REPORT No. : XM19080032W07

TEST REPORT

APPLICANT	:	Hot Pepper, Inc.
PRODUCT NAME	:	4G Smart Phone
MODEL NAME	:	HPP-L55
BRAND NAME	:	Hot Pepper
FCC ID	:	2APD4-A95C
STANDARD(S)	:	47 CFR Part 15 Subpart E
RECEIPT DATE	:	2019-10-10
TEST DATE	:	2019-11-10 to 2019-11-26
ISSUE DATE	:	2019-12-30

Edited by : Bowers Zeng

Bowers Zeng(Test engineer)

Review by:

Elvis Wang(Auditor)

Approved by:

Anne Liu (Supervisor)

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DIRECTORY

Change History		
Version	Date	Reason for change
1.0	2019-12-30	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Hot Pepper, Inc.
Applicant Address:	5151 California Ave., Suite 100, Irvine 92617, USA
Manufacturer:	Hot Pepper, Inc.
Manufacturer Address:	5151 California Ave., Suite 100, Irvine 92617, USA

1.2. Equipment Under Test (EUT) Description

Product Name:	4G Smart Phone
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	A95C_MAINBOARD_P3
Software Version:	HPP-L55-C1.0.0
Modulation Type:	OFDM
Modulation Mode:	802.11a, 802.11n(HT20), 802.11n(HT40)
Operating Frequency Range:	5.180 GHz- 5.240 GHz; 5.260 GHz -5.320 GHz ; 5.745GHz- 5.825GHz
Channel Number:	Refer to 1.3
Antenna Type:	PIFA Antenna
Antenna Gain:	5.1G:-0.8 dBi;5.2G:-0.8dBi,5.8G:-0.9dBi

Note 1: The U-NII band is applicable to this report, another bands of operation (2.4GHz) is documented in a separate report.
Note 2: WIFI hotspot does not support U-NII band.
Note 3: During test, the duty cycle of the EUT was setting to 100%.
Note 4: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. The channel number and frequency of EUT

Frequency Range: 5180-5240MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**36**	**5180**	40	5200
	44	**5220**	**48**	**5240**
40MHz	**38**	**5190**	**46**	**5230**
Frequency Range: 5260-5320MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**52**	**5260**	56	5280
	60	**5300**	**64**	**5320**
40MHz	**54**	**5270**	**62**	**5310**
Frequency Range: 5745-5805MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**149**	**5745**	153	5765
	157	**5785**	161	5805
	165	**5825**	/	/
40MHz	**151**	**5755**	**159**	**5795**

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

1.4. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

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

No.	Section	Description	Test Date	Test Engineer	Result
1	15.203	Antenna Requirement	N/A	N/A	PASS
2	15.407(a) (e)	Emission Bandwidth	Nov 10, 2019	LaiHuihuang	PASS
3	15.407(a)	Maximum conducted output Power	Nov 10, 2019	LaiHuihuang	PASS
4	15.407(a)	Peak Power spectral density	Nov 10, 2019	LaiHuihuang	PASS
5	15.407(b)	Restricted Frequency Bands	Nov 13, 2019 Nov 26, 2019	Yaming Luo	PASS
6	15.407(g)	Frequency Stability	Nov 10, 2019	LaiHuihuang	PASS
7	15.207	Conducted Emission	Nov 13, 2019 Nov 26, 2019	Yaming Luo	PASS
8	15.407(b)	Radiated Emission	Nov 13, 2019 Nov 26, 2019	Yaming Luo	PASS
9	15.407(c)	Automatically discontinue transmission requirement	N/A	N/A	PASS
Note: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013 and KDB789033 D02 v02r01.					

1.5. 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 15C 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. Result: Compliant

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

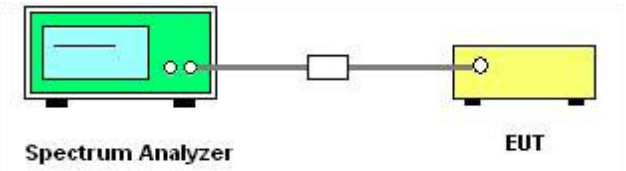
2.2. Emission Bandwidth

2.2.1. 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.

2.2.2. Test Description

A. 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.

B. 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 the 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 the video bandwidth (VBW) ≥ 3 × 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.

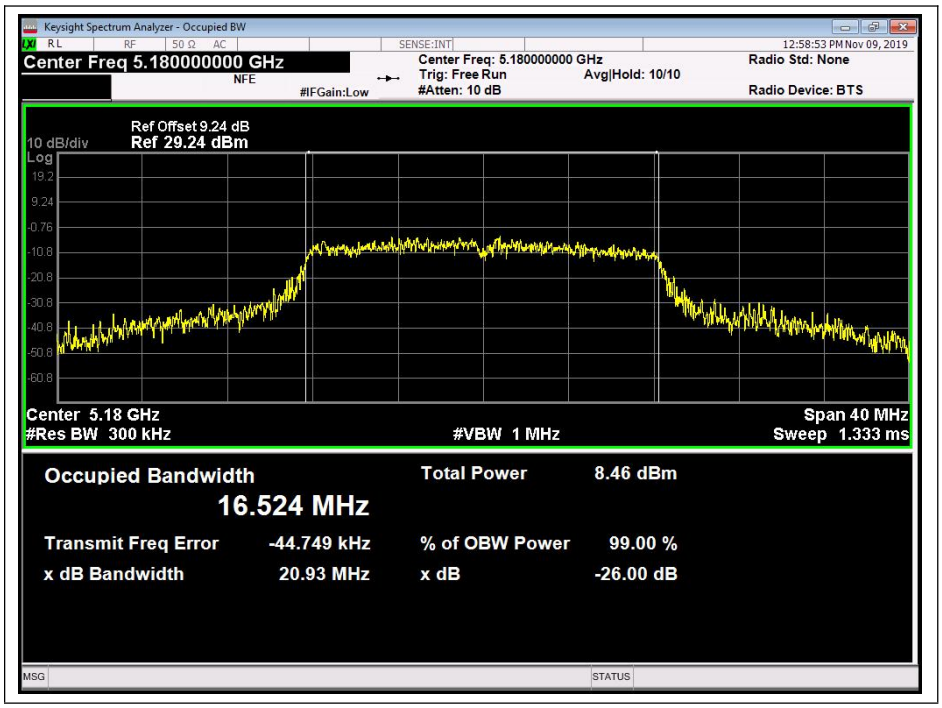
2.2.3. Test Result

802.11a Test mode

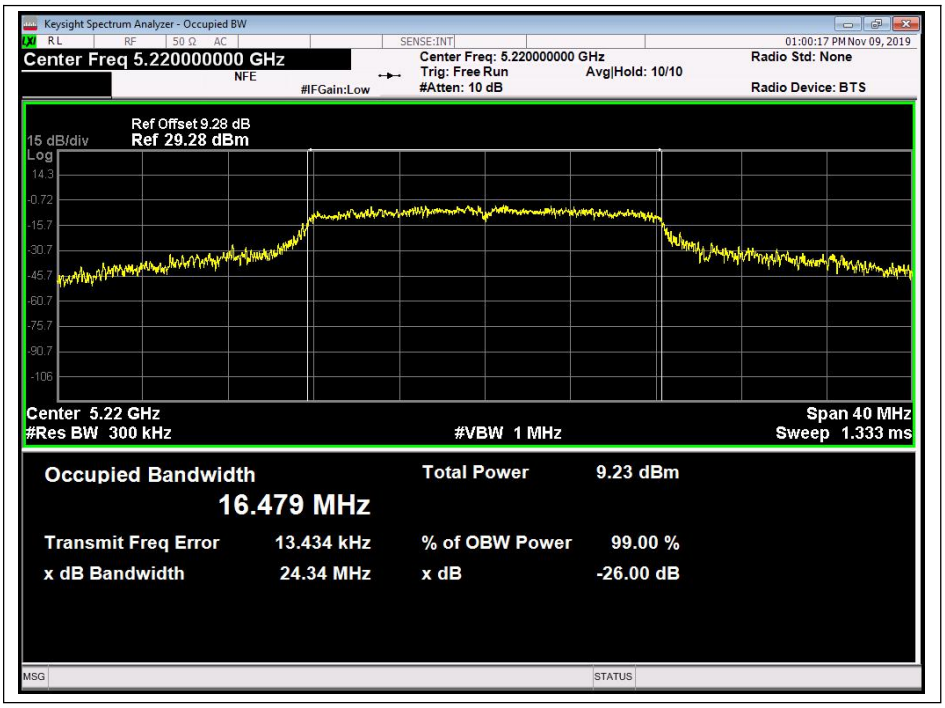
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	20.93
44	5220	24.34
48	5240	25.66
52	5260	23.03
60	5300	24.72
64	5320	20.87
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**
149	5745	16.31
157	5785	11.41
165	5825	16.32

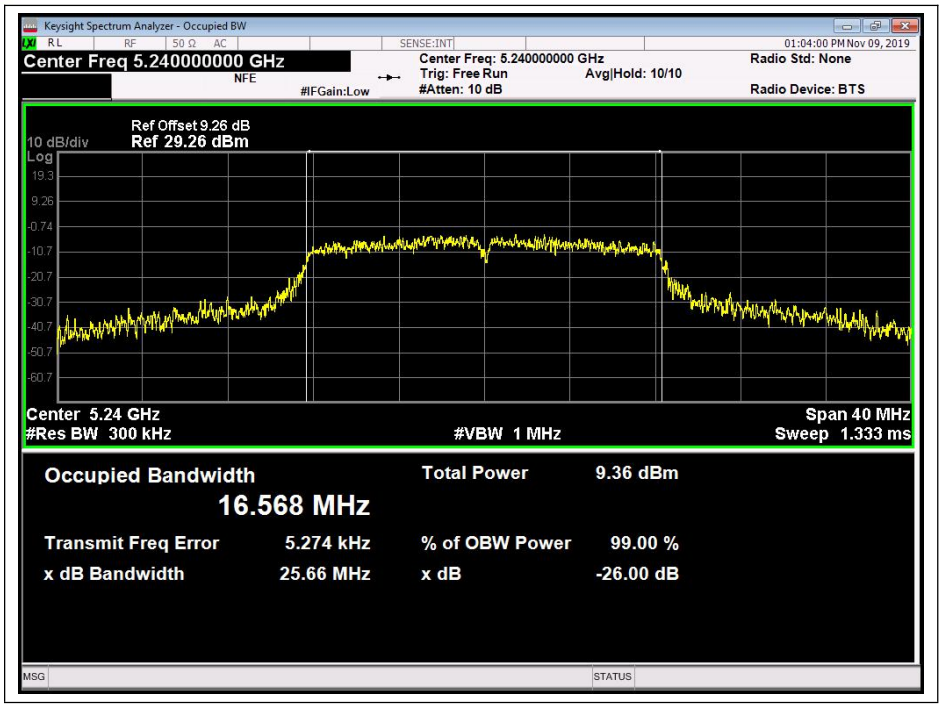
B. Test Plots



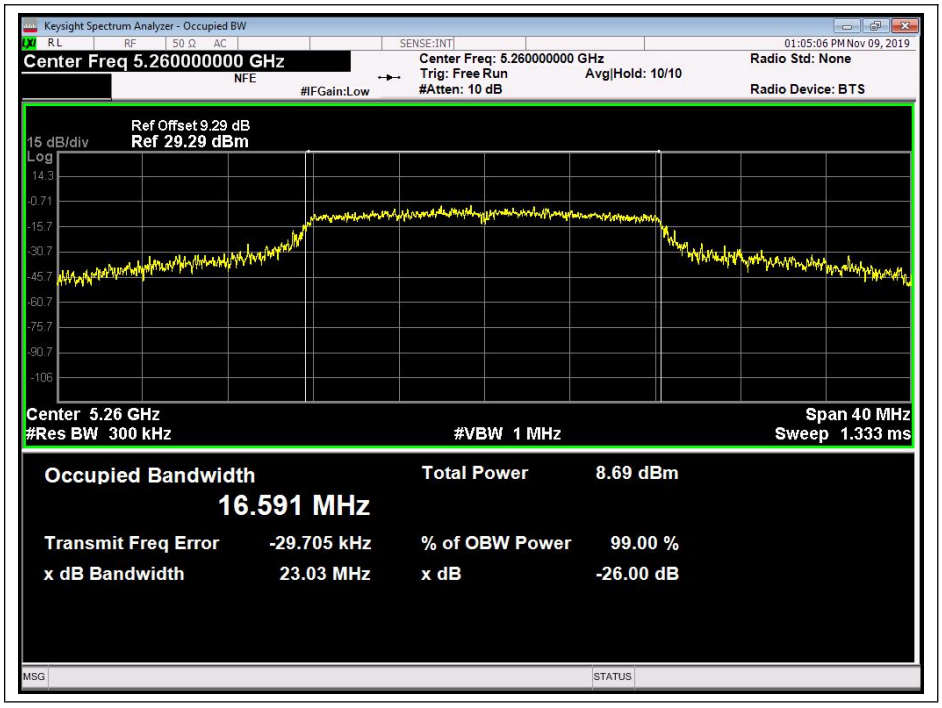
(Channel 36, 5180MHz, 802.11a)



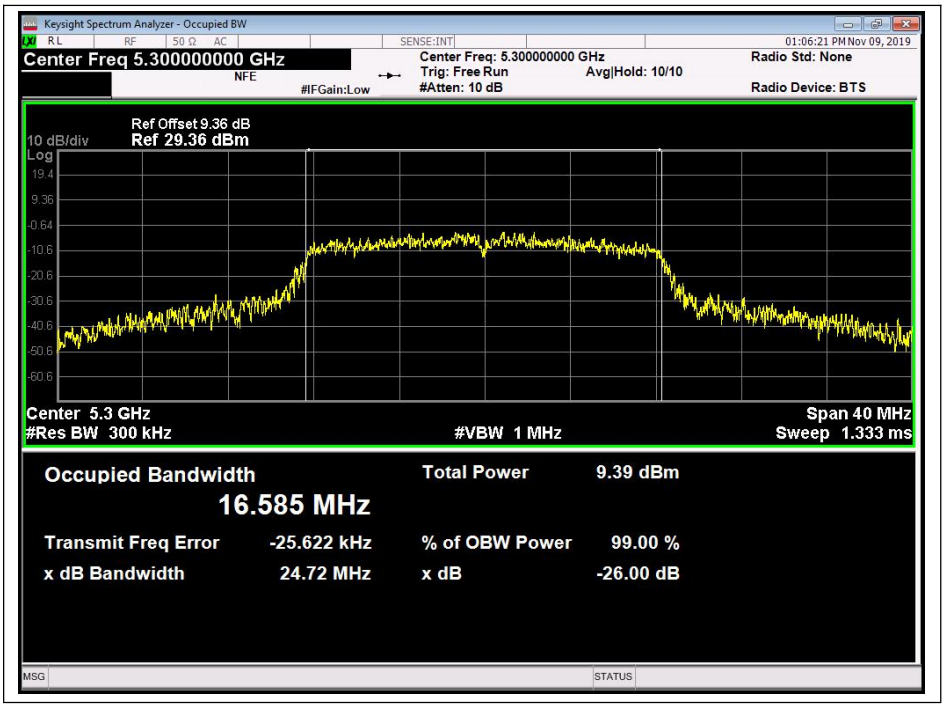
(Channel 44, 5220 MHz, 802.11a)



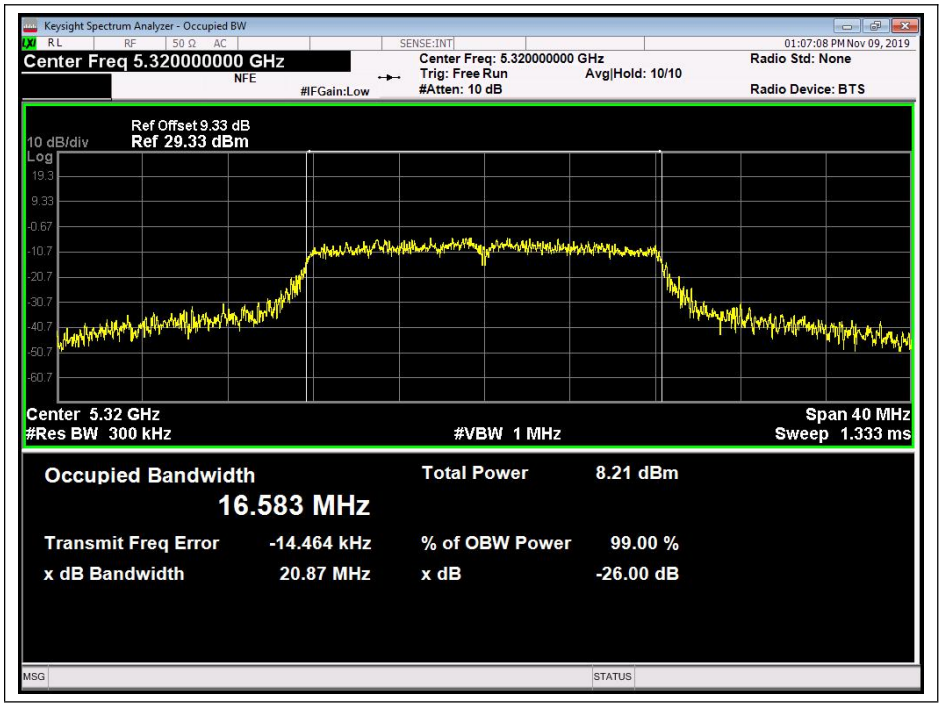
(Channel 48, 5240MHz, 802.11a)



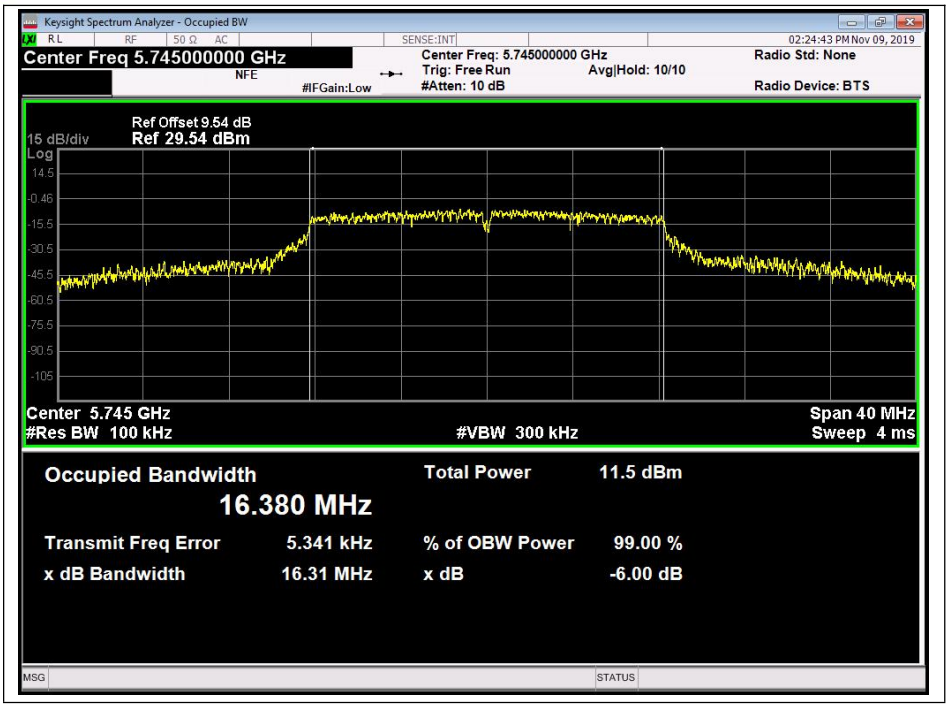
(Channel 52, 5260MHz, 802.11a)



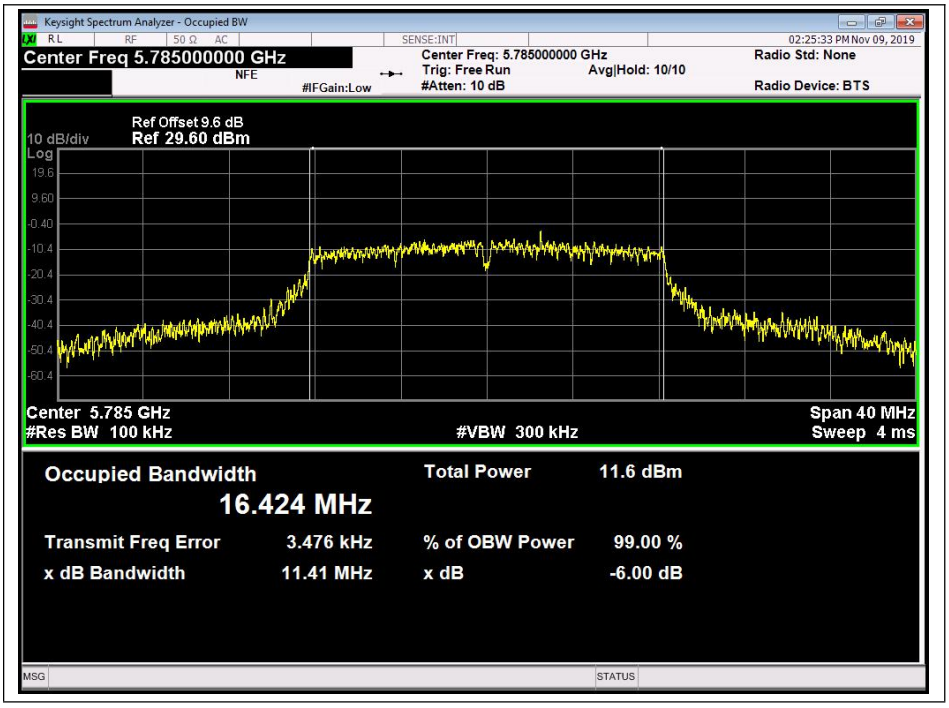
(Channel 60, 5300 MHz, 802.11a)



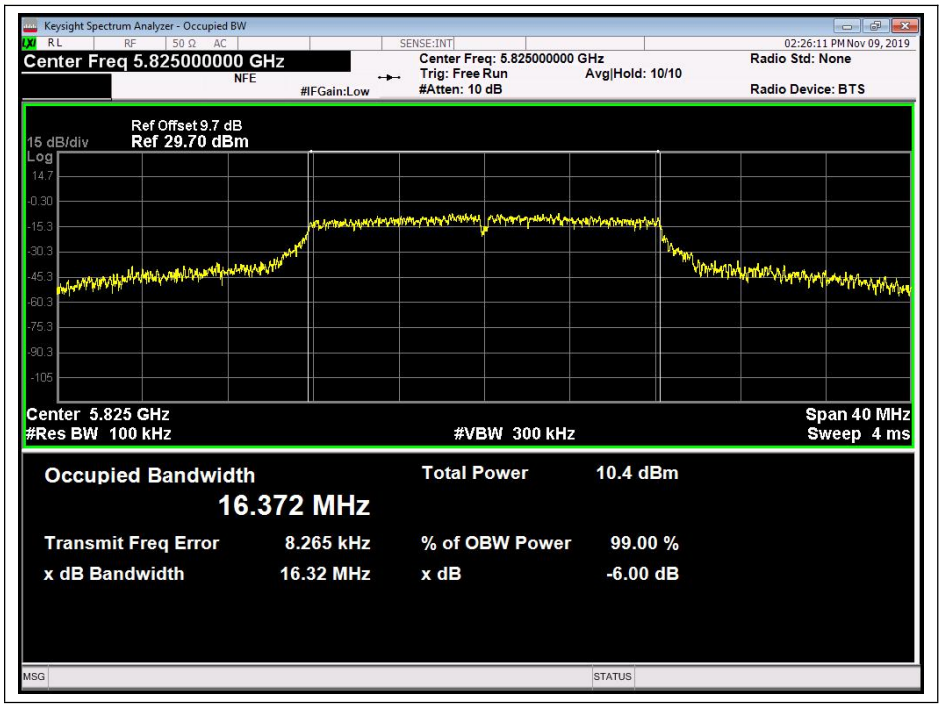
(Channel 64, 5320MHz, 802.11a)



(Channel 149, 5745MHz, 802.11a)



(Channel 157, 5785MHz, 802.11a)



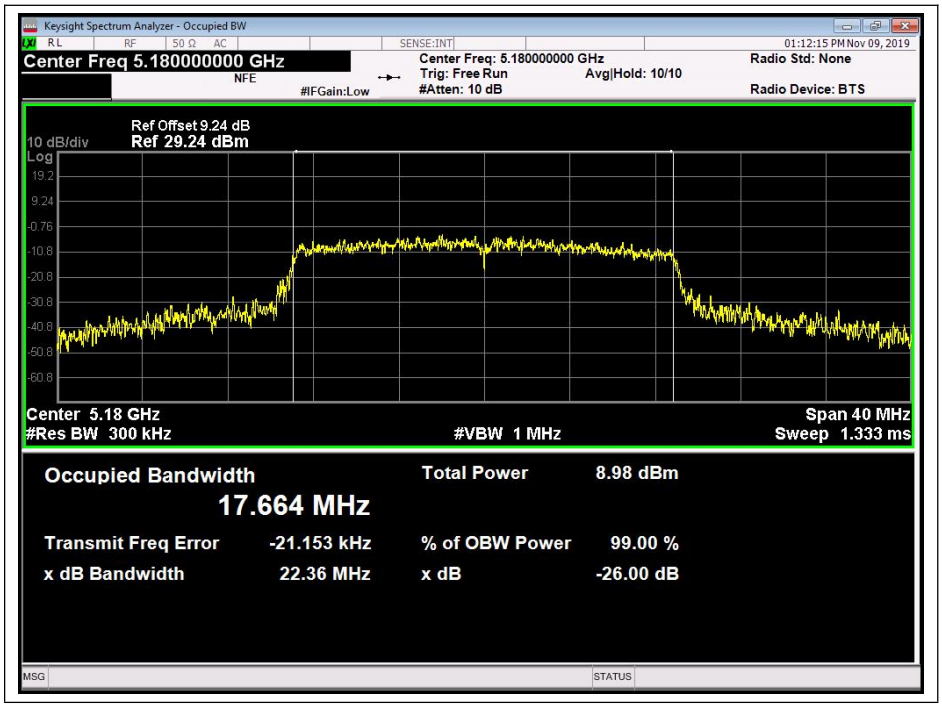
(Channel 165, 5825MHz, 802.11a)

802.11n (HT20) Test mode

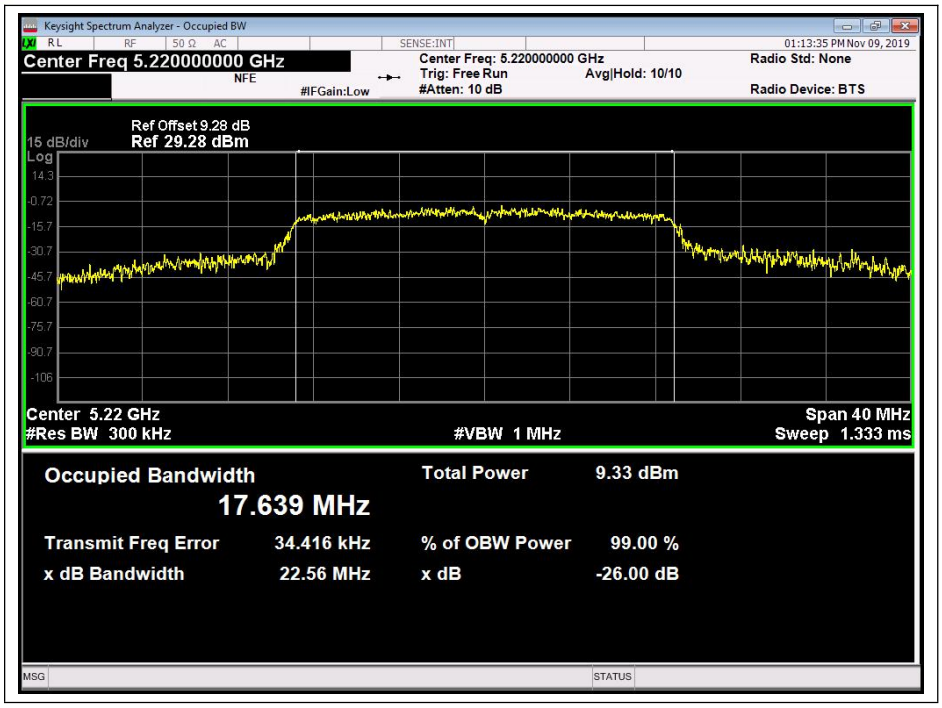
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	22.36
44	5220	22.56
48	5240	30.36
52	5260	21.26
60	5300	20.34
64	5320	23.06
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**
149	5745	17.18
157	5785	17.59
165	5825	17.66

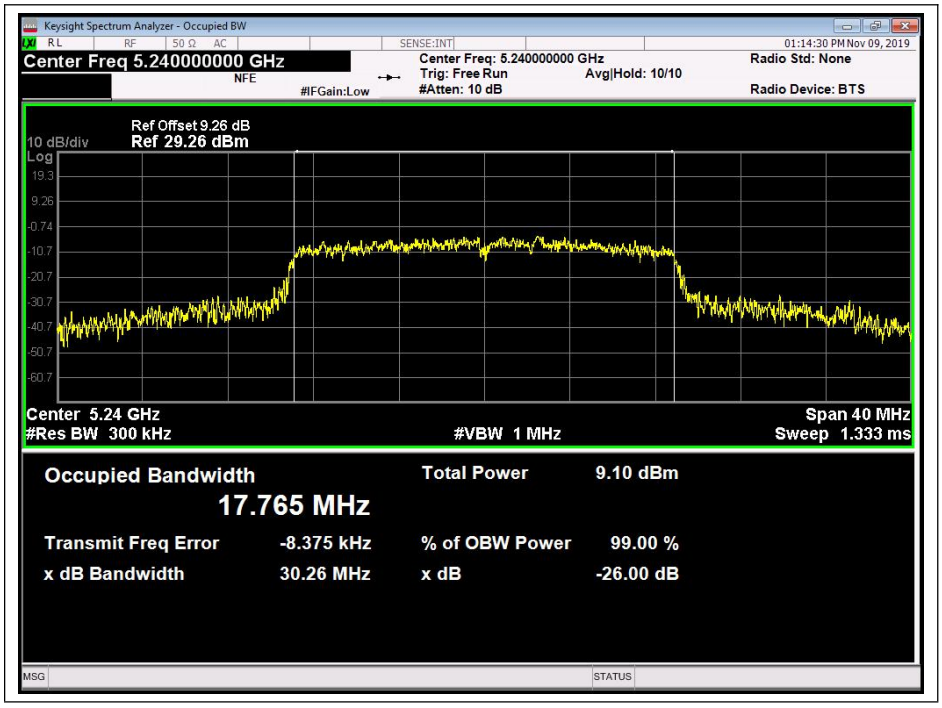
B. Test Plots



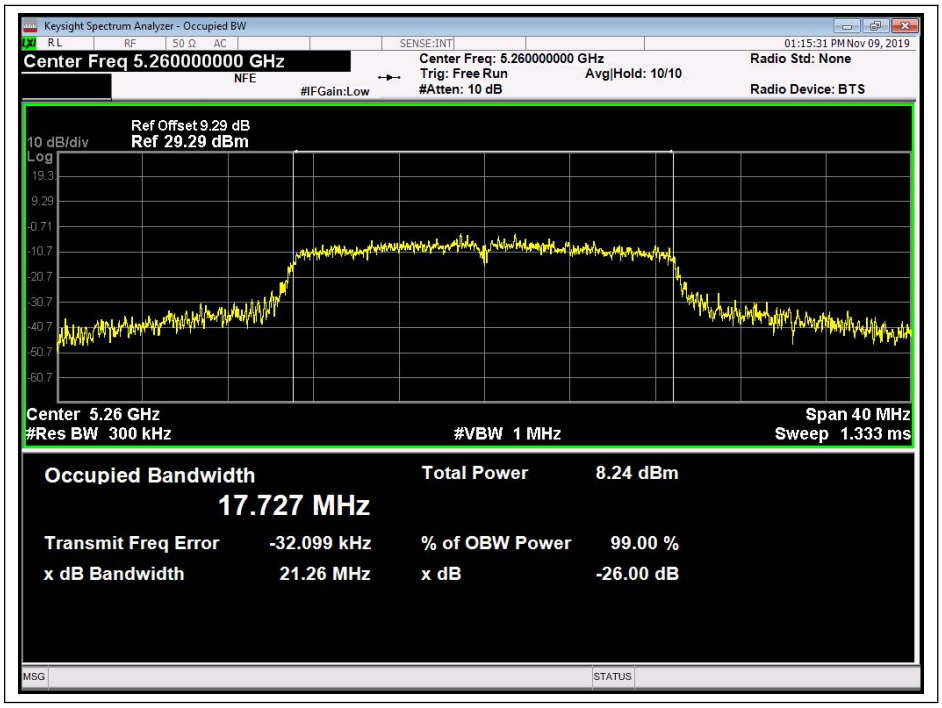
(Channel 36, 5180MHz, 802.11 n (HT20))



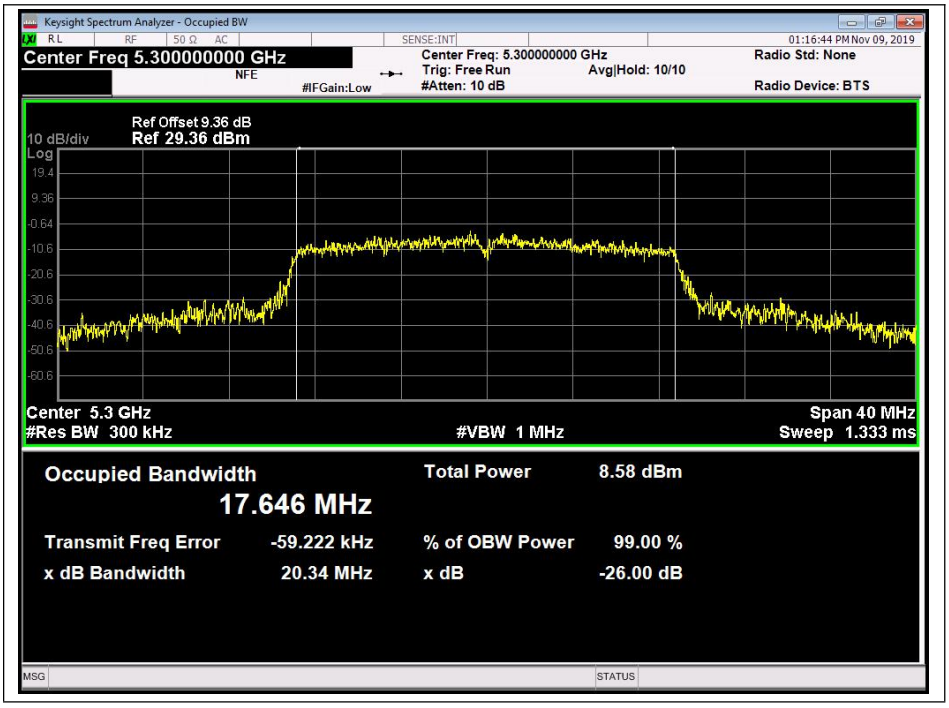
(Channel 44, 5220 MHz, 802.11 n (HT20))



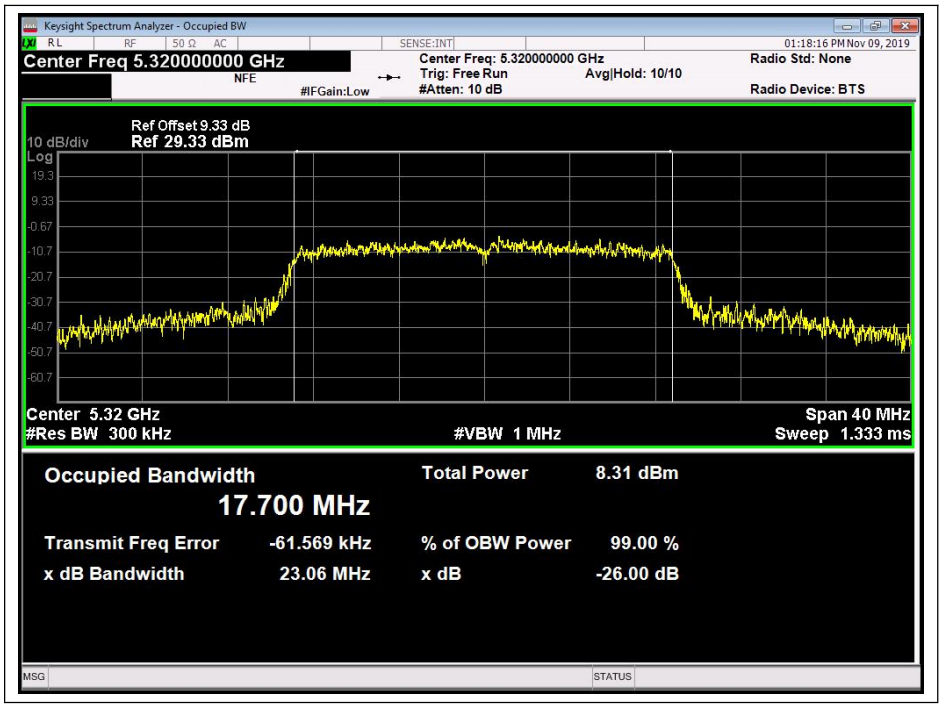
(Channel 48, 5240MHz, 802.11 n (HT20))



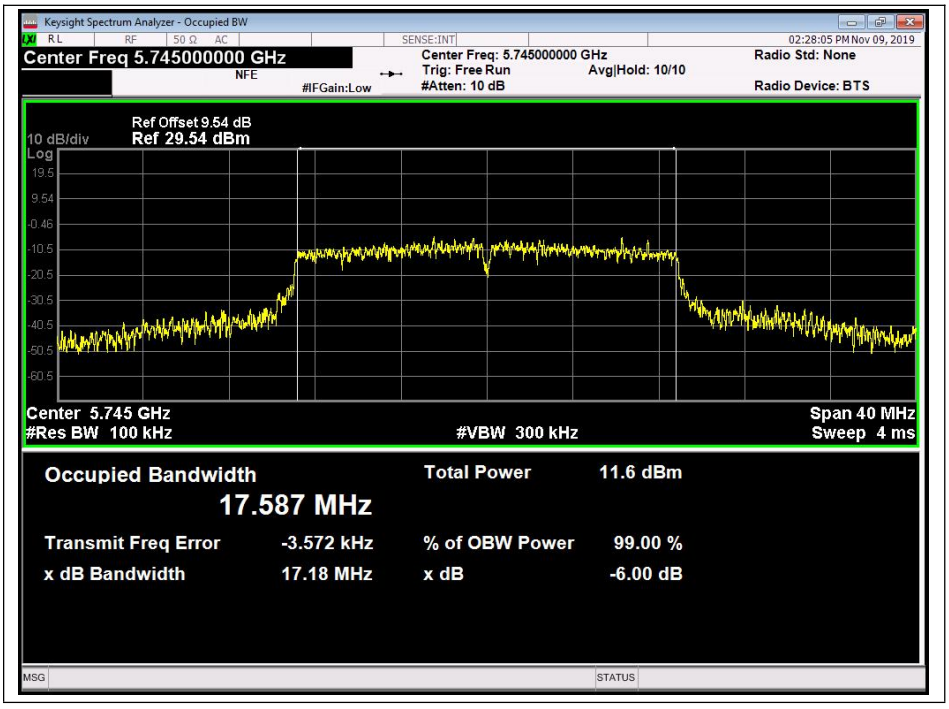
(Channel 52, 5260MHz, 802.11 n (HT20))



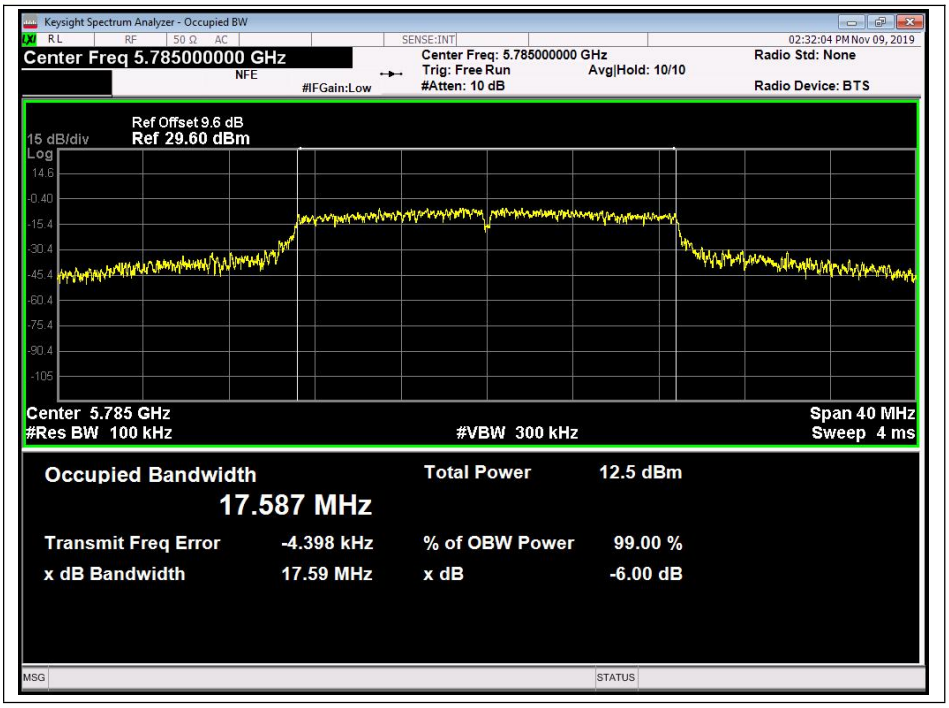
(Channel 60, 5300 MHz, 802.11 n (HT20))



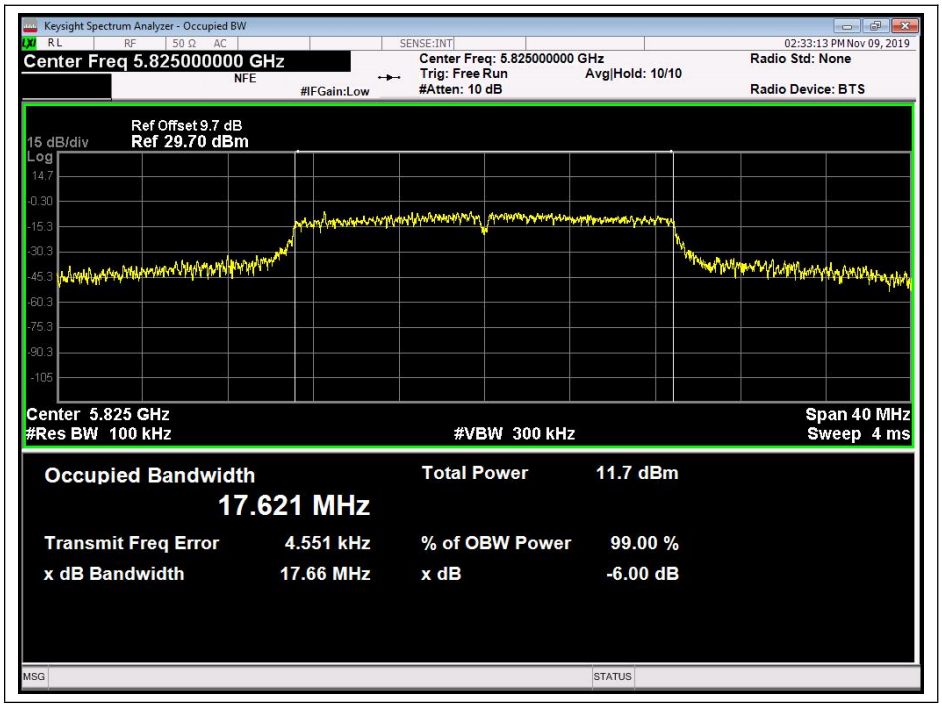
(Channel 64, 5320MHz, 802.11 n (HT20))



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



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



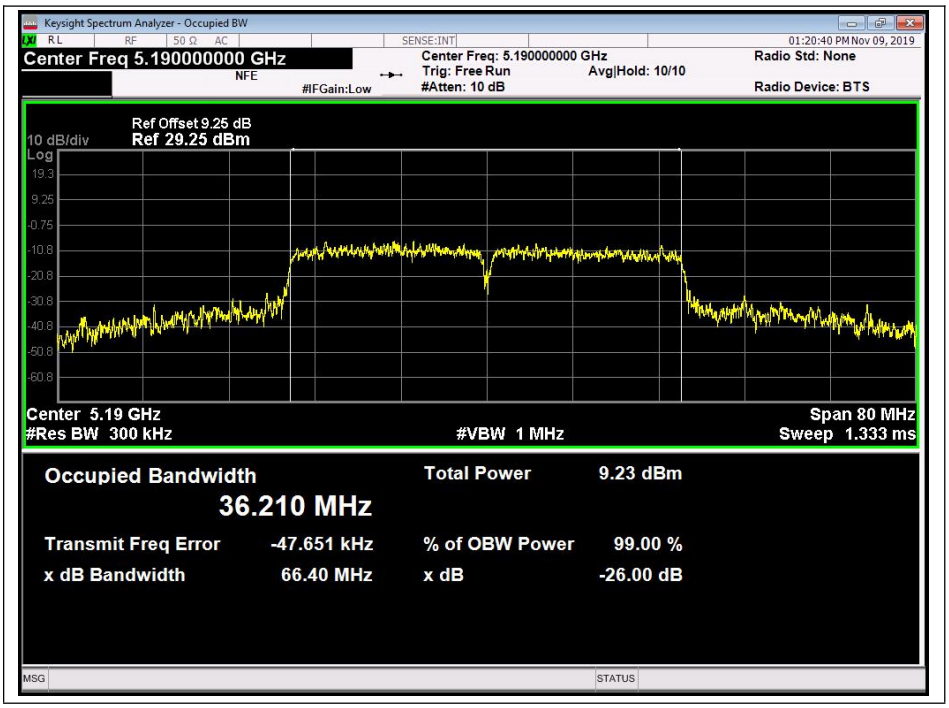
(Channel 165, 5825MHz, 802.11 n (HT20))

802.11n (HT40) Test mode

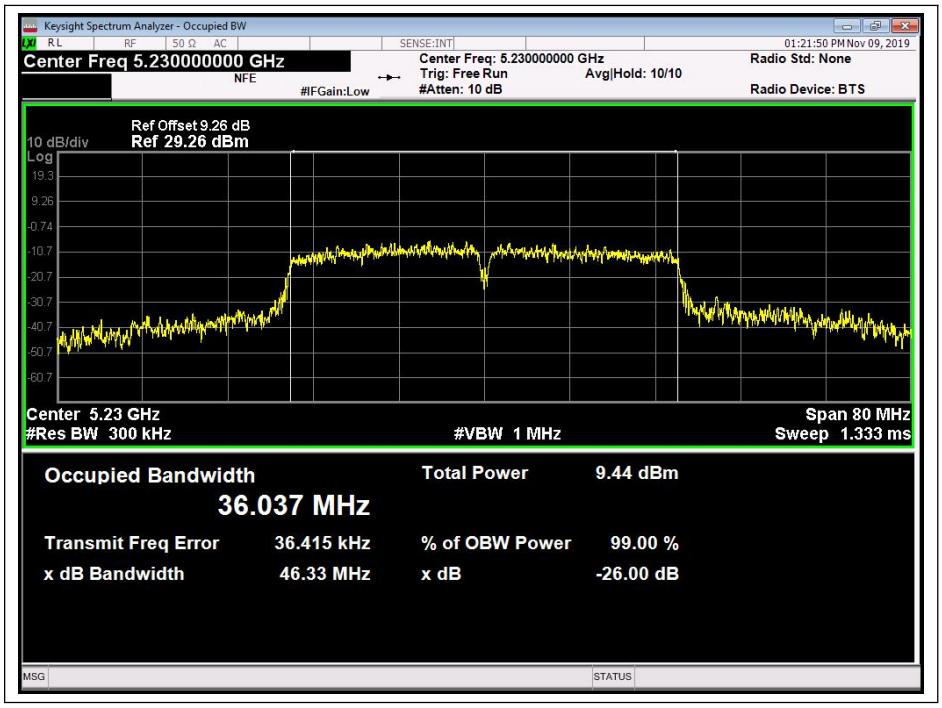
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
38	5190	66.40
46	5230	46.33
54	5270	57.10
62	5310	48.92
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**
151	5755	29.12
159	5795	28.88

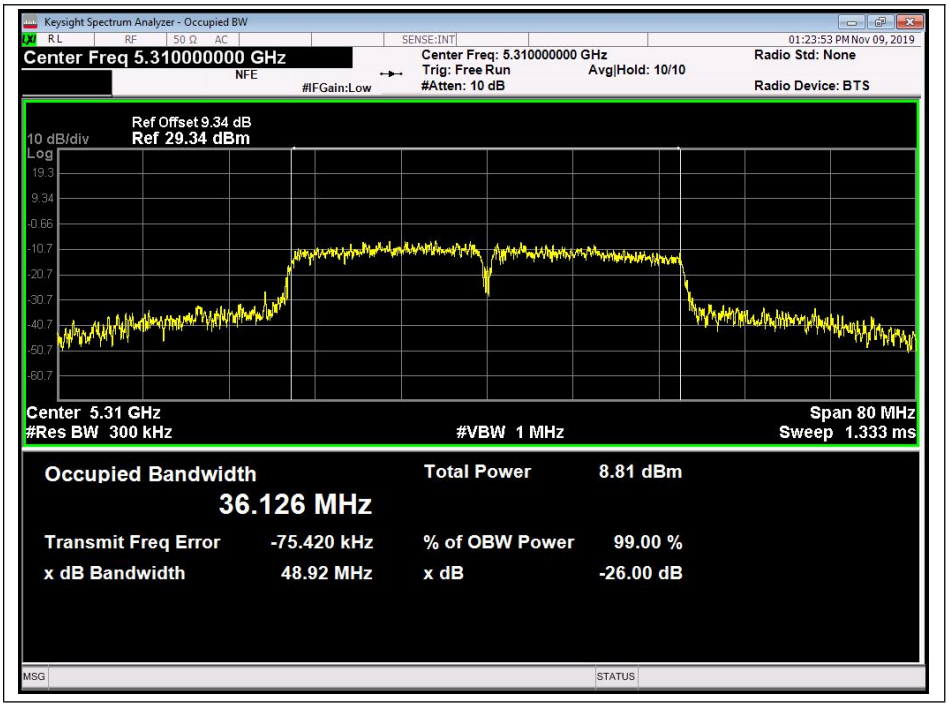
B. Test Plots



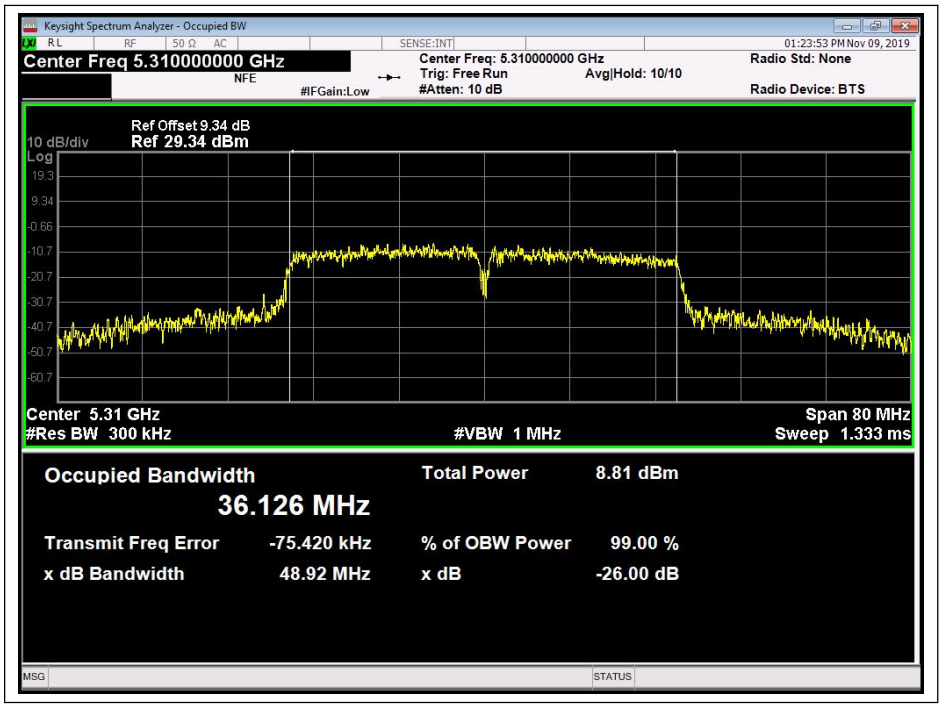
(Channel 38, 5190MHz, 802.11n (HT40))



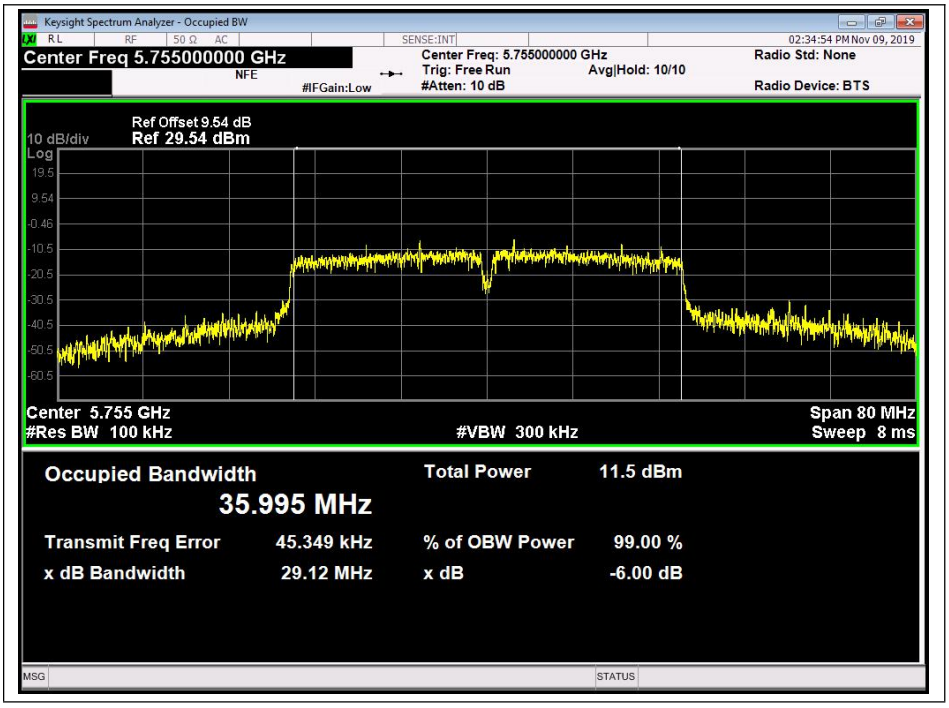
(Channel 46, 5230 MHz, 802.11n (HT40))



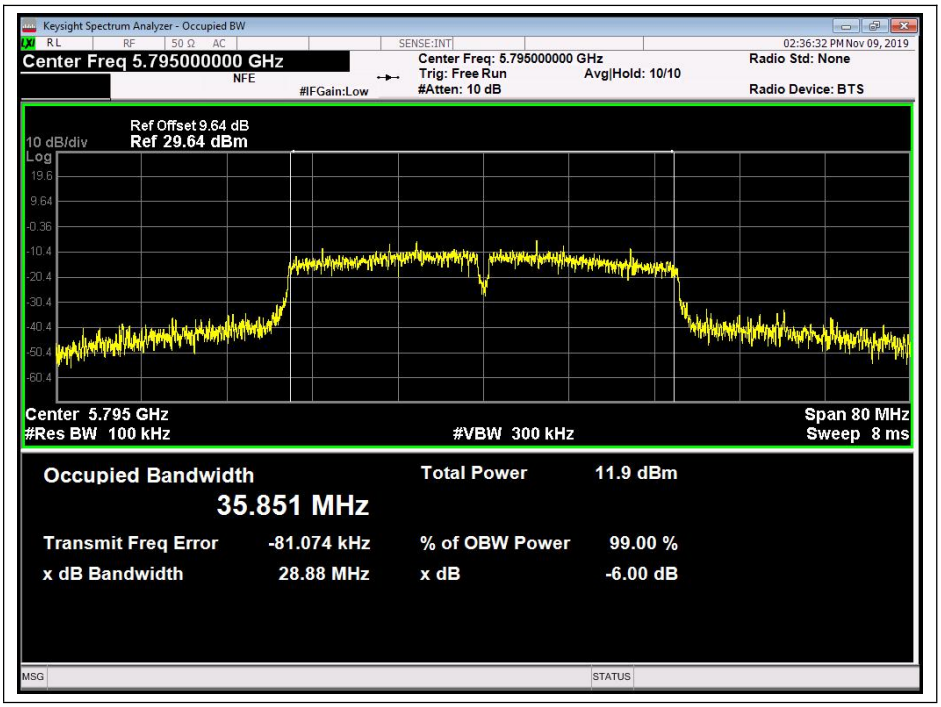
(Channel 54, 5270MHz, 802.11n (HT40))



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



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



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

2.3. Maximum conducted output power

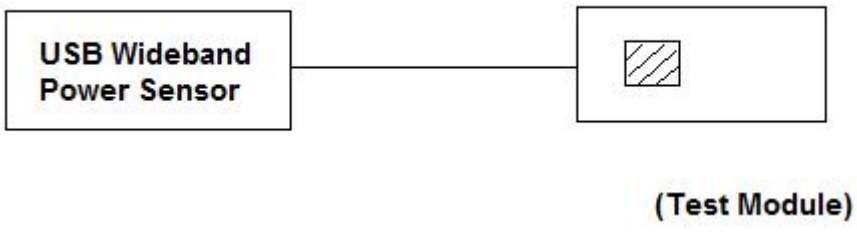
2.3.1. Requirement

(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 250 mW provided the maximum antenna gain does not exceed 6 dBi.
(2) For the 5.25-5.35 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 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 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(4) According to KDB662911D01Measure-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} +10log(N_{ANT}) 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.

A. Test Set:



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.

2.3.3. Test Result

Duty Cycle Factor

Mode	Channel	Frequency (MHz)	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty Cycle (%)	Duty Cycle Factor
802.11 a	36	5180	100	100	100	0
802.11 HT20	36	5180	100	100	100	0
802.11 HT40	38	5190	100	100	100	0

802.11a Test mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Limit		Verdict
			(dBm)	11+10*log(EBW) (dBm)	
36	5180	12.31	24	23.98	PASS
44	5220	12.07		23.98	
48	5240	12.01		23.98	
52	5260	11.43		23.96	
60	5300	12.60		23.95	
64	5320	11.80		23.91	
149	5745	12.08	30		
157	5785	12.08			
165	5825	12.32			
Note: Power limit is 24dBm or 11+10*log(EBW)					

802.11n (HT20) Test mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Limit		Verdict
			(dBm)	11+10*log(EBW) (dBm)	
36	5180	12.19	24	24.07	PASS
44	5220	12.00		24.05	
48	5240	11.95		24.04	
52	5260	11.16		24.04	
60	5300	11.06		24.08	
64	5320	11.52		24.04	
149	5745	12.13	30		
157	5785	12.00			
165	5825	12.10			
Note: Power limit is 24dBm or 11+10*log(EBW)					

802.11n (HT40) Test mode

Channel	Frequency (MHz)	Average Output Power (dBm)	Limit		Verdict
			(dBm)	11+10*log(EBW) (dBm)	
38	5190	12.39	24	24.07	PASS
46	5230	12.07		24.05	PASS
54	5270	11.65	24	24.04	PASS
62	5310	11.70		24.04	PASS
151	5755	11.90	30		PASS
159	5795	12.38			PASS
Note: Power limit is 24dBm or 11+10*log(EBW)					

Note: The duty cycle factor has been compensated into the test result

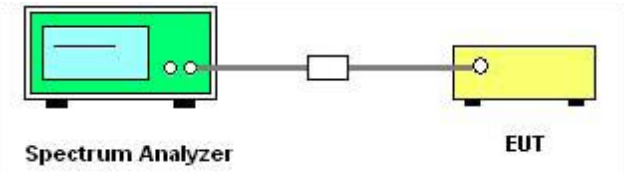
2.4. Peak Power spectral density

2.4.1. Requirement

(1) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
(2) For the 5.25-5.35 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500KHz band.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(4) According to KDB662911D01Measure-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} +10log(N_{ANT}) dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

2.4.2. Test Description

A. Test Set:



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.

B. Test Procedure

KDB 789033 Section F) Maximum Power Spectral Density (PSD) Method SA-1 was used in order to prove compliance.test procedure for Band 1 and Band 2A:

1) Set span to encompass the entire 26-dB emission bandwidth
2) Set RBW = 1 MHz. Set VBW ≥ 3 MHz.
3) Number of points in sweep ≥ 2 Span / RBW. Sweep time = auto.
4) Detector = RMS (i.e., power averaging)
5) Trace average at least 100 traces in power averaging (i.e., RMS) mode
6) Record the max value

Band 4 test procedure:

For devices operating in the band 5.725−5.85 GHz, the rules specify a measurement bandwidth of 500 kHz

2.4.3. Test Result

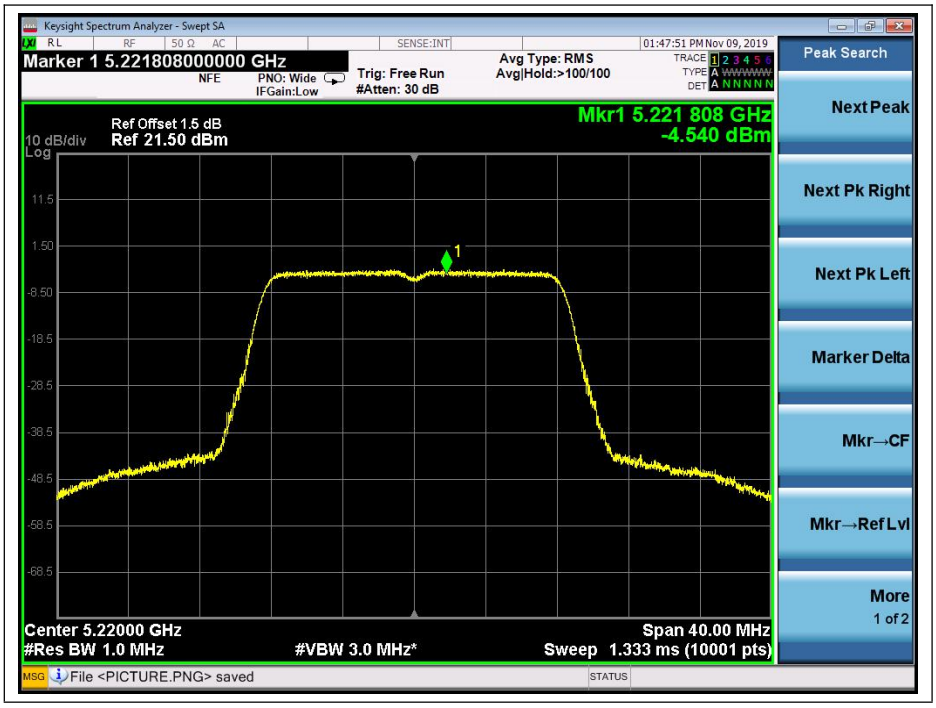
802.11a Test mode

A. Test Verdict:

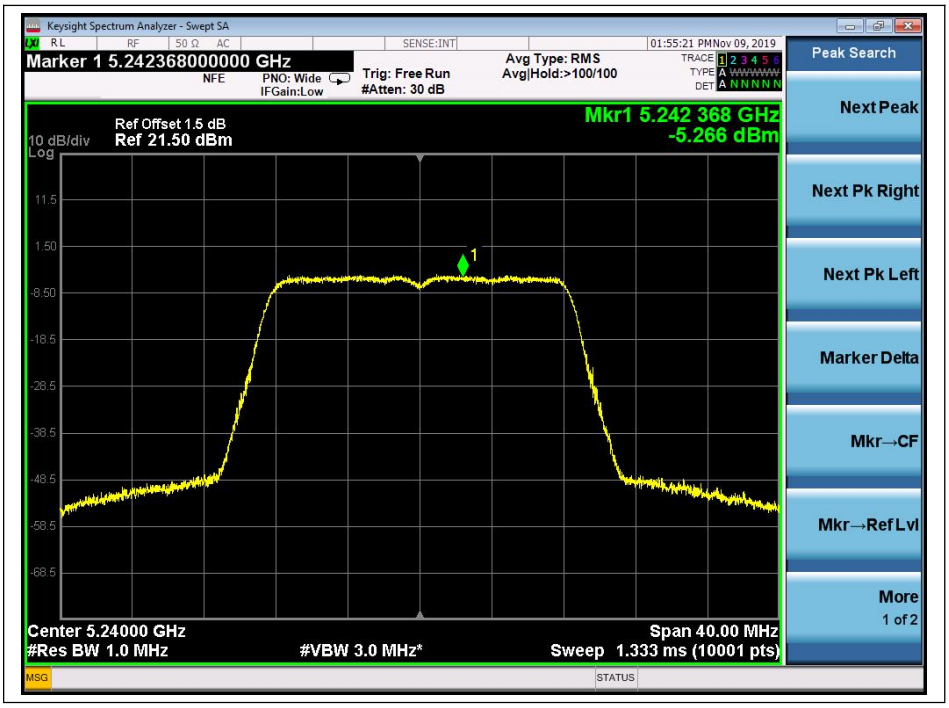
Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	-4.599	11	PASS
44	5220	-4.540		
48	5240	-5.266		
52	5260	-6.242		
60	5300	-6.086		
64	5320	-5.599		
Channel	Frequency (MHz)	Measured PSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
149	5745	1.708	30	PASS
157	5785	1.791		
165	5825	1.333		

B. Test Plots

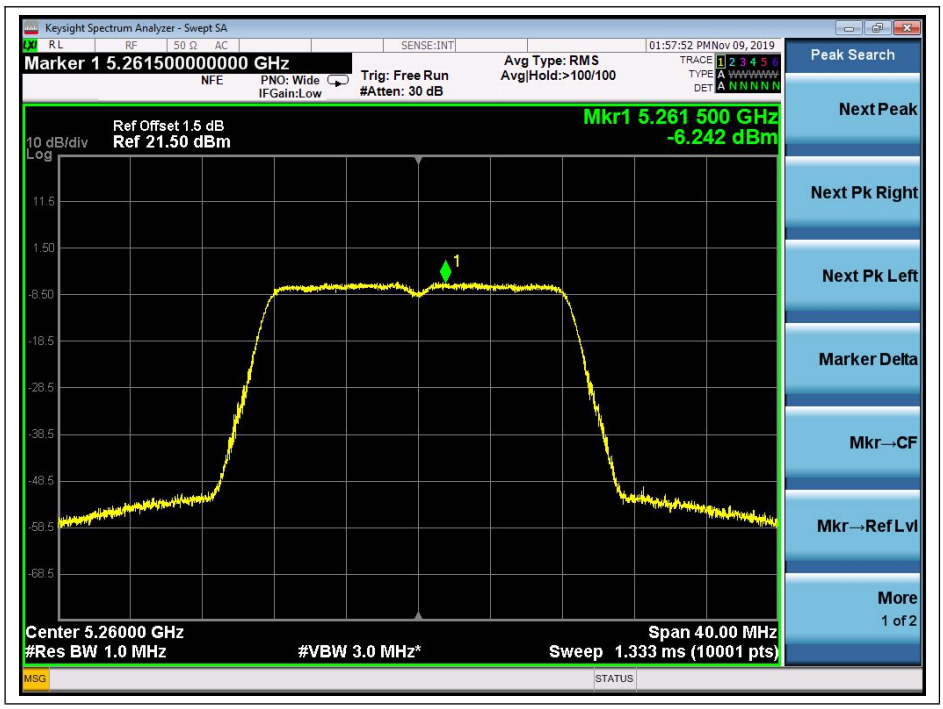
(Channel 36, 5180MHz, 802.11a,)



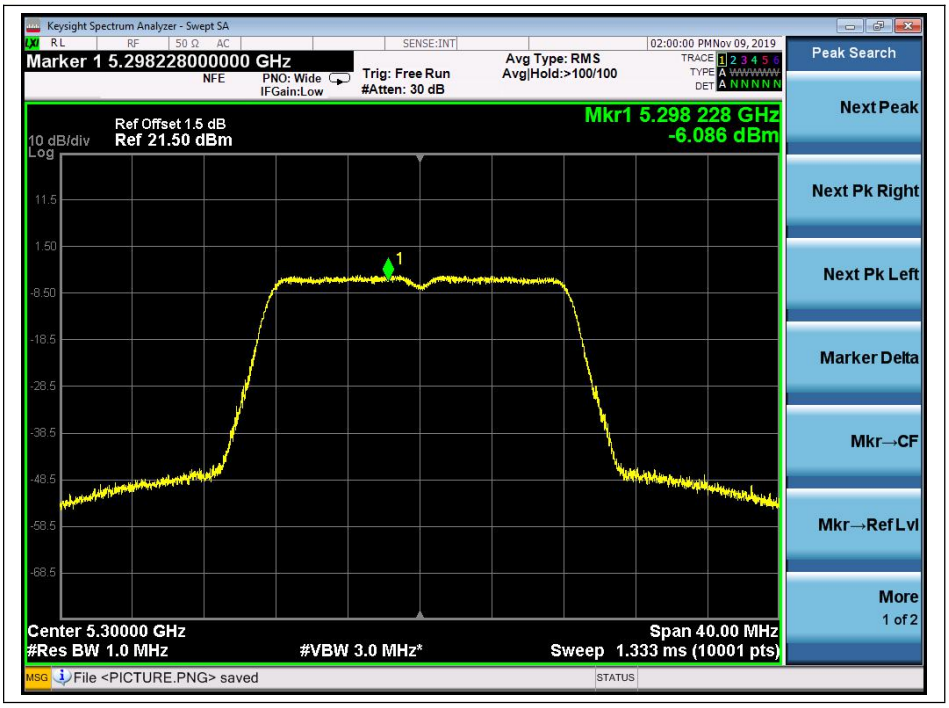
(Channel 44, 5220 MHz, 802.11a,)



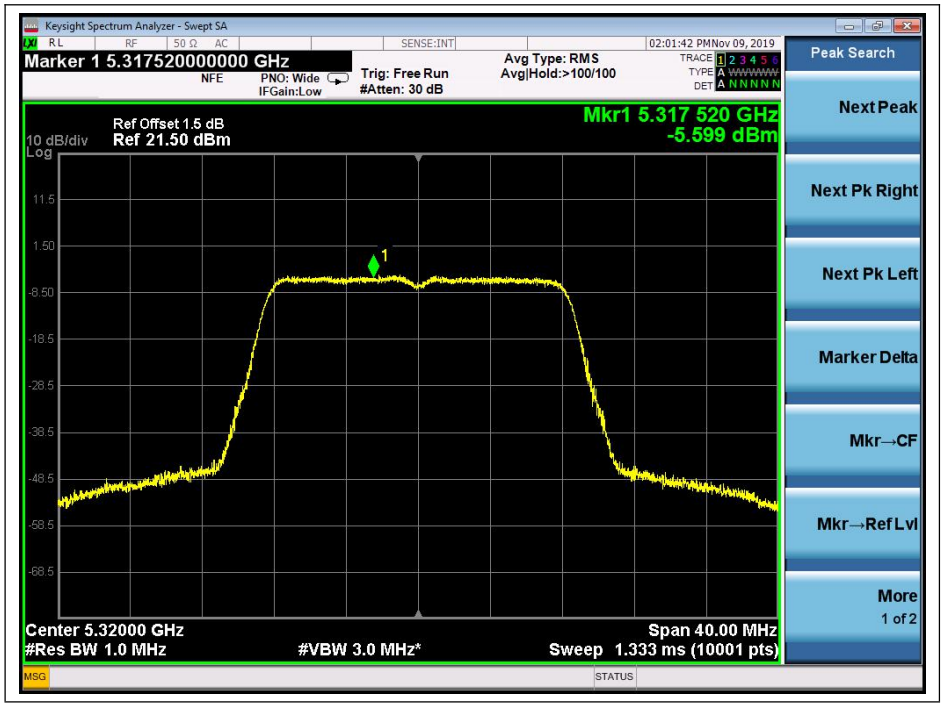
(Channel 48, 5240MHz, 802.11a,)



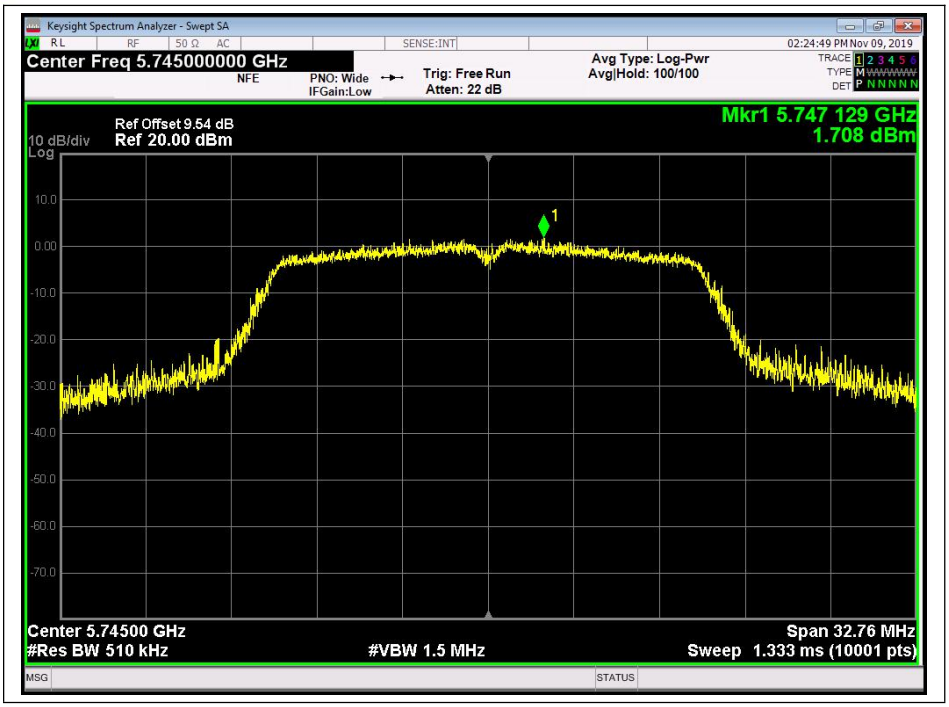
(Channel 52, 5260MHz, 802.11a,)



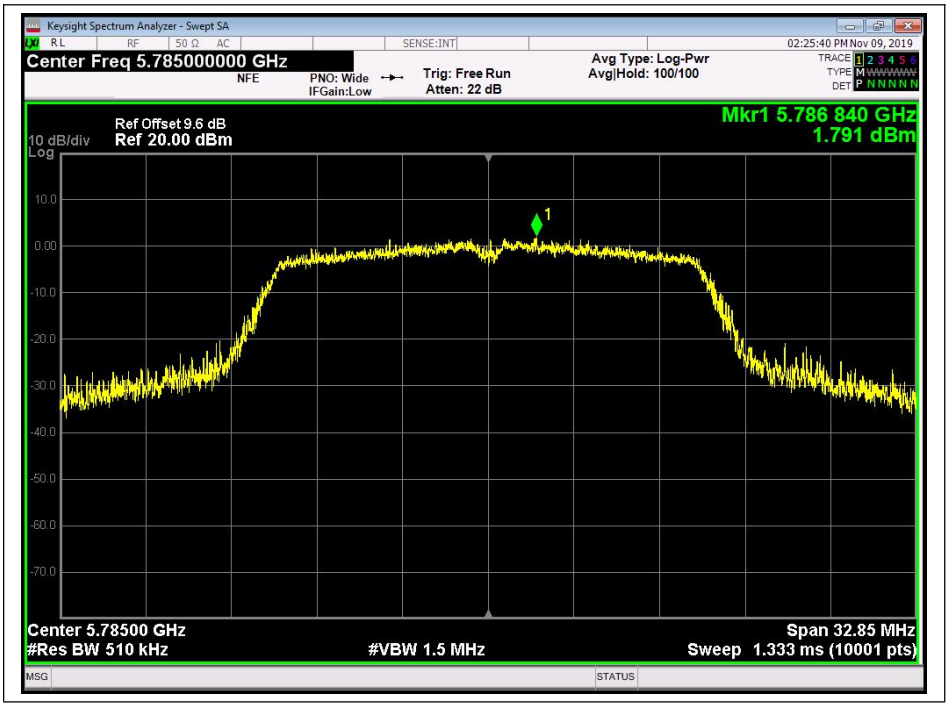
(Channel 60, 5300 MHz, 802.11a,)



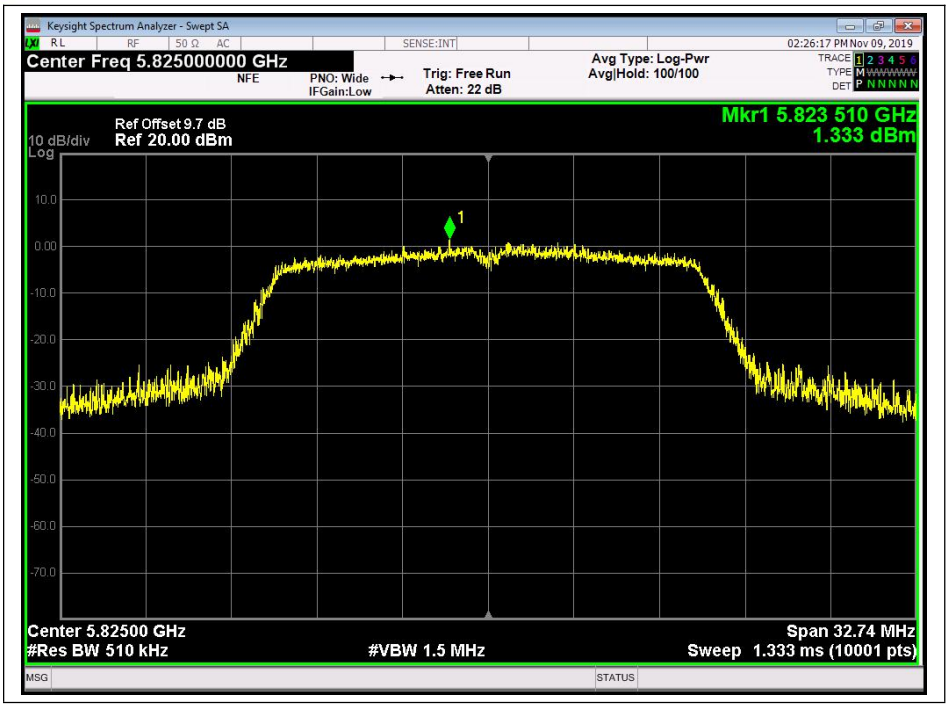
(Channel 64, 5320MHz, 802.11a,)



(Channel 149, 5745MHz, 802.11a)



(Channel 157, 5785MHz, 802.11a)



(Channel 165, 5825MHz, 802.11a)

802.11n (HT20) Test mode

A. Test Verdict:

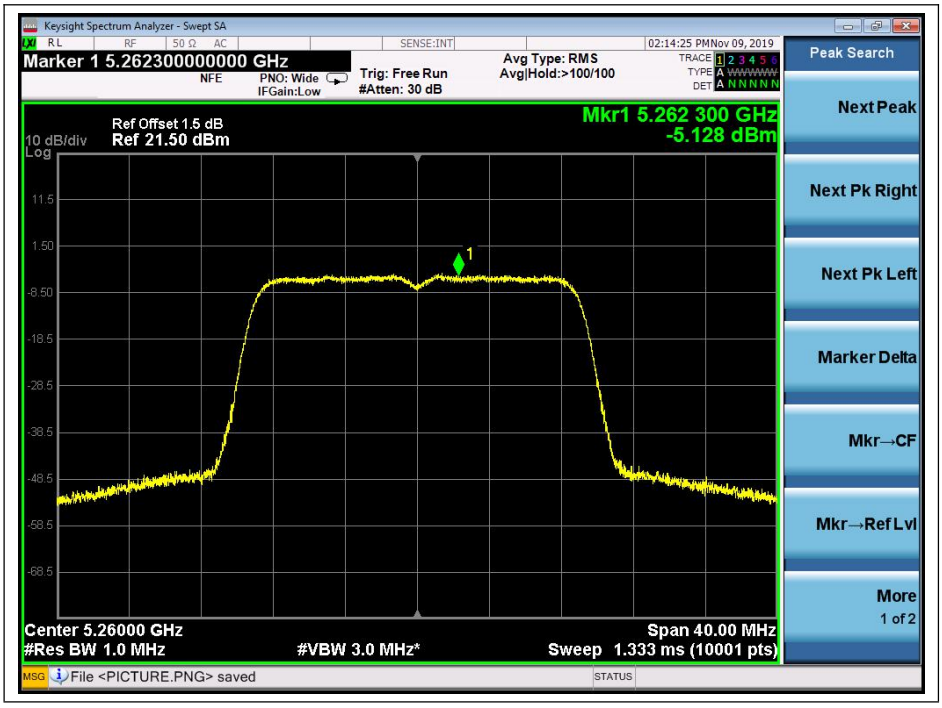
Channel	Frequency (MHz)	Measured PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	-5.114	11	PASS
44	5220	-4.656		
48	5240	-4.665		
52	5260	-5.128		
60	5300	-5.326		
64	5320	-5.862		
Channel	Frequency (MHz)	Measured PSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
149	5745	1.284	30	PASS
157	5785	1.442		
165	5825	2.528		

B. Test Plots

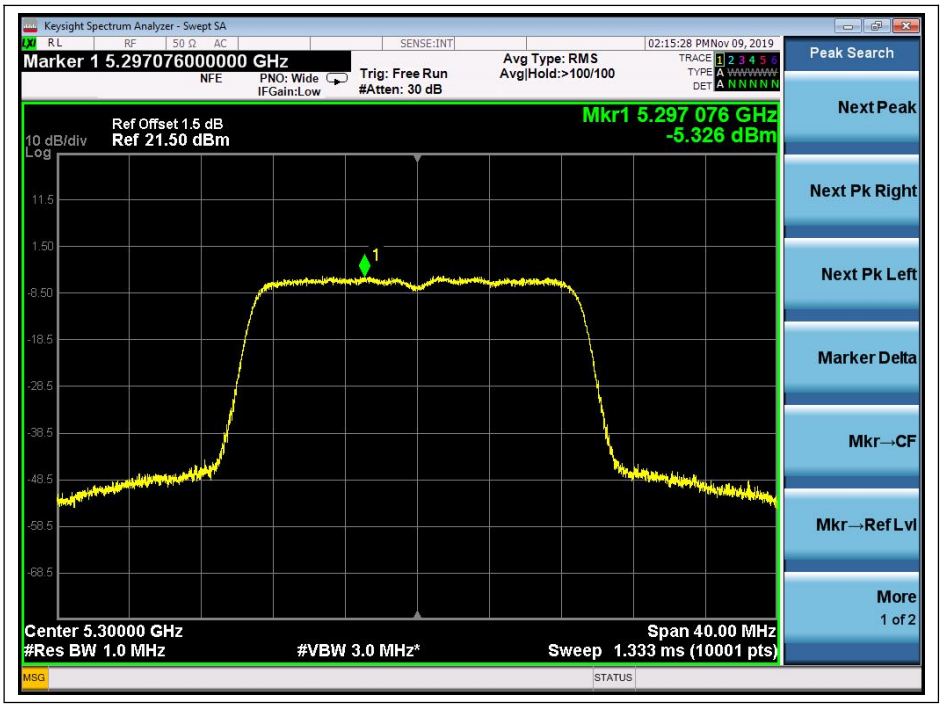
(Channel 36, 5180MHz, 802.11 n (HT20))

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

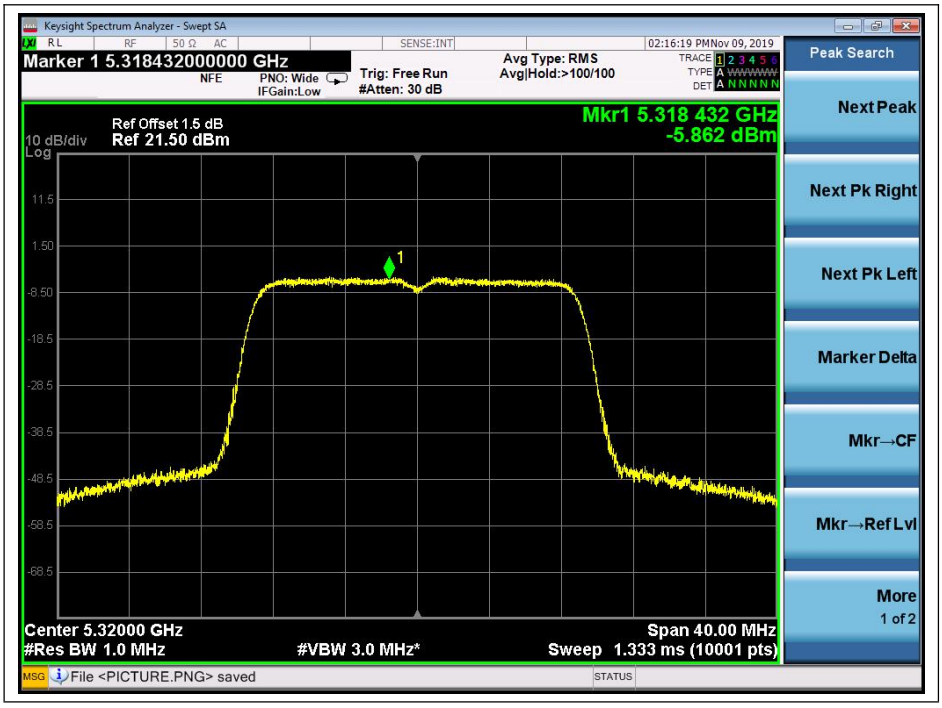
(Channel 48, 5240MHz, 802.11 n (HT20))



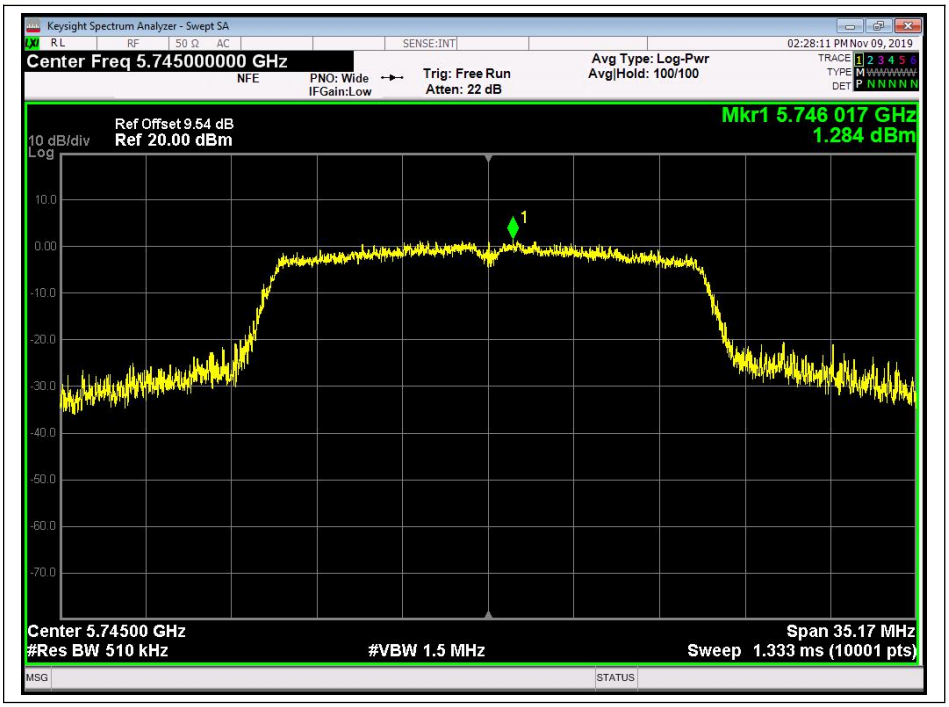
(Channel 52, 5260MHz, 802.11 n (HT20))



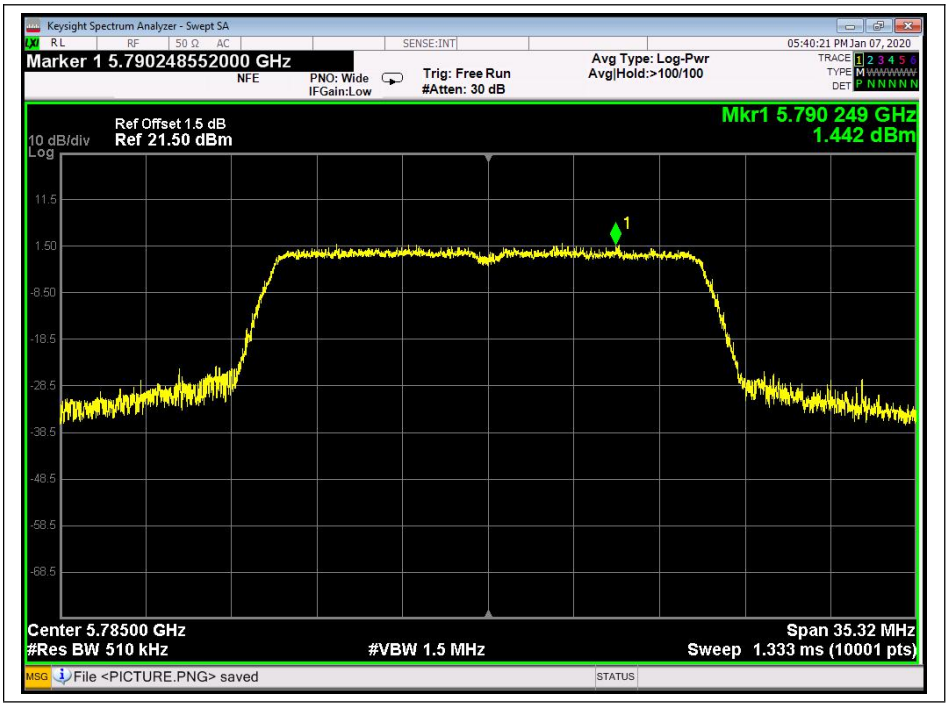
(Channel 60, 5300 MHz, 802.11 n (HT20))



(Channel 64, 5320MHz, 802.11 n (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)	Measured PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	-5.338	11	PASS
46	5230	-7.707		
54	5270	-6.658		
62	5310	-6.911		
Channel	Frequency (MHz)	Measured PSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
151	5755	-1.842	30	PASS
159	5795	-0.667		

B. Test Plots

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

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