TEST REPORT

APPLICANT	:	Nubia Technology Co.,Ltd
PRODUCT NAME	:	LTE Digital Mobile Phone
MODEL NAME	:	NX627J
BRAND NAME	:	NUBIA
FCC ID	:	2AHJO-NX627J
STANDARD(S)	:	47 CFR Part 15 Subpart E
RECEIPT DATE	:	2019-08-21
TEST DATE	:	2019-08-29 to 2019-09-16
ISSUE DATE	:	2019-09-19

Edited by: Peng Mi (Rapporteur)

Approved by: Peng Huarui (Supervisor)

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Change History		
Version	**Date**	**Reason for change**
1.0	2019-09-19	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Nubia Technology Co.,Ltd
Applicant Address:	10/F, Tower A, Hans Innovation Mansion, North Ring Rd., No.9018, High-Tech Park, Nanshan District, Shenzhen, China
Manufacturer:	Nubia Technology Co.,Ltd
Manufacturer Address:	10/F, Tower A, Hans Innovation Mansion, North Ring Rd., No.9018, High-Tech Park, Nanshan District, Shenzhen, China

1.2. Equipment Under Test (EUT) Description

Product Name:	LTE Digital Mobile Phone	
Serial No:	(N/A, marked #1 by test site)	
Hardware Version:	NX627J_V1MB	
Software Version:	NX627J_ENCommon_V1.00	
Modulation Type:	OFDM	
Modulation Mode:	802.11a, 802.11n(HT20), 802.11n(HT40) 802.11ac(VHT20), 802.11ac(VHT40)	
Operating Frequency Range:	5.180 GHz- 5.240 GHz; 5.260 GHz -5.320 GHz ; 5.500 GHz -5.720 GHz ; 5.745GHz- 5.825GHz	
Channel Number:	Refer to 1.3	
Antenna Type:	PIFA Antenna	
Antenna Gain:	Ant 0: 1.5 dBi; Ant 1: 1.5 dBi	
Directional Gain:	4.51 dBi Note 3	
Accessory Information:	Battery	
	Brand Name:	ATL
	Model No.:	Li3839T44P6h866443
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	3900mAh
	Rated Voltage:	3.82V
	Charge Limit:	4.40V

Accessory Information:	AC Adapter	
	Brand Name:	N/A
	Model No.:	CYNBY090200-A00
	Serial No.:	(N/A, marked #1 by test site)
	Rated Output:	12V⎓1.5A or 9V⎓2A or 5V⎓3A
	Rated Input:	100-240V ～ 50/60Hz 0.5A

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

Note 2: The EUT has two antennas and supports a MIMO function. Physically, the EUT provides two completed transmitters and two receivers for 802.11n and 802.11ac modulation mode.

Modulation Mode:	**TX Function**
802.11a	1TX
802.11n	2TX
802.11ac	2TX

Note 3: According to KDB 662911 D01, the directional gain = G_{ANT} + 10log(N_{ANT}) dBi, where G_{ANT} is the maximum antenna gain in dBi, N_{ANT} is the number of outputs.

Note 4: During test, the duty cycle of the EUT was setting to 100%.

Note 5: For conducted test item Maximum conducted output Power and Peak Power spectral density of each modulation mode, we recorded the test result of two antennas separately, for other conducted test items both of the two antennas were tested separately, we only recorded the worst test result(Ant 1) in this report.

Note 6: All radiation test items for 802.11n and 802.11ac modulation mode operate at MIMO mode during the test. Other modulation mode operate at SISO mode, both of the two antennas were tested separately, we only recorded the worst test result(ANT1) in this report.

Note 7: 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: 5180MHz-5240MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**36**	**5180**	40	5200
	44	**5220**	**48**	**5240**
40MHz	**38**	**5190**	**46**	**5230**
Frequency Range: 5260MHz-5320MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**52**	**5260**	56	5280
	60	**5300**	**64**	**5320**
40MHz	**54**	**5270**	**62**	**5310**
Frequency Range: 5500MHz-5720MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**100**	**5500**	105	5520
	108	5540	112	5560
	116	5580	**120**	**5600**
	124	5620	128	5640
	132	5660	136	5680
	140	5700	**144**	**5720**
40MHz	**102**	**5510**	110	5550
	118	5590	**126**	**5630**
	134	5670	**142**	**5710**
Frequency Range: 5745-5825MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	**149**	**5745**	153	5765
	157	**5785**	161	5805
	165	**5825**		
40MHz	**151**	**5775**	**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 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	Aug 29, 2019	Zhou Chuang	PASS	No deviation
3	15.407(a)	Maximum conducted output Power	Aug 29, 2019	Zhou Chuang	PASS	No deviation
4	15.407(a)(e)	Emission Bandwidth	Aug 29, 2019	Zhou Chuang	PASS	No deviation
5	15.407(a)	Maximum Power spectral density	Aug 29, 2019	Zhou Chuang	PASS	No deviation
6	15.407(g)	Frequency Stability	Aug 29, 2019	Zhou Chuang	PASS	No deviation
7	15.207	Conducted Emission	Sep 11, 2019	Lin Jiayong	PASS	No deviation
8	15.407(b)	Restricted Frequency Bands	Sep 11, 2019	Peng Xuewei	PASS	No deviation
9	15.407(b)	Radiated Emission	Sep 16, 2019	Peng Xuewei	PASS	No deviation

Note1: The DFS test report was documented in a separate report (Report No.: SZ19070119W05).

Note2: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10 2013.

Note3: These RF tests were performed according to the method of measurements prescribed in KDB789033 D02 General UNII Test Procedures New Rules v02r01, KDB662911 D01 Multiple Transmitter Output v02r01.

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 12dB contains two parts that cable loss 2dB and Attenuator 10dB.

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

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 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. 2.1.2 Result: Compliant

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

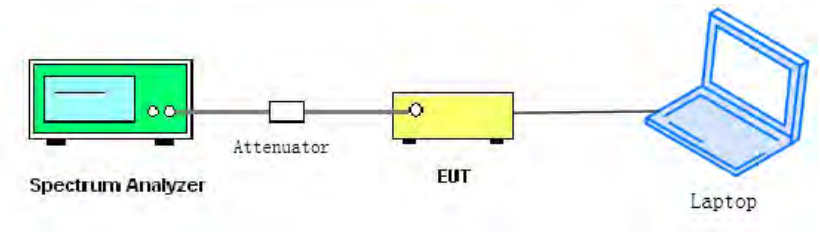
2.2. Duty Cycle of the test signal

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 subclause, 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 ±2%; otherwise, the duty cycle is considered to be nonconstant.

2.2.2. 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

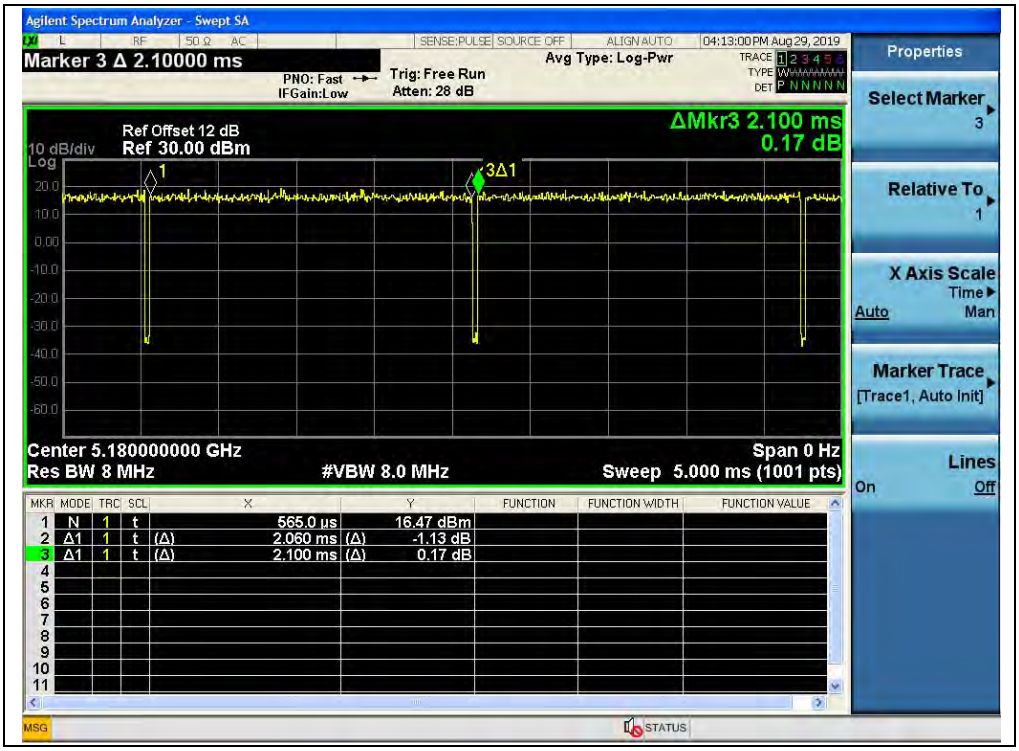
KDB 789033 Section B was used in order to prove compliance.

2.2.3. Test Result

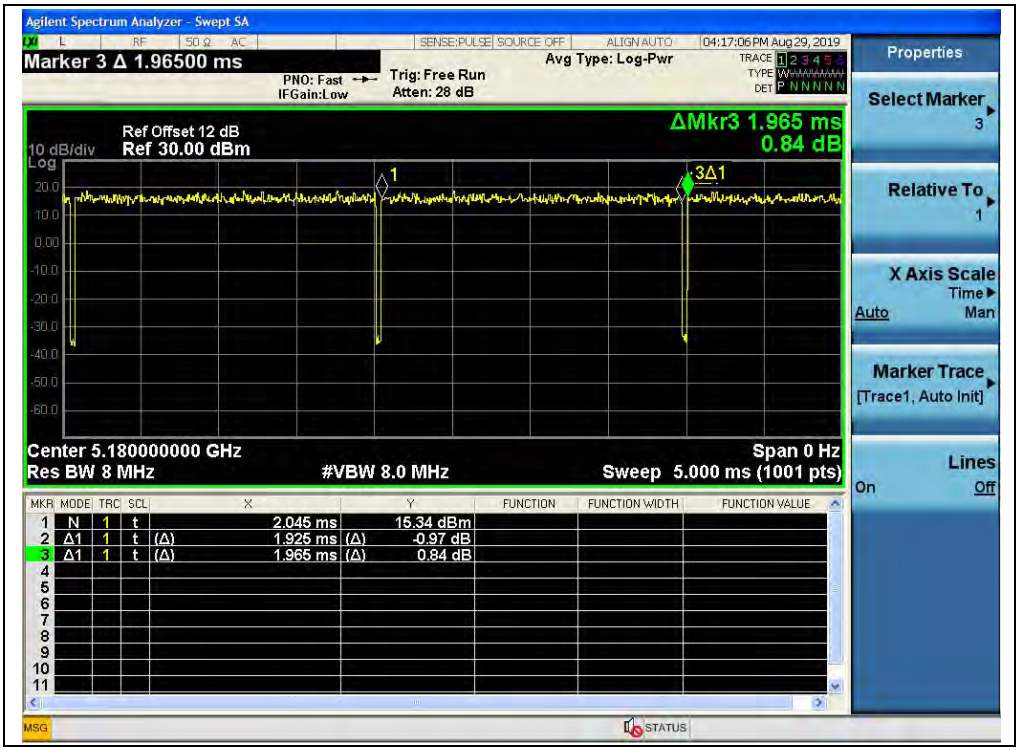
A. Test Verdict:

Test Mode	Duty Cycle (%) (D)	Duty Factor (10*log[1/D])
802.11a	98.10	0.08
802.11n(HT20)	97.96	0.09
802.11n(HT40)	96.34	0.16
802.11ac(VHT20)	98.22	0.08
802.11ac(VHT40)	96.36	0.16

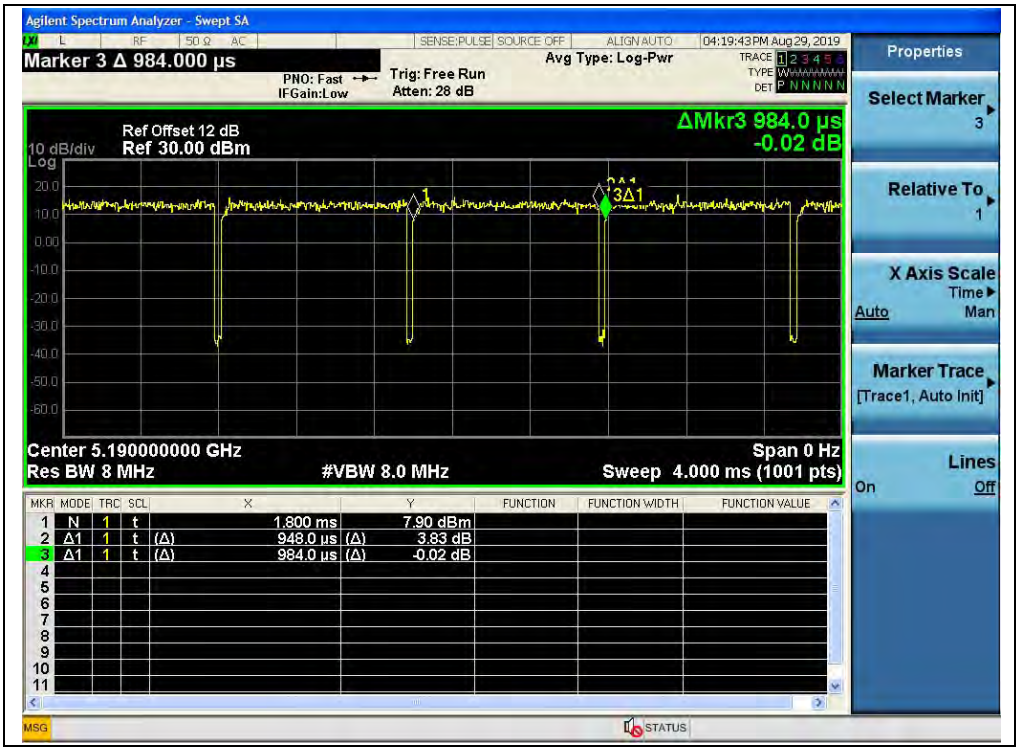
B. Test Plots



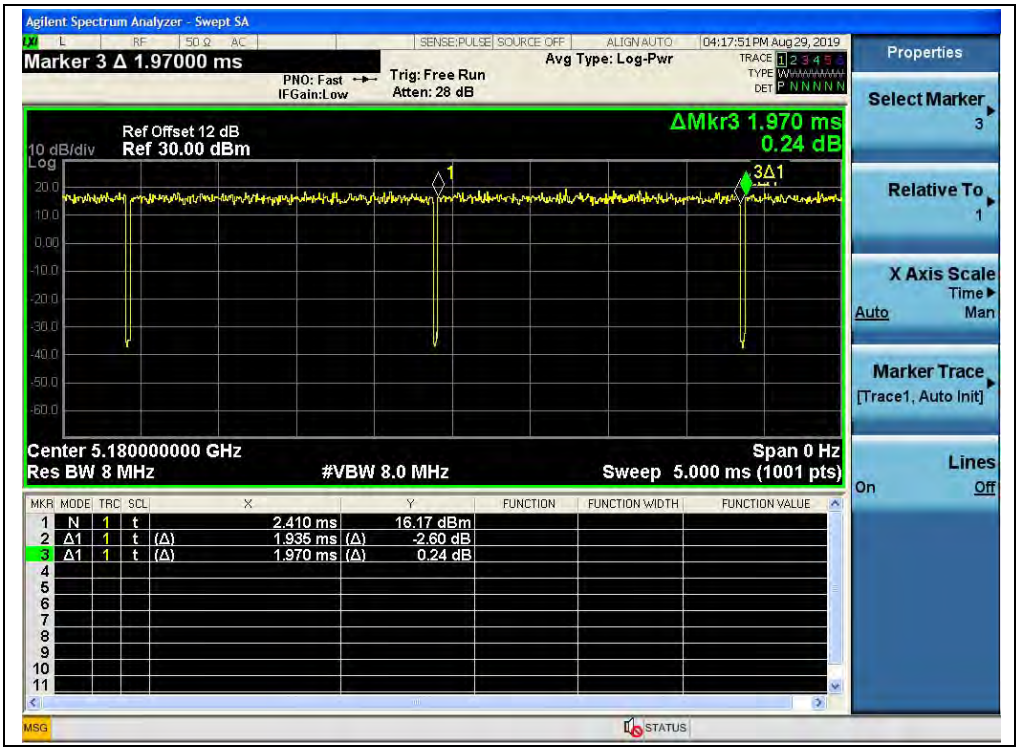
(CH36_5180MHz_802.11a)



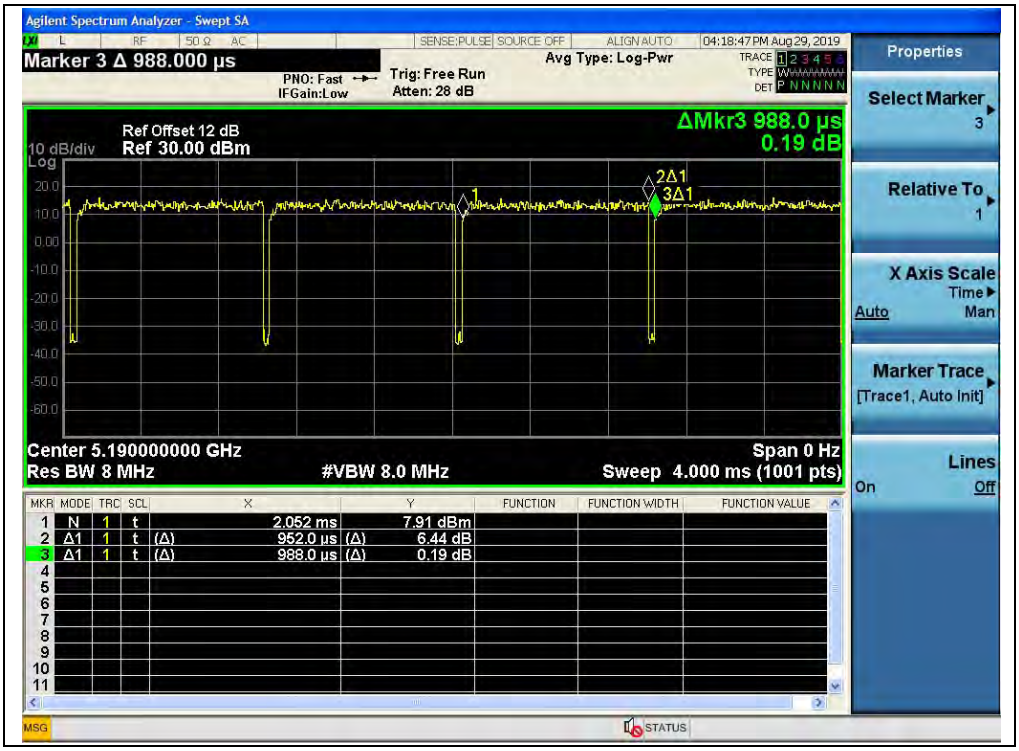
(CH36_5180MHz _802.11n(HT20))



(CH38_5190MHz _802.11n(HT40))



(CH36_5180MHz _802.11ac(VHT20))



(CH38_5190MHz _802.11 ac(VHT40))

2.3. Maximum conducted output power

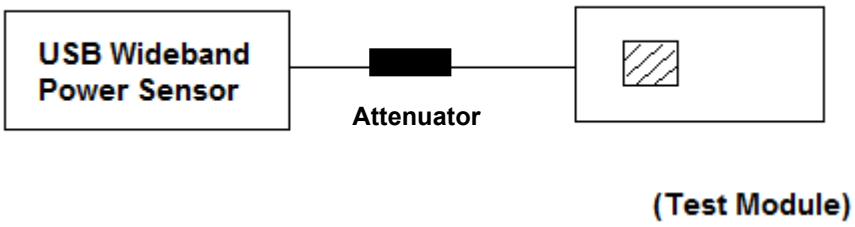
2.3.1. Requirement

(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 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 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 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.

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 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

Mode	Band	Channel (MHz)	26dB BW (MHz)	11+10log(26dB BW)	Limits (dBm)
a	UNII-2a	5260	22.66	24.55	24.00
		5300	22.12	24.45	24.00
		5320	22.61	24.54	24.00
	UNII-2c	5500	22.79	24.58	24.00
		5600	22.61	24.54	24.00
		5720	22.88	24.59	24.00
n20	UNII-2a	5260	23.11	24.64	24.00
		5300	22.97	24.61	24.00
		5320	23.99	24.80	24.00
	UNII-2c	5500	22.76	24.57	24.00
		5600	22.47	24.52	24.00
		5720	22.94	24.61	24.00
ac20	UNII-2a	5260	23.2	24.65	24.00
		5300	23.07	24.63	24.00
		5320	23.39	24.69	24.00
	UNII-2c	5500	23.58	24.73	24.00
		5600	22.45	24.51	24.00
		5720	23.15	24.65	24.00

2.3.4. Test Result

Maximum Peak Conducted Output Power

802.11a Test mode

Channel	Frequency (MHz)	Measured Peak Power				Limit (dBm)		Verdict
		ANT 0		ANT 1				
		dBm	W	dBm	W	dBm	W	
36	5180	15.06	0.032	15.21	0.033	24	0.25	PASS
44	5220	14.19	0.026	15.11	0.032			
48	5240	13.91	0.025	15.09	0.032			
52	5260	14.12	0.026	16.15	0.041			
60	5300	14.26	0.027	16.27	0.042			
64	5320	14.05	0.025	16.35	0.043			
100	5500	14.00	0.025	16.31	0.043			
120	5600	15.98	0.040	16.88	0.049			
144	5720	16.19	0.042	**17.69**	**0.059**			
149	5745	16.16	0.041	17.55	0.057	30	1	
157	5785	**16.56**	**0.045**	17.44	0.055			
165	5825	16.37	0.043	17.05	0.051			

802.11n (HT20) Test mode

Channel	Frequency (MHz)	Measured Peak Power		Total Power		Limit (dBm)		Verdict
		ANT 0	ANT 1					
		dBm	dBm	W	dBm	dBm	W	
36	5180	13.95	16.12	0.066	18.18	24	0.25	PASS
44	5220	14.23	16.16	0.068	18.31			
48	5240	14.03	16.09	0.066	18.19			
52	5260	14.03	16.08	0.066	18.19			
60	5300	14.05	16.31	0.068	18.34			
64	5320	14.70	16.17	0.071	18.51			
100	5500	14.16	16.19	0.068	18.30			
120	5600	15.63	17.64	0.095	19.76			
144	5720	16.54	17.79	**0.105**	**20.22**			
149	5745	16.49	17.49	0.101	20.03	30	1	
157	5785	16.59	17.37	0.100	20.01			
165	5825	16.54	17.16	0.097	19.87			

Note: Directional gain = 1.5dBi +10log(2) =4.51dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and 30dBm for 5.745-5.825 GHz band.

802.11n (HT40) Test mode

Channel	Frequency (MHz)	Measured Peak Power		Total Power		Limit (dBm)		Verdict
		ANT 0	ANT 1					
		dBm	dBm	W	dBm	dBm	W	
38	5190	14.70	16.54	0.075	18.73	24	0.25	PASS
46	5230	14.53	16.80	0.076	18.82			
54	5270	14.52	16.79	0.076	18.81			
62	5310	14.38	16.05	0.068	18.31			
102	5510	15.81	17.92	0.100	20.00			
126	5630	16.33	18.47	0.113	20.54			
142	5710	17.78	18.24	**0.127**	**21.03**			
151	5755	17.48	18.19	0.122	20.86	30	1	
159	5795	17.41	18.05	0.119	20.75			

Note: Directional gain = 1.5dBi +10log(2) =4.51dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and 30dBm for 5.745-5.825 GHz band.

802.11ac (VHT20) Test mode

Channel	Frequency (MHz)	Measured Peak Power		Total Power		Limit (dBm)		Verdict
		ANT 0	ANT 1					
		dBm	dBm	W	dBm	dBm	W	
36	5180	14.33	16.32	0.070	18.45	24	0.25	PASS
44	5220	14.12	16.26	0.068	18.33			
48	5240	14.03	16.01	0.065	18.14			
52	5260	14.53	16.06	0.069	18.37			
60	5300	14.14	16.19	0.068	18.30			
64	5320	14.07	16.13	0.067	18.23			
100	5500	14.25	16.07	0.067	18.26			
120	5600	15.58	17.51	0.093	19.66			
144	5720	16.61	17.49	**0.102**	**20.08**			
149	5745	16.37	17.36	0.098	19.90	30	1	
157	5785	16.43	17.30	0.098	19.90			
165	5825	16.26	16.84	0.091	19.57			

Note: Directional gain = 1.5dBi +10log(2) =4.51dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and 30dBm for 5.745-5.825 GHz band.

802.11ac (VHT40) Test mode

Channel	Frequency (MHz)	Measured Peak Power		Total Power		Limit (dBm)		Verdict
		ANT 0	ANT 1					
		dBm	dBm	W	dBm	dBm	W	
38	5190	14.78	16.66	0.076	18.83	24	0.25	PASS
46	5230	14.62	16.48	0.073	18.66			
54	5270	14.33	16.69	0.074	18.68			
62	5310	14.32	16.15	0.068	18.34			
102	5510	15.21	17.21	0.086	19.33			
126	5630	15.78	17.20	0.090	19.56			
142	5710	16.82	17.08	0.099	19.96			
151	5755	16.90	17.86	0.110	20.42	30	1	
159	5795	16.95	18.00	**0.113**	**20.52**			

Note: Directional gain = 1.5dBi +10log(2) =4.51dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and 30dBm for 5.745-5.825 GHz band.

Maximum Average Conducted Output Power

802.11a Test mode

Frequency (MHz)	Average Power							Limit		Verdict
	Measured		Duty Factor	Duty factor Calculated						
	ANT0	ANT1		ANT0		ANT1				
	dBm	dBm		dBm	W	dBm	W	dBm	W	
5180	9.92	10.28	0.08	10.00	0.010	10.36	0.011	24	0.25	PASS
5220	9.72	10.10		9.80	0.010	10.18	0.010			
5240	9.38	10.06		9.46	0.009	10.14	0.010			
5260	9.37	10.20		9.45	0.009	10.28	0.011			
5300	9.54	10.33		9.62	0.009	10.41	0.011			
5320	9.54	10.47		9.62	0.009	10.55	0.011			
5500	9.26	10.27		9.34	0.009	10.35	0.011			
5600	10.23	11.10		10.31	0.011	11.18	0.013			
5720	11.29	11.65		11.37	0.014	11.73	0.015			
5745	11.27	11.48		11.35	0.014	11.56	0.014	30	1	
5785	11.50	12.60		**11.58**	**0.014**	**12.68**	**0.019**			
5825	11.43	12.20		11.51	0.014	12.28	0.017			

802.11n (HT20) Test mode

Frequency (MHz)	Average Power					Limit		Verdict
	Measured		Duty Factor	Total Power with Duty Factor				
	ANT0	ANT1						
	dBm	dBm		W	dBm	dBm	W	
5180	9.30	10.45	0.09	0.020	13.01	24	0.25	PASS
5220	9.36	10.51		0.020	13.07			PASS
5240	9.17	10.98		0.020	13.27			
5260	9.12	11.02		0.020	13.27			
5300	9.12	11.05		0.020	13.29			
5320	9.07	10.89		0.021	13.17			
5500	9.24	11.56		0.023	13.65			
5600	10.51	12.37		0.030	14.64			
5720	11.47	12.55		**0.033**	**15.14**			
5745	11.25	12.51		0.032	15.03	30	1	
5785	11.55	12.29		0.032	15.04			
5825	11.42	12.07		0.031	14.86			

Note: Directional gain = 1.5dBi +10log(2) =4.51dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and 30dBm for 5.745-5.825 GHz band.

802.11n (HT40) Test mode

Frequency (MHz)	Average Power					Limit		Verdict
	Measured		Duty Factor	Total Power with Duty Factor				
	ANT0	ANT1						
	dBm	dBm		W	dBm	dBm	W	
5190	9.51	11.52	0.46	0.024	13.80	24	0.25	PASS
5230	9.28	11.02		0.022	13.41			
5270	9.07	11.01		0.021	13.32			
5310	9.31	11.84		0.025	13.93			
5510	10.51	12.59		0.031	14.85			
5630	11.15	12.91		0.034	15.29			
5710	12.27	12.88		**0.038**	**15.76**			
5755	12.09	12.69		0.036	15.57	30	1	
5795	12.16	12.57		0.036	15.54			
Note: Directional gain = 1.5dBi +10log(2) =4.51dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and 30dBm for 5.745-5.825 GHz band.								

802.11ac (VHT20) Test mode

Frequency (MHz)	Average Power					Limit		Verdict
	Measured		Duty Factor	Total Power with Duty Factor				
	ANT0	ANT1						
	dBm	dBm		W	dBm	dBm	W	
5180	9.51	11.16	0.08	0.022	13.50	24	0.25	PASS
5220	9.13	11.13		0.022	13.33			
5240	9.16	11.03		0.021	13.28			
5260	9.78	11.79		0.025	13.99			
5300	9.15	11.13		0.022	13.34			
5320	9.34	11.43		0.023	13.60			
5500	9.41	12.10		0.025	14.05			
5600	10.61	12.46		0.030	14.72			
5720	11.34	12.36		0.031	14.97			
5745	11.36	12.27		0.031	14.93	30	1	
5785	11.42	12.36		**0.032**	**15.00**			
5825	11.37	11.80		0.029	14.68			
Note: Directional gain = 1.5dBi +10log(2) =4.51dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and 30dBm for 5.745-5.825 GHz band.								

802.11ac (VHT40) Test mode

Frequency (MHz)	Average Power					Limit		Verdict
	Measured		Duty Factor	Total Power with Duty Factor				
	ANT0	ANT1						
	dBm	dBm		W	dBm	dBm	W	
5190	9.53	11.41	0.16	0.024	13.74	24	0.25	PASS
5230	9.47	11.18		0.023	13.58			
5270	9.12	11.42		0.023	13.59			
5310	9.19	11.82		0.024	13.87			
5510	9.83	12.73		0.029	14.69			
5630	10.63	13.09		0.033	15.20			
5710	11.75	12.79		**0.035**	**15.47**			
5755	11.62	12.66		0.034	15.34	30	1	
5795	11.63	12.48		0.033	15.25			
Note: Directional gain = 1.5dBi +10log(2) =4.51dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz, 5.260-5.320 GHz, 5.500-5.720 GHz band and 30dBm for 5.745-5.825 GHz band.								

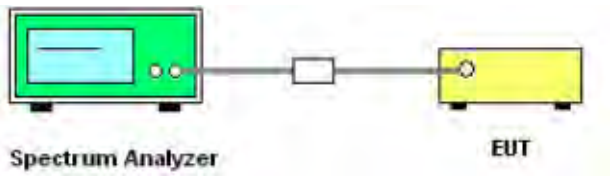
2.4. Emission Bandwidth

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

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

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.

2.4.3. Test Result

802.11a Test mode

A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	22.66
44	5220	22.88
48	5240	22.92
52	5260	22.66
60	5300	22.12
64	5320	22.61
100	5500	22.79
120	5600	22.61
144	5720	22.88
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**
144	5720	16.01
149	5745	15.78
157	5785	15.43
165	5825	15.69

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 100, 5500MHz, 802.11a,)

(Channel 120, 5600 MHz, 802.11a,)

(Channel 144, 5720MHz, 802.11a,)

(Channel 144, 5720MHz, 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	23.16
44	5220	22.78
48	5240	23.23
52	5260	23.11
60	5300	22.97
64	5320	23.99
100	5500	22.76
120	5600	22.47
144	5720	22.94
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**
144	5720	16.92
149	5745	17.58
157	5785	17.51
165	5825	16.91

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 48, 5260MHz, 802.11 n (HT20))

(Channel 52, 5300MHz, 802.11 n (HT20))

(Channel 60, 5320 MHz, 802.11 n (HT20))

(Channel 64, 5500MHz, 802.11 n (HT20))

(Channel 100, 5600MHz, 802.11 n (HT20))

(Channel 120, 5720 MHz, 802.11 n (HT20))

(Channel 144, 5720MHz, 802.11 n (HT20))

(Channel 144, 5745MHz, 802.11 n (HT20))

(Channel 149, 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	41.52
46	5230	41.45
54	5270	40.98
62	5310	40.63
102	5510	41.17
126	5630	41.17
142	5710	41.23
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**
142	5710	36.37
151	5755	36.36
159	5795	36.36

B. Test Plots

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

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

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

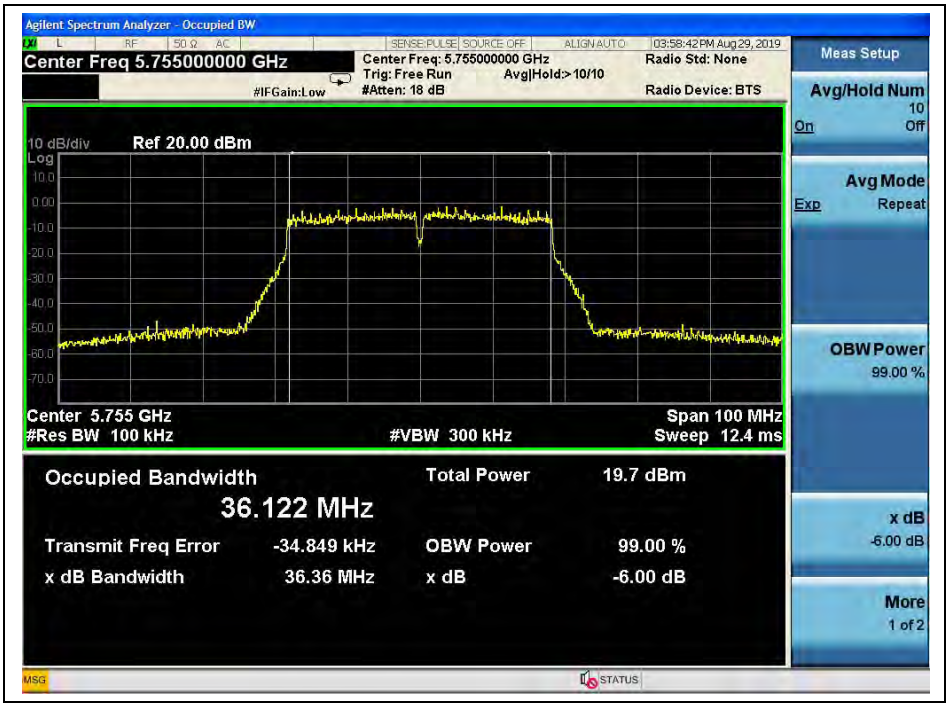
(Channel 62, 5310 MHz, 802.11n (HT40))

(Channel 102, 5510MHz, 802.11n (HT40))

(Channel 126, 5630 MHz, 802.11n (HT40))

(Channel 142, 5710MHz, 802.11n (HT40))

(Channel 142, 5710MHz, 802.11n (HT40))



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

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

802.11ac (VHT20) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	24.02
44	5220	22.90
48	5240	23.14
52	5260	23.20
60	5300	23.07
64	5320	23.39
100	5500	23.58
120	5600	22.45
144	5720	23.15
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**
144	5720	16.79
149	5745	17.58
157	5785	17.62
165	5825	16.90

B. Test Plots

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

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

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

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

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

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

(Channel 100, 5500MHz, 802.11 ac (VHT20))

(Channel 120, 5600 MHz, 802.11 ac (VHT20))

(Channel 144, 5720MHz, 802.11 ac (VHT20))

(Channel 144, 5720MHz, 802.11 ac (VHT20))

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

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

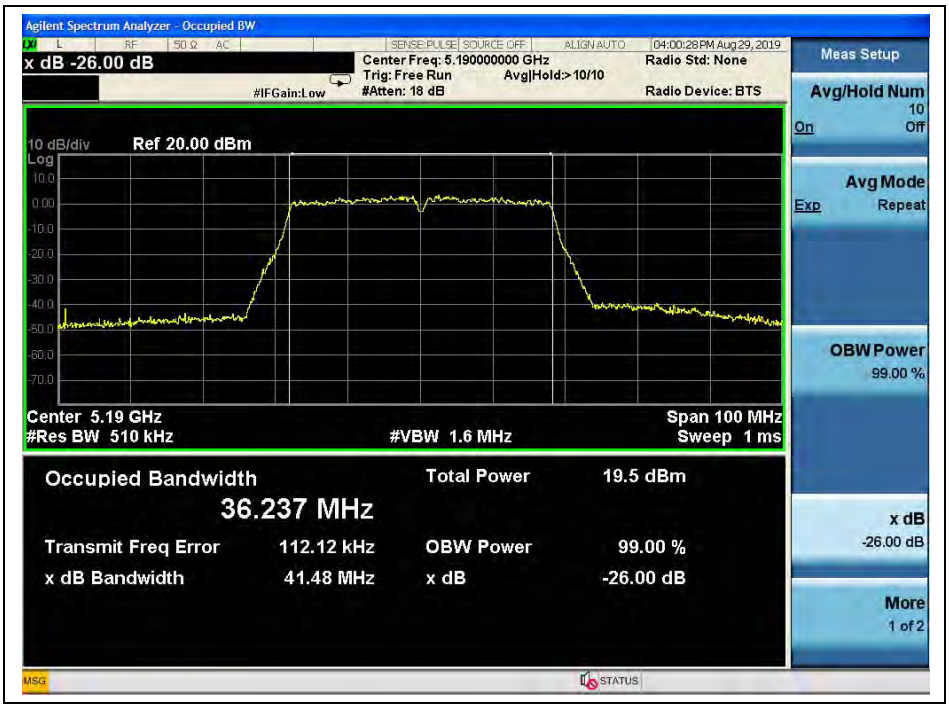
(Channel 165, 5825MHz, 802.11 ac (VHT20))

802.11 ac (VHT40) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
38	5190	41.48
46	5230	41.08
54	5270	41.01
62	5310	40.83
102	5510	40.79
126	5630	40.78
142	5710	40.77
Channel	**Frequency (MHz)**	**6dB Bandwidth (MHz)**
142	5710	36.37
151	5755	36.39
159	5795	36.39

B. Test Plots

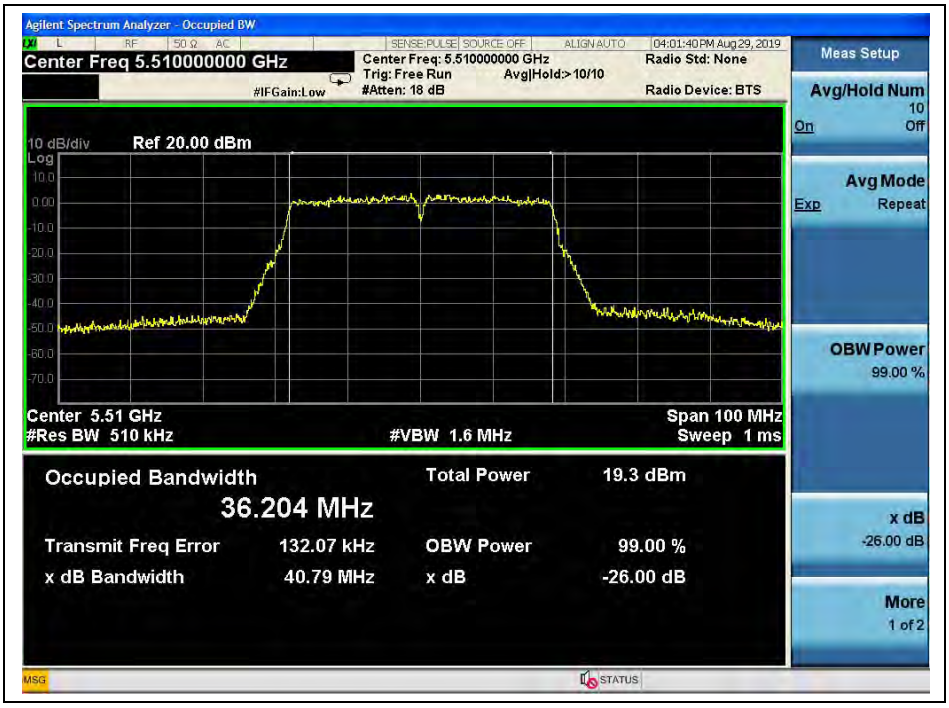


(Channel 38, 5190MHz, 802.11 ac (VHT40))

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

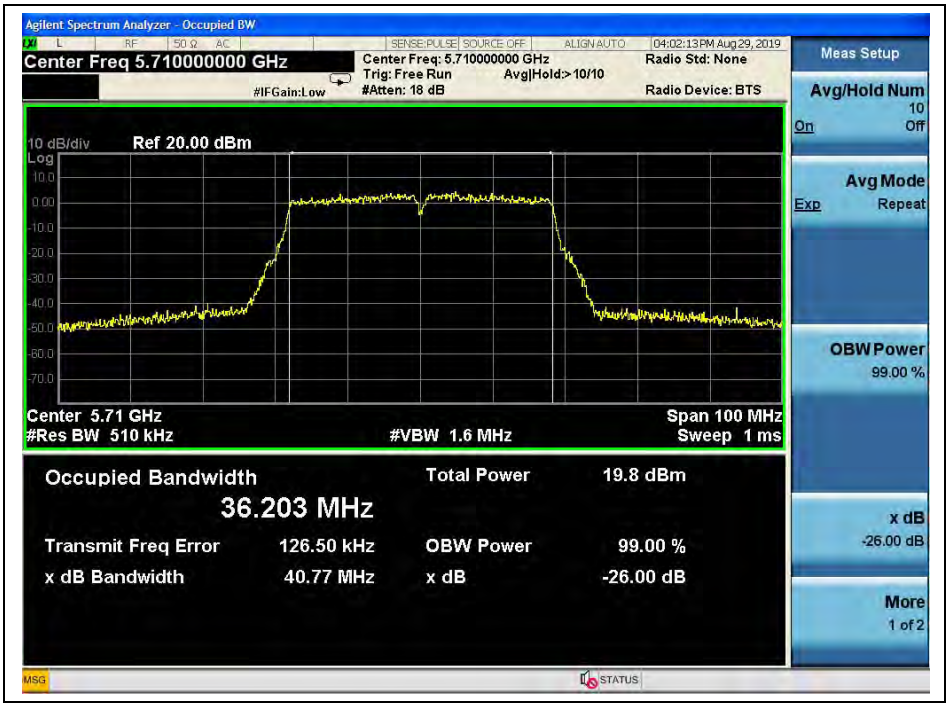
(Channel 54, 5270MHz, 802.11 ac (VHT40))

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



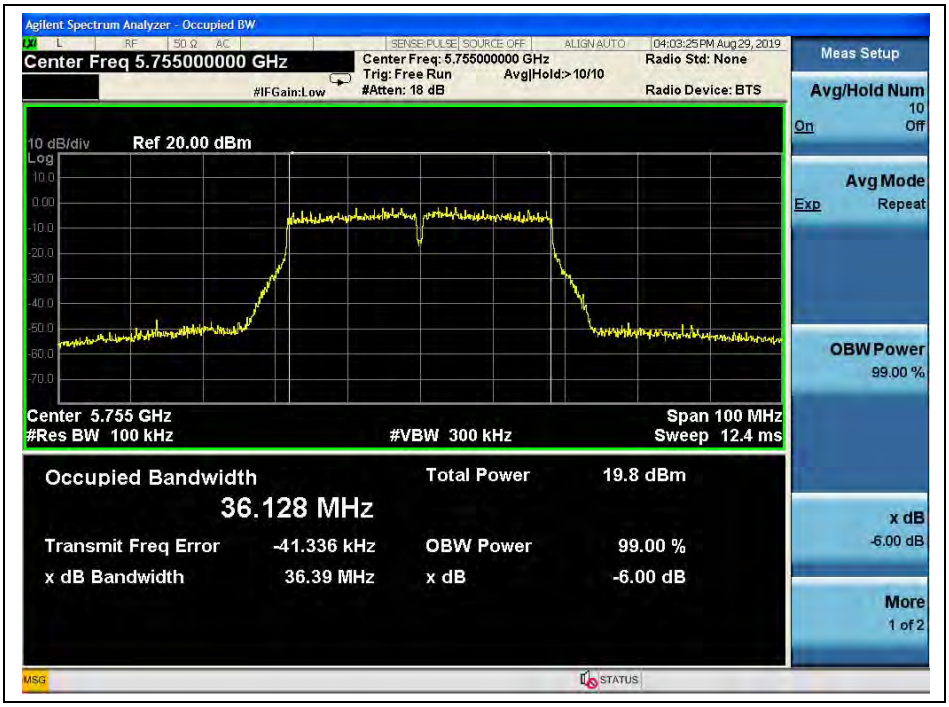
(Channel 102, 5510MHz, 802.11 ac (VHT40))

(Channel 126, 5630 MHz, 802.11 ac (VHT40))



(Channel 142, 5710MHz, 802.11 ac (VHT40))

(Channel 142, 5710MHz, 802.11 ac (VHT40))



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

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

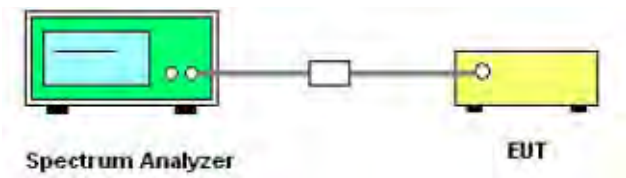
2.5. Maximum Power Spectral Density

2.5.1. Requirement

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

2.5.2. 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-3 was used in order to prove compliance

1) Set span to encompass the entire -26dB 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 = Average (RMS)
5) Trace mode=Max hold
6) Record the max value

2.5.3. Test Result

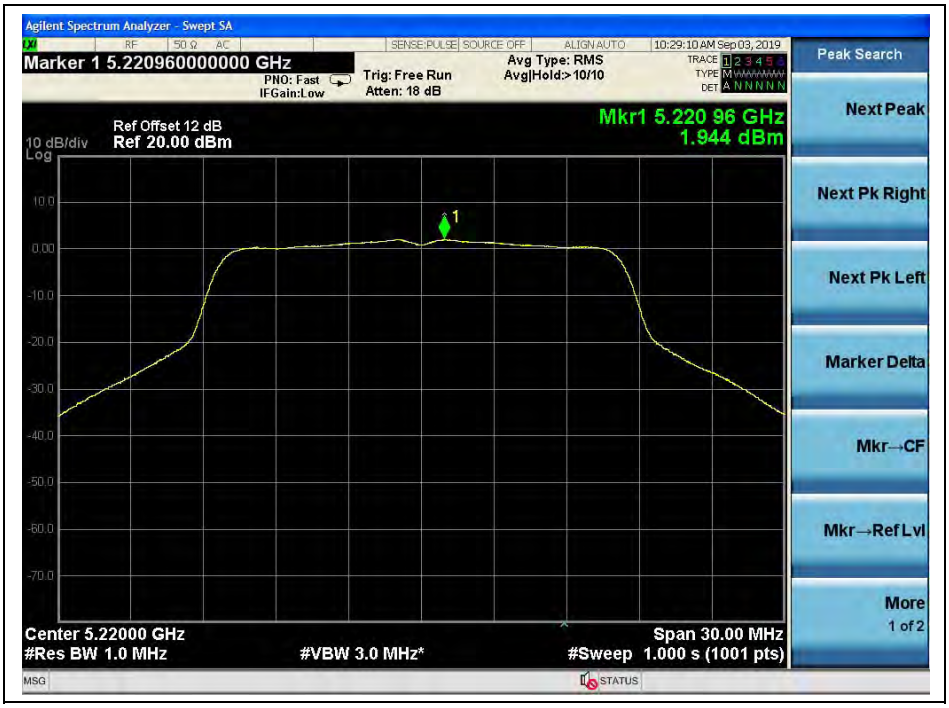
802.11a Test mode

A. Test Verdict:

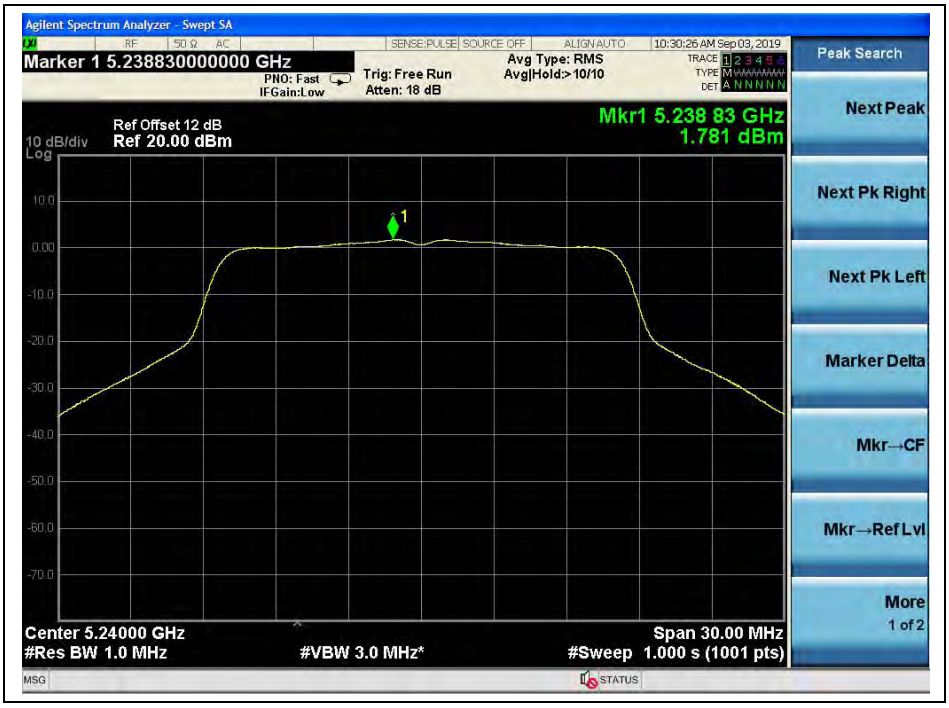
Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)		Limit (dBm/MHz)	Verdict
		ANT 0	ANT 1		
36	5180	1.75	2.28	11	PASS
44	5220	1.94	2.50		
48	5240	1.78	2.46		
52	5260	1.99	2.61		
60	5300	2.24	3.07		
64	5320	2.34	3.07		
100	5500	2.08	2.25		
120	5600	2.26	2.25		
144	5720	3.03	2.62		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)		Limit (dBm/500KHz)	Verdict
		ANT 0	ANT 1		
144	5720	0.26	-0.13	30	PASS
149	5745	0.11	-0.33		
157	5785	0.09	-0.29		
165	5825	0.10	-0.43		

B. Test Plots

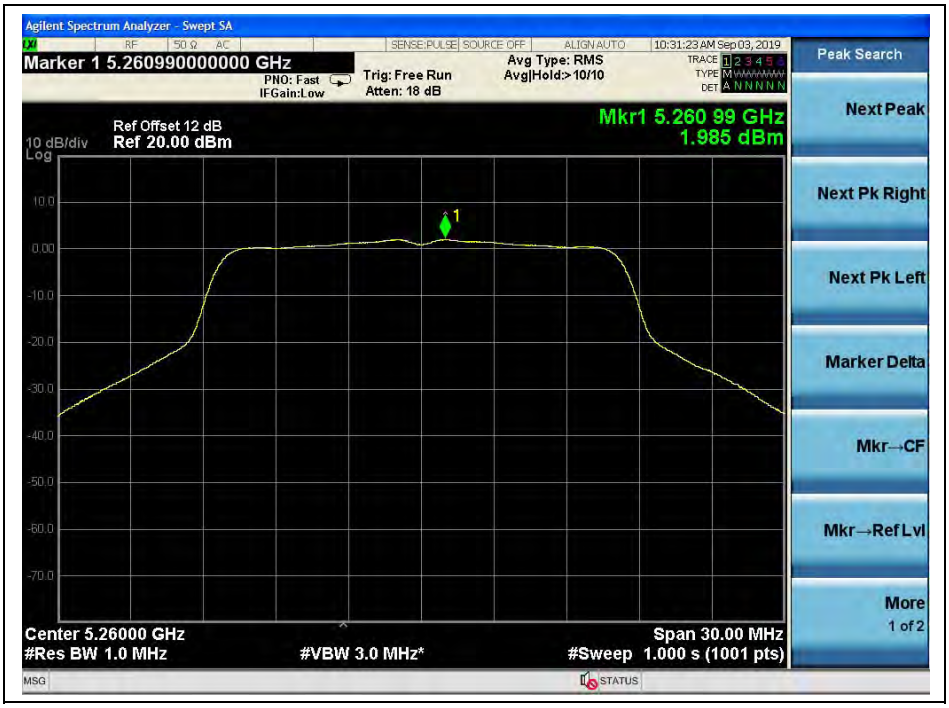
(Channel 36, 5180MHz, 802.11a, ANT 0)



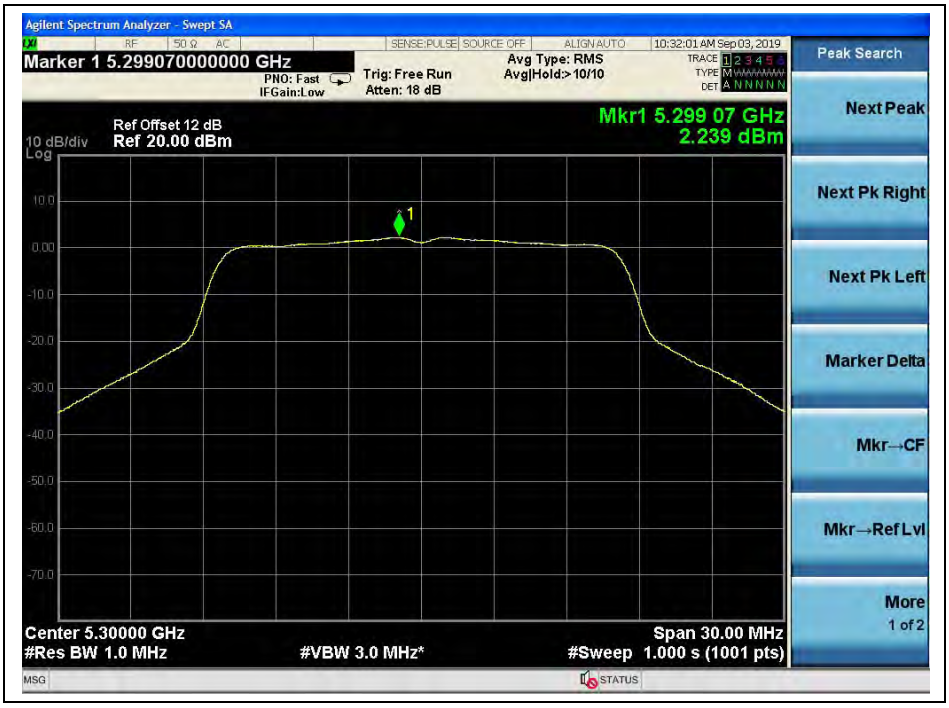
(Channel 44, 5220 MHz, 802.11a, ANT 0)



(Channel 48, 5240MHz, 802.11a, ANT 0)



(Channel 52, 5260MHz, 802.11a, ANT 0)



(Channel 60, 5300 MHz, 802.11a, ANT 0)