



FCC TEST REPORT

FCC ID: 2ARJA-A9

On Behalf of

Vsoon Smart Manufacture Co., Ltd.

WiFi display receiver

**Model No.: A9, A1, A2, A3, A5, A6, A7, A8, A10, A12, D1, D2, D3,
D5, D6, D7, D8, DA9, DA10, G1, G2, G3, G5, G6, G7, G8, G9,
G10, R1, R2, R3, R5, R6, R7, R8, R9, R10, R11, R13, R15, R16**

Prepared for : Vsoon Smart Manufacture Co., Ltd.

The 3rd Floor, B5 Building, Huachuang Industry Park,
Address : No.9, Huateng Road, Shiqi Town, Panyu District,
Guangzhou, Guangdong, China

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.

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Address : District, 518103, Shenzhen, Guangdong, China

Report Number : T1904178-C01-R02

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Date of Report : June 22, 2019

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TEST REPORT DECLARATION

Applicant : Vsoon Smart Manufacture Co., Ltd.
 Address : The 3rd Floor, B5 Building, Huachuang Industry Park, No.9,
 Huateng Road, Shiqi Town, Panyu District, Guangzhou,
 Guangdong, China

Manufacturer : Vsoon Smart Manufacture Co., Ltd.
 Address : The 3rd Floor, B5 Building, Huachuang Industry Park, No.9,
 Huateng Road, Shiqi Town, Panyu District, Guangzhou,
 Guangdong, China

EUT Description : WiFi display receiver

(A) Model No. : A9, A1, A2, A3, A5, A6, A7, A8, A10,
 A12, D1, D2, D3, D5, D6, D7, D8, DA9,
 G1, G2, G3, G5, G6, G7, G8, G9,
 G10, R1, R2, R3, R5, R6, R7, R8, R9,
 R10, R11, R13, R15, R16

(B) Trademark : N/A

Measurement Standard Used:

FCC CFR Title 47 Part 15 Subpart E Section 15.407

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....:	Lucas Pang Project Engineer	
Approved by (name + signature).....:	Simple Guan Project Manager	
Date of issue.....	June 22, 2019	

Revision History

Revision	Issue Date	Revisions	Revised By
V0	June 22, 2019	Initial released Issue	Simple Guan

1 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	PASS
AC Power Line Conducted Emission	15.207	PASS
Peak Transmit Power	15.407(a)(1)	PASS
Power Spectral Density	15.407(a)(1)	PASS
Undesirable Emission	15.407(b)(6), 15.205/15.209	PASS
Radiated Emission	15.205/15.209	PASS
Band Edge	15.205	PASS
Frequency Stability	15.407(g)	PASS

Remark:

Pass: The EUT complies with the essential requirements in the standard.

Frequency Stability : The manufacturer stated in the user's manual.

1.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 40GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(1)

Note (1): The measurement uncertainty is for coverage factor of $k=2$ and a level of confidence of 95%.

Remark: Test according to ANSI C63.10:2013

2 General Information

2.1 General Description of EUT

Description	: WiFi display receiver
Model Number	: A9, A1, A2, A3, A5, A6, A7, A8, A10, A12, D1, D2, D3, D5, D6, D7, D8, DA9, DA10, G1, G2, G3, G5, G6, G7, G8, G9, G10, R1, R2, R3, R5, R6, R7, R8, R9, R10, R11, R13, R15, R16
Diff	: Except for appearance color and model name, there is no difference between all models. The main test model A9 in this report.
Trademark	: N/A
Test Voltage	: DC 5V from USB port
Operation frequency	: 802.11a/n(HT20)/ac(HT20): 5180~5240MHz 802.11n(HT40)/ac(HT40): 5190~5230MHz 802.11ac(HT80): 5210MHz
Channel separation:	: 802.11a/n(HT20)/ac(HT20): 20MHz; 802.11n(HT40)/ac(HT40): 40MHz 802.11ac(HT80): 80MHz
Modulation type	: CCK/OFDM/DBPSK/DAPSK
Antenna Type	: FPC Antenna, Maximum Gain is 2.5dBi
Software version	: 1030.32.0201.2018
Hardware version	: V1.2

2.2 Test mode

Transmitting mode	Keep the EUT in transmitting with modulation. EUT was test with 99% duty cycle at its maximum power control level.
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

Channel	Power level
Lowest	14dBm
Middle	14dBm
Highest	14dBm

2.3 Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission

Registration Number: 293961

July 25, 2017 Certificated by IC

Registration Number: 12135A

2.4 Accessories of Device (EUT)

Accessories1	:	/
Manufacturer	:	/
Model	:	/
Power supply	:	/

2.5 Tested Supporting System Details

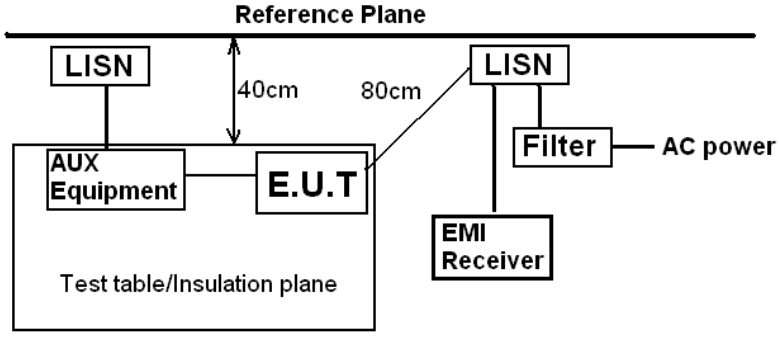
No.	Description	Manufacturer	Model	Serial Number	Certification or DOC
1	Notebook	ACER	ZQT	N/A	DOC
2	TV	TCL	/	/	/
3	HDMI cable	/	/	/	/
4	USB cable	/	/	/	/

3 Test Instruments list

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	2018.09.21	1Year
Spectrum analyzer	Agilent	E4407B	MY46185649	2018.09.21	1Year
Receiver	R&S	ESCI	1166.5950K03-1011	2018.09.21	1Year
Receiver	R&S	ESCI	101202	2018.09.21	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	VULB9168-438	2018.04.13	2Year
Horn Antenna	EMCO	3115	640201028-06	2018.04.13	2Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	2018.04.13	2Year
Cable	Resenberger	N/A	No.1	2018.09.21	1Year
Cable	SCHWARZBECK	N/A	No.2	2018.09.21	1Year
Cable	SCHWARZBECK	N/A	No.3	2018.09.21	1Year
Pre-amplifier	Schwarzbeck	BBV9743	9743-019	2018.09.21	1Year
Pre-amplifier	R&S	AFS33-18002650-30-8P-44	SEL0080	2018.09.21	1Year
Temperature controller	Terchy	MHQ	120	2018.09.21	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	8126466	2018.09.21	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	101043	2018.09.21	1 Year
20db Attenuator	ICPROBING	IATS1	82347	2018.09.21	1 Year
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170294	2018.04.13	2 Year
Power Meter	Anritsu	ML2487A	6K00001491	2018.09.21	1 Year

4 Test results and Measurement Data

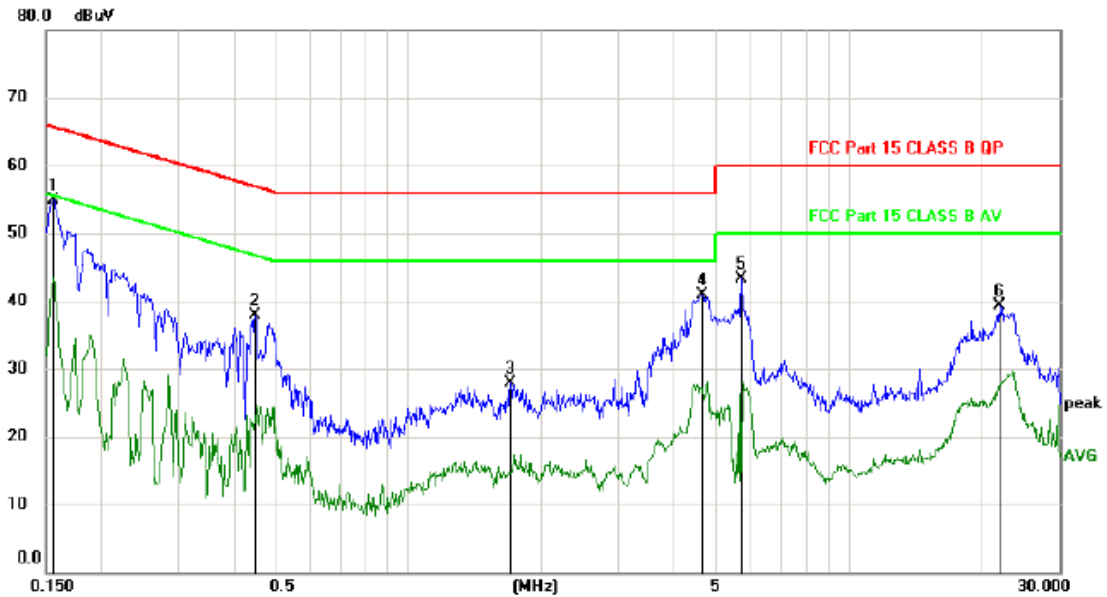
4.1 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.		
Test setup:	 Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test results:	Pass		

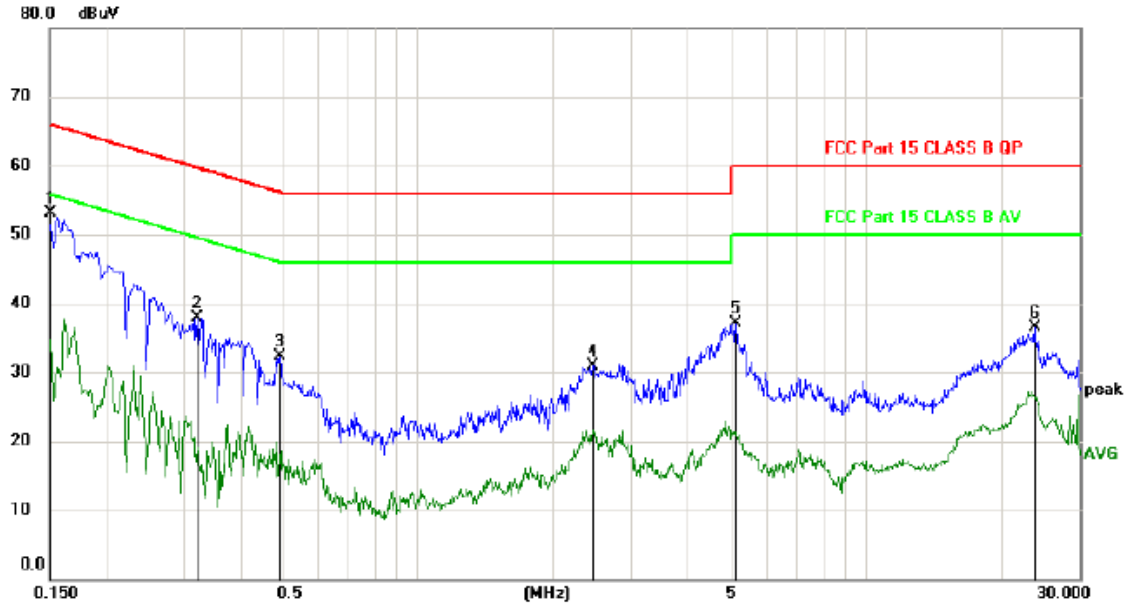
Measurement Data

An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Line:



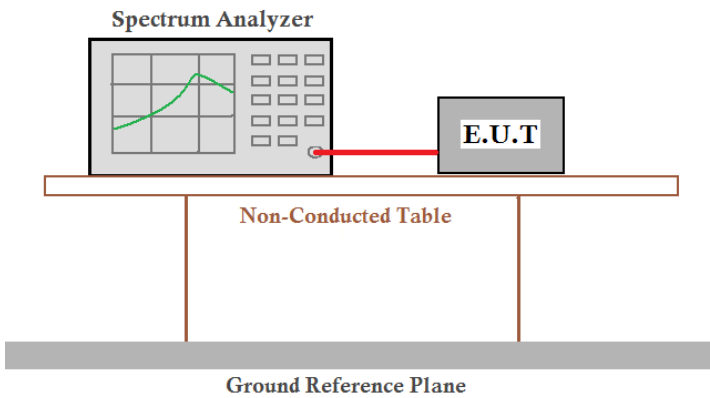
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1559	45.35	9.63	54.98	65.68	-10.70	peak	
2		0.4470	28.20	9.68	37.88	56.93	-19.05	peak	
3		1.7069	18.09	9.80	27.89	56.00	-28.11	peak	
4		4.6230	30.82	10.04	40.86	56.00	-15.14	peak	
5		5.6878	33.20	10.10	43.30	60.00	-16.70	peak	
6		21.8730	29.14	10.20	39.34	60.00	-20.66	peak	

Neutral:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1500	43.57	9.63	53.20	66.00	-12.80	peak	
2		0.3209	28.20	9.67	37.87	59.68	-21.81	peak	
3		0.4889	22.70	9.68	32.38	56.19	-23.81	peak	
4		2.4600	21.03	9.87	30.90	56.00	-25.10	peak	
5		5.1330	27.06	10.07	37.13	60.00	-22.87	peak	
6		23.7777	26.21	10.26	36.47	60.00	-23.53	peak	

NOTE: Test Result 802.11ac (HT80), AC 120V/60Hz (Worst Case)

4.2 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	N/A
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test procedure:	According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Test results:	Pass

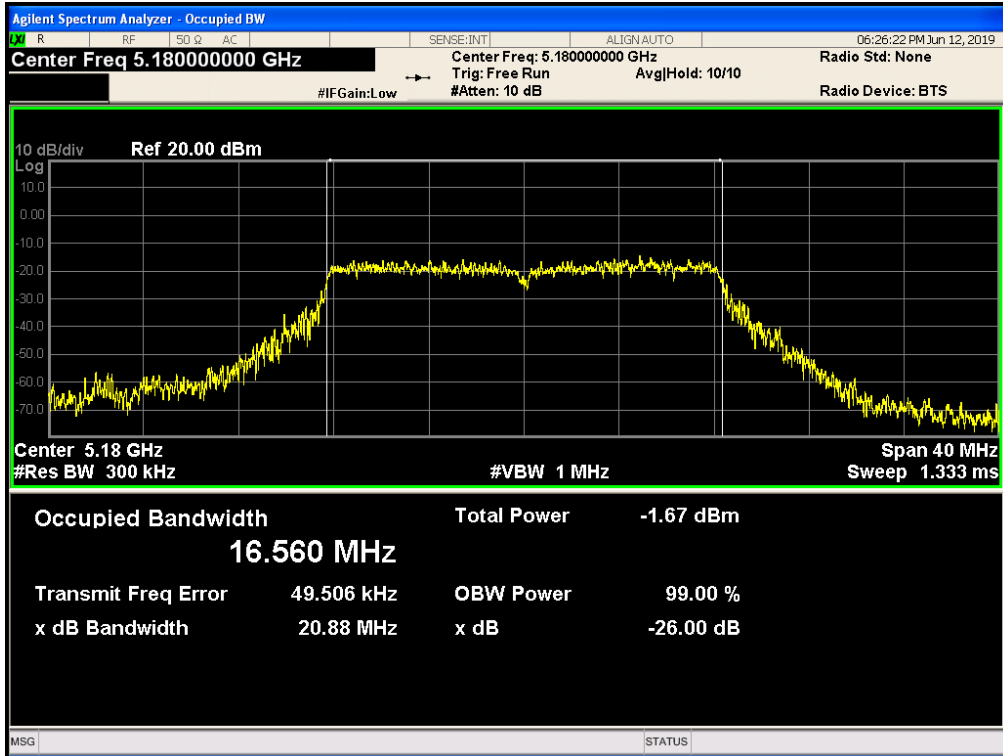
ANT1:

Measurement Data:

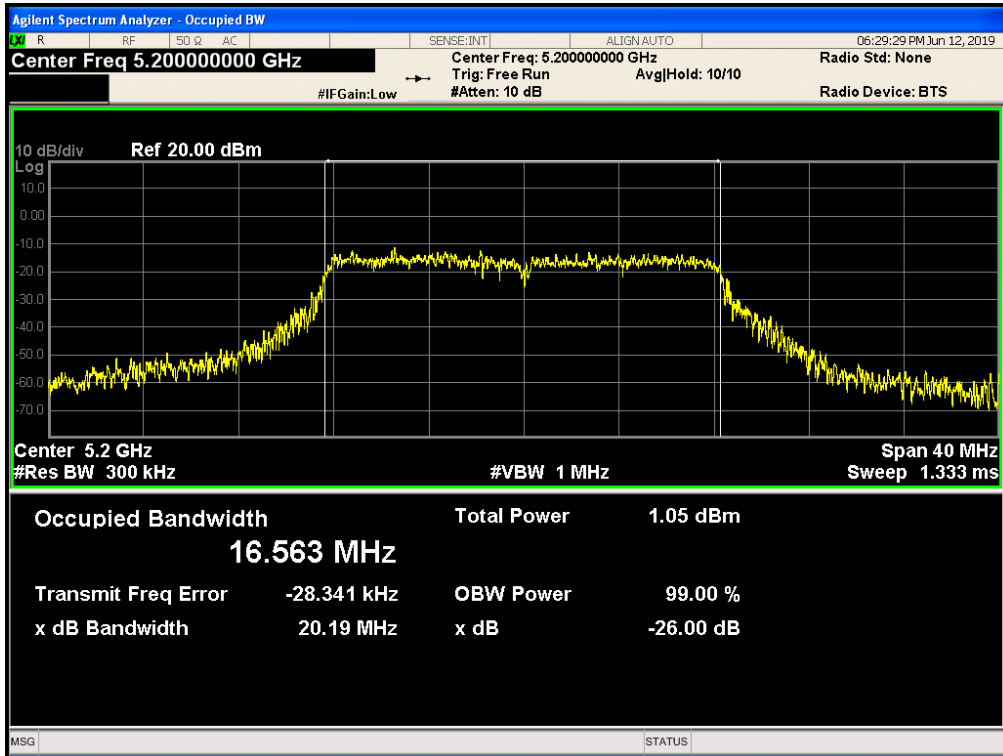
Occupied Channel Bandwidth

Mode	Frequency (MHz)	Antenna	99% OBW (MHz)	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
802.11a	5180	Ant 1	16.5603	16.5603	0	Pass
802.11a	5200	Ant 1	16.5631	16.5631	0	Pass
802.11a	5240	Ant 1	16.6273	16.6273	0	Pass
802.11ac20	5180	Ant 1	17.6102	17.6102	0	Pass
802.11ac20	5200	Ant 1	17.6107	17.6107	0	Pass
802.11ac20	5240	Ant 1	17.7355	17.7355	0	Pass
802.11ac40	5190	Ant 1	35.8779	35.8779	0	Pass
802.11ac40	5230	Ant 1	35.9609	35.9609	0	Pass
802.11ac80	5210	Ant 1	75.4064	75.4064	0	Pass
802.11n(HT20)	5180	Ant 1	17.7485	17.7485	0	Pass
802.11n(HT20)	5200	Ant 1	17.6294	17.6294	0	Pass
802.11n(HT20)	5240	Ant 1	17.7987	17.7987	0	Pass
802.11n(HT40)	5190	Ant 1	36.0099	36.0099	0	Pass
802.11n(HT40)	5230	Ant 1	35.9274	35.9274	0	Pass

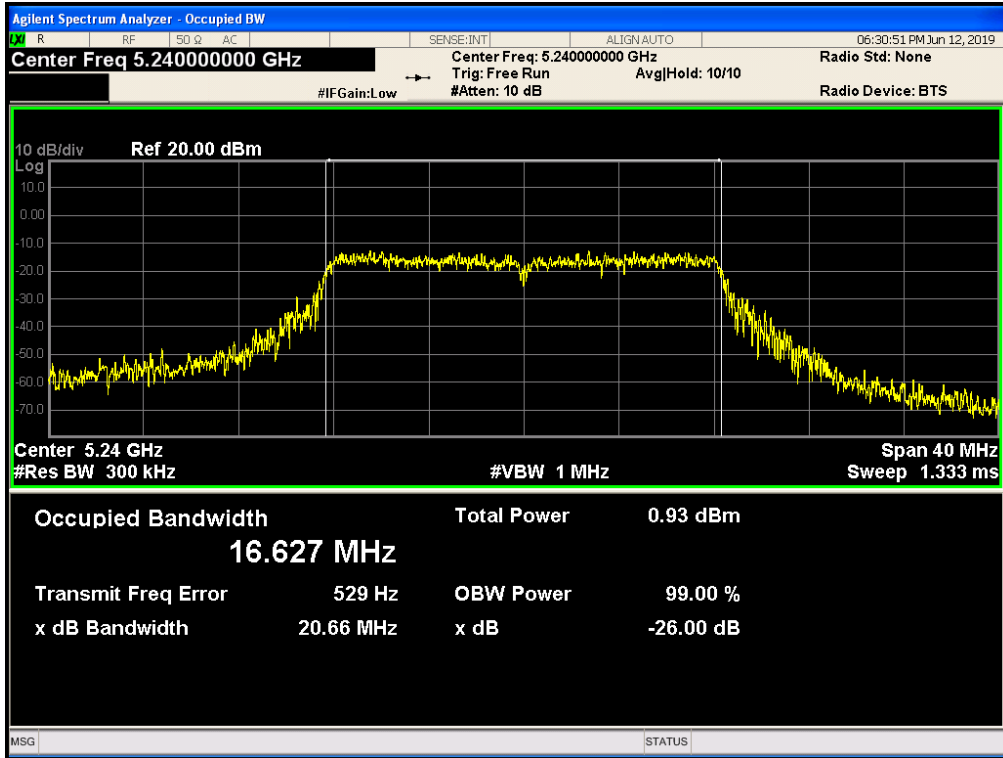
OBW NVNT 802.11a 5180MHz Ant1



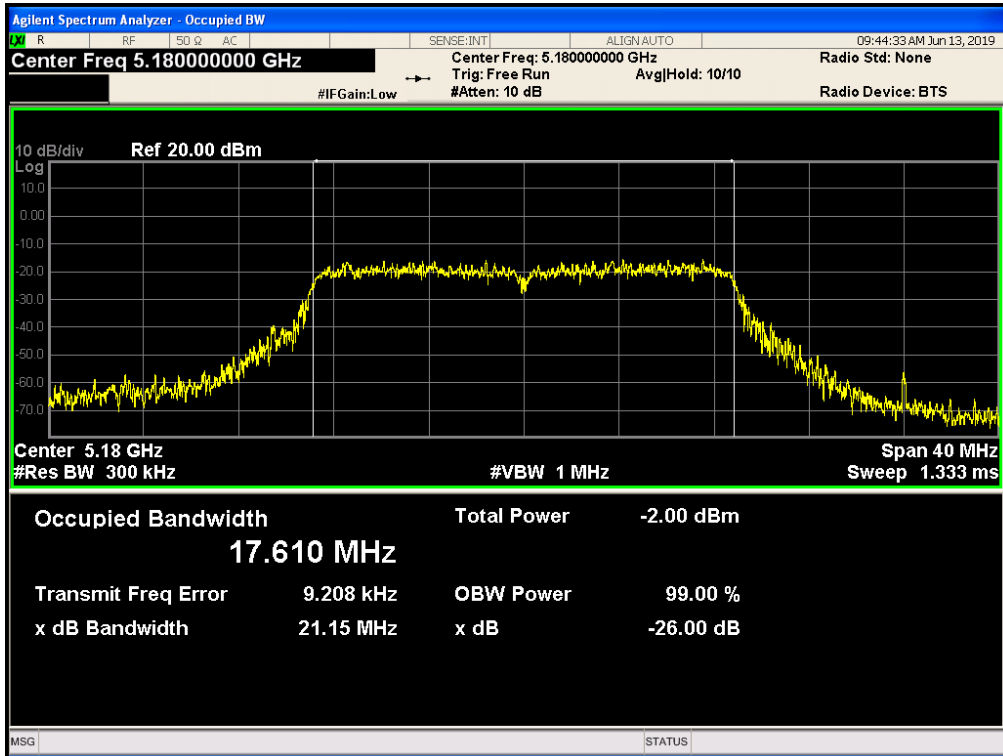
OBW NVNT 802.11a 5200MHz Ant1



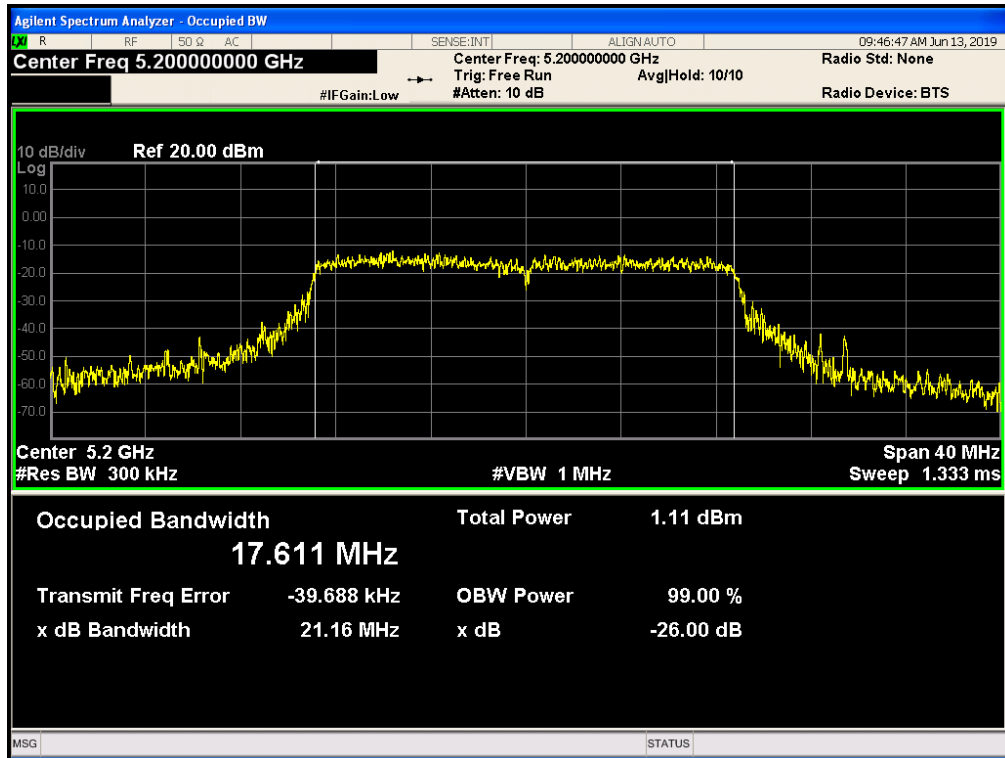
OBW NVNT 802.11a 5240MHz Ant1



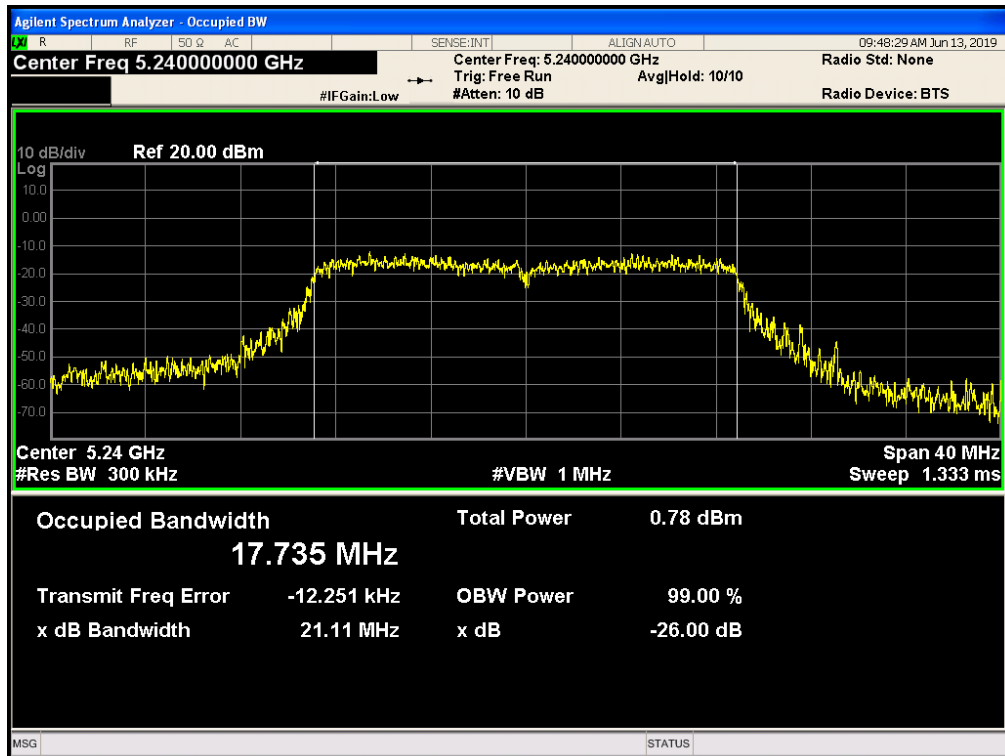
OBW NVNT 802.11ac20 5180MHz Ant1



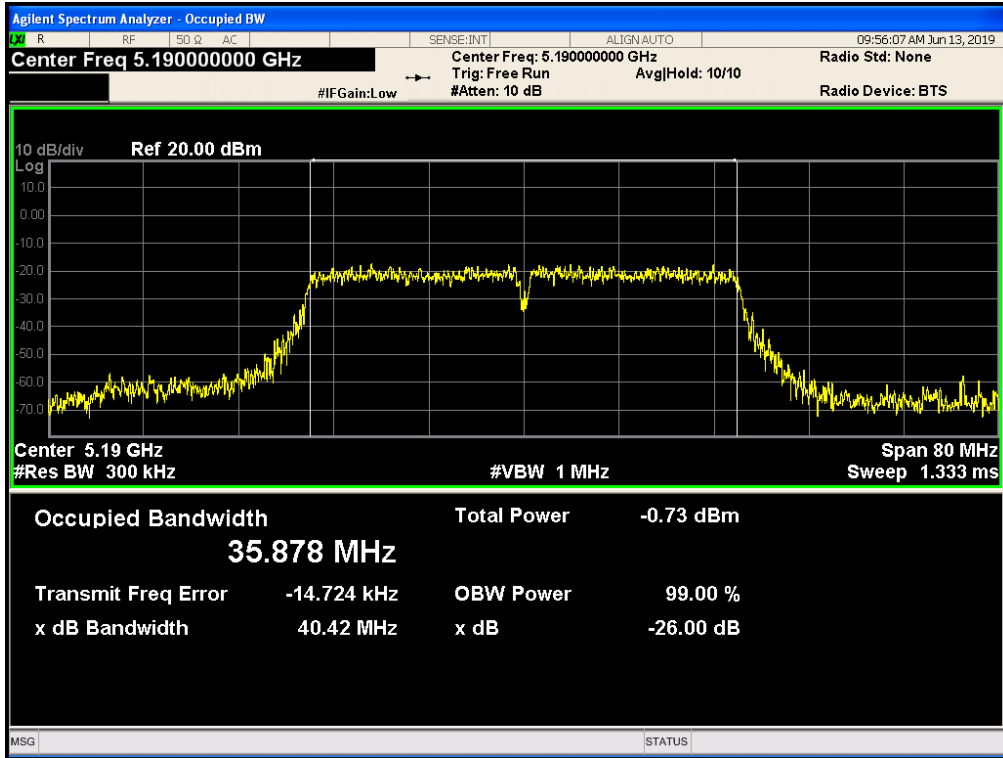
OBW NVNT 802.11ac20 5200MHz Ant1



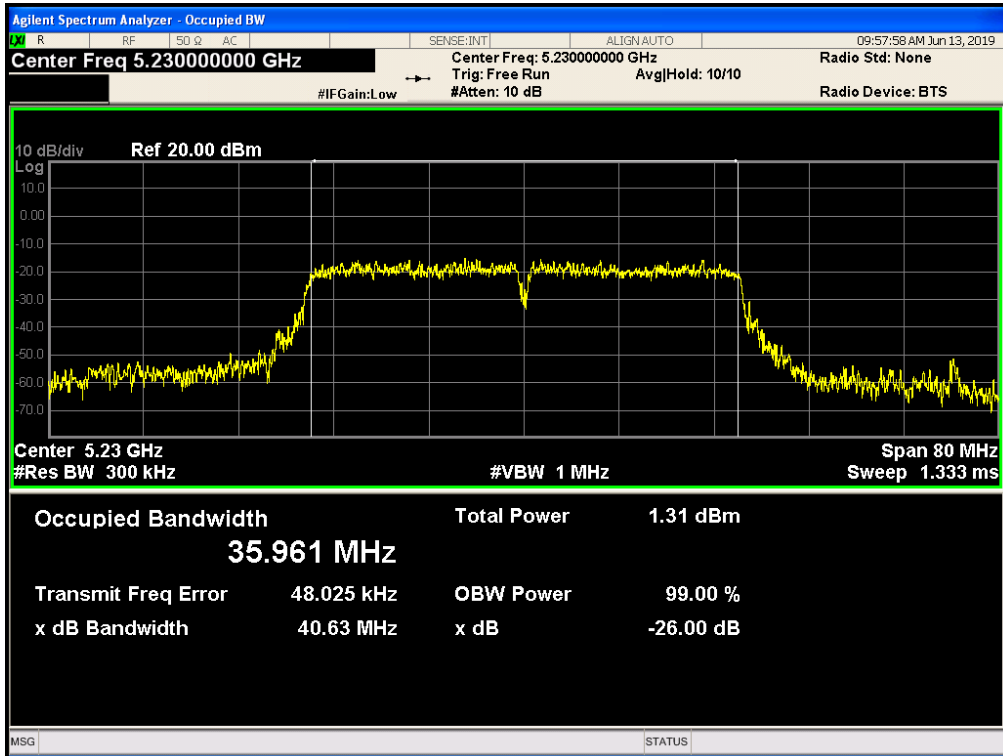
OBW NVNT 802.11ac20 5240MHz Ant1



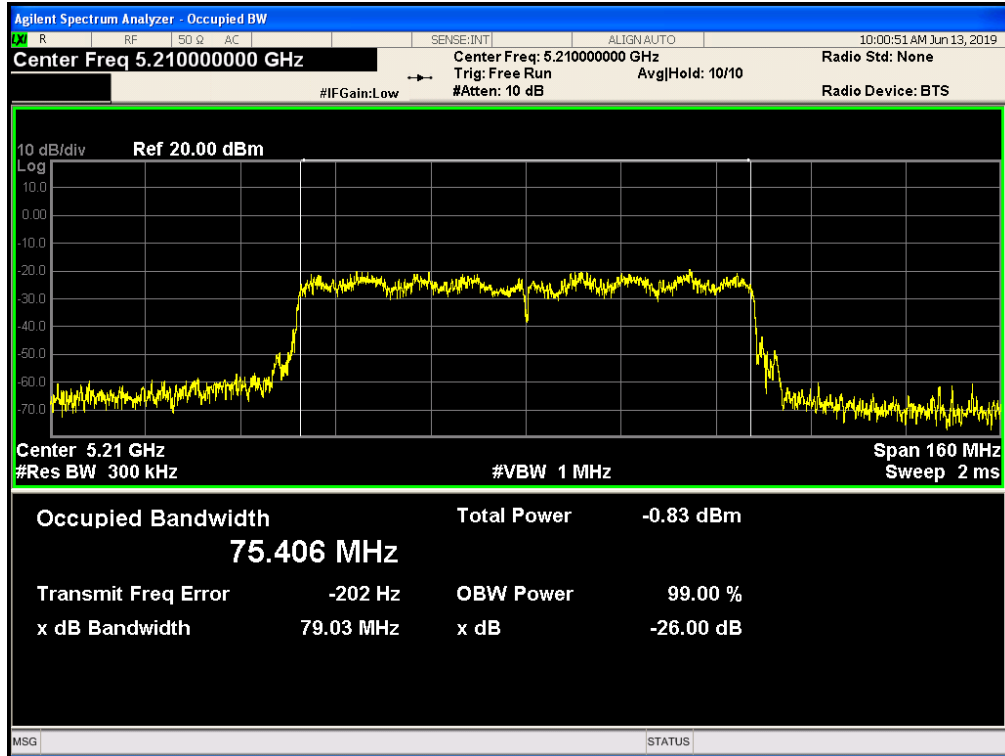
OBW NVNT 802.11ac40 5190MHz Ant1



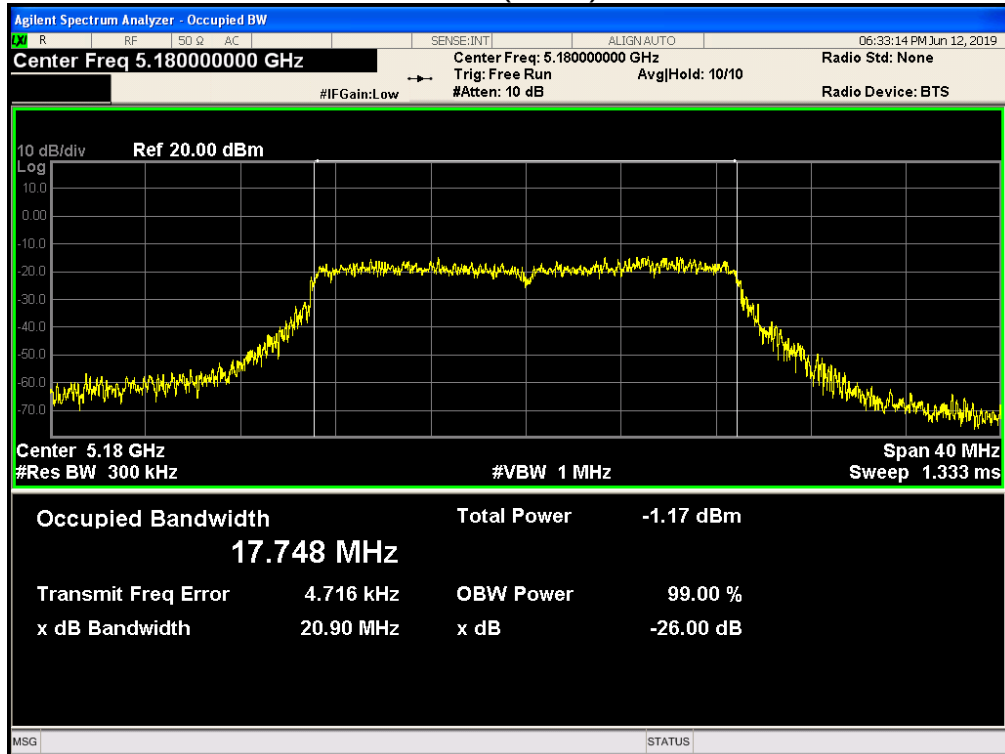
OBW NVNT 802.11ac40 5230MHz Ant1



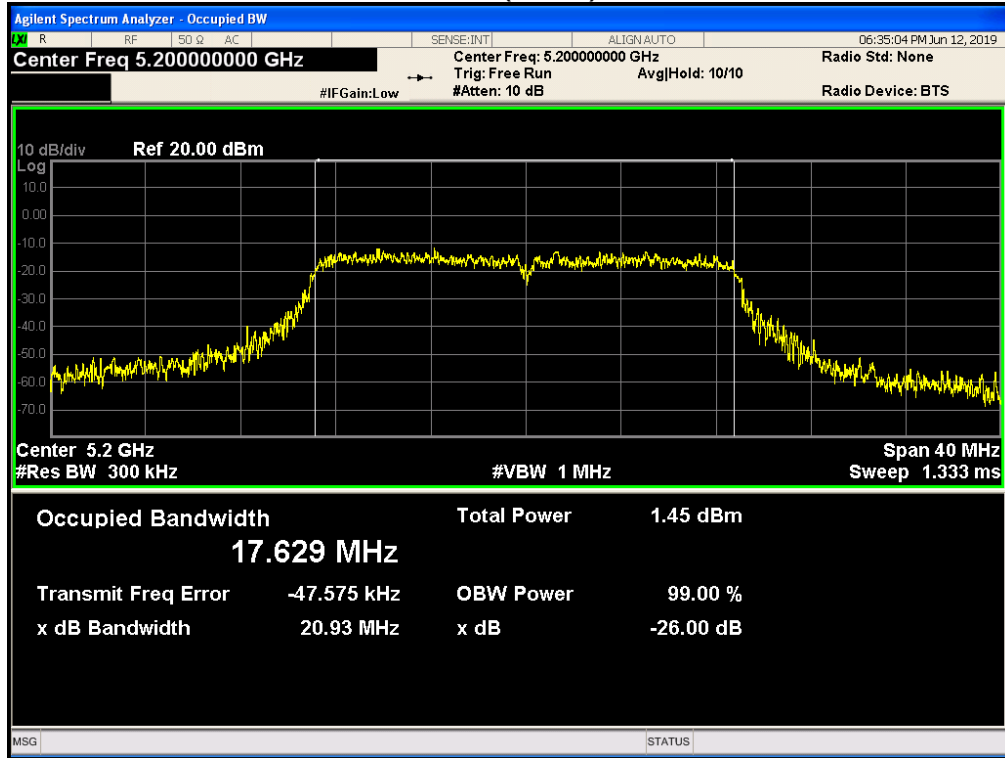
OBW NVNT 802.11ac80 5210MHz Ant1



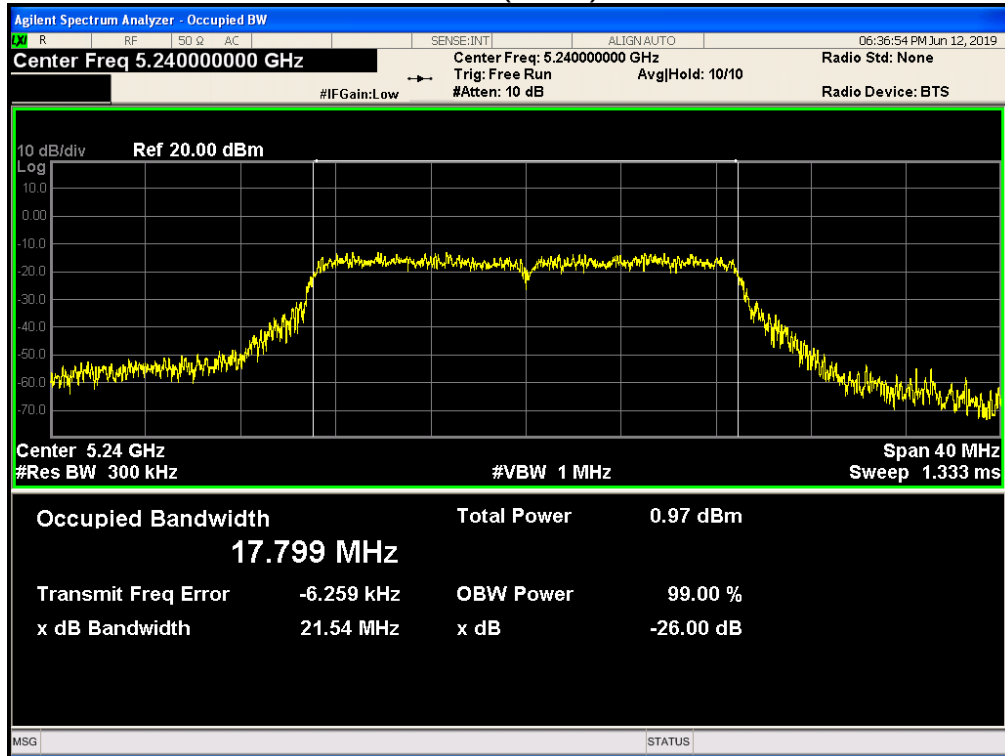
OBW NVNT 802.11n(HT20) 5180MHz Ant1



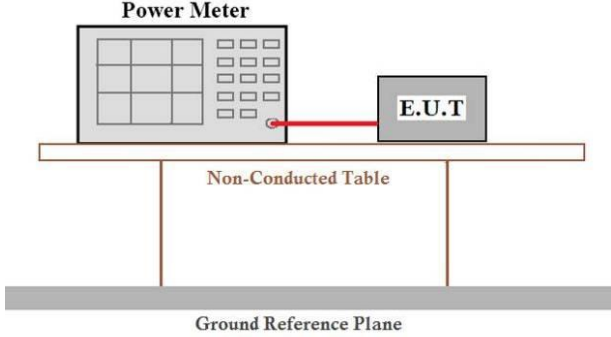
OBW NVNT 802.11n(HT20) 5200MHz Ant1



OBW NVNT 802.11n(HT20) 5240MHz Ant1



4.3 Peak Transmit Power

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	For the band 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 250mW. For the band 5.725-5.85GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 1W.
Test setup:	 The diagram illustrates the test setup. A Power Meter, represented by a rectangular box with a grid of buttons and a display, is connected to an E.U.T. (Equipment Under Test), represented by a smaller rectangular box. A red cable connects the two. Both the Power Meter and the E.U.T. are placed on a Non-Conducted Table, which is supported by two vertical legs. Below the table is a Ground Reference Plane, represented by a thick horizontal bar.
Test procedure:	Measurement using an RF average power meter (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle. b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level. c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five. (ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B). (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter. (iv) Adjust the measurement in dBm by adding $10 \log(1/x)$ where x is the duty cycle (e.g., $10 \log(1/0.25)$ if the duty cycle is 25 percent).
Test results:	Pass

Measurement Data**Maximum Conducted Output Power**

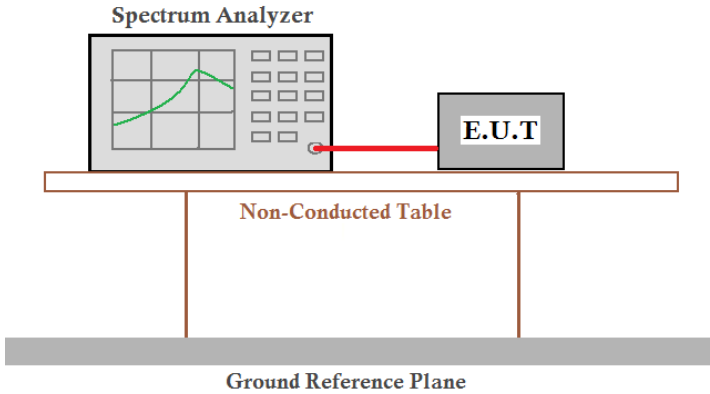
Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
802.11a	5180	Ant 1	8.718	0.13	8.848	24	Pass
802.11a	5200	Ant 1	11.407	0.13	11.537	24	Pass
802.11a	5240	Ant 1	11.286	0.13	11.416	24	Pass
802.11ac20	5180	Ant 1	8.366	0.15	8.516	24	Pass
802.11ac20	5200	Ant 1	11.368	0.13	11.498	24	Pass
802.11ac20	5240	Ant 1	11.177	0.13	11.307	24	Pass
802.11ac40	5190	Ant 1	9.335	0.28	9.615	24	Pass
802.11ac40	5230	Ant 1	11.445	0.27	11.715	24	Pass
802.11ac80	5210	Ant 1	9.471	0.56	10.031	24	Pass
802.11n(HT20)	5180	Ant 1	9.19	0.13	9.32	24	Pass
802.11n(HT20)	5200	Ant 1	11.71	0.12	11.83	24	Pass
802.11n(HT20)	5240	Ant 1	11.346	0.13	11.476	24	Pass
802.11n(HT40)	5190	Ant 1	9.436	0.29	9.726	24	Pass
802.11n(HT40)	5230	Ant 1	11.725	0.28	12.005	24	Pass

Note:

1, Total Power = Measured Power + Duty Factor

2, Duty Factor = $10 \log (1/\text{Duty Cycle})$

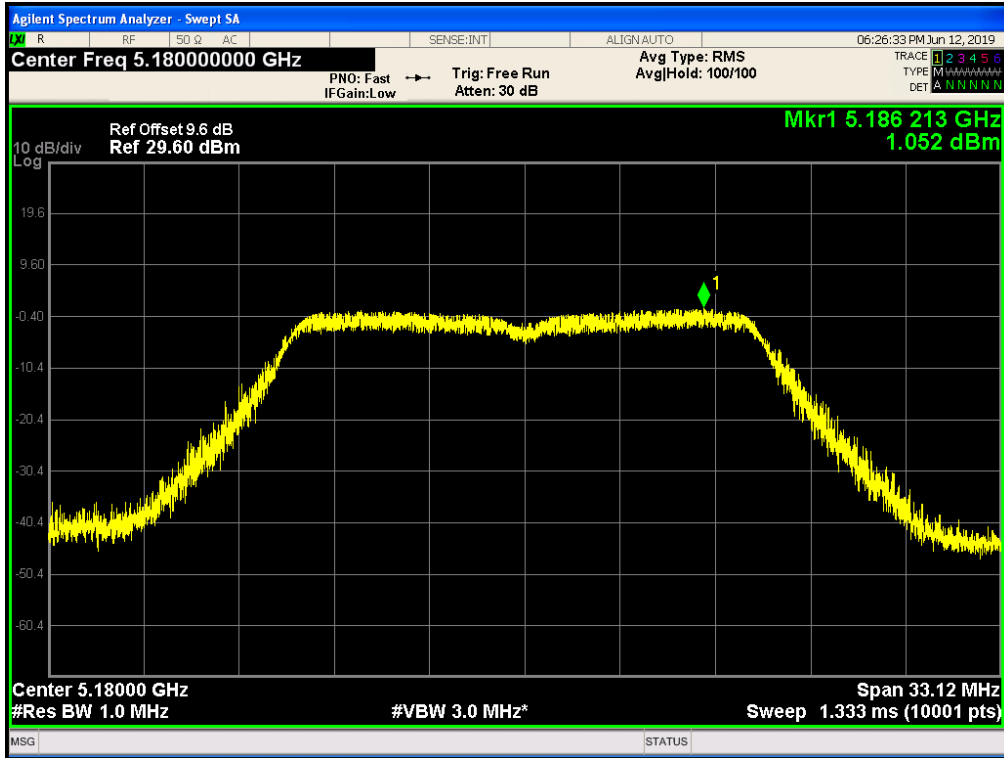
4.4 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	$\leq 11.00\text{dBm/MHz}$ for 5150MHz-5250MHz, 5250-5350MHz and 5470-5725 MHz $\leq 30.00\text{dBm/500KHz}$ for 5725MHz-5850MHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by two vertical legs. Below the table is a Ground Reference Plane.
Test procedure:	1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...". 2) Use the peak search function on the instrument to find the peak of the spectrum. 3) Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum. b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. 4) The result is the PSD.
Test results:	Pass

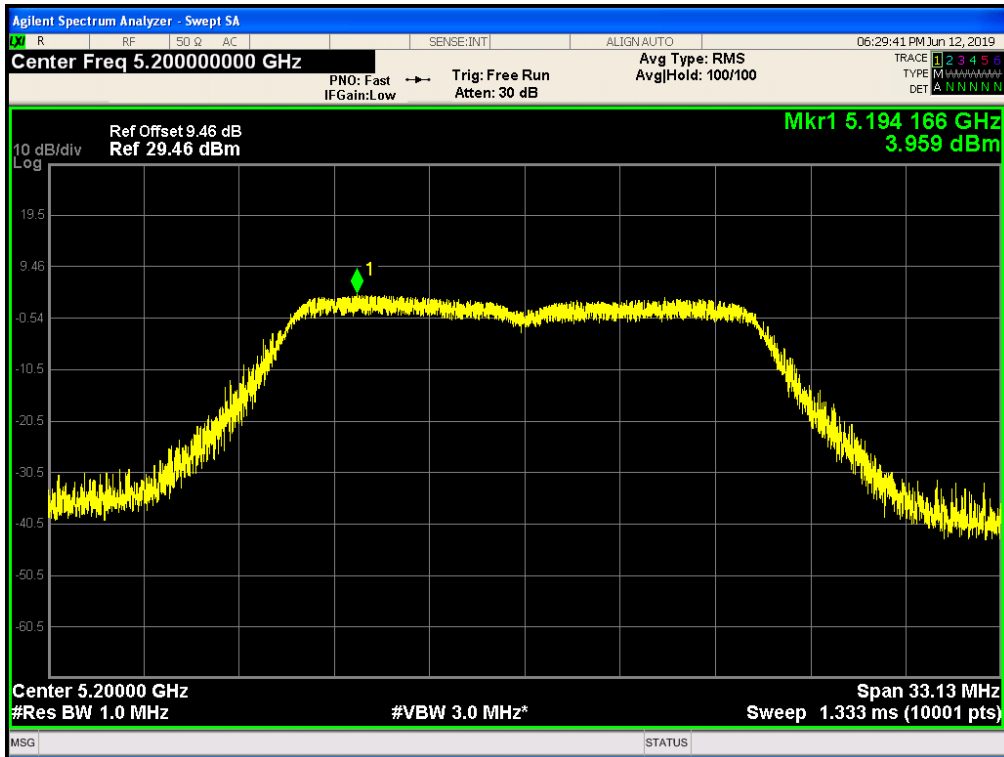
Measurement Data**Band 1 (5150-5250 MHz)****Maximum Power Spectral Density Level**

Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
802.11a	5180	Ant 1	1.052	11	Pass
802.11a	5200	Ant 1	3.959	11	Pass
802.11a	5240	Ant 1	3.574	11	Pass
802.11ac20	5180	Ant 1	1.001	11	Pass
802.11ac20	5200	Ant 1	3.559	11	Pass
802.11ac20	5240	Ant 1	3.324	11	Pass
802.11ac40	5190	Ant 1	-1.681	11	Pass
802.11ac40	5230	Ant 1	1.127	11	Pass
802.11ac80	5210	Ant 1	-3.724	11	Pass
802.11n(HT20)	5180	Ant 1	2.009	11	Pass
802.11n(HT20)	5200	Ant 1	4.721	11	Pass
802.11n(HT20)	5240	Ant 1	4.038	11	Pass
802.11n(HT40)	5190	Ant 1	-1.681	11	Pass
802.11n(HT40)	5230	Ant 1	0.759	11	Pass

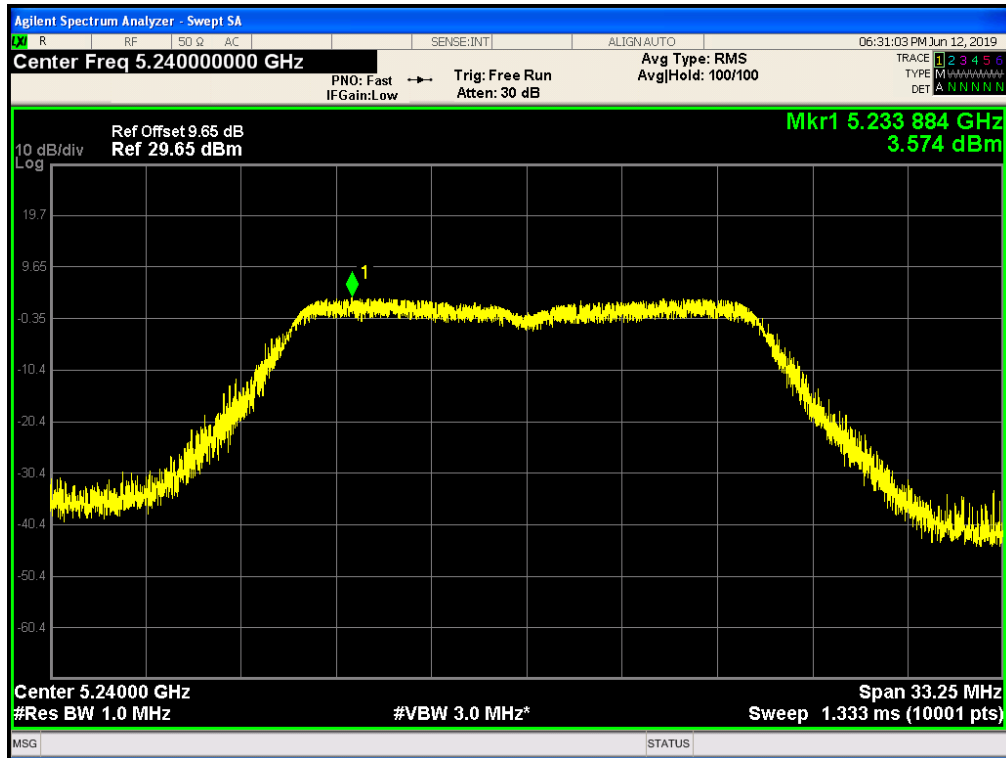
PSD NVNT 802.11a 5180MHz Ant1



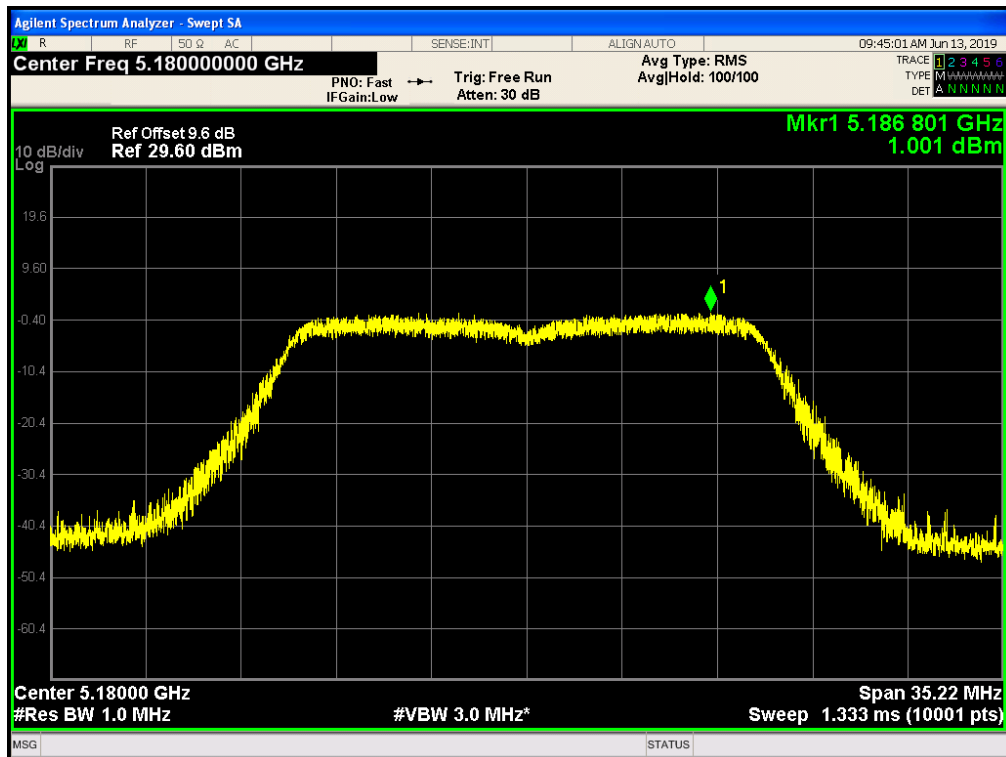
PSD NVNT 802.11a 5200MHz Ant1



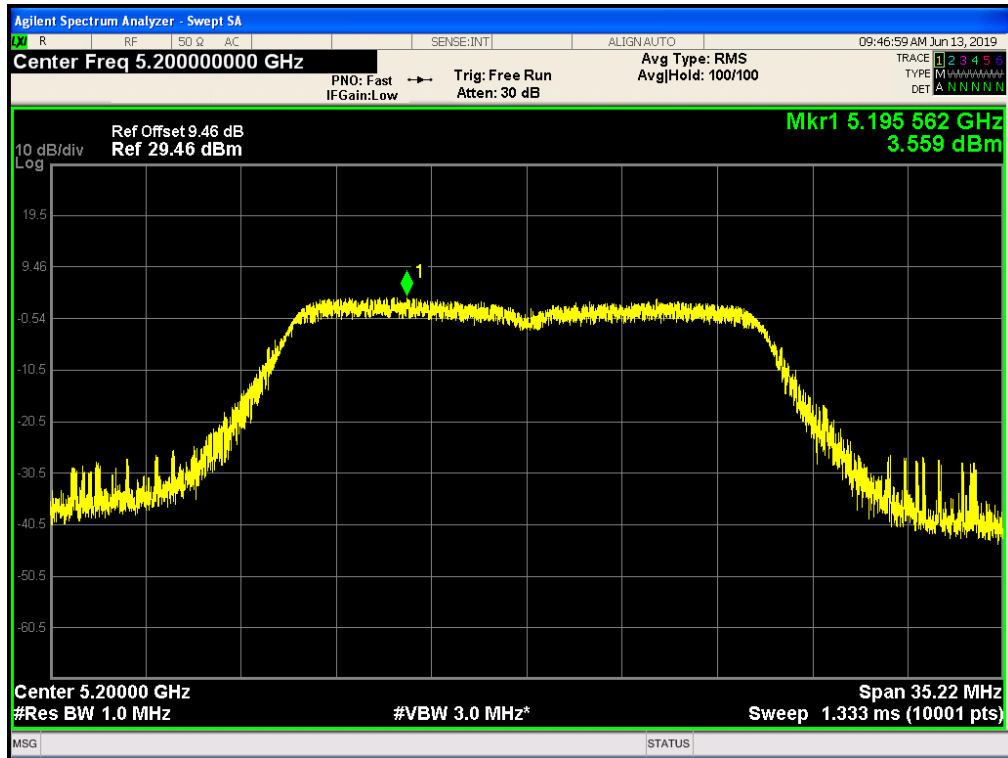
PSD NVNT 802.11a 5240MHz Ant1



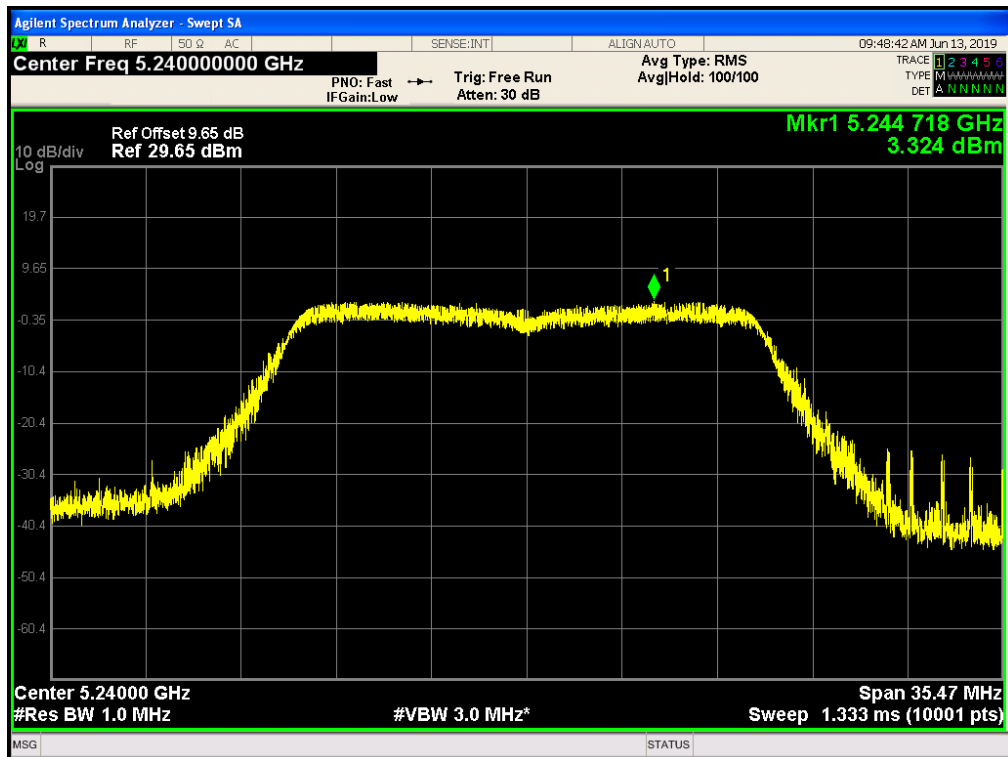
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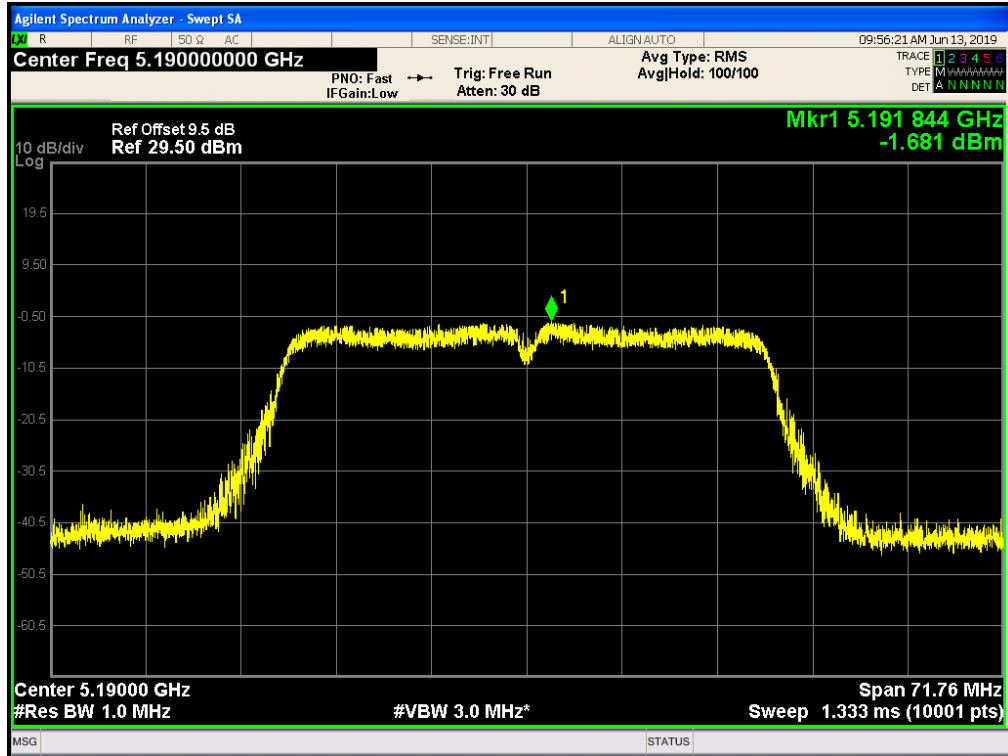
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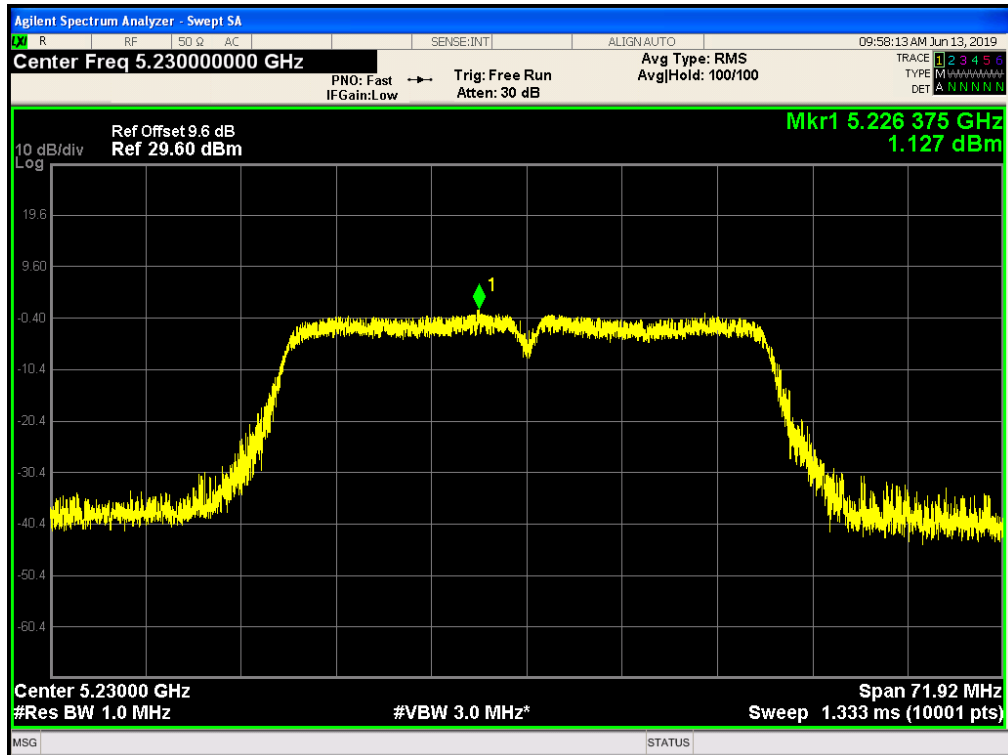
PSD NVNT 802.11ac20 5240MHz Ant1



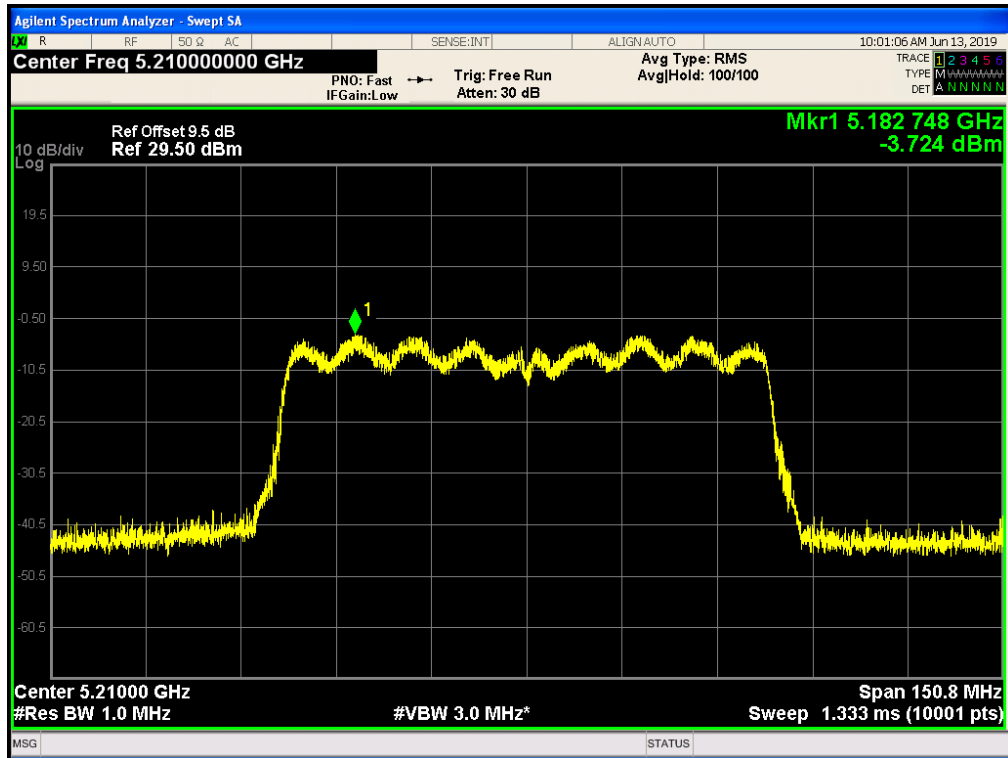
PSD NVNT 802.11ac40 5190MHz Ant1



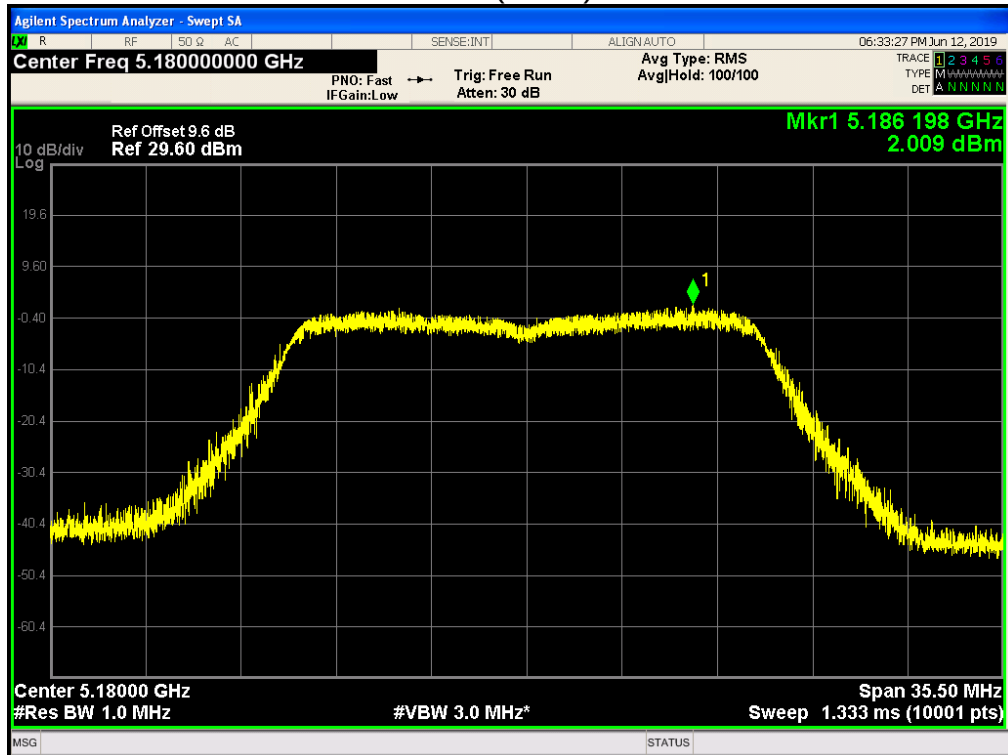
PSD NVNT 802.11ac40 5230MHz Ant1



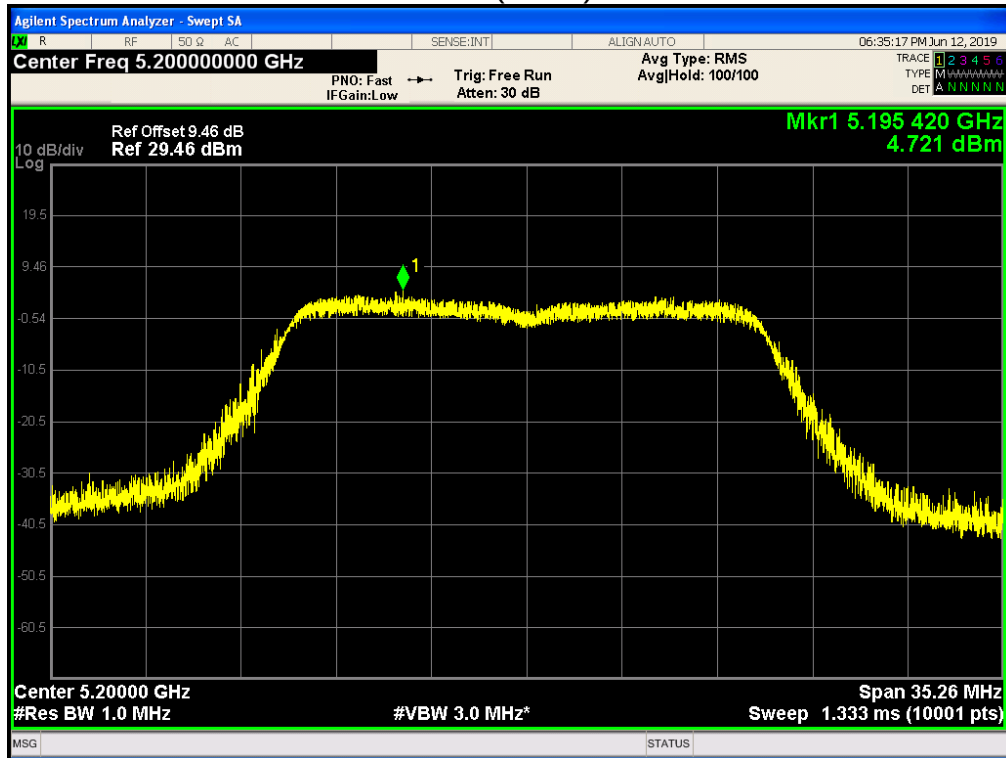
PSD NVNT 802.11ac80 5210MHz Ant1



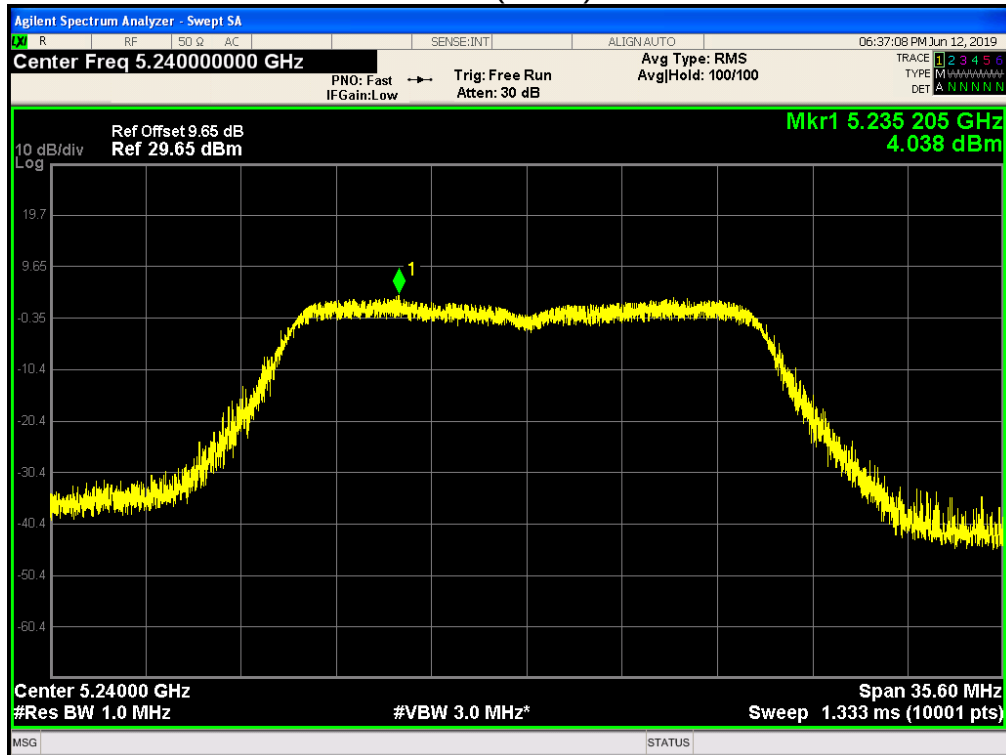
PSD NVNT 802.11n(HT20) 5180MHz Ant1



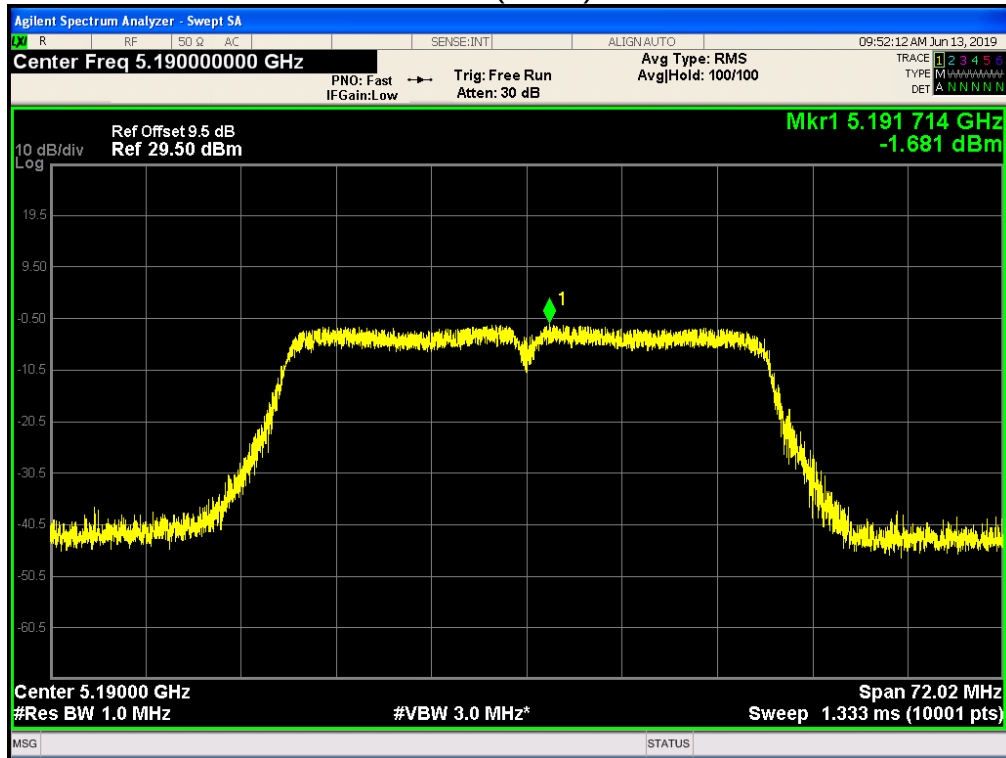
PSD NVNT 802.11n(HT20) 5200MHz Ant1



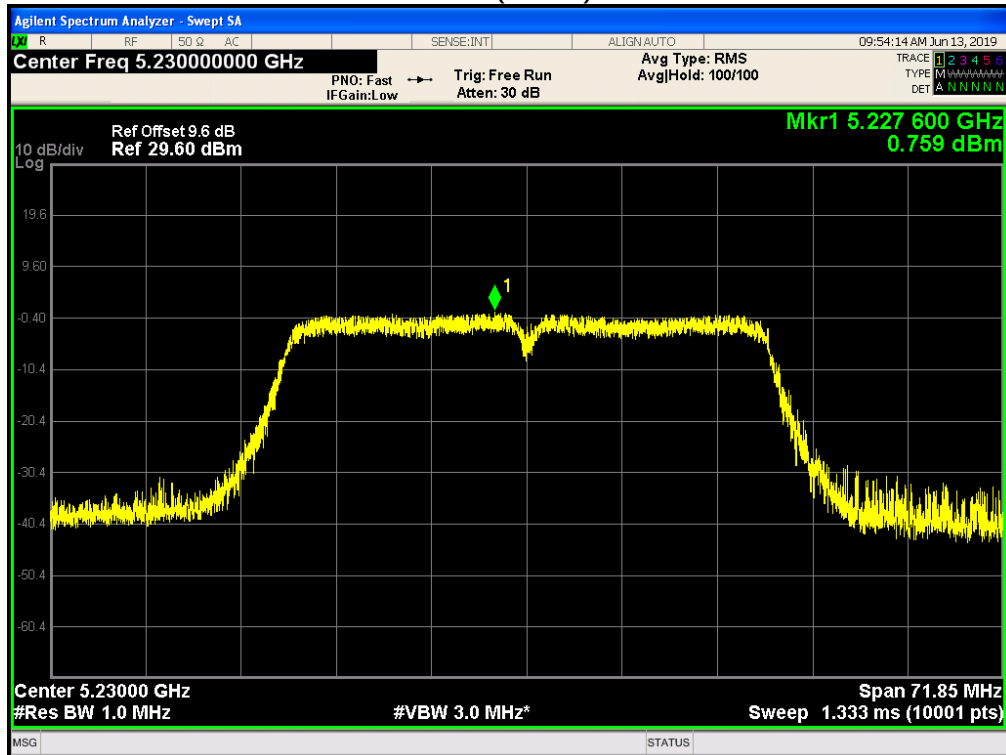
PSD NVNT 802.11n(HT20) 5240MHz Ant1



PSD NVNT 802.11n(HT40) 5190MHz Ant1

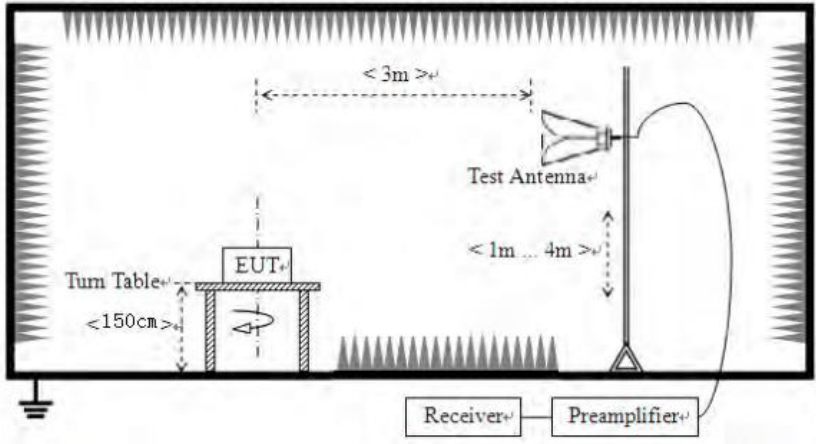


PSD NVNT 802.11n(HT40) 5230MHz Ant1



4.5 Band Edge

Test Requirement:	FCC Part15 E Section 15.407 and 15.205																								
Test Method:	ANSI C63.10:2013																								
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)																								
Receiver setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>AV</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr></table>					Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	AV	1MHz	3MHz	Average Value	
Frequency	Detector	RBW	VBW	Remark																					
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value																					
Above 1GHz	Peak	1MHz	3MHz	Peak Value																					
	AV	1MHz	3MHz	Average Value																					
Limit:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr><tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr><tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr><tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr><tr><td>68.2</td><td>Peak Value</td></tr></table> Undesirable emission limits: (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band. (3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.					Frequency	Limit (dBuV/m @3m)	Remark	30MHz-88MHz	40.0	Quasi-peak Value	88MHz-216MHz	43.5	Quasi-peak Value	216MHz-960MHz	46.0	Quasi-peak Value	960MHz-1GHz	54.0	Quasi-peak Value	Above 1GHz	54.0	Average Value	68.2	Peak Value
Frequency	Limit (dBuV/m @3m)	Remark																							
30MHz-88MHz	40.0	Quasi-peak Value																							
88MHz-216MHz	43.5	Quasi-peak Value																							
216MHz-960MHz	46.0	Quasi-peak Value																							
960MHz-1GHz	54.0	Quasi-peak Value																							
Above 1GHz	54.0	Average Value																							
	68.2	Peak Value																							
Test Procedure:	a. The EUT was placed on the top of a rotating table 1.5 m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.																								
Test setup:	Above 1GHz																								

	
Test results:	Pass

Remark:

According to KDB 789033 D02 v02r01 section G) 1) (d), for For measurements above 1000 MHz @ 3m distance, the limit of field strength is computed as follows:

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2;$$

For example, if $\text{EIRP} = -27\text{dBm}$

$$E[\text{dBuV/m}] = -27 + 95.2 = 68.2\text{dBuV/m}.$$

Measurement Data:**Band1**

Mode:		802.11a		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	33.82	17.20	51.02	68.20	-17.18	PK
V	5150.00	34.97	17.20	52.17	68.20	-16.03	PK
Mode:		802.11a		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	25.21	17.18	42.39	54.00	-11.61	AV
V	5150.00	27.55	17.18	44.73	54.00	-9.27	AV
Mode:		802.11a		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	34.28	17.20	51.48	68.20	-16.72	PK
V	5350.00	34.99	17.20	52.19	68.20	-16.01	PK
Mode:		802.11a		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	25.28	17.18	42.46	54.00	-11.54	AV
V	5350.00	27.28	17.18	44.46	54.00	-9.54	AV

Mode:		802.11n(HT20)		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	33.59	17.20	50.79	68.20	-17.41	PK
V	5150.00	35.27	17.20	52.47	68.20	-15.73	PK
Mode:		802.11n(HT20)		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	24.80	17.18	41.98	54.00	-12.02	AV
V	5150.00	26.96	17.18	44.14	54.00	-9.86	AV
Mode:		802.11n(HT20)		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	33.99	17.20	51.19	68.20	-17.01	PK
V	5350.00	35.26	17.20	52.46	68.20	-15.74	PK
Mode:		802.11n(HT20)		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	25.15	17.18	42.33	54.00	-11.67	AV
V	5350.00	27.28	17.18	44.46	54.00	-9.54	AV

Mode:		802.11ac(HT20)		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	33.77	17.20	50.97	68.20	-17.23	PK
V	5150.00	35.39	17.20	52.59	68.20	-15.61	PK
Mode:		802.11ac(HT20)		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	25.09	17.18	42.27	54.00	-11.73	AV
V	5150.00	26.95	17.18	44.13	54.00	-9.87	AV
Mode:		802.11ac(HT20)		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	33.67	17.20	50.87	68.20	-17.33	PK
V	5350.00	34.71	17.20	51.91	68.20	-16.29	PK
Mode:		802.11ac(HT20)		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	25.29	17.18	42.47	54.00	-11.53	AV
V	5350.00	27.49	17.18	44.67	54.00	-9.33	AV

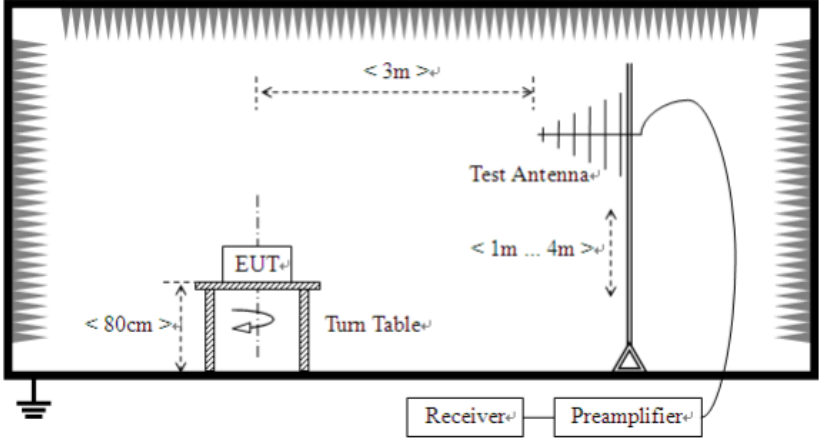
Mode:		802.11n(HT40)		Frequency:		5190MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	33.78	17.20	50.98	68.20	-17.22	PK
V	5150.00	34.77	17.20	51.97	68.20	-16.23	PK
Mode:		802.11n(HT40)		Frequency:		5190MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	24.76	17.18	41.94	54.00	-12.06	AV
V	5150.00	27.34	17.18	44.52	54.00	-9.48	AV
Mode:		802.11n(HT40)		Frequency:		5230MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	34.23	17.20	51.43	68.20	-16.77	PK
V	5350.00	35.06	17.20	52.26	68.20	-15.94	PK
Mode:		802.11n(HT40)		Frequency:		5230MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	24.90	17.18	42.08	54.00	-11.92	AV
V	5350.00	26.80	17.18	43.98	54.00	-10.02	AV

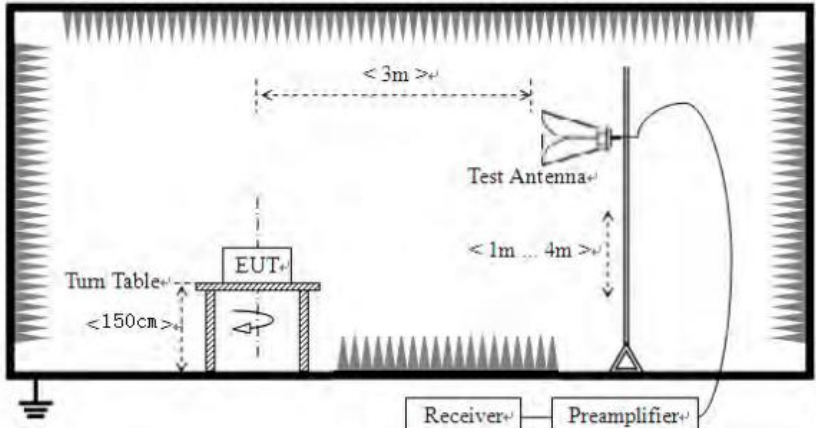
Mode:		802.11ac(HT40)		Frequency:		5190MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	33.65	17.20	50.85	68.20	-17.35	PK
V	5150.00	34.99	17.20	52.19	68.20	-16.01	PK
Mode:		802.11ac(HT40)		Frequency:		5190MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	25.14	17.18	42.32	54.00	-11.68	AV
V	5150.00	26.99	17.18	44.17	54.00	-9.83	AV
Mode:		802.11ac(HT40)		Frequency:		5230MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	34.12	17.20	51.32	68.20	-16.88	PK
V	5350.00	35.28	17.20	52.48	68.20	-15.72	PK
Mode:		802.11ac(HT40)		Frequency:		5230MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	25.37	17.18	42.55	54.00	-11.45	AV
V	5350.00	27.17	17.18	44.35	54.00	-9.65	AV

Mode:		802.11ac(HT80)		Frequency:		5210MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	34.31	17.20	51.51	68.20	-16.69	PK
V	5150.00	34.69	17.20	51.89	68.20	-16.31	PK
Mode:		802.11ac(HT80)		Frequency:		5210MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	24.83	17.18	42.01	54.00	-11.99	AV
V	5150.00	27.26	17.18	44.44	54.00	-9.56	AV
Mode:		802.11ac(HT80)		Frequency:		5210MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	34.27	17.20	51.47	68.20	-16.73	PK
V	5350.00	35.05	17.20	52.25	68.20	-15.95	PK
Mode:		802.11ac(HT80)		Frequency:		5210MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	24.91	17.18	42.09	54.00	-11.91	AV
V	5350.00	27.34	17.18	44.52	54.00	-9.48	AV

4.6 Radiated Emission

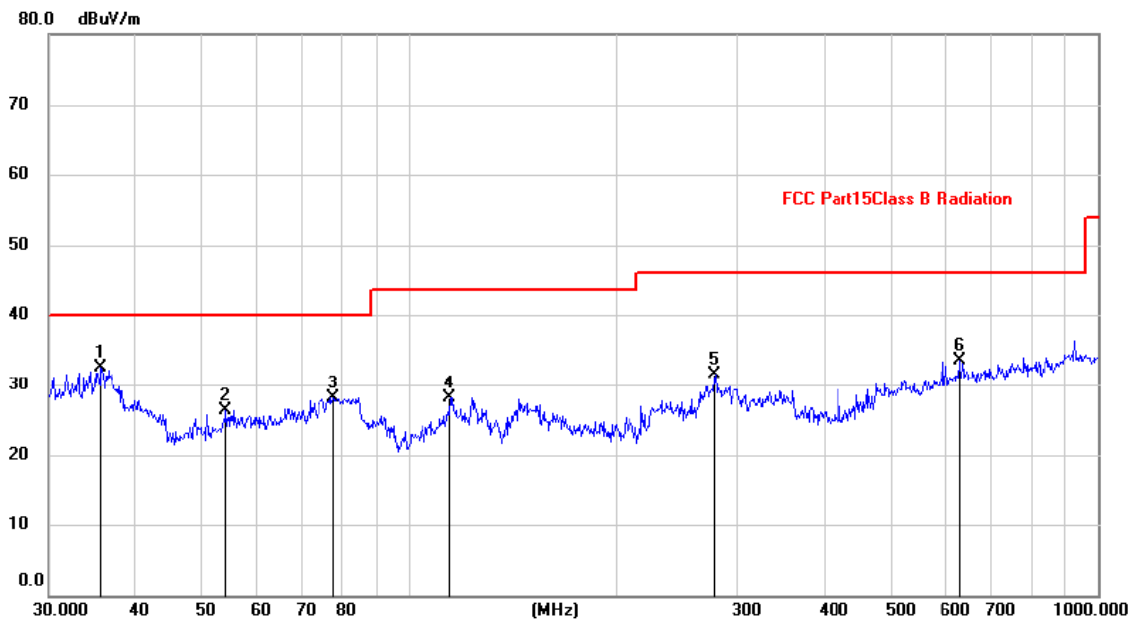
Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	30MHz to 40GHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		AV	1MHz	3MHz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		74.0		Peak Value
			54.0		Average Value
Test Procedure:	Substitution method was performed to determine the actual ERP emission levels of the EUT. The following test procedure as below:				
	1>.Below 1GHz test procedure:				
	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.				
2>.Above 1GHz test procedure:					
1. On the test site as test setup graph above,the EUT shall be placed at the 1.5m support on the turntable and in the position closest to normal use as declared by the provider. 2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter.The output of the test antenna shall be connected to the measuring receiver. 3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.					

	4. The test antenna shall be raised and lowered from 1m to 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver. 5. Repeat step 4 for test frequency with the test antenna polarized horizontally. 6. Remove the transmitter and replace it with a substitution antenna 7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output. 8. Repeat step 7 with both antennas horizontally polarized for each test frequency. 9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula: $\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ where: Pg is the generator output power into the substitution antenna.
Test setup:	Below 1GHz  Above 1GHz

	 The diagram illustrates an EMC test setup within a shielded room. A Turn Table, with a diameter of 150cm, is used to rotate the Equipment Under Test (EUT). The Test Antenna is positioned at a distance of less than 3m from the EUT and at a height of 1m to 4m. The antenna is connected to a Receiver and a Preamplifier. The room walls are lined with absorbers.
Test results:	Pass

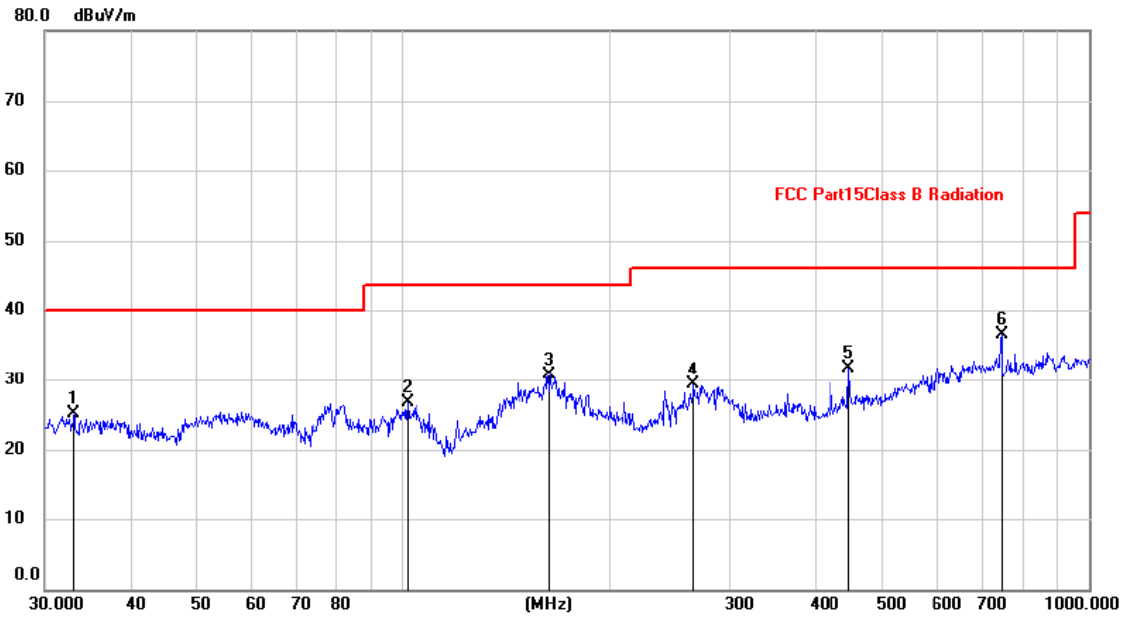
Measurement Data:

Vertical:



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	35.6240	18.93	13.51	32.44	40.00	-7.56	peak		
2		54.4515	12.94	13.35	26.29	40.00	-13.71	peak		
3		77.8653	18.20	9.89	28.09	40.00	-11.91	peak		
4		114.9167	16.04	12.05	28.09	43.50	-15.41	peak		
5		278.0668	18.50	12.94	31.44	46.00	-14.56	peak		
6		629.4772	13.79	19.80	33.59	46.00	-12.41	peak		

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		33.0949	11.61	13.44	25.05	40.00	-14.95	peak		
2		101.2883	15.95	10.73	26.68	43.50	-16.82	peak		
3		163.7547	16.37	14.28	30.65	43.50	-12.85	peak		
4		264.7456	16.81	12.55	29.36	46.00	-16.64	peak		
5		446.4141	14.93	16.86	31.79	46.00	-14.21	peak		
6	*	747.4823	15.19	21.27	36.46	46.00	-9.54	peak		

NOTE: Test Result 802.11 ac/HT80, AC 120V/60Hz (Worst Case)

Above 1GHz:**(worst case : ANT1)****802.11a(HT20) 5180MHz**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	21.51	39.67	14.62	32.65	43.15	74.00	-30.85	Vertical
15540	23.30	38.6	17.66	34.46	45.10	74.00	-28.90	Vertical
10360	22.52	39.67	14.62	32.65	44.16	74.00	-29.84	Horizontal
15540	24.32	38.6	17.66	34.46	46.12	74.00	-27.88	Horizontal

802.11a(HT20) 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	22.59	39.67	14.62	32.65	44.23	74.00	-29.77	Vertical
15600	24.02	38.6	17.66	34.46	45.82	74.00	-28.18	Vertical
10400	23.25	39.67	14.62	32.65	44.89	74.00	-29.11	Horizontal
15600	25.66	38.6	17.66	34.46	47.46	74.00	-26.54	Horizontal

802.11a(HT20) 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	22.04	39.67	14.62	32.65	43.68	74.00	-30.32	Vertical
15720	23.17	38.6	17.66	34.46	44.97	74.00	-29.03	Vertical
10480	22.24	39.67	14.62	32.65	43.88	74.00	-30.12	Horizontal
15720	24.88	38.6	17.66	34.46	46.68	74.00	-27.32	Horizontal

(worst case : ANT1)**802.11n(HT20) 5180MHz**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	24.34	38.6	17.66	34.46	46.14	74.00	-27.86	Vertical
15540	23.23	39.67	14.62	32.65	44.87	74.00	-29.13	Vertical
10360	21.21	39.67	14.62	32.65	42.85	74.00	-31.15	Horizontal
15540	22.54	38.6	17.66	34.46	44.34	74.00	-29.66	Horizontal

802.11n(HT20) 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	21.97	39.67	14.62	32.65	43.61	74.00	-30.39	Vertical
15600	23.13	38.6	17.66	34.46	44.93	74.00	-29.07	Vertical
10400	21.98	39.67	14.62	32.65	43.62	74.00	-30.38	Horizontal
15600	24.15	38.6	17.66	34.46	45.95	74.00	-28.05	Horizontal

802.11n(HT20) 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	22.23	39.67	14.62	32.65	43.87	74.00	-30.13	Vertical
15720	23.86	38.6	17.66	34.46	45.66	74.00	-28.34	Vertical
10480	23.69	39.67	14.62	32.65	45.33	74.00	-28.67	Horizontal
15720	25.58	38.6	17.66	34.46	47.38	74.00	-26.62	Horizontal

(worst case : ANT1)

802.11ac(HT20) 5180MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	21.84	39.67	14.62	32.65	43.48	74.00	-30.52	Vertical
15540	23.34	38.6	17.66	34.46	45.14	74.00	-28.86	Vertical
10360	22.42	39.67	14.62	32.65	44.06	74.00	-29.94	Horizontal
15540	24.46	38.6	17.66	34.46	46.26	74.00	-27.74	Horizontal

802.11ac(HT20) 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	22.26	39.67	14.62	32.65	43.90	74.00	-30.10	Vertical
15600	24.32	38.6	17.66	34.46	46.12	74.00	-27.88	Vertical
10400	23.65	39.67	14.62	32.65	45.29	74.00	-28.71	Horizontal
15600	25.79	38.6	17.66	34.46	47.59	74.00	-26.41	Horizontal

802.11ac(HT20) 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	21.47	39.67	14.62	32.65	43.11	74.00	-30.89	Vertical
15720	23.44	38.6	17.66	34.46	45.24	74.00	-28.76	Vertical
10480	21.90	39.67	14.62	32.65	43.54	74.00	-30.46	Horizontal
15720	24.88	38.6	17.66	34.46	46.68	74.00	-27.32	Horizontal

(worst case : ANT1)

802.11n(HT40) 5190MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380	22.51	39.67	14.62	32.65	44.15	74.00	-29.85	Vertical
15570	24.40	38.6	17.66	34.46	46.20	74.00	-27.80	Vertical
10380	23.44	39.67	14.62	32.65	45.08	74.00	-28.92	Horizontal
15570	25.26	38.6	17.66	34.46	47.06	74.00	-26.94	Horizontal

802.11n(HT40) 5230MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460	21.62	39.67	14.62	32.65	43.26	74.00	-30.74	Vertical
15690	23.40	38.6	17.66	34.46	45.20	74.00	-28.80	Vertical
10460	22.07	39.67	14.62	32.65	43.71	74.00	-30.29	Horizontal
15690	24.41	38.6	17.66	34.46	46.21	74.00	-27.79	Horizontal

802.11ac(HT40) 5190MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380	22.29	39.67	14.62	32.65	43.93	74.00	-30.07	Vertical
15570	24.01	38.6	17.66	34.46	45.81	74.00	-28.19	Vertical
10380	23.66	39.67	14.62	32.65	45.30	74.00	-28.70	Horizontal
15570	25.94	38.6	17.66	34.46	47.74	74.00	-26.26	Horizontal

(worst case : ANT1)**802.11ac(HT40) 5230MHz**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460	21.56	39.67	14.62	32.65	43.20	74.00	-30.80	Vertical
15690	23.01	38.6	17.66	34.46	44.81	74.00	-29.19	Vertical
10460	21.84	39.67	14.62	32.65	43.48	74.00	-30.52	Horizontal
15690	24.12	38.6	17.66	34.46	45.92	74.00	-28.08	Horizontal

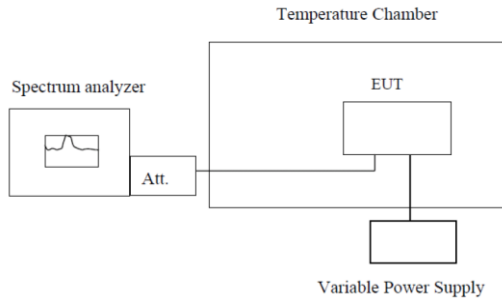
(worst case : ANT1)**802.11ac(HT80) 5210MHz**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10420	22.45	39.67	14.62	32.65	44.09	74.00	-29.91	Vertical
15630	24.06	38.6	17.66	34.46	45.86	74.00	-28.14	Vertical
10420	23.14	39.67	14.62	32.65	44.78	74.00	-29.22	Horizontal
15630	25.85	38.6	17.66	34.46	47.65	74.00	-26.35	Horizontal

Note:

1. Level = Read Level + Antenna Factor+ Cable loss- Preamp Factor.
2. The test trace is same as the ambient noise (the test frequency range: 18GHz~40GHz), therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

5 Frequency Stability

Test Requirement:	FCC Part15 E Section 15.407 (g)
Limit:	Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.
Test setup:	 The diagram illustrates the test setup. A 'Spectrum analyzer' is connected to an 'Att.' (attenuator) block. The 'Att.' block is connected to the 'EUT' (Equipment Under Test) which is located inside a 'Temperature Chamber'. The 'EUT' is also connected to a 'Variable Power Supply'.
Test procedure:	1. The EUT is installed in an environment test chamber with external power source. 2. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT. 3. A sufficient stabilization period at each temperature is used prior to each frequency measurement. 4. When temperature is stabilized, measure the frequency stability. 5. The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.
Test results:	Pass

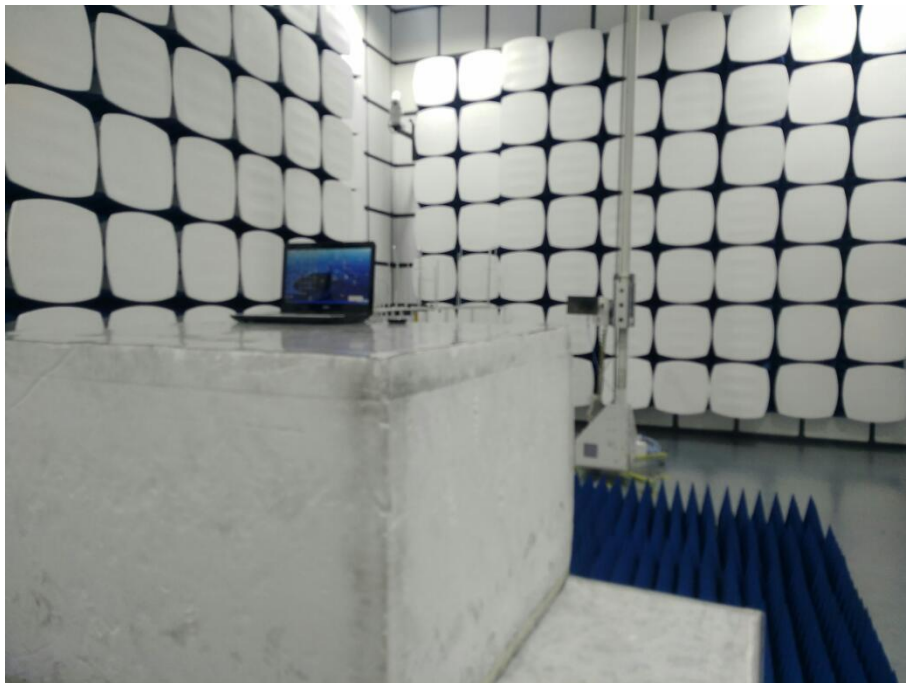
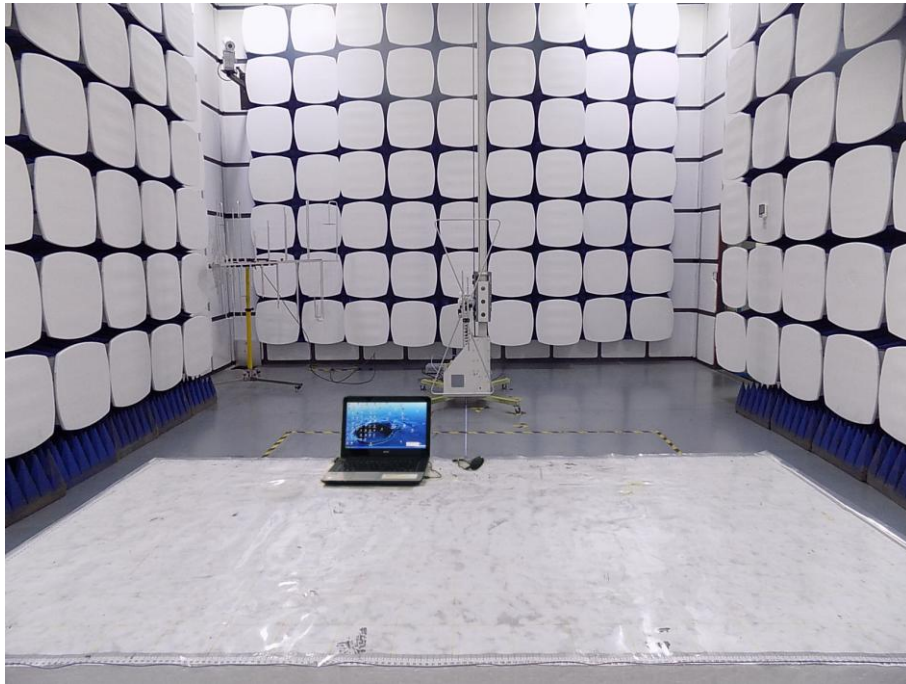
Measurement Data (the worst channel):

Band 1:

Mode	Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)	Limit (ppm)	Verdict
802.11a	5180	5180	0	25	Pass
802.11a	5200	5199.98	3.85	25	Pass
802.11a	5240	5240	0	25	Pass
802.11ac20	5180	5180	0	25	Pass
802.11ac20	5200	5199.98	3.85	25	Pass
802.11ac20	5240	5240	0	25	Pass
802.11ac40	5190	5190	0	25	Pass
802.11ac40	5230	5230.04	7.65	25	Pass
802.11ac80	5210	5210.08	15.36	25	Pass
802.11n(HT20)	5180	5180	0	25	Pass
802.11n(HT20)	5200	5199.96	7.69	25	Pass
802.11n(HT20)	5240	5240.02	3.82	25	Pass
802.11n(HT40)	5190	5189.96	7.71	25	Pass
802.11n(HT40)	5230	5230	0	25	Pass

6 Test Setup Photo

Radiated Emission



Conducted Emission



7 EUT Constructional Details

Reference to the test report No. T1904178-C01-R01.

---END OF REPORT---