

FCC Test Report

Report No.: AGC00742200901FE06

FCC ID : 2AKC6XHT-WF2D

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION: Wireless USB Adapter

BRAND NAME : N/A

MODEL NAME : 6B22, 6B21

APPLICANT: SHEN ZHEN XIN HUA TIAN TECHNOLOGY CO., LTD.

DATE OF ISSUE : Oct. 12, 2020

STANDARD(S) FCC Part 15.407

TEST PROCEDURE(S) KDB 789033 D02 v02r01

REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	1	Oct. 12, 2020	Valid	Initial Release

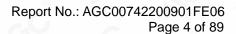
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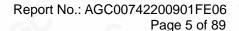
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1. VERIFICATION OF CONFORMITY

Applicant	SHEN ZHEN XIN HUA TIAN TECHNOLOGY CO., LTD.		
Address	3Foor, B Buliding, DaHong Industrial Park, GuangMin District, Shenzhen City, China		
Manufacturer	SHEN ZHEN XIN HUA TIAN TECHNOLOGY CO., LTD.		
Address	3Foor, B Buliding, DaHong Industrial Park, GuangMin District, Shenzhen City, China		
Factory	SHEN ZHEN XIN HUA TIAN TECHNOLOGY CO., LTD.		
Address	3Foor, B Buliding, DaHong Industrial Park, GuangMin District, Shenzhen City, China		
Product Designation	Wireless USB Adapter		
Brand Name	N/A		
Test Model	6B22		
Series Model	6B21		
Model Difference	All the series models are the same as the test model except for the model names and the color and shape of appearance.		
Date of test	Sep. 08, 2020 to Oct. 12, 2020		
Deviation	No any deviation from the test method		
Condition of Test Sample	Normal		
Test Result	Pass		
Report Template	AGCRT-US-BGN/RF		

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Prepared By	sky dong	
' GO	Sky Dong (Project Engineer)	Oct. 12, 2020
Reviewed By	Max Zhang	®
CC	Max Zhang (Reviewer)	Oct. 12, 2020
Approved By	Foresties	
y ^C \GC	Forrest Lei (Authorized Officer)	Oct. 12, 2020

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Wireless USB Adapter". It is designed by way of utilizing the OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

A major technical description of Lot is described as following				
Operation Frequency	5150 MHz~5250MHz			
Output Power	IEEE 802.11a20:8.15dBm; IEEE 802.11n(20):7.30dBm; IEEE 802.11ac(20):7.17dBm; IEEE802.11n(40):6.63dBm; IEEE802.11ac(40):6.29dBm; IEEE802.11ac(80):6.99dBm			
Modulation	BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM,OFDM			
Number of channels	7			
Hardware Version	V2.1			
Software Version	V2.1			
Antenna Designation	Antenna 1: PCB Antenna Antenna 2: Dedicated Antenna			
Number of transmit chain	2(802.11a/n/ac all used two antennas,but 802.11a support SISO and 802.11n/ac support MIMO)			
Directional gain	All transmit signals are completely uncorrelated with each other			
Antenna Gain	Antenna 1:5dBi Antenna 2:5dBi			
Power Supply	DC 5V by PC			

Note:

- 1. There are two antenna positions in the test sample, and the test data of both antenna positions meet the requirements.
- 2. The EUT is designed as indoor access point operating device.
- 3. The device do not support TPC.
- 4. The maximum antenna gain is 5dBi, the device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \le 4$;

So: Directional gain = Gant + Array Gain =5dBi < 6dBi

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2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency	
100	36	5180 MHz	
	38	5190 MHz	
20° - C	40	5200 MHz	
5150 MHz~5250MHz	42	5210 MHz	
	44	5220 MHz	
	46	5230 MHz	
	48	5240 MHz	

Note: For 20MHZ bandwidth system use Channel 36,40,44,48 For 40MHZ bandwidth system use Channel 38,46; For 80MHZ bandwidth system use Channel 42

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2.3. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID**: **2AKC6XHT-WF2D** filing to comply with the FCC Part 15 requirements.

2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.407 rules KDB 789033 D02

2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

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3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in measurement" (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB

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4. DESCRIPTION OF TEST MODES

Mode	Available channel	Tested channel	Modulation	Date rate(Mbps)
802.11a/n20	36, 40, 44, 48	36, 40, 48	OFDM	6Mbps/MCS0
802.11n40	38, 46	38, 46	OFDM	MCS0
802.11ac80	42	42	OFDM	MCS0

Note:

- 1. The EUT has been set to operate continuously on tested channel individually, and the EUT is operating at its maximum duty cycle>or equal 98%
- 2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
- 3. The test software is the REALTEK 11ac 8822BU USB WLAN NIC Massproduction Kit 0.0000.59.20170515 which can set the EUT into the individual test modes.

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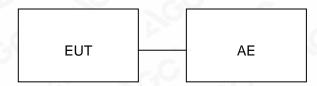


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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure 1:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Wireless USB Adapter	6B22	2AKC6XHT-WF2D	EUT
2	PC	N/A	N/A	AE
3	PC adapter	PC-1903420HH	N/A	AE

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.407	6dB Bandwidth	Compliant
§15.407	Emission Bandwidth	Compliant
§15.203	ANTENNA REQUIREMENT	Compliant
§15.407	07 Maximum conducted output power	
§15.407	Conducted Spurious Emission	Compliant
§15.407	Maximum Conducted Output Power Density	Compliant
§15.209	§15.209 Radiated Emission	
§15.407	§15.407 Band Edges	
§15.207	Line Conduction Emission	Compliant

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6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd		
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China		
Designation Number	CN1259		
FCC Test Firm Registration Number	975832		
A2LA Cert. No.	5054.02		
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA		

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	May 15, 2020	May 14, 2021
LISN	R&S	ESH2-Z5	100086	Jul. 03,2020	Jul. 02,2021
Test software	R&S	ES-K1 (Ver V1.71)	N/A	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2020	May 14, 2021
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 12, 2019	Dec. 11, 2020
Power sensor	Aglient	U2021XA	MY54110007	Jun. 08, 2020	Jun. 07, 2021
5GHz Fliter	Micro-tronics	N/A	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep.21, 2019	Sep. 20, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 17, 2019	May. 16, 2021
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 15, 2019	Oct. 16, 2020
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 20, 2019	Sep. 19, 2021
Test software	FARA	EZ_EMC (Ver.RA-03A)	N/A	N/A	N/A

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7. MAXIMUM CONDUCTED OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

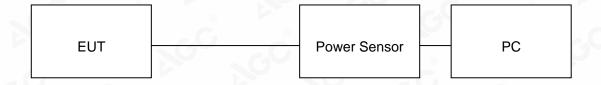
For average power test:

- 1. Connect EUT RF output port to power sensor through an RF attenuator.
- 2. Connect the power sensor to the PC.
- 3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 4. Record the maximum power from the software.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

7.2. TEST SET-UP

AVERAGE POWER SETUP



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7.3. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION							
Frequency (MHz)	Average Power Chain 1(dBm)	Average Power Chain 2(dBm) Average Power Total(dBm)		Applicable Limits (dBm)	Pass or Fail		
5180	7.89	7.62	N/A	30	Pass		
5200	7.96	7.85	N/A	30	Pass		
5240	8.15	8.03	N/A	30	Pass		

	LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION								
Frequency (MHz)	Average Power Chain 1(dBm)	Average Power Chain 2(dBm)	Average Power Total(dBm)	Applicable Limits (dBm)	Pass or Fail				
5180	4.37	4.21	7.30	30	Pass				
5200	3.51	3.39	6.46	30	Pass				
5240	4.08	3.86	6.98	30	Pass				

	LIMITS AND MEASUREMENT RESULT FOR 802.11N40 MODULATION							
Frequency (MHz) Average Power Chain 1(dBm) Average Power Chain 2(dBm) Average Power Total(dBm) Applicable Limits (dBm)								
5190	3.70	3.53	6.63	30	Pass			
5230	3.56	3.28	6.43	30	Pass			

	LIMITS AND MEASUREMENT RESULT FOR 802.11AC20 MODULATION							
Frequency (MHz)								
5180	4.26	4.06	7.17	30	Pass			
5200	3.69	3.49	6.60	30	Pass			
5240	3.70	3.52	6.62	30	Pass			

LIMITS AND MEASUREMENT RESULT FOR 802.11AC40 MODULATION						
Frequency (MHz) Average Power Chain 1(dBm) Average Power Chain 2(dBm) Average Power Total(dBm)				Applicable Limits (dBm)	Pass or Fail	
5190	3.39	3.16	6.29	30	Pass	
5230	3.21	3.14	6.19	30	Pass	

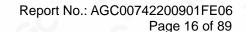
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LIMITS AND MEASUREMENT RESULT FOR 802.11AC80 MODULATION							
Frequency (MHz)				Applicable Limits (dBm)	Pass or Fail		
5210	4.06	3.89	6.99	30	Pass		

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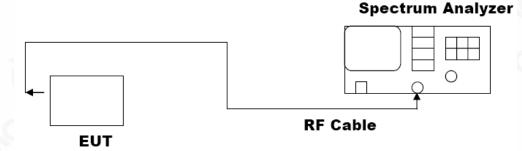
8. EMISSION BANDWIDTH

8.1. MEASUREMENT PROCEDURE

- 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 maximum 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%.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



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8.3. LIMITS AND MEASUREMENT RESULTS

LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION						
		Арр	licable Limits			
Applicable Limits						
	Frequency (MHz)	-26dB Bandwidth	99.00% Occupied Bandwidth	Criteria		
	5180MHz	19.70	16.448	PASS		
Within the Band	5200MHz	19.42	16.450	PASS		
	5240MHz	19.52	16.459	PASS		

LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION							
		App	licable Limits				
Applicable Limits							
	Frequency (MHz)	-26dB Bandwidth	99.00% Occupied Bandwidth	Criteria			
	5180MHz	20.14	17.534	PASS			
GC C	5200MHz	20.03	17.550	PASS			
Within the Band	5240MHz	20.08	17.529	PASS			
C SGC SGC	5190MHz	43.11	36.210	PASS			
	5230MHz	42.97	36.189	PASS			

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION						
		Appl	icable Limits			
Applicable Limits		Test Data (MHz)				
777	Frequency (MHz)	-26dB Bandwidth	99.00% Occupied Bandwidth	Criteria		
	5180MHz	20.62	17.550	PASS		
20	5200MHz	20.19	17.549	PASS		
Within the Band	5240MHz	20.40	17.539	PASS		
Within the Band	5190MHz	40.67	30.087	PASS		
GC C	5230MHz	40.33	36.078	PASS		
	5210MHz	81.78	75.214	PASS		

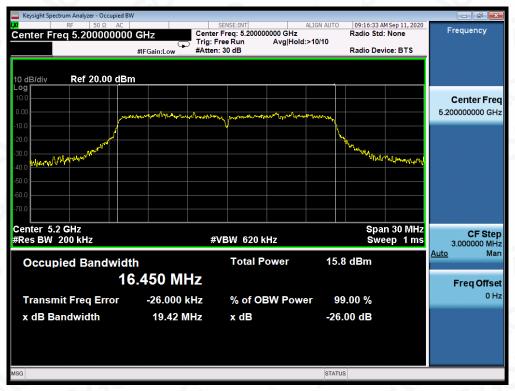
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802.11a20 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5180MHz



TEST PLOT OF BANDWIDTH FOR 5200MHz



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TEST PLOT OF BANDWIDTH FOR 5240MHz



802.11n20 TEST RESULT TEST PLOT OF BANDWIDTH FOR 5180MHz



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TEST PLOT OF BANDWIDTH FOR 5200MHz



TEST PLOT OF BANDWIDTH FOR 5240MHz



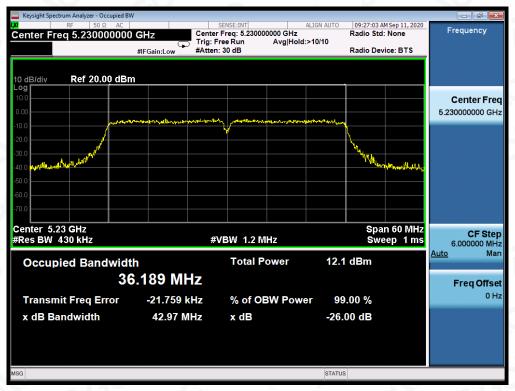
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802.11n40 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5190MHz



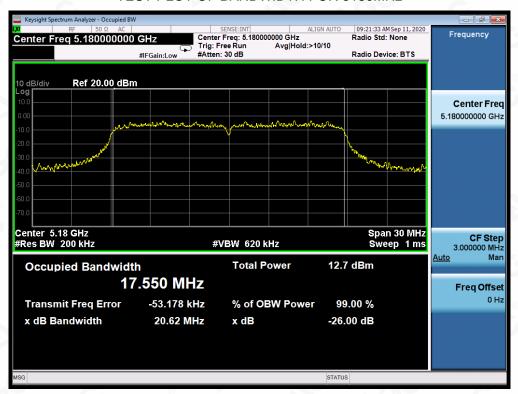
TEST PLOT OF BANDWIDTH FOR 5230MHz



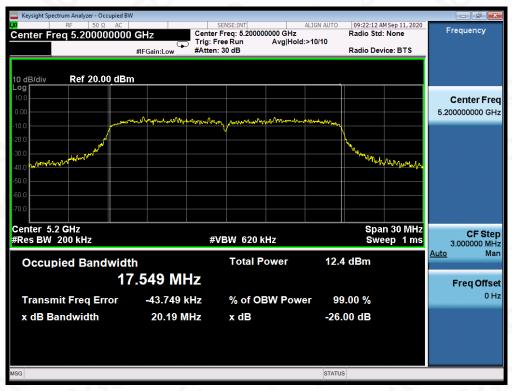
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802.11ac20 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5180MHz



TEST PLOT OF BANDWIDTH FOR 5200MHz



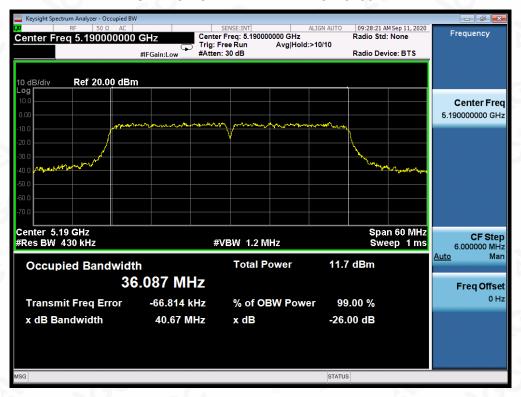
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TEST PLOT OF BANDWIDTH FOR 5240MHz



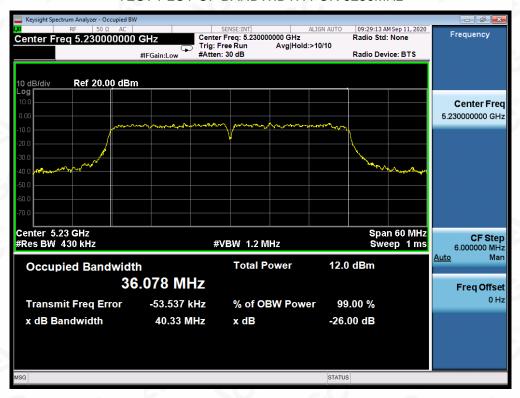
802.11ac40 TEST RESULTTEST PLOT OF BANDWIDTH FOR 5190MHz



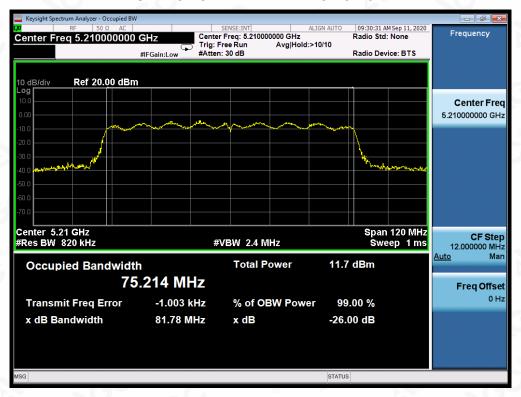
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TEST PLOT OF BANDWIDTH FOR 5230MHz



802.11ac80 TEST RESULT TEST PLOT OF BANDWIDTH FOR 5210MHz



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9. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

9.1 MEASUREMENT PROCEDURE

Refer to KDB 789033 section F

9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

9.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

9.4 LIMITS AND MEASUREMENT RESULT

	LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION							
Frequency (MHz)	The Chain 1 Chain 2 Total 1			Applicable Limits (dBm)	Pass or Fail			
5180	-3.522	-3.564	N/A	17	Pass			
5200	-3.458	-3.464	N/A	17	Pass			
5240	-3.213	-3.329	N/A	17	Pass			

LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION							
Frequency (MHz)	Power density Chain 1 (dBm/MHz)	Power density Chain 2 (dBm/MHz)	Power density Total (dBm/MHz)	Applicable Limits (dBm)	Pass or Fail		
5180	-7.386	-7.547	-4.455	17	Pass		
5200	-8.112	-7.863	-4.975	17	Pass		
5240	-7.345	-7.469	-4.396	17	Pass		

LIMITS AND MEASUREMENT RESULT FOR 802.11N40 MODULATION						
Frequency (MHz)	Power density Chain 1 (dBm/MHz)	Power density Chain 2 (dBm/MHz)	Power density Total (dBm/MHz)	Applicable Limits (dBm) Pass or		
5190	-11.161	-11.082	-8.111	17	Pass	
5230	-11.147	-11.393	-8.258	17	Pass	

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LIMITS AND MEASUREMENT RESULT FOR 802.11AC20 MODULATION						
Frequency (MHz)	Power density Chain 1 (dBm/MHz)	Power density Chain 2 (dBm/MHz)	Power density Total (dBm/MHz)	Applicable Limits (dBm)		
5180	-7.266	-7.564	-4.402	17	Pass	
5200	-7.901	-7.624	-4.750	17	Pass	
5240	-7.906	-8.260	-5.069	17	Pass	

LIMITS AND MEASUREMENT RESULT FOR 802.11AC40 MODULATION						
Frequency (MHz)	Power density Chain 1 (dBm/MHz)	Power density Chain 2 (dBm/MHz)	Power density Total (dBm/MHz)	Applicable Limits (dBm) Pass or		
5190	-10.984	-11.880	-8.399	17	Pass	
5230	-11.503	-11.520	-8.501	17	Pass	

LIMITS AND MEASUREMENT RESULT FOR 802.11AC80 MODULATION					
Frequency (MHz)	Power density Chain 1 (dBm/MHz)	Power density Chain 2 (dBm/MHz)	Power density Total (dBm/MHz)	Applicable Limits (dBm) Pass or I	
5210	-12.848	-12.688	-9.757	17	Pass

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802.11a20 TEST RESULT AT CHAIN 1TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



802.11a20 TEST RESULT AT CHAIN 2
TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



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802.11n20 TEST RESULT AT CHAIN 1TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



802.11n20 TEST RESULT AT CHAIN 2
TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



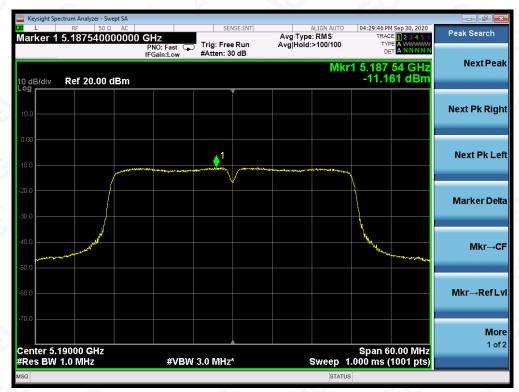
TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



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802.11n40 TEST RESULT AT CHAIN 1TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz



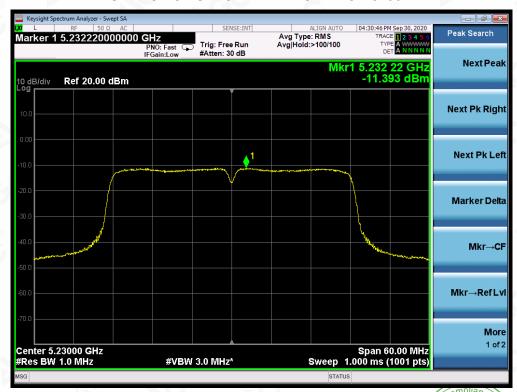
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802.11n40 TEST RESULT AT CHAIN 2 TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz



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802.11ac20 TEST RESULT AT CHAIN 1TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



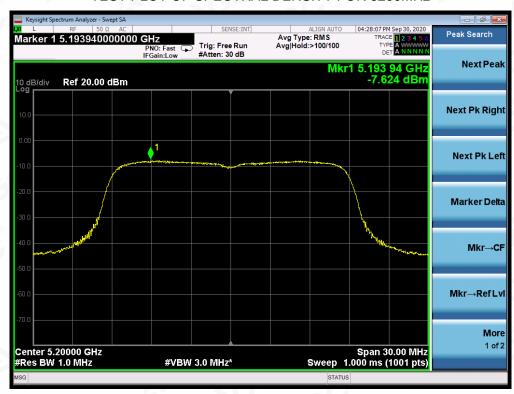
802.11ac20 TEST RESULT AT CHAIN 2 TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



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TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



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802.11ac40 TEST RESULT AT CHAIN 1 TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz



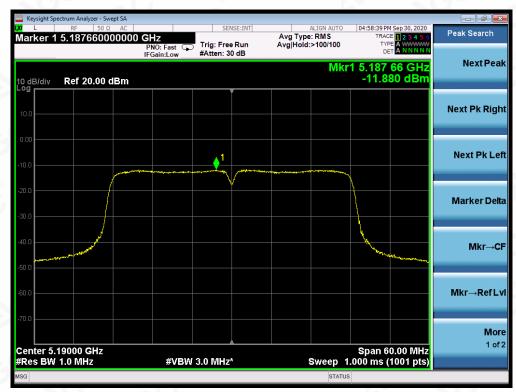
TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz



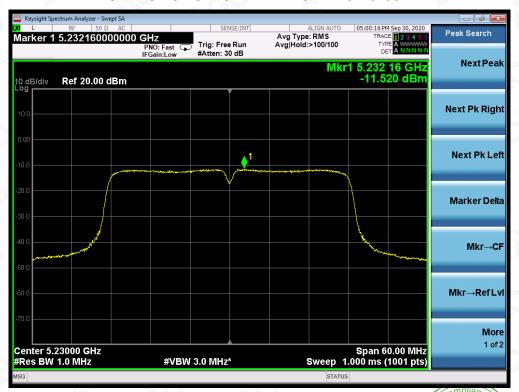
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802.11ac40 TEST RESULT AT CHAIN 2TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz



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802.11ac80 TEST RESULT AT CHAIN 1 TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz



802.11ac80 TEST RESULT AT CHAIN 2 TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz



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10. CONDUCTED SPURIOUS EMISSION

10.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

10.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

10.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT						
Amplicable Limite	Measurement Result					
Applicable Limits	Test channel	Criteria				
-27dBm/MHz	5150MHz-5250MHz	PASS				

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