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# FCC Test Report

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Report No.: AGC05925190404FE06

**FCC ID** : 2ARV8-TR750  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : Teton Router 750  
**BRAND NAME** : **TETON** camera  
**MODEL NAME** : TR750  
**CLIENT** : Teton Camera LLC  
**DATE OF ISSUE** : Jun. 05, 2019  
**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	/	Jun. 05, 2019	Valid	Initial Release



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### 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	Teton Camera LLC
<b>Address</b>	46 N Franklin Ave, #648Pinedale, WY 82941, US
<b>manufacturer</b>	Teton Camera LLC
<b>Address</b>	46 N Franklin Ave, #648Pinedale, WY 82941, US
<b>Factory</b>	Shenzhen Guanglianzhitong Technology co. LTD
<b>Address</b>	Room 305, 306, Skyworth digital building, Songbai Road, Shiyan Street, Baoan District, Shenzhen, China
<b>Product Designation</b>	Teton Router 750
<b>Brand Name</b>	<b>TETON</b> camera
<b>Test Model</b>	TR750
<b>Date of test</b>	May 25, 2019 to Jun. 05, 2019
<b>Deviation</b>	None
<b>Condition of Test Sample</b>	Normal
<b>Test Result</b>	Pass
<b>Report Template</b>	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.

Tested By

*Draven Li*

Draven Li(Li Ming Liang) Jun. 05, 2019

Reviewed By

*Max Zhang*

Max Zhang(Zhang Yi) Jun. 05, 2019

Approved By

*Forrest Lei*

Forrest Lei(Lei Yonggang)  
Authorized Officer Jun. 05, 2019



## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

The EUT is designed as “Teton Router 750”. 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

<b>Operation Frequency</b>	5150 MHz~5250MHz
<b>Output Power</b>	IEEE 802.11a:18.27dBm; IEEE 802.11n(20):16.20dBm; IEEE802.11 ac(20):15.62dBm; IEEE802.11n(40):15.27dBm IEEE802.11ac(40):15.18dBm IEEE802.11ac(80):12.35dBm
<b>Modulation</b>	BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM,OFDM
<b>Number of channels</b>	7
<b>Hardware Version</b>	V1.2.1
<b>Software Version</b>	V1.0
<b>Antenna Designation</b>	Dipole Antenna
<b>Number of transmit chain</b>	1
<b>Antenna Gain</b>	4.98dBi
<b>Power Supply</b>	DC 5V by adapter or DC 3.6V by battery

### 2.2. TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
5150 GHz~5250GHz	36	5180 MHz
	38	5190 MHz
	40	5200 MHz
	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: 2ARV8-TR750** 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.



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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,  $U_c = \pm 3.2$  dB
- Uncertainty of Radiated Emission below 1GHz,  $U_c = \pm 3.9$  dB
- Uncertainty of Radiated Emission above 1GHz,  $U_c = \pm 4.8$  dB



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#### 4. DESCRIPTION OF TEST MODES

Mode	Available channel	Tested channel	Modulation	Date rate(Mbps)
802.11a/n20/ac20	36,40,44,48	36,38,48	OFDM	6/6.5
802.11n40/ac40	38,46	38,46	OFDM	13.5
802.11ac80	42	42	OFDM	13.5

**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 QATool\_Dbg\_V2.0.10.3 which can set the EUT into the individual test modes.



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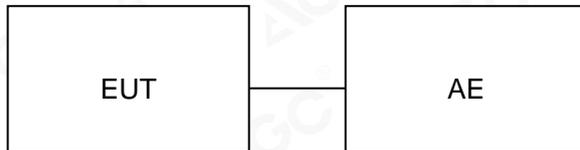
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## 5. SYSTEM TEST CONFIGURATION

### 5.1 CONFIGURATION OF TESTED SYSTEM



### 5.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Teton Router 750	TR750	FFDD	EUT
2	Adapter	KA1517-0502000USU	DC 5V	AE
3	U-Disk	Kingston	8G	AE
4	TF Card	Kingston	8G	AE

### 5.3. SUMMARY OF TEST RESULTS

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



## 6. TEST FACILITY

<b>Test Site</b>	Attestation of Global Compliance (Shenzhen) Co., Ltd
<b>Location</b>	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
<b>Designation Number</b>	CN1259
<b>FCC Test Firm Registration Number</b>	975832
<b>A2LA Cert. No.</b>	5054.02
<b>Description</b>	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	Jun. 12, 2018	Jun. 11, 2019
LISN	R&S	ESH2-Z5	100086	Aug. 28, 2018	Aug. 27, 2019

### TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun.12, 2018	Jun.11, 2019
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 20, 2018	Dec. 19, 2019
Power sensor	Aglient	U2021XA	MY54110007	Dec. 20, 2018	Dec. 19, 2019
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 21, 2017	Sep. 20, 2020
preamplifier	ChengYi	EMC184045SE	980508	Sep. 21, 2017	Sep. 20, 2020
Active loop antenna (9K-30MHz)	A.H.	SAS-562B	CC&C	May. 26, 2018	May. 25, 2020
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 26, 2018	May. 25, 2020
Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-205	Sep. 28, 2017	Sep. 27, 2019
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 28, 2017	Sep. 27, 2019



## 7. MAXIMUM CONDUCTED OUTPUT POWER

### 7.1. MEASUREMENT PROCEDURE

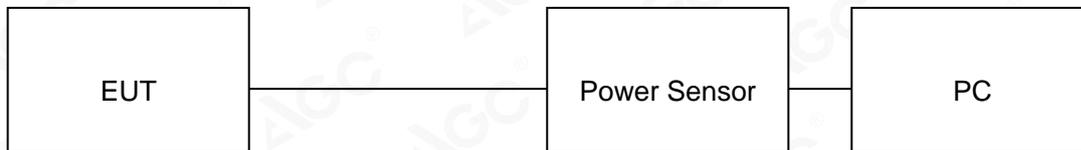
For average power test:

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 802.11A MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5180	18.27	30.00	Pass
5200	18.16	30.00	Pass
5240	18.20	30.00	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5180	16.20	30.00	Pass
5200	16.16	30.00	Pass
5240	16.09	30.00	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5180	15.59	30.00	Pass
5200	15.47	30.00	Pass
5240	15.62	30.00	Pass



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LIMITS AND MEASUREMENT RESULT FOR 802.11N40 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5190	15.27	30.00	Pass
5230	15.13	30.00	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC40 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5190	15.18	30.00	Pass
5230	15.07	30.00	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC80 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5210	12.35	30.00	Pass



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## 8. EMISSION BANDWIDTH

### 8.1. MEASUREMENT PROCEDURE

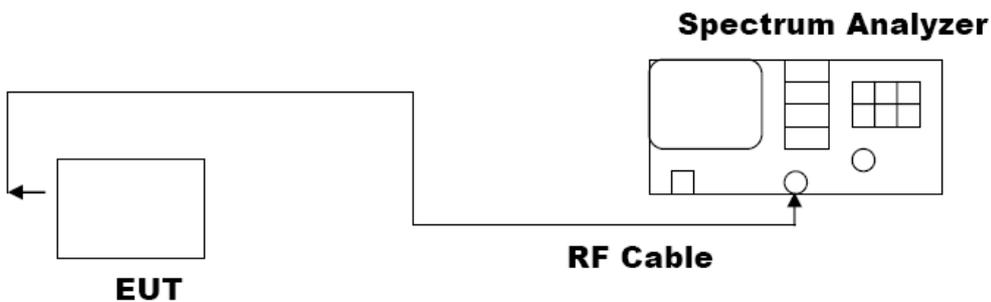
- a) Set RBW = approximately 1% of the emission bandwidth.
  - a) Set RBW = approximately 1% of the emission bandwidth.
  - b) Set the VBW > RBW.
  - c) Detector = Peak.
  - d) Trace mode = max hold.
  - e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.
- Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW  $\geq 3 \cdot$  RBW
5. Peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument

**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)



### 8.3. LIMITS AND MEASUREMENT RESULTS

LIMITS AND MEASUREMENT RESULT FOR 802.11A MODULATION			
Test Channel	-26dBc EBW (MHz)	99% OBW (MHz)	Criteria
5180MHz	19.38	16.519	PASS
5200MHz	19.07	16.497	PASS
5240MHz	19.23	16.501	PASS

LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION			
Test Channel	-26dBc EBW (MHz)	99% OBW (MHz)	Criteria
5180MHz	19.78	17.518	PASS
5200MHz	19.85	17.488	PASS
5240MHz	19.74	17.498	PASS
5190MHz	39.89	36.156	PASS
5230MHz	39.97	36.175	PASS

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION			
Test Channel	-26dBc EBW (MHz)	99% OBW (MHz)	Criteria
5180MHz	19.78	17.513	PASS
5200MHz	19.84	17.515	PASS
5240MHz	19.90	17.491	PASS
5190MHz	39.89	36.171	PASS
5230MHz	39.98	36.155	PASS
5210MHz	81.28	75.646	PASS

A 26-dB bandwidth that straddles into U-NII 2A band but its 99% occupied power bandwidth does not. If DFS is required, the device must be able to detect radar signal within its 99% occupied power bandwidth. For this rare case, DFS requirement does not apply.



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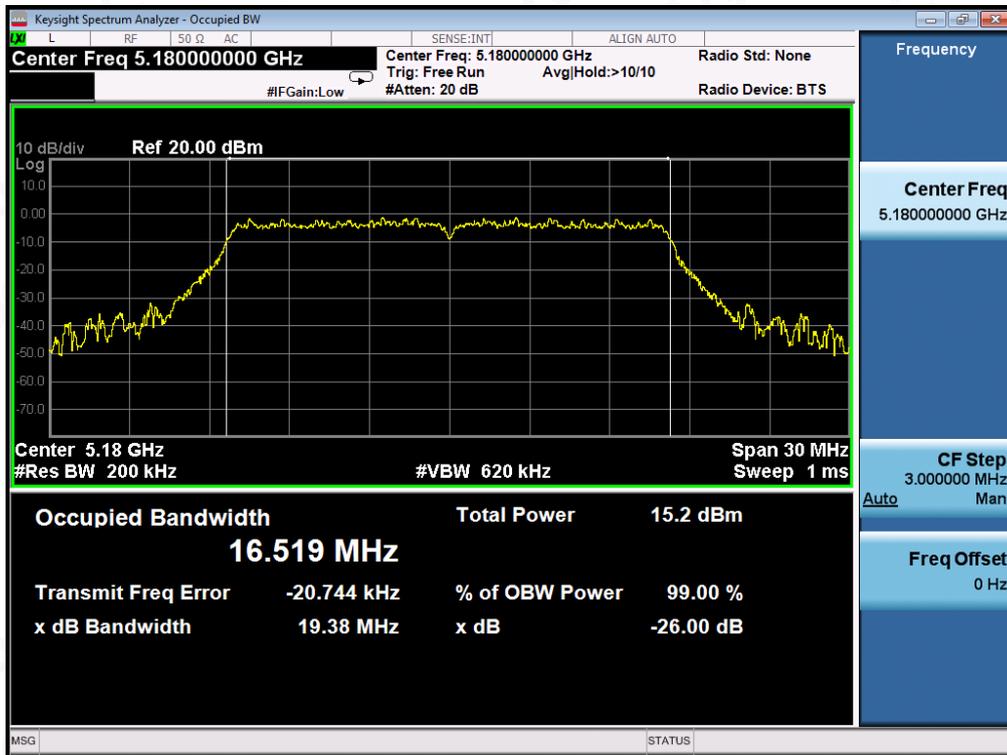
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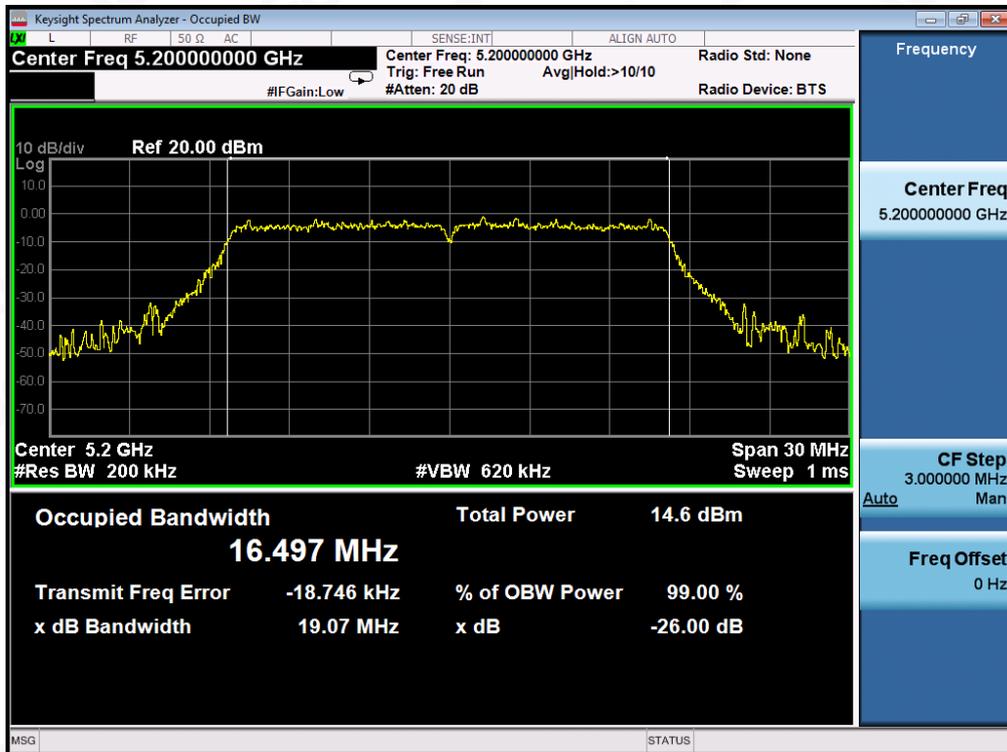
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### 802.11a TEST RESULT

#### TEST PLOT OF BANDWIDTH FOR 5180MHz



#### TEST PLOT OF BANDWIDTH FOR 5200MHz



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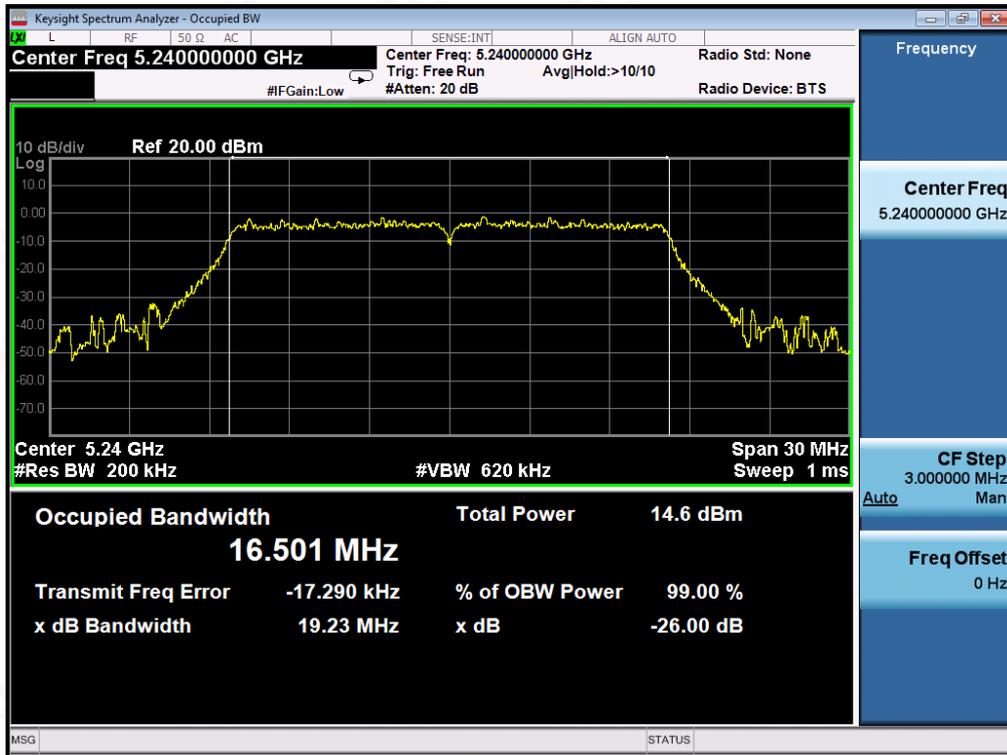
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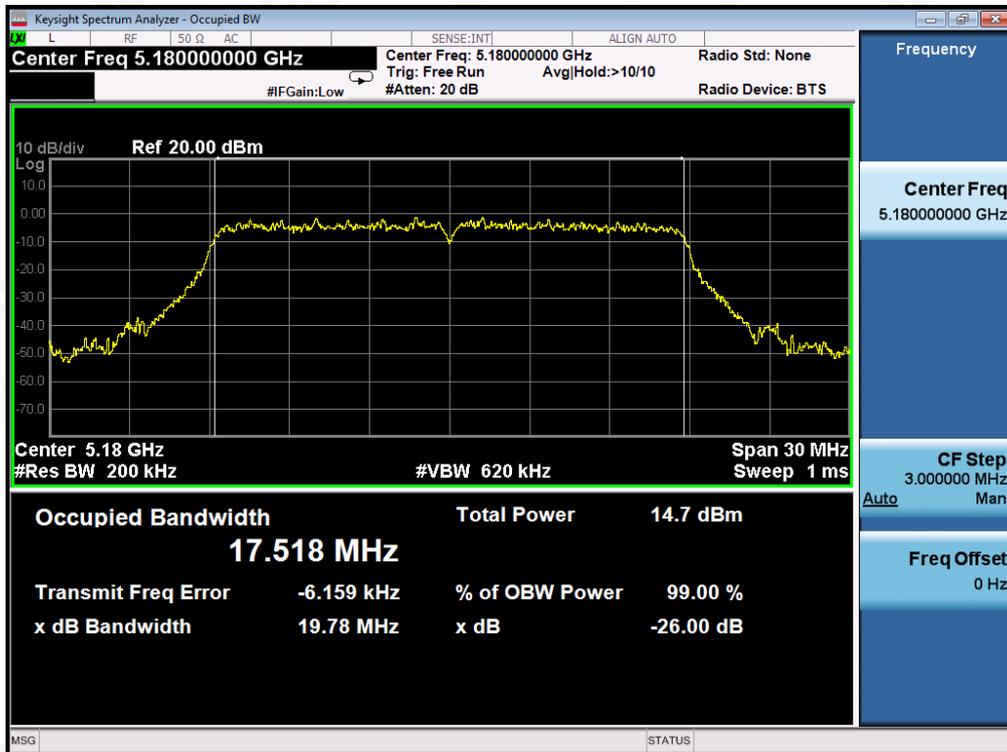
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TEST PLOT OF BANDWIDTH FOR 5240MHz



802.11n20 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5180MHz



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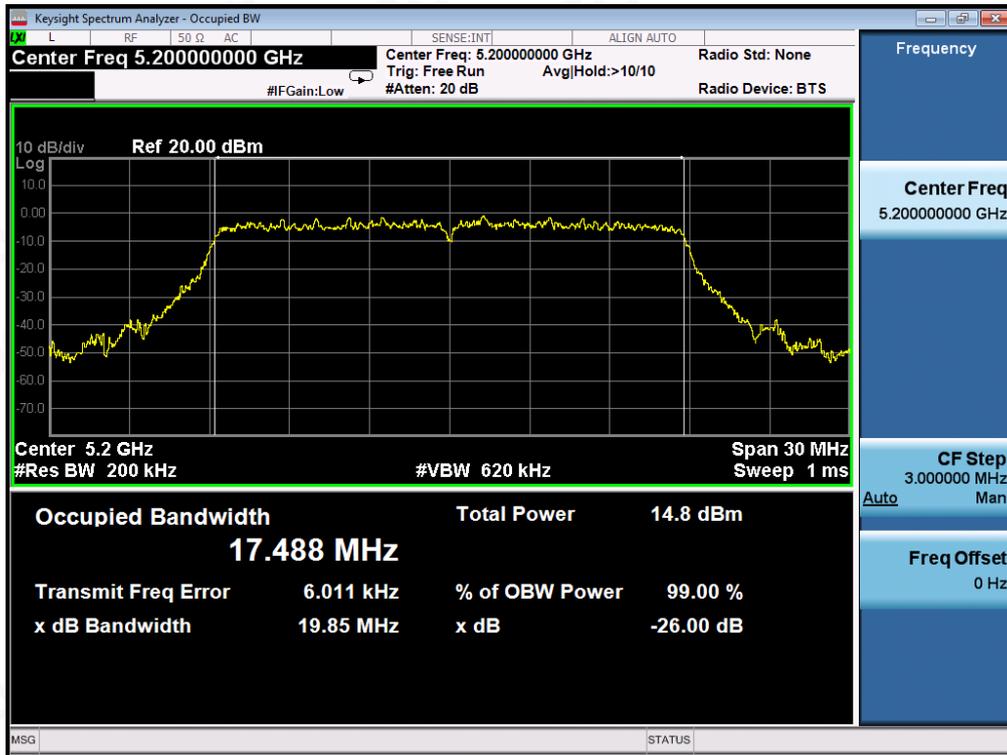
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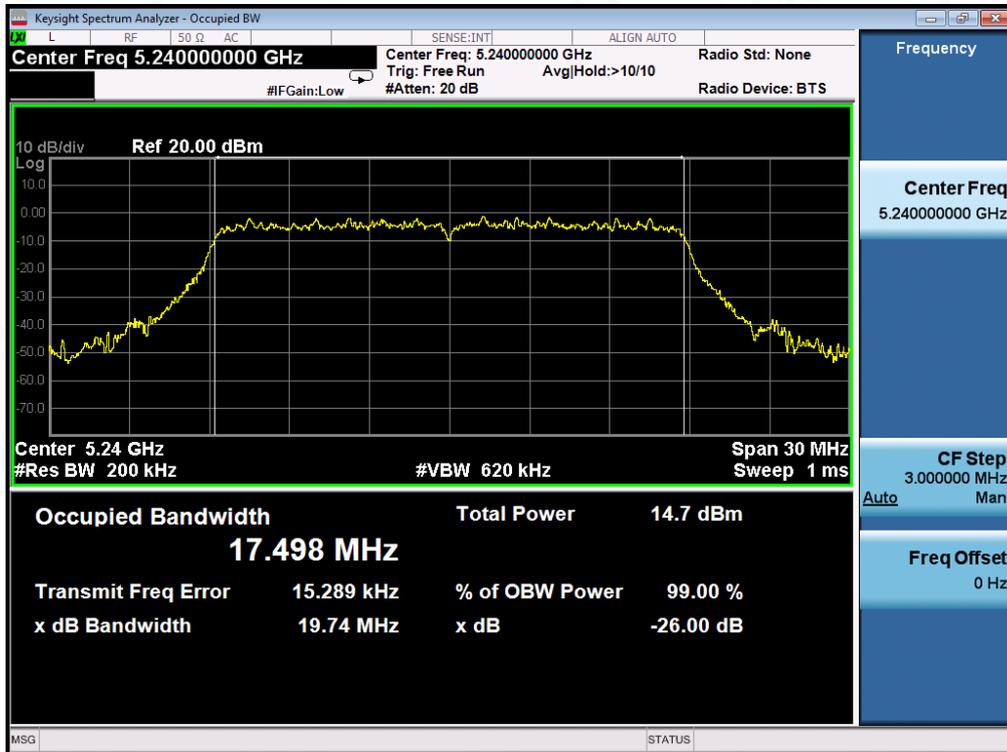
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### TEST PLOT OF BANDWIDTH FOR 5200MHZ



### TEST PLOT OF BANDWIDTH FOR 5240MHZ

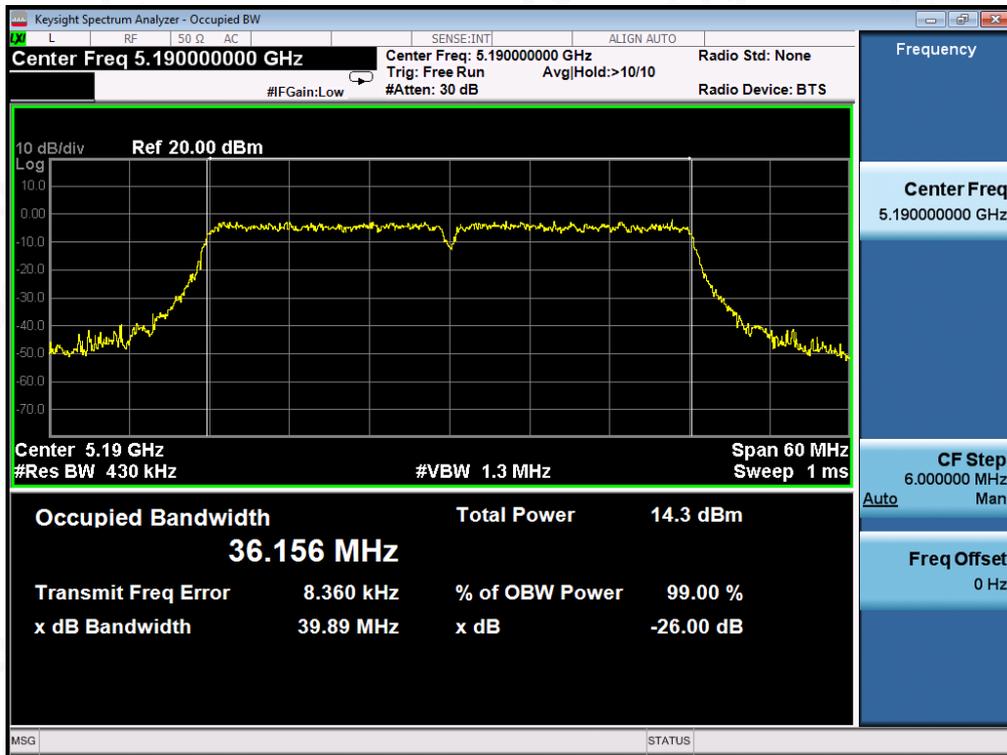


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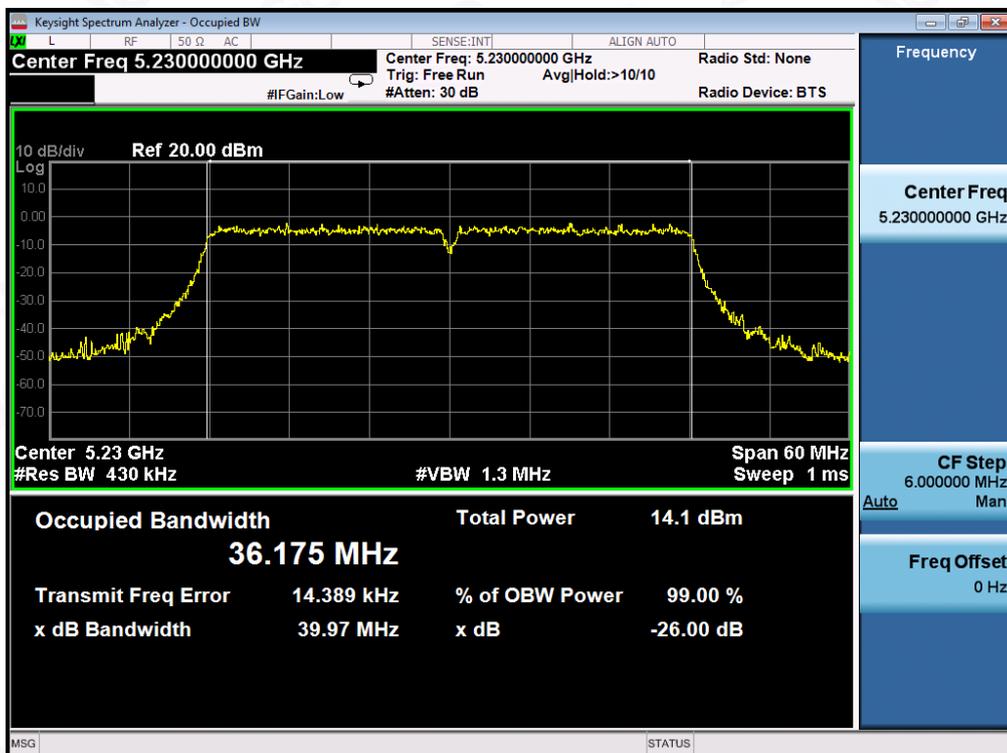
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### 802.11n40 TEST RESULT

#### TEST PLOT OF BANDWIDTH FOR 5190MHz



#### TEST PLOT OF BANDWIDTH FOR 5230MHz



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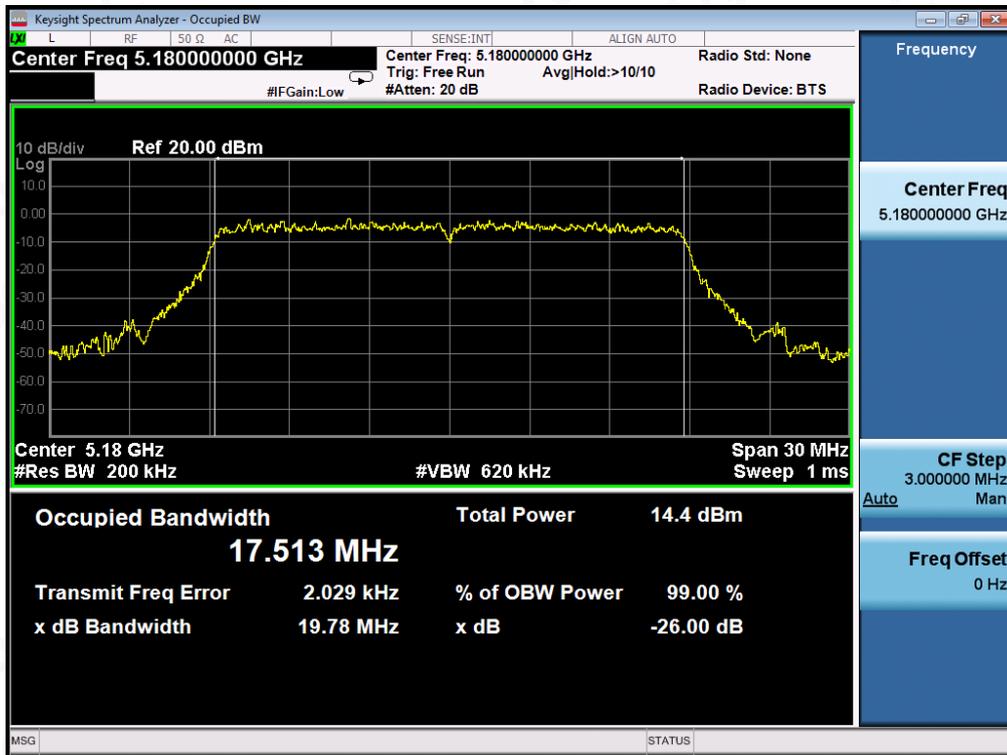
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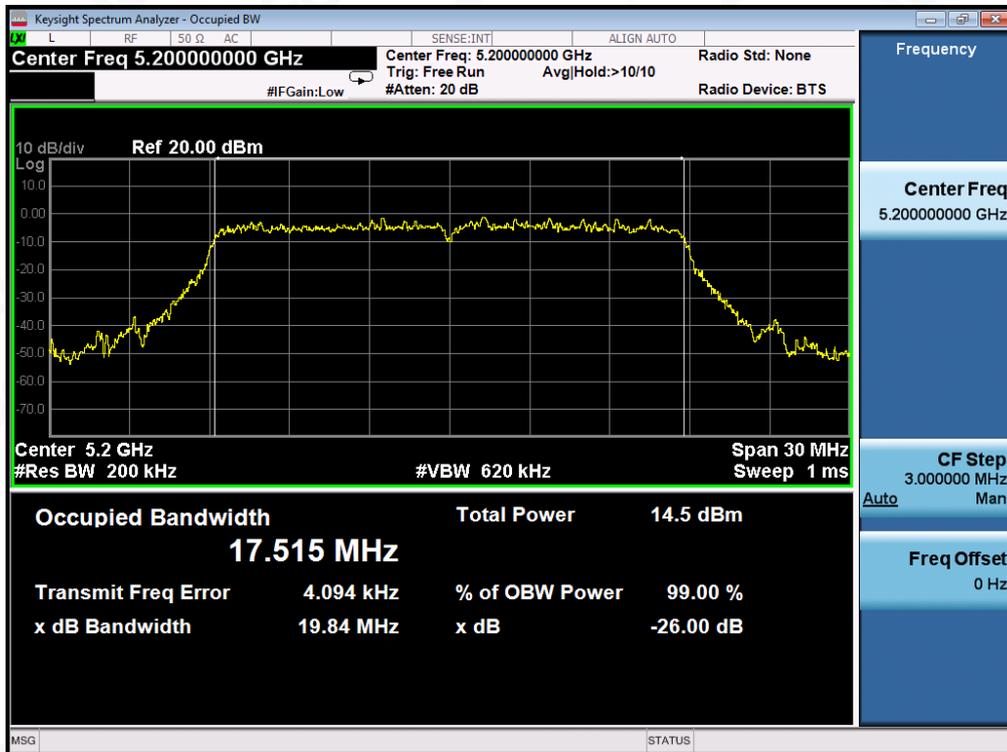
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### 802.11ac20 TEST RESULT

#### TEST PLOT OF BANDWIDTH FOR 5180MHz



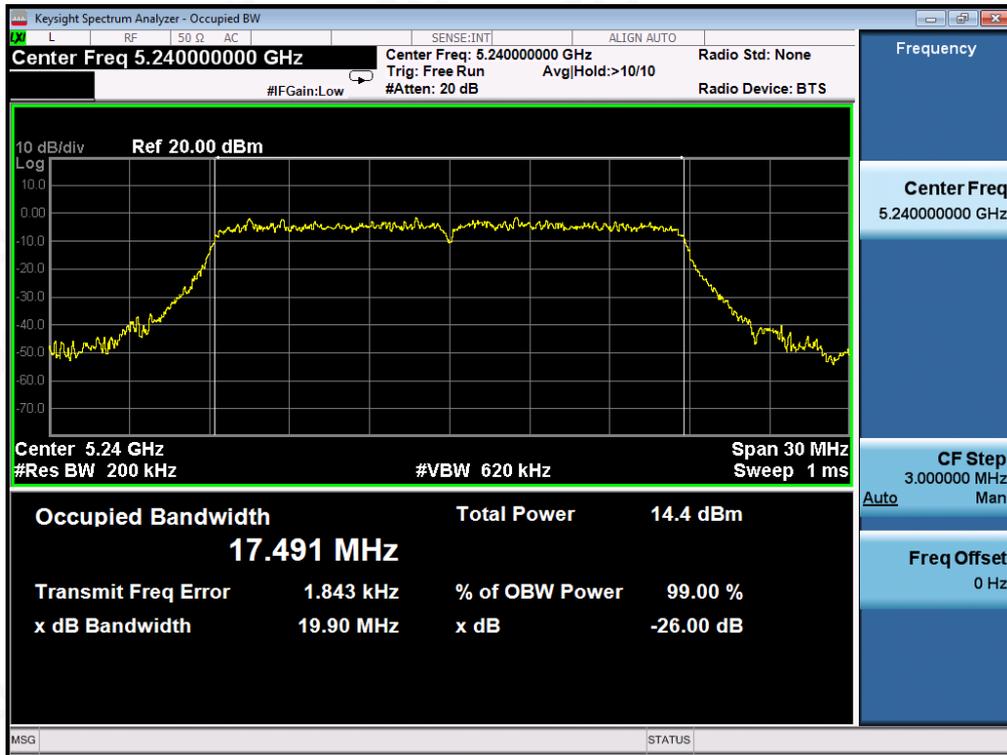
#### TEST PLOT OF BANDWIDTH FOR 5200MHz



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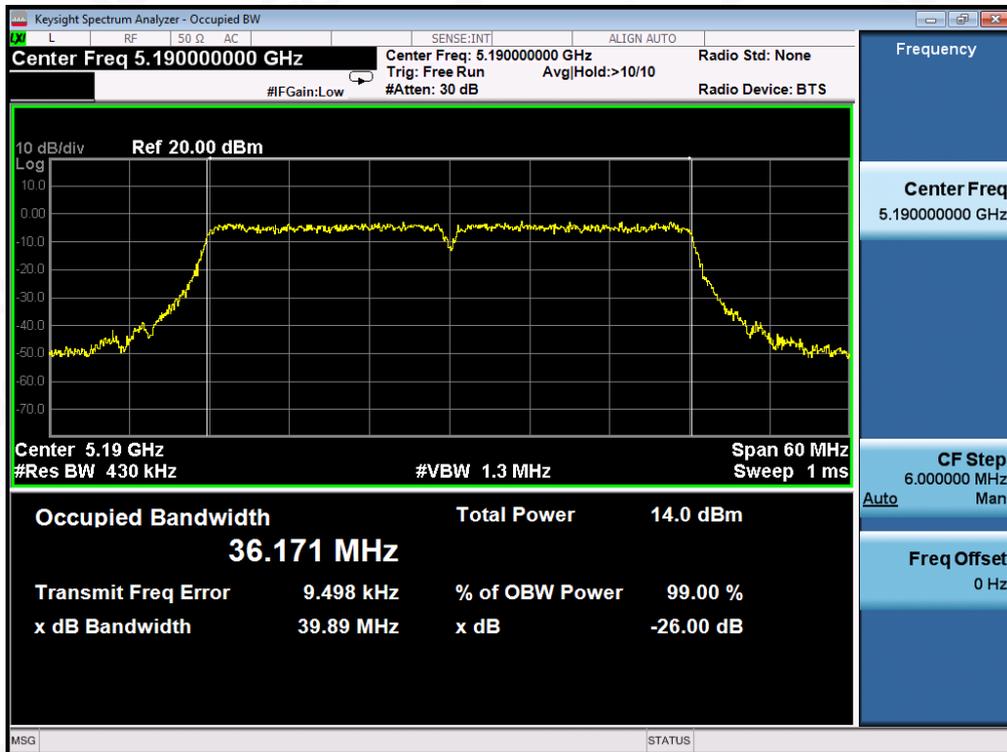
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TEST PLOT OF BANDWIDTH FOR 5240MHz



802.11ac40 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5190MHz



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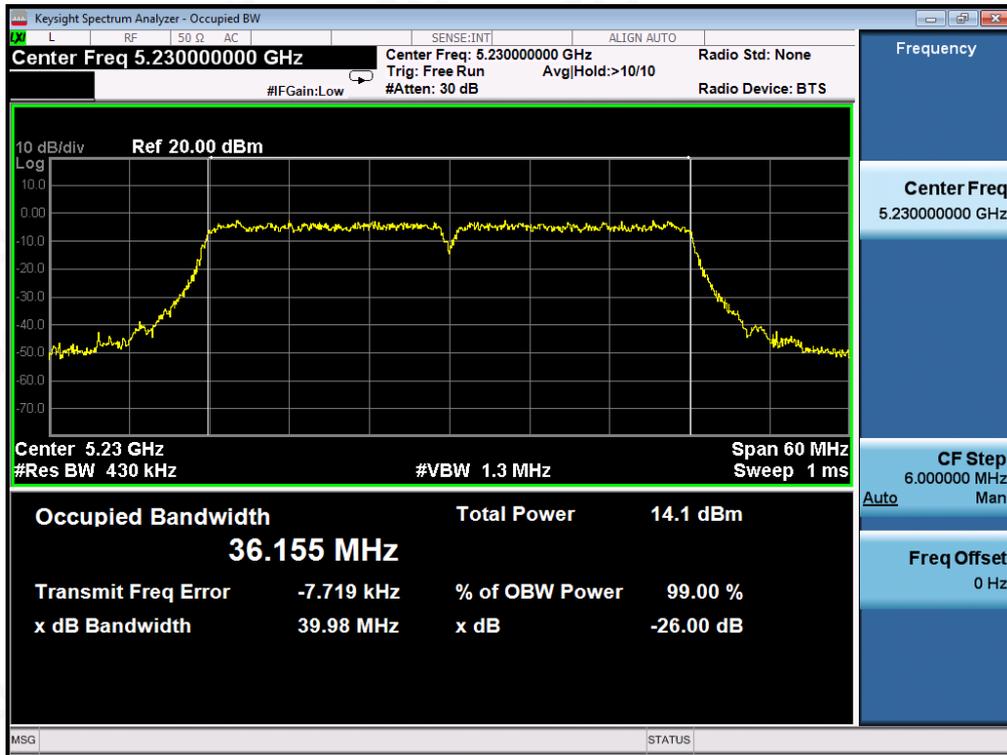
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E-mail: agc@agc-cert.com

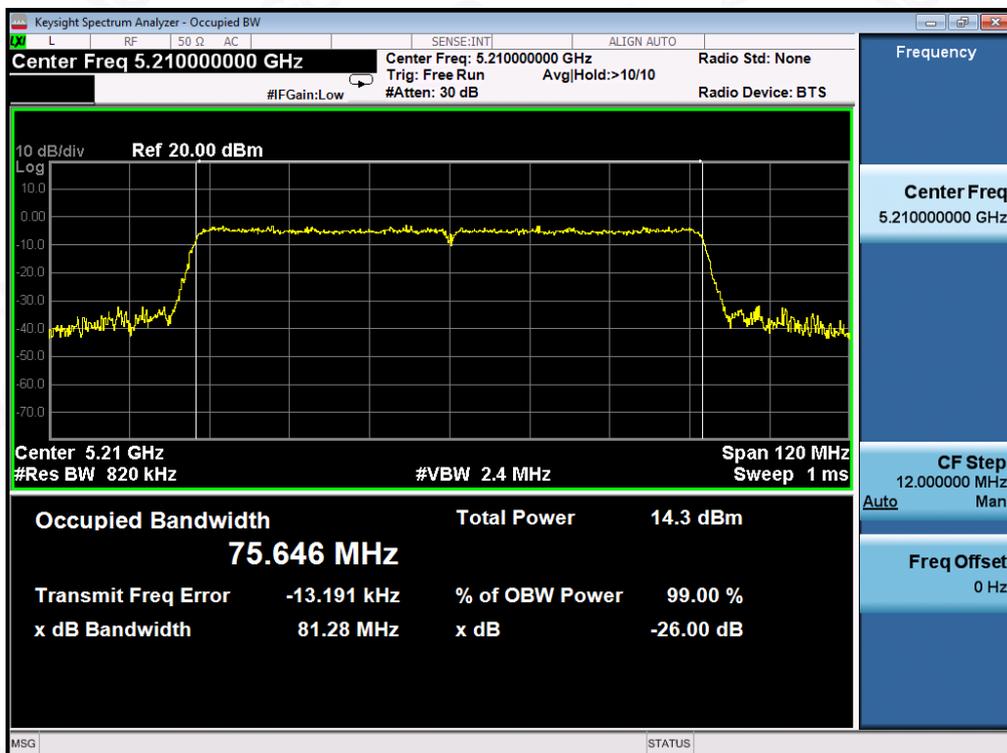
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### TEST PLOT OF BANDWIDTH FOR 5230MHZ



### 802.11ac80 TEST RESULT

### TEST PLOT OF BANDWIDTH FOR 5210MHZ



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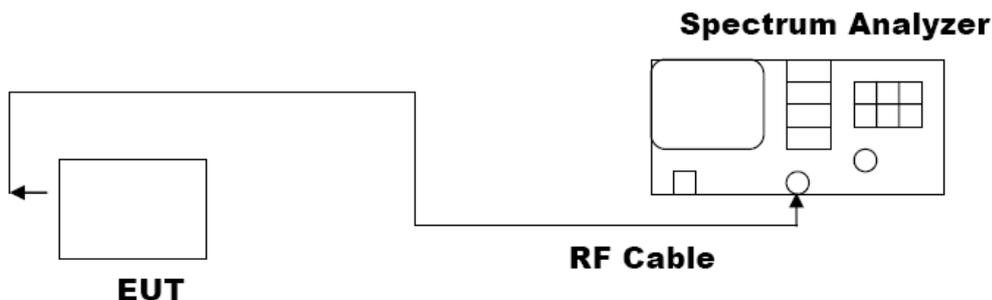
Add: 2/F., Building 2, No.1-4, Chaxi Sanwei Technial Industrial Park, Gushu,  
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## 9. MAXIMUM CONDUCTED OUTPUT PEAK POWER SPECTRAL DENSITY

### 9.1 MEASUREMENT PROCEDURE

Refer to KDB 789033 section F

### 9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



### 9.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

### 9.4 LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT FOR 802.11A MODULATION			
Frequency (MHz)	Power density (dBm/MHz)	Applicable Limits (dBm/MHz)	Pass or Fail
5180	13.106	17.00	Pass
5200	13.069	17.00	Pass
5240	13.294	17.00	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION			
Frequency (MHz)	Power density (dBm/MHz)	Applicable Limits (dBm/MHz)	Pass or Fail
5180	11.181	17.00	Pass
5200	11.101	17.00	Pass
5240	11.046	17.00	Pass
5190	8.173	17.00	Pass
5230	8.117	17.00	Pass



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LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION			
Frequency (MHz)	Power density (dBm/MHz)	Applicable Limits (dBm/MHz)	Pass or Fail
5180	9.684	17.00	Pass
5200	9.789	17.00	Pass
5240	9.529	17.00	Pass
5190	6.646	17.00	Pass
5230	6.982	17.00	Pass
5210	4.628	17.00	Pass



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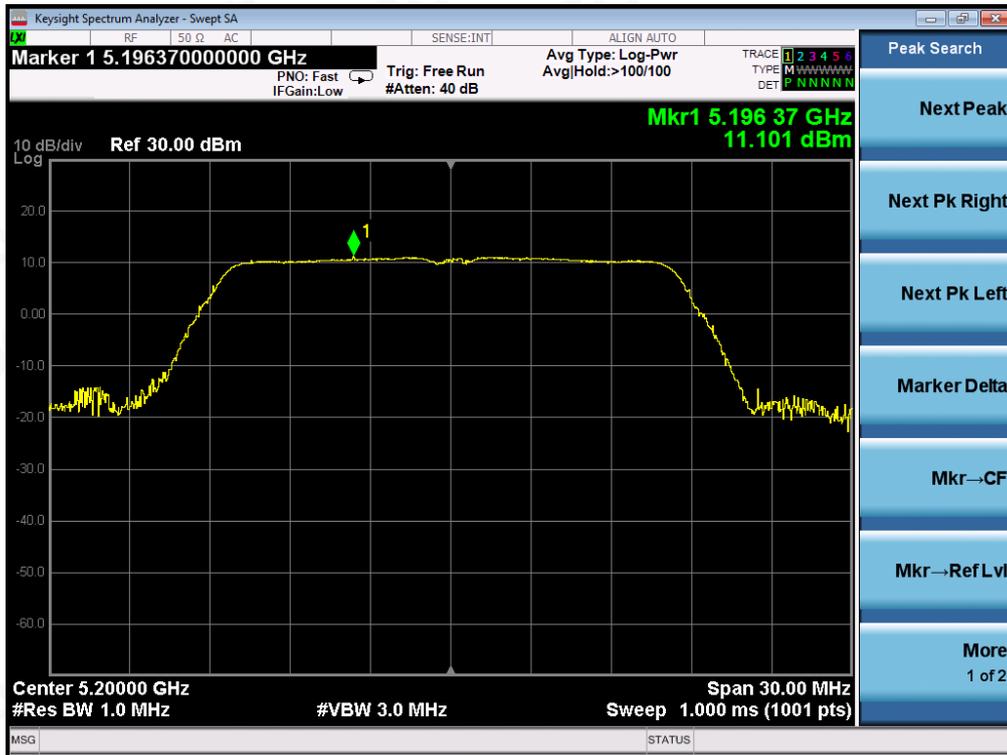
E-mail: agc@agc-cert.com

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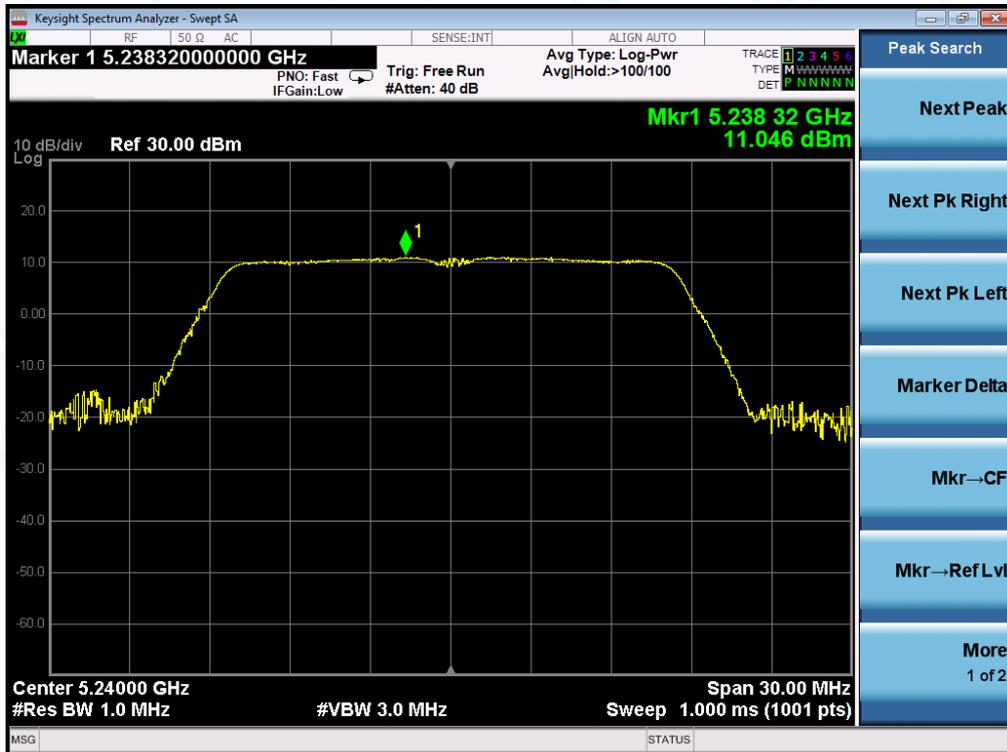




TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



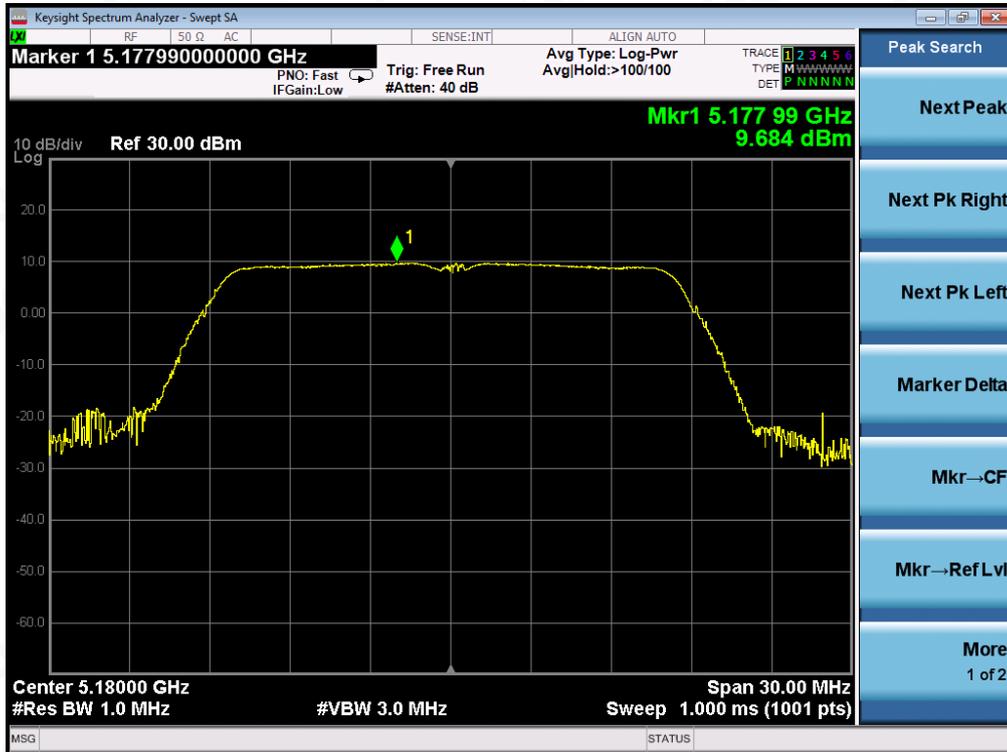
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### 802.11AC20/40/80 TEST RESULT

#### TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



#### TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



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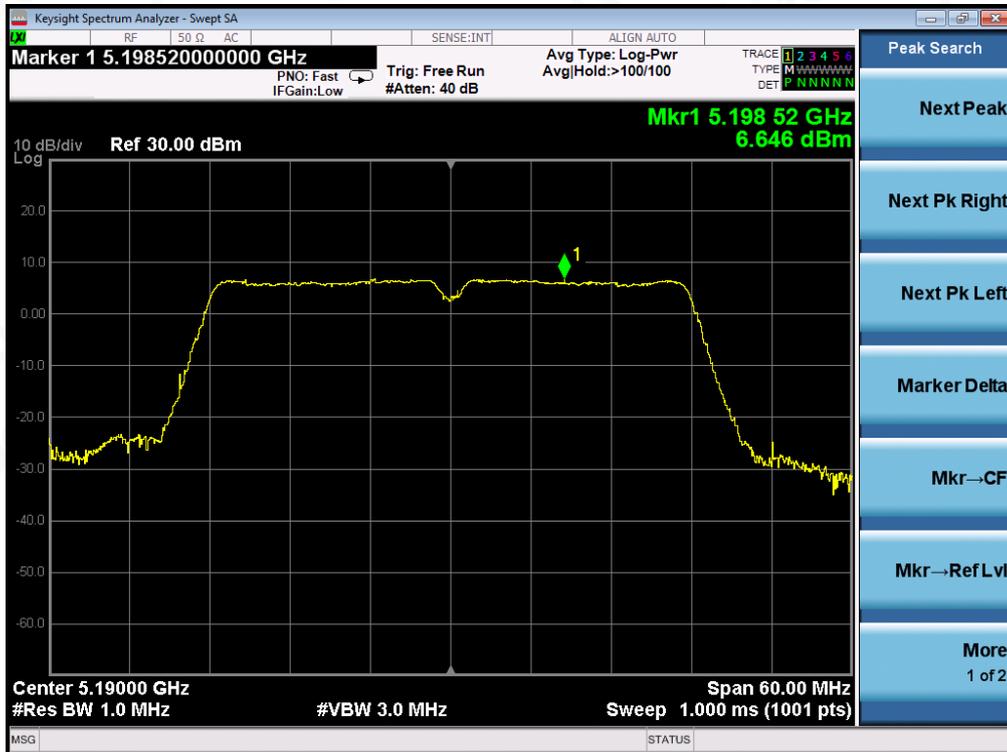
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TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz



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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		
Applicable Limits	Measurement Result	
	Test channel	Criteria
-27dBm/MHz	5150MHz-5250MHz	PASS



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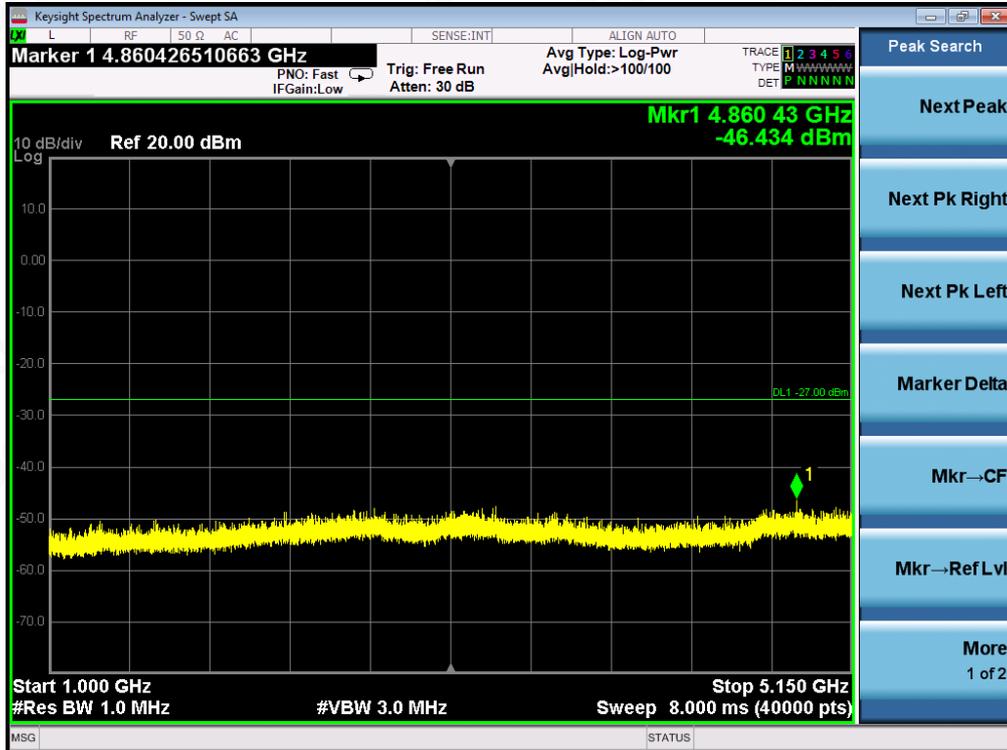
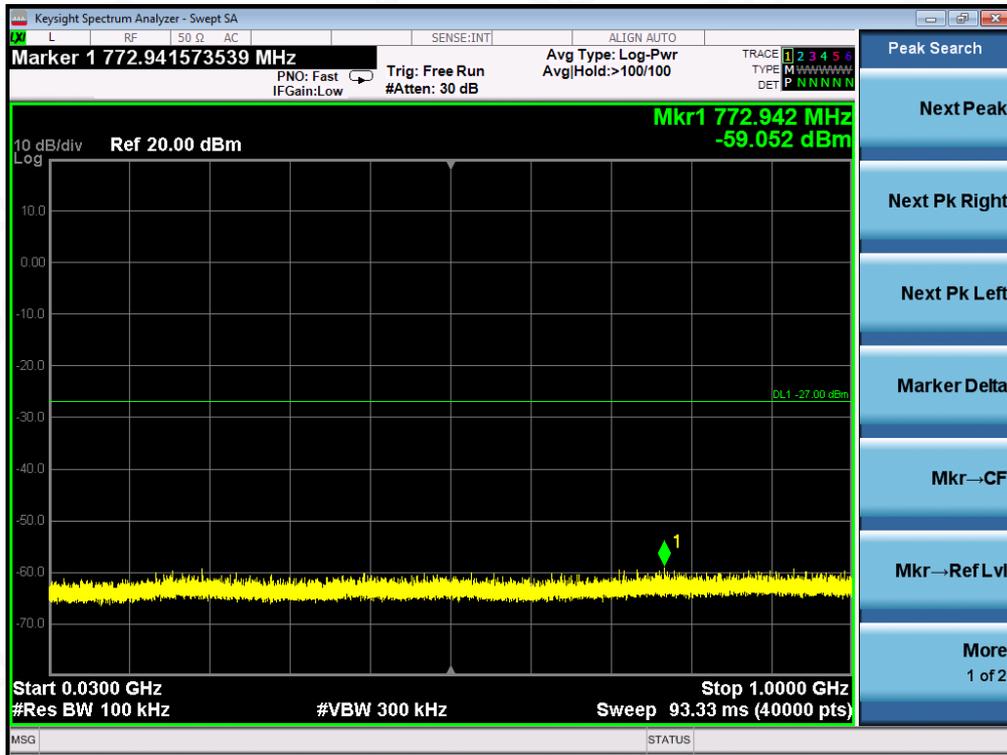
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**FOR 802.11A MODULATION**  
**TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5180MHZ**



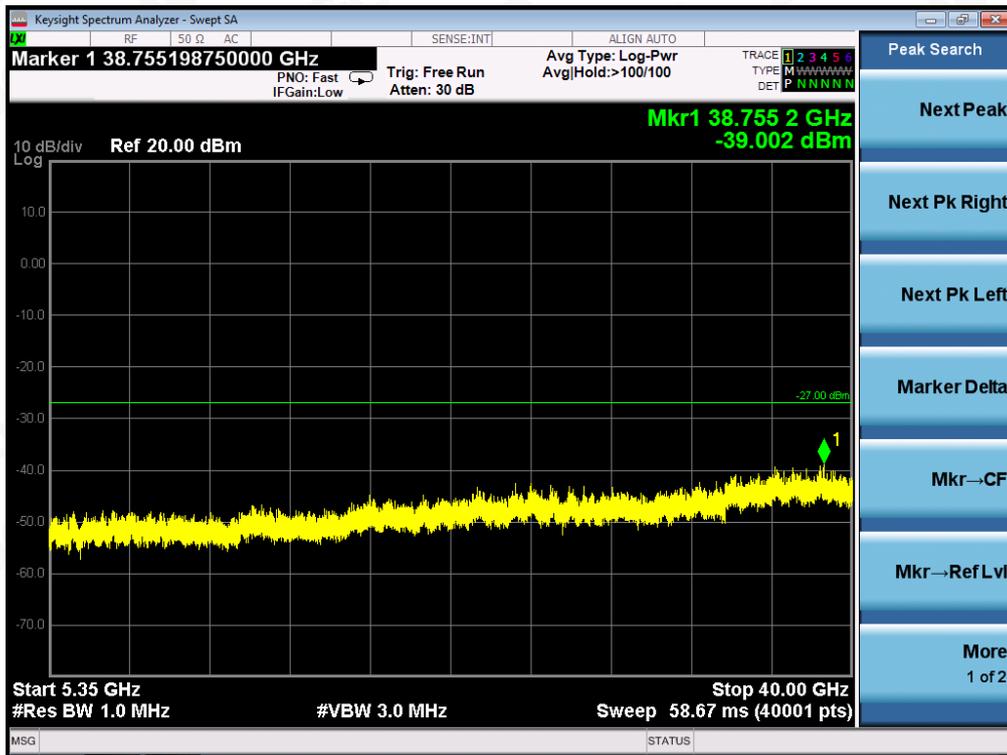
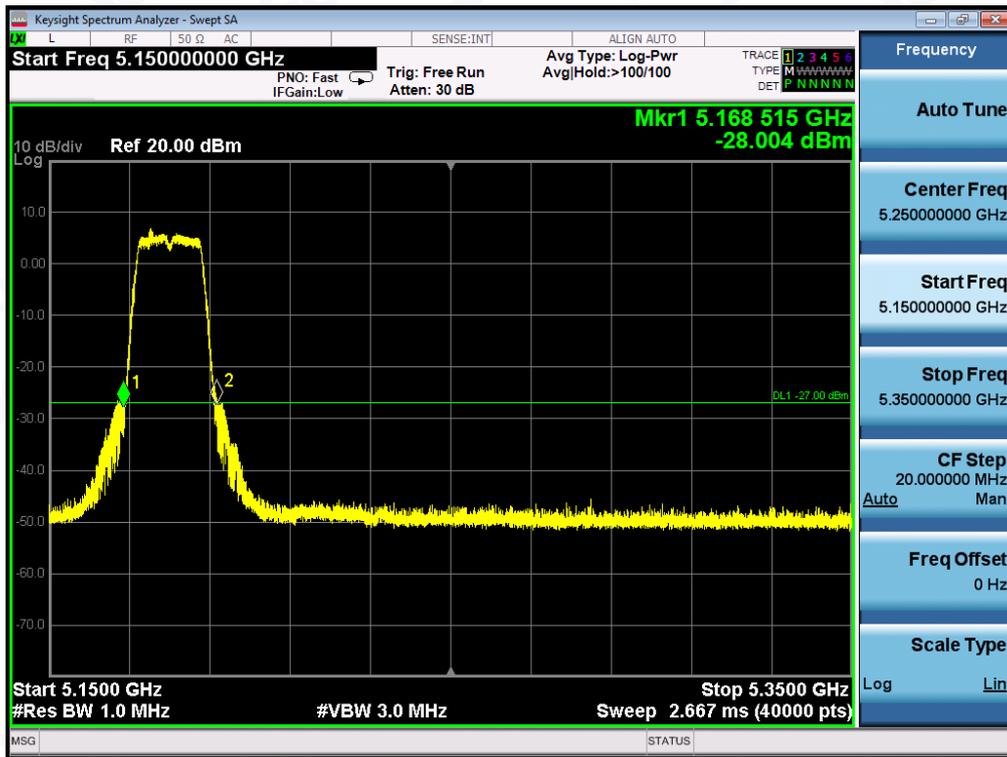
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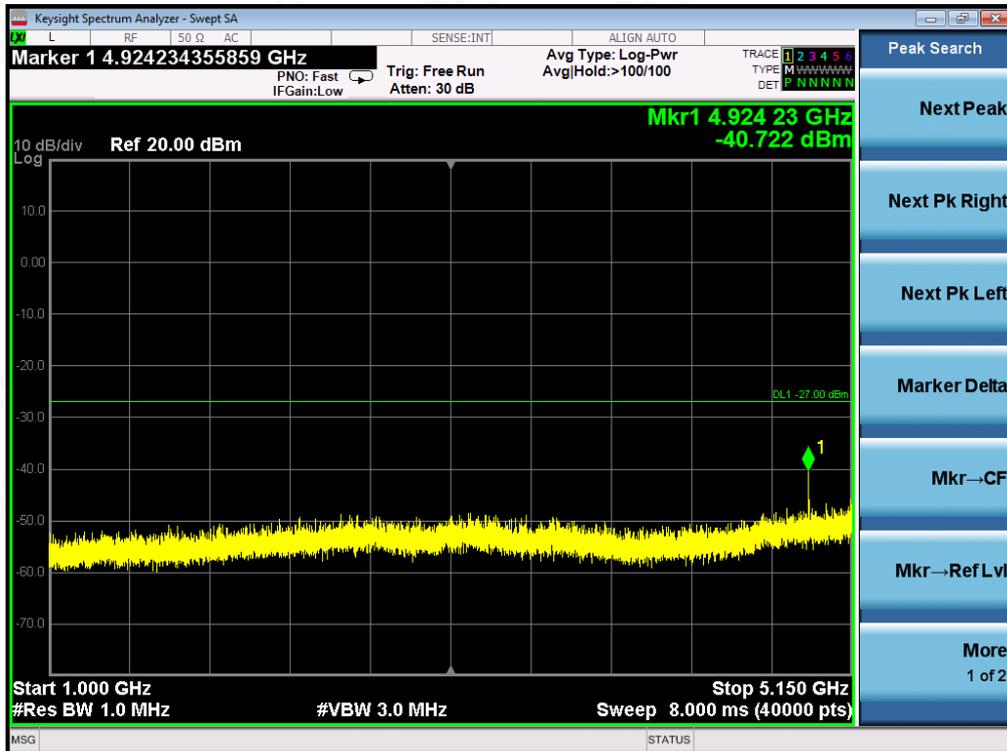
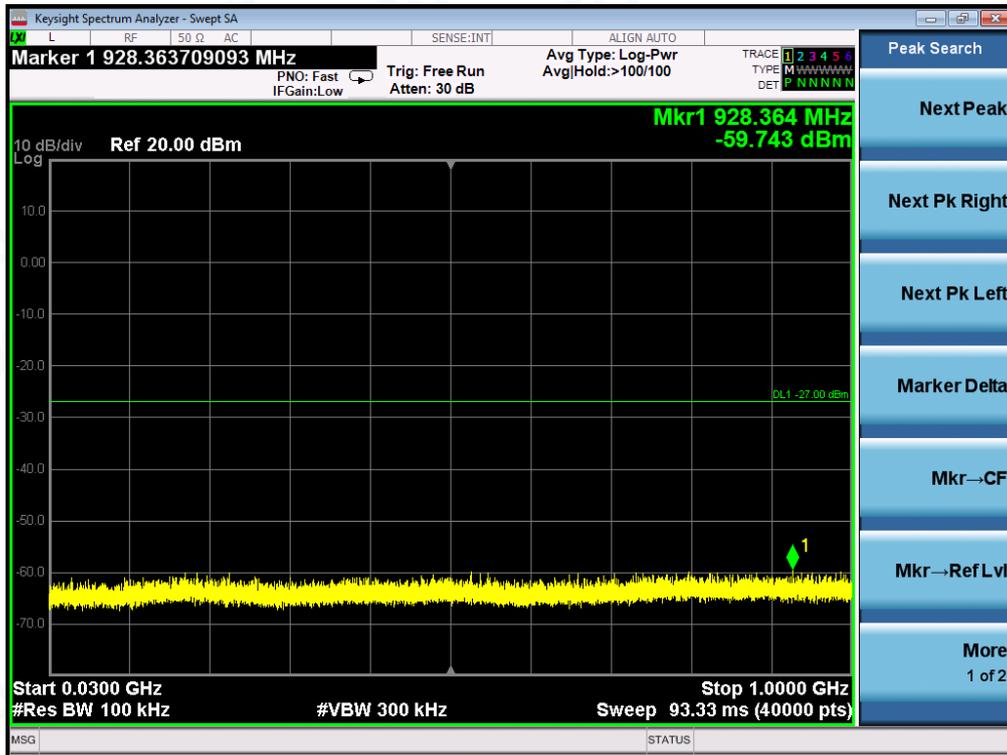
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TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5240MHz



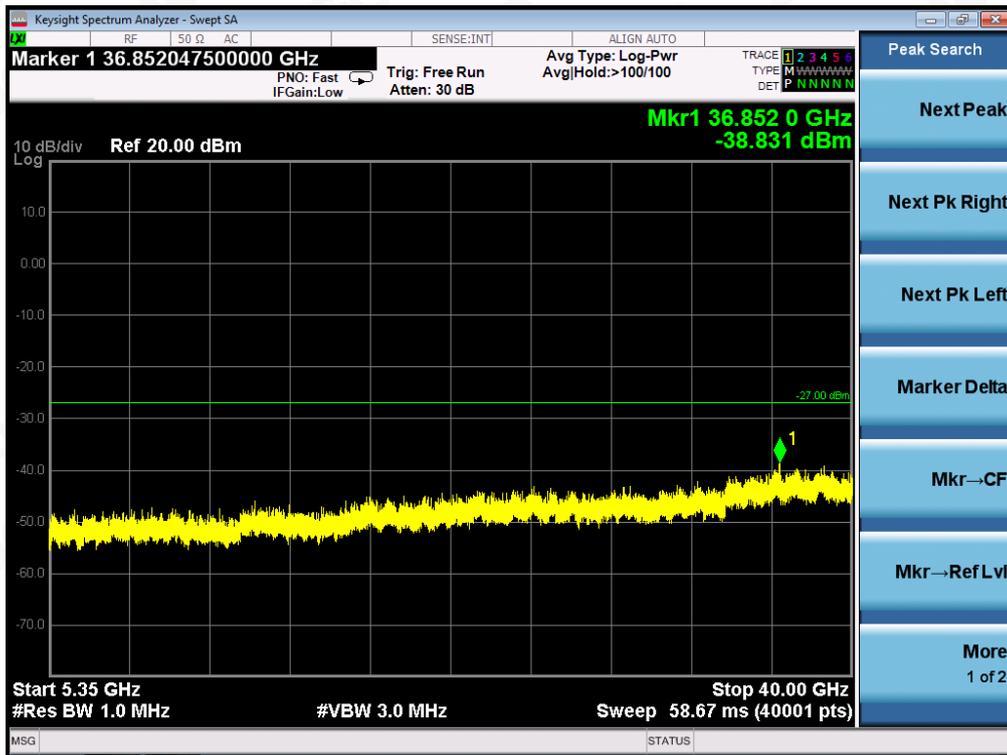
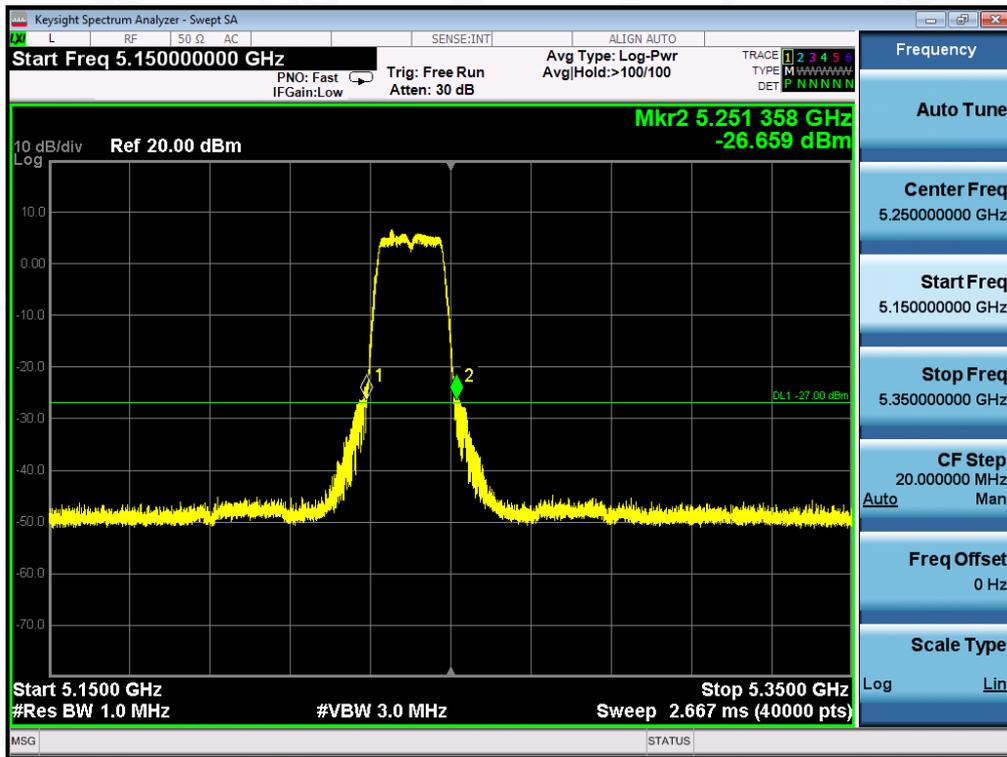
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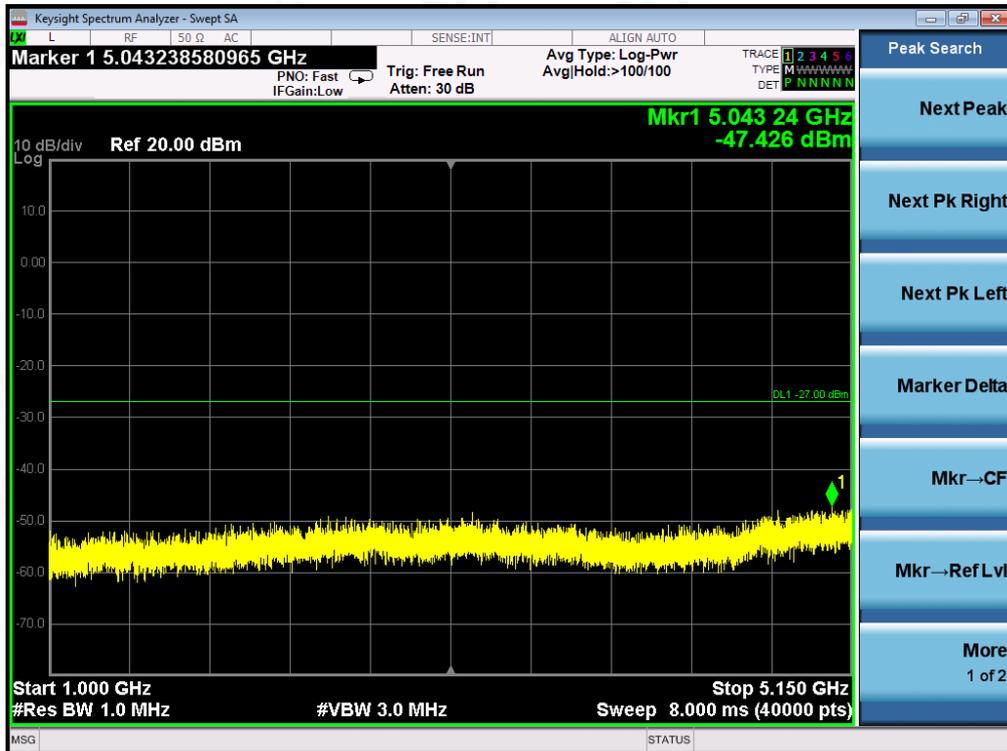
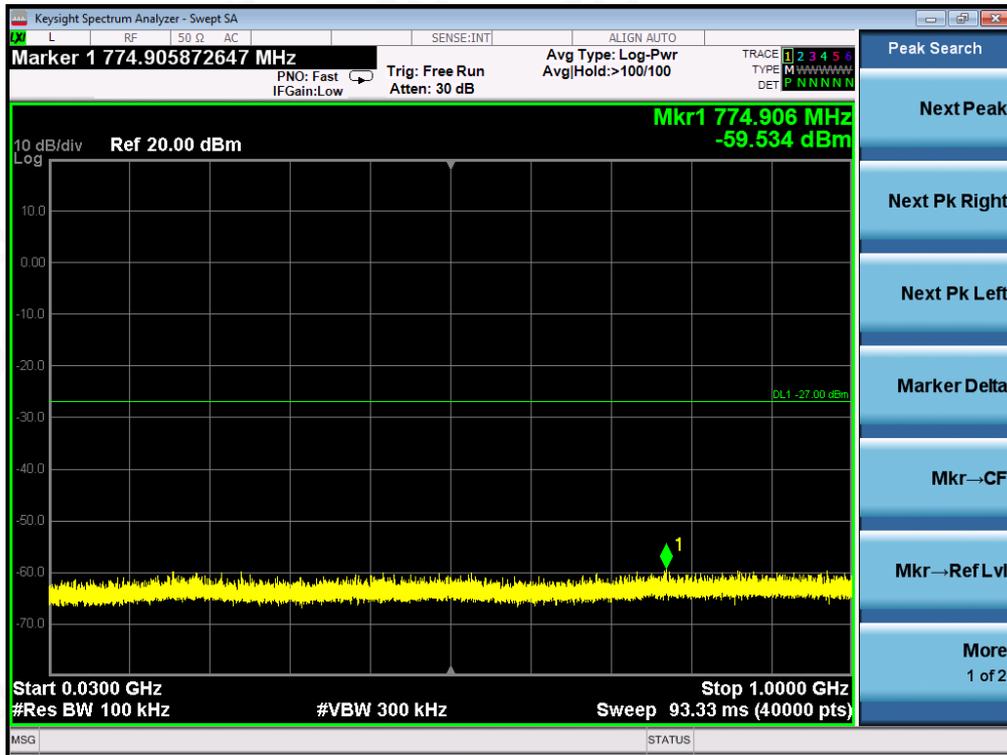
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TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5230MHz



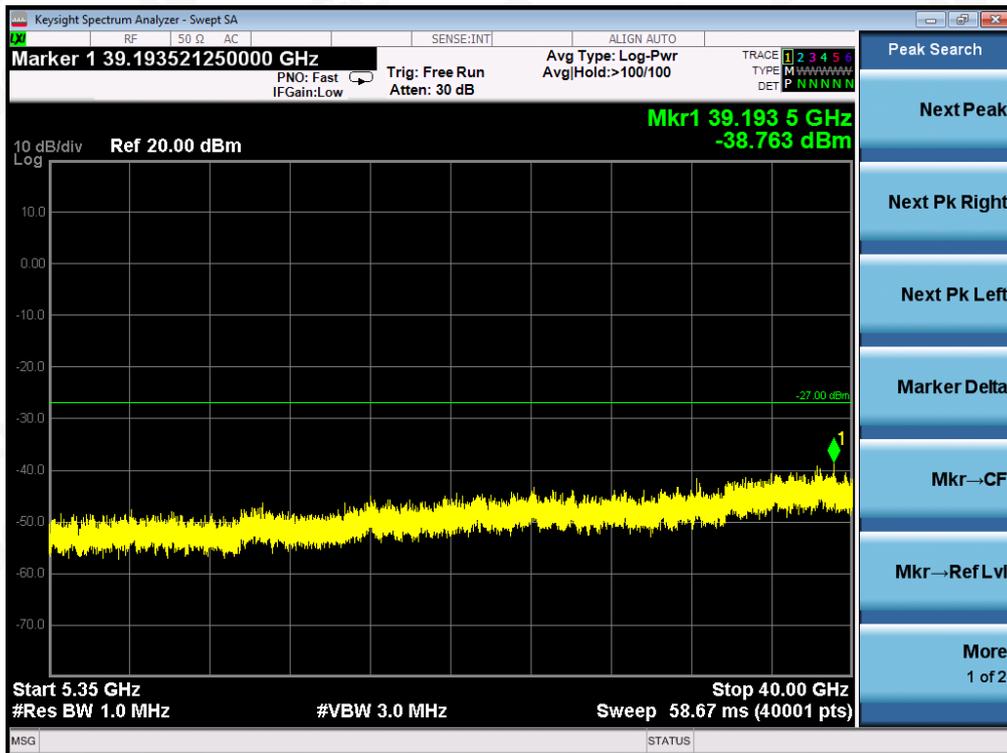
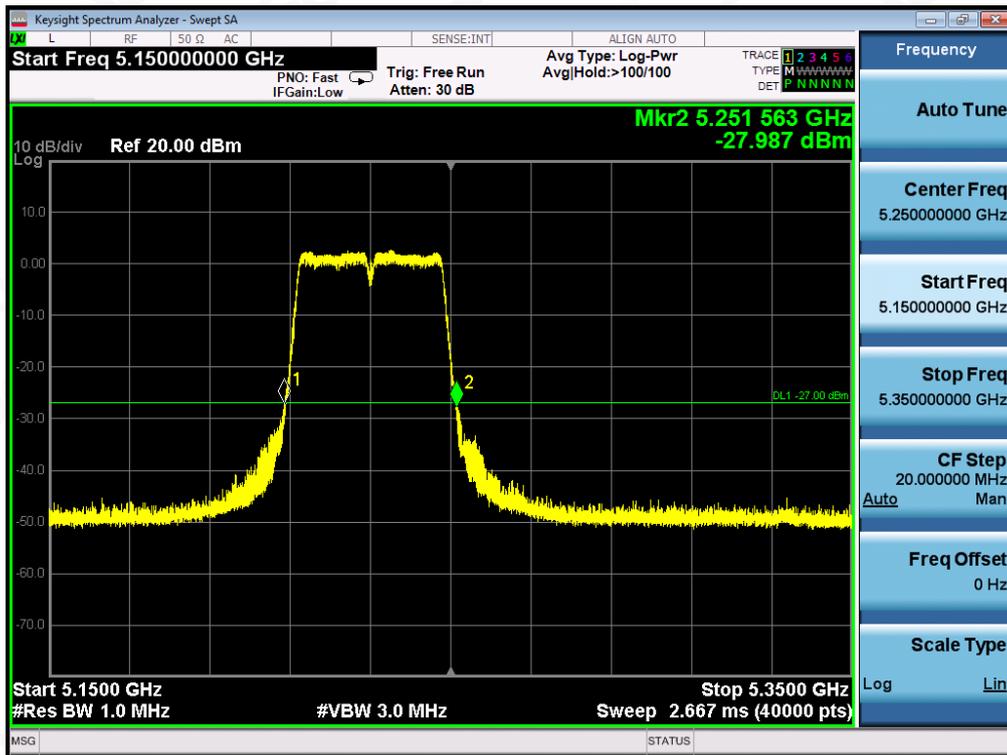
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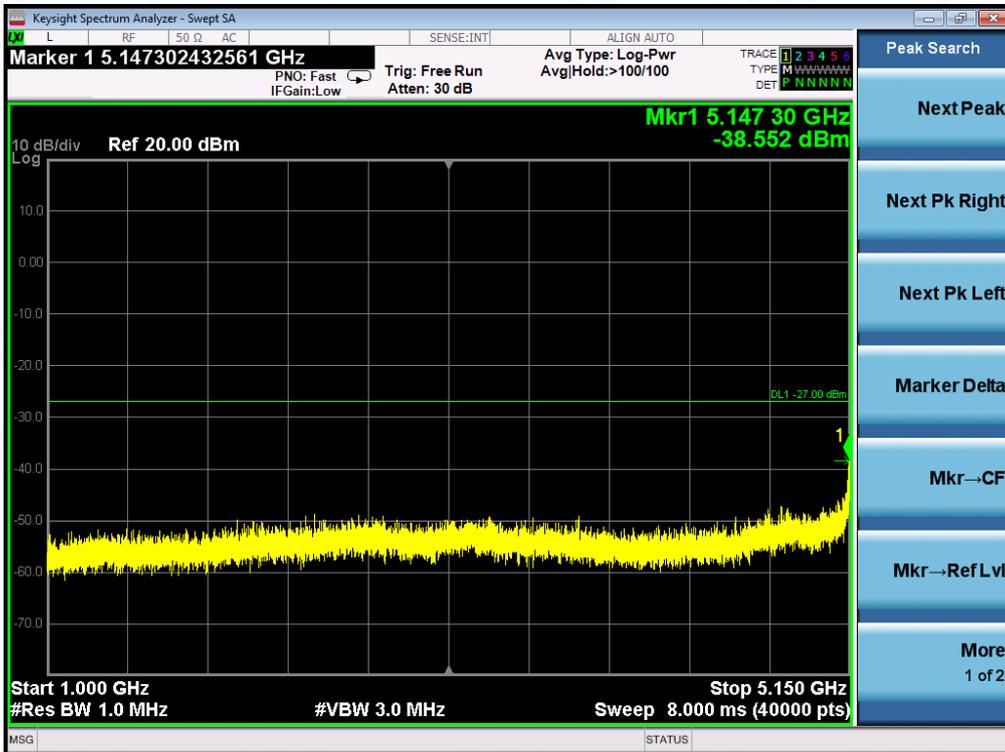
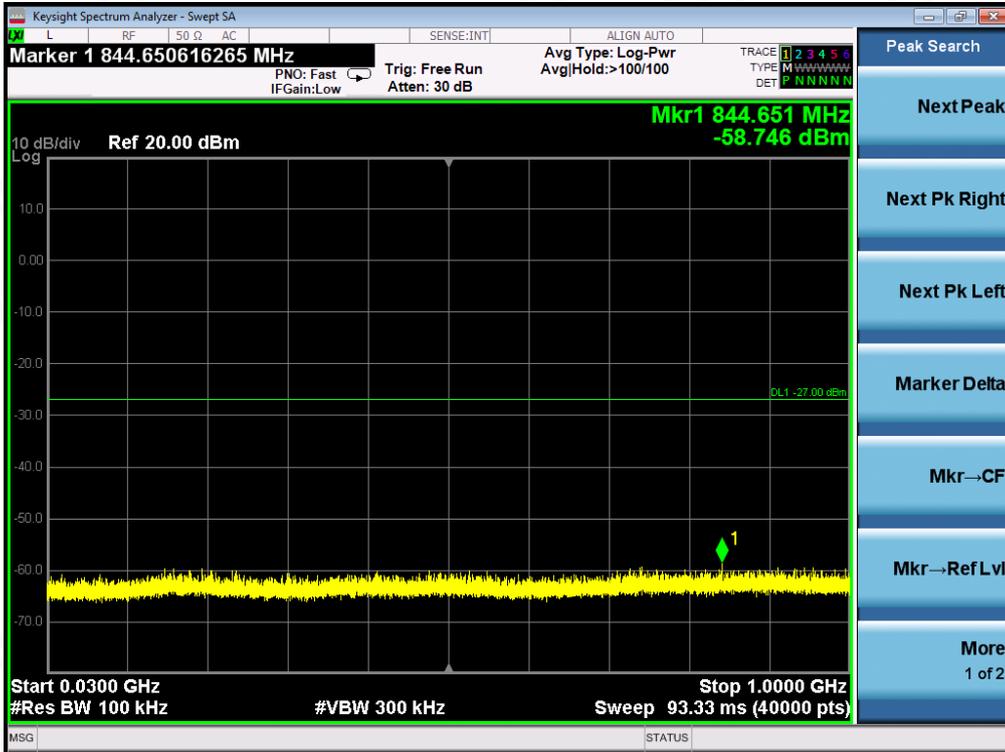
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**FOR 802.11AC80 MODULATION**

**TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5210MHZ**



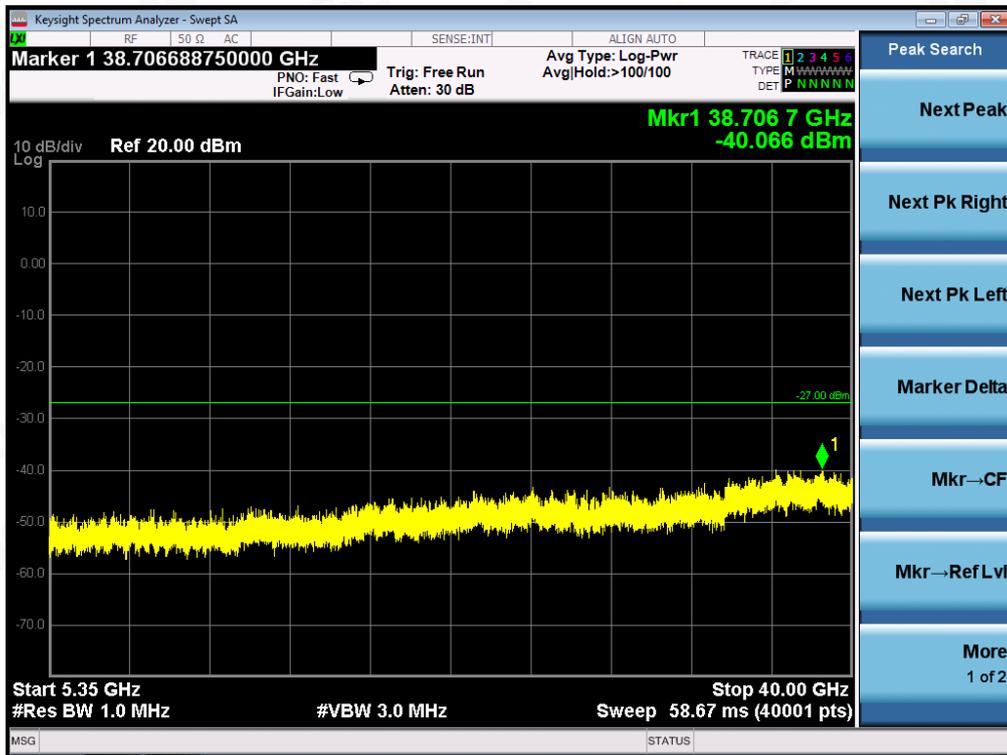
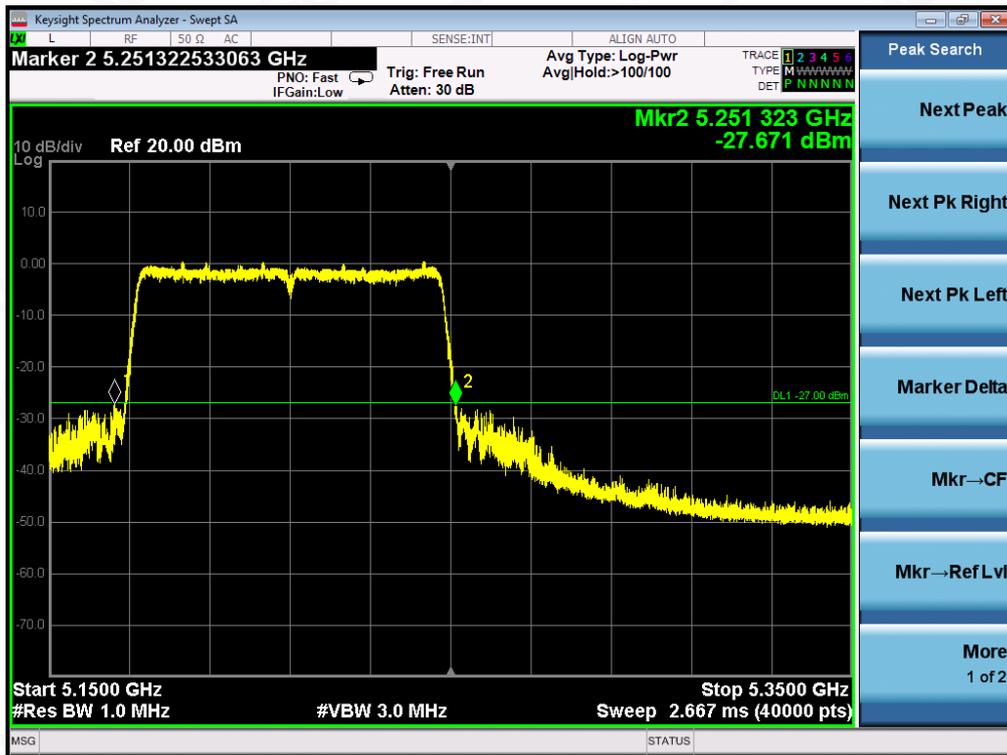
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Note: All the 20MHz bandwidth modulation had been tested, the 802.11a was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 was the worst case and record in his test report. All the 80MHz bandwidth modulation had been tested, the 802.11ac80 was the worst case and record in his test report.



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## 11. RADIATED EMISSION

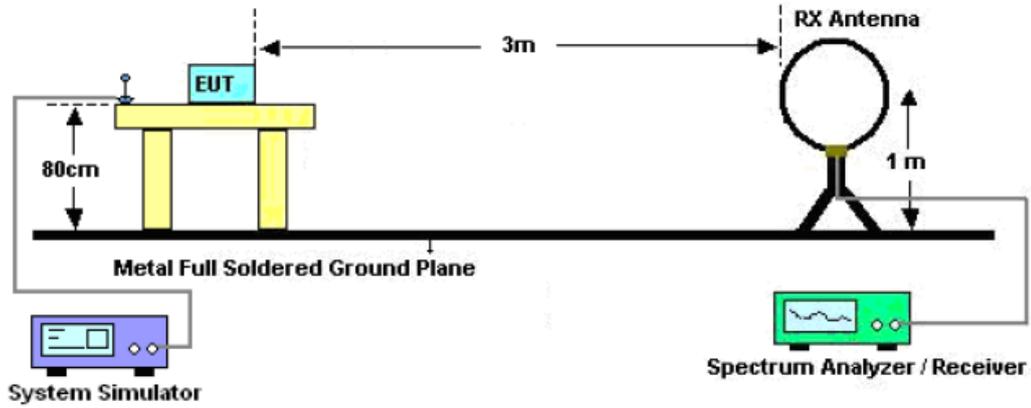
### 11.1. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3M VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

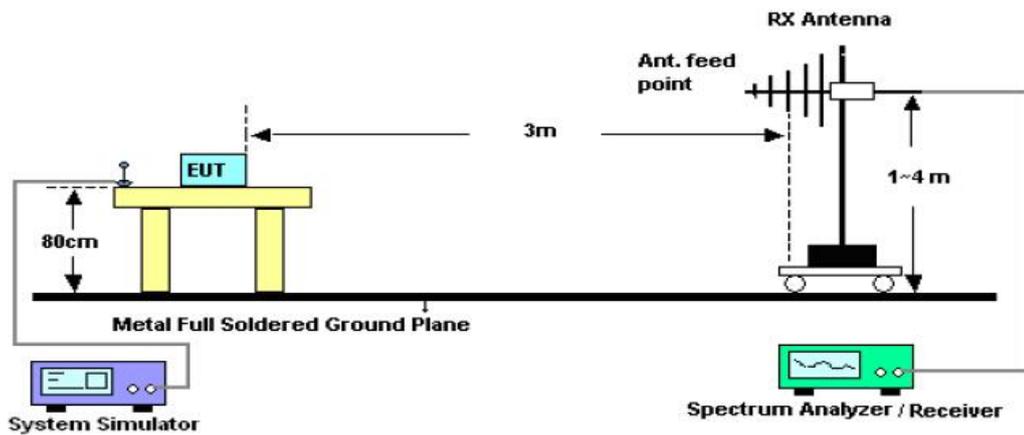


### 11.2. TEST SETUP

Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz

