FCC Test Report

Report No.: AGC01600180201FE06

FCC ID	:	SMC-SA
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	JMGO Smart Home Theater
BRAND NAME	:	N/A
MODEL NAME	:	Refer to page 5
CLIENT	:	SHENZHEN HOLATEK CO., LTD
DATE OF ISSUE	:	Mar. 31, 2018
STANDARD(S) **TEST PROCEDURE(S)**	:	FCC Part 15.407 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	/	Mar. 31, 2018	Valid	Initial Release

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1. VERIFICATION OF CONFORMITY

Applicant	SHENZHEN HOLATEK CO., LTD
Address	Rm.1001, Unit4, Bld.B, Kexing Science Park, Keyuan Road, Nashan District, Shenzhen
Manufacturer	BYD Precision Manufacturing., Ltd
Address	NO.3001, Baohe Road, Baolong Industrial Town, Longgang Shenzhen. china
Product Designation	JMGO Smart Home Theater
Brand Name	N/A
Test Model	SA
Series Model	SC, SA Pro, SC Pro, SCC, SAA, S2, S3, S4, S5, S6, S7, S8, S9, S20, S30, S40, S50, S60, S70, S80, S90, S21, S22, S23, S24, S25, S26, S27, S28, S29, S31, S32, S33, S34, S35, S36, S37, S38, S39, T11, T12, T13, T14, T15, T16, T17, T18, T19, T21, T22, T23, T24, T25, T26, T27, T28, T29, T31, T32, T33, T34, T35, T36, T37, T38, T39, S200, S300, S400, S500, S600, S700, S800, S900, S201, S202, S203, S204, S205, S206, S207, S208, S209, S301, S302, S303, S304, S305, S306, S307, S308, S309, T101, T102, T103, T104, T105, T106, T107, T108, T109, T201, T202, T203, T204, T205, T206, T207, T208, T209, T301, T302, T303, T304, T305, T306, T307, ST308, T309
Model Difference	All are the same except the model name.
Date of test	Mar. 11, 2018 to Mar. 30, 2018
Deviation	None
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.

Tested by Max Zhang

Max Zhang(Zhang Yi) Mar. 31, 2018

Reviewed by Bart Xie

Bart Xie(Xie Xiaobin)) Mar. 31, 2018

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as “JMGO Smart Home Theater”. 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

Operation Frequency	5150 MHz～5250MHz;5725 MHz～5850MHz
Output Power	IEEE 802.11a20:13.36dBm; IEEE 802.11n(20):9.36dBm; IEEE802.11 ac(20):9.28dBm; IEEE802.11n(40):7.36dBm IEEE802.11ac(40):7.25dBm EEE802.11ac(80):4.85dBm
Modulation	BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM,OFDM
Number of channels	9 for 20MHZ bandwidth system 4 for 40MHZ bandwidth system 2 for 80MHZ bandwidth system
Hardware Version	VerC
Software Version	1.0.18
Antenna Designation	Internal antenna
Number of transmit chain	1
Antenna Gain	3dBi
Power Supply	AC120V/60Hz

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency	Frequency Band	Channel Number	Frequency
5150 GHz～5250GHz	36	5180 MHz	5725 GHz～5850GHz	149	5745 MHz
	38	5190 MHz		151	5755 MHz
	40	5200 MHz		153	5765 MHz
	42	5210 MHz		155	5775MHz
	44	5220 MHz		157	5785 MHz
	46	5230 MHz		159	5795 MHz
	48	5240 MHz		161	5805 MHz
				165	5825MHz

Note: For 20MHZ bandwidth system use Channel 36,40,44,48,149,153,157,161,165; For 40MHZ bandwidth system use Channel 38,46,151,159; For 80MHZ bandwidth system use Channel 42,155

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

This submittal(s) (test report) is intended for **FCC ID: SMC-SA** 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.

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

4. DESCRIPTION OF TEST MODES

Mode	Available channel	Tested channel	Modulation	Date rate(Mbps)
802.11a/n20/ac20	36,40,44,48,149,153,157,161,165	36,38,48,149, 157,165	OFDM	6/6.5
802.11n40/ac40	38,46,151,159	38,46, 151,159	OFDM	13.5
802.11ac80	42,155	42,155	OFDM	13.5

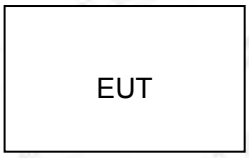
Note:

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.

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	JMGO Smart Home Theater	SA	SMC-SA	EUT

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

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2F., Bldg.2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District B112-B113, Bldg.12, Baoan Bldg Materials Center, No.1 of Xixiang Inner Ring Road, Baoan District, Shenzhen 518012
NVLAP LAB CODE	600153-0
Designation Number	CN5028
FCC Test Firm Registration Number	682566
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by National Voluntary Laboratory Accreditation program, NVLAP Code 600153-0

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun.20, 2017	Jun.19, 2018
LISN	R&S	ESH2-Z5	100086	Aug.21, 2017	Aug.20, 2018

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun.20, 2017	Jun.19, 2018
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec.08, 2017	Dec.07, 2018
Power sensor	Aglient	U2021XA	MY54110007	Sep.21, 2017	Sep.20, 2018
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep.20, 2017	Sep.19, 2018
preamplifier	ChengYi	EMC184045SE	980508	Sep.15, 2017	Sep.14, 2018
Active loop antenna (9K-30MHz)	A.H.	SAS-562B	N/A	Mar.01, 2016	Feb.28, 2018
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May.18, 2017	May.17, 2019
Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-205	Jun.20, 2017	Jun.19, 2018
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep.28, 2017	Sep.27, 2018

7. MAXIMUM CONDUCTED OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

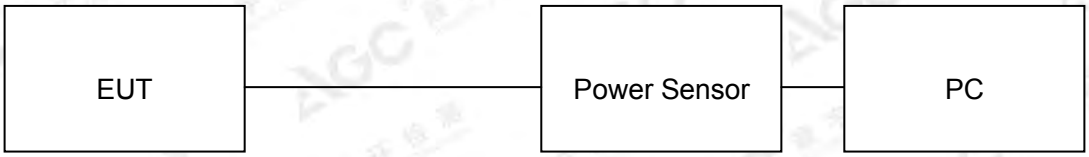
For average power test:

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



7.3. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5180	12.85	24	Pass
5200	13.12	24	Pass
5240	13.36	24	Pass
5745	12.15	30	Pass
5785	12.36	30	Pass
5825	12.69	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5180	9.16	24	Pass
5200	9.25	24	Pass
5240	9.36	24	Pass
5745	8.79	30	Pass
5785	8.89	30	Pass
5825	9.04	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5180	9.04	24	Pass
5200	9.12	24	Pass
5240	9.28	24	Pass
5745	8.54	30	Pass
5785	8.72	30	Pass
5825	8.68	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N40 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5190	7.25	24	Pass
5230	7.36	24	Pass
5755	6.85	30	Pass
5795	6.74	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC40 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5190	7.14	24	Pass
5230	7.25	24	Pass
5755	6.74	30	Pass
5795	6.52	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC80 MODULATION			
Frequency (MHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
5210	4.85	24	Pass
5775	4.12	30	Pass

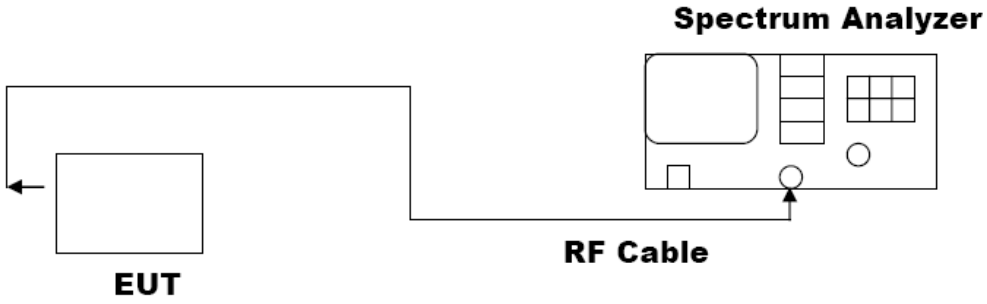
8. 6dB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on operation frequency individually.
3. Set RBW = 100kHz.
4. Set the VBW ⩾3*RBW. Detector = Peak. Trace mode = max hold.
5. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.

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

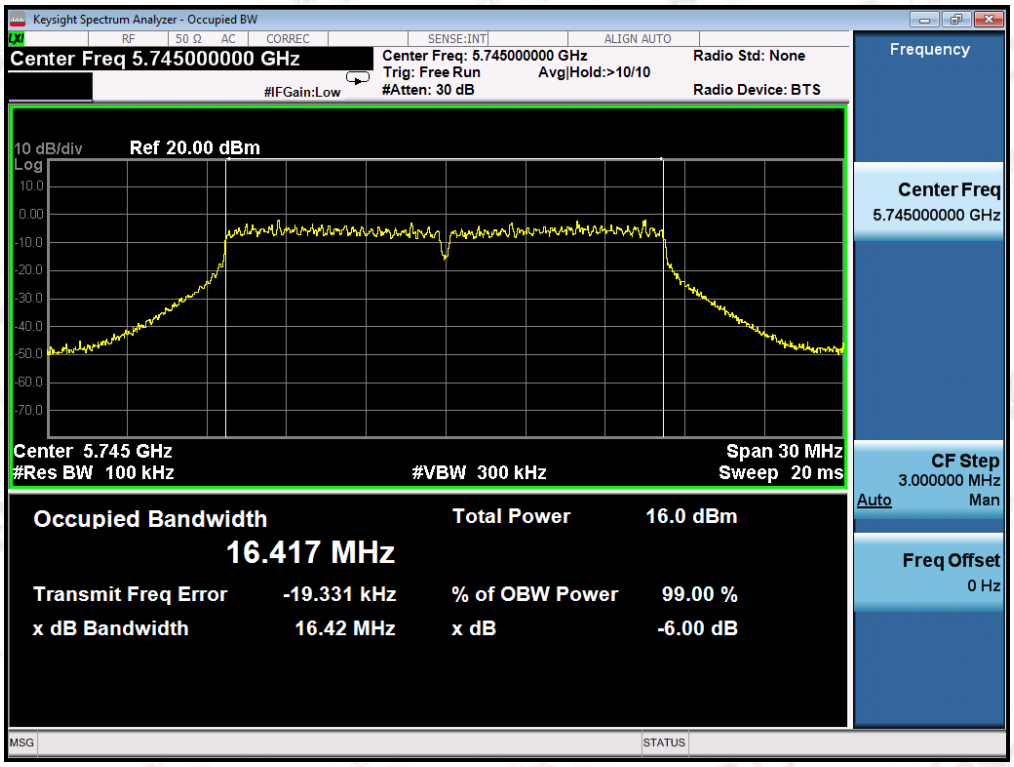
LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
>500KHZ	5745MHz	16.42	PASS
	5785MHz	16.41	PASS
	5825MHz	16.44	PASS

LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
>500KHZ	5745MHz	17.58	PASS
	5785MHz	17.61	PASS
	5825MHz	17.61	PASS
	5755MHz	36.39	PASS
	5795MHz	36.32	PASS

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
>500KHZ	5745MHz	17.58	PASS
	5785MHz	17.64	PASS
	5825MHz	17.58	PASS
	5755MHz	36.38	PASS
	5795MHz	36.34	PASS
	5775MHz	75.73	PASS

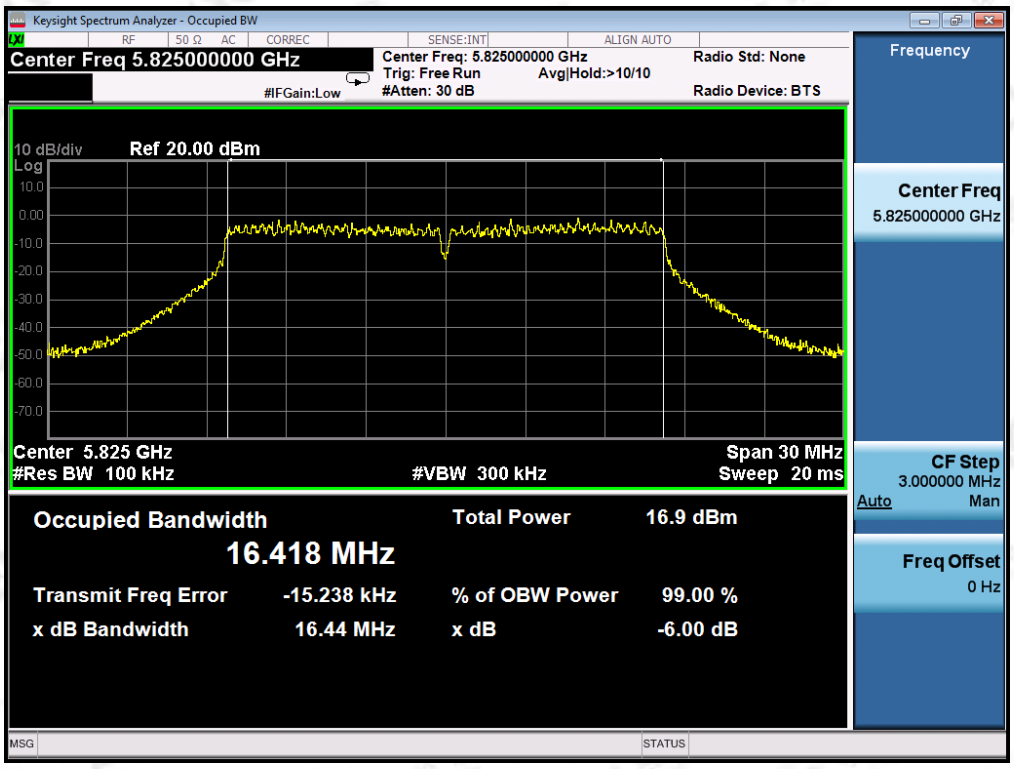
802.11a20 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5745MHz



TEST PLOT OF BANDWIDTH FOR 5785MHz

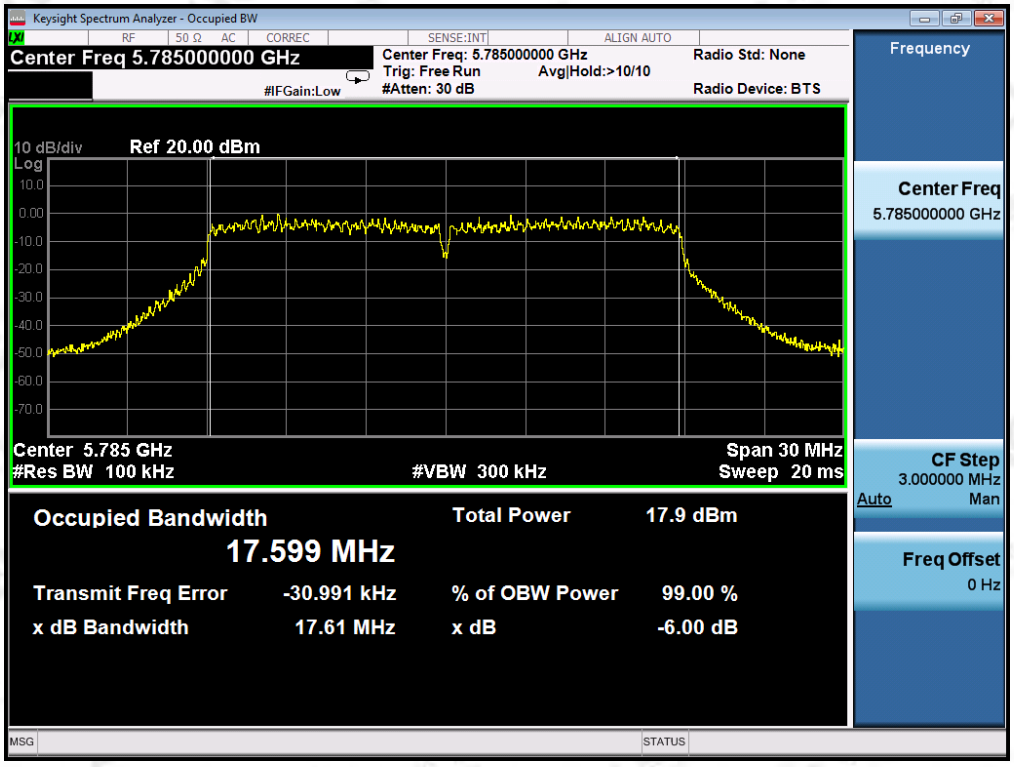
TEST PLOT OF BANDWIDTH FOR 5825MHz



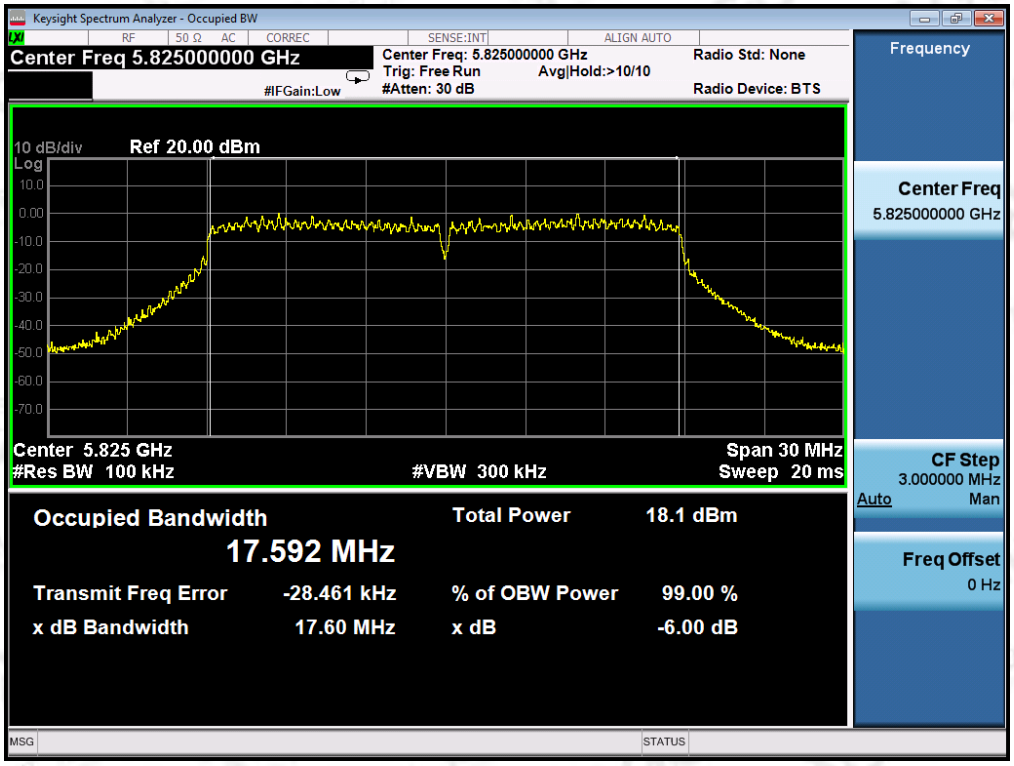
802.11n20 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5745MHz

TEST PLOT OF BANDWIDTH FOR 5785MHz

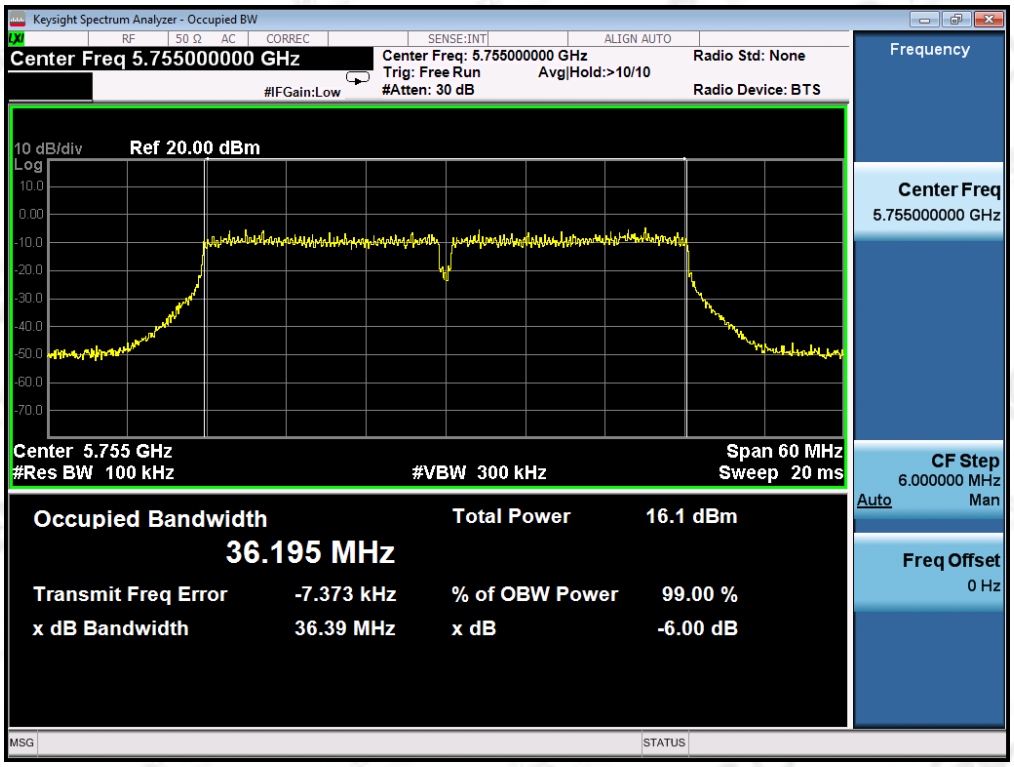


TEST PLOT OF BANDWIDTH FOR 5825MHz



802.11n40 TEST RESULT

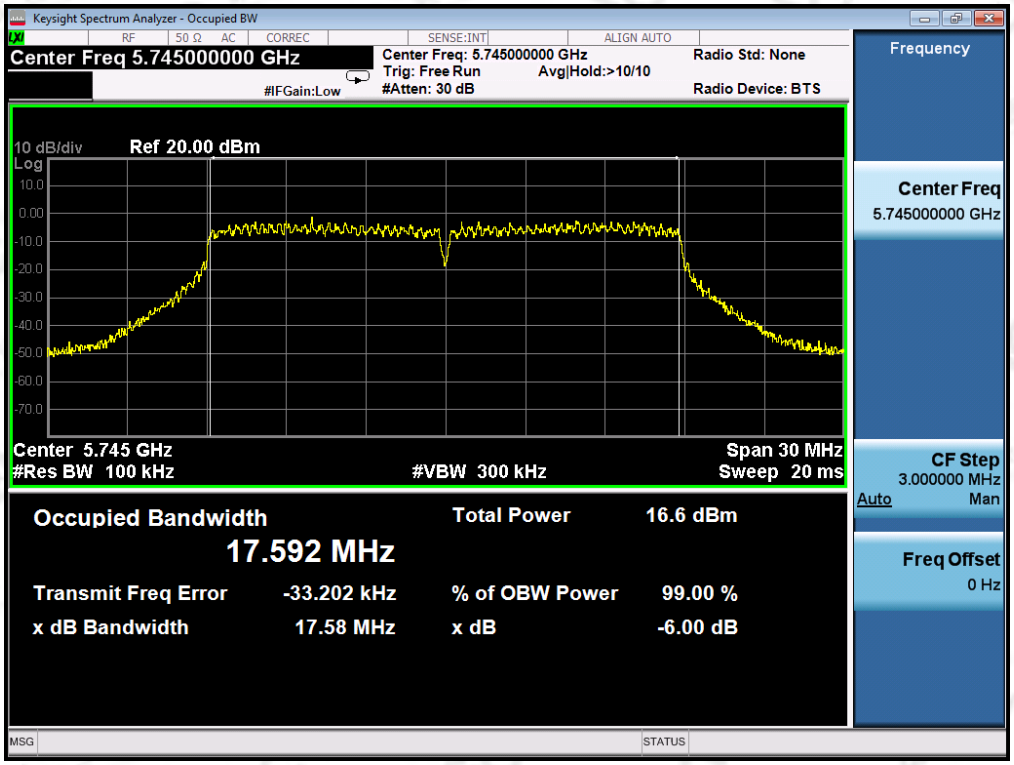
TEST PLOT OF BANDWIDTH FOR 5755MHz



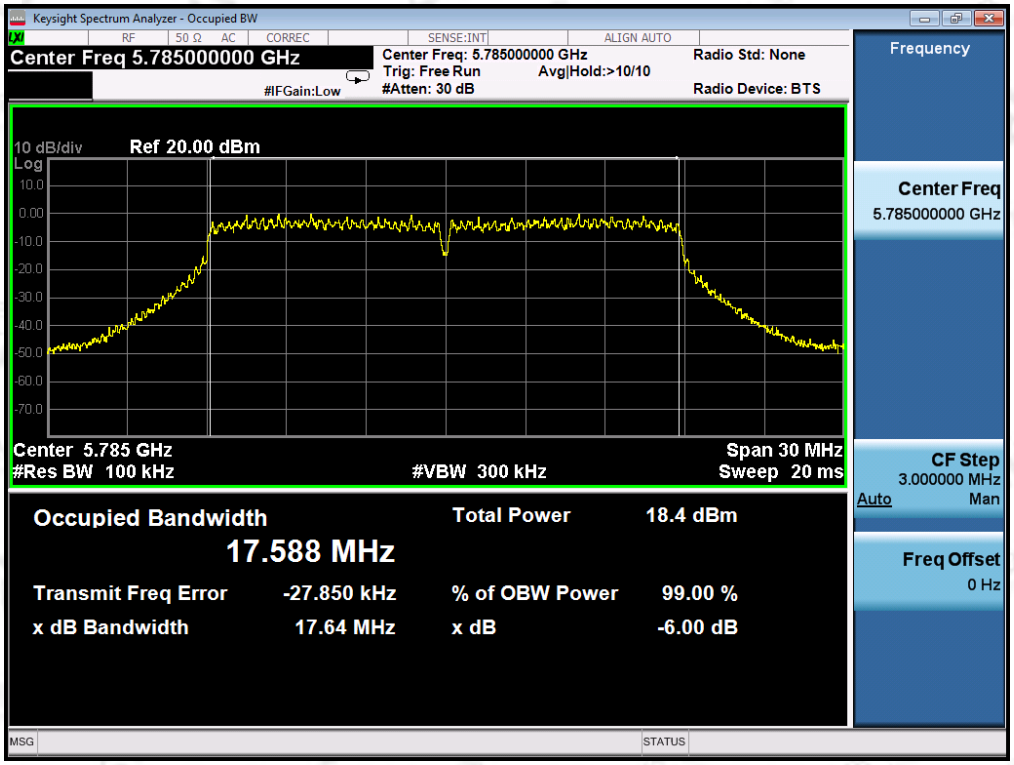
TEST PLOT OF BANDWIDTH FOR 5795MHz

802.11ac20 TEST RESULT

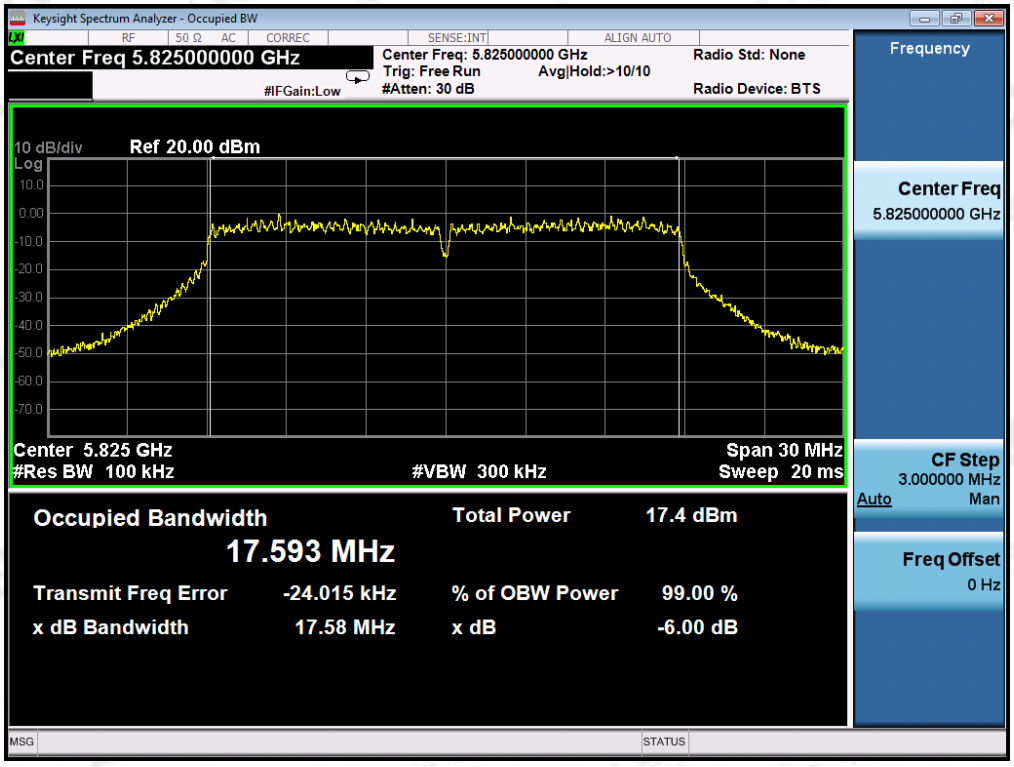
TEST PLOT OF BANDWIDTH FOR 5745MHz



TEST PLOT OF BANDWIDTH FOR 5785MHz

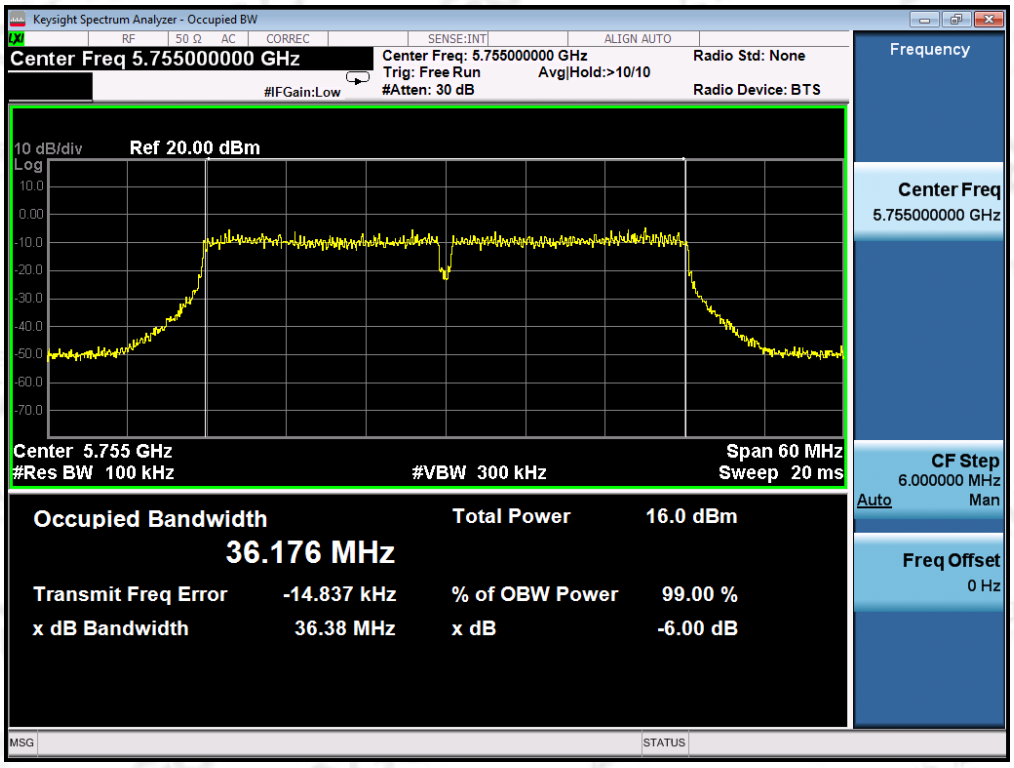


TEST PLOT OF BANDWIDTH FOR 5825MHz

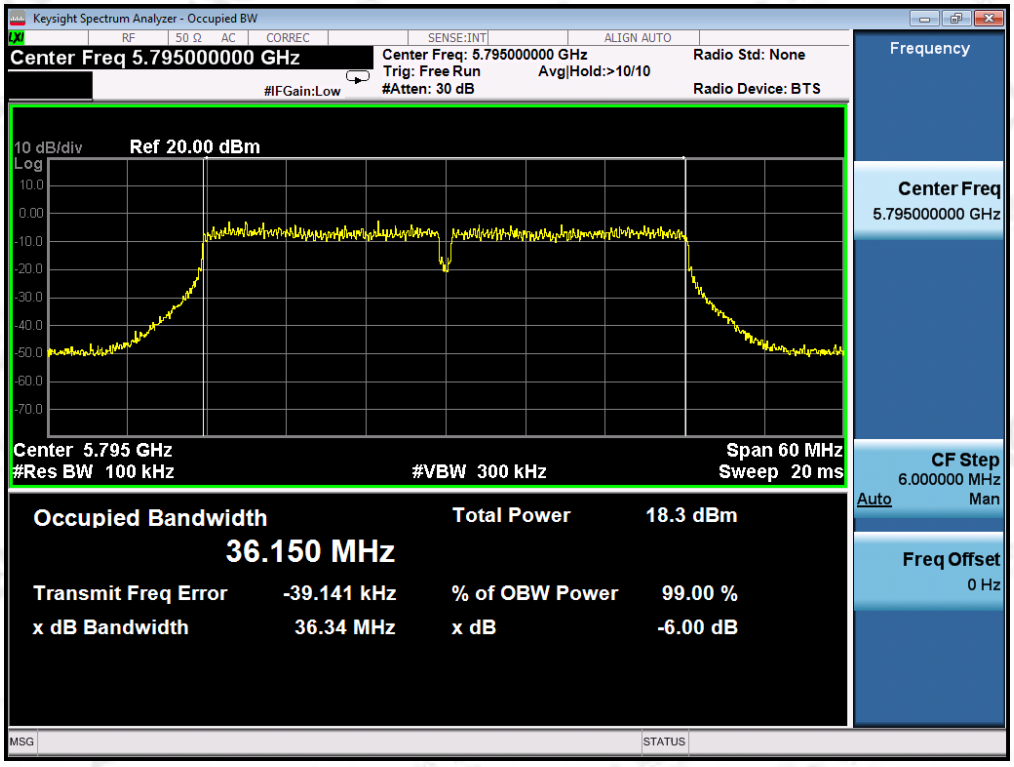


802.11ac40 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5755MHz

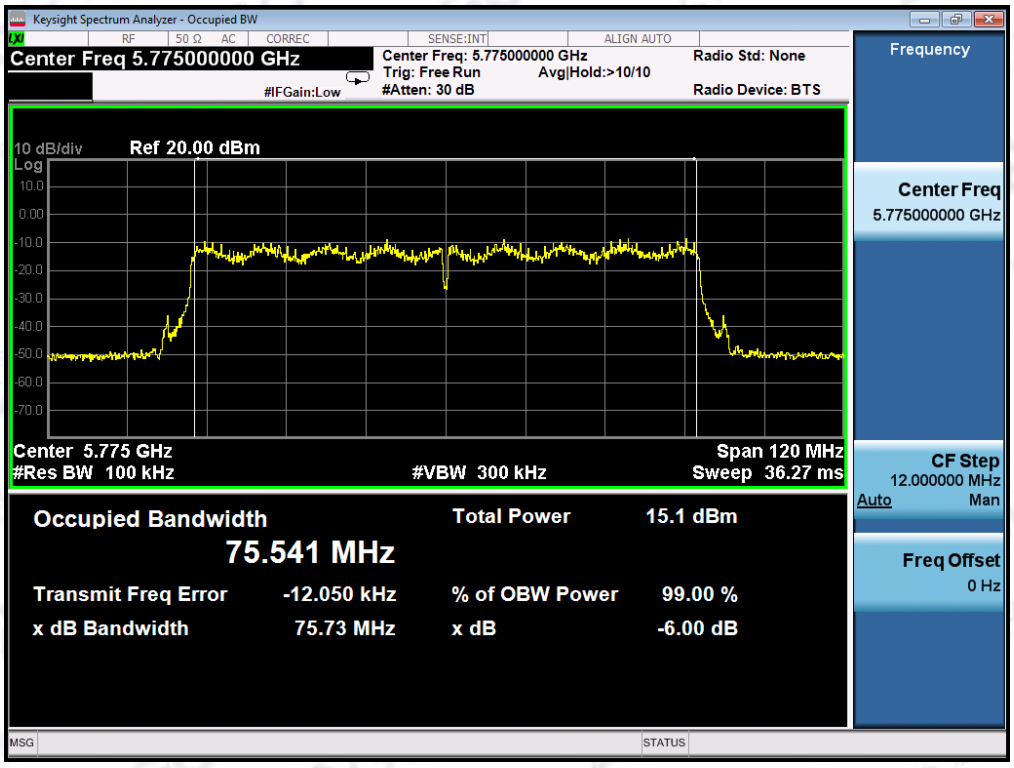


TEST PLOT OF BANDWIDTH FOR 5795MHz



802.11ac80 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5775MHz



9. EMISSION BANDWIDTH

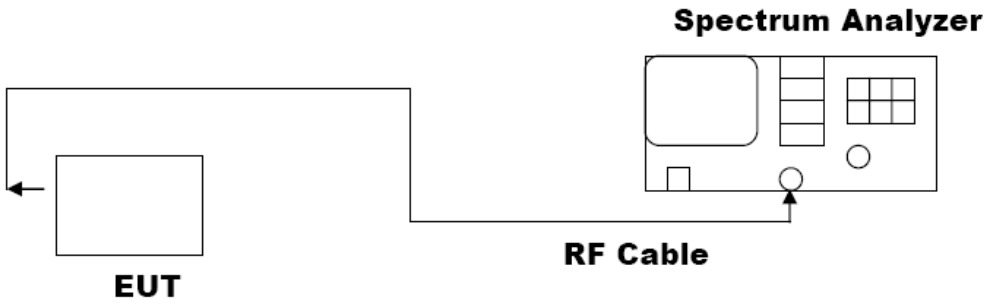
9.1. MEASUREMENT PROCEDURE

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 ≥ 3 · 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.

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



9.3. LIMITS AND MEASUREMENT RESULTS

LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION			
Test Channel	**-26dBc EBW (MHz)**	**99% OBW (MHz)**	**Criteria**
5180MHz	19.48	16.480	PASS
5200MHz	19.46	16.478	PASS
5240MHz	19.51	16.488	PASS

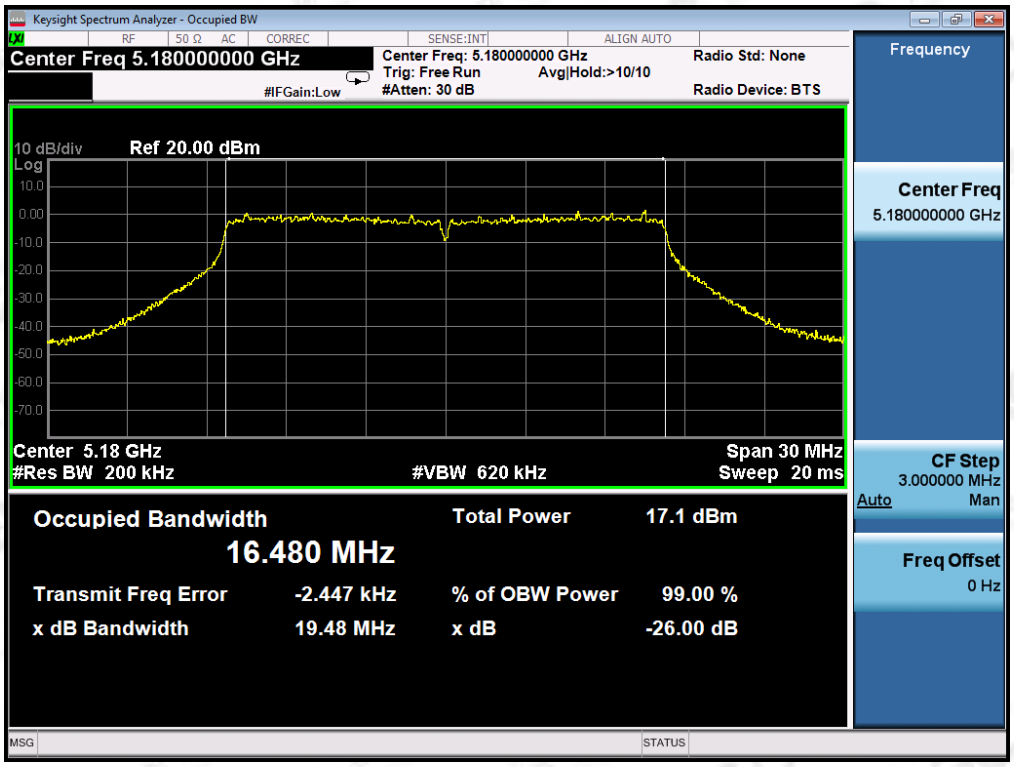
LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION			
Test Channel	**-26dBc EBW (MHz)**	**99% OBW (MHz)**	**Criteria**
5180MHz	20.14	17.641	PASS
5200MHz	20.16	17.640	PASS
5240MHz	19.96	17.643	PASS
5190MHz	40.49	36.213	PASS
5230MHz	40.35	36.237	PASS

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION			
Test Channel	**-26dBc EBW (MHz)**	**99% OBW (MHz)**	**Criteria**
5180MHz	19.97	17.640	PASS
5200MHz	20.21	17.635	PASS
5240MHz	20.09	17.637	PASS
5190MHz	40.42	36.218	PASS
5230MHz	40.49	36.236	PASS
5210MHz	80.58	75.738	PASS

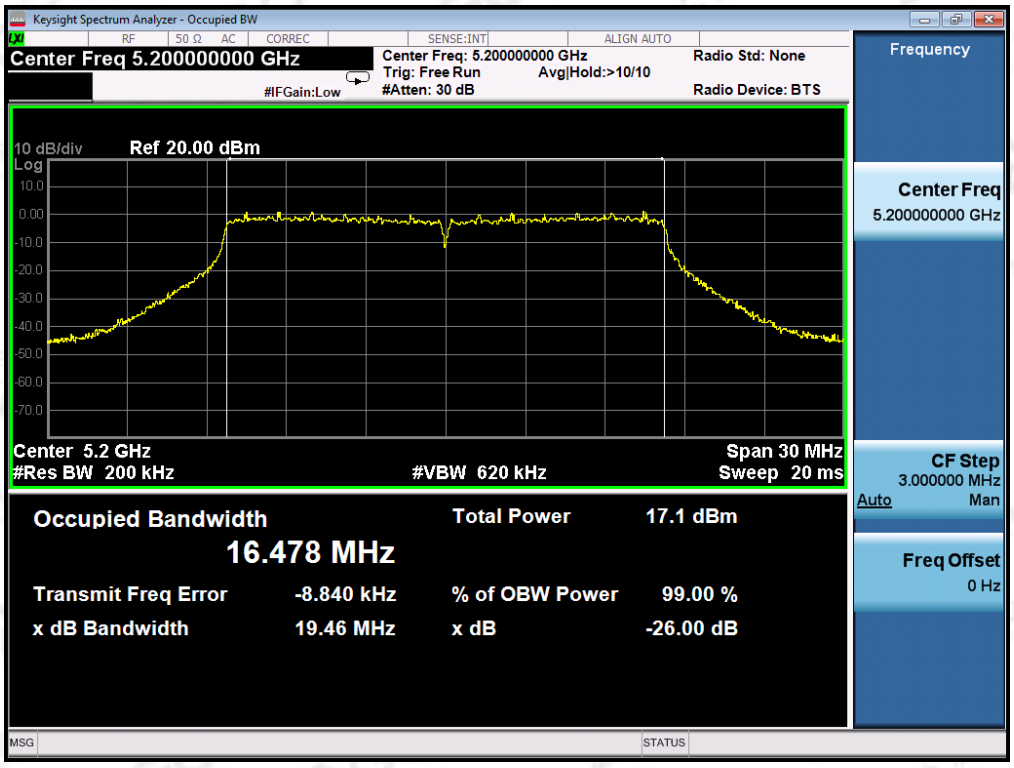
A 26-dB bandwidth that straddles into U-NII 2A band but its 99% occupied power bandwidth does not. If DFS is required, the device must be able to detect radar signal within its 99% occupied power bandwidth. For this rare case, DFS requirement does not apply.

802.11a20 TEST RESULT

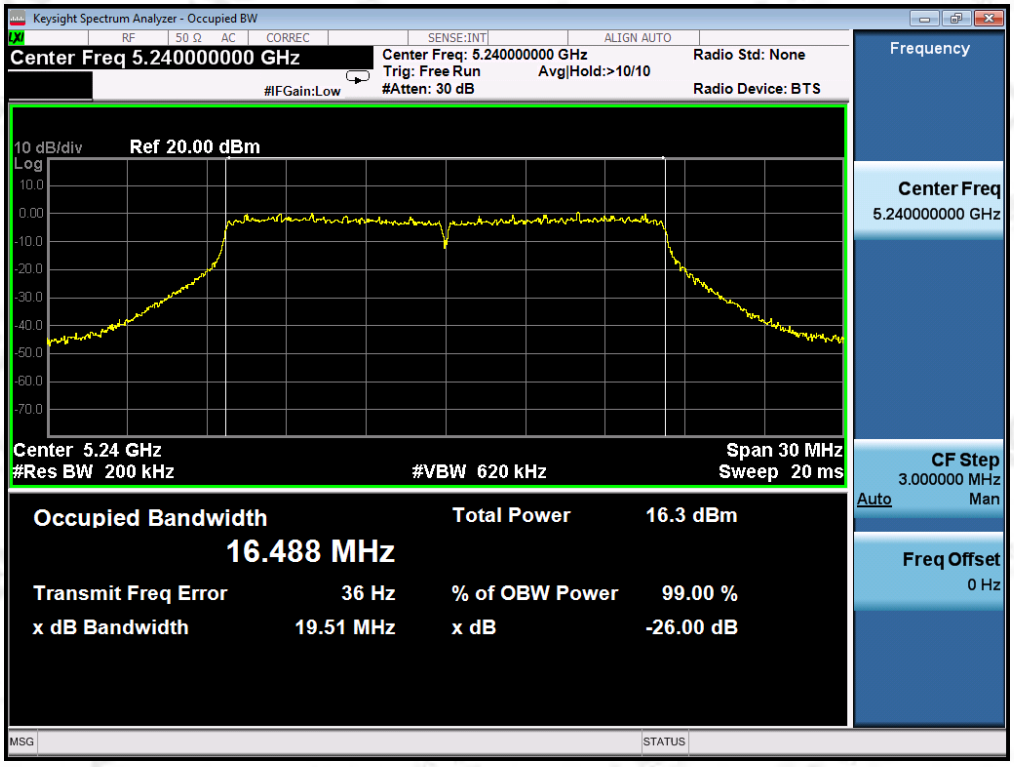
TEST PLOT OF BANDWIDTH FOR 5180MHz



TEST PLOT OF BANDWIDTH FOR 5200MHz

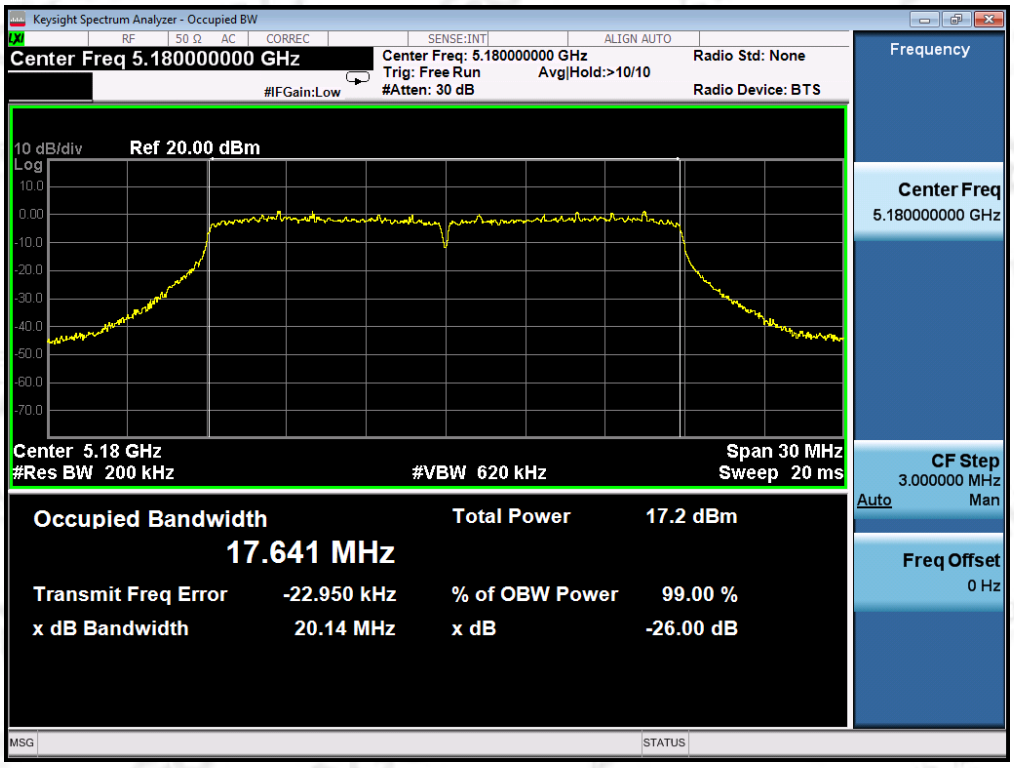


TEST PLOT OF BANDWIDTH FOR 5240MHz

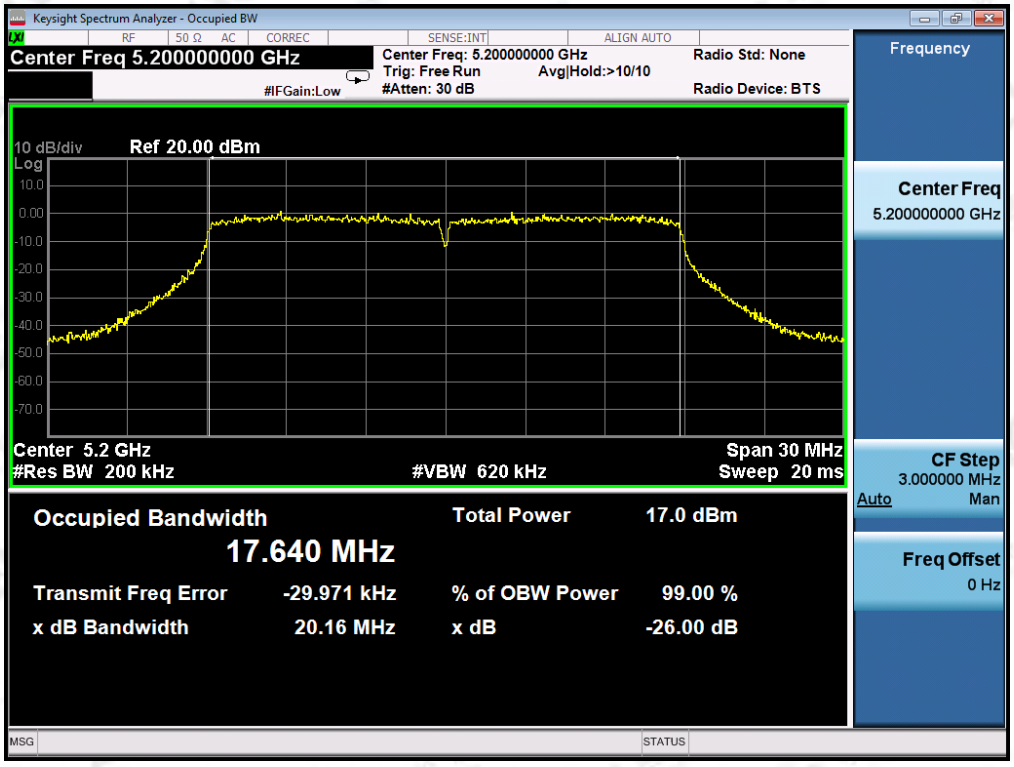


802.11n20 TEST RESULT

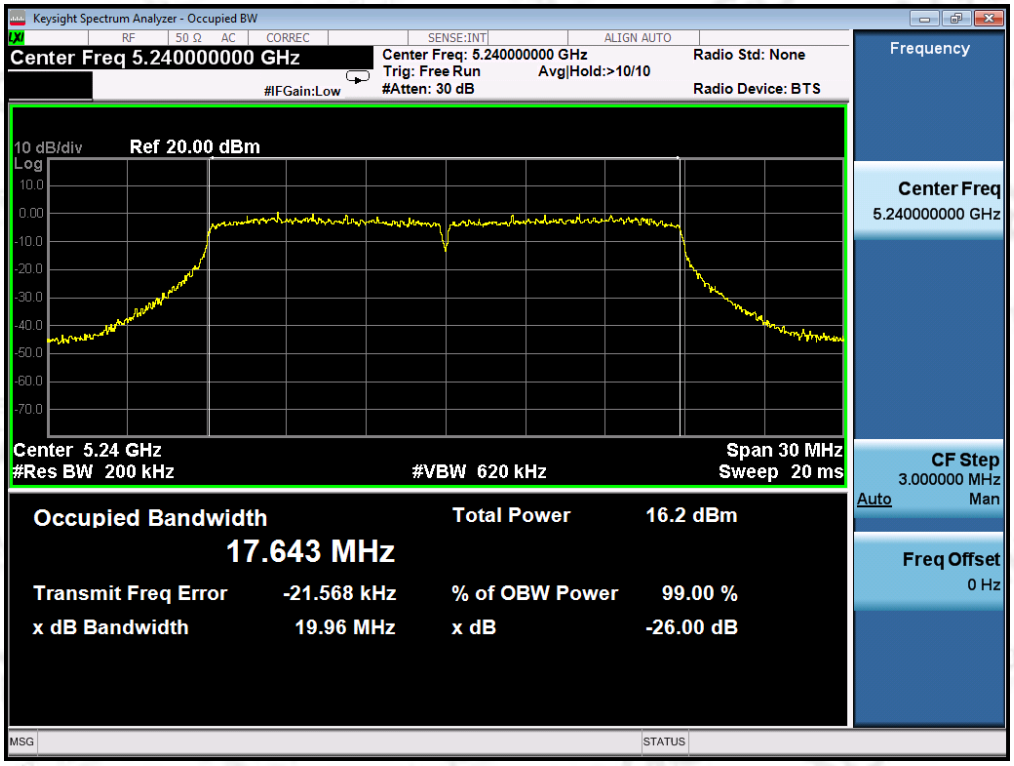
TEST PLOT OF BANDWIDTH FOR 5180MHz



TEST PLOT OF BANDWIDTH FOR 5200MHz

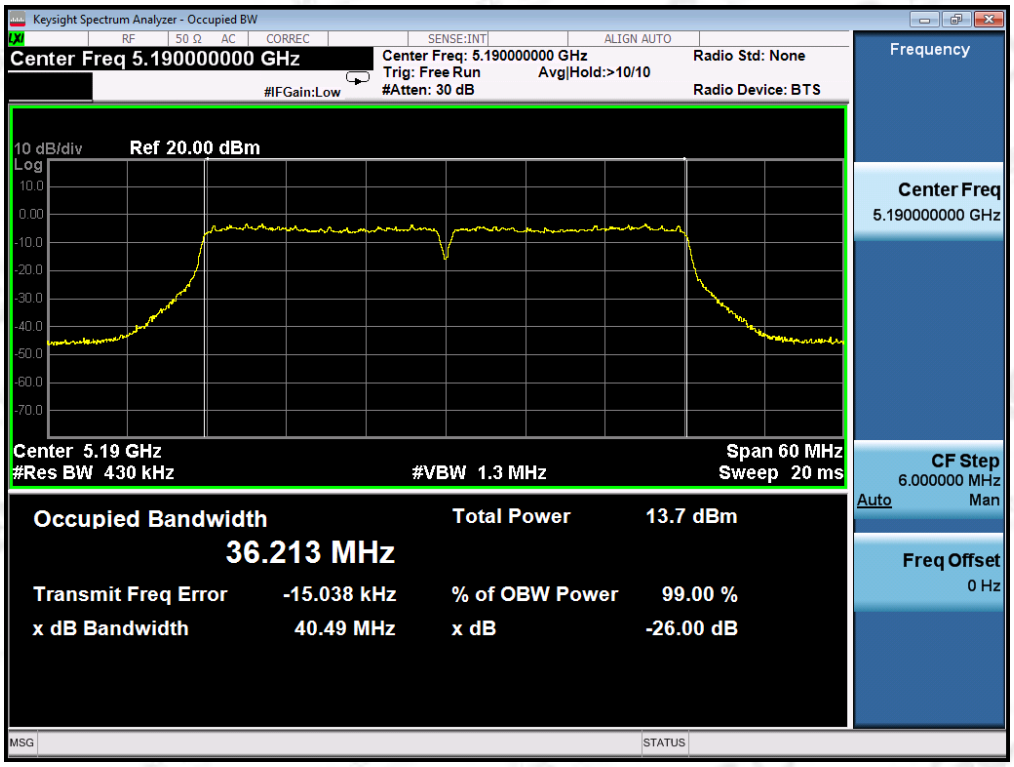


TEST PLOT OF BANDWIDTH FOR 5240MHz

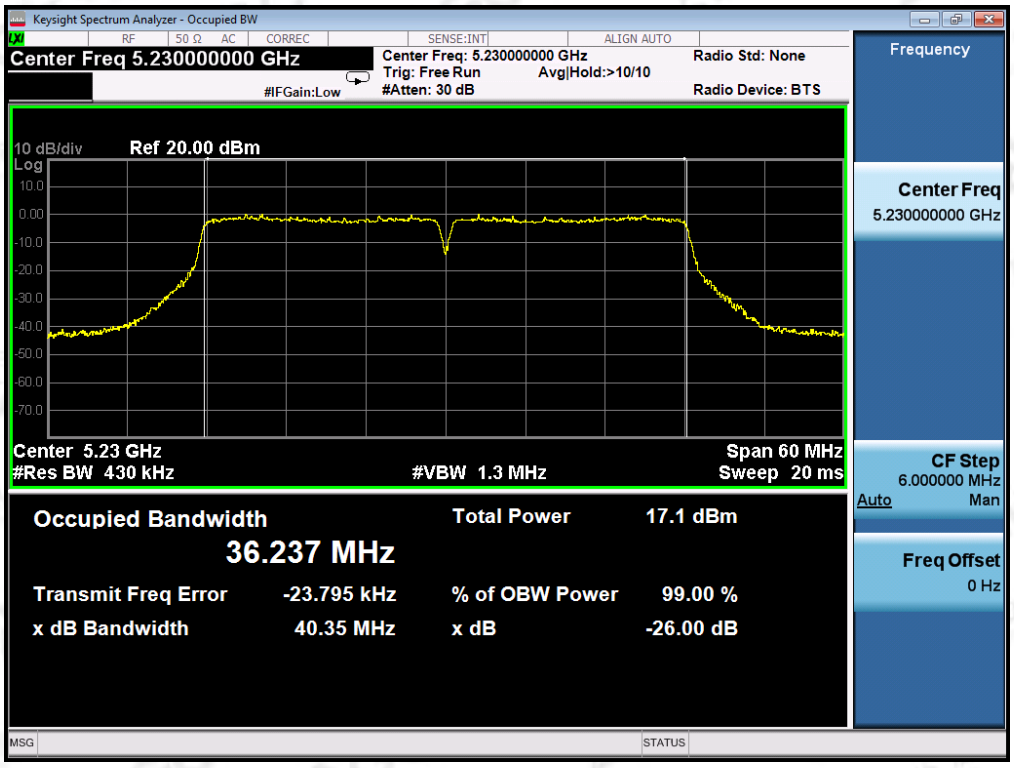


802.11n40 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5190MHz

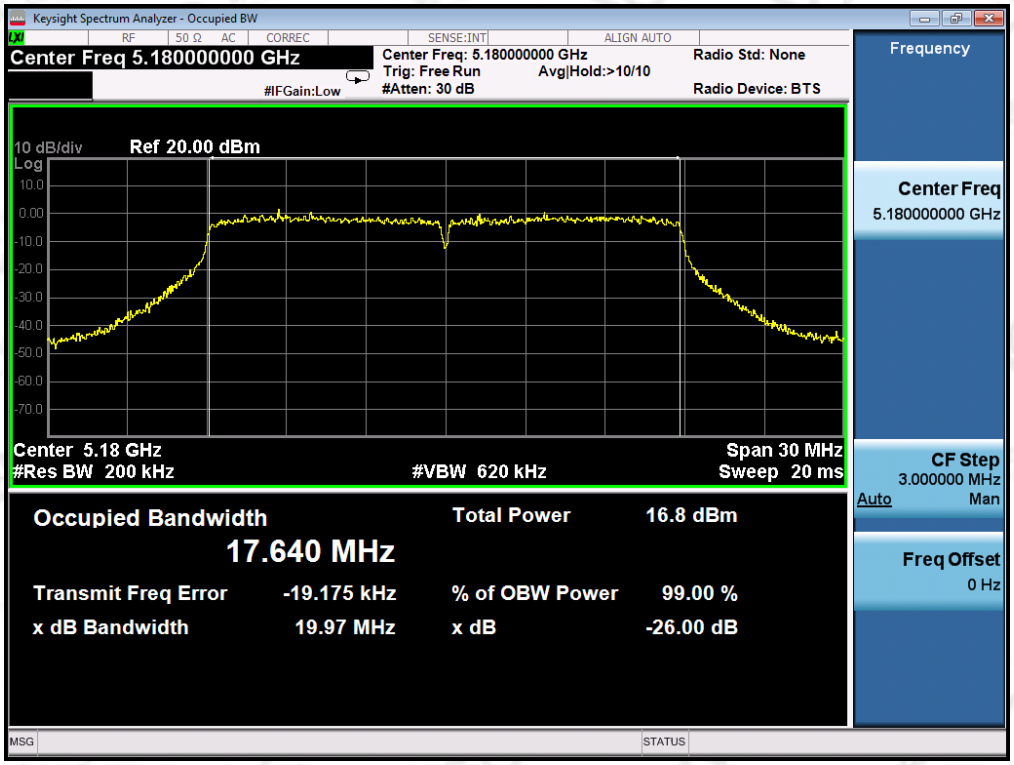


TEST PLOT OF BANDWIDTH FOR 5230MHz

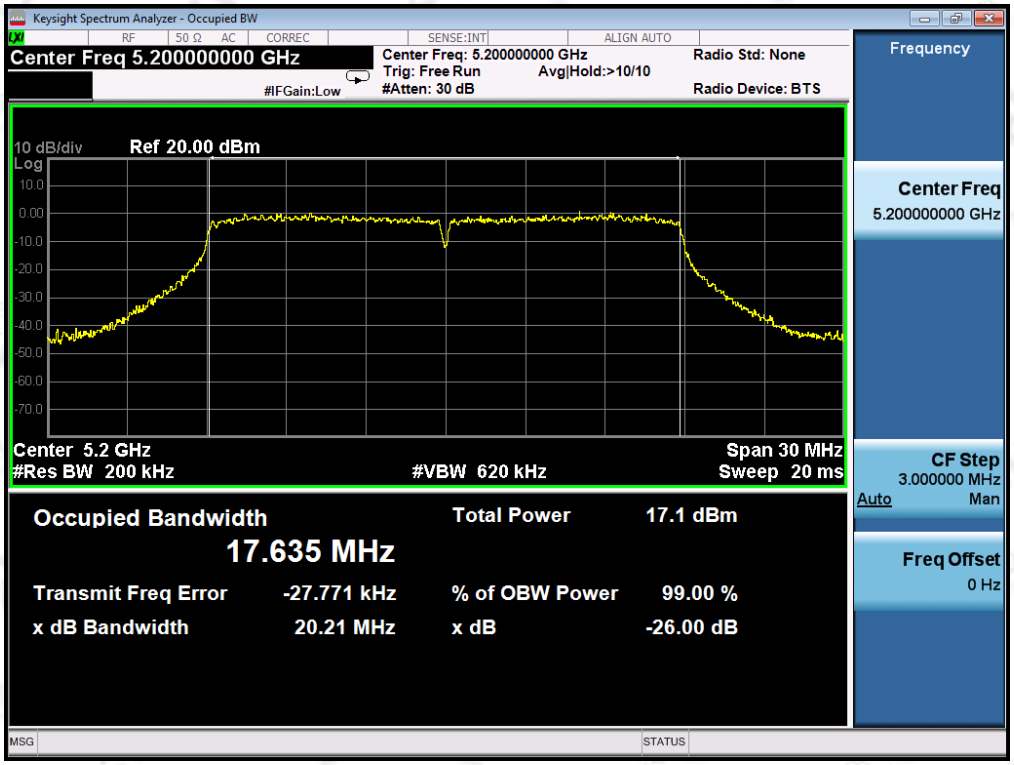


802.11ac20 TEST RESULT

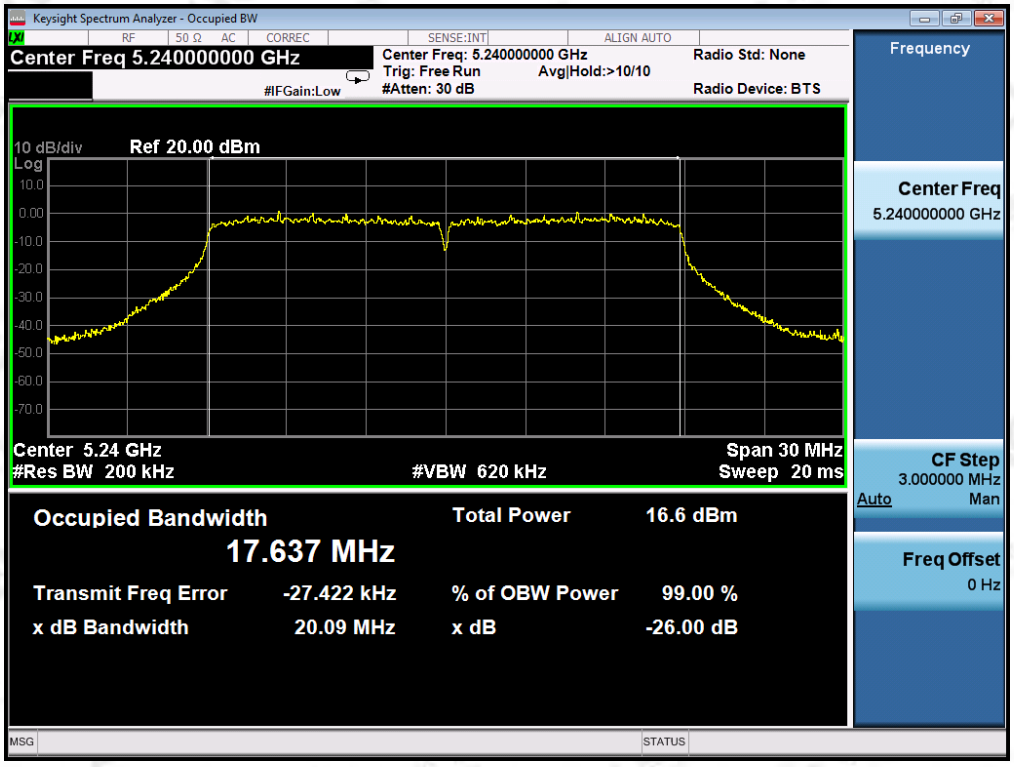
TEST PLOT OF BANDWIDTH FOR 5180MHz



TEST PLOT OF BANDWIDTH FOR 5200MHz

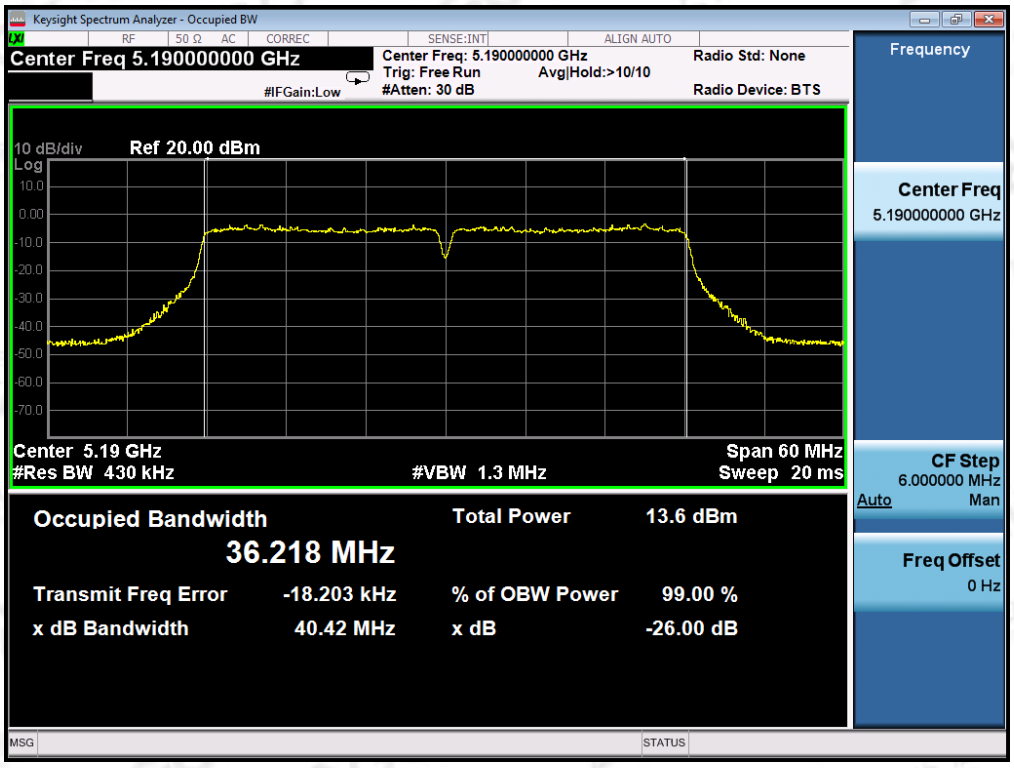


TEST PLOT OF BANDWIDTH FOR 5240MHz

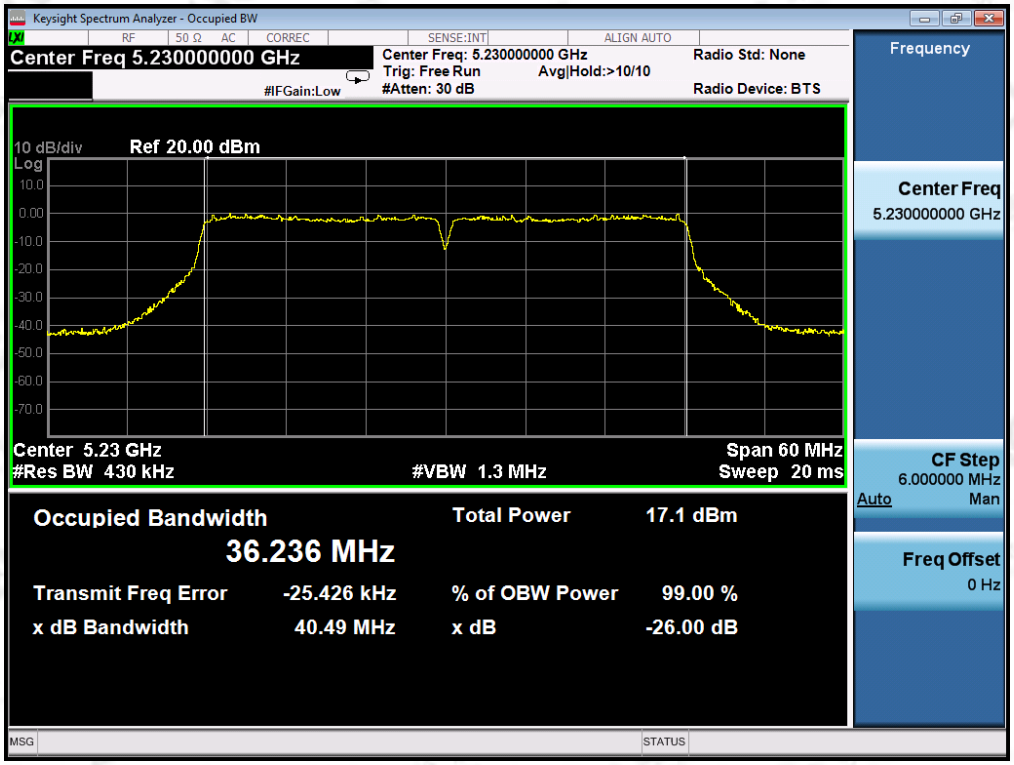


802.11ac40 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5190MHz

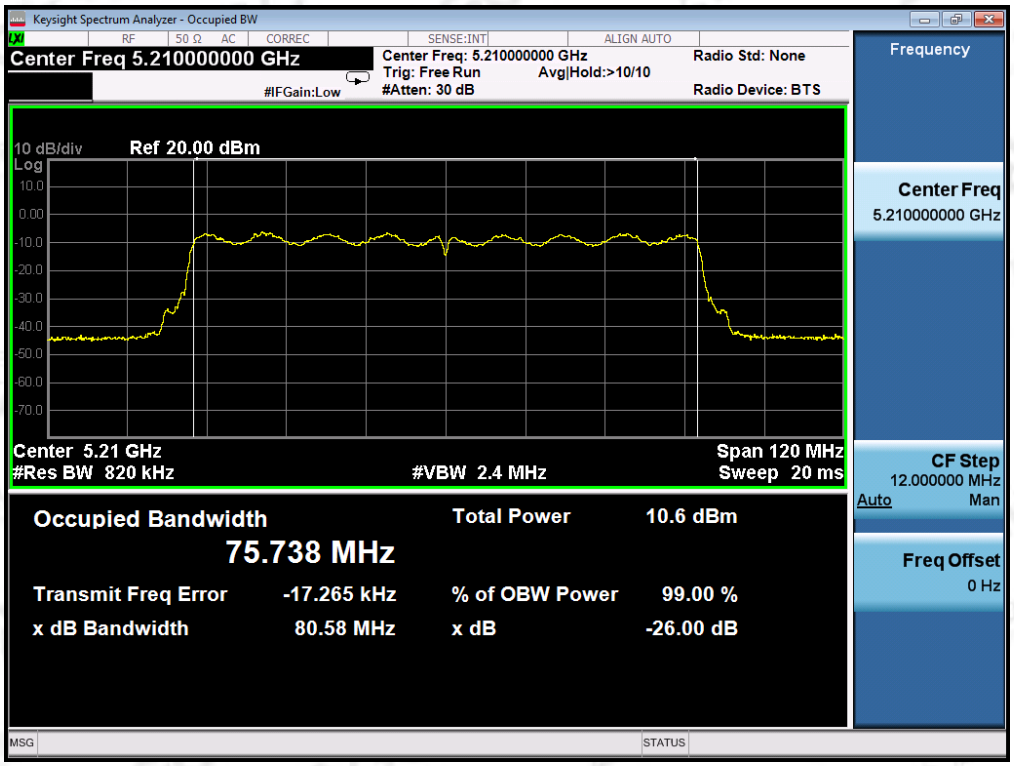


TEST PLOT OF BANDWIDTH FOR 5230MHz



802.11ac80 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5210MHz



10. MAXIMUM CONDUCTED OUTPUT PEAK POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

Refer to KDB 789033 section F

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

10.4 LIMITS AND MEASUREMENT RESULT

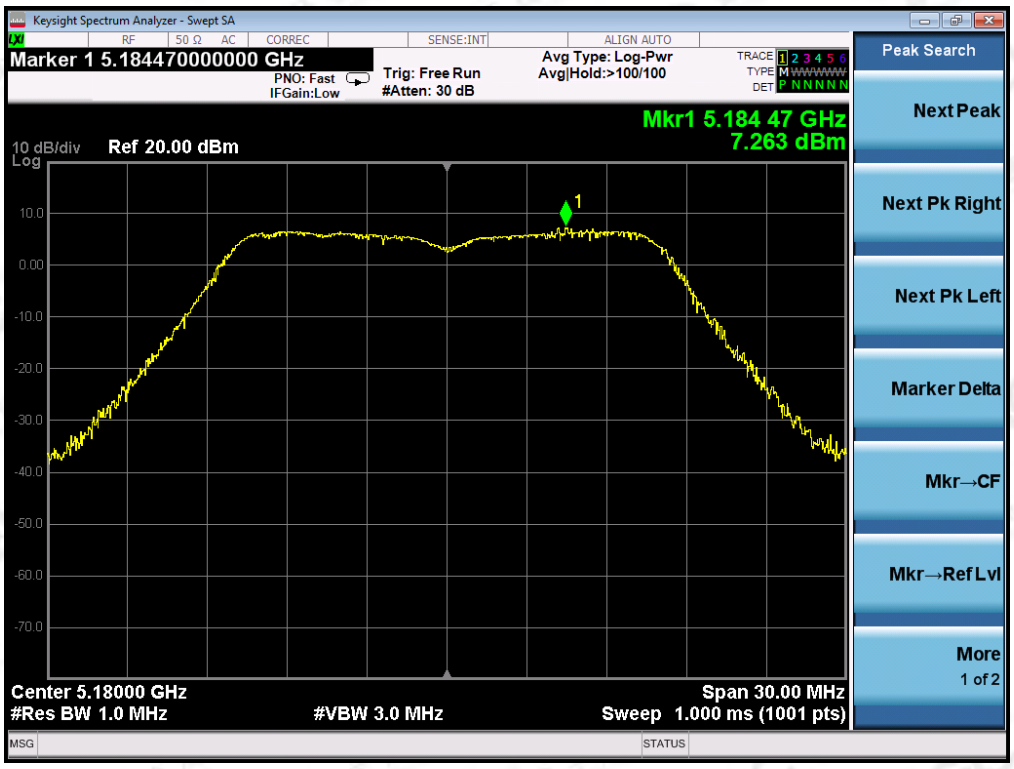
LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION			
Frequency (MHz)	**Power density (dBm/MHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5180	7.263	11	Pass
5200	7.385	11	Pass
5240	7.009	11	Pass
Frequency (MHz)	**Power density (dBm/500kHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5745	2.274	30	Pass
5785	2.866	30	Pass
5825	2.987	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION			
Frequency (MHz)	**Power density (dBm/MHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5180	2.535	11	Pass
5200	2.792	11	Pass
5240	2.277	11	Pass
5190	-3.172	11	Pass
5230	-0.748	11	Pass
Frequency (MHz)	**Power density (dBm/500kHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5745	-2.272	30	Pass
5785	-0.565	30	Pass
5825	-1.209	30	Pass
5755	-5.979	30	Pass
5795	-5.045	30	Pass

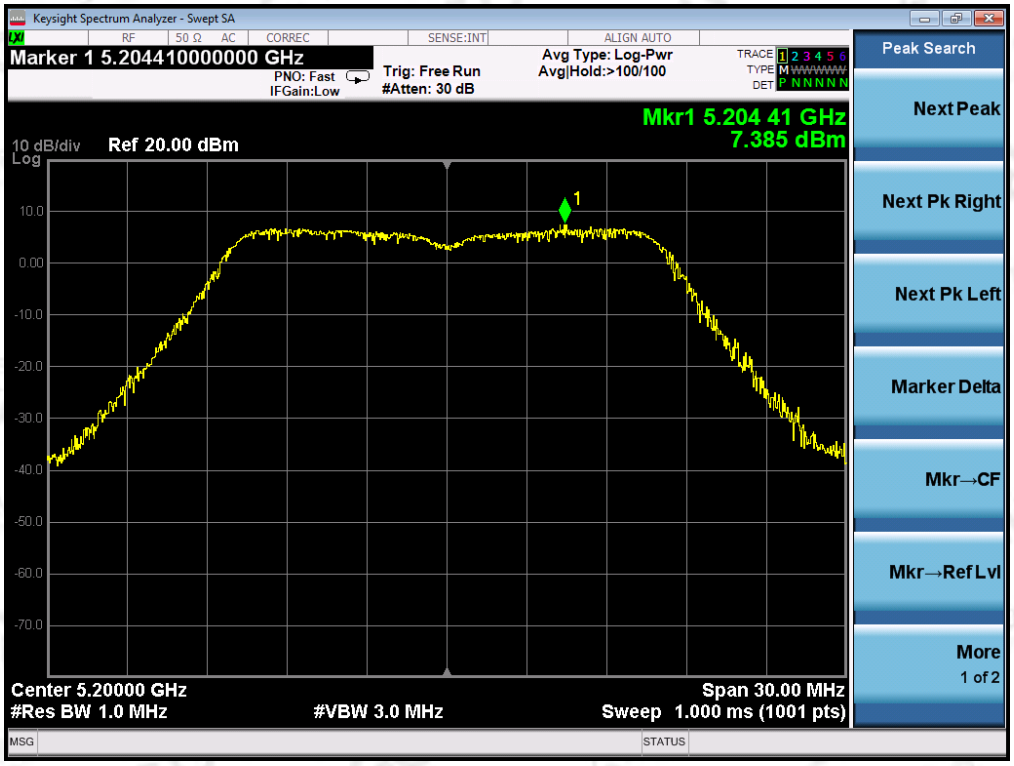
LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION			
Frequency (MHz)	**Power density (dBm/MHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5180	2.412	11	Pass
5200	2.324	11	Pass
5240	1.669	11	Pass
5190	-3.211	11	Pass
5230	-0.858	11	Pass
5210	-7.729	11	Pass
Frequency (MHz)	**Power density (dBm/500kHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5745	-2.622	30	Pass
5785	-0.974	30	Pass
5825	-1.008	30	Pass
5755	-5.769	30	Pass
5795	-4.788	30	Pass
5775	-9.227	30	Pass

802.11a20 TEST RESULT

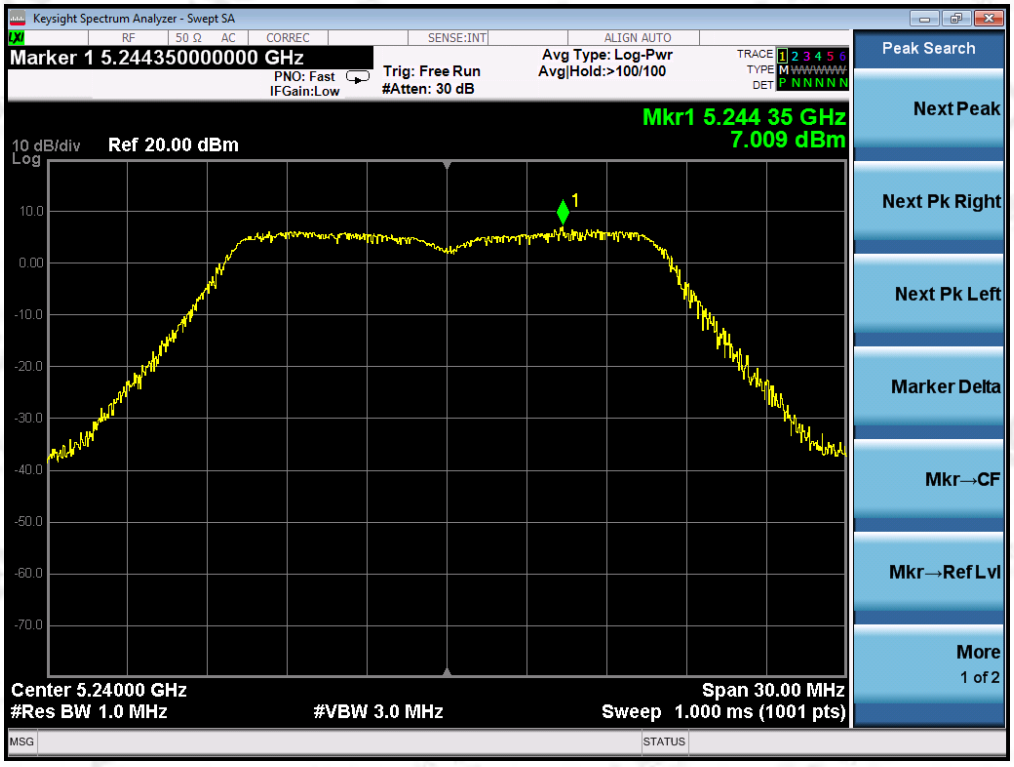
TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



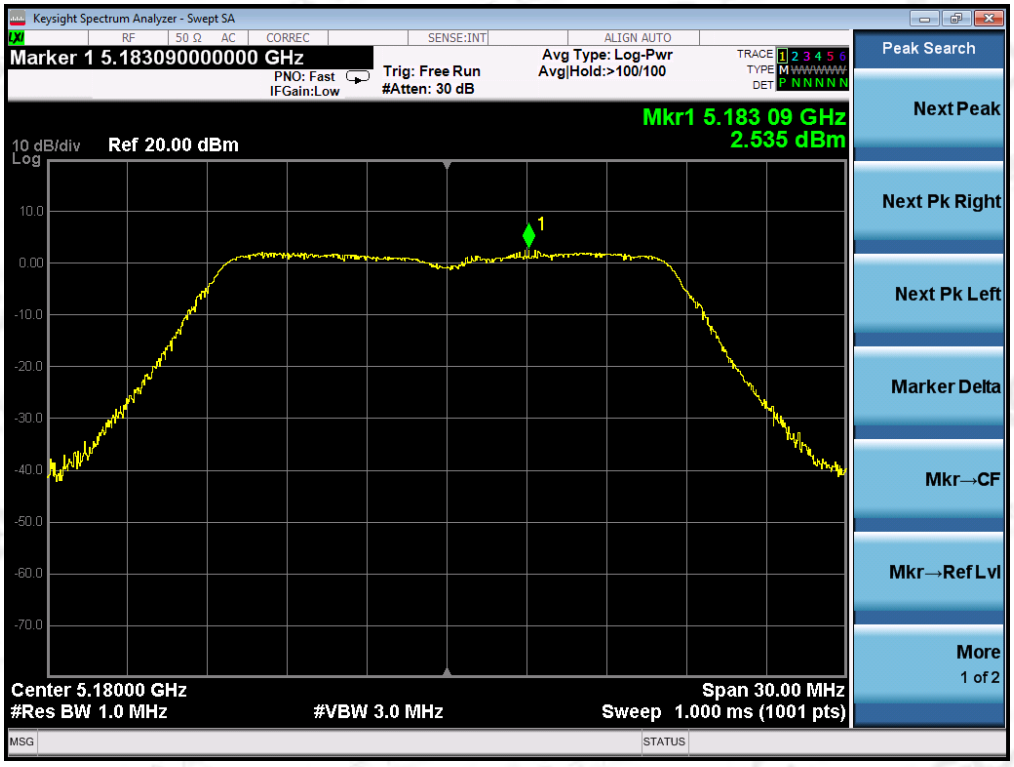
TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz

TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz

TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz

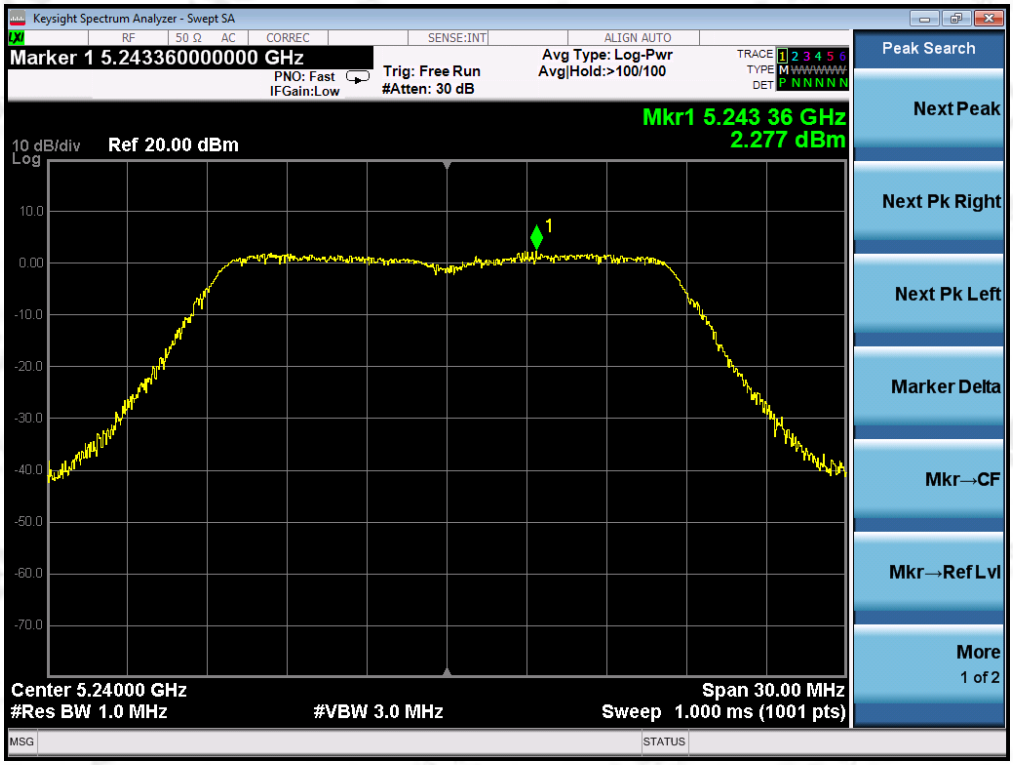
802.11n20 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz



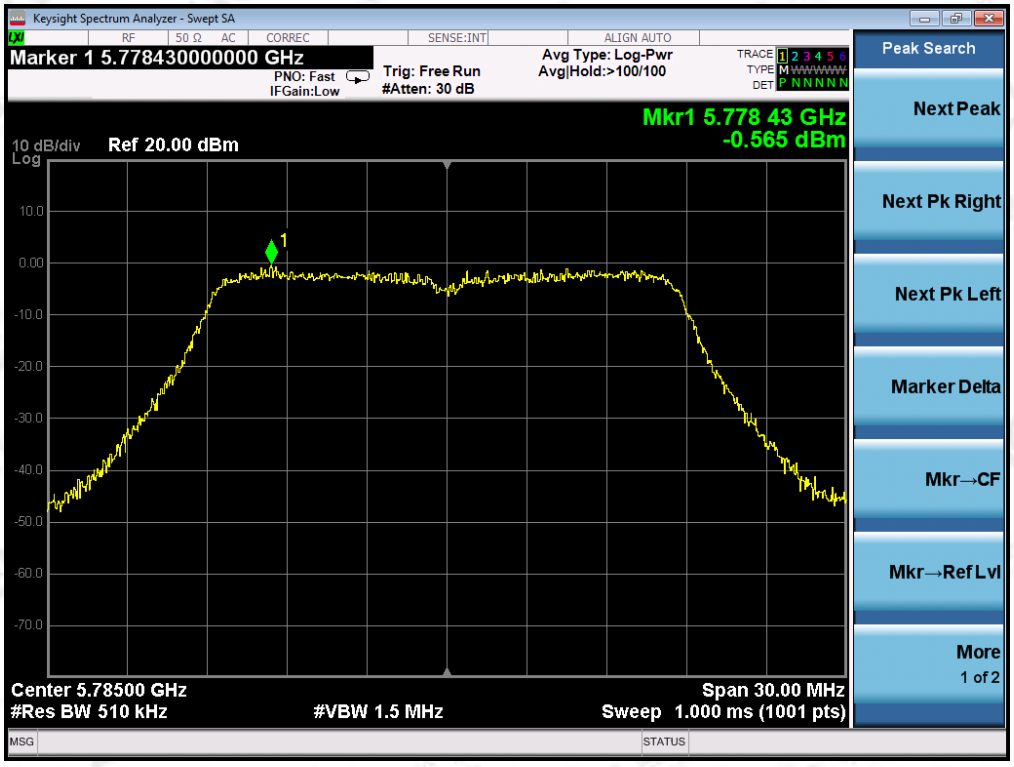
TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz

TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz

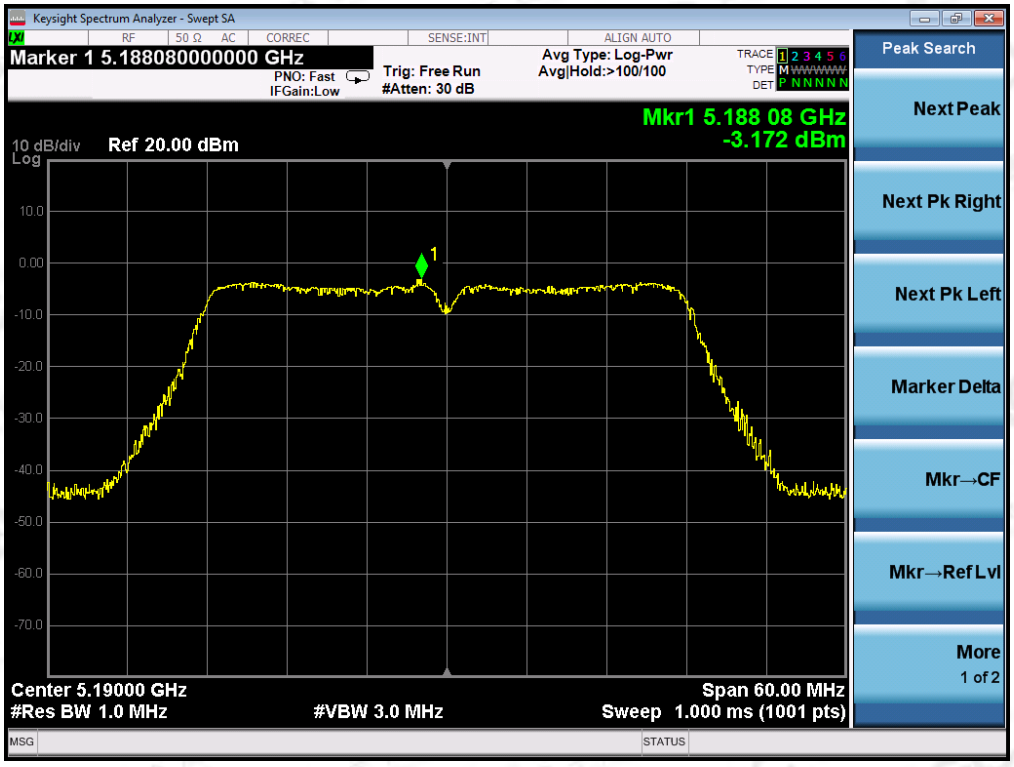
TEST PLOT OF SPECTRAL DENSITY FOR 5785MHz



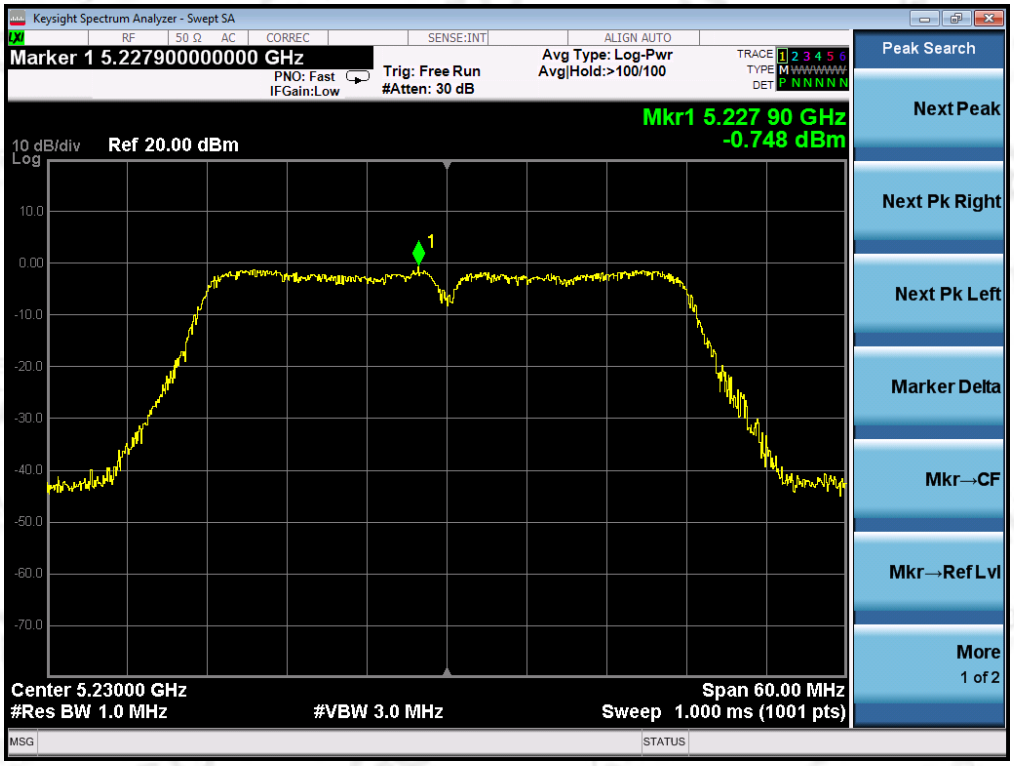
TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz

802.11n40 TEST RESULT

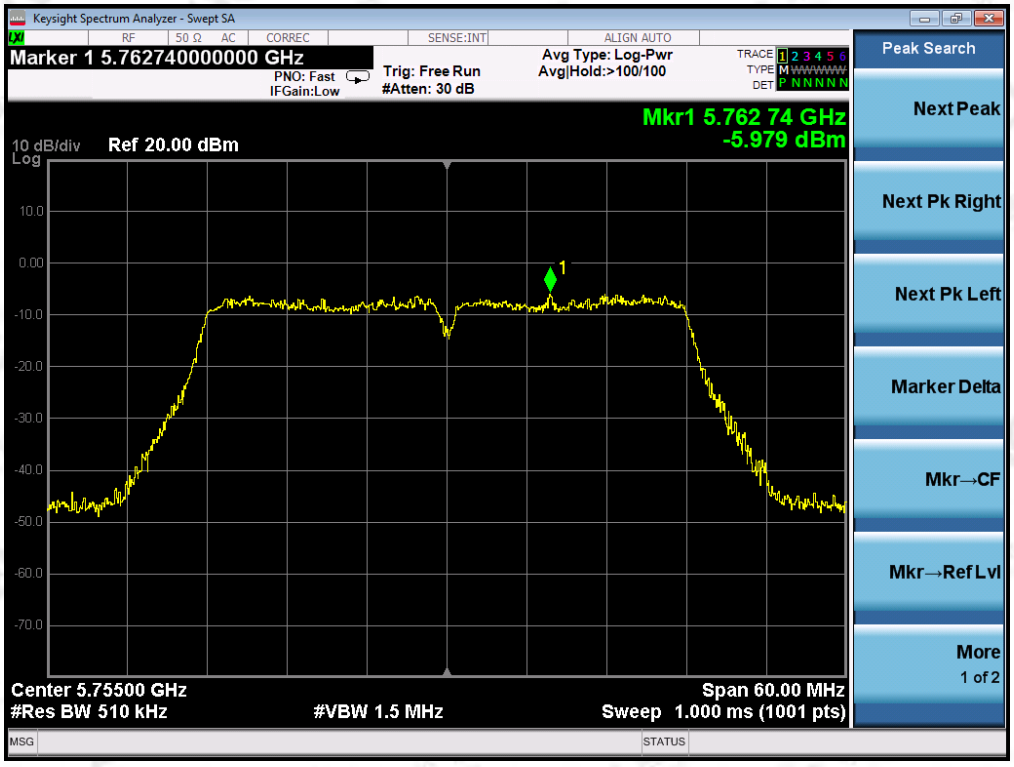
TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz



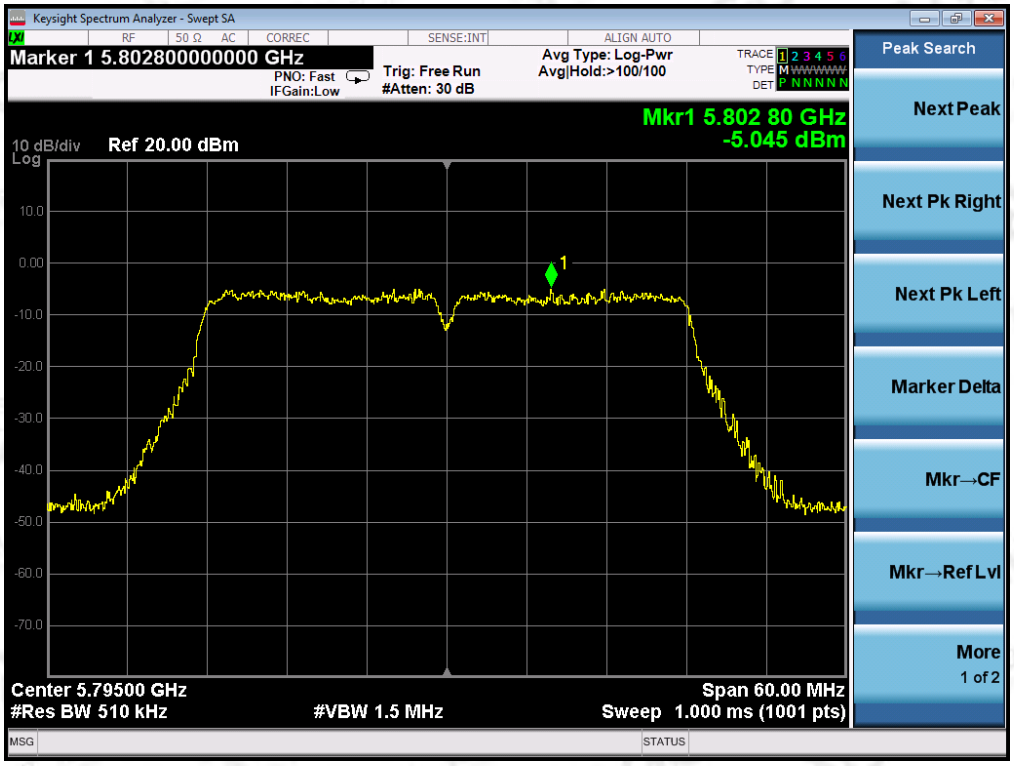
TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5755MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz



802.11ac20 TEST RESULT

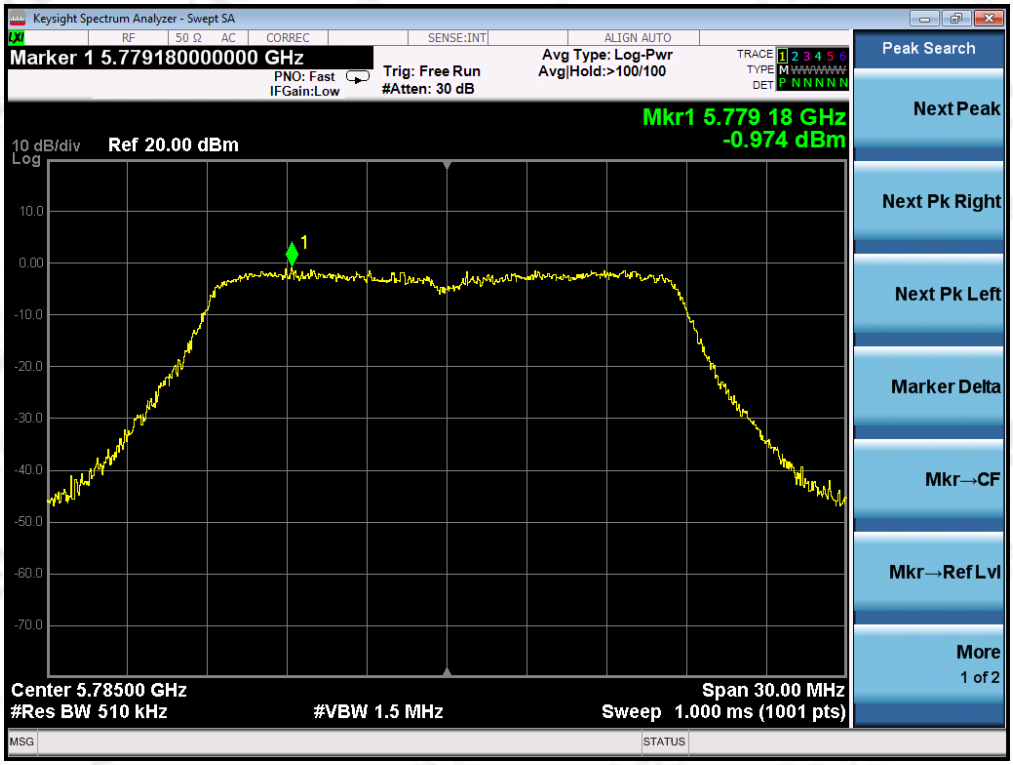
TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz

TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz

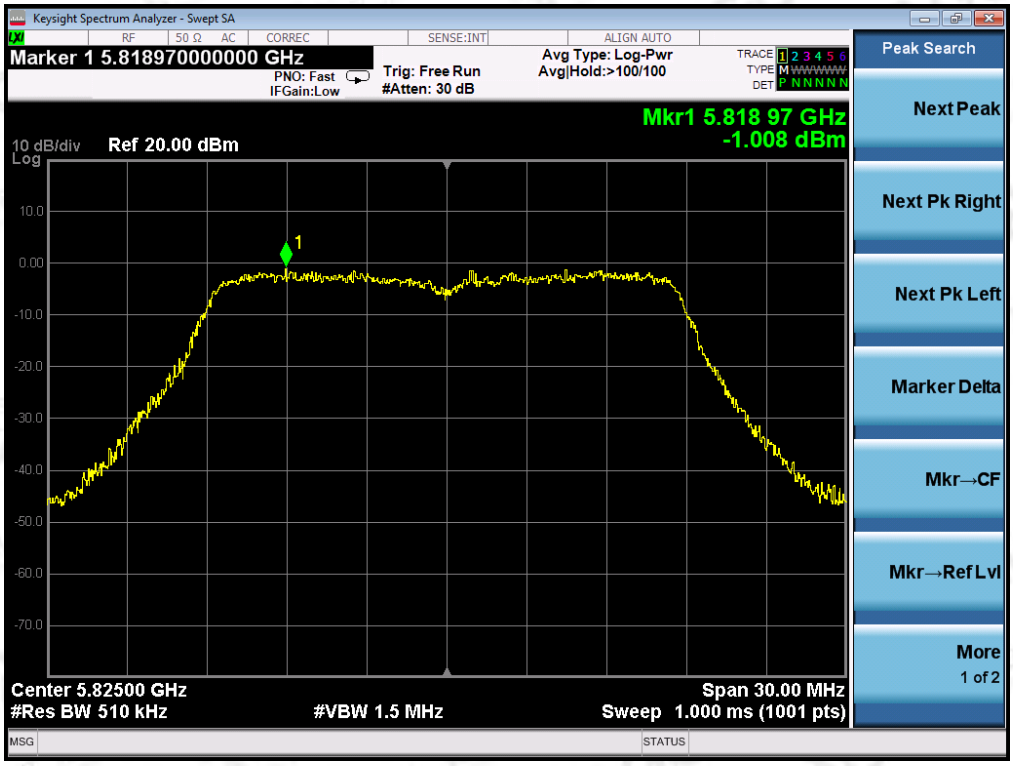
TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz

TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz

TEST PLOT OF SPECTRAL DENSITY FOR 5785MHz

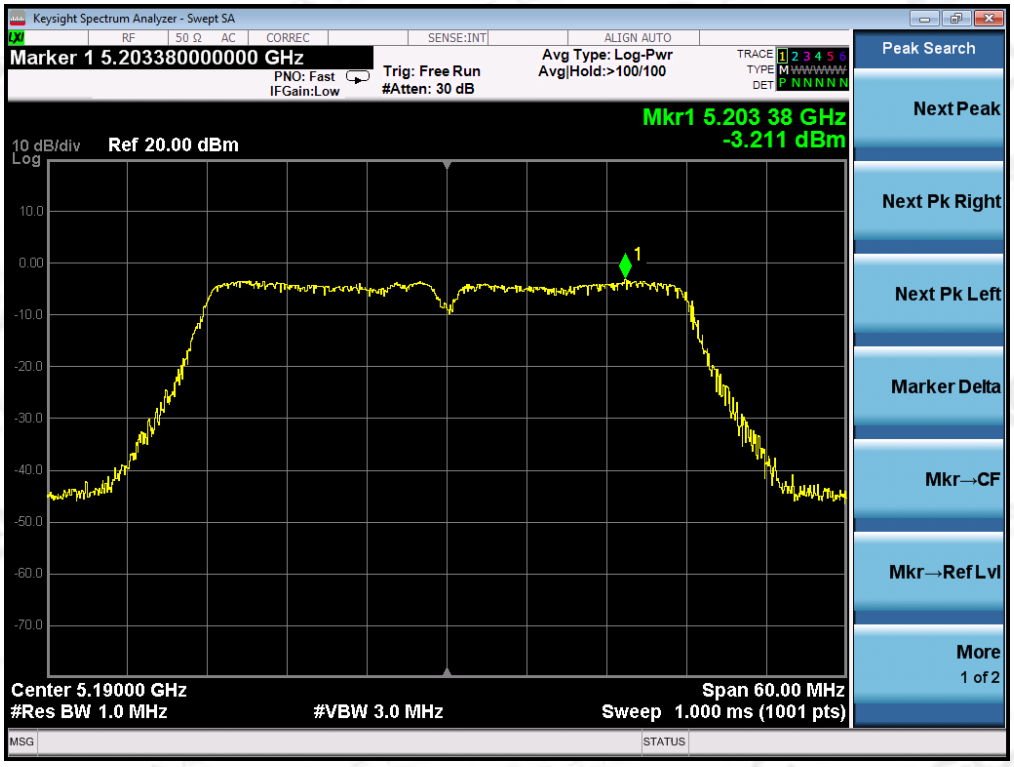


TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz

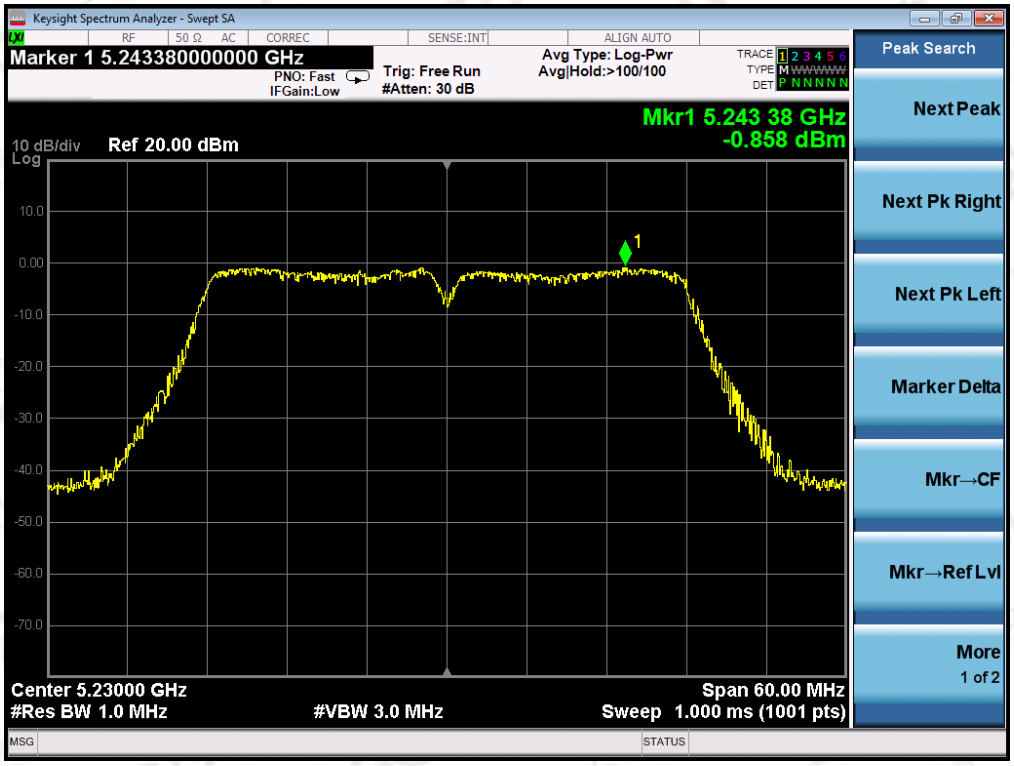


802.11ac40 TEST RESULT

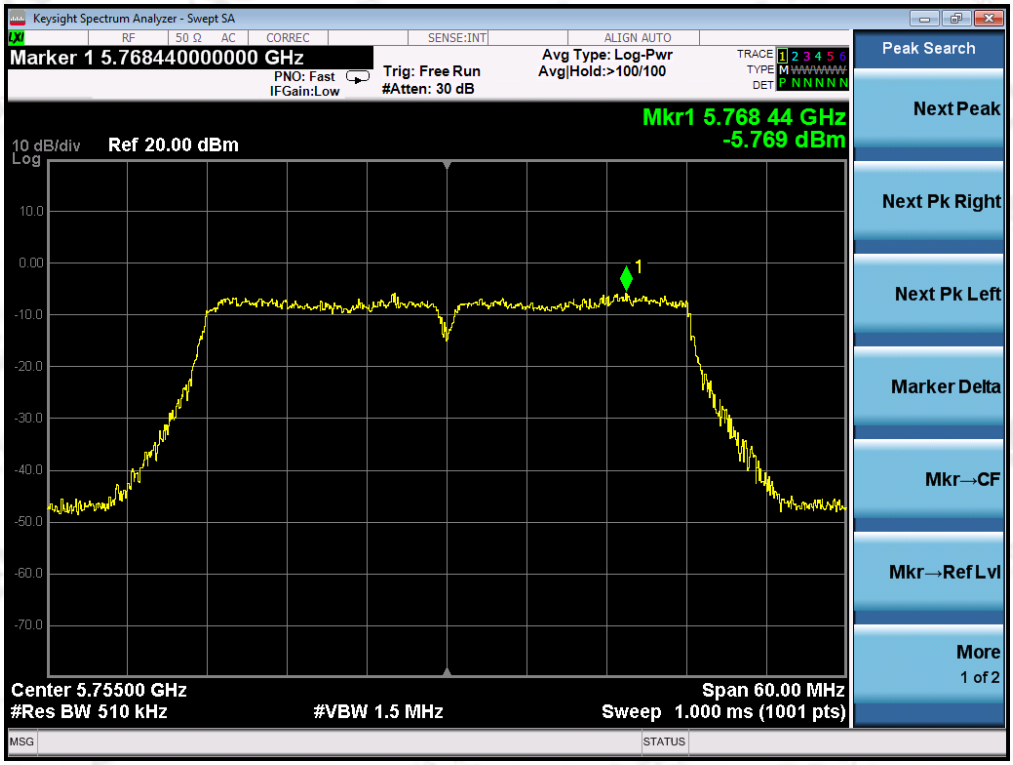
TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz



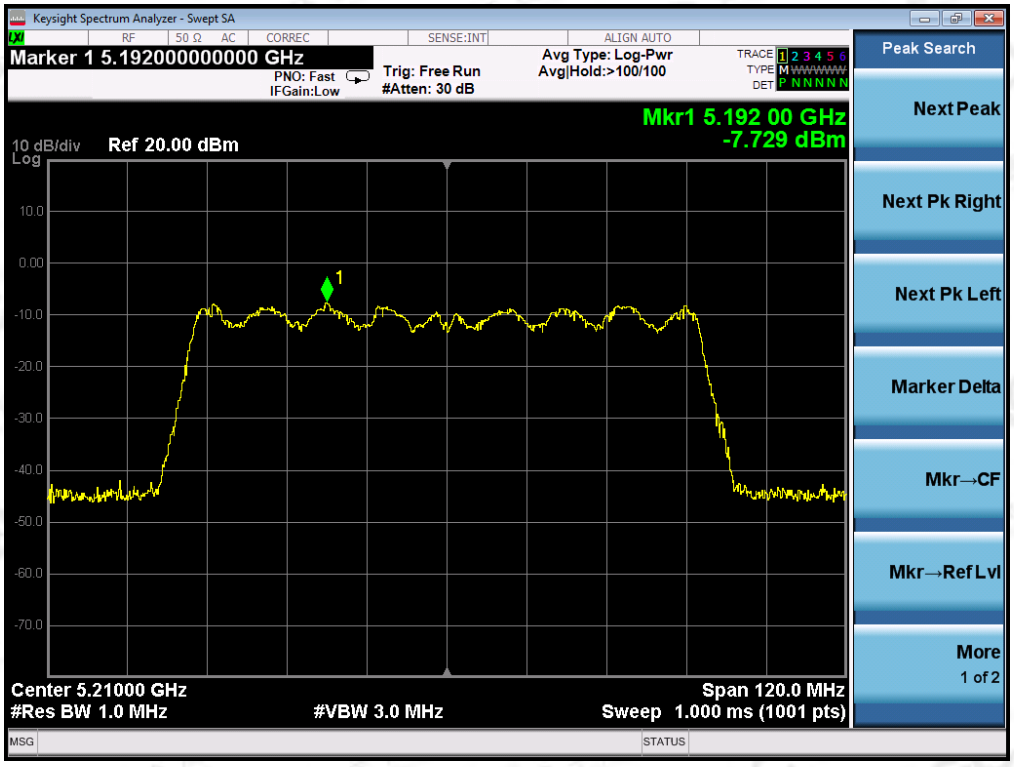
TEST PLOT OF SPECTRAL DENSITY FOR 5755MHz



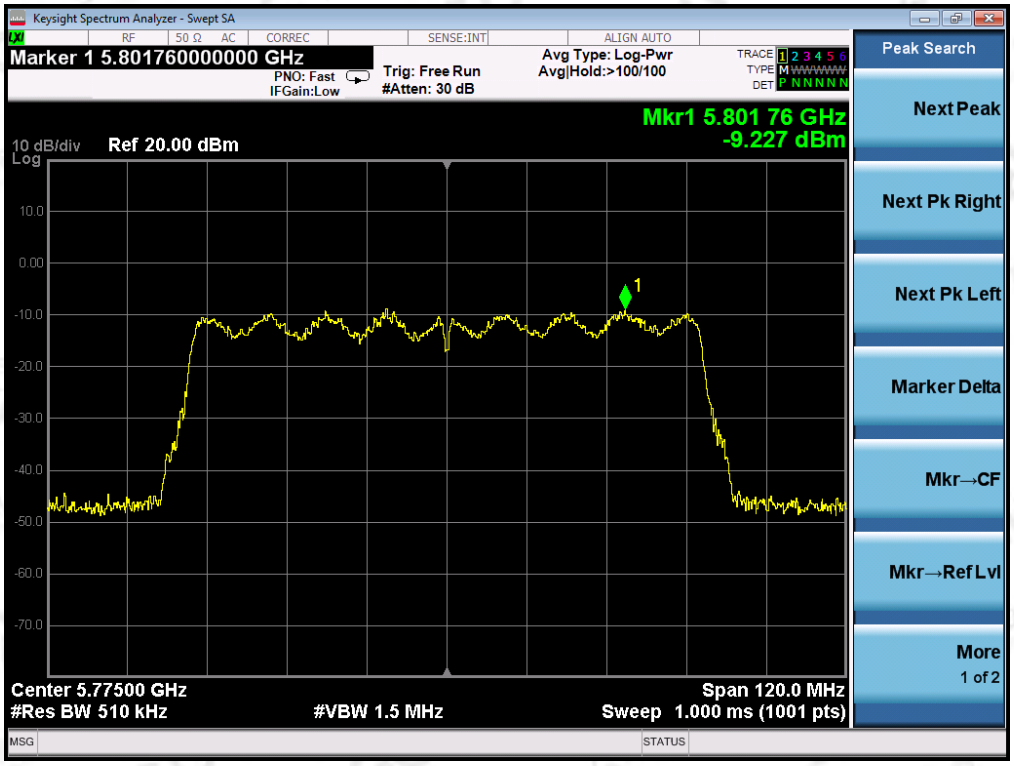
TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz

802.11ac80 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz



TEST PLOT OF SPECTRAL DENSITY FOR 5775MHz



11. CONDUCTED SPURIOUS EMISSION

11.1. 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.

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

The same as described in section 8.2.

11.3. MEASUREMENT EQUIPMENT USED

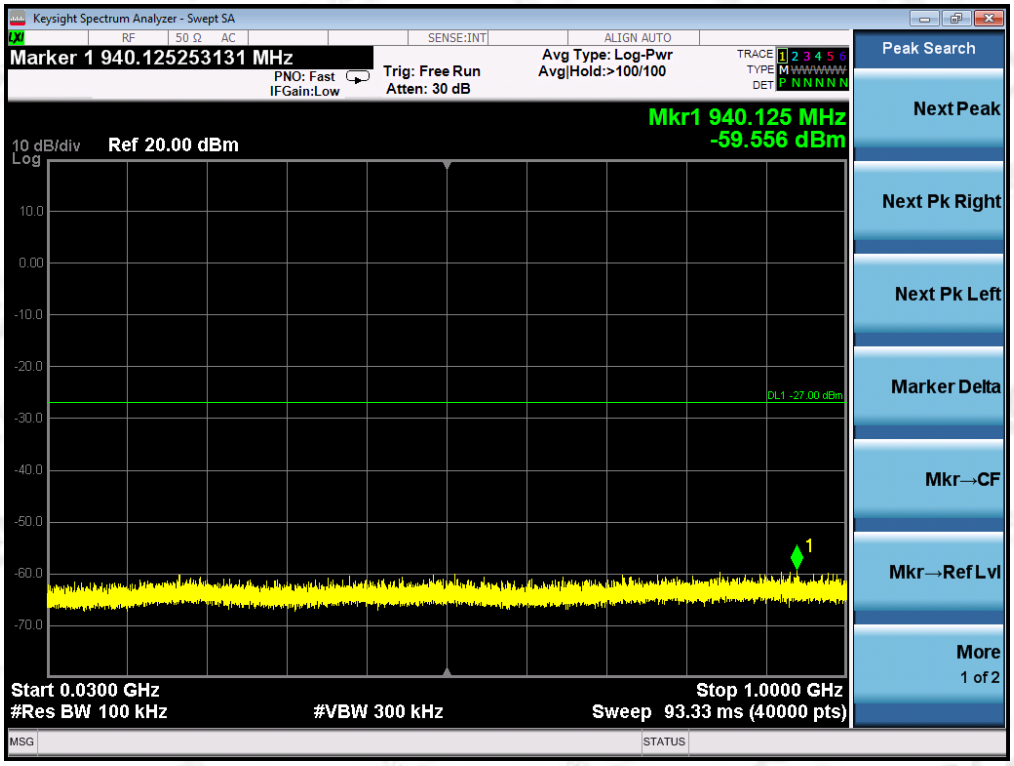
The same as described in section 6.

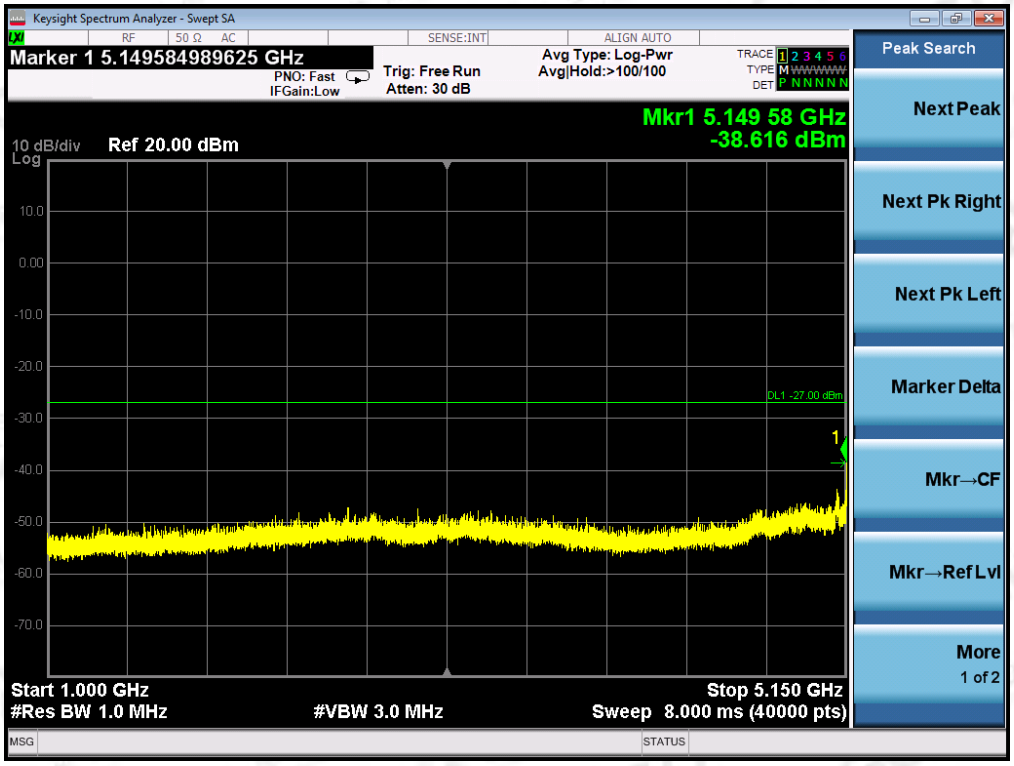
11.4. LIMITS AND MEASUREMENT RESULT

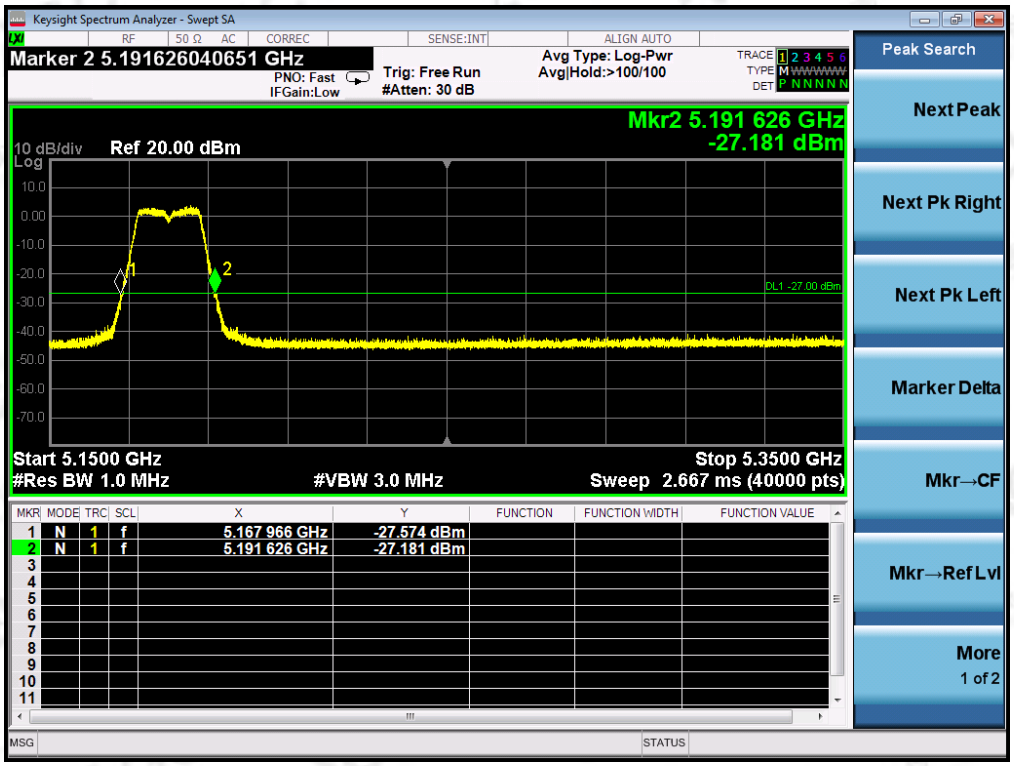
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	**Measurement Result**	
	Test channel	**Criteria**
-27dBm/MHz	5150MHz-5250MHz	PASS
All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edgeincreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	5725MHz-5850MHz	PASS

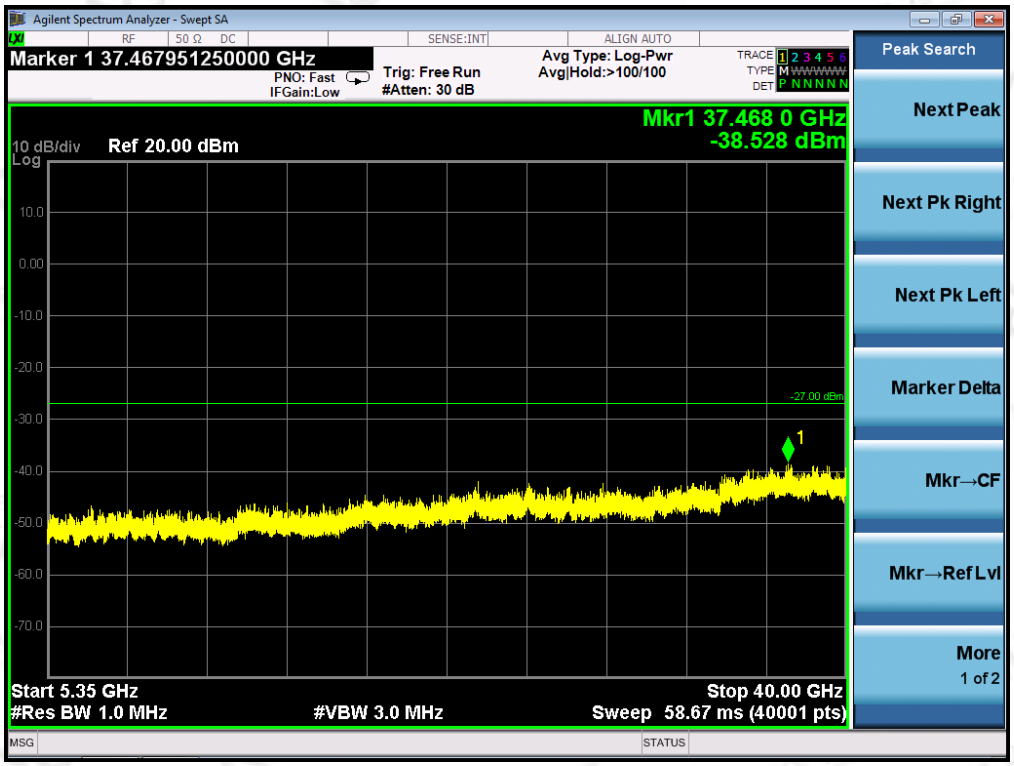
FOR 802.11A20 MODULATION

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5180MHz

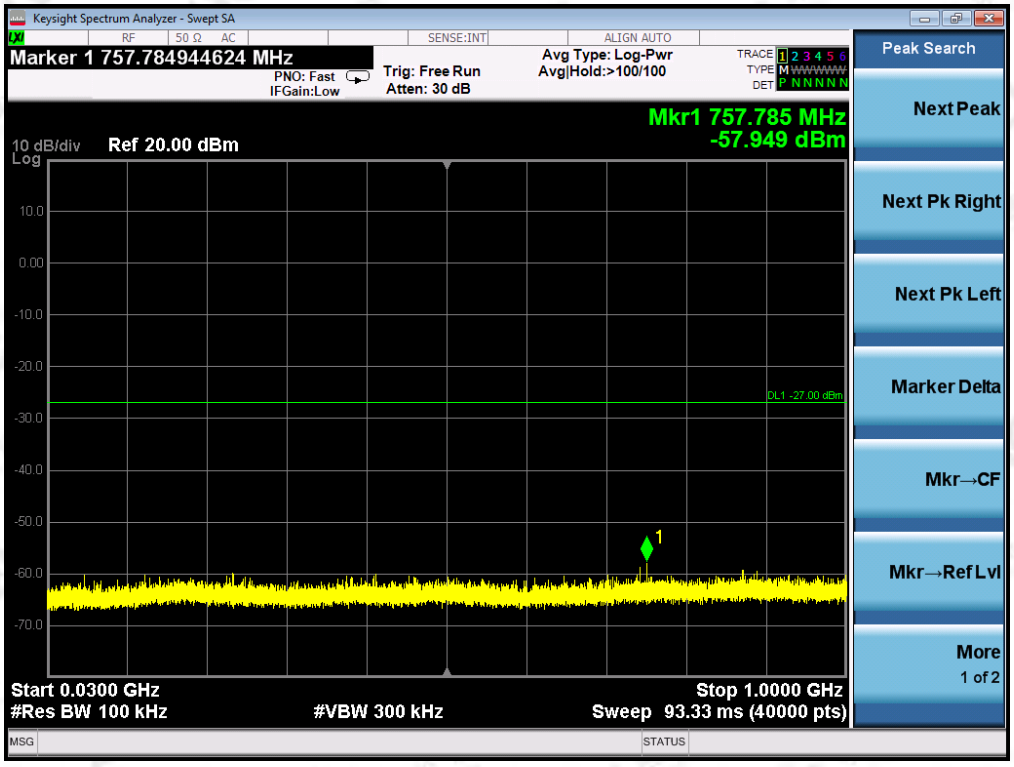


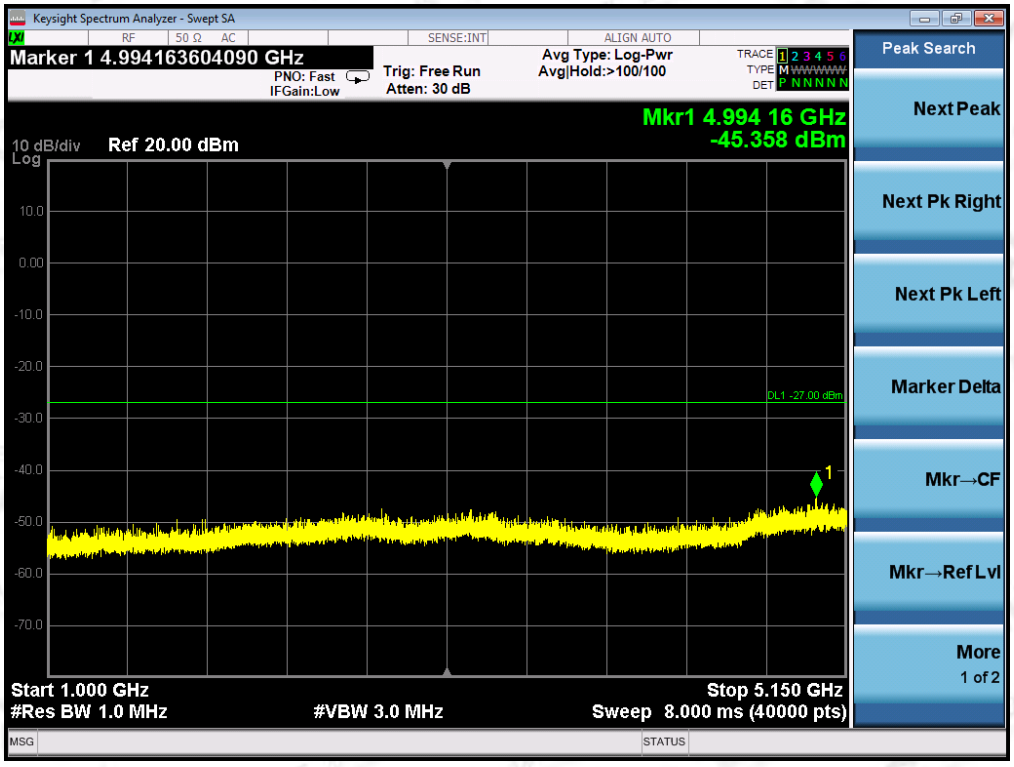


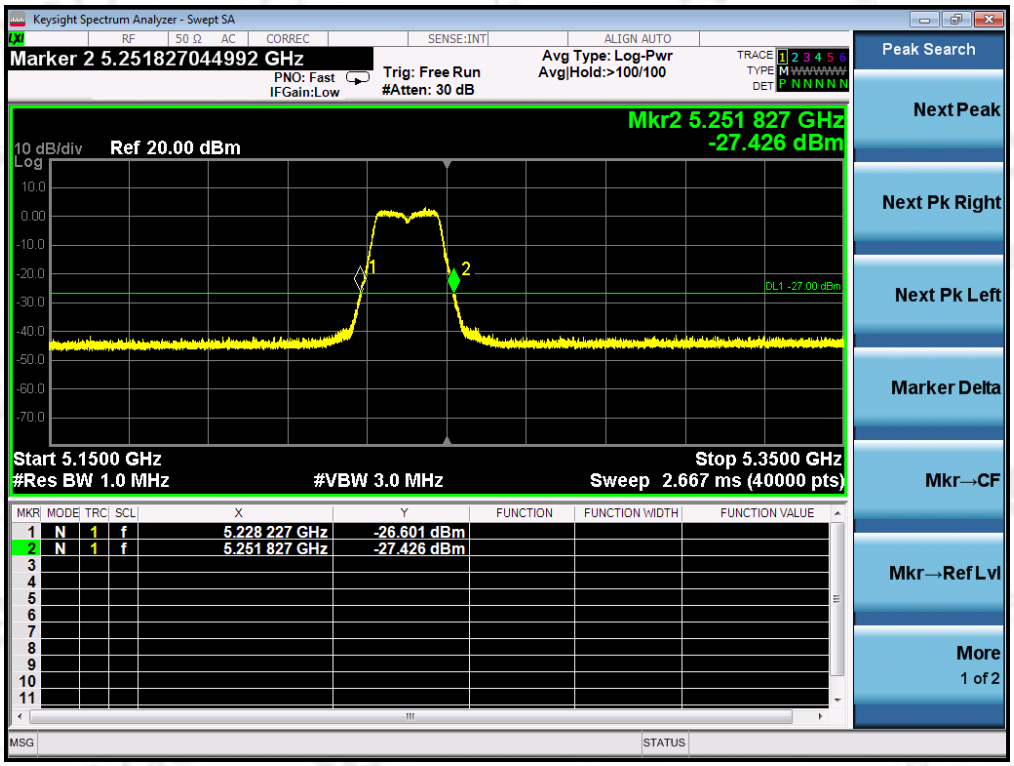


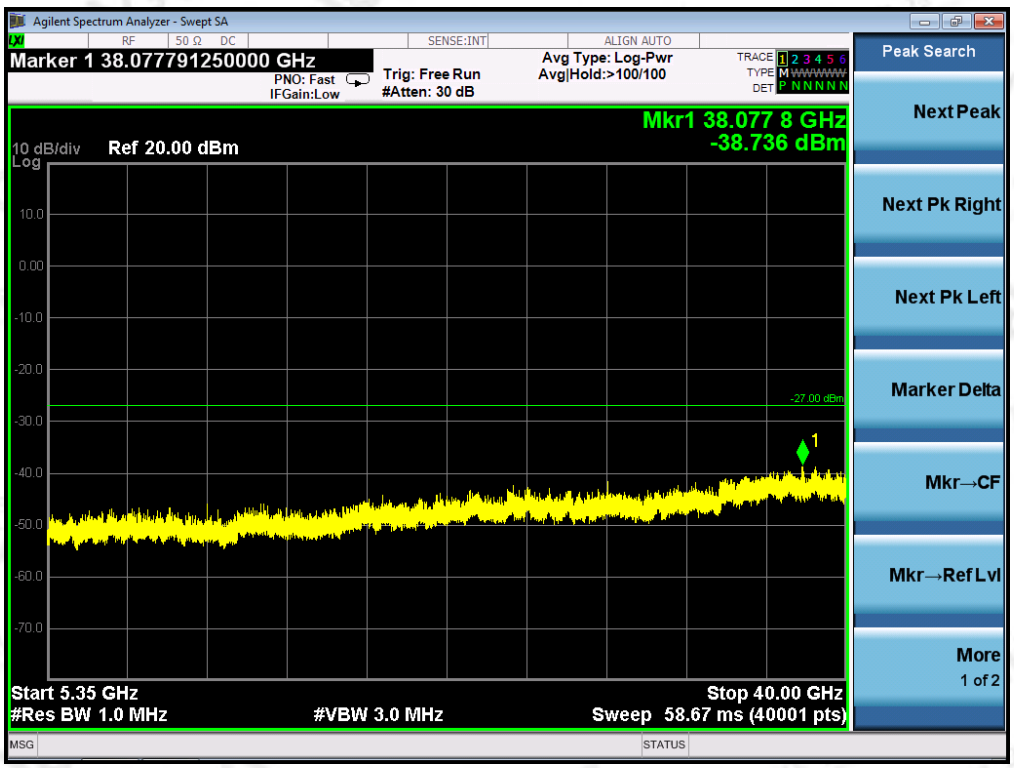


TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5240MHz

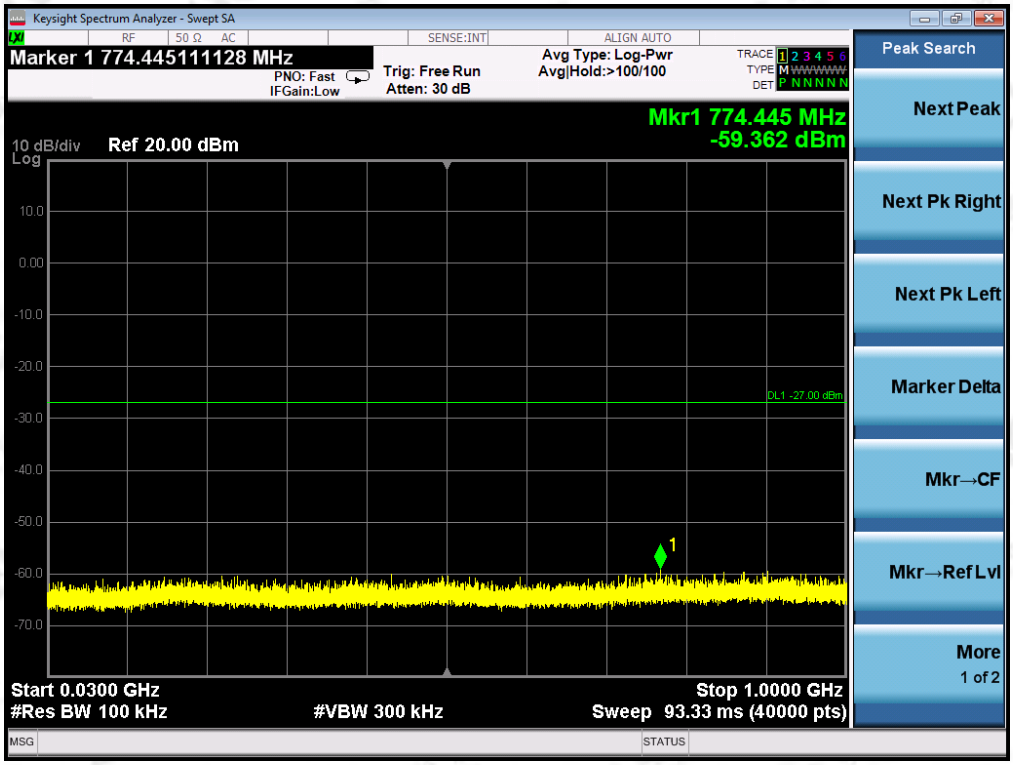


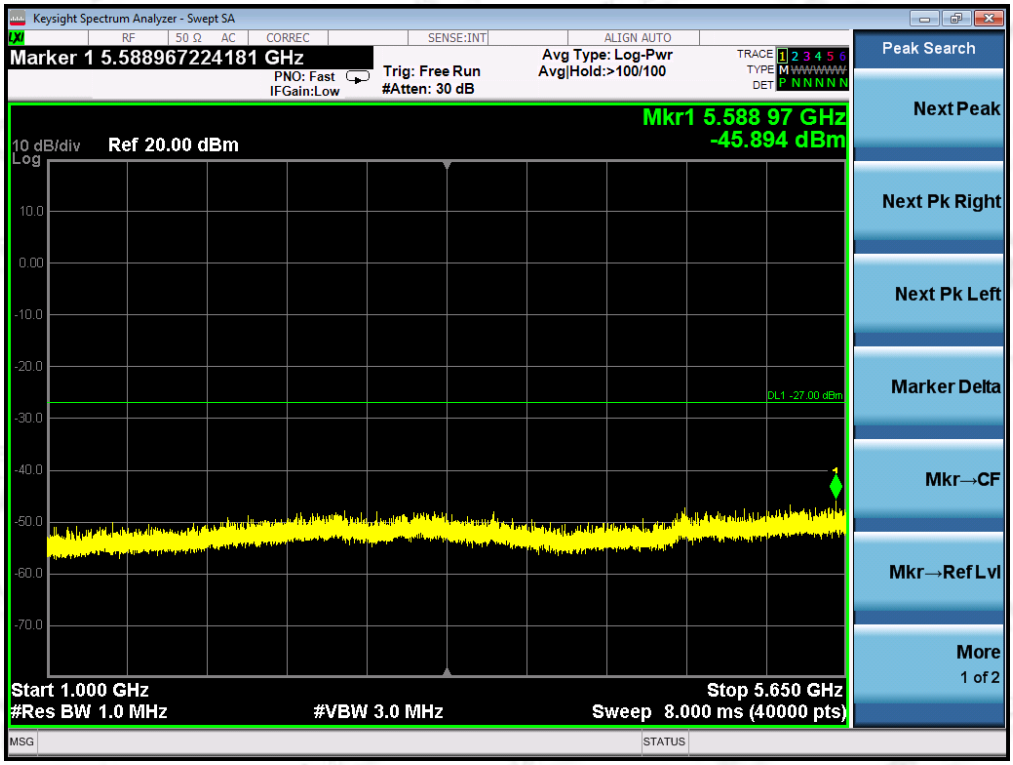


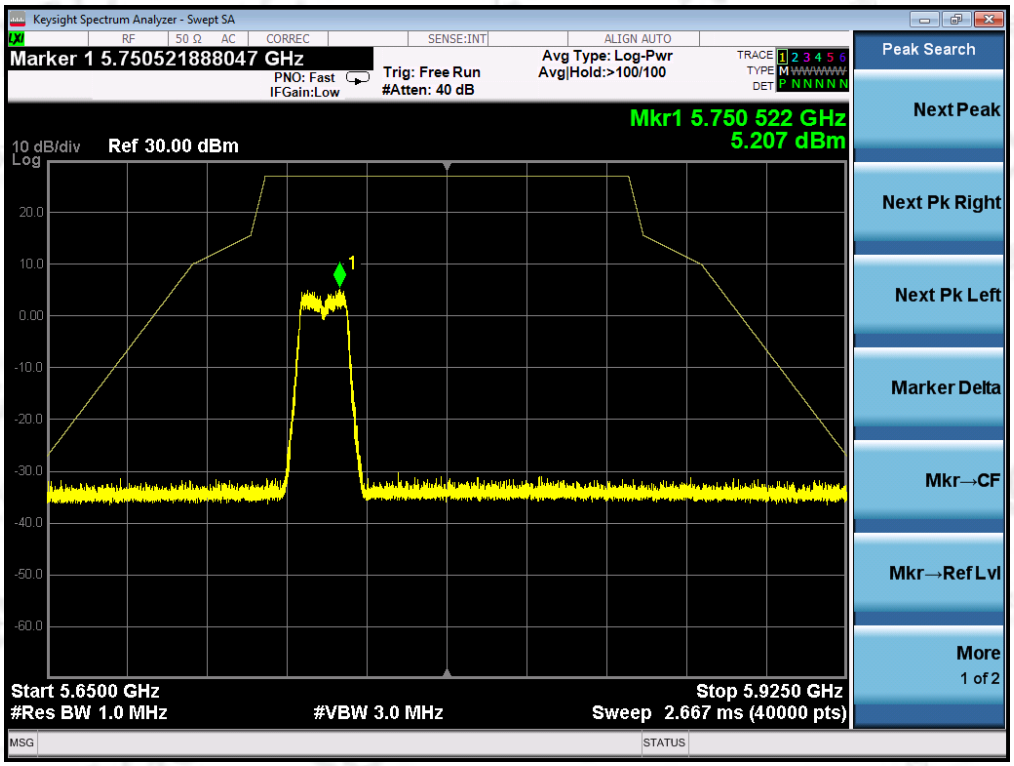


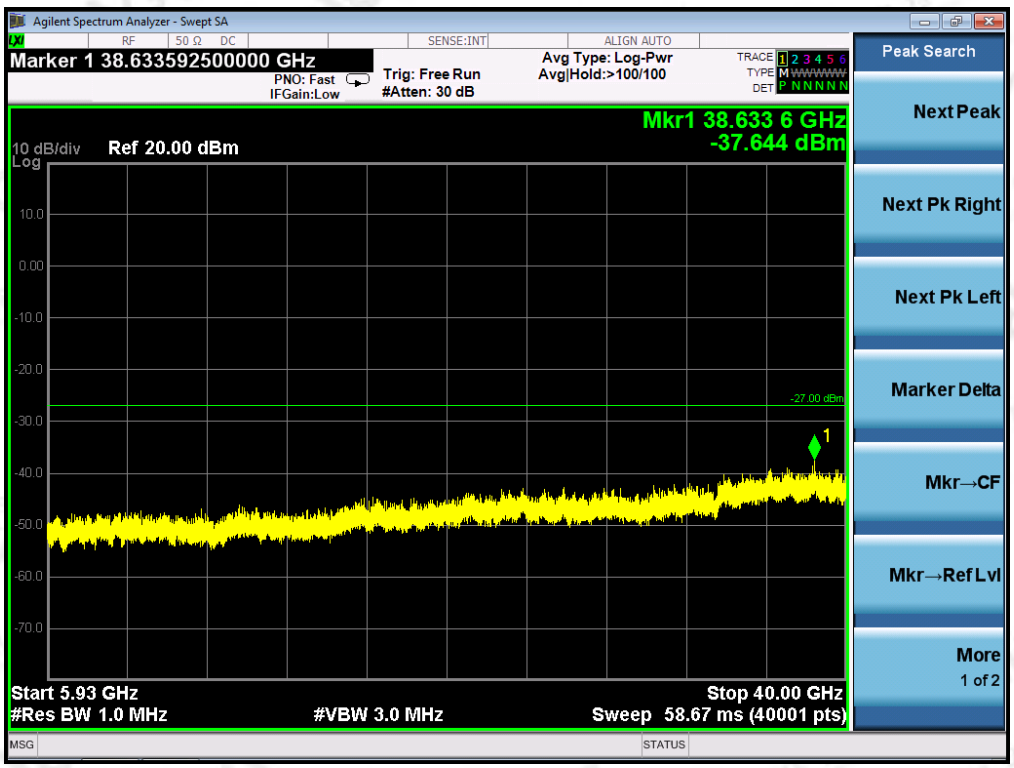


TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5745MHz

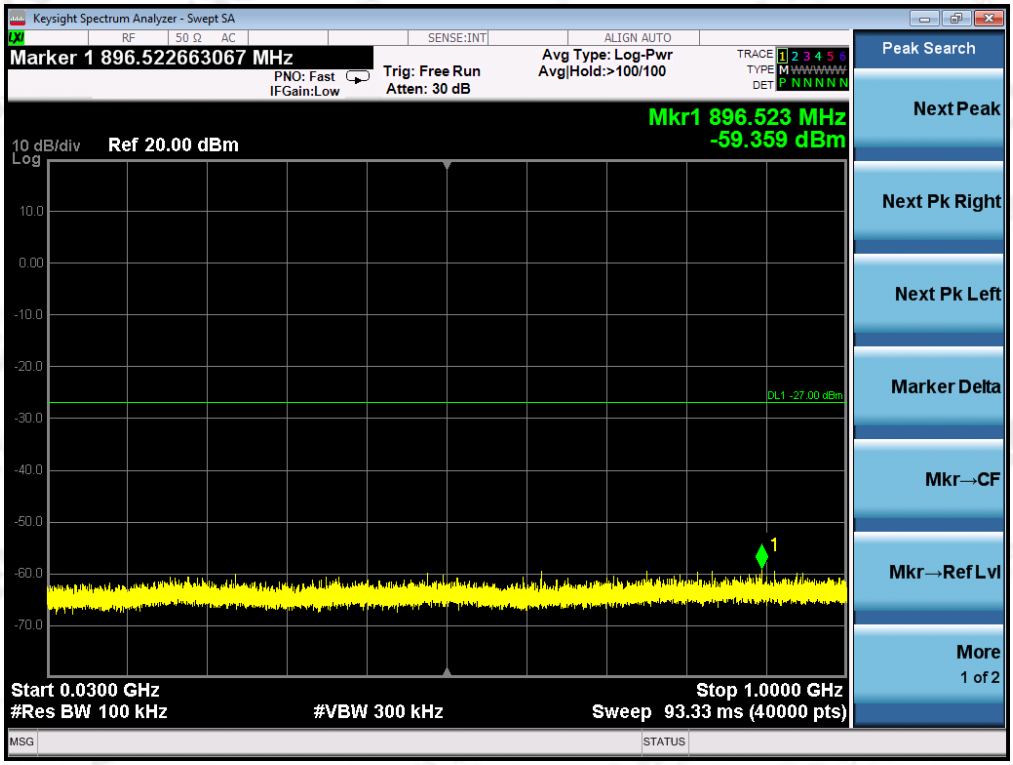


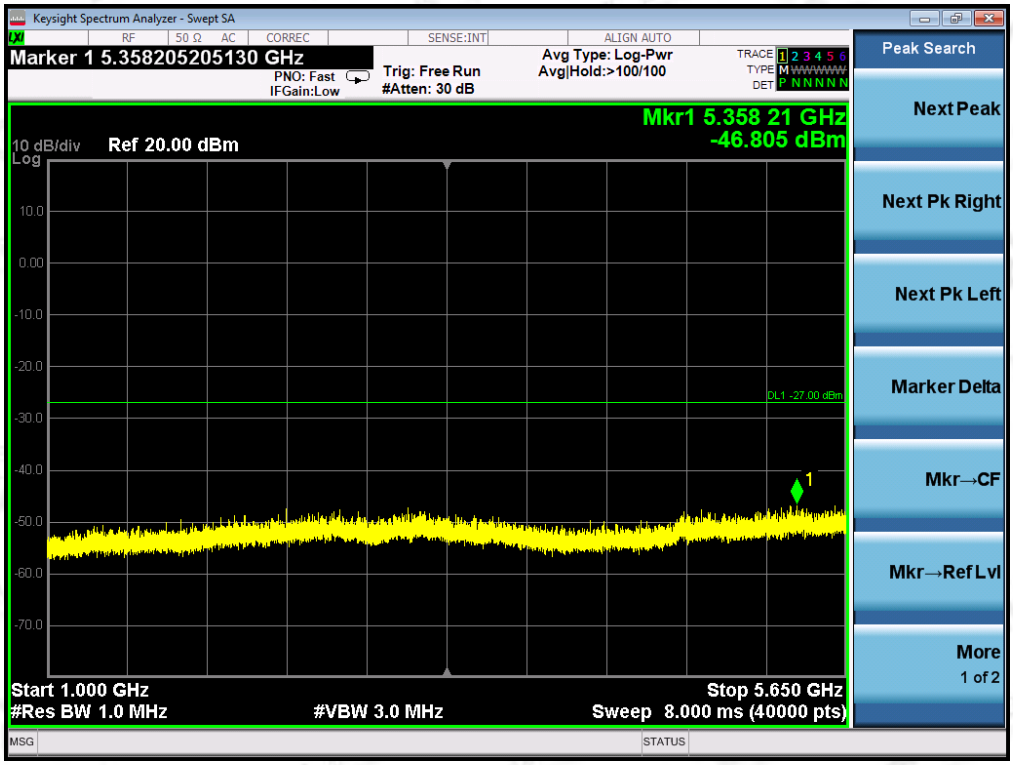


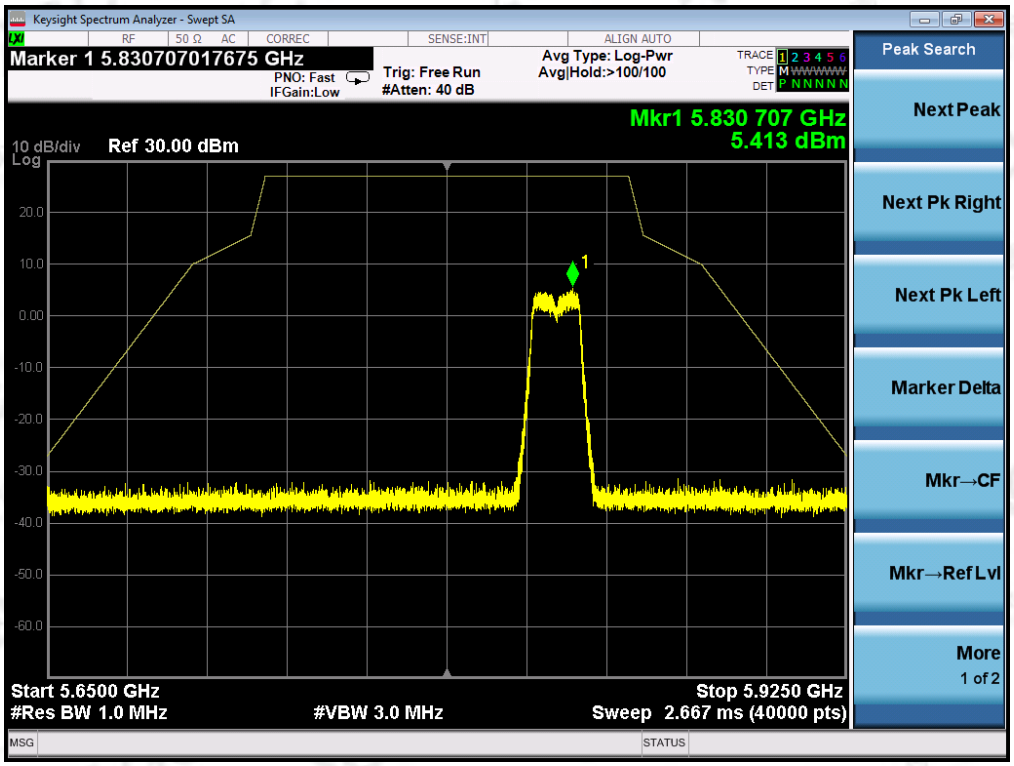


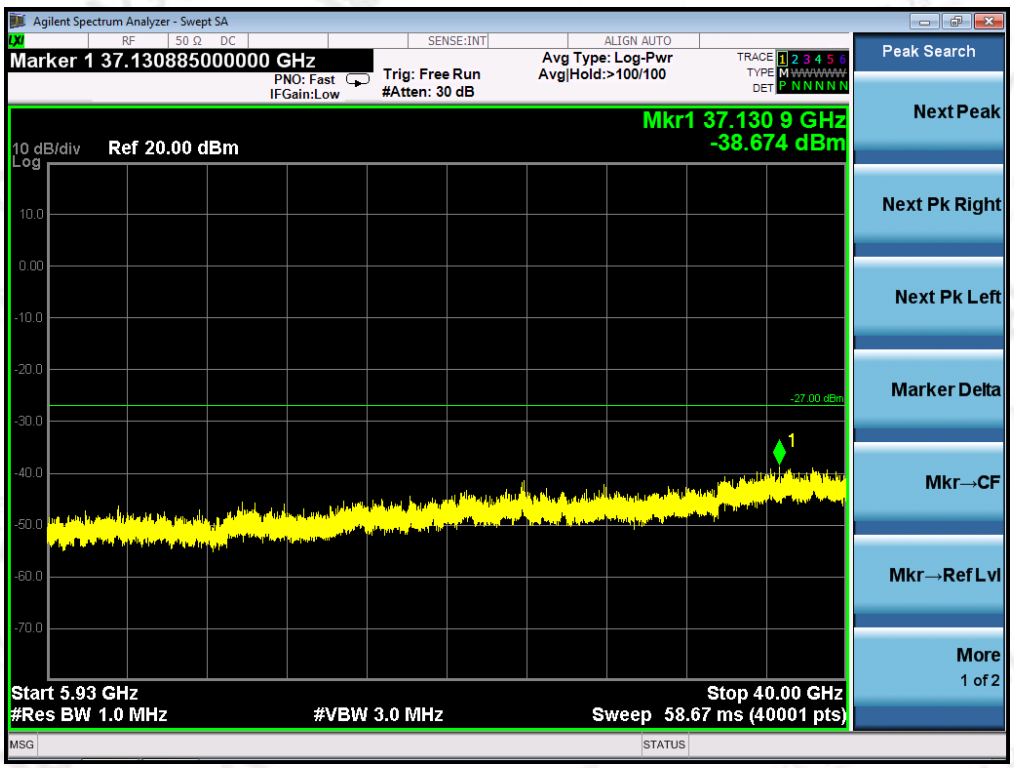


TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5825MHz



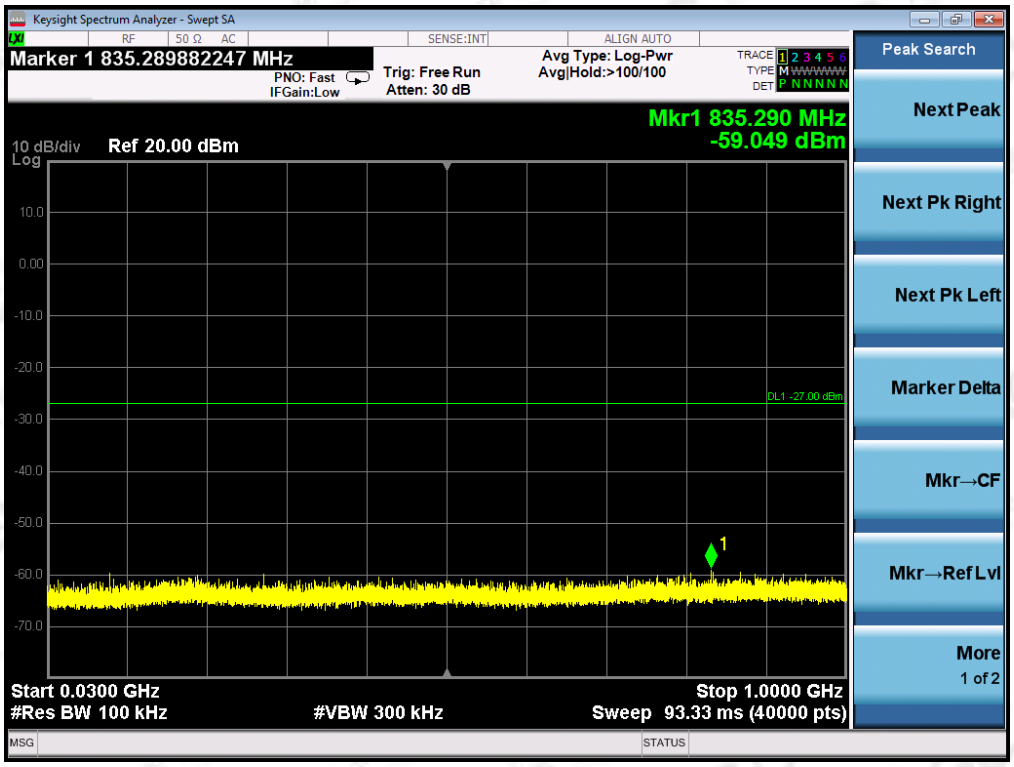


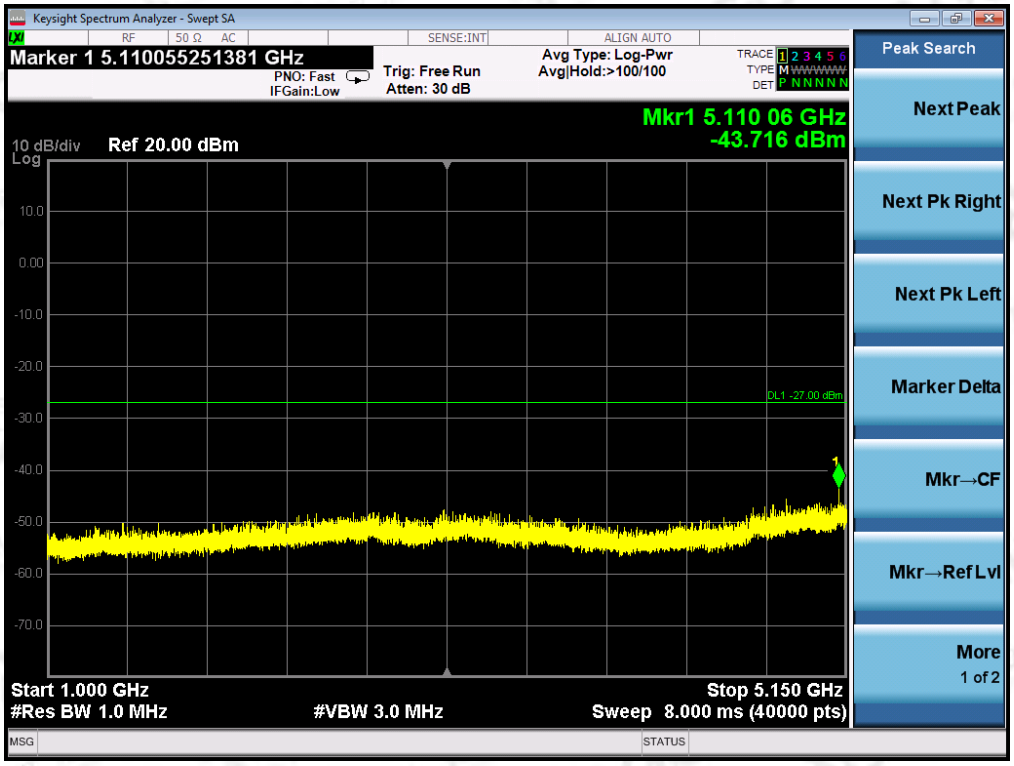


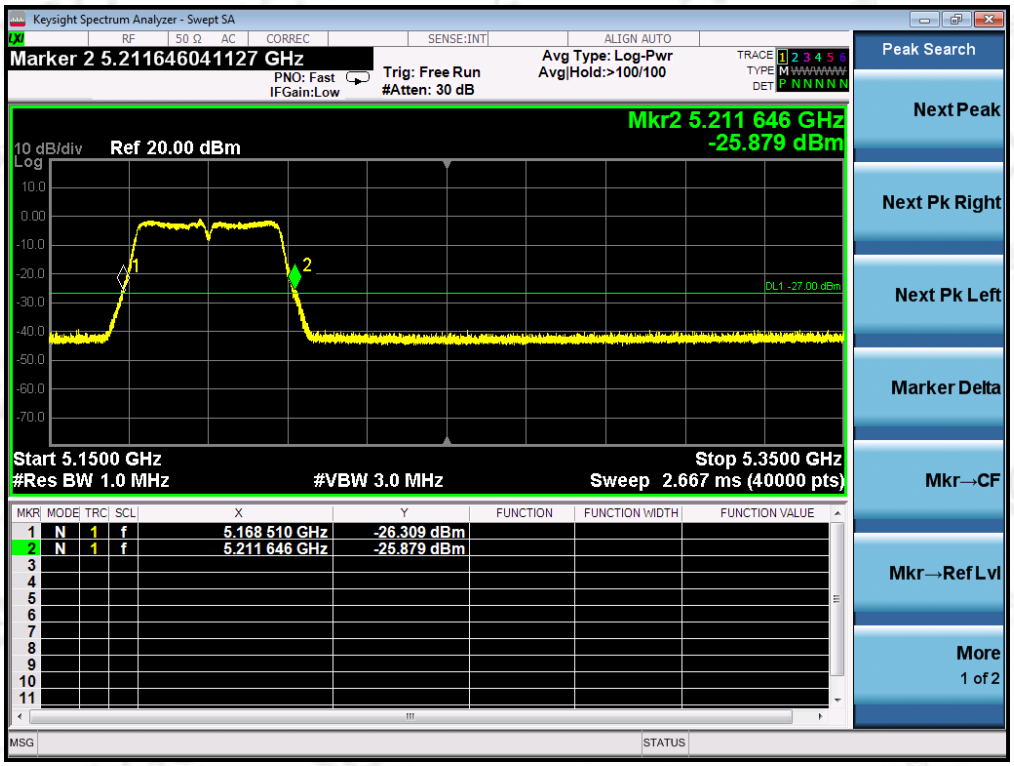


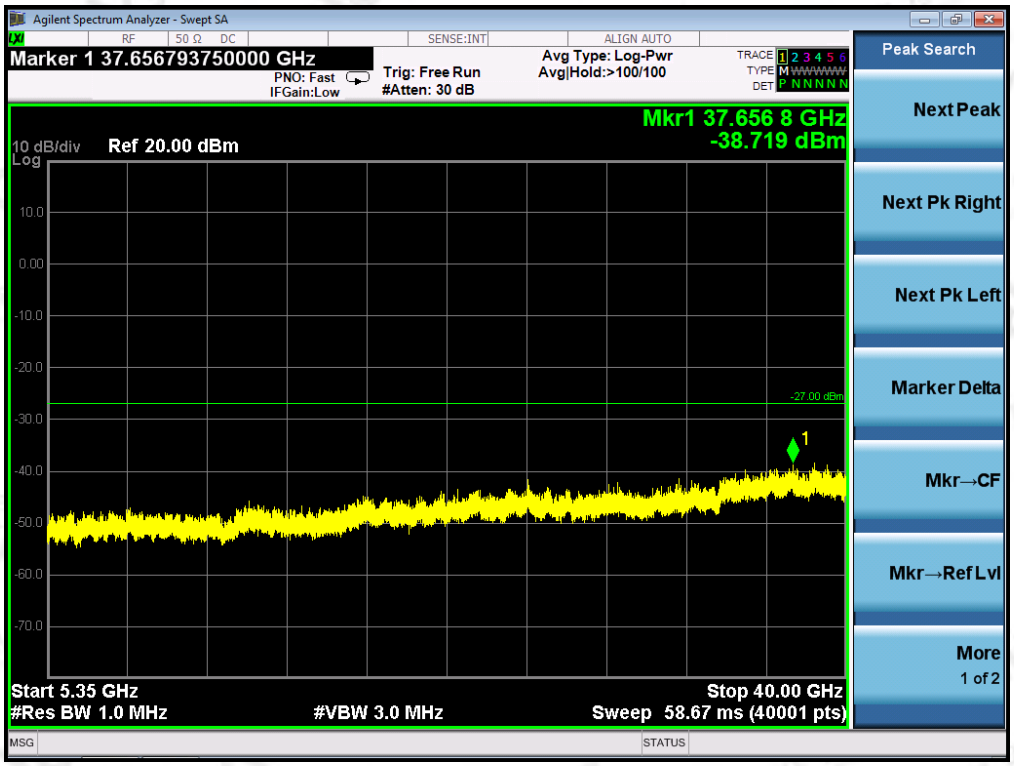
FOR 802.11N40 MODULATION

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5190MHz

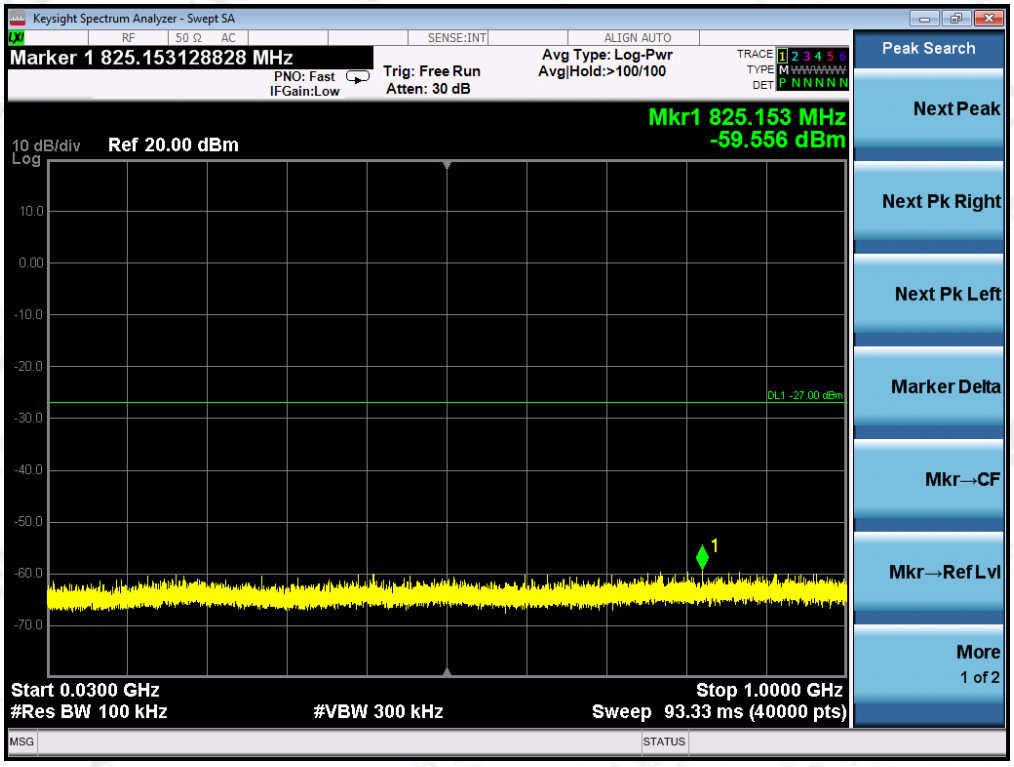


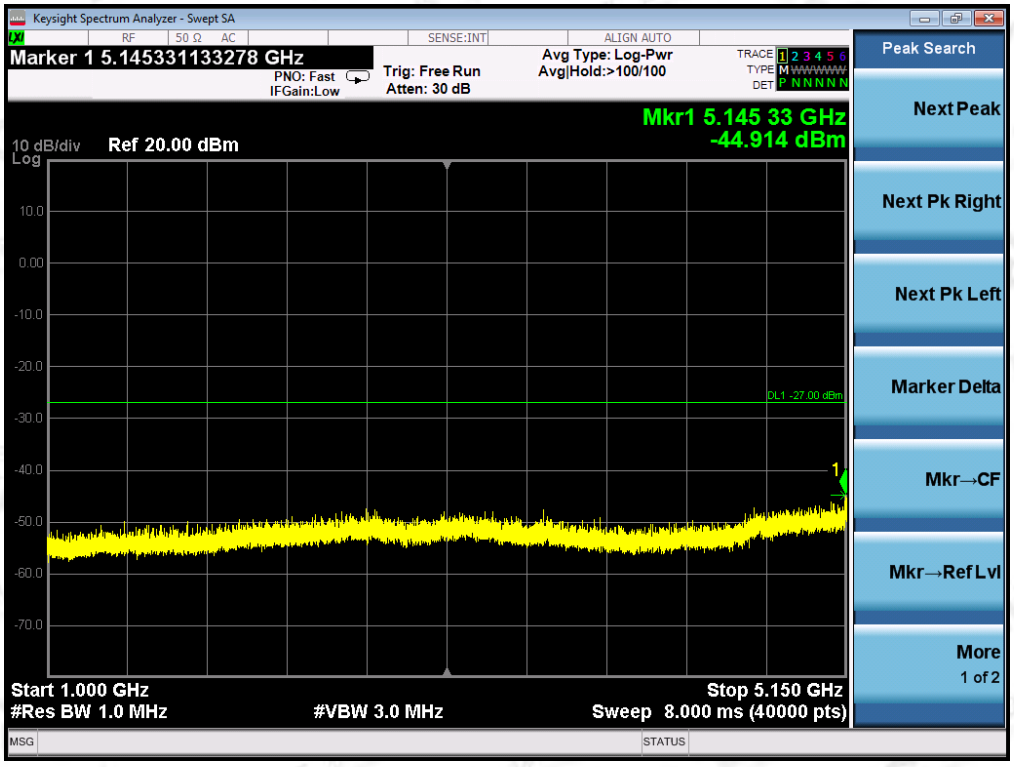


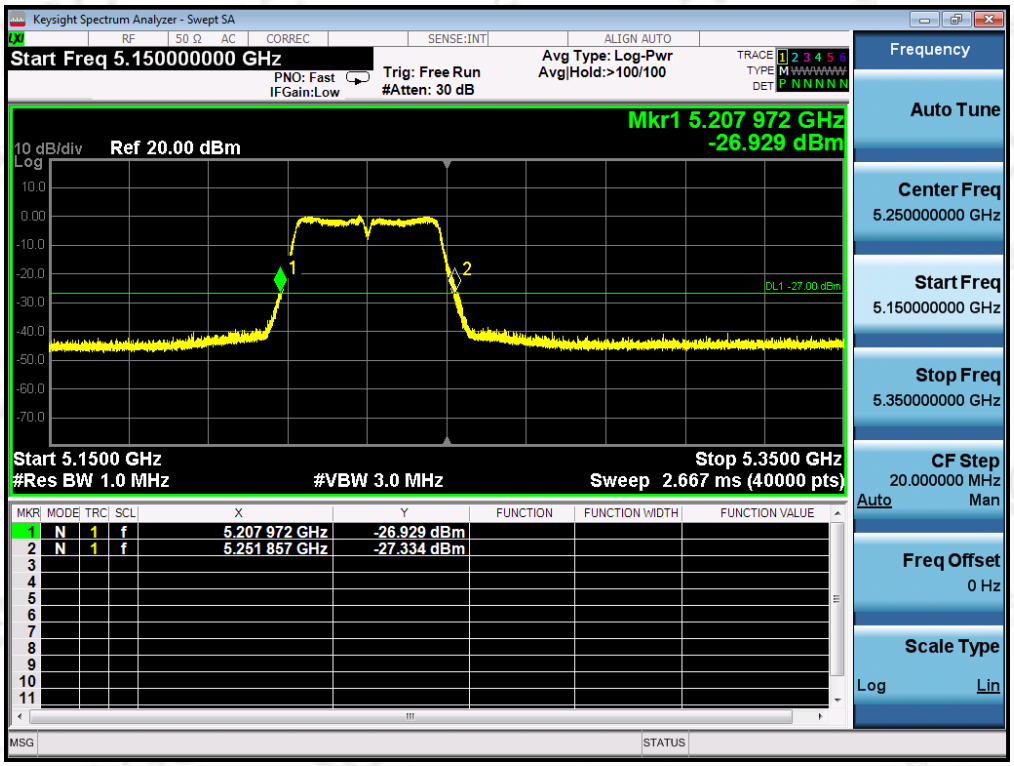


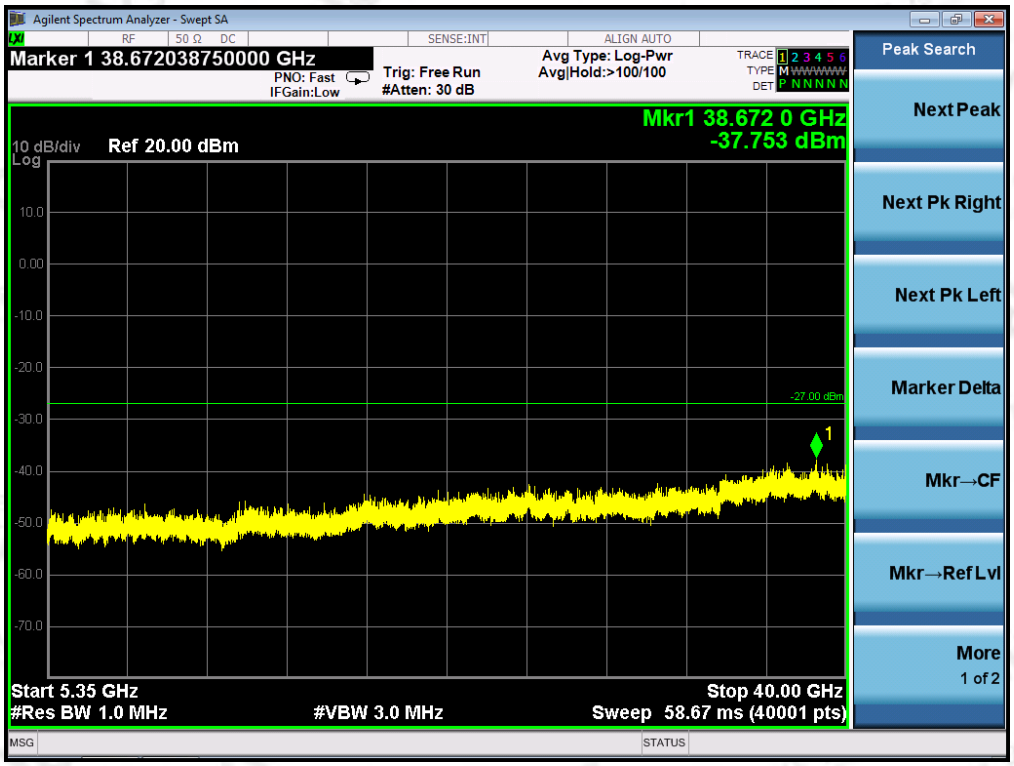


TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5230MHz

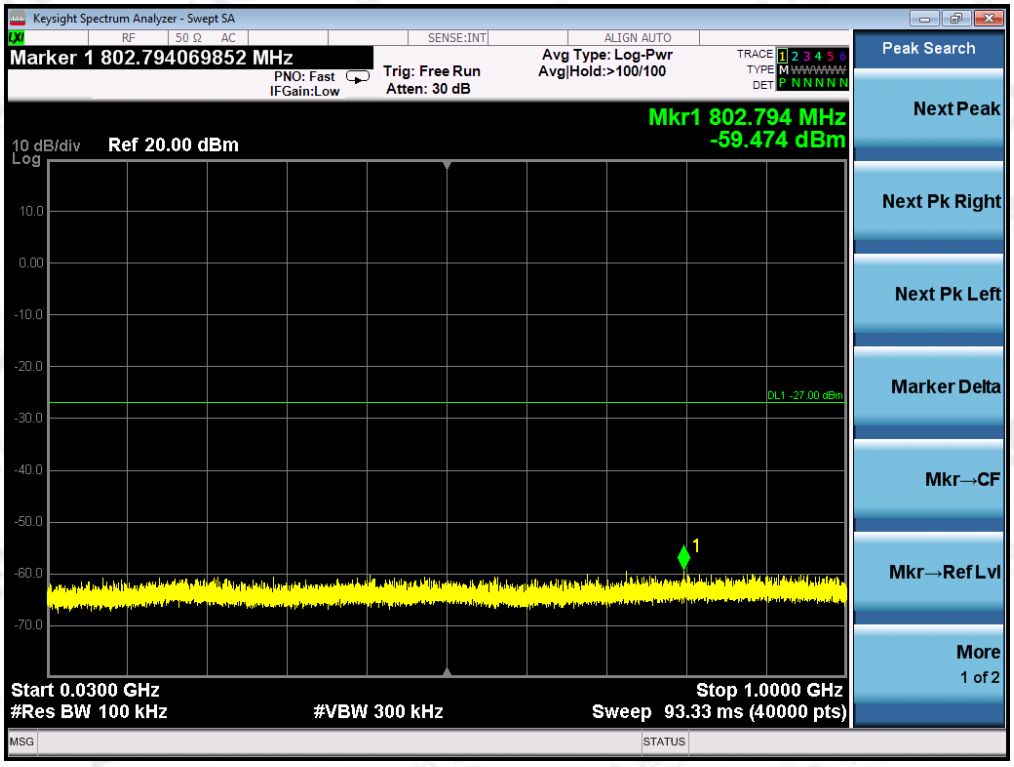


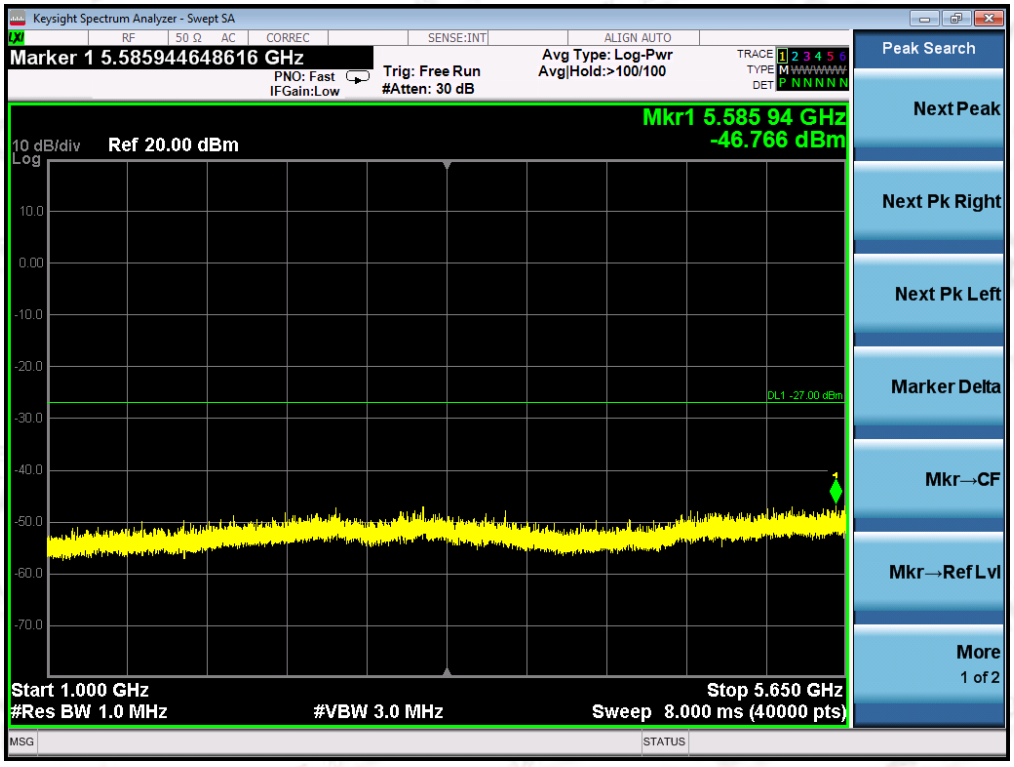


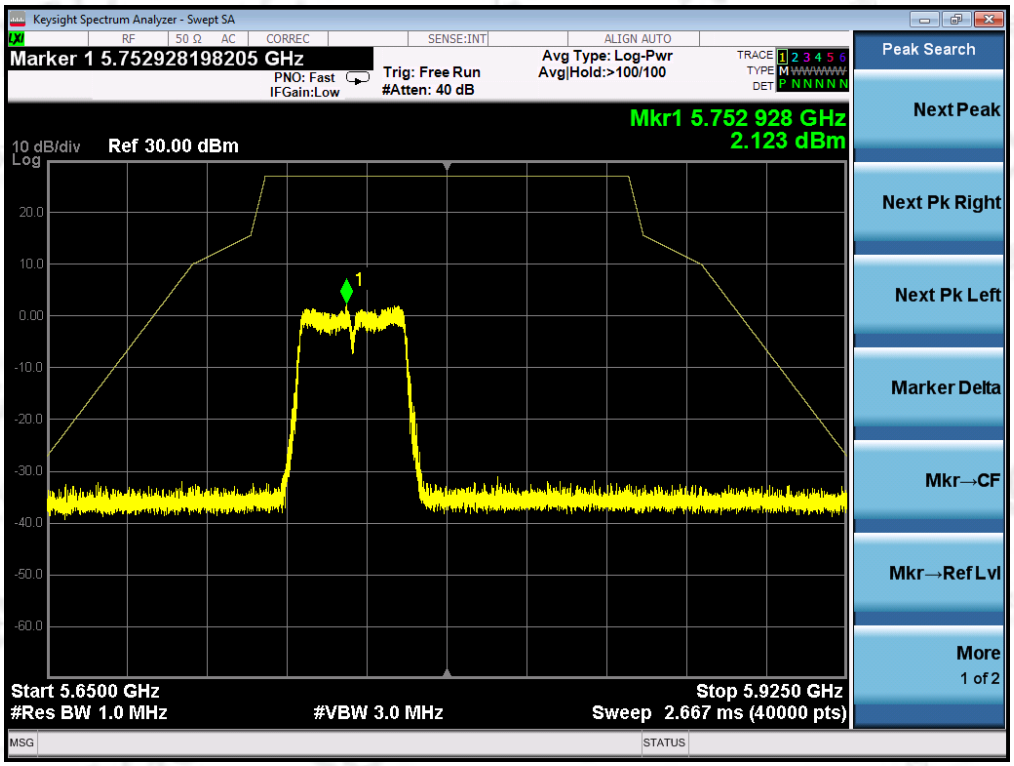


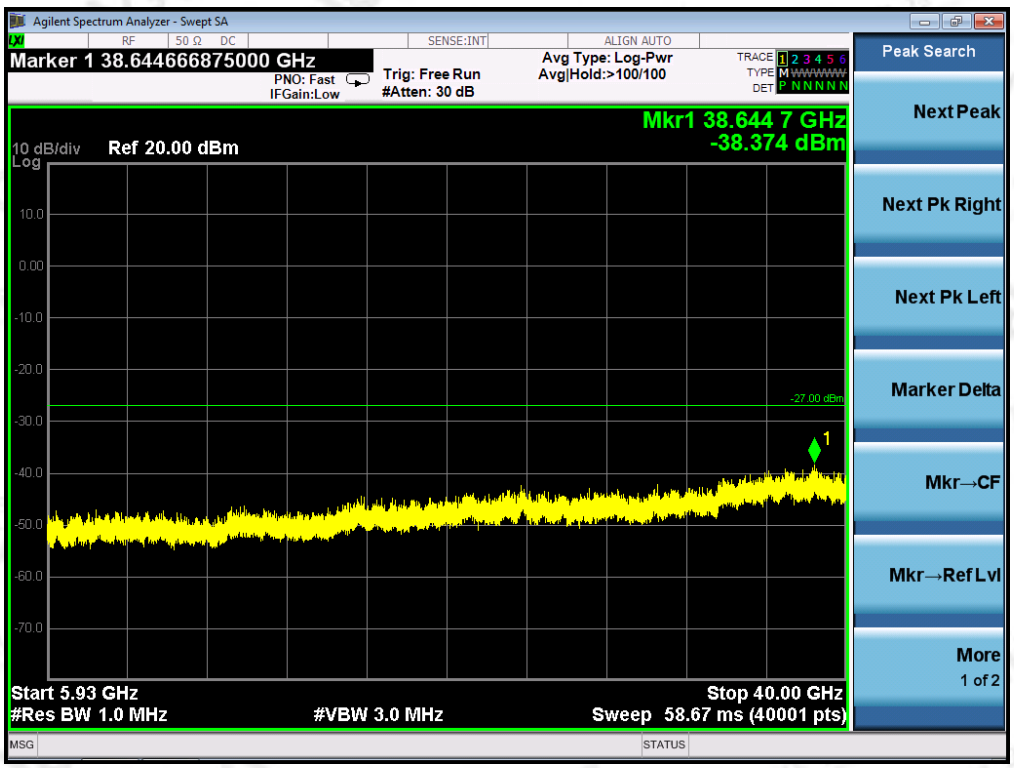


TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5755MHz

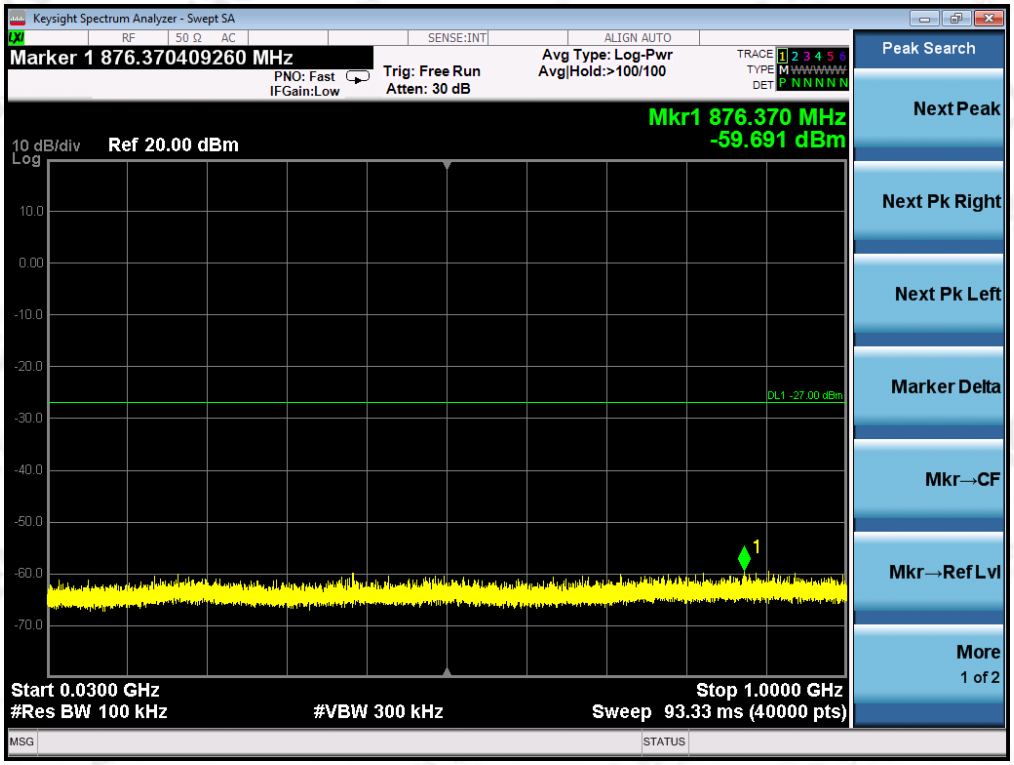


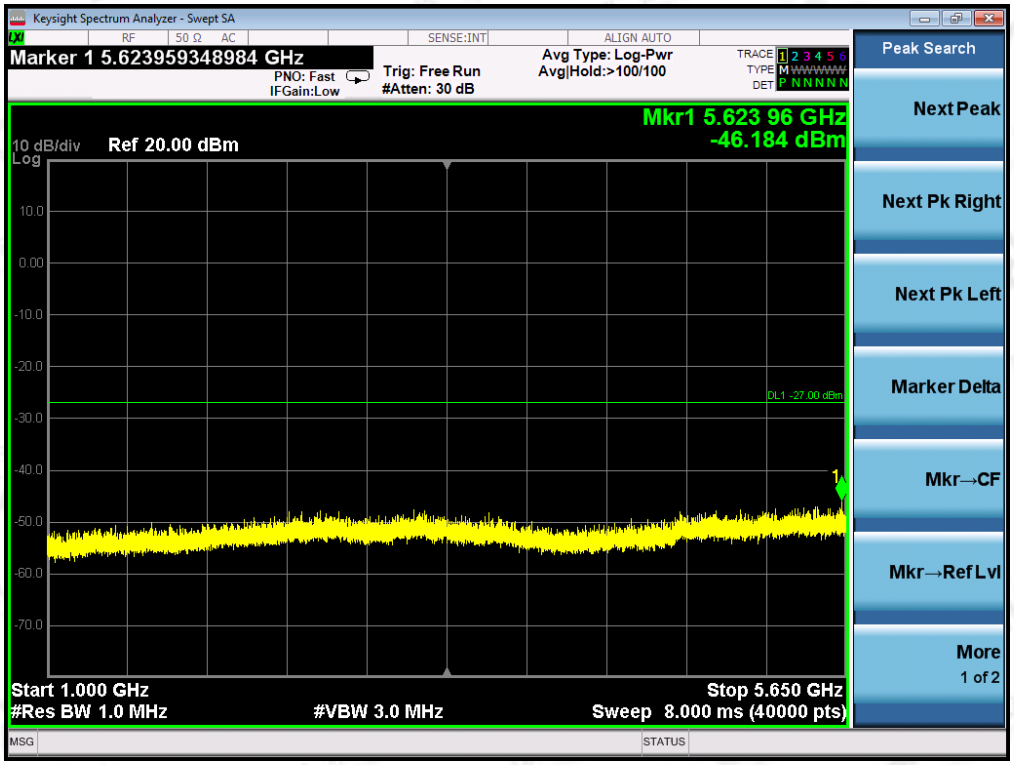


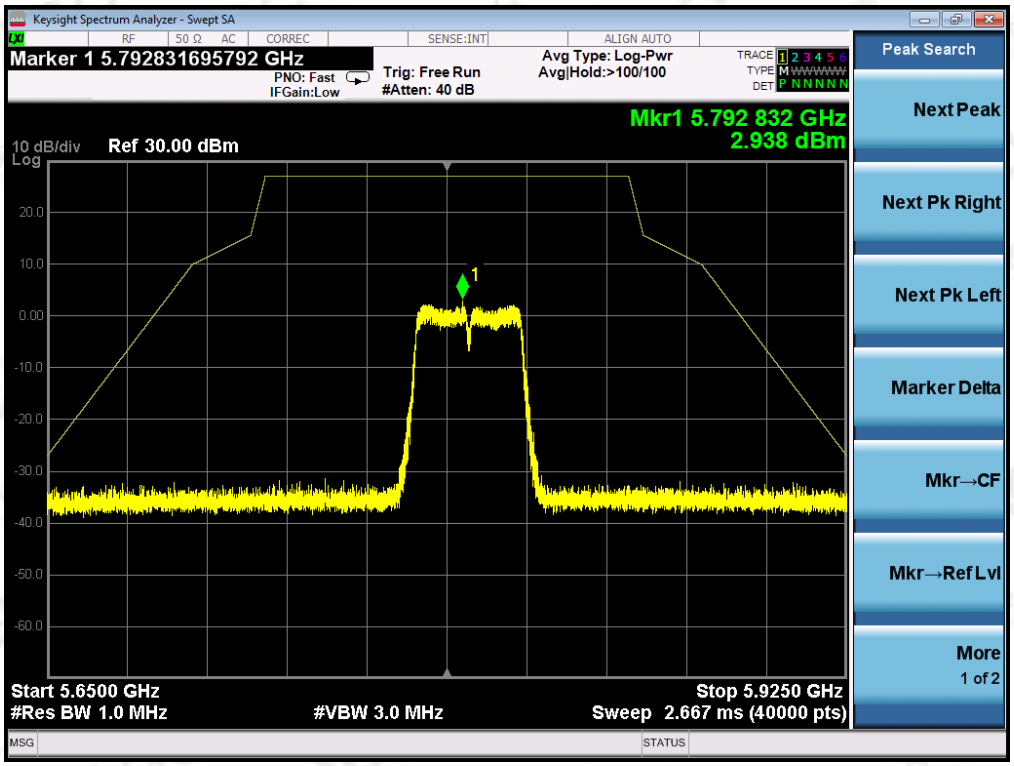


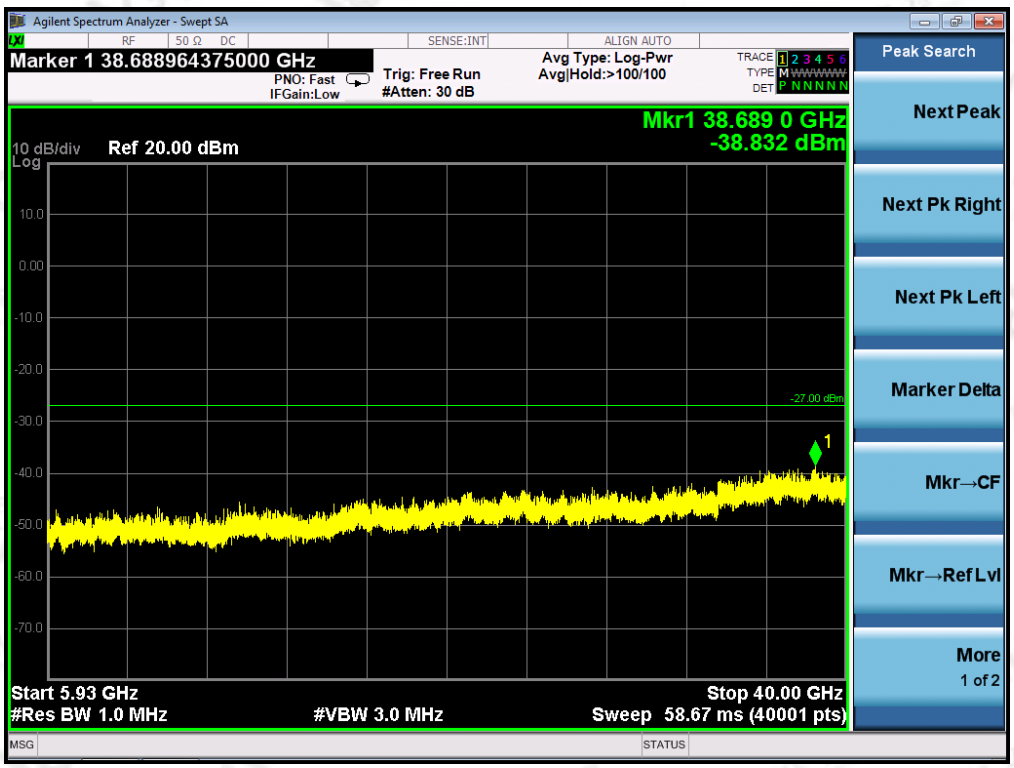


TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5795M



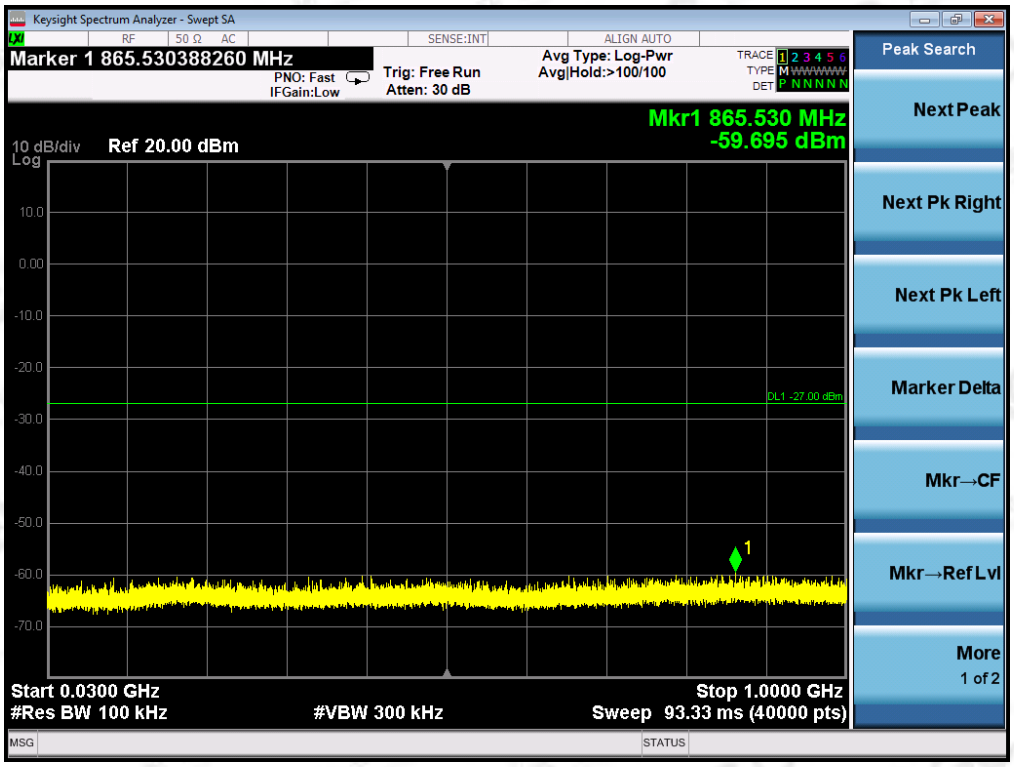


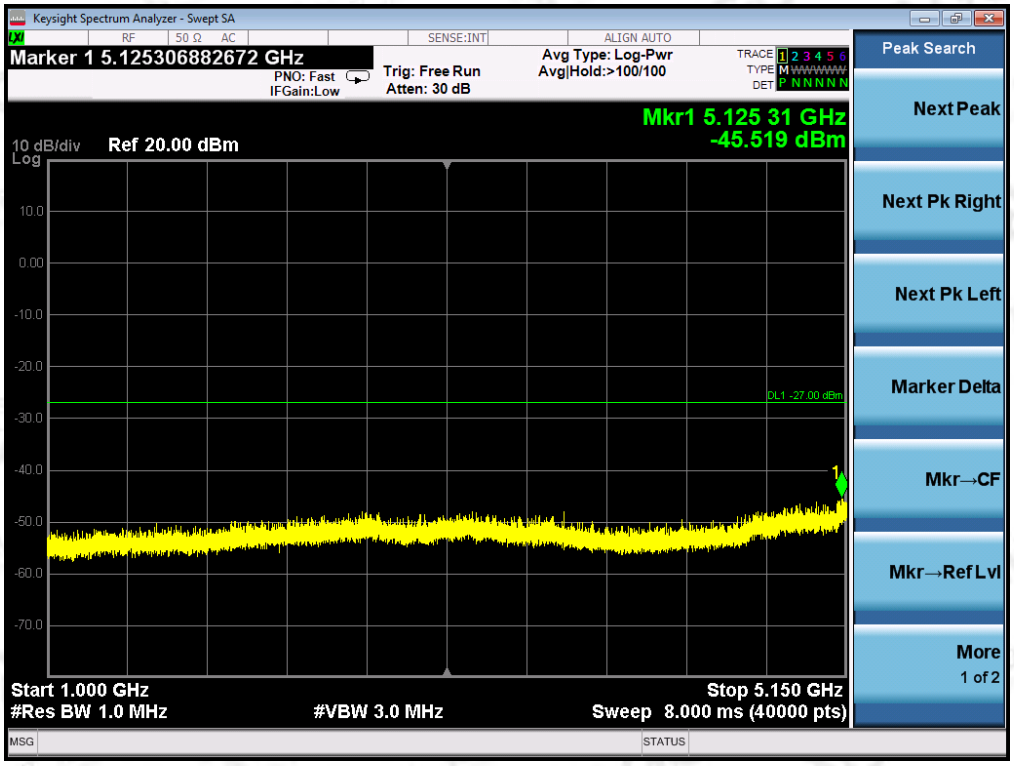


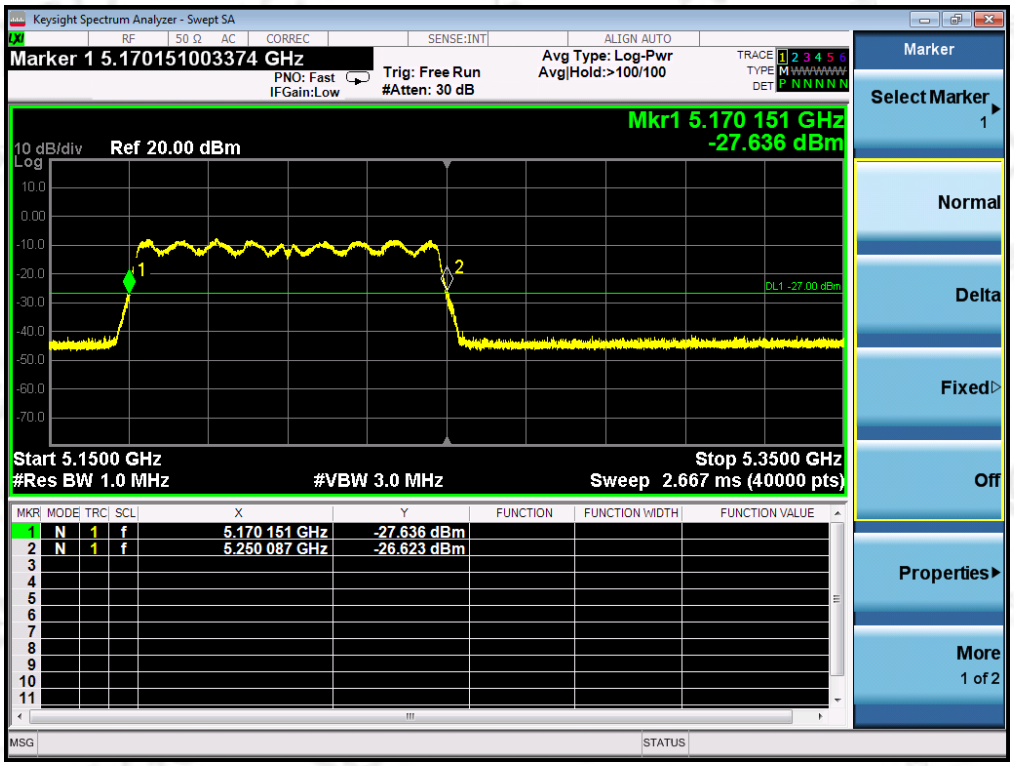


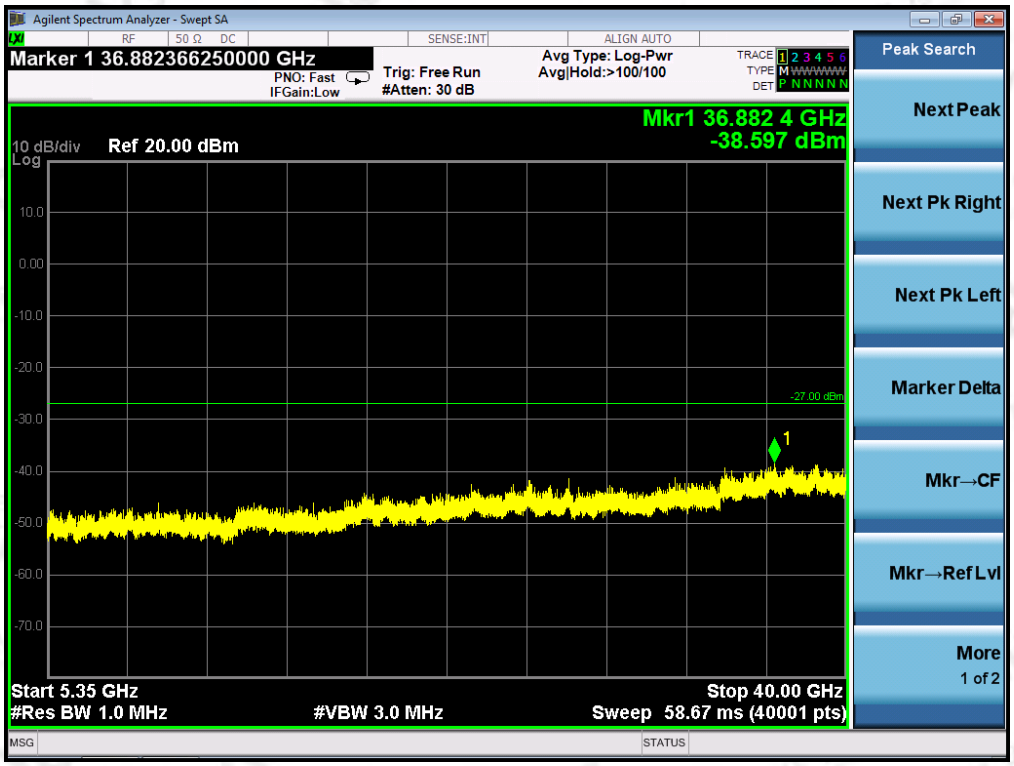
FOR 802.11AC80 MODULATION

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5210MHz

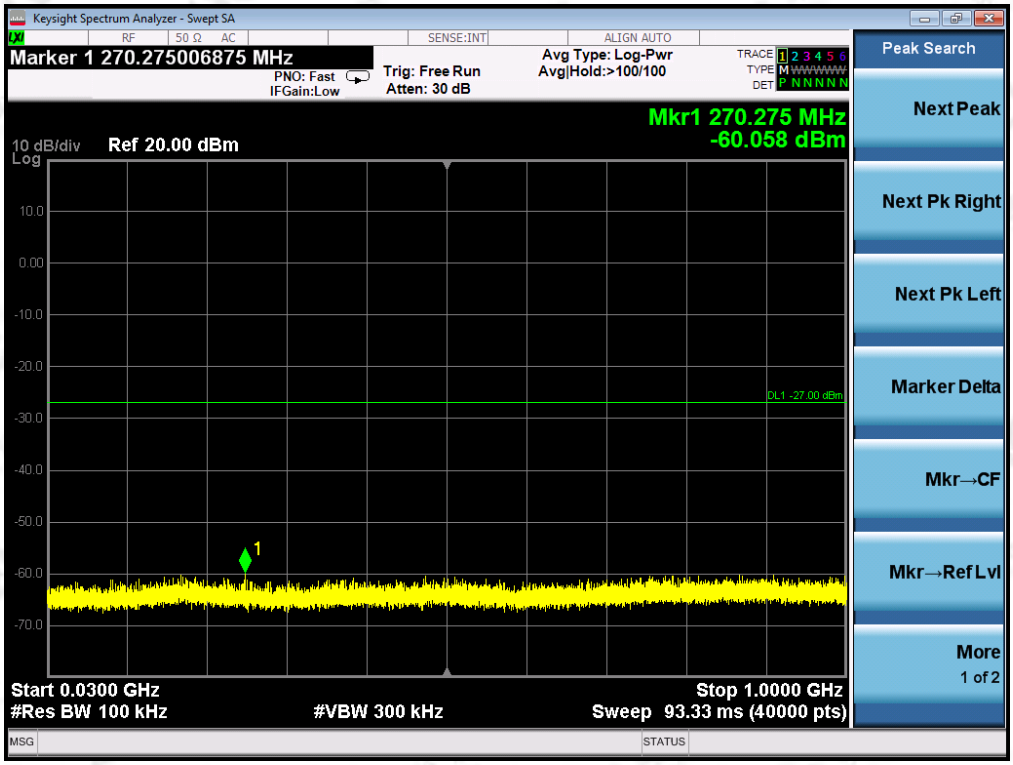


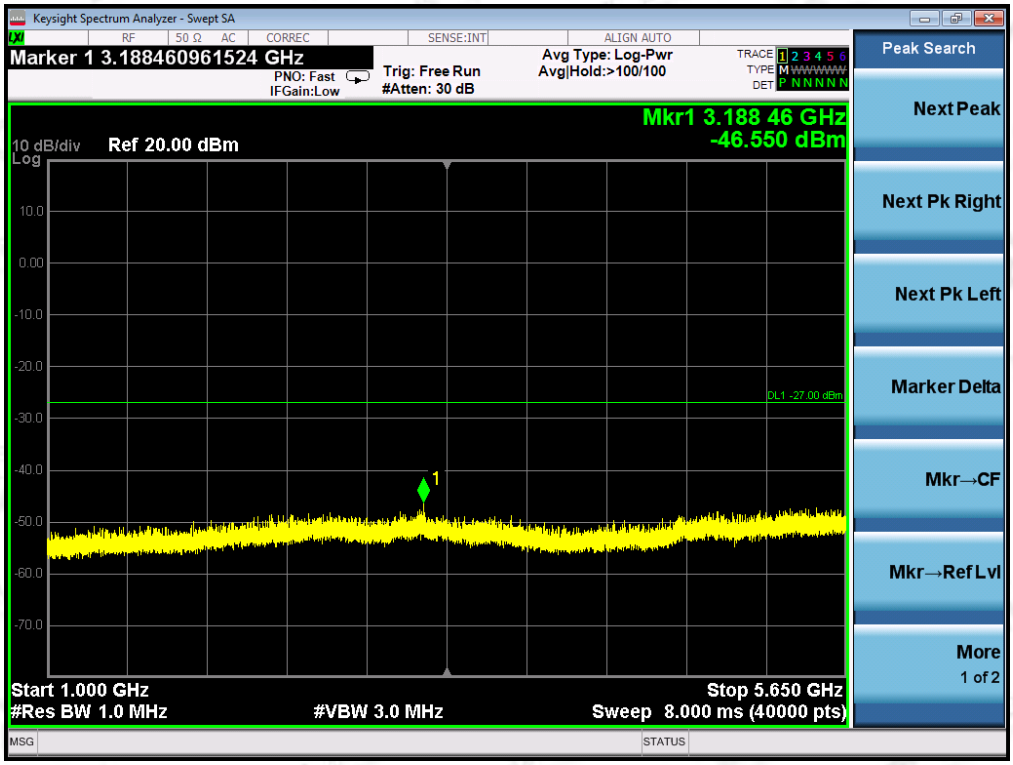


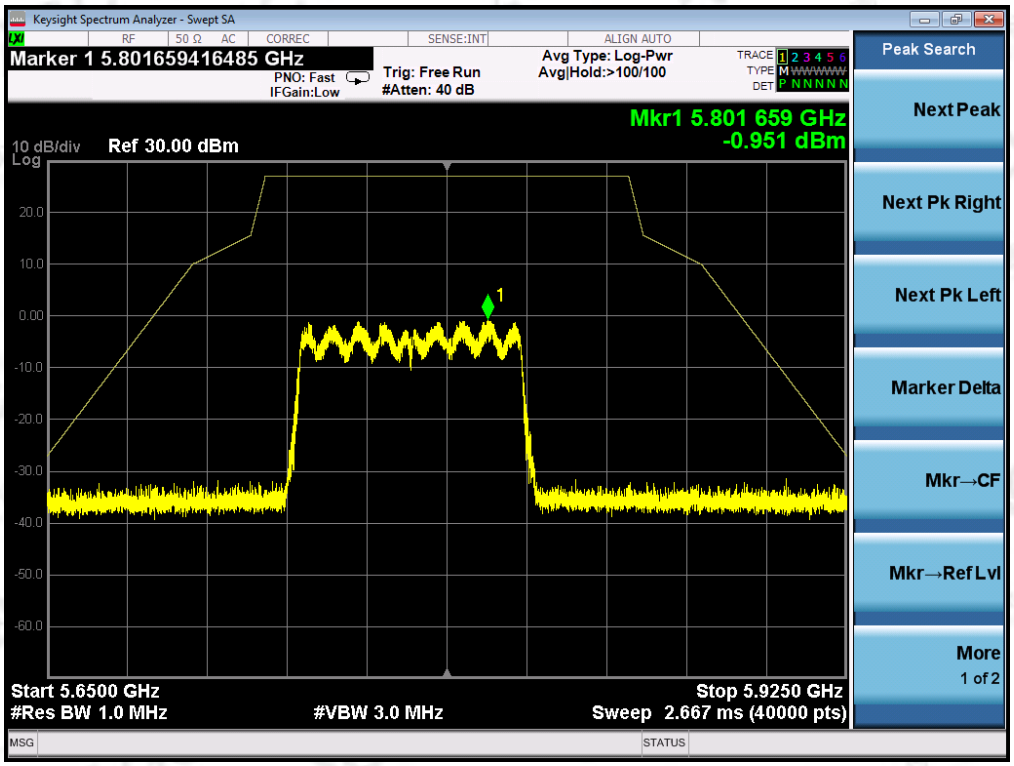


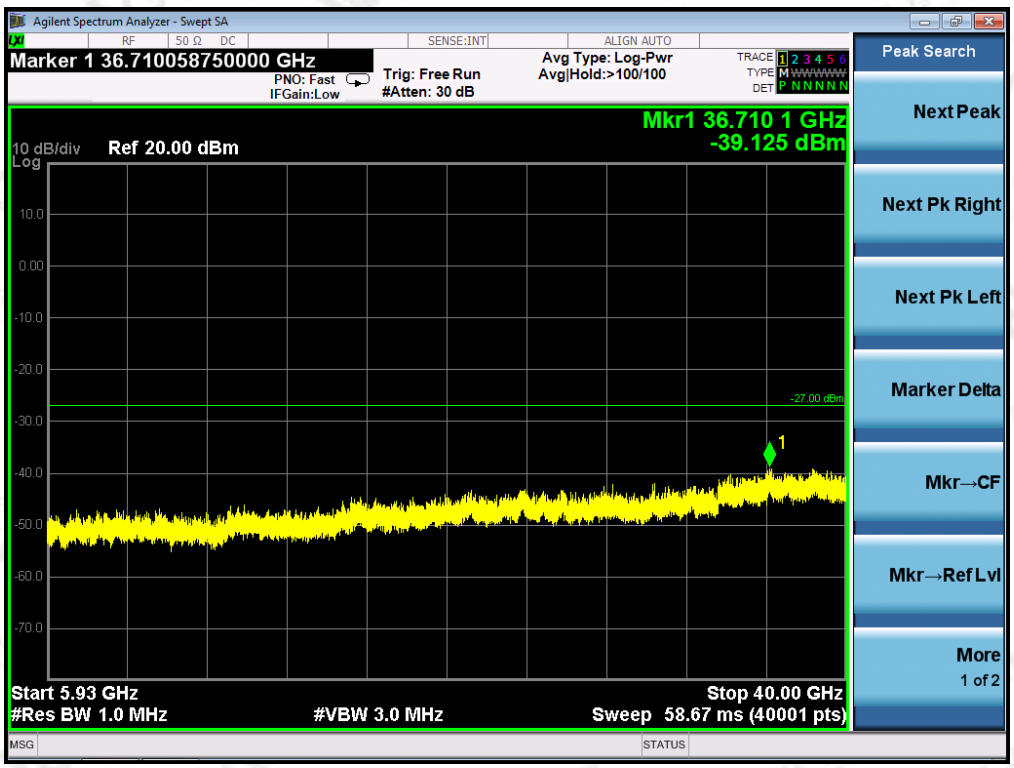


TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5775MHz









Note: All the 20MHz bandwidth modulation had been tested, the 802.11a20 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.

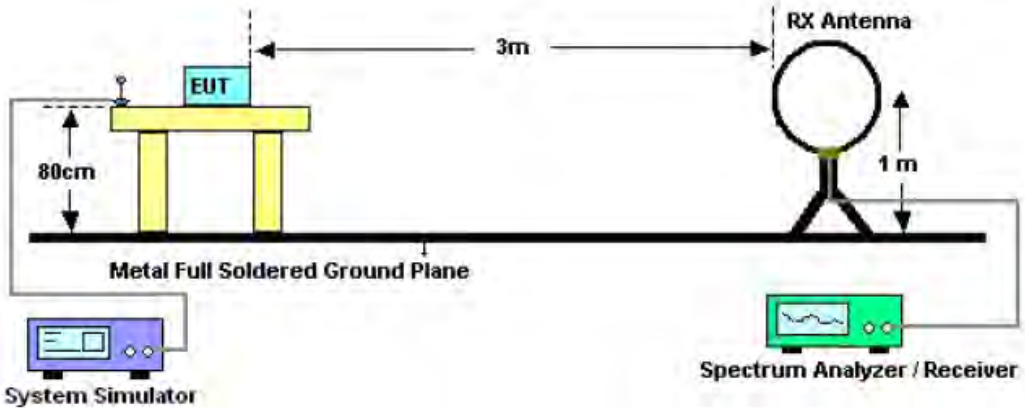
12. RADIATED EMISSION

12.1. MEASUREMENT PROCEDURE

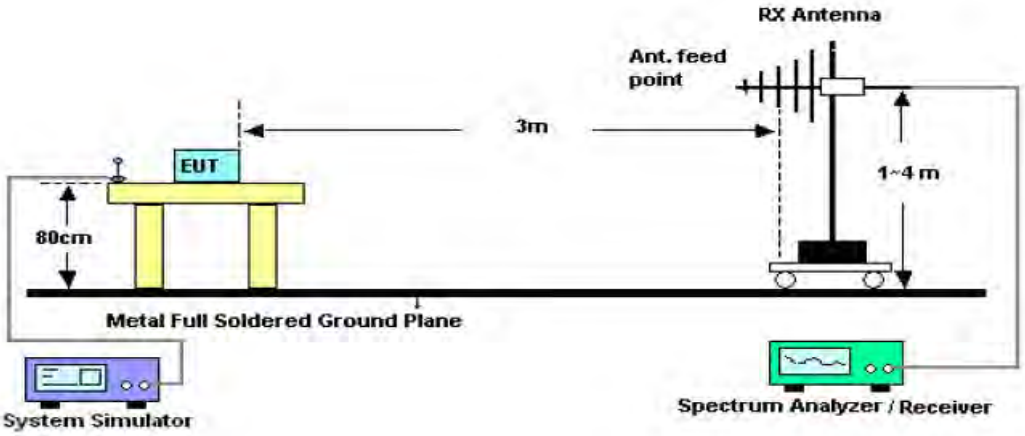
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated 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.

12.2. TEST SETUP

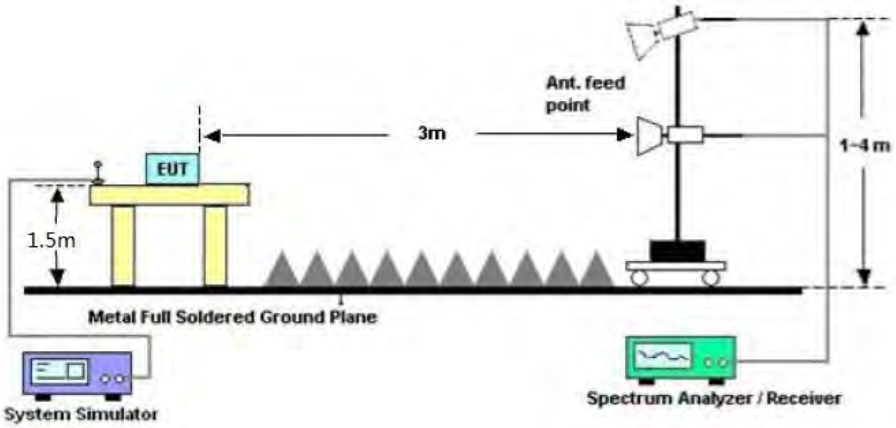
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



12.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested For restricted band radiated emission,
the test records reported below are the worst result compared to other modes.

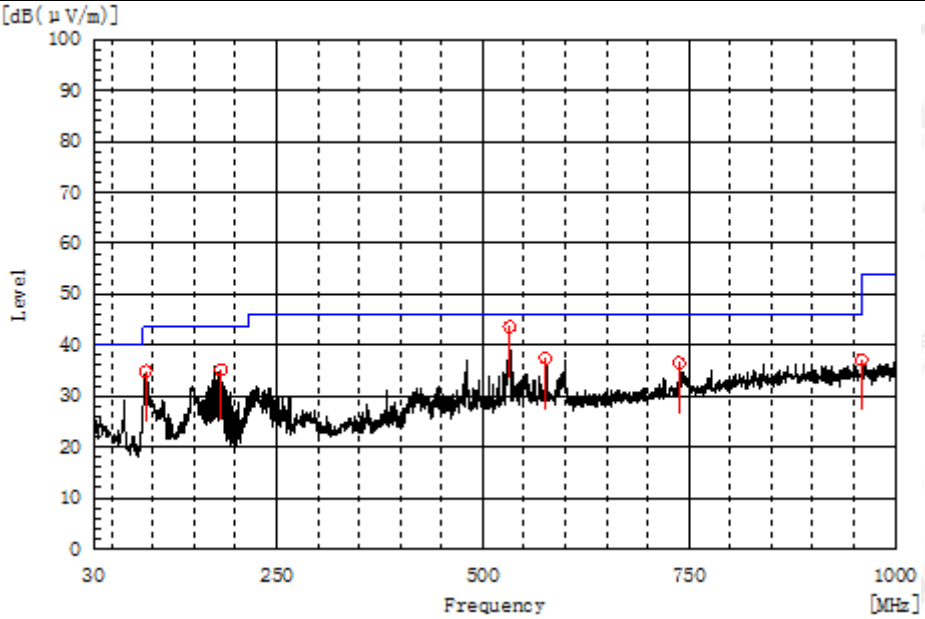
12.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ

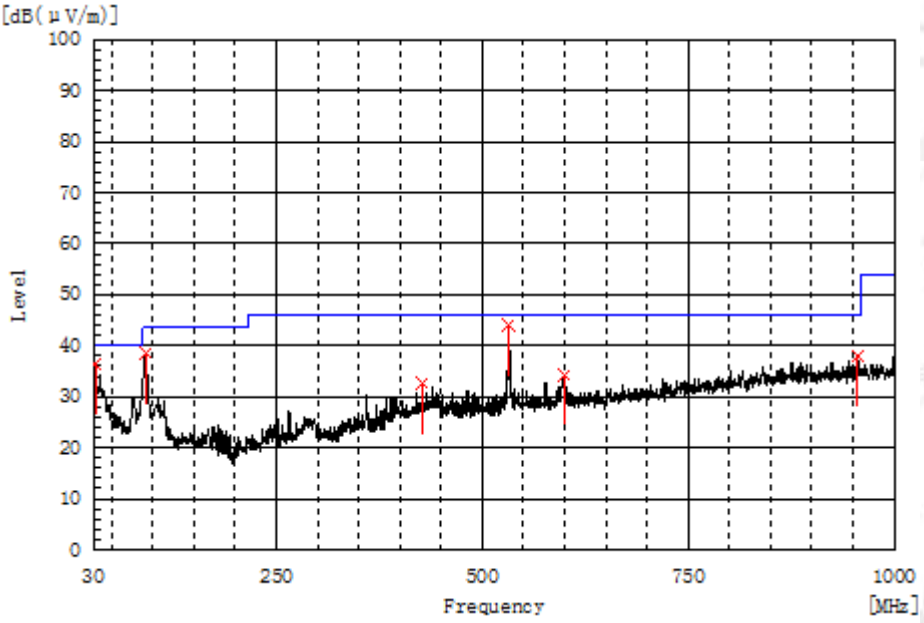
EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
91.595	H	22.5	12.4	34.9	43.5	8.6	Pass	100.0	214.9
182.775	H	20.8	14.3	35.1	43.5	8.4	Pass	150.0	214.6
532.460	H	20.1	23.5	43.6	46.0	2.4	Pass	150.0	71.8
576.110	H	12.9	24.5	37.4	46.0	8.6	Pass	150.0	286.8
738.100	H	9.3	27.2	36.5	46.0	9.5	Pass	150.0	143.2
959.260	H	6.4	30.7	37.1	46.0	8.9	Pass	100.0	286.2

RESULT: PASS

EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Vertical



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
30.970	V	20.7	15.6	36.3	40.0	3.7	Pass	100.0	232.7
91.110	V	26.2	12.4	38.6	43.5	4.9	Pass	150.0	180.5
531.975	V	20.4	23.5	43.9	46.0	2.1	Pass	100.0	196.3
599.875	V	9.3	24.9	34.2	46.0	11.8	Pass	100.0	304.9
955.865	V	7.3	30.7	38.0	46.0	8.0	Pass	150.0	287.7
427.215	V	10.9	21.6	32.5	46.0	13.5	Pass	200.0	141.5

RESULT: PASS

Note: All test channels had been tested. The 802.11a20 at 5180MHz is the worst case and recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The “Factor” value can be calculated automatically by software of measurement system.

RADIATED EMISSION ABOVE 1GHZ

EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10360.120	42.45	9.14	51.59	74	-22.41	peak
10360.120	36.85	9.14	45.99	54	-8.01	AVG
15540.180	39.85	10.22	50.07	74	-23.93	peak
15540.180	33.68	10.22	43.9	54	-10.1	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10360.120	40.52	9.14	49.66	74	-24.34	peak
10360.120	36.14	9.14	45.28	54	-8.72	AVG
15540.180	37.25	10.22	47.47	74	-26.53	peak
15540.180	32.84	10.22	43.06	54	-10.94	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5240MHz	Antenna	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10480.120	40.38	9.27	49.65	74	-24.35	peak
10480.120	35.54	9.27	44.81	54	-9.19	AVG
15720.180	38.15	10.38	48.53	74	-25.47	peak
15720.180	34.08	10.38	44.46	54	-9.54	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
10480.120	39.58	9.27	48.85	74	-25.15	peak
10480.120	35.26	9.27	44.53	54	-9.47	AVG
15720.180	38.41	10.38	48.79	74	-25.21	peak
15720.180	34.19	10.38	44.57	54	-9.43	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5745MHz	Antenna	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11490.120	39.78	9.42	49.2	74	-24.8	peak
11490.120	34.25	9.42	43.67	54	-10.33	AVG
17235.180	36.71	10.51	47.22	74	-26.78	peak
17235.180	31.26	10.51	41.77	54	-12.23	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11490.120	38.95	9.42	48.37	74	-25.63	peak
11490.120	33.49	9.42	42.91	54	-11.09	AVG
17235.180	35.18	10.51	45.69	74	-28.31	peak
17235.180	31.85	10.51	42.36	54	-11.64	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5825MHz	Antenna	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11650.120	40.78	9.62	50.4	74	-23.6	peak
11650.120	34.35	9.62	43.97	54	-10.03	AVG
17475.180	37.74	10.75	48.49	74	-25.51	peak
17475.180	32.25	10.75	43	54	-11	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
11650.120	39.77	9.62	49.39	74	-24.61	peak
11650.120	34.38	9.62	44	54	-10	AVG
17475.180	37.25	10.75	48	74	-26	peak
17475.180	32.64	10.75	43.39	54	-10.61	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Note: All the case had been tested. The 802.11a modulation is the worst case and recorded in the test report. Other frequencies radiation emission from 1GHz to 40GHz at least have 20dB margin and not recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The “Factor” value can be calculated automatically by software of measurement system.

13. BAND EDGE EMISSION

13.1. MEASUREMENT PROCEDURE

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO

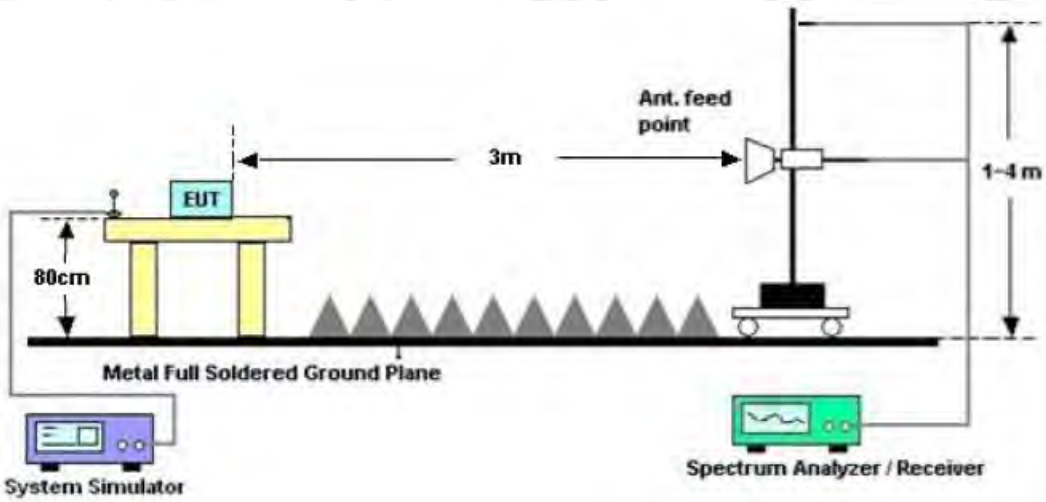
(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

3. Other procedures refer to clause 11.2.

Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2. The factor had been edited in the “Input Correction” of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μV) to represent the Amplitude. Use the F dB(μV/m) to represent the Field Strength. So A=F.
3. Only the data of band edge emission at the restricted band 4.5GHz-5.15GHz record in the report. Other restricted band 5.35GHz-5.46GHz and 7.25GHz-7.77GHz were considered as ambient noise. No recording in the test report.

13.2. TEST SET-UP

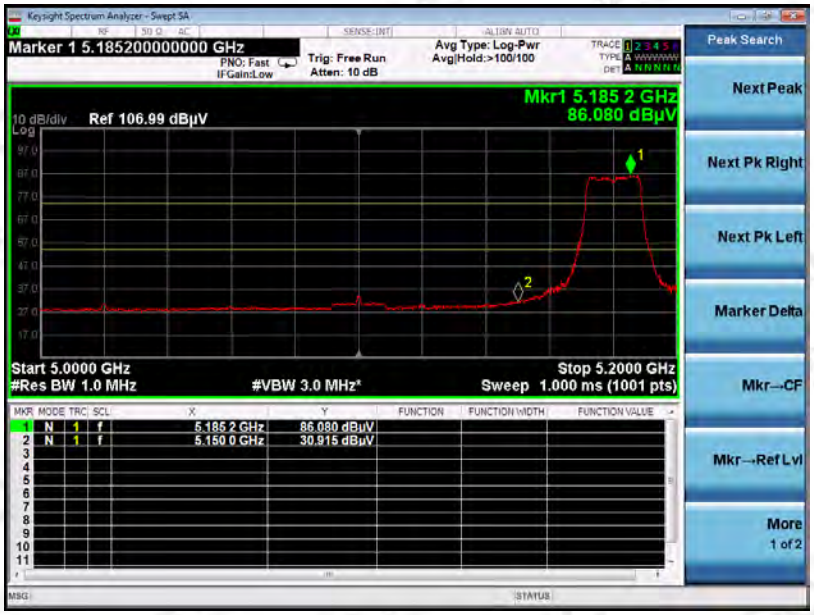


13.3. TEST RESULT

EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal

PK Value

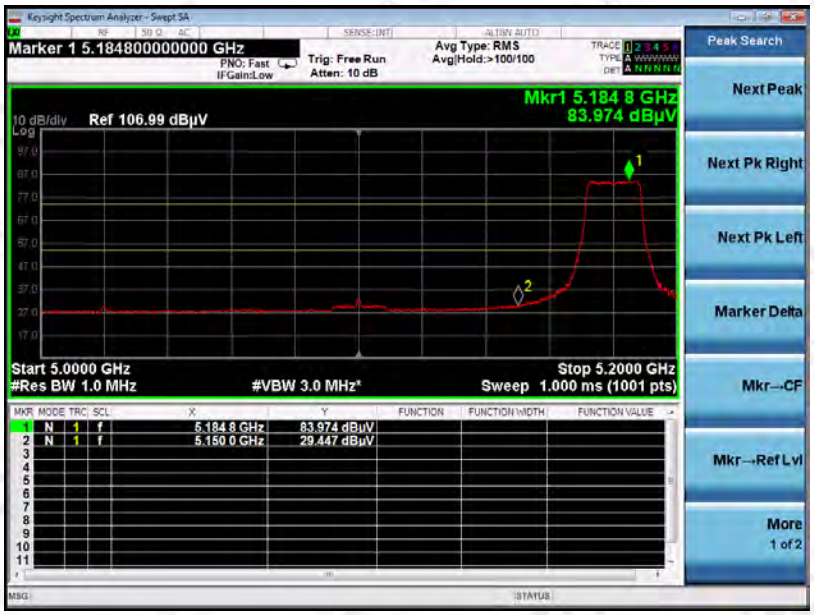
AV Value



EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Vertical

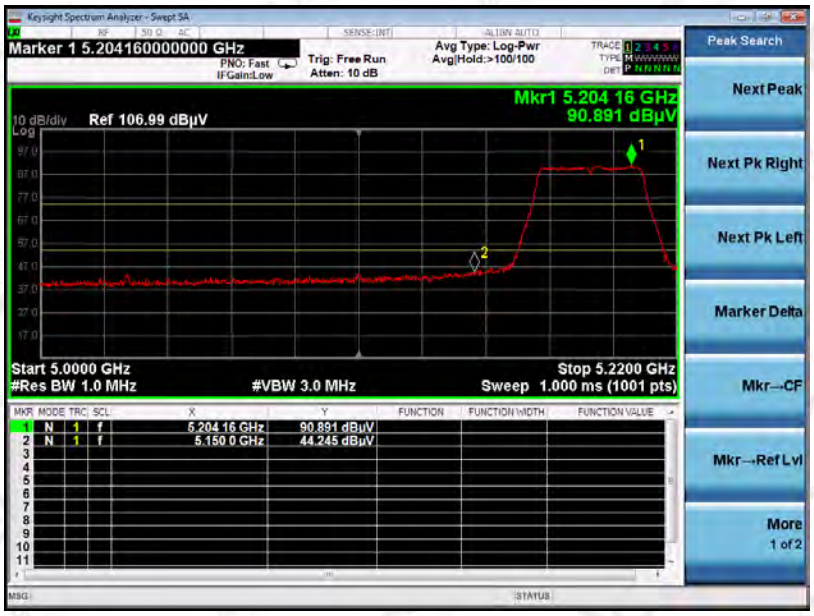
PK Value

AV Value

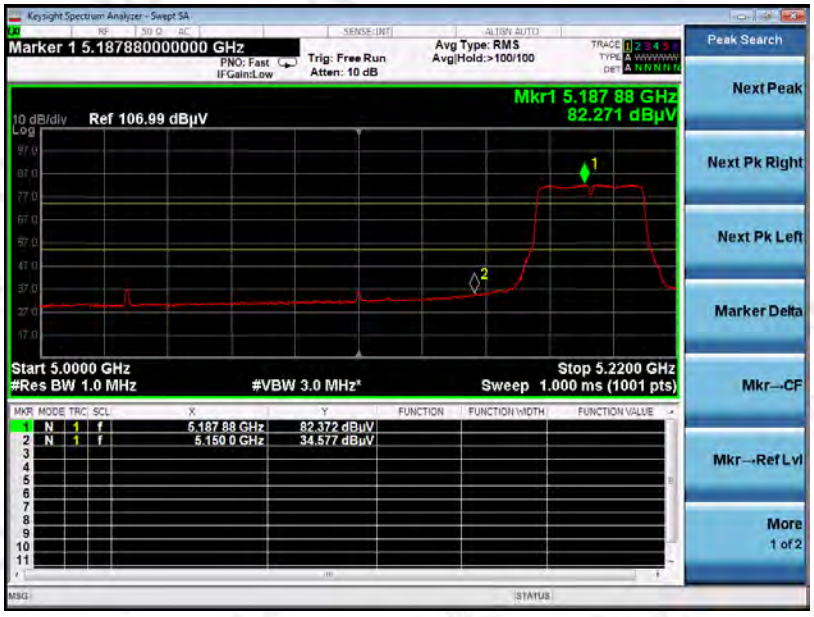


EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40 5190MHz	Antenna	Horizontal

PK Value

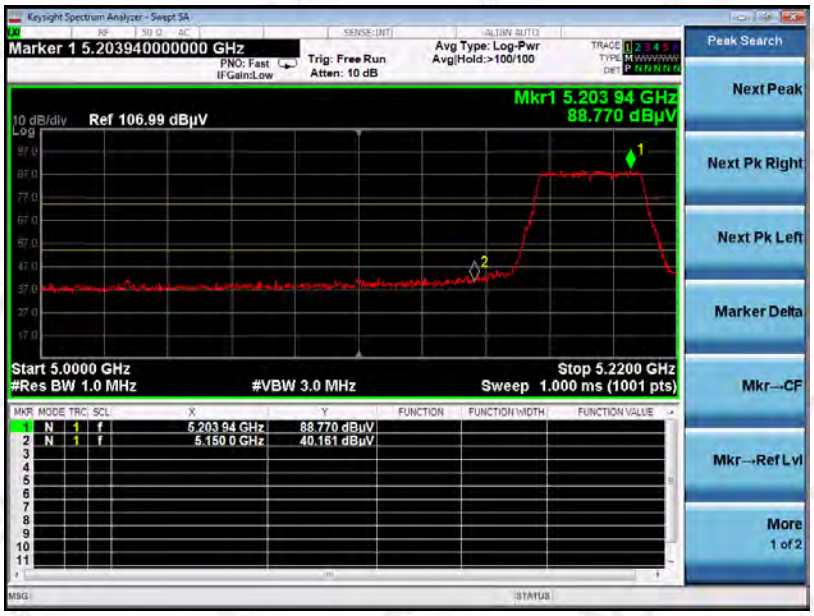


AV Value



EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n40 5190MHz	Antenna	Vertical

PK Value



AV Value

EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80 5210MHz	Antenna	Horizontal

PK Value

AV Value

EUT	JMGO Smart Home Theater	Model Name	SA
Temperature	25℃	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80 5210MHz	Antenna	Vertical

PK Value

AV Value

RESULT: PASS

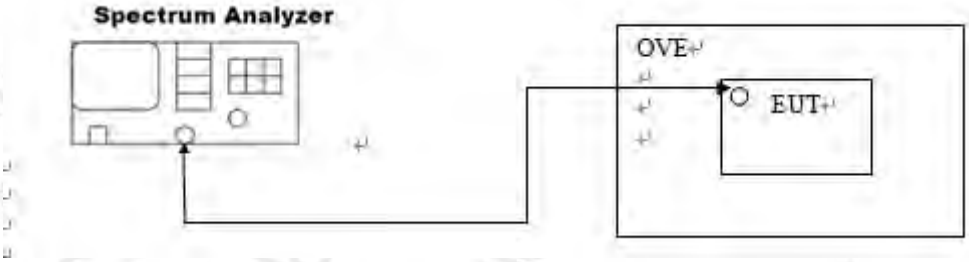
Note: All the 20MHz bandwidth modulation had been tested, the 802.11a20 was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 was the worst case and record in his test report.

14. FREQUENCY STABILITY

14.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the operation frequency.
3. Set SPA Centre Frequency = Operation Frequency. SPAN=enough to measure the emission is maintained within the band
4. Set SPA Trace 1 Max hold, then View.
5. Extreme temperature rule is -10°C~60°C.

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



14.3. MEASUREMENT RESULTS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
802.11a	- 10℃	5180	within the band	PASS
	0℃	5180	within the band	PASS
	10℃	5180	within the band	PASS
	20℃	5180	within the band	PASS
	30℃	5180	within the band	PASS
	40℃	5180	within the band	PASS
	- 10℃	5240	within the band	PASS
	0℃	5240	within the band	PASS
	10℃	5240	within the band	PASS
	20℃	5240	within the band	PASS
	30℃	5240	within the band	PASS
	40℃	5240	within the band	PASS
	- 10℃	5745	within the band	PASS
	0℃	5745	within the band	PASS
	10℃	5745	within the band	PASS
	20℃	5745	within the band	PASS
	30℃	5745	within the band	PASS
	40℃	5745	within the band	PASS
	- 10℃	5825	within the band	PASS
	0℃	5825	within the band	PASS
	10℃	5825	within the band	PASS
	20℃	5825	within the band	PASS
	30℃	5825	within the band	PASS
	40℃	5825	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
802.11n20	- 10℃	5180	within the band	PASS
	0℃	5180	within the band	PASS
	10℃	5180	within the band	PASS
	20℃	5180	within the band	PASS
	30℃	5180	within the band	PASS
	40℃	5180	within the band	PASS
	- 10℃	5240	within the band	PASS
	0℃	5240	within the band	PASS
	10℃	5240	within the band	PASS
	20℃	5240	within the band	PASS
	30℃	5240	within the band	PASS
	40℃	5240	within the band	PASS
	- 10℃	5745	within the band	PASS
	0℃	5745	within the band	PASS
	10℃	5745	within the band	PASS
	20℃	5745	within the band	PASS
	30℃	5745	within the band	PASS
	40℃	5745	within the band	PASS
	- 10℃	5825	within the band	PASS
	0℃	5825	within the band	PASS
	10℃	5825	within the band	PASS
	20℃	5825	within the band	PASS
	30℃	5825	within the band	PASS
	40℃	5825	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
802.11ac20	- 10℃	5180	within the band	PASS
	0℃	5180	within the band	PASS
	10℃	5180	within the band	PASS
	20℃	5180	within the band	PASS
	30℃	5180	within the band	PASS
	40℃	5180	within the band	PASS
	- 10℃	5240	within the band	PASS
	0℃	5240	within the band	PASS
	10℃	5240	within the band	PASS
	20℃	5240	within the band	PASS
	30℃	5240	within the band	PASS
	40℃	5240	within the band	PASS
	- 10℃	5745	within the band	PASS
	0℃	5745	within the band	PASS
	10℃	5745	within the band	PASS
	20℃	5745	within the band	PASS
	30℃	5745	within the band	PASS
	40℃	5745	within the band	PASS
	- 10℃	5825	within the band	PASS
	0℃	5825	within the band	PASS
	10℃	5825	within the band	PASS
	20℃	5825	within the band	PASS
	30℃	5825	within the band	PASS
	40℃	5825	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
802.11n40	- 10℃	5190	within the band	PASS
	0℃	5190	within the band	PASS
	10℃	5190	within the band	PASS
	20℃	5190	within the band	PASS
	30℃	5190	within the band	PASS
	40℃	5190	within the band	PASS
	- 10℃	5230	within the band	PASS
	0℃	5230	within the band	PASS
	10℃	5230	within the band	PASS
	20℃	5230	within the band	PASS
	30℃	5230	within the band	PASS
	40℃	5230	within the band	PASS
	- 10℃	5755	within the band	PASS
	0℃	5755	within the band	PASS
	10℃	5755	within the band	PASS
	20℃	5755	within the band	PASS
	30℃	5755	within the band	PASS
	40℃	5755	within the band	PASS
	- 10℃	5795	within the band	PASS
	0℃	5795	within the band	PASS
	10℃	5795	within the band	PASS
	20℃	5795	within the band	PASS
	30℃	5795	within the band	PASS
	40℃	5795	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
802.11ac40	- 10℃	5190	within the band	PASS
	0℃	5190	within the band	PASS
	10℃	5190	within the band	PASS
	20℃	5190	within the band	PASS
	30℃	5190	within the band	PASS
	40℃	5190	within the band	PASS
	- 10℃	5230	within the band	PASS
	0℃	5230	within the band	PASS
	10℃	5230	within the band	PASS
	20℃	5230	within the band	PASS
	30℃	5230	within the band	PASS
	40℃	5230	within the band	PASS
	- 10℃	5755	within the band	PASS
	0℃	5755	within the band	PASS
	10℃	5755	within the band	PASS
	20℃	5755	within the band	PASS
	30℃	5755	within the band	PASS
	40℃	5755	within the band	PASS
	- 10℃	5795	within the band	PASS
	0℃	5795	within the band	PASS
	10℃	5795	within the band	PASS
	20℃	5795	within the band	PASS
	30℃	5795	within the band	PASS
	40℃	5795	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
802.11ac80	- 10℃	5210	within the band	PASS
	0℃	5210	within the band	PASS
	10℃	5210	within the band	PASS
	20℃	5210	within the band	PASS
	30℃	5210	within the band	PASS
	40℃	5210	within the band	PASS
	- 10℃	5775	within the band	PASS
	0℃	5775	within the band	PASS
	10℃	5775	within the band	PASS
	20℃	5775	within the band	PASS
	30℃	5775	within the band	PASS
	40℃	5775	within the band	PASS

15. FCC LINE CONDUCTED EMISSION TEST

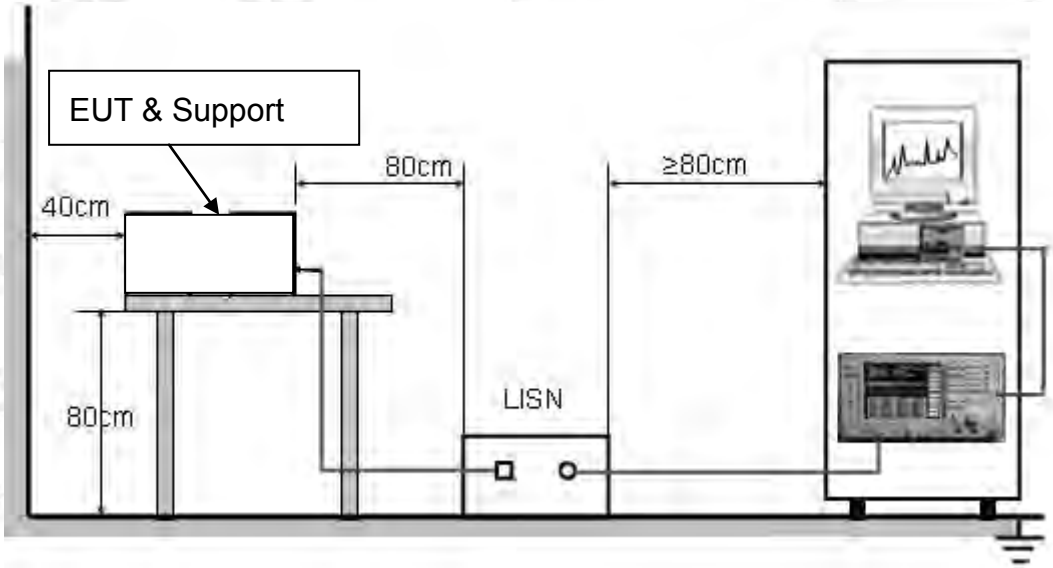
15.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

15.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



15.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

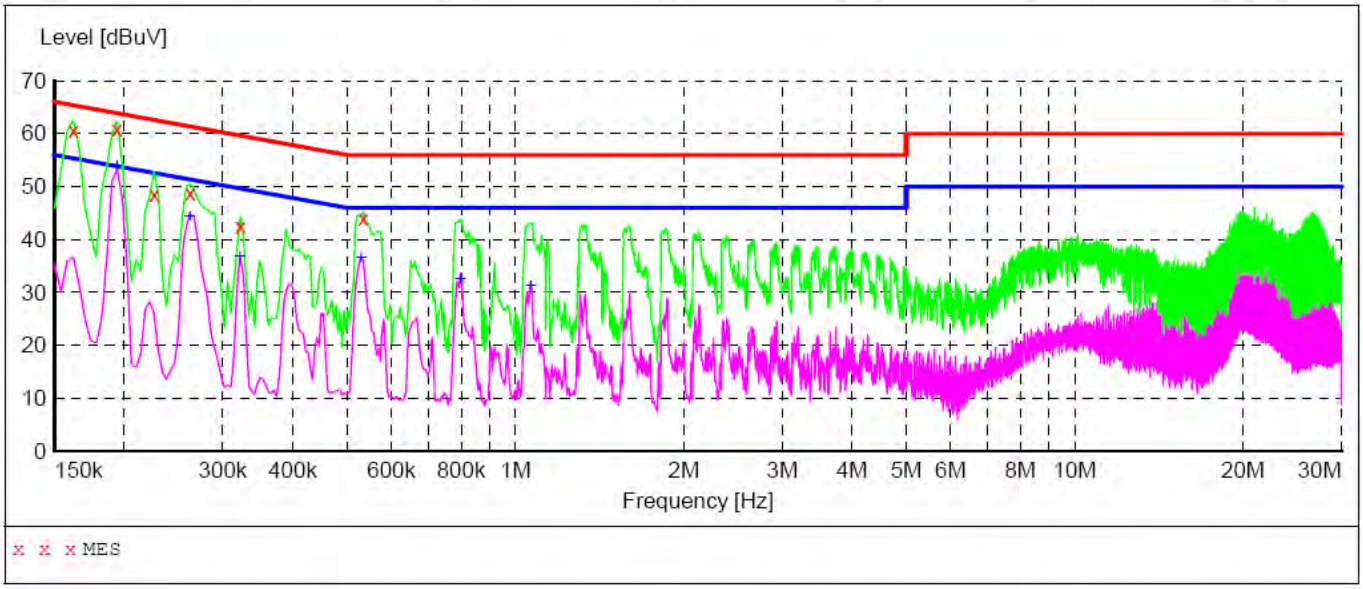
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

15.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

15.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST-L



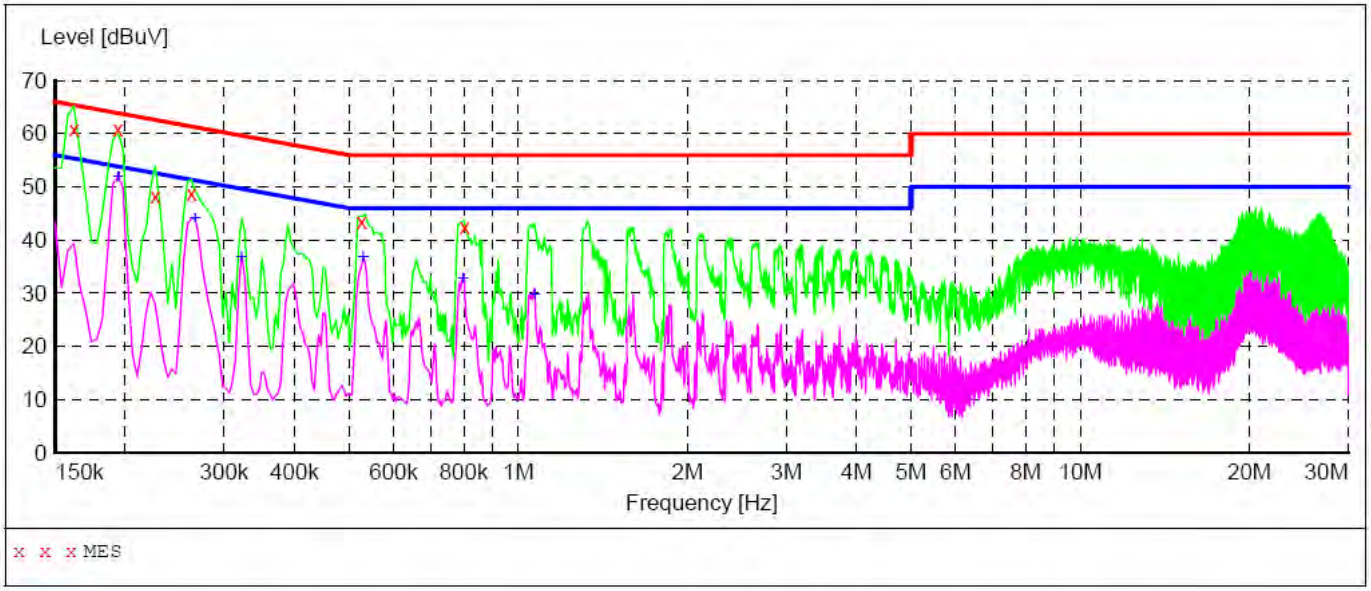
MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector
0.162000	60.70	11.4	65	4.7	QP
0.194000	60.90	11.4	64	3.0	QP
0.226000	48.50	11.3	63	14.1	QP
0.262000	48.80	11.3	61	12.6	QP
0.322000	42.60	11.3	60	17.1	QP
0.534000	44.10	11.4	56	11.9	QP

MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector
0.194000	53.00	11.4	54	1.0	AV
0.262000	44.20	11.3	51	7.2	AV
0.322000	36.70	11.3	50	13.0	AV
0.530000	36.40	11.4	46	9.6	AV
0.798000	32.50	11.4	46	13.5	AV
1.066000	31.20	11.3	46	14.8	AV

LINE CONDUCTED EMISSION TEST-N



MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector
0.162000	60.80	11.4	65	4.6	QP
0.194000	60.90	11.4	64	3.0	QP
0.226000	48.30	11.3	63	14.3	QP
0.262000	48.90	11.3	61	12.5	QP
0.526000	43.60	11.4	56	12.4	QP
0.802000	42.60	11.4	56	13.4	QP

MEASUREMENT RESULT:

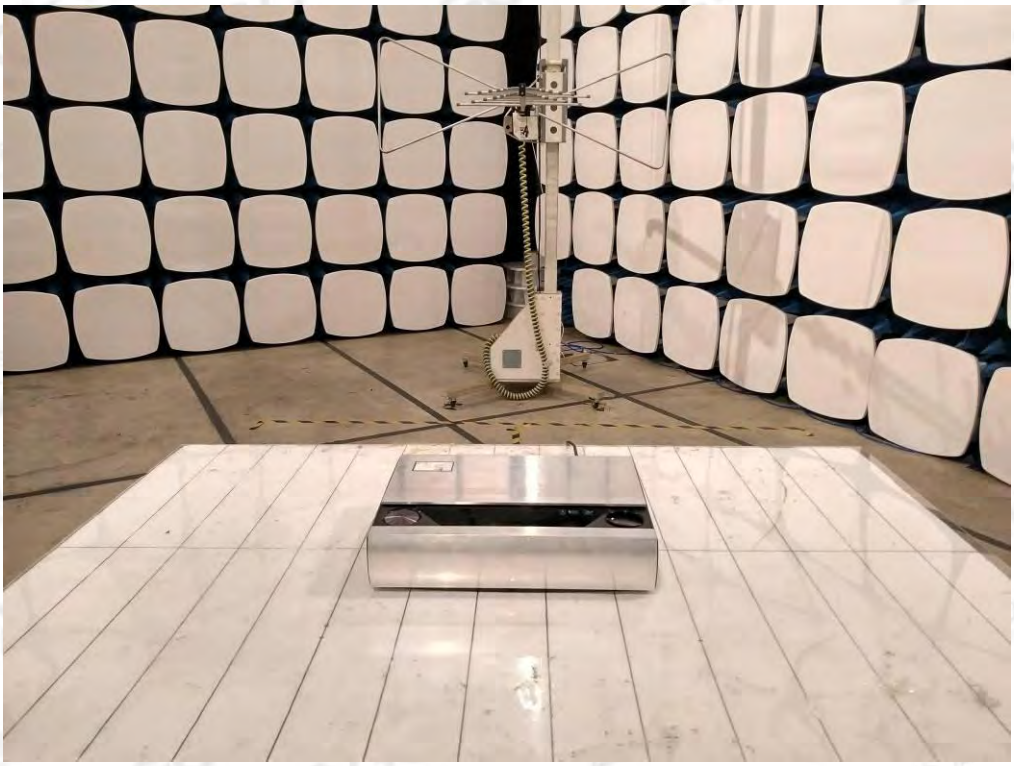
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector
0.194000	52.70	11.4	54	1.2	AV
0.266000	44.00	11.3	51	7.2	AV
0.322000	36.70	11.3	50	13.0	AV
0.530000	36.60	11.4	46	9.4	AV
0.798000	32.80	11.4	46	13.2	AV
1.070000	29.60	11.3	46	16.4	AV

RESULT: PASS

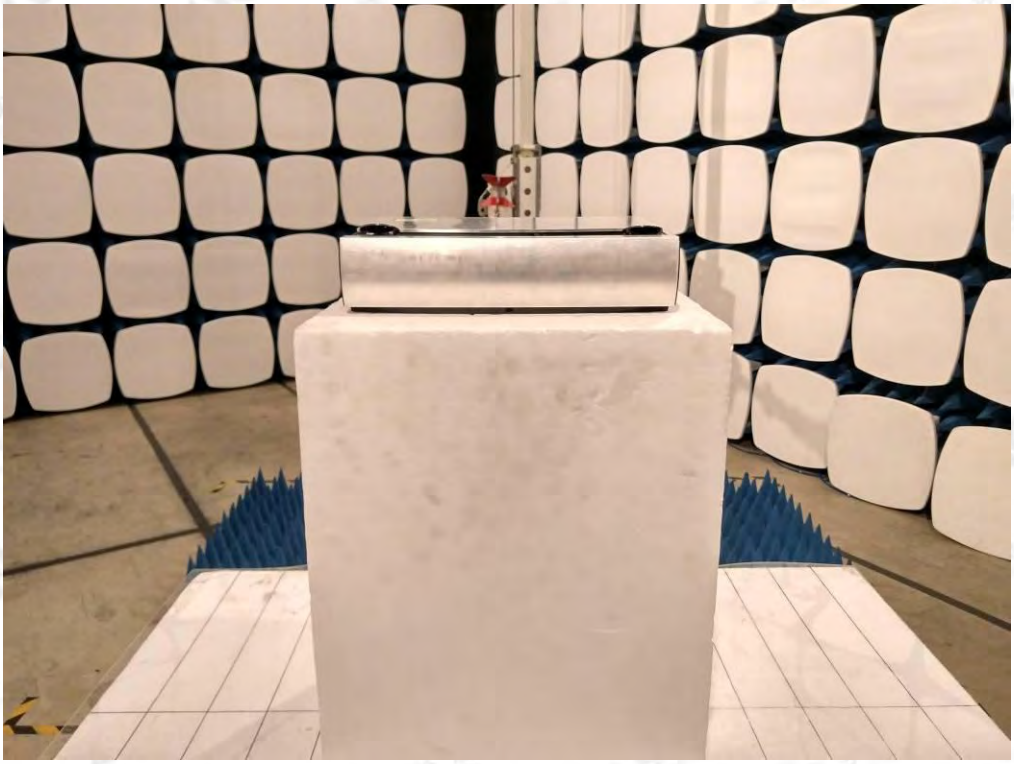
APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC LINE CONDUCTED EMISSION TEST SETUP

FCC RADIATED EMISSION TEST SETUP BELOW 1GHZ



FCC RADIATED EMISSION TEST SETUP ABOVE 1GHZ



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