FCC Test Report

Report No.: AGC05734170801FE06

FCC ID	:	SMCV8
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	JmGO Smart Home Theater
BRAND NAME	:	N/A
MODEL NAME	:	V8, J6
CLIENT	:	SHENZHEN HOLATEK CO., LTD
DATE OF ISSUE	:	July 12, 2017
STANDARD(S) **TEST PROCEDURE(S)**	:	FCC Part 15.407 KDB 789033 D02 KDB 644545 D03 and KDB 662911 D01
REPORT VERSION	:	V1.0

*A*ttestation of *G*lobal *C*ompliance (Shenzhen) Co., Ltd

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	July 12, 2017	Valid	Original Report

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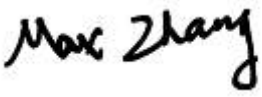
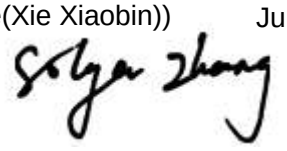
1. VERIFICATION OF CONFORMITY

Applicant	SHENZHEN HOLATEK CO., LTD
Address	Rm.1001, Unit4, Bld.B, Kexing Science Park, Keyuan Road, Nashan District, Shenzhen
Manufacturer	SHENZHEN HOLATEK CO., LTD
Address	Rm.1001, Unit4, Bld.B, Kexing Science Park, Keyuan Road, Nashan District, Shenzhen
Product Designation	JmGO Smart Home Theater
Brand Name	N/A
Test Model	V8
Series Model	J6
Model Difference	All are the same except the model name.
Date of test	July 08, 2017 to July 10, 2017
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(Zhang Yi) July 10, 2017

Reviewed by 
Bart Xie(Xie Xiaobin)) July 12, 2017

Approved by 
Solger Zhang(Zhang Hongyi) July 12, 2017
Authorized Officer

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as “client”. 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 GHz～5250GHz;5725 GHz～5825GHz
Output Power	IEEE 802.11a20:13.83Bm IEEE 802.11n(20):13.24dBm; IEEE802.11n(40):10.45Bm IEEE802.11ac(20):13.08Bm IEEE802.11ac(40):10.38Bm EEE802.11ac(80):8.16Bm
Modulation	BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM,OFDM
Number of channels	15
Hardware Version	VerE
Software Version	1.0.91
Antenna Designation	Fixed Antenna
Number of transmit chain	2(802.11a used antenna 0, 802.11n/ac used two antennas)
Antenna Gain	2dBi
Power Supply	DC19.5V by adapter

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: SMCV8** 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 v01r04, KDB 644545 D03 v01 and KDB 662911 D01 v02r01.

2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 3.18dB
Radiated measurement: +/- 3.91dB

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	36,40,48, 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

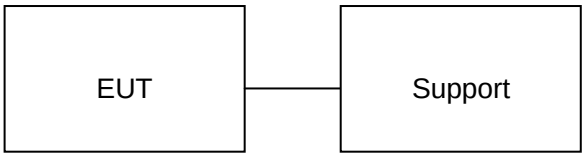
Note:

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	V8	SMCV8	EUT
2	Adapter	ADP-120MH DCP	DC 19.5V/6.15A	Marketed

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

Site	Dongguan Precise Testing Service Co., Ltd.
Location	Building D, Baoding Technology Park,Guangming Road2, Dongcheng District, Dongguan, Guangdong, China.
FCC Registration No.	371540
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014.

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2017	July 3, 2018
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2017	July 3, 2018
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2017	July 3, 2018
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2017	July 3, 2018
3m Anechoic Chamber	CHENGYU	966	PTS-001	July 4, 2017	July 3, 2018
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 6, 2017	June 5, 2018
Spectrum analyzer	Agilent	E4407B	MY46185649	June 6, 2017	June 5, 2018
Power Sensor	Agilent	U2021XA	MY55050474	June 6, 2017	June 5, 2018
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 11, 2016	July 10, 2017
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 6, 2017	June 5, 2018

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2017	July 3, 2018
Artificial Mains Network	Narda	L2-16B	000WX31025	July 8, 2017	July 7, 2018
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 8, 2017	July 7, 2018
RF Cable	SCHWARZBECK	AK9515E	96222	July 4, 2017	July 3, 2018
Shielded Room	CHENGYU	843	PTS-002	June 6, 2017	June 5, 2018

7. MAXIMUM CONDUCTED OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

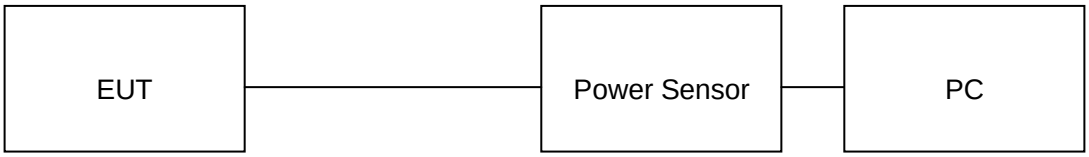
For average power test:

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	13.34	24	Pass
5200	13.41	24	Pass
5240	13.72	24	Pass
5745	13.54	30	Pass
5785	13.59	30	Pass
5825	13.83	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION					
Frequency (MHz)	**Average Power Chain 0(dBm)**	**Average Power Chain 1(dBm)**	**Average Power Total(dBm)**	**Applicable Limits (dBm)**	**Pass or Fail**
5180	10.18	9.74	12.98	24	Pass
5200	10.21	9.79	13.02	24	Pass
5240	10.24	9.84	13.06	24	Pass
5745	10.34	9.53	12.96	30	Pass
5785	10.35	9.67	13.03	30	Pass
5825	10.52	9.92	13.24	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20 MODULATION					
Frequency (MHz)	**Average Power Chain 0(dBm)**	**Average Power Chain 1(dBm)**	**Average Power Total(dBm)**	**Applicable Limits (dBm)**	**Pass or Fail**
5180	10.12	9.53	12.85	24	Pass
5200	10.14	9.47	12.83	24	Pass
5240	10.18	9.64	12.93	24	Pass
5745	10.24	9.18	12.75	30	Pass
5785	10.33	9.27	12.84	30	Pass
5825	10.39	9.72	13.08	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N40 MODULATION					
Frequency (MHz)	**Average Power Chain 0(dBm)**	**Average Power Chain 1(dBm)**	**Average Power Total(dBm)**	**Applicable Limits (dBm)**	**Pass or Fail**
5190	7.47	6.85	10.18	24	Pass
5230	7.53	7.04	10.30	24	Pass
5755	7.85	6.99	10.45	30	Pass
5795	7.15	7.18	10.18	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC40 MODULATION					
Frequency (MHz)	**Average Power Chain 0(dBm)**	**Average Power Chain 1(dBm)**	**Average Power Total(dBm)**	**Applicable Limits (dBm)**	**Pass or Fail**
5190	7.17	6.74	9.97	24	Pass
5230	7.34	7.24	10.30	24	Pass
5755	7.52	6.53	10.06	30	Pass
5795	7.67	7.04	10.38	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC80 MODULATION					
Frequency (MHz)	**Average Power Chain 0(dBm)**	**Average Power Chain 1(dBm)**	**Average Power Total(dBm)**	**Applicable Limits (dBm)**	**Pass or Fail**
5210	5.17	4.89	8.04	24	Pass
5775	5.25	5.04	8.16	30	Pass

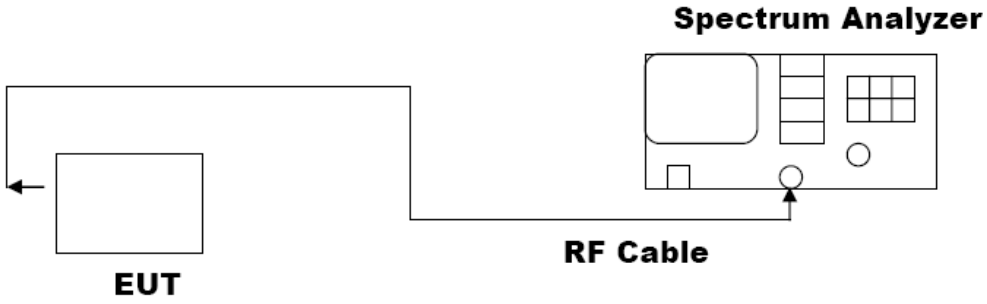
8. 6dB BANDWIDTH

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	16.32	PASS
	5785MHz	16.30	PASS
	5825MHz	16.32	PASS

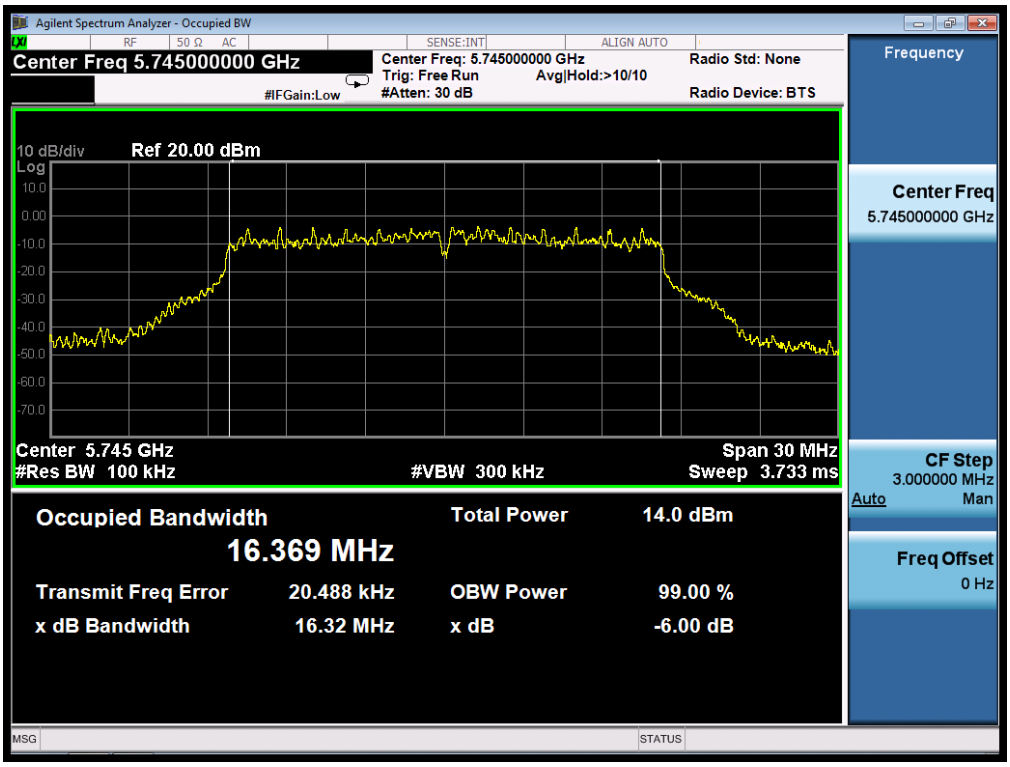
LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION			
Applicable Limits	**Applicable Limits**		
	Test Data (MHz)		**Criteria**
>500KHZ	5745MHz	17.58	PASS
	5785MHz	17.65	PASS
	5825MHz	17.62	PASS
	5755MHz	36.36	PASS
	5795MHz	36.36	PASS

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION			
Applicable Limits	**Applicable Limits**		
	Test Data (MHz)		**Criteria**
>500KHZ	5745MHz	17.67	PASS
	5785MHz	17.57	PASS
	5825MHz	17.64	PASS
	5755MHz	36.35	PASS
	5795MHz	35.64	PASS
	5775MHz	76.23	PASS

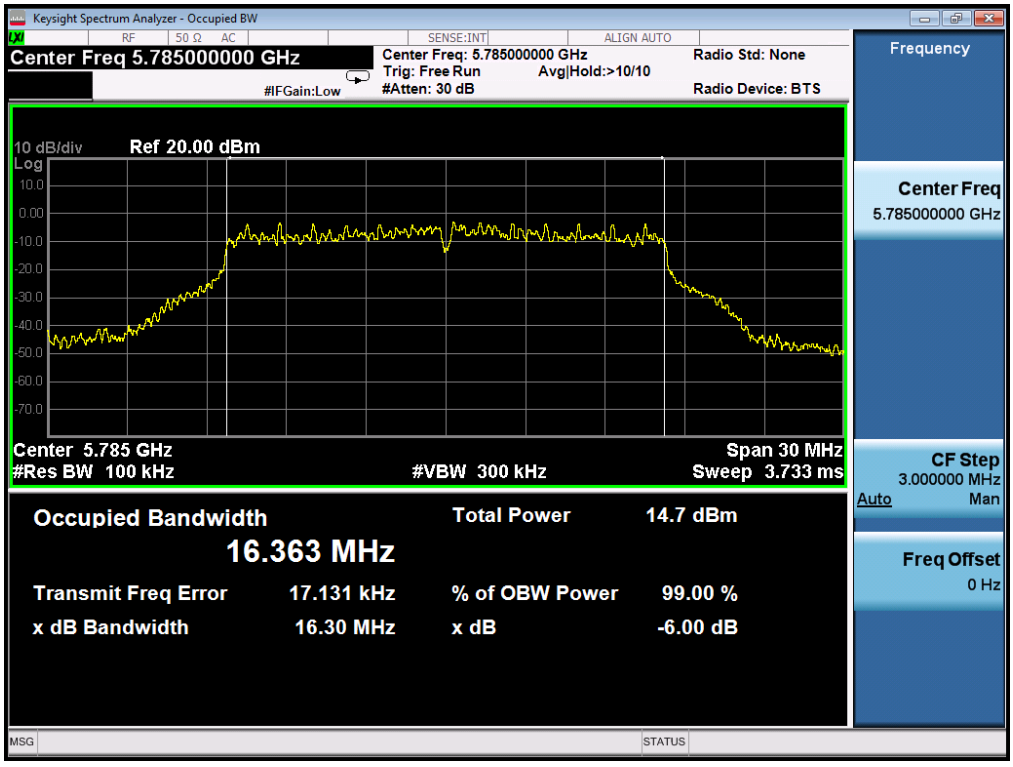
For 802.11n20/n40/ac20/ac40/ac80 mode, two transmit chains had been tested, the chain 0 was the worst case and record in the test report.

802.11a20 TEST RESULT

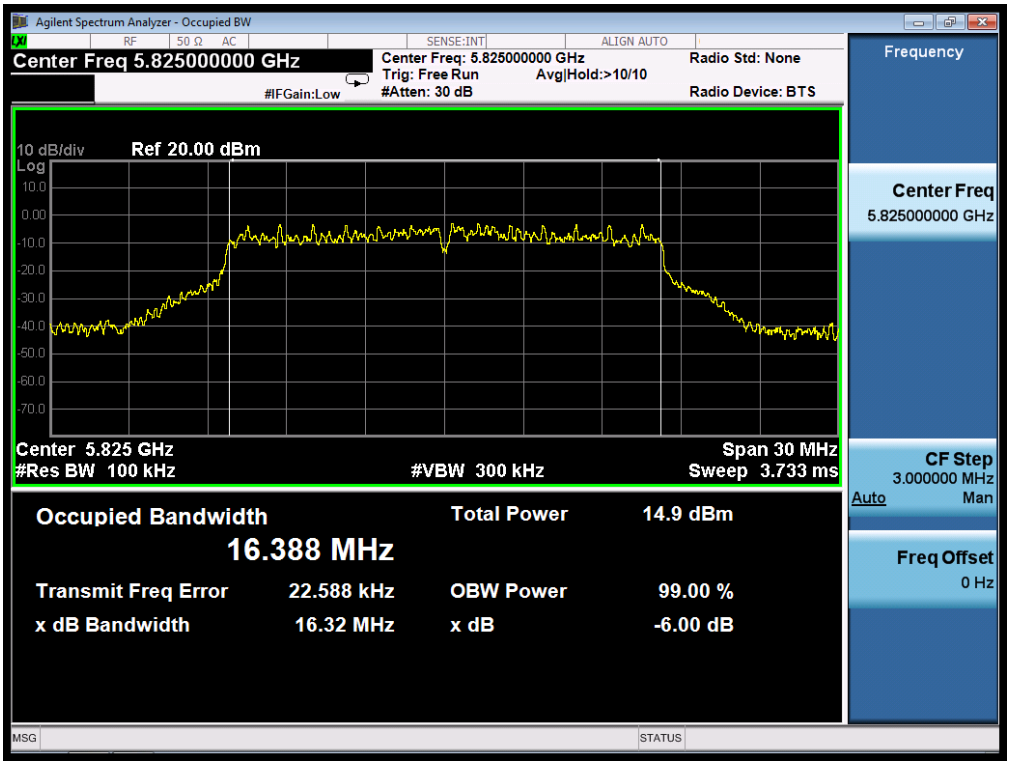
TEST PLOT OF BANDWIDTH FOR 5745MHz



TEST PLOT OF BANDWIDTH FOR 5785MHz

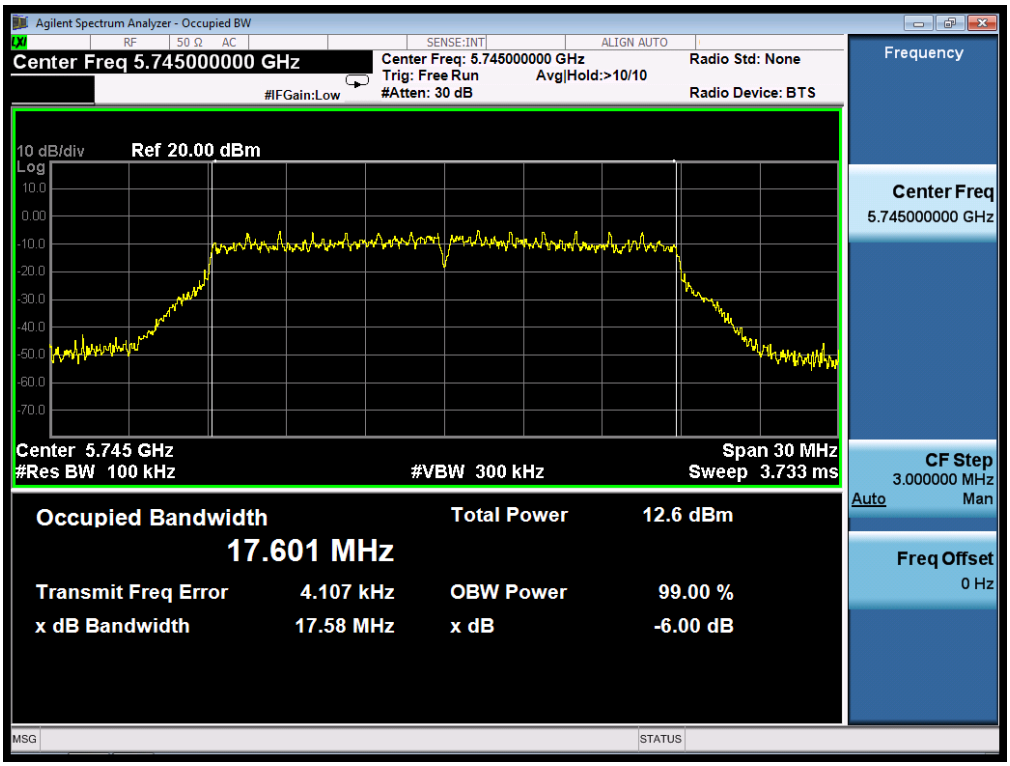


TEST PLOT OF BANDWIDTH FOR 5825MHz

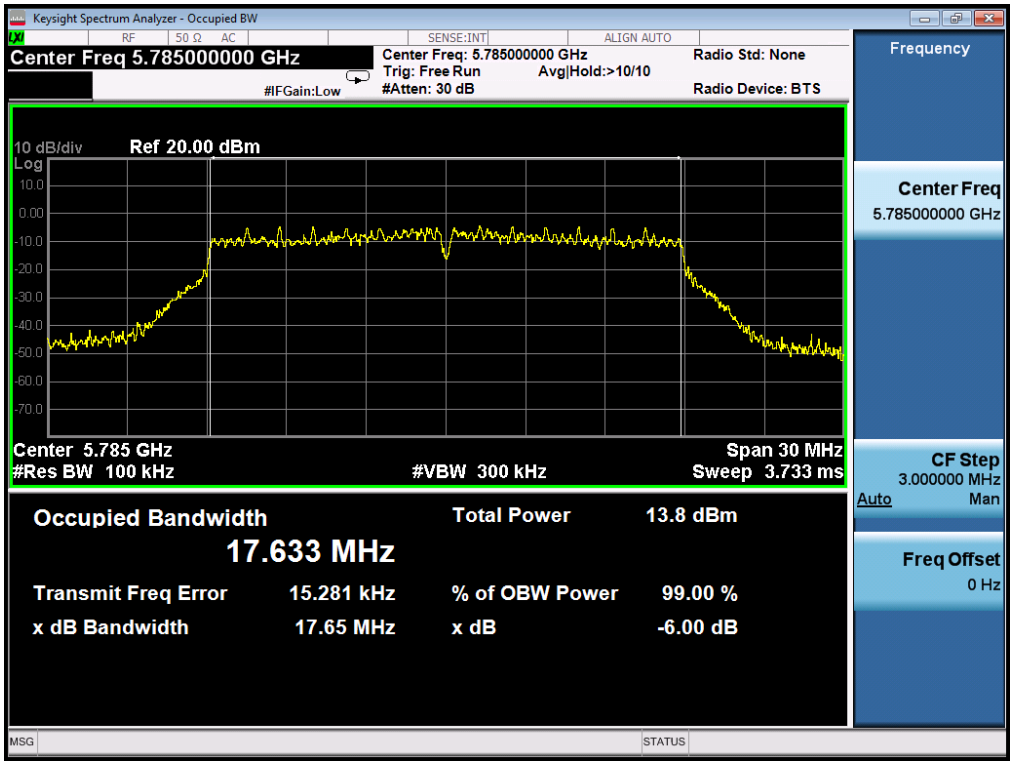


802.11n20 TEST RESULT

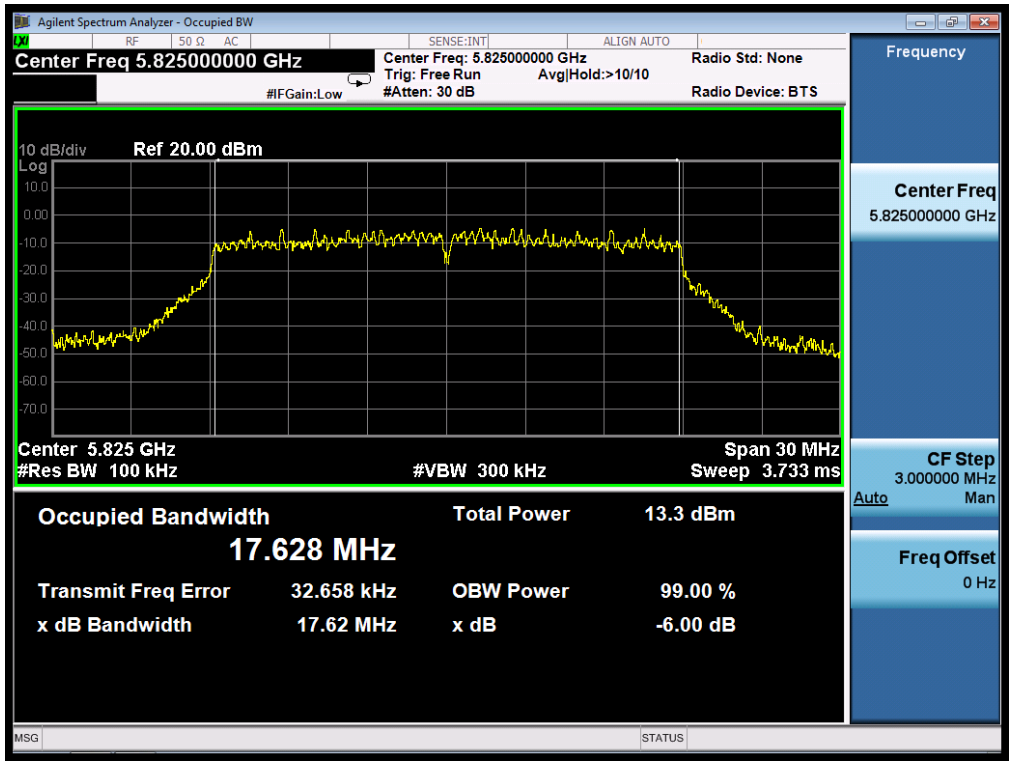
TEST PLOT OF BANDWIDTH FOR 5745MHz



TEST PLOT OF BANDWIDTH FOR 5785MHz

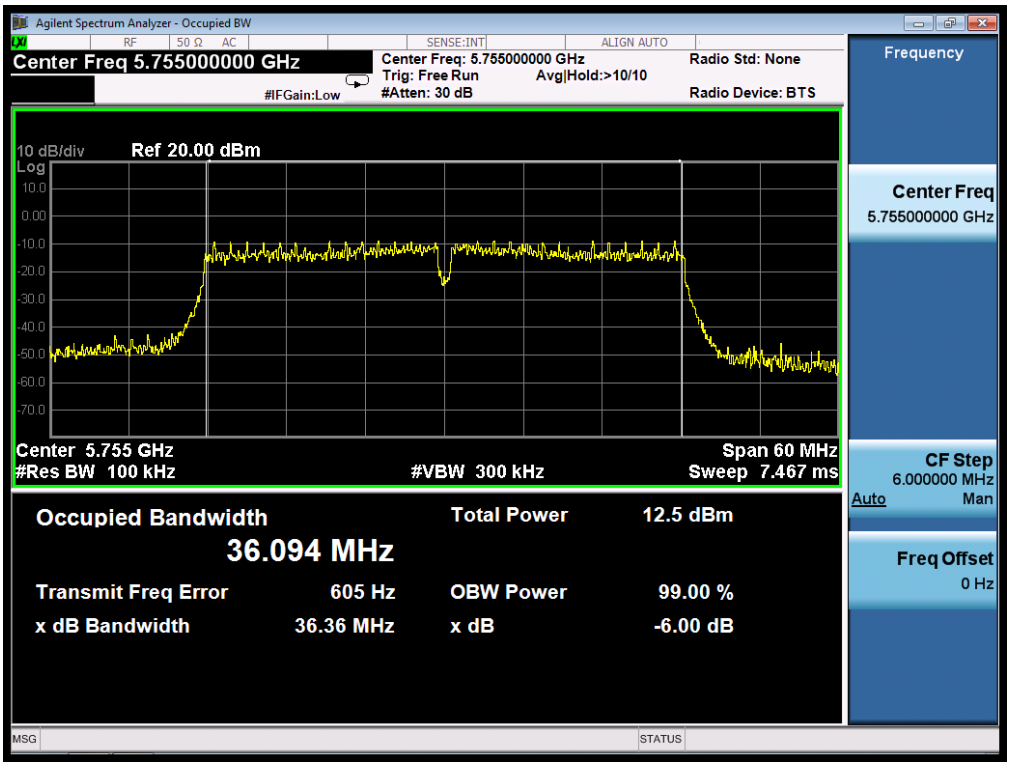


TEST PLOT OF BANDWIDTH FOR 5825MHz

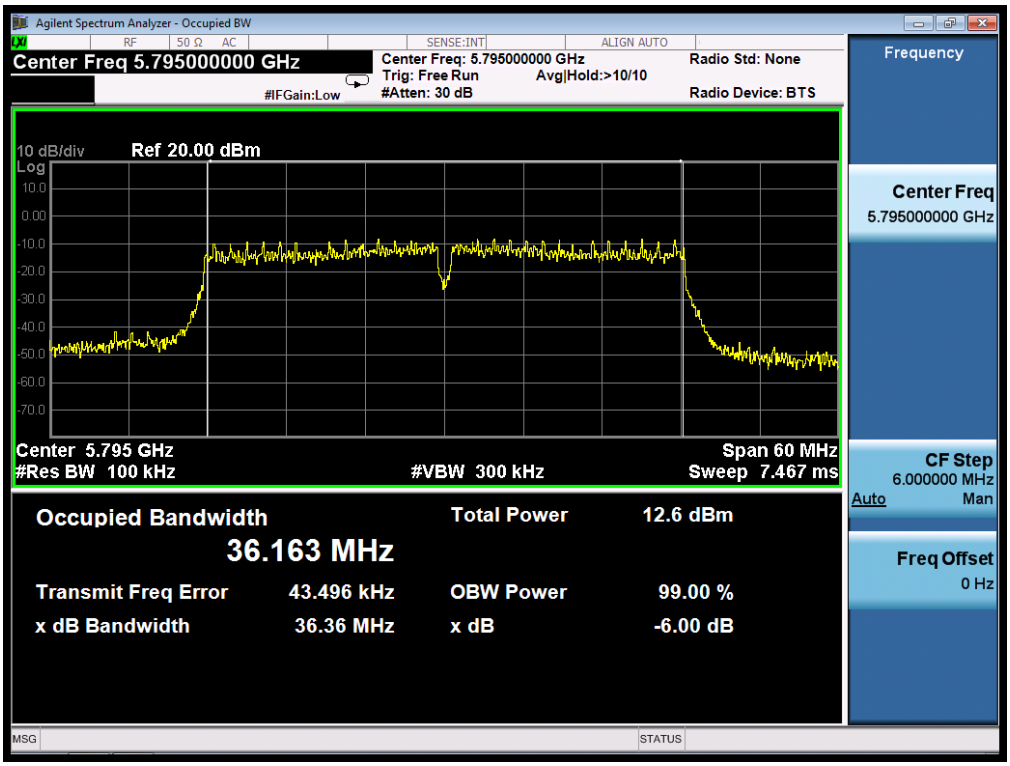


802.11n40 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5755MHz

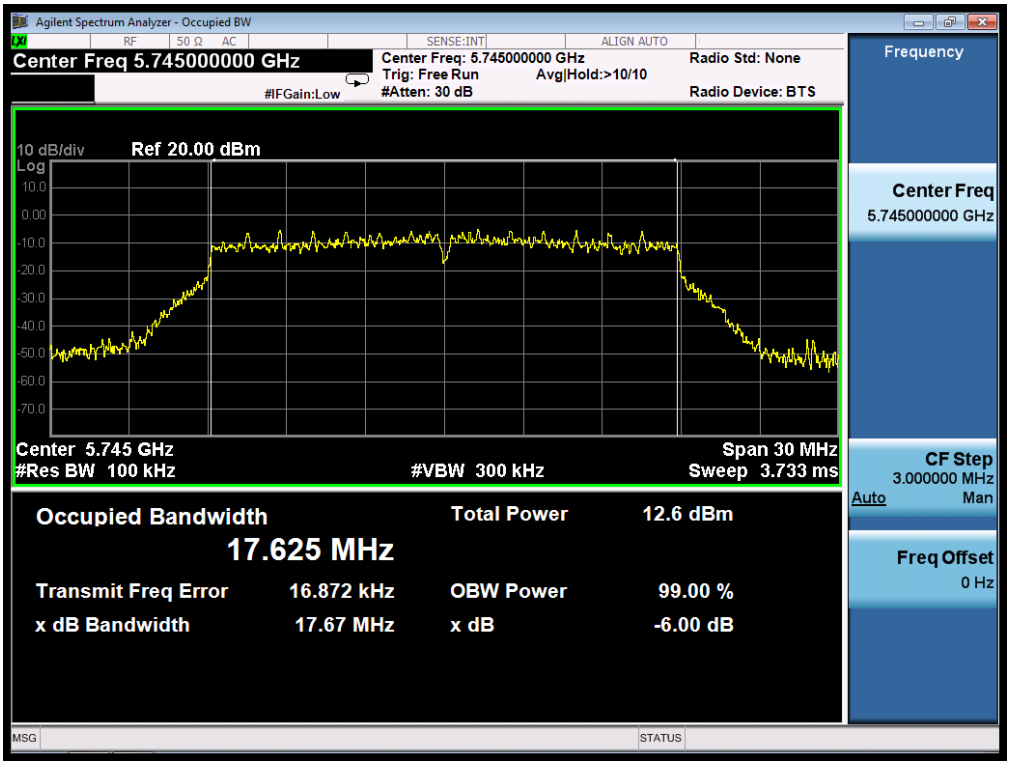


TEST PLOT OF BANDWIDTH FOR 5795MHz

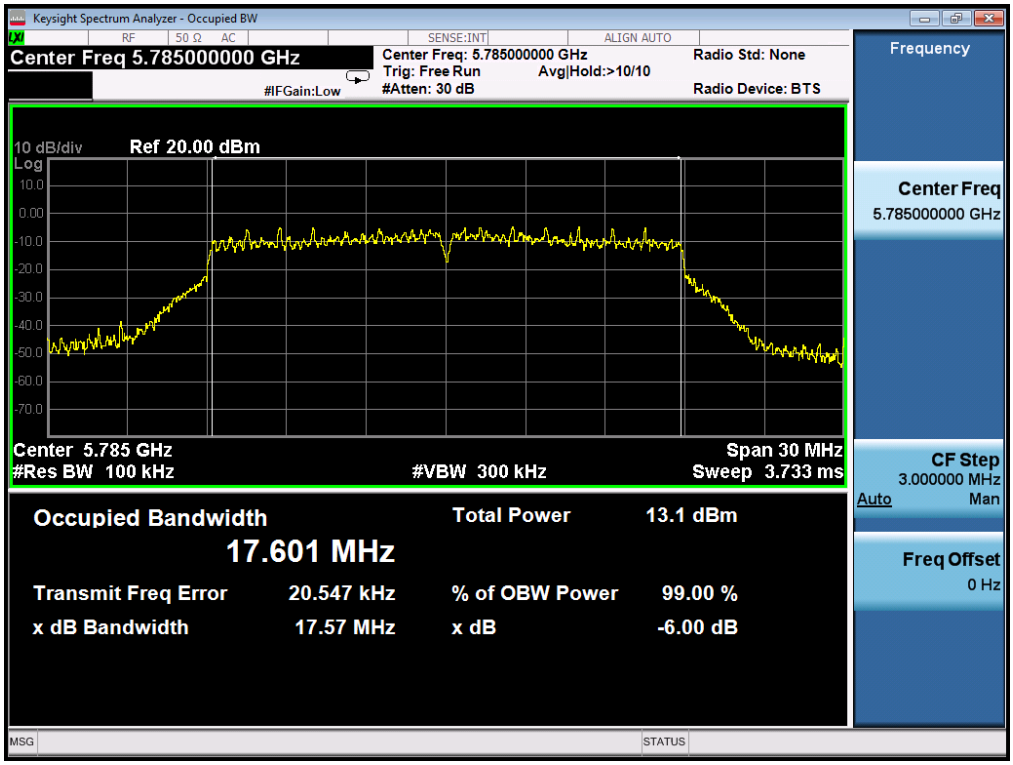


802.11ac20 TEST RESULT

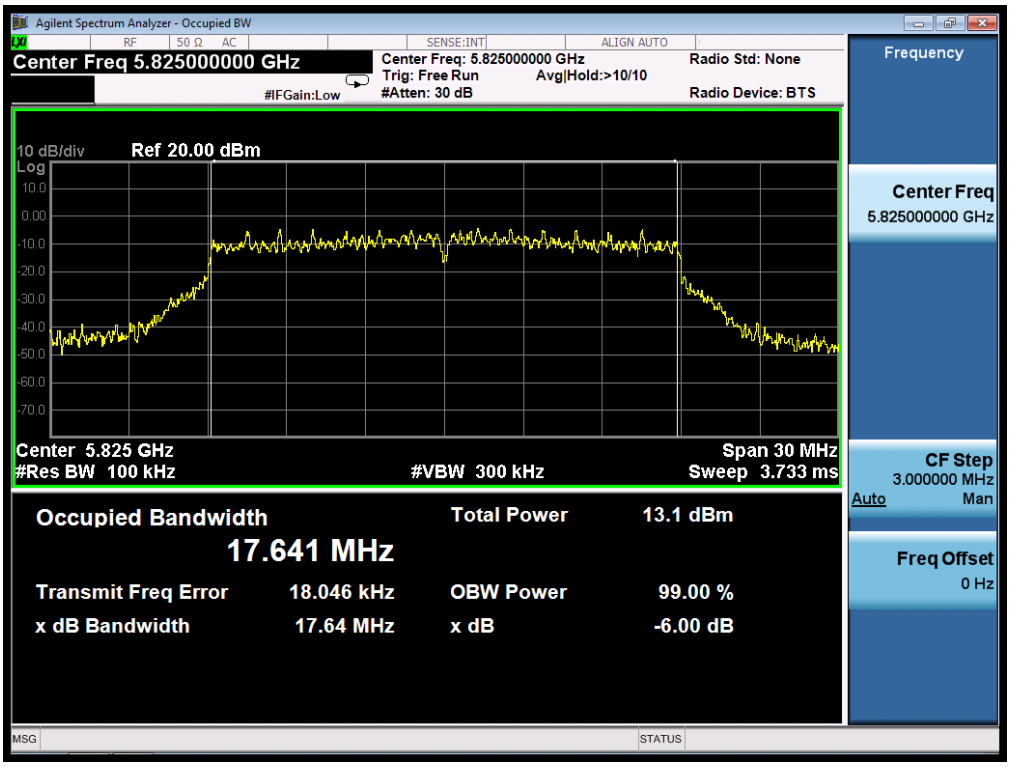
TEST PLOT OF BANDWIDTH FOR 5745MHz



TEST PLOT OF BANDWIDTH FOR 5785MHz

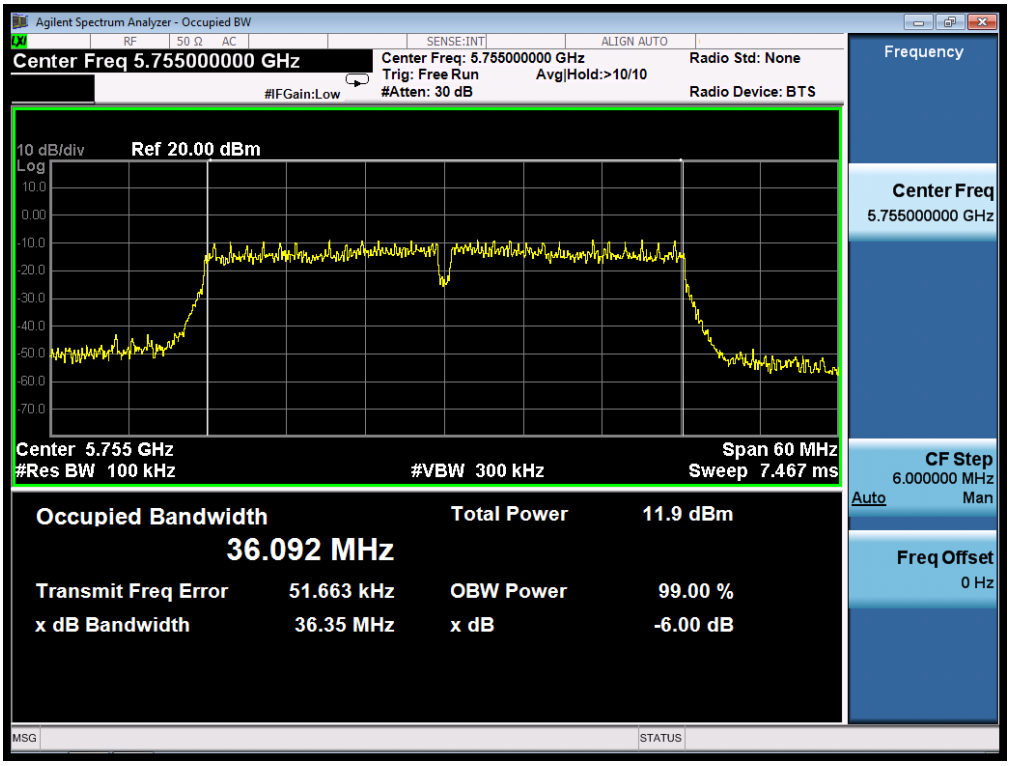


TEST PLOT OF BANDWIDTH FOR 5825MHz

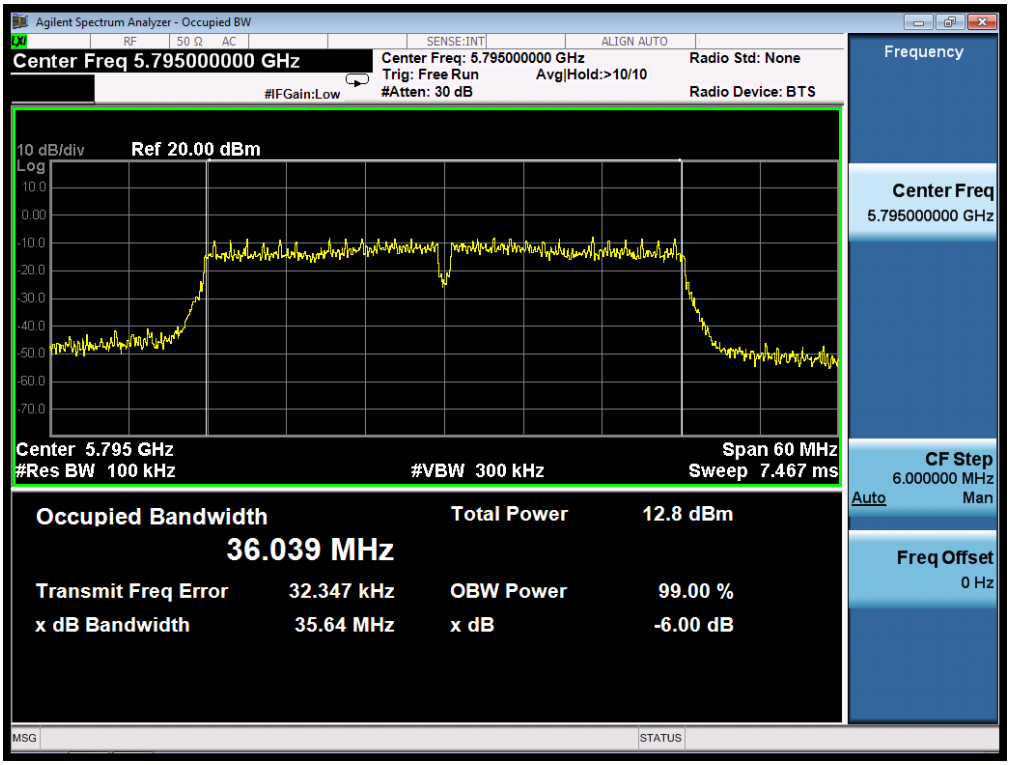


802.11ac40 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5755MHz

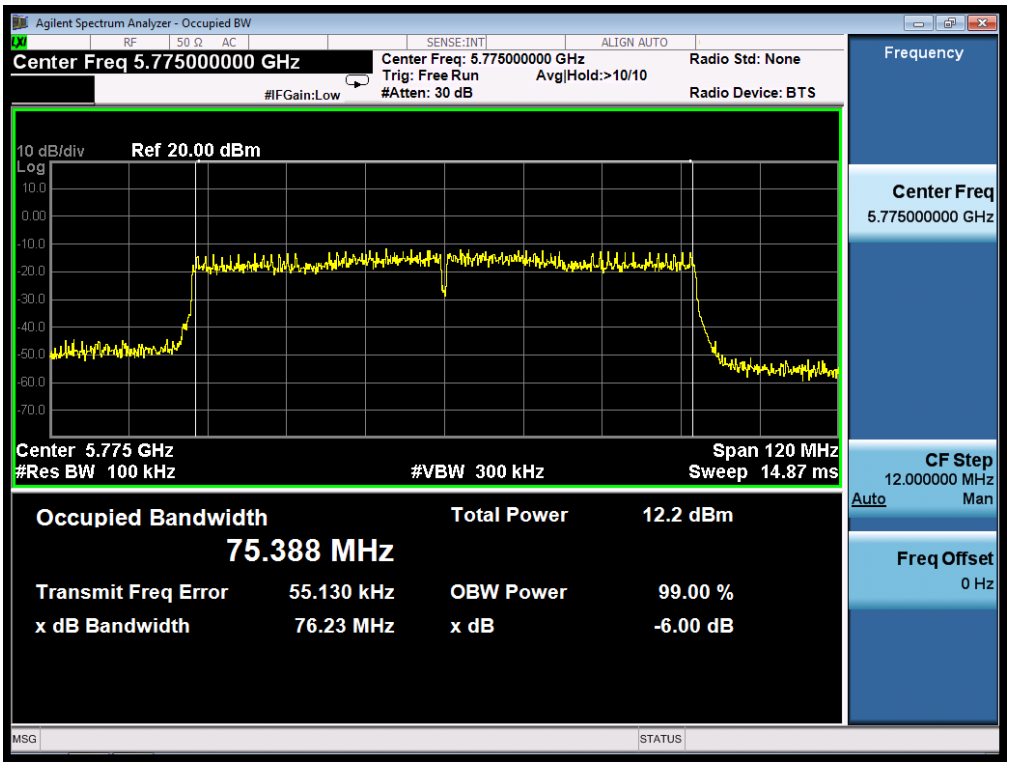


TEST PLOT OF BANDWIDTH FOR 5795MHz



802.11ac80 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5775MHz



9. EMISSION BANDWIDTH

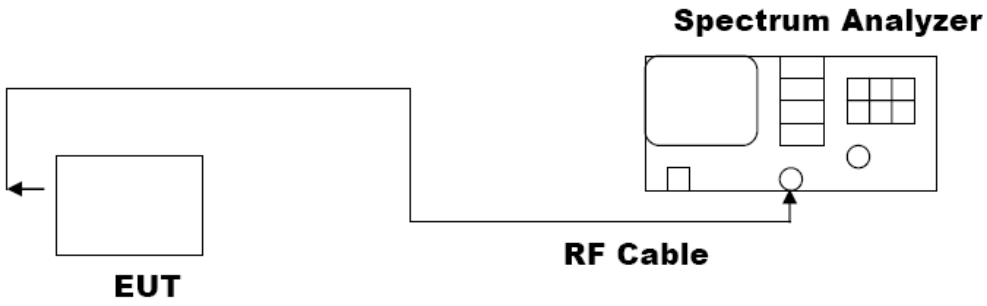
9.1. MEASUREMENT PROCEDURE

a) Set RBW = approximately 1% of the emission bandwidth.
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	23.00	16.709	PASS
5200MHz	20.52	16.458	PASS
5240MHz	22.68	16.535	PASS

LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION			
Test Channel	**-26dBc EBW (MHz)**	**99% OBW (MHz)**	**Criteria**
5180MHz	24.09	17.770	PASS
5200MHz	21.12	17.718	PASS
5240MHz	23.18	17.761	PASS
5190MHz	39.09	36.225	PASS
5230MHz	38.95	36.197	PASS

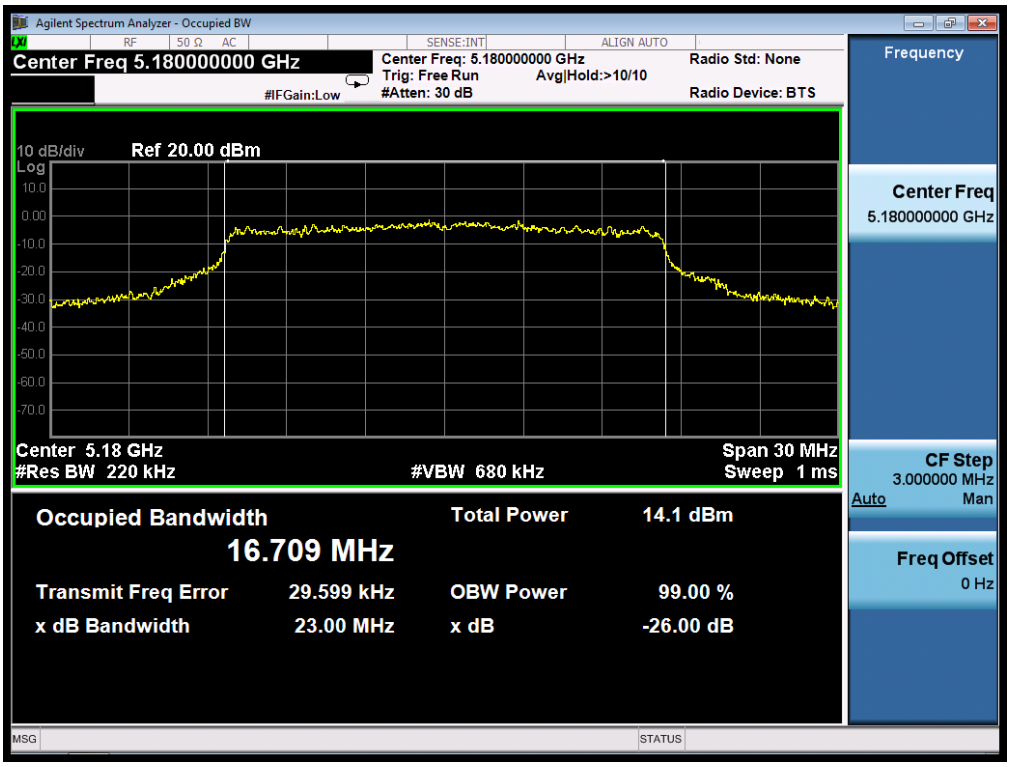
LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION			
Test Channel	**-26dBc EBW (MHz)**	**99% OBW (MHz)**	**Criteria**
5180MHz	20.98	17.713	PASS
5200MHz	21.12	17.679	PASS
5240MHz	21.20	17.697	PASS
5190MHz	39.16	36.223	PASS
5230MHz	39.14	36.225	PASS
5210MHz	80.73	75.749	PASS

The channel operating in U-NII 1 band has 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.

For 802.11n20/n40/ac20/ac40/ac80 mode, two transmit chains had been tested, the chain 0 was the worst case and record in the test report.

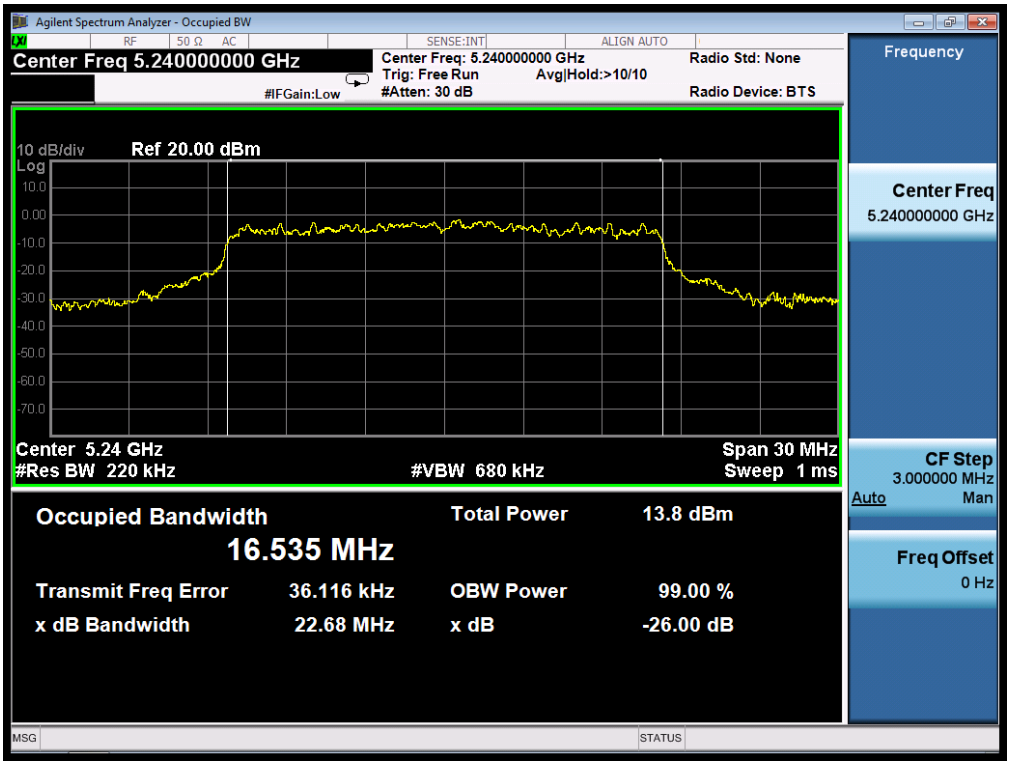
802.11a20 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5180MHz



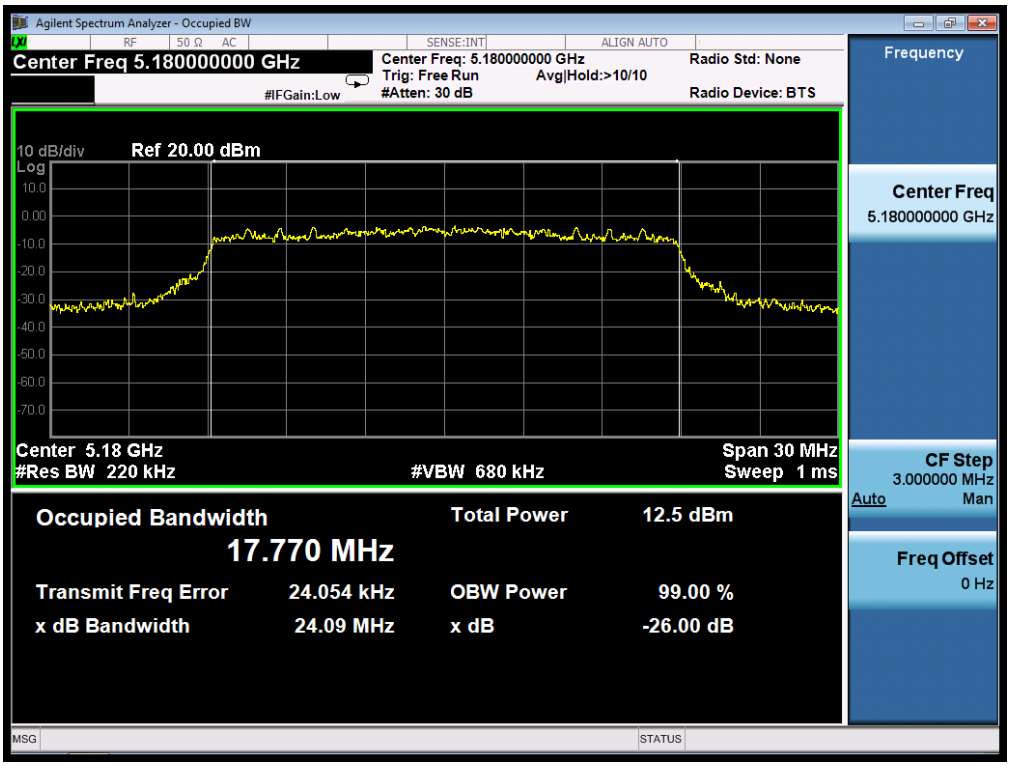
TEST PLOT OF BANDWIDTH FOR 5200MHz

TEST PLOT OF BANDWIDTH FOR 5240MHz

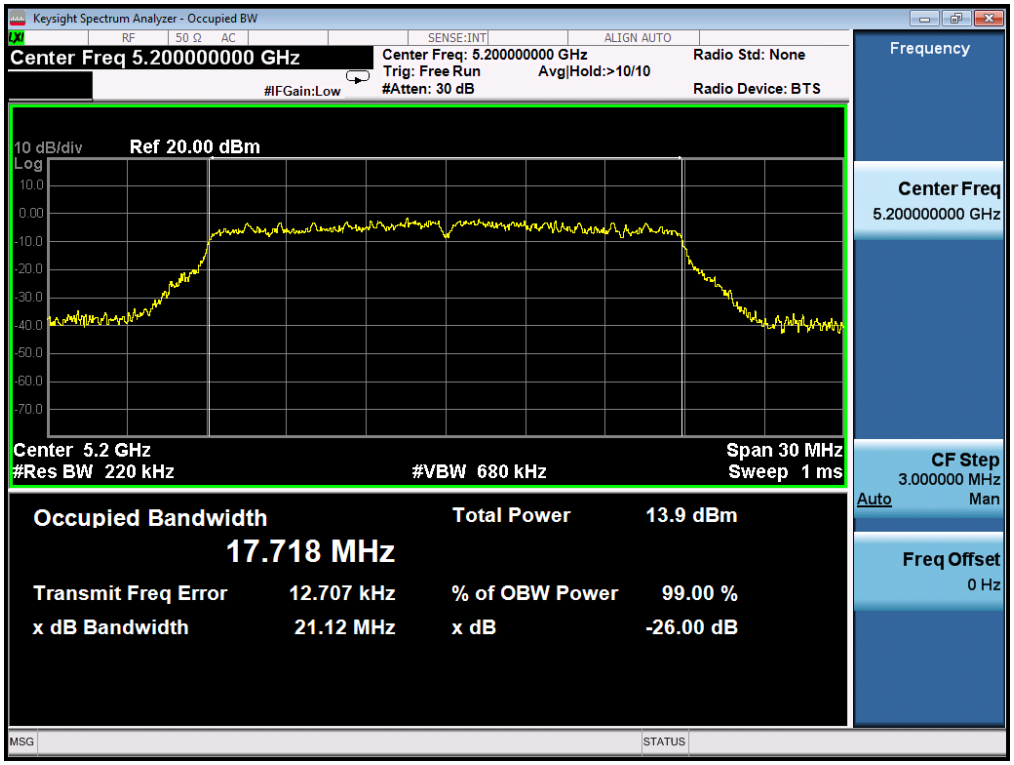


802.11n20 TEST RESULT

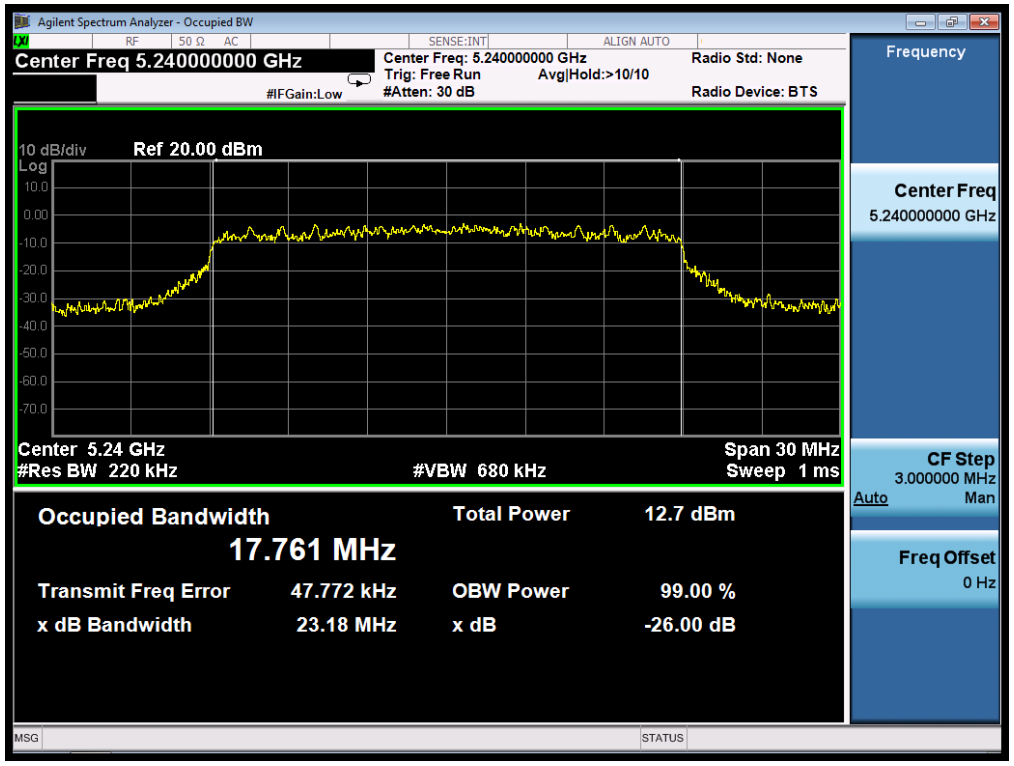
TEST PLOT OF BANDWIDTH FOR 5180MHz



TEST PLOT OF BANDWIDTH FOR 5200MHz

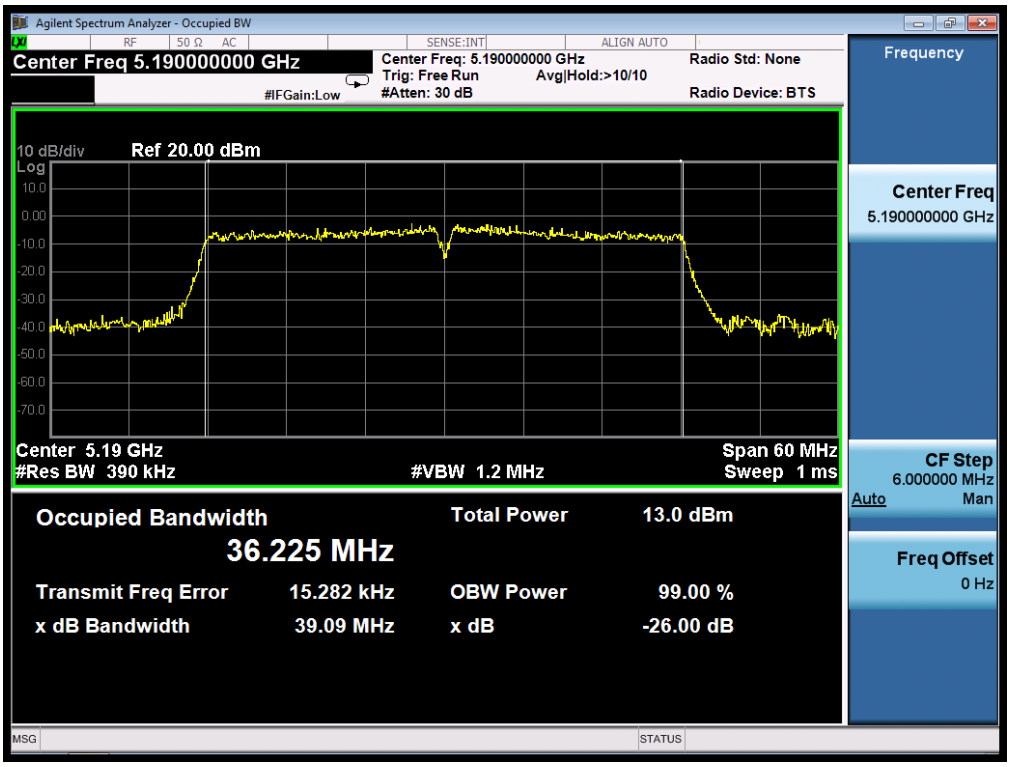


TEST PLOT OF BANDWIDTH FOR 52400MHz

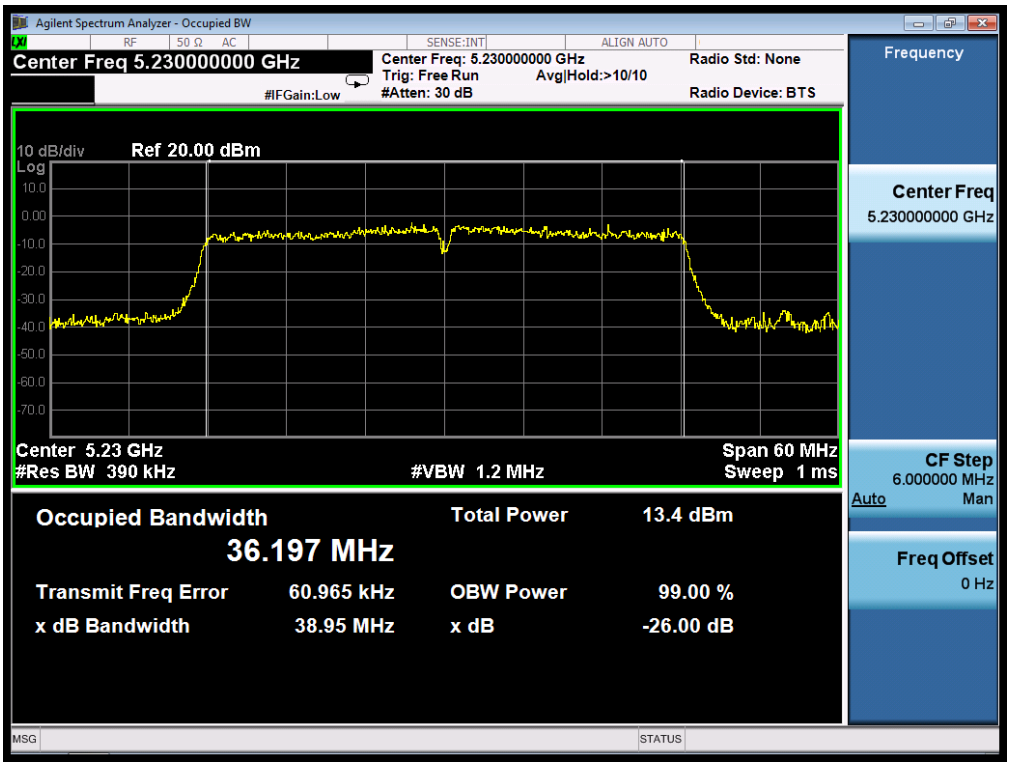


802.11n40 TEST RESULT

TEST PLOT OF BANDWIDTH FOR 5190MHz

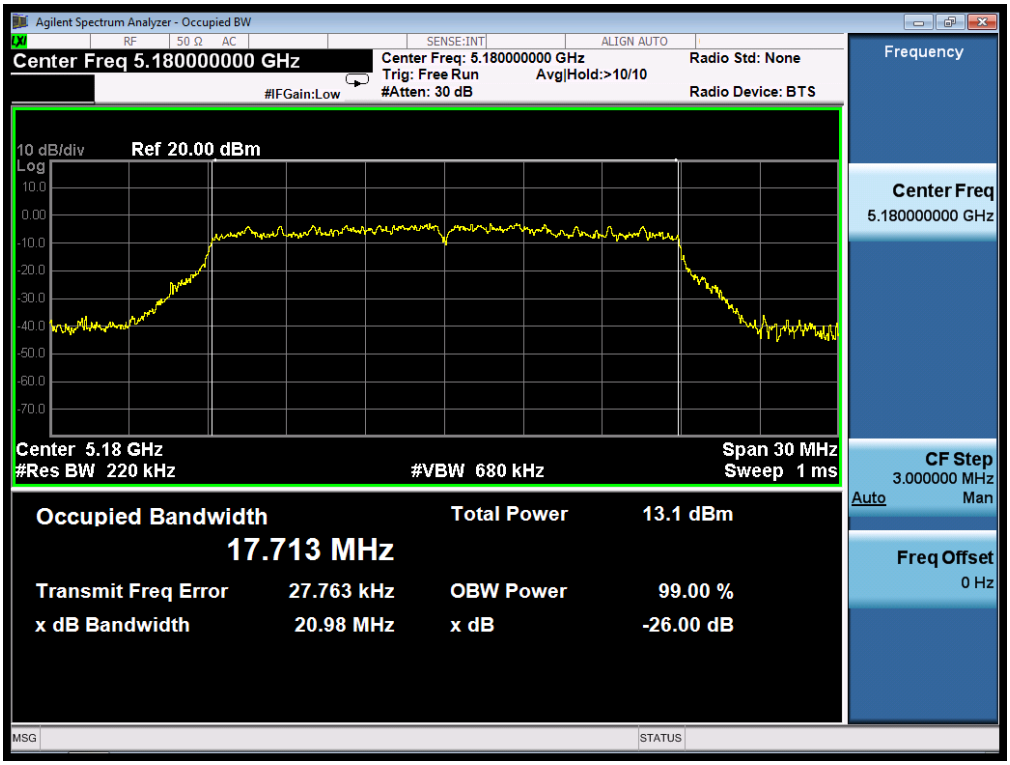


TEST PLOT OF BANDWIDTH FOR 5230MHz

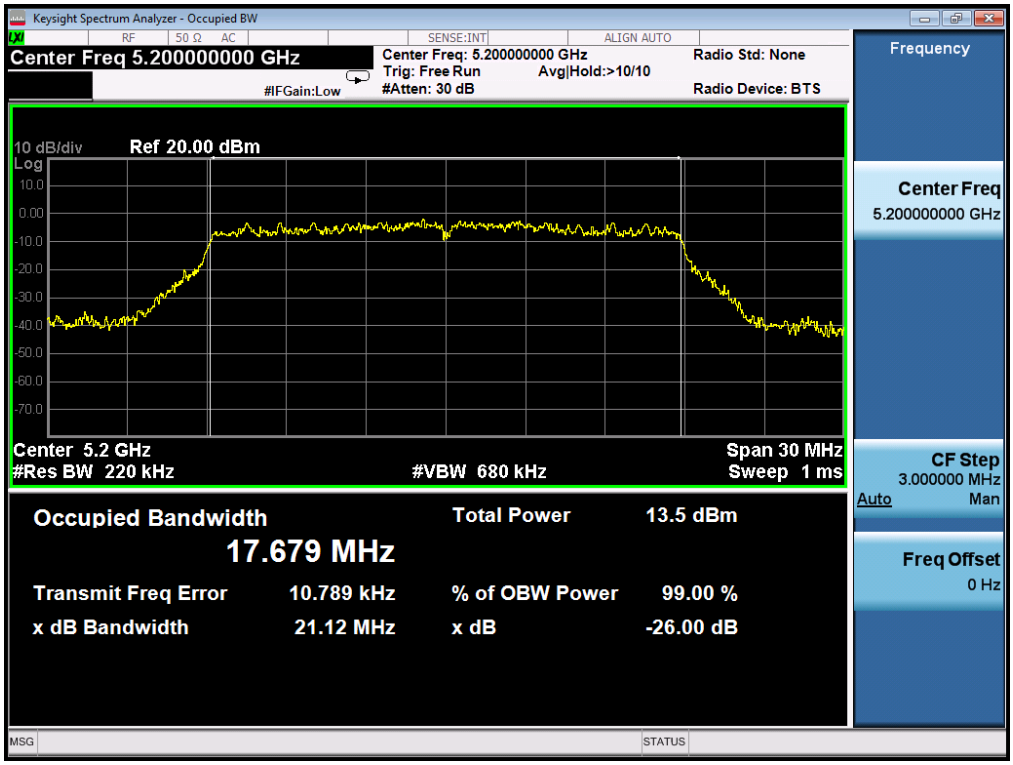


802.11ac20 TEST RESULT

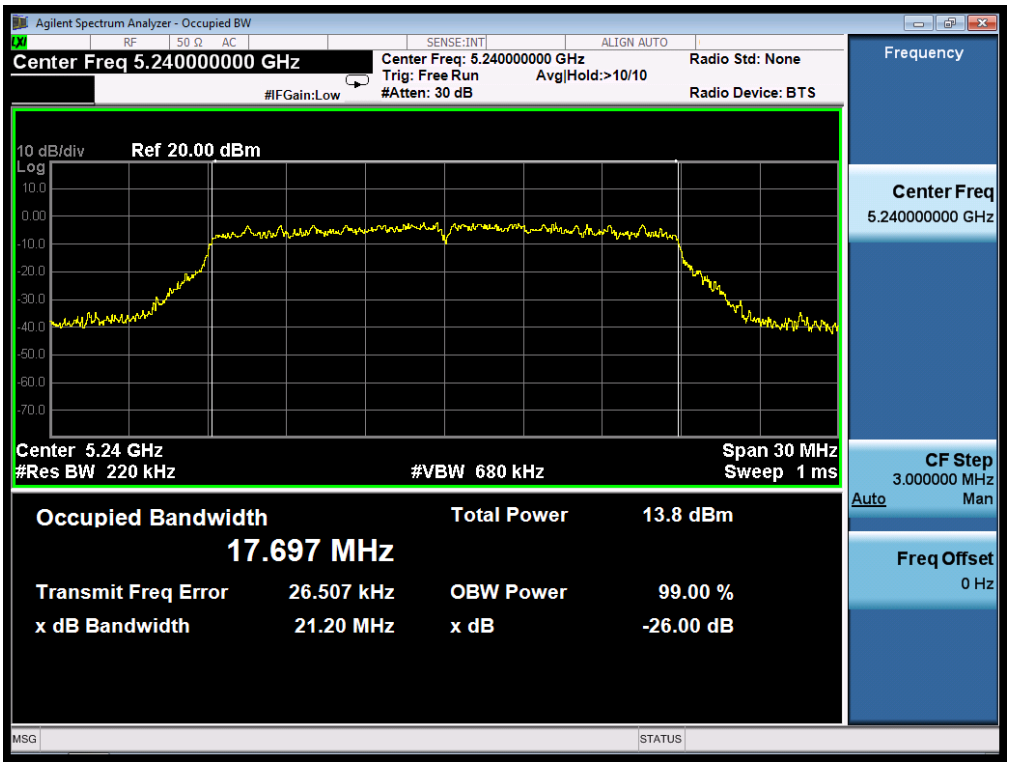
TEST PLOT OF BANDWIDTH FOR 5180MHz



TEST PLOT OF BANDWIDTH FOR 5200MHz

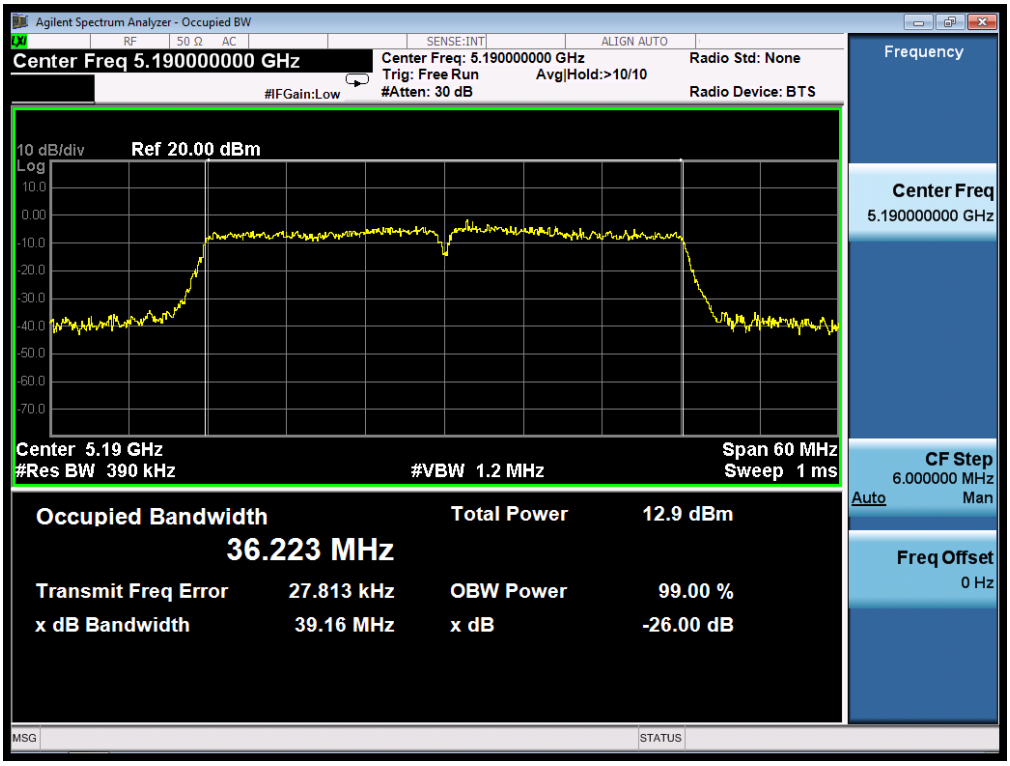


TEST PLOT OF BANDWIDTH FOR 5240MHz

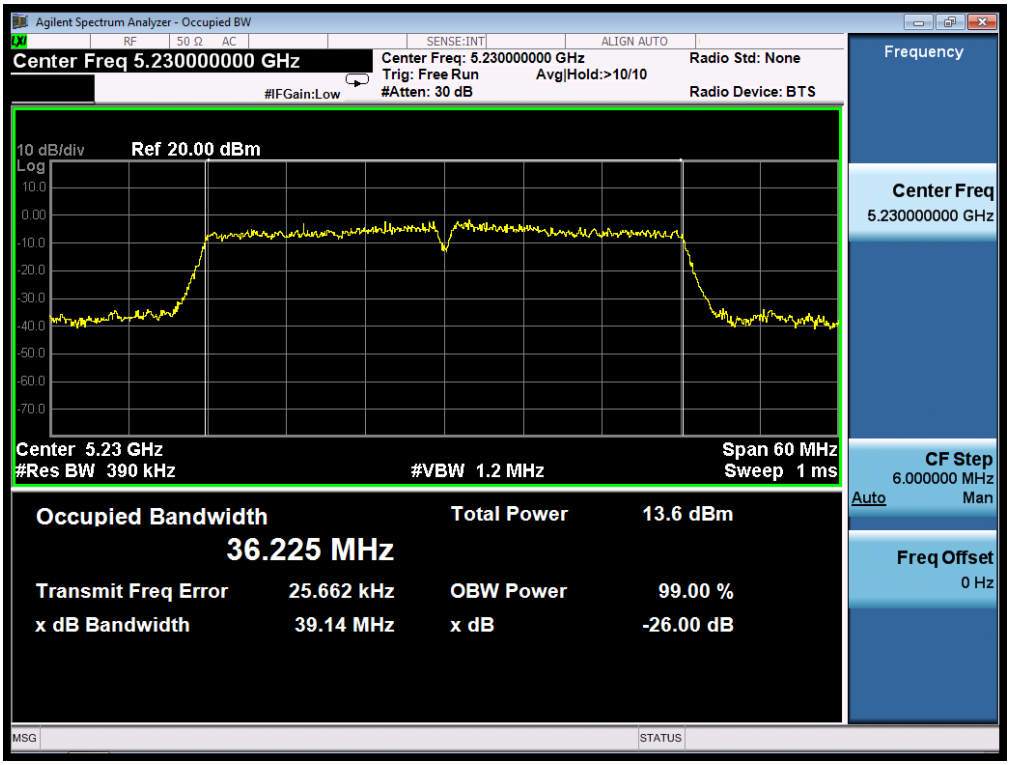


802.11ac40 TEST RESULT

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	6.916	11	Pass
5200	6.930	11	Pass
5240	7.298	11	Pass
Frequency (MHz)	**Power density (dBm/500kHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5745	2.966	30	Pass
5785	3.625	30	Pass
5825	3.759	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION					
Frequency (MHz)	**Power density Chain 0 (dBm/MHz)**	**Power density Chain 1 (dBm/MHz)**	**Power density Total (dBm/MHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5180	5.121	5.263	8.203	11	Pass
5200	5.145	5.065	8.115	11	Pass
5240	6.013	5.777	8.907	11	Pass
5190	3.068	3.065	6.077	11	Pass
5230	3.521	2.793	6.183	11	Pass
Frequency (MHz)	**Power density Chain 0 (dBm/500kHz)**	**Power density Chain 1 (dBm/500kHz)**	**Power density Total (dBm/500kHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5745	2.338	1.883	5.127	30	Pass
5785	3.013	1.938	5.519	30	Pass

5825	3.109	3.043	6.086	30	Pass
5755	-0.354	-0.763	2.457	30	Pass
5795	-0.157	-0.203	2.830	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION					
Frequency (MHz)	**Power density Chain 0 (dBm/MHz)**	**Power density Chain 1 (dBm/MHz)**	**Power density Total (dBm/MHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5180	4.928	4.865	7.907	11	Pass
5200	5.477	5.012	8.261	11	Pass
5240	5.765	5.571	8.679	11	Pass
5190	2.338	1.886	5.128	11	Pass
5230	2.752	2.984	5.880	11	Pass
5210	-0.070	-0.300	2.827	11	Pass
Frequency (MHz)	**Power density Chain 0 (dBm/500kHz)**	**Power density Chain 1 (dBm/500kHz)**	**Power density Total (dBm/500kHz)**	**Applicable Limits (dBm)**	**Pass or Fail**
5745	2.469	0.601	4.645	30	Pass
5785	2.842	2.060	5.479	30	Pass
5825	2.502	2.403	5.463	30	Pass
5755	-0.273	-0.962	2.406	30	Pass
5795	1.053	-0.818	3.228	30	Pass
5775	-1.241	-2.964	0.993	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 5785MHz

TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz

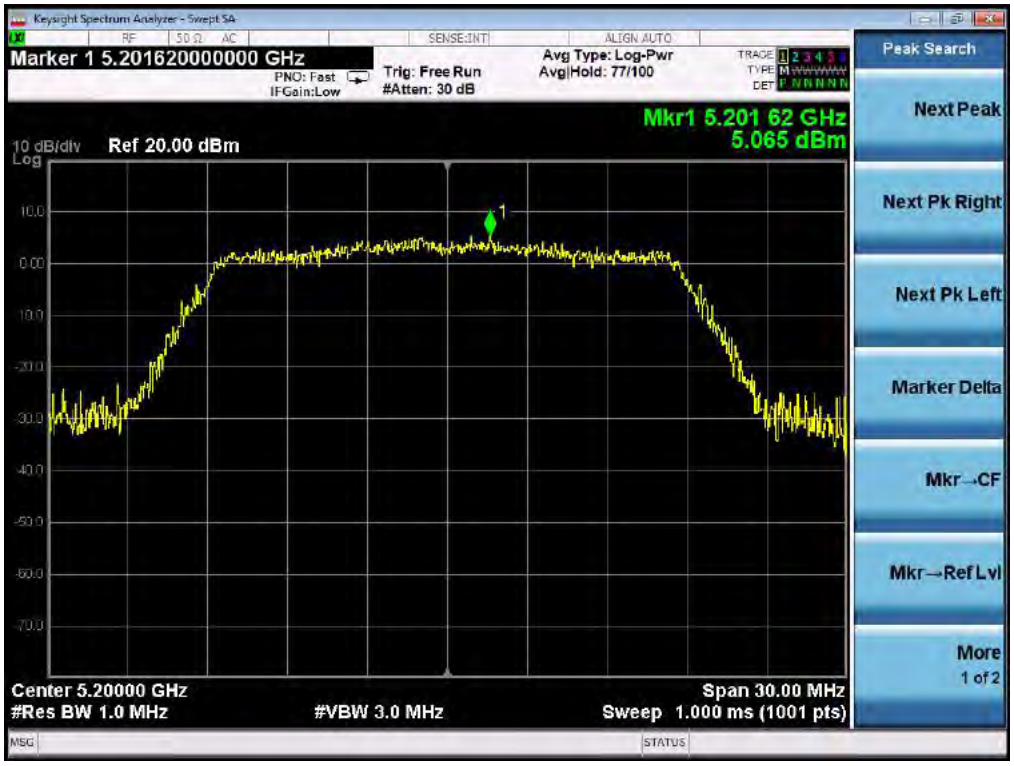
802.11n20 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz AT CHAIN 1



TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5785MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5785MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz AT CHAIN 1

802.11n40 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5755MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5755MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz AT CHAIN 1

802.11ac20 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5180MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5200MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5240MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5745MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5785MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5785MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5825MHz AT CHAIN 1

802.11ac40 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5190MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5230MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5755MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5755MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz AT CHAIN 1

802.11ac80 TEST RESULT

TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5775MHz AT CHAIN 0

TEST PLOT OF SPECTRAL DENSITY FOR 5775MHz AT CHAIN 1

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

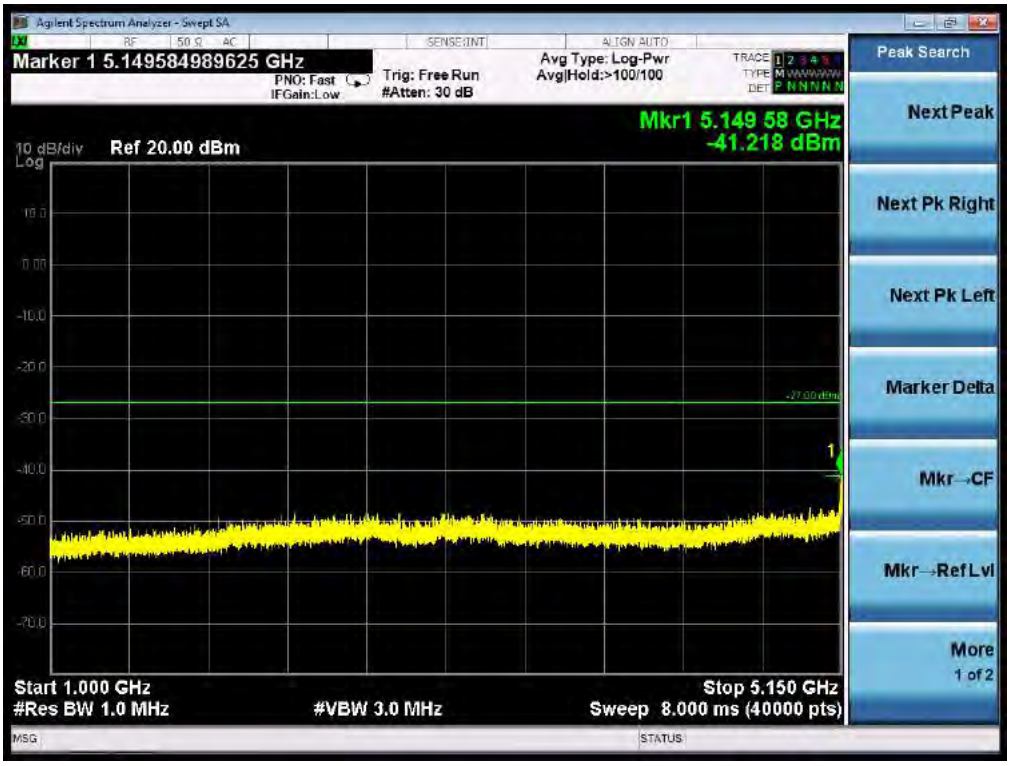
The same as described in section 6.

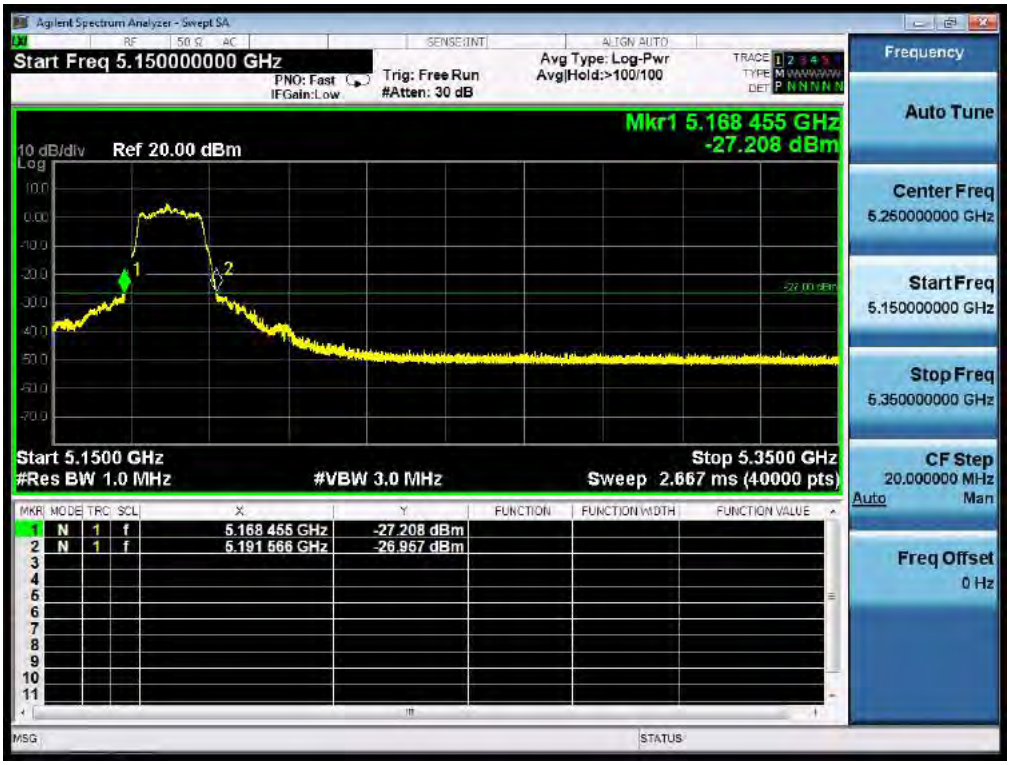
11.4. LIMITS AND MEASUREMENT RESULT

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

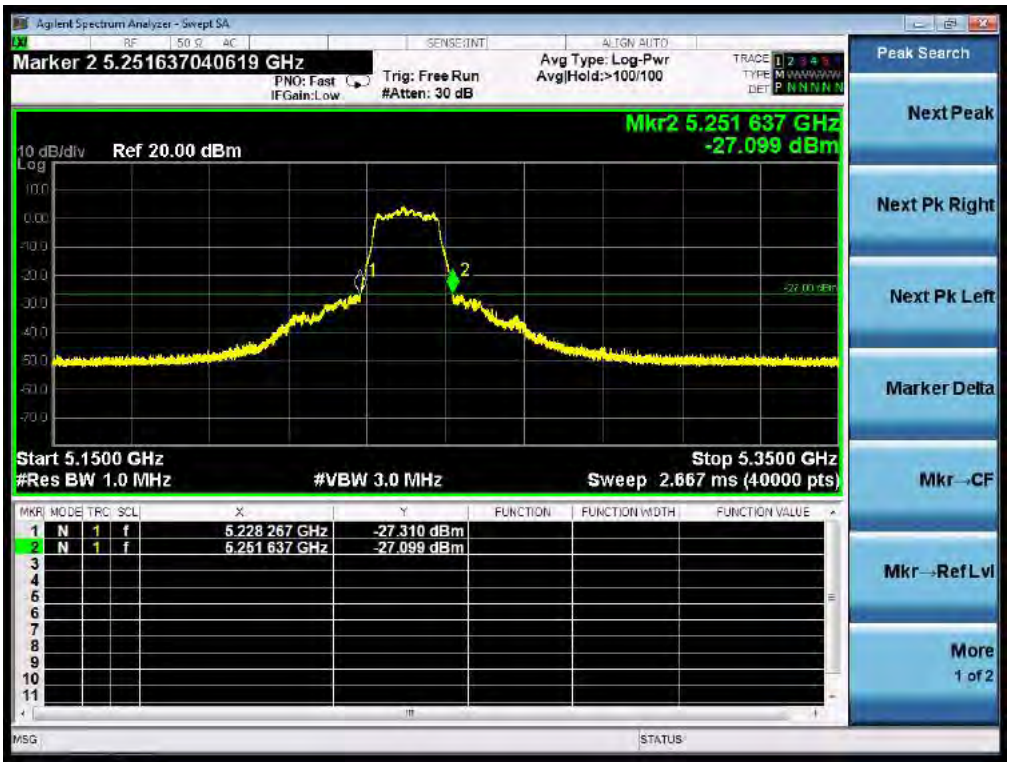
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5180MHz




Agilent Spectrum Analyzer - Swept SA
Start Freq 5.150000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.168 455 GHz
-27.208 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
1 N 1 f 5.168 455 GHz -27.208 dBm
2 N 1 f 5.191 566 GHz -26.957 dBm
Frequency
Auto Tune
Center Freq
5.250000000 GHz
Start Freq
5.150000000 GHz
Stop Freq
5.350000000 GHz
CF Step
20.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

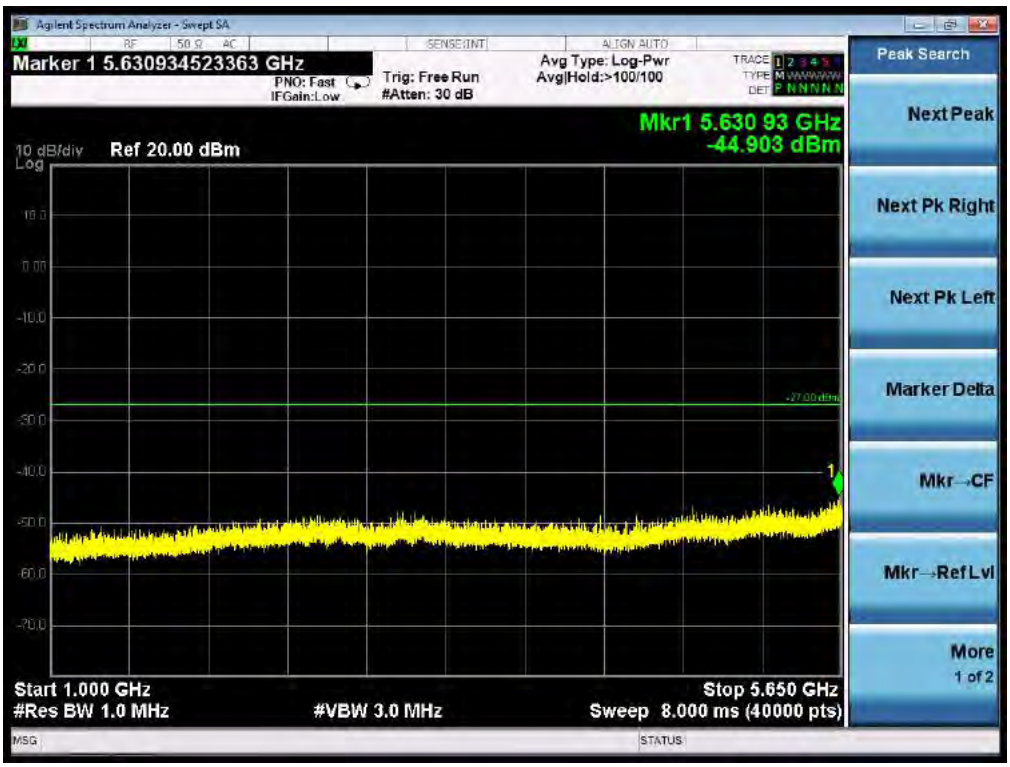

Agilent Spectrum Analyzer - Swept SA
Marker 1 37.598694967374 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 37.598 7 GHz
-38.523 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

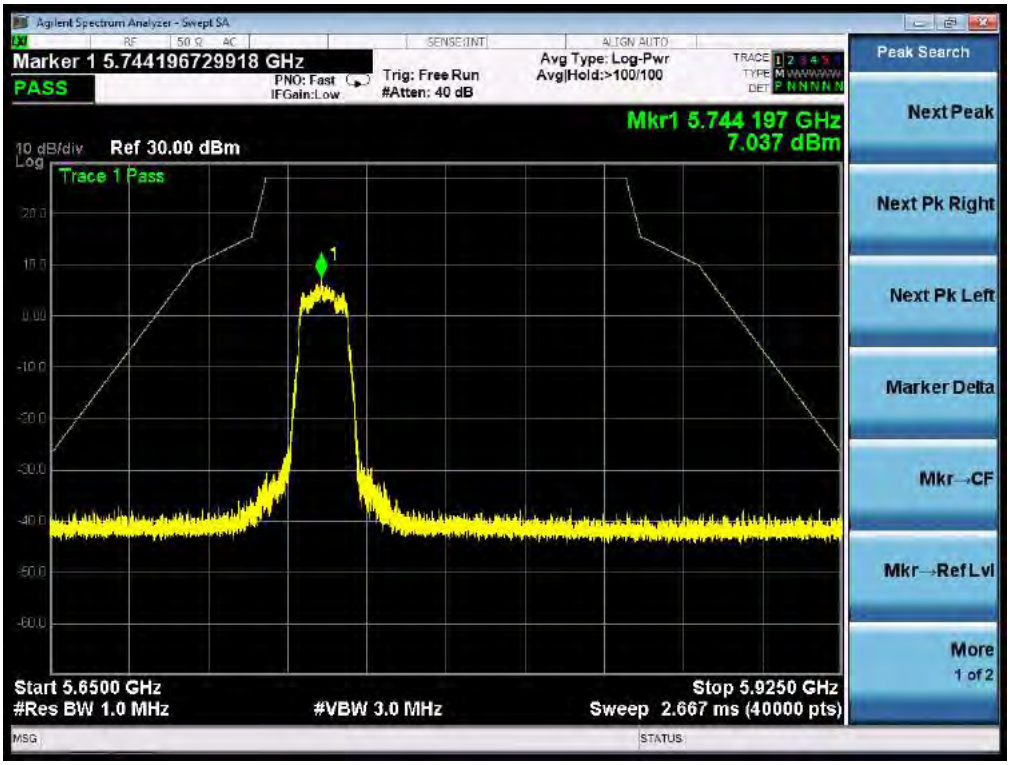
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5240MHz


Agilent Spectrum Analyzer - Swept SA
Marker 2 5.251637040619 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr2 5.251 637 GHz
-27.099 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
1 N 1 f 5.228 267 GHz -27.310 dBm
2 N 1 f 5.251 637 GHz -27.099 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 38.523873096827 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 38.523 9 GHz
-38.044 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

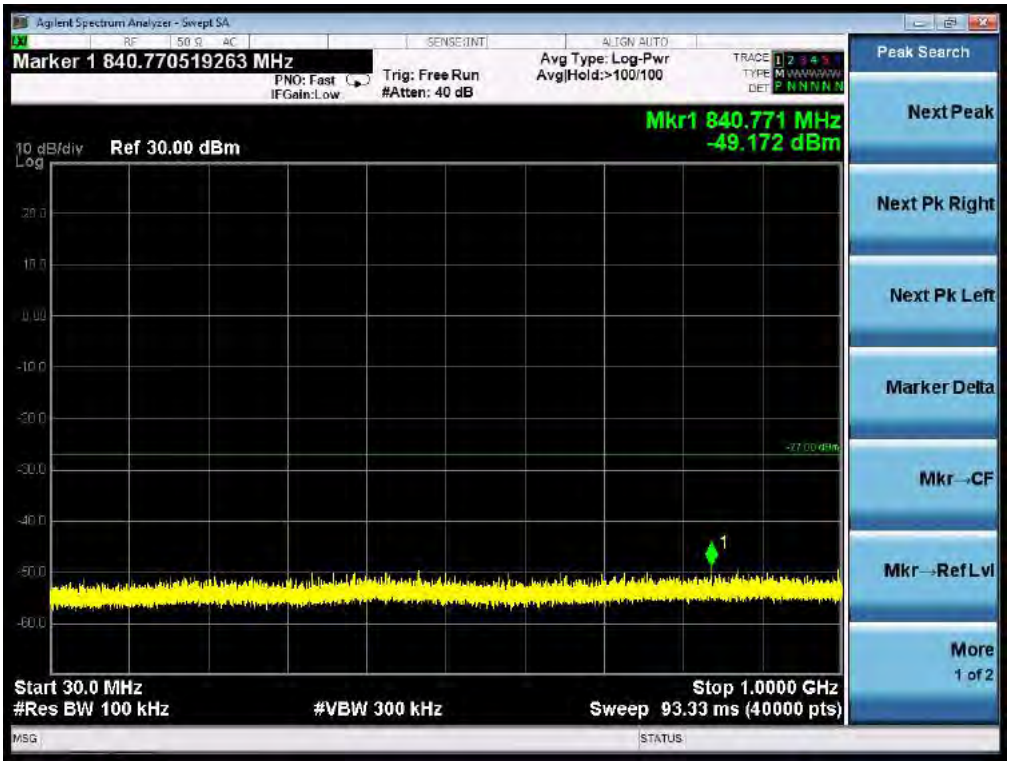
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5745MHz

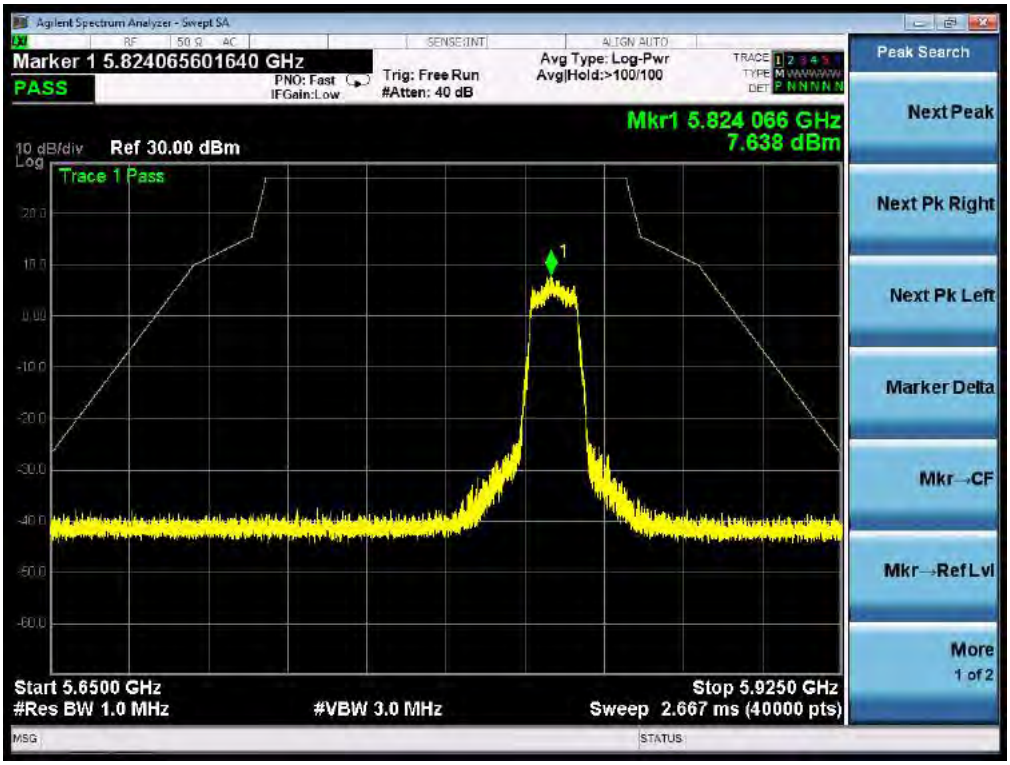



Agilent Spectrum Analyzer - Swept SA
Marker 1 5.744196729918 GHz
PASS
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.744 197 GHz
7.037 dBm
10 dB/div
Log
Ref 30.00 dBm
Trace 1 Pass
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 36.679308232706 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 36.679 3 GHz
-38.651 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

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

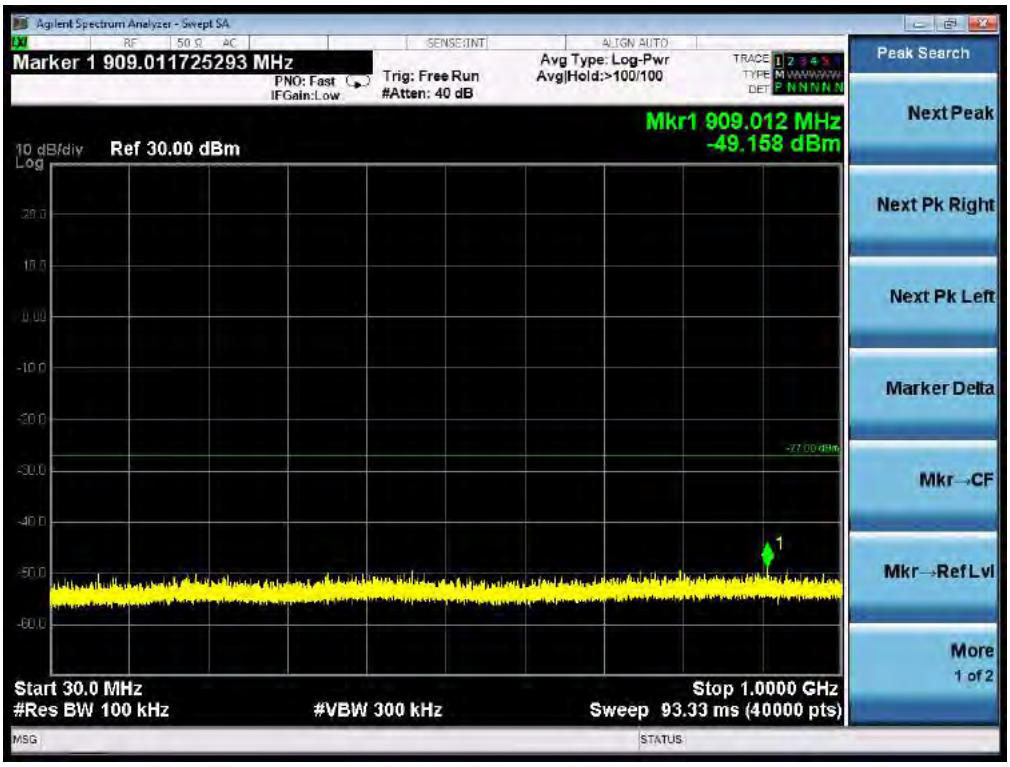


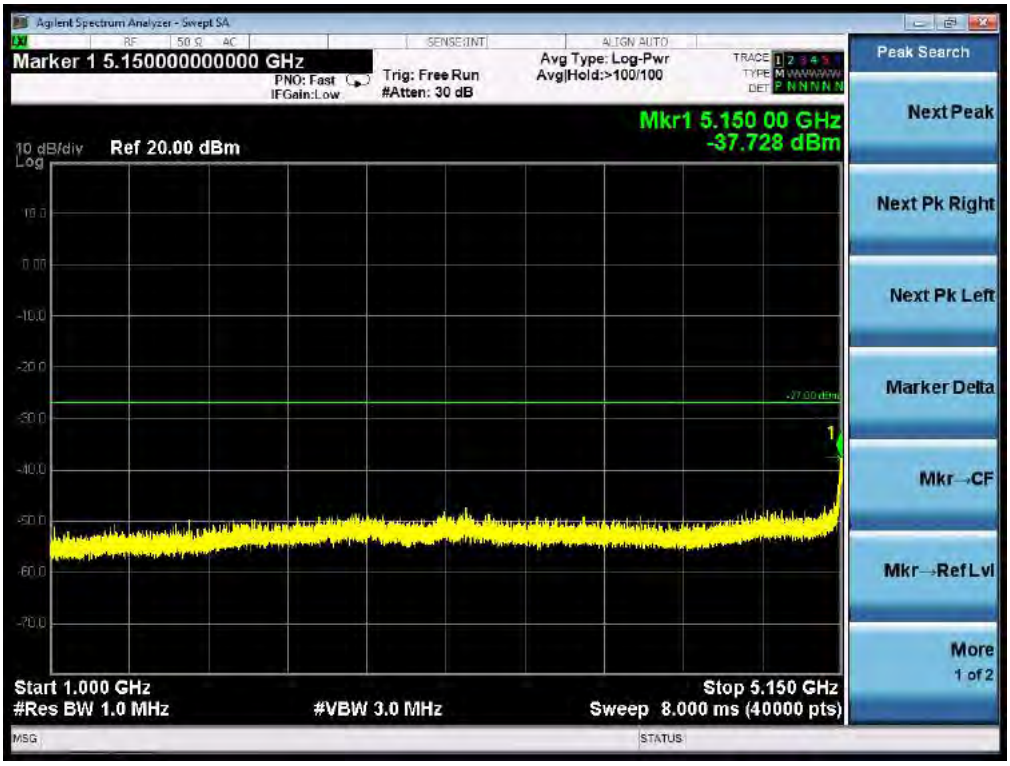

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.824065601640 GHz
PASS
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.824 066 GHz
7.638 dBm
10 dB/div
Log
Ref 30.00 dBm
Trace 1 Pass
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 38.606297657441 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 38.606 3 GHz
-38.732 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

FOR 802.11N40 MODULATION

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






Agilent Spectrum Analyzer - Swept SA
Marker 2 5.210571013998 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr2 5.210 571 GHz
-27.327 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
1 N 1 f 5.169 951 GHz -26.995 dBm
2 N 1 f 5.210 571 GHz -27.327 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2
MSG
STATUS

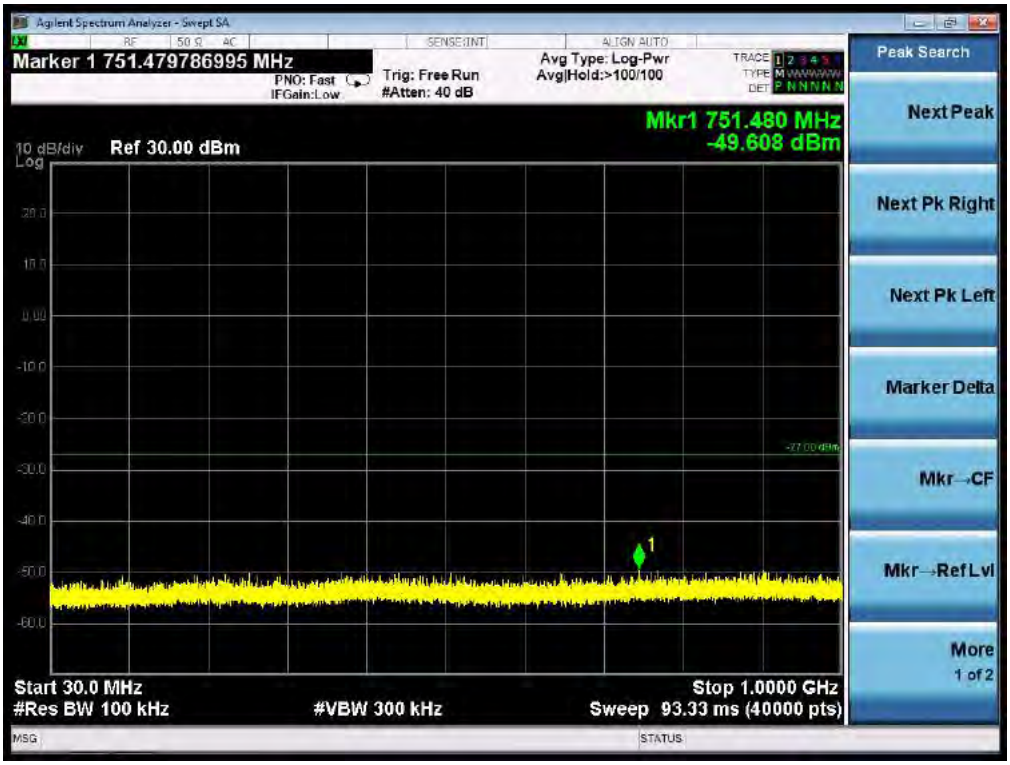

Agilent Spectrum Analyzer - Swept SA
Marker 1 38.615697892447 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 38.615 7 GHz
-38.204 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

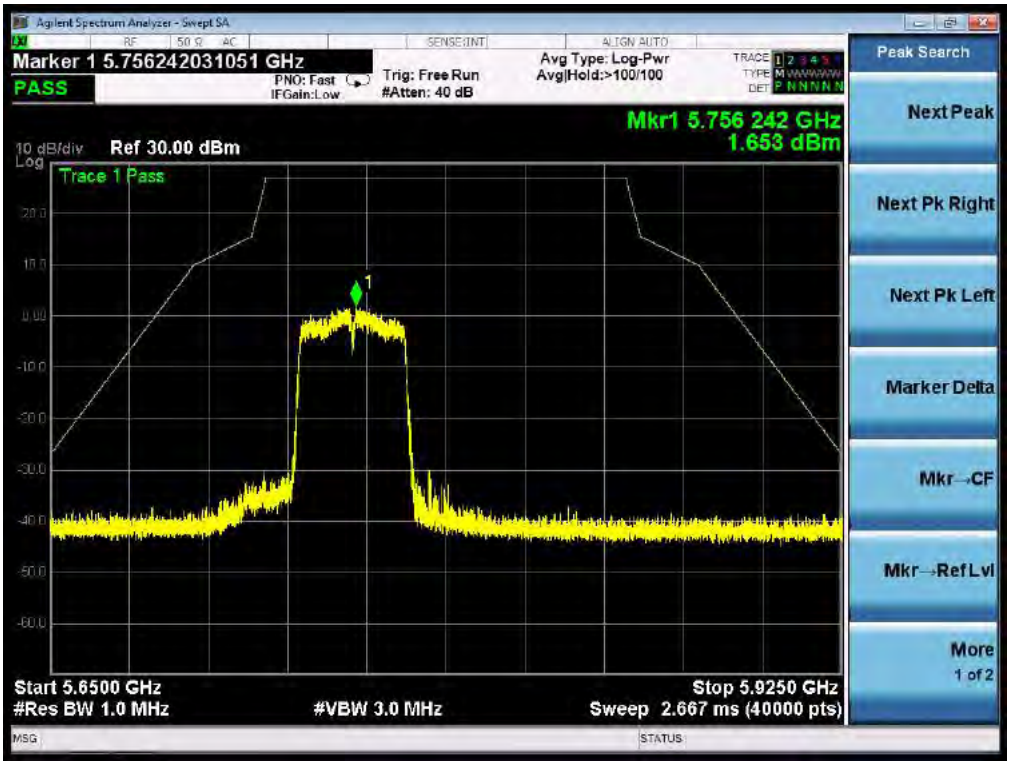
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5230MHz


Agilent Spectrum Analyzer - Swept SA
Marker 1 5.210037001125 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.210 037 GHz
-27.003 dBm
10 dB/div
Ref 20.00 dBm
Log
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
1 N 1 f 5.210 037 GHz -27.003 dBm
2 N 1 f 5.250 352 GHz -26.864 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 38.594041101028 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 38.594 0 GHz
-38.926 dBm
10 dB/div
Ref 20.00 dBm
Log
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

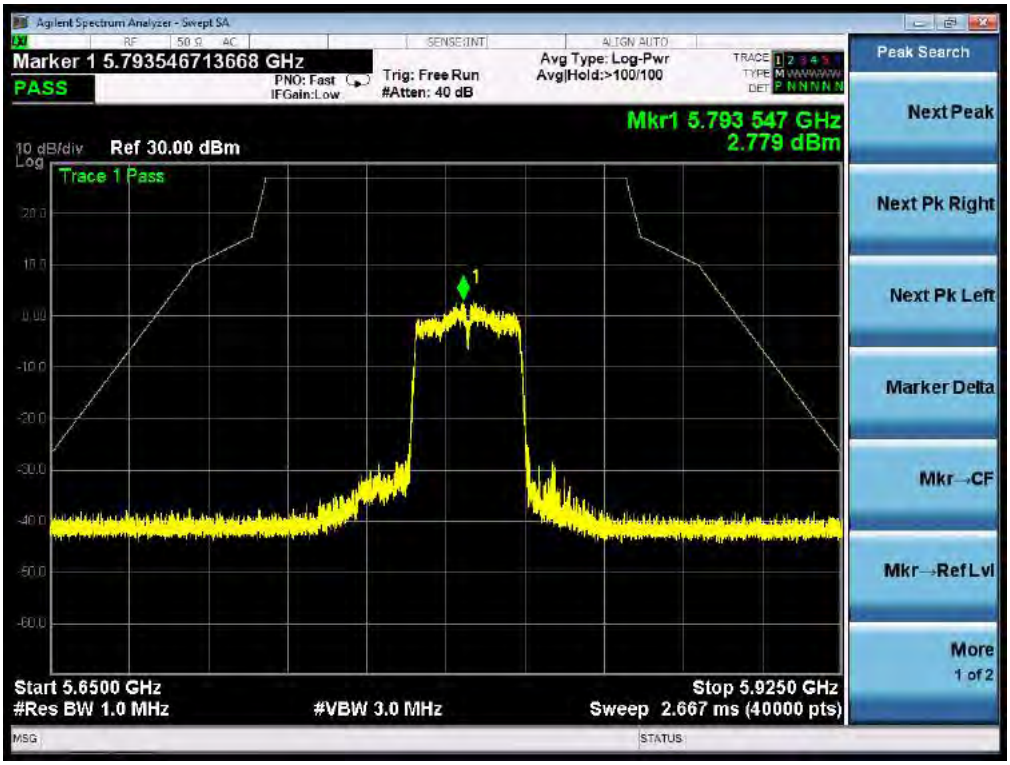
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5755MHz




Agilent Spectrum Analyzer - Swept SA
Marker 1 5.756242031051 GHz
PASS
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.756 242 GHz
1.653 dBm
10 dB/div
Log
Ref 30.00 dBm
Trace 1 Pass
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 37.592541063527 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 37.592 5 GHz
-38.723 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

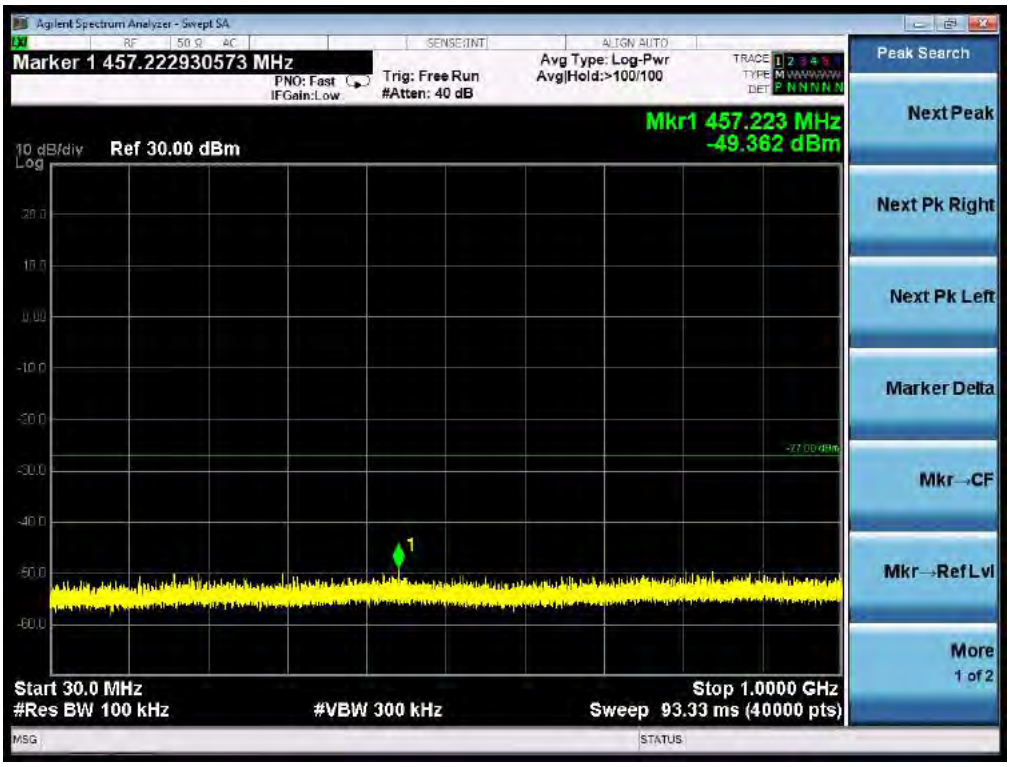
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5795M

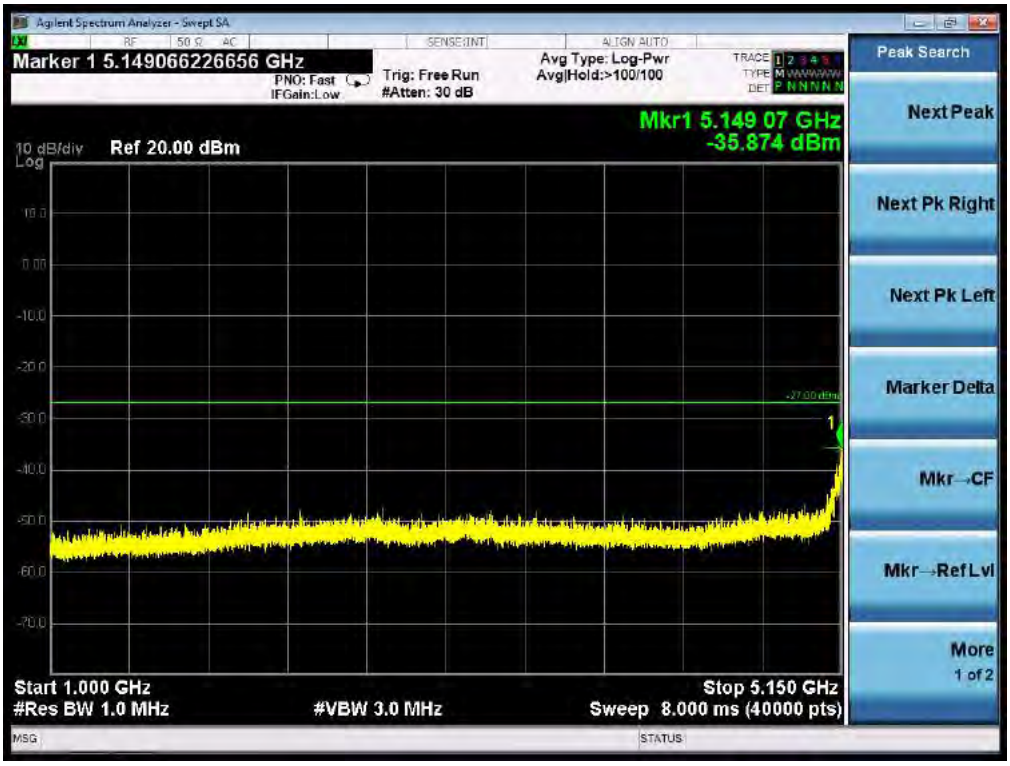

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.793546713668 GHz
PASS
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.793 547 GHz
2.779 dBm
10 dB/div
Log
Ref 30.00 dBm
Trace 1 Pass
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

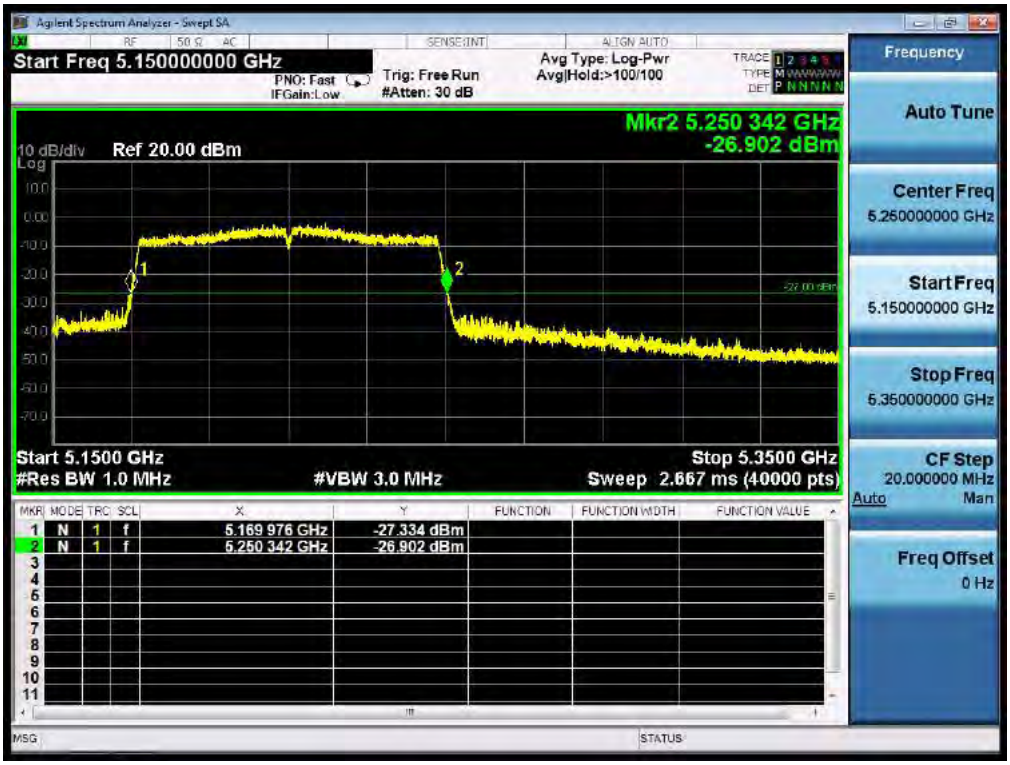

Agilent Spectrum Analyzer - Swept SA
Marker 1 37.617246056151 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 37.617 2 GHz
-38.804 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

FOR 802.11AC80 MODULATION

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

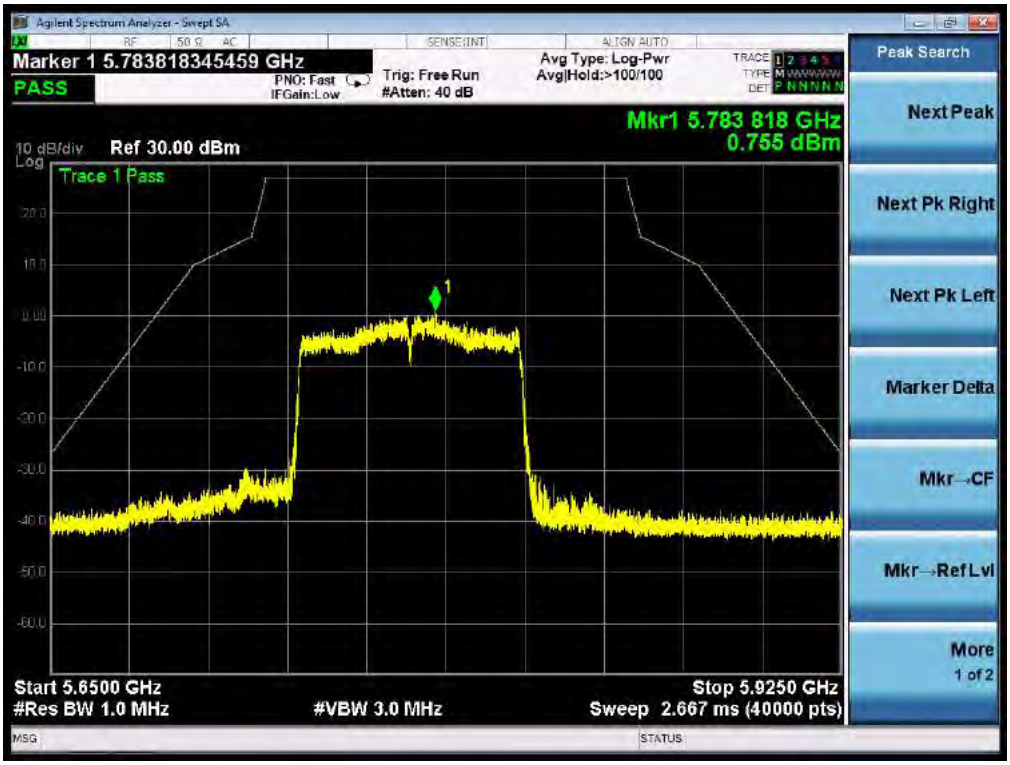





Agilent Spectrum Analyzer - Swept SA
Start Freq 5.150000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr2 5.250 342 GHz
-26.902 dBm
10 dB/div
Ref 20.00 dBm
Log
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
1 N 1 f 5.169 976 GHz -27.334 dBm
2 N 1 f 5.250 342 GHz -26.902 dBm
Frequency
Auto Tune
Center Freq
5.250000000 GHz
Start Freq
5.150000000 GHz
Stop Freq
5.350000000 GHz
CF Step
20.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 37.596096152404 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 37.596 1 GHz
-38.382 dBm
10 dB/div
Ref 20.00 dBm
Log
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

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


Agilent Spectrum Analyzer - Swept SA
Marker 1 5.783818345459 GHz
PASS
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.783 818 GHz
0.755 dBm
10 dB/div
Log
Ref 30.00 dBm
Trace 1 Pass
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 37.506499537488 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 37.506 5 GHz
-37.676 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

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.

Two transmit chains had been tested, the chain 0 was the worst case and record in the test report.

The spurious emission at chain 0 is more than 3dB below the limits, so the MIMO results for the spurious emissions are comply with the requirement.

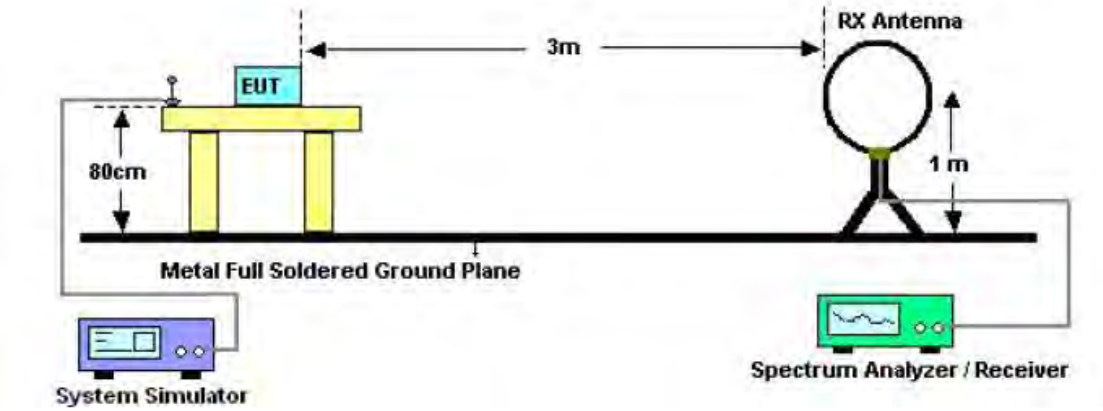
12. RADIATED EMISSION

12.1. MEASUREMENT PROCEDURE

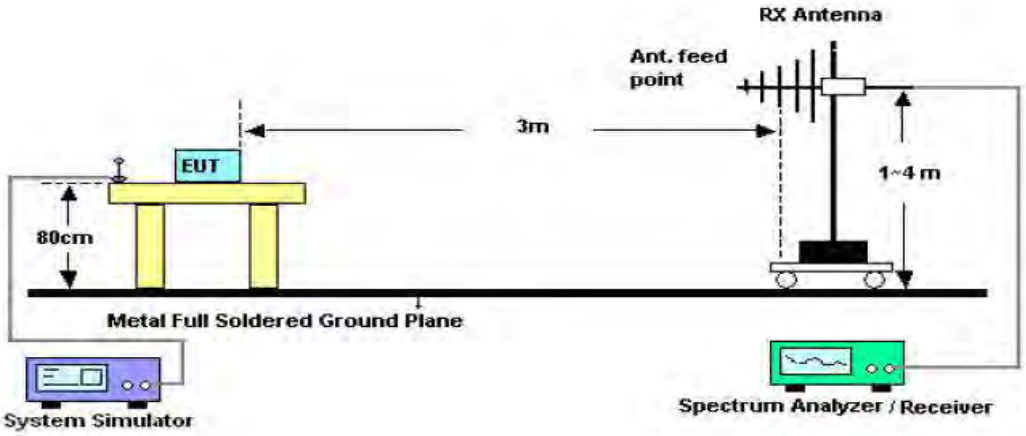
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated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

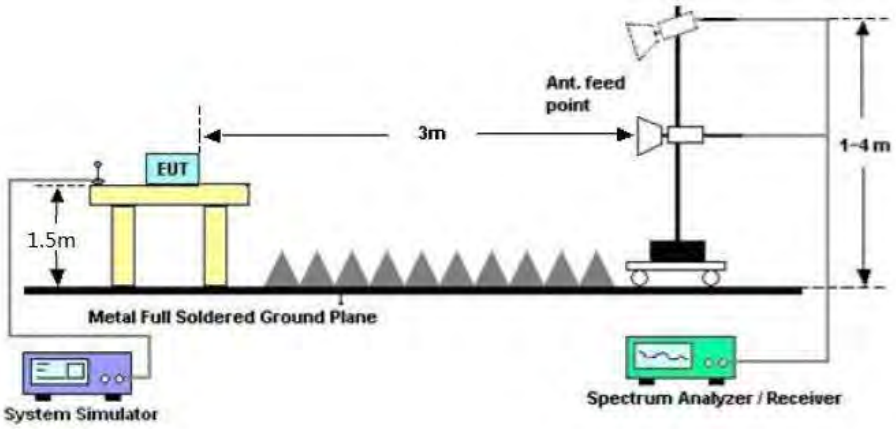
Radiated Emission Test-Setup Frequency Below 30MHz



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.

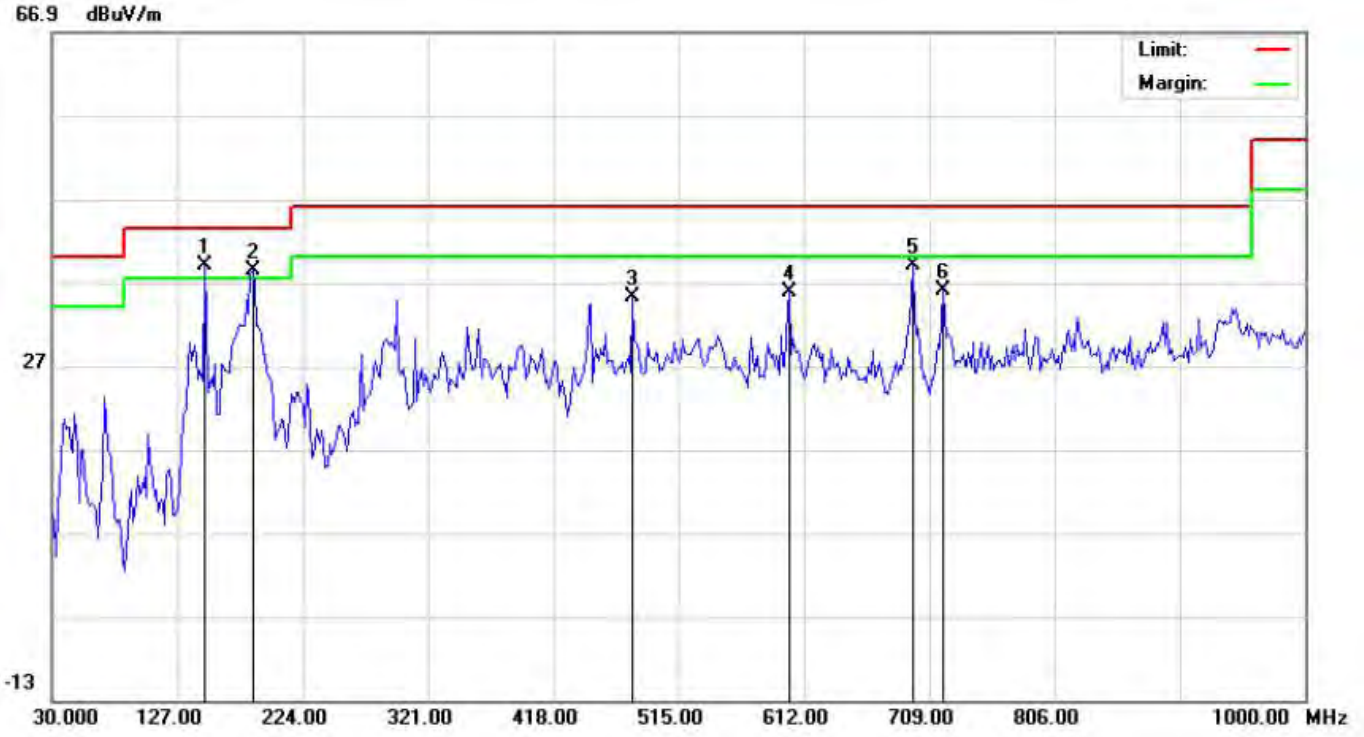
12.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

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

RADIATED EMISSION BELOW 1GHZ

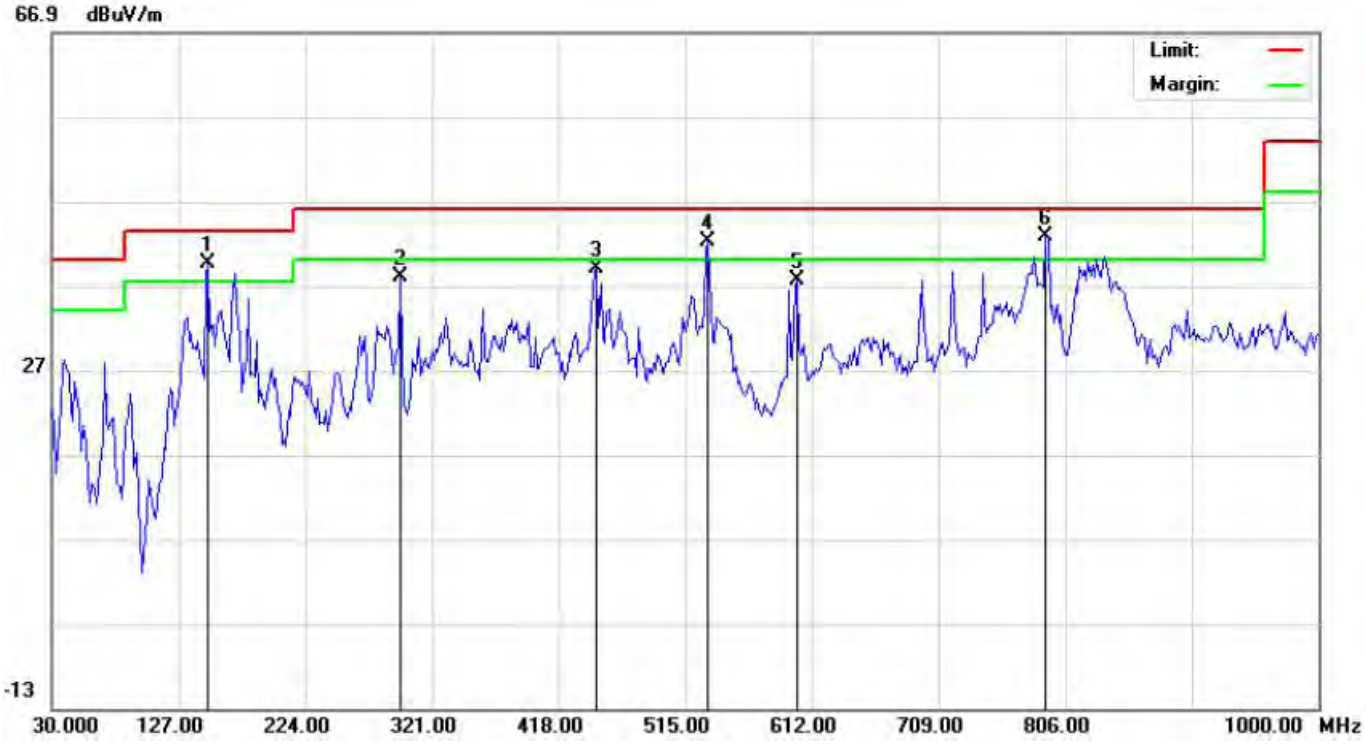
EUT	JmGO Smart Home Theater	**Model Name**	V8
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	802.11a20 5180MHz	**Antenna**	Horizontal



No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	148.0167	25.72	13.25	38.97	43.50	-4.53	peak			
2	!	185.2000	27.13	11.31	38.44	43.50	-5.06	peak			
3		479.4333	14.25	20.91	35.16	46.00	-10.84	peak			
4		600.6833	12.17	23.73	35.90	46.00	-10.10	peak			
5		696.0667	13.83	25.08	38.91	46.00	-7.09	peak			
6		720.3167	10.25	25.78	36.03	46.00	-9.97	peak			

RESULT: PASS

EUT	JmGO Smart Home Theater	Model Name	V8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Vertical



No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	!	149.6333	24.27	15.26	39.53	43.50	-3.97	peak			
2		296.7500	22.69	15.31	38.00	46.00	-8.00	peak			
3		447.1000	18.45	20.50	38.95	46.00	-7.05	peak			
4	!	532.7833	20.17	22.02	42.19	46.00	-3.81	peak			
5		600.6833	14.85	22.75	37.60	46.00	-8.40	peak			
6	*	791.4500	15.69	27.20	42.89	46.00	-3.11	peak			

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**	V8
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	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
10360.120	43.57	9.14	52.71	74	-21.29	peak
10360.120	36.38	9.14	45.52	54	-8.48	AVG
15540.180	41.18	10.22	51.4	74	-22.6	peak
15540.180	35.28	10.22	45.5	54	-8.5	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
10360.120	42.52	9.14	51.66	74	-22.34	peak
10360.120	35.78	9.14	44.92	54	-9.08	AVG
15540.180	40.45	10.22	50.67	74	-23.33	peak
15540.180	34.25	10.22	44.47	54	-9.53	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	JmGO Smart Home Theater	**Model Name**	V8
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	41.34	9.27	50.61	74	-23.39	peak
10480.120	36.71	9.27	45.98	54	-8.02	AVG
15720.180	39.54	10.38	49.92	74	-24.08	peak
15720.180	34.49	10.38	44.87	54	-9.13	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	40.79	9.27	50.06	74	-23.94	peak
10480.120	35.59	9.27	44.86	54	-9.14	AVG
15720.180	38.74	10.38	49.12	74	-24.88	peak
15720.180	33.84	10.38	44.22	54	-9.78	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	JmGO Smart Home Theater	Model Name	V8
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	41.24	9.42	50.66	74	-23.34	peak
11490.120	34.75	9.42	44.17	54	-9.83	AVG
17235.180	38.79	10.51	49.3	74	-24.7	peak
17235.180	33.94	10.51	44.45	54	-9.55	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	41.78	9.42	51.2	74	-22.8	peak
11490.120	35.25	9.42	44.67	54	-9.33	AVG
17235.180	38.04	10.51	48.55	74	-25.45	peak
17235.180	32.53	10.51	43.04	54	-10.96	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	JmGO Smart Home Theater	**Model Name**	V8
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	40.79	9.62	50.41	74	-23.59	peak
11650.120	34.53	9.62	44.15	54	-9.85	AVG
17475.180	37.75	10.75	48.5	74	-25.5	peak
17475.180	35.42	10.75	46.17	54	-7.83	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	39.64	9.62	49.26	74	-24.74	peak
11650.120	35.63	9.62	45.25	54	-8.75	AVG
17475.180	37.77	10.75	48.52	74	-25.48	peak
17475.180	34.42	10.75	45.17	54	-8.83	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=VBW=1MHz / Sweep=AUTO

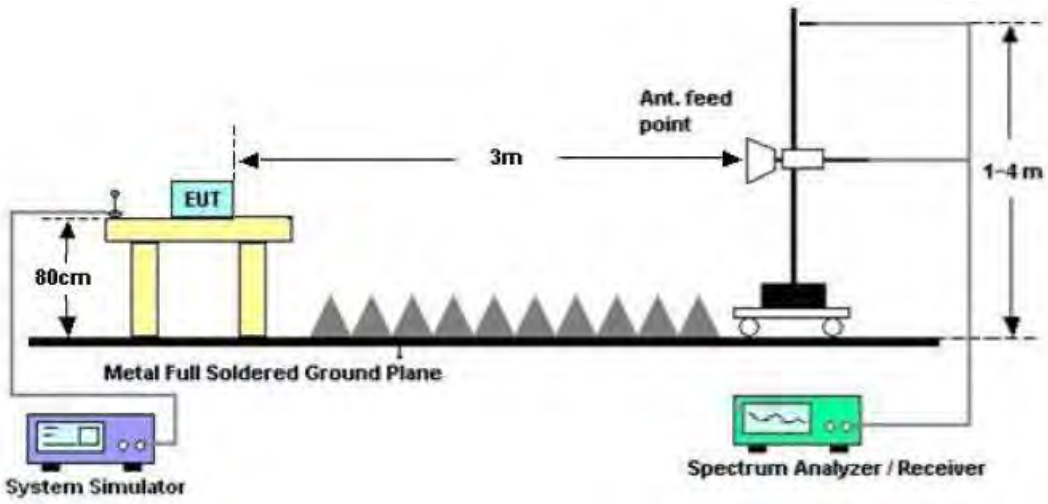
(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

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	V8
Temperature	25°C	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	V8
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	V8
Temperature	25°C	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	V8
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	V8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80 5210MHz	Antenna	Horizontal

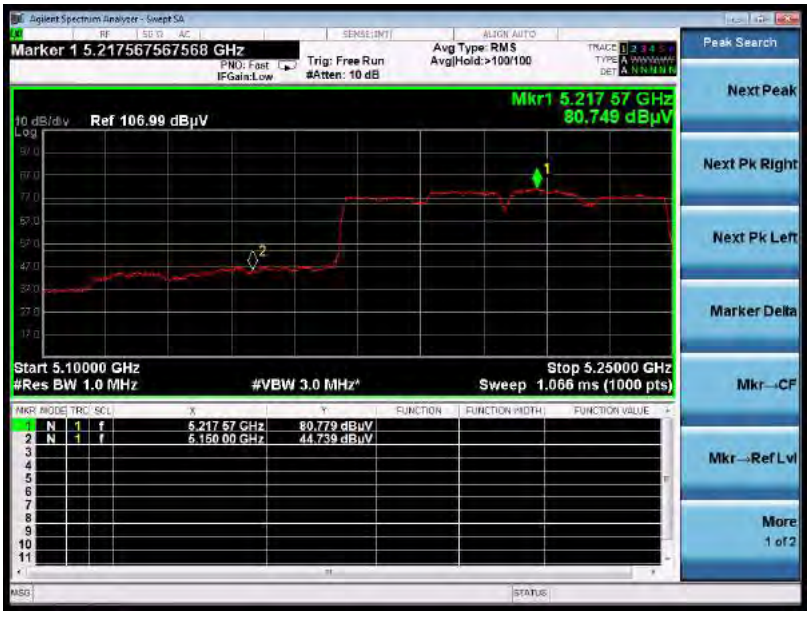
PK Value

AV Value

EUT	JmGO Smart Home Theater	Model Name	V8
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80 5210MHz	Antenna	Vertical

PK Value

AV Value



RESULT: PASS

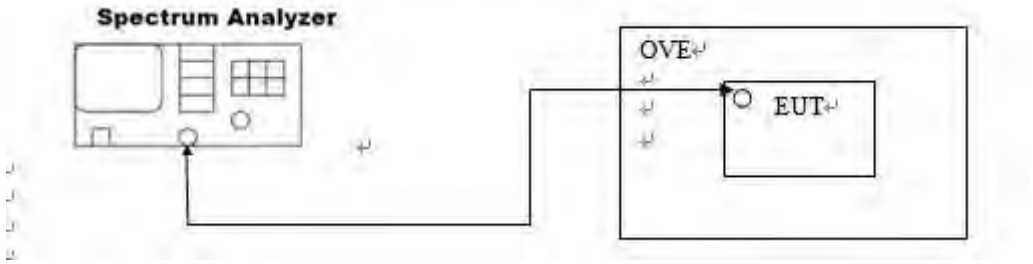
Note: All the 20MHz bandwidth modulation had been tested, the 802.11a20 was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 was the worst case and record in his test report.

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~50°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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	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
	50℃	5775	within the band	PASS

15. FCC LINE CONDUCTED EMISSION TEST

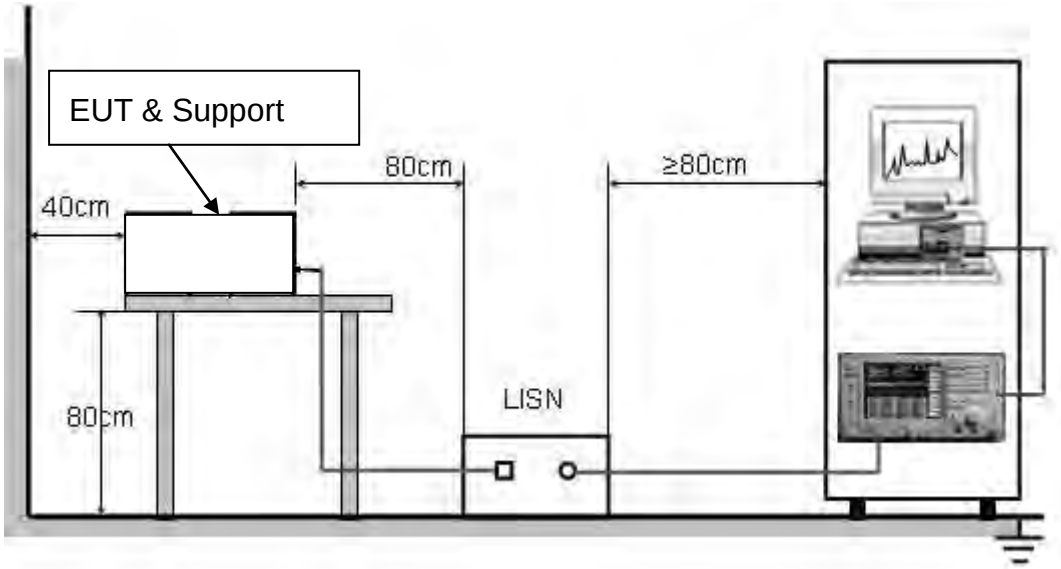
15.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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.

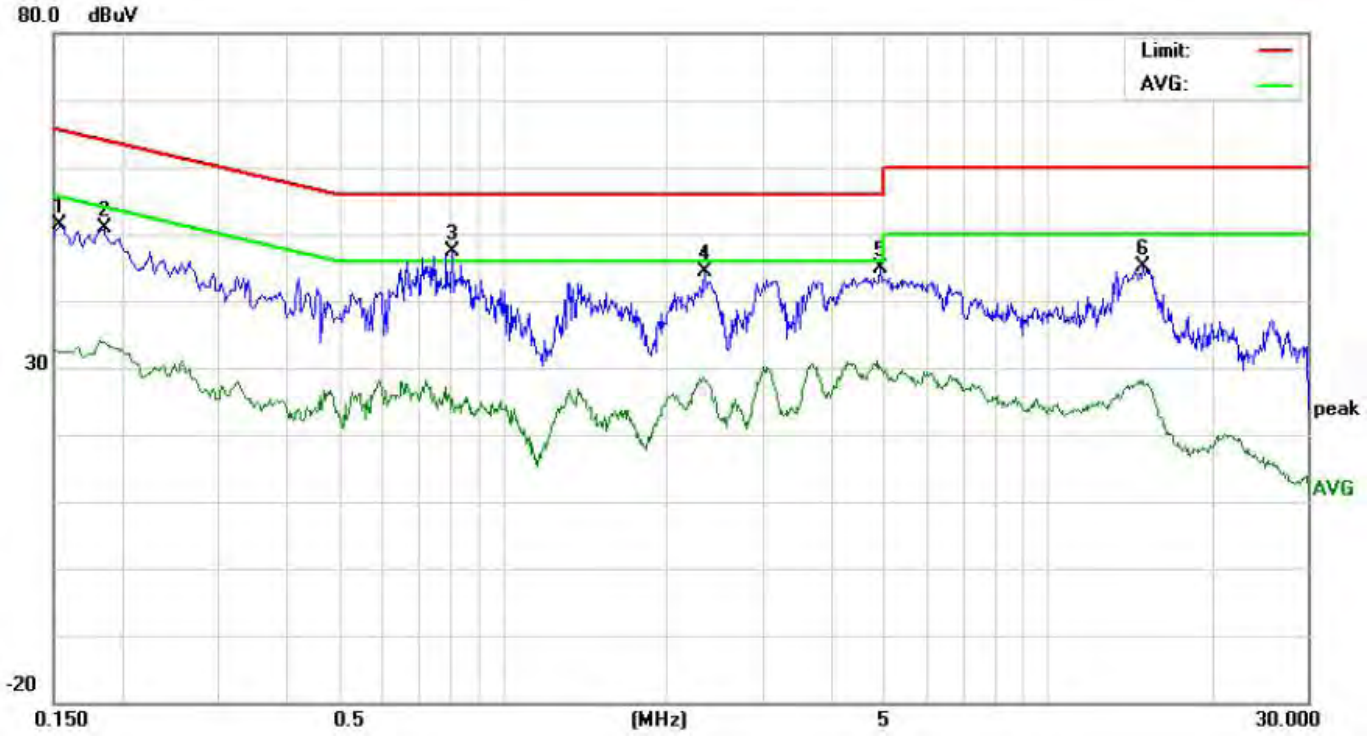
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

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.

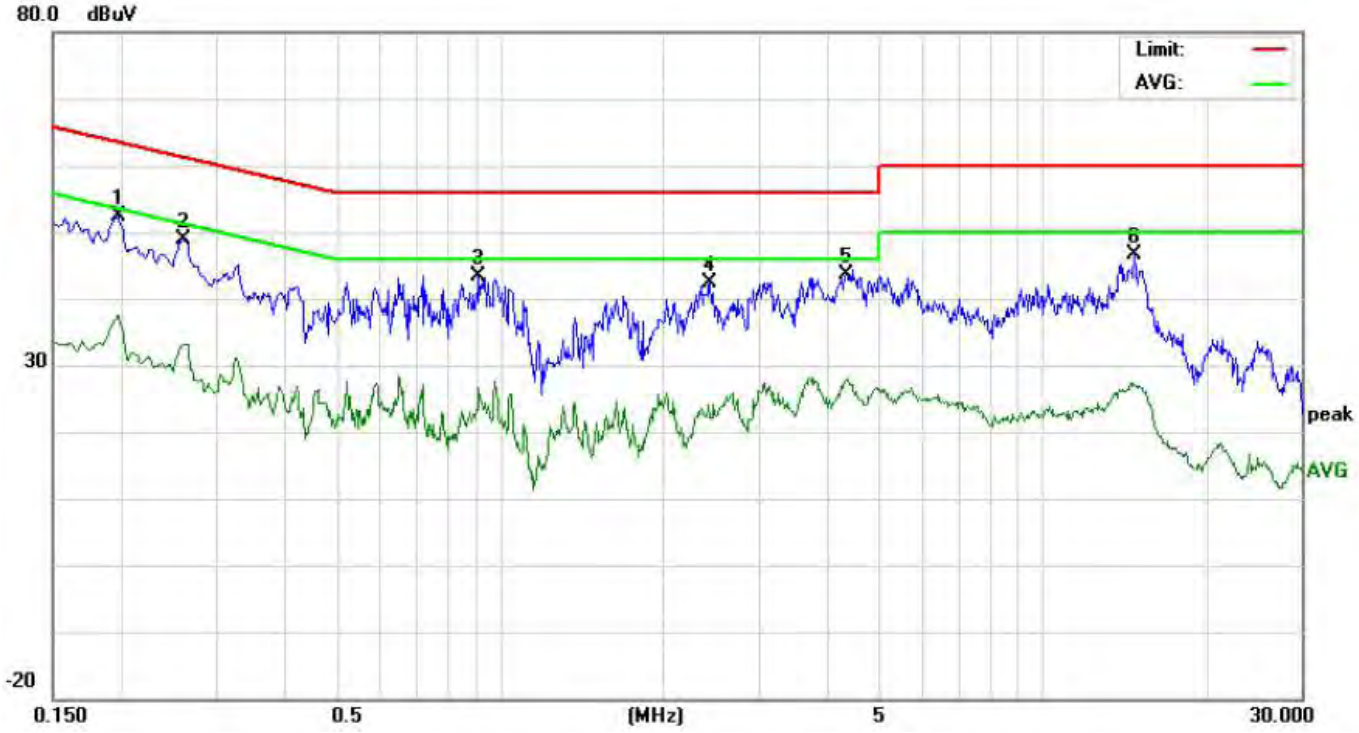
15.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST-L



No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1539	41.18		22.23	10.16	51.34		32.39	65.78	55.78	-14.44	-23.39	P	
2	0.1859	40.60		23.62	10.20	50.80		33.82	64.21	54.21	-13.41	-20.39	P	
3	0.8100	37.12		15.05	10.29	47.41		25.34	56.00	46.00	-8.59	-20.66	P	
4	2.3580	34.06		17.86	10.37	44.43		28.23	56.00	46.00	-11.57	-17.77	P	
5	4.9378	34.59		19.86	10.24	44.83		30.10	56.00	46.00	-11.17	-15.90	P	
6	14.9177	35.03		18.04	10.12	45.15		28.16	60.00	50.00	-14.85	-21.84	P	

LINE CONDUCTED EMISSION TEST-N

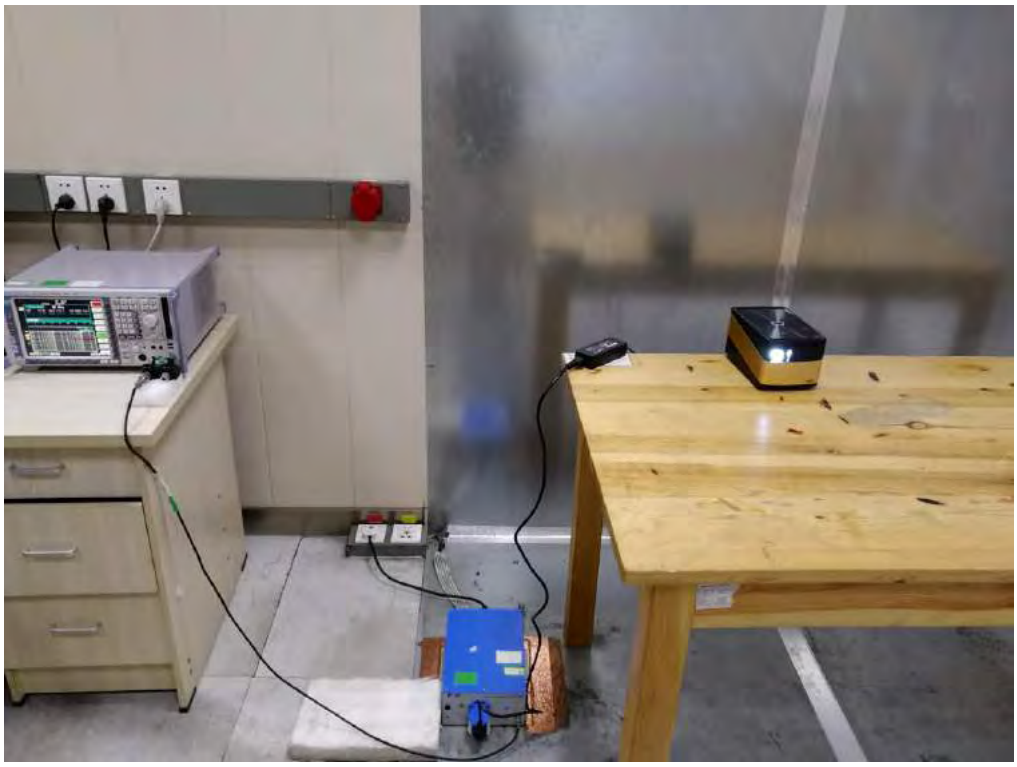


No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1980	42.26		27.30	10.21	52.47		37.51	63.69	53.69	-11.22	-16.18	P	
2	0.2620	38.65		22.97	10.27	48.92		33.24	61.36	51.36	-12.44	-18.12	P	
3	0.9180	32.88		16.12	10.40	43.28		26.52	56.00	46.00	-12.72	-19.48	P	
4	2.4380	31.93		11.78	10.40	42.33		22.18	56.00	46.00	-13.67	-23.82	P	
5	4.3379	33.43		17.60	10.28	43.71		27.88	56.00	46.00	-12.29	-18.12	P	
6	14.8259	36.53		17.12	10.12	46.65		27.24	60.00	50.00	-13.35	-22.76	P	

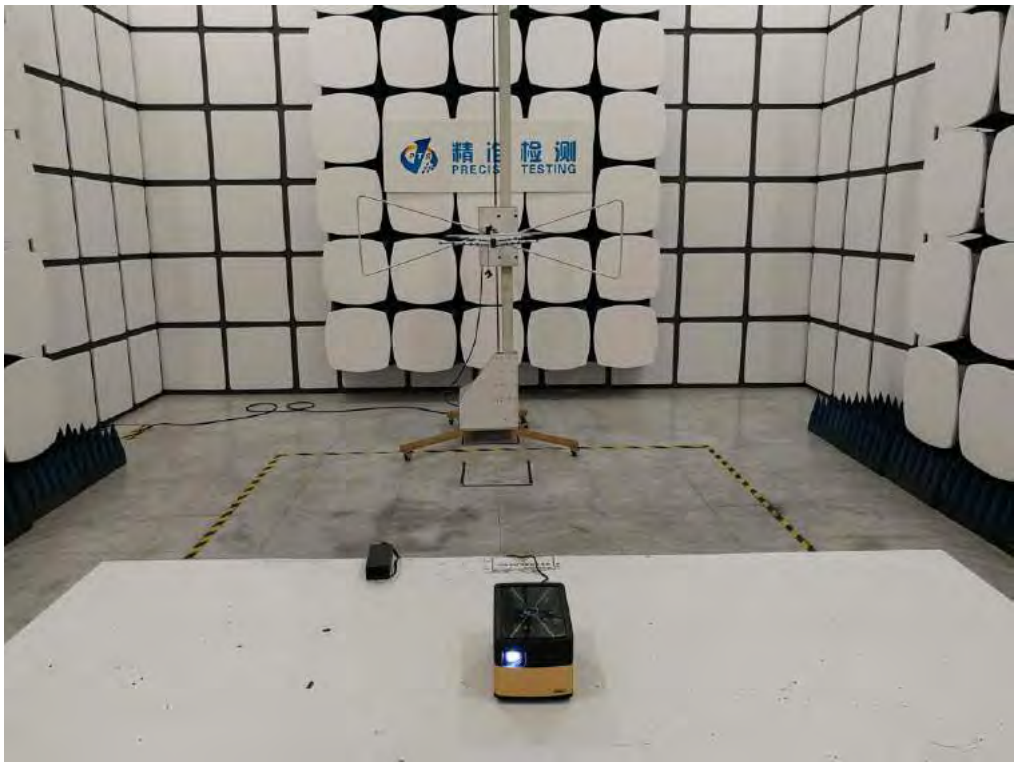
RESULT: PASS

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

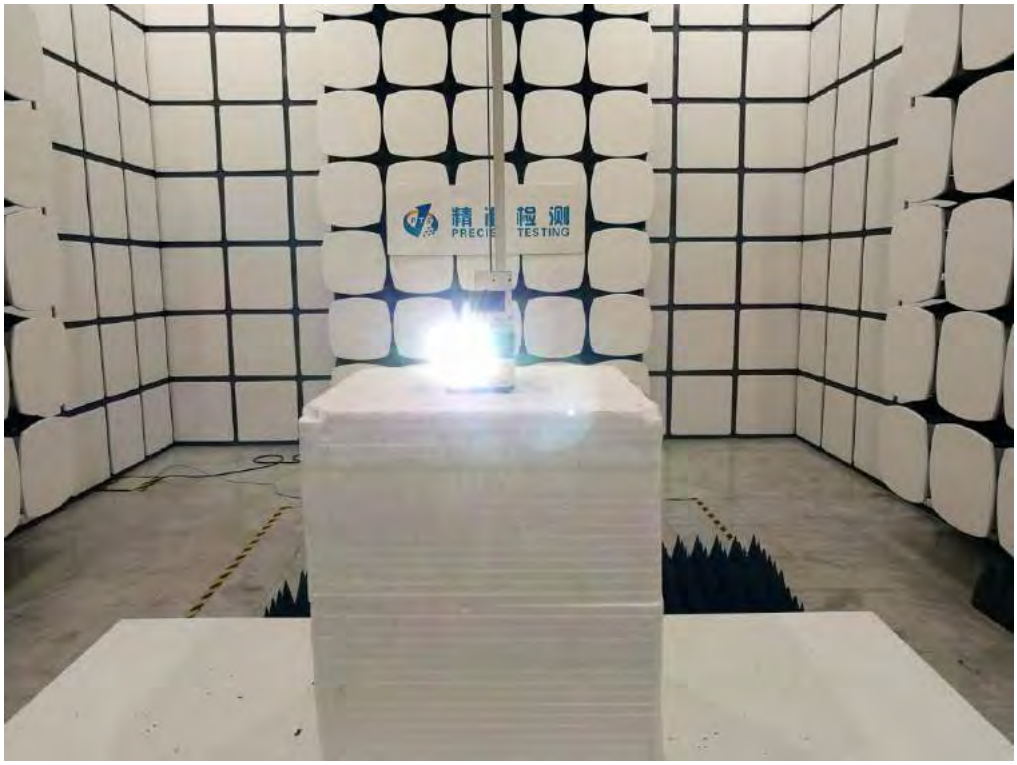
FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP BELOW 1GHZ



FCC RADIATED EMISSION TEST SETUP ABOVE 1GHZ



----END OF REPORT----