TEST REPORT

For

ActivConnect G Series Android PC

Model Number: PRM-X6PRO-01

FCC ID: QAM018

IC: 5459A-018

Report Number : WT168002531

Test Laboratory	:	Shenzhen Academy of Metrology and Quality Inspection National Digital Electronic Product Testing Center
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TEST REPORT DECLARATION

Applicant	:	PROMETHEAN LIMITED
Address	:	PROMETHEAN HOUSE, LOWER PHILIPS RD WHITEBIRK BLACKBURN,BB1 5TH UNITED KINGDOM
Manufacturer	:	PROMETHEAN LIMITED
Address	:	PROMETHEAN HOUSE, LOWER PHILIPS RD WHITEBIRK BLACKBURN,BB1 5TH UNITED KINGDOM
EUT Description	:	ActivConnect G Series Android PC
Model No	:	PRM-X6PRO-01
Trade mark	:	Promethean
Serial Number	:	/
FCC ID	:	QAM018
IC	:	5459A-018

Test Standards:

FCC Part 15 15.207, 15.209, 15.407(2015)

RSS-247 Issue 1(2015-05) RSS-Gen Issue 4(2014-11)

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. 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 FCC Rules Part 15.207, 15.209, 15.407 and IC Rules RSS-247 Issue 1(2015-05), RSS-Gen Issue 4(2014-11)

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Project Engineer:	陈司林	Date:	May.13, 2016
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Checked by:	林奕翔	Date:	May.13, 2016
	(Lin Yixiang 林奕翔)		
Approved by:	林斌	Date:	May.13, 2016
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1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	FCC Rules	IC Rules	Test Results
6dB Bandwidth	FCC §15.407 (e)	RSS-247 Clause 6.2	Pass
26dB Bandwidth	FCC §15.407 (a)	RSS-247 Clause 6.2	Pass
Maximum Peak Conducted Power	FCC §15.407 (a)	RSS-247 Clause 6.2	Pass
Maximum Power Spectral Density Level	FCC §15.407 (a)	RSS-247 Clause 6.2	Pass
Radiated Bandedge and Spurious	15.407 (b) 15.209 15.205	RSS-247 Clause 6.2	Pass
Conducted emission test for AC power port	15.207	RSS-Gen Section8.8	Pass
Frequency Stability	15.407(g)	RSS-Gen §6.11	Pass
Antenna Requirment	15.203	RSS-Gen Section8.1.3	Pass
99% Occupied bandwidth	N/A	RSS-Gen Clause 6.6	Pass

Remark: “N/A” means “Not applicable.”

2. GENERAL INFORMATION

2.1. Report information

2.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

2.1.2. The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

2.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.
The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number are 446246 806614 994606(semi anechoic chamber).

The Laboratory is listed in Voluntary Control Council for Interference by Information Technology Equipment (VCCI), and the registration number are R-1974(open area test site) , R-1966(semi anechoic chamber),C-2117(mains ports conducted interference measurement) and T-180(telecommunication ports conducted interference measurement).

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 11177A-1 11177A-2.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

2.3. Measurement Uncertainty

Conducted Emission
9kHz~30MHz 3.5dB

Radiated Emission
30MHz~1000MHz 4.5dB
1GHz~26.5GHz 4.6dB

3. PRODUCT DESCRIPTION

3.1. EUT Description

Description	:	ActivConnect G Series Android PC
Manufacturer	:	PROMETHEAN LIMITED
Model Number	:	PRM-X6PRO-01
Operate Frequency	:	U-NII 1(5150~5250MHz) U-NII 3(5725~5850MHz)
Antenna Designation	:	PIFA Antenna 2dBi

Remark: /

Table 2 Working Frequency List U-NII 1 (802.11a, 802.11ac VH20, 802.11n HT20)

Channel	Frequency	Channel	Frequency
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz

Table 3 Working Frequency List U-NII 1,(802.11ac VH40, 802.11n HT40)

Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz

Table 4 Working Frequency List U-NII 1 (802.11ac VH80)

Channel	Frequency
42	5210MHz

Table 5 Working Frequency List U-NII 3 (802.11a, 802.11ac VH20, 802.11n HT20)

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz	---	---

Table 6 Working Frequency List U-NII 3,(802.11ac VH40, 802.11n HT40)

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

Table 7 Working Frequency List U-NII 3 (802.11ac VH80)

Channel	Frequency
155	5775MHz

3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **QAM018** and IC: **5459A-018** filing to comply with Section 15.207，15.209，15.407 of the FCC Part 15, Subpart E and RSS-247 Issue 1(2015-05), RSS-Gen Issue 4(2014-11) Rules.

3.3. Block Diagram of EUT Configuration

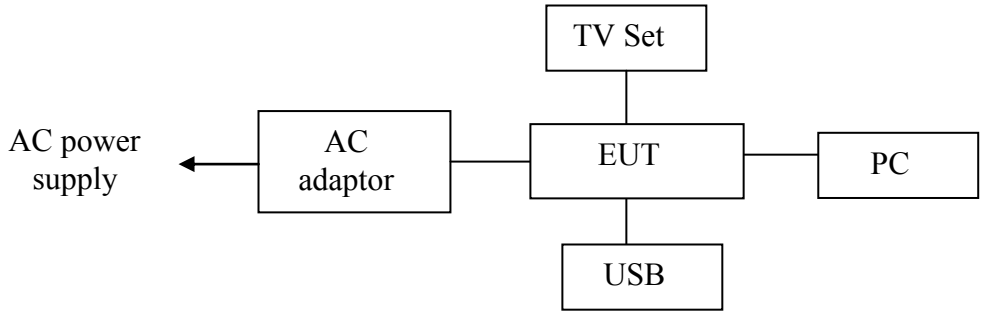


Figure 1 EUT setup

3.4. Operating Condition of EUT

The Radiated spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).
Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power.
Worst-case data rates as provided by the client were:
802.11a mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0
802.11ac VH80 mode:MCS0
802.11a operates in SISO mode. For SISO conducted measurements, the modes tested in this report will be considered as a worst case mode.
802.11n operate in SISO mode. For SISO conducted measurements, the modes tested in this report will be considered as a worst case mode.
802.11ac operate in SISO mode. For SISO conducted measurements, the modes tested in this report will be considered as a worst case mode.

3.5. Directional Antenna Gain

The EUT does NOT support a WIFI MIMO function.
Directional gain need NOT to be considered.

3.6. Support Equipment List

Table 8 Support Equipment List

Name	Model No	S/N	Manufacturer
Adaptor for EUT	ICP12-050-2000D	--	Shenzhen Shi Yingyuan Electronics Co., Ltd.
Computer	9439	L3BDF2K	Lenovo
Keyboard (USB)	SK-8825 (L)	02553778	Lenovo
Mouse (USB)	MO28UOL	4418011108	Lenovo
Monitor	9227-AE1	V1TDB38	Lenovo
TV	KV-J21TF8	--	Sony
LCD TV	26L16SW	R145567	Skyworth

3.7. Test Conditions

Date of test：Apr.15,2016- May.10, 2016
Date of EUT Receive：Apr.11,2016
Temperature: -30-50 ℃
Relative Humidity:48-56%

3.8. Special Accessories

Not available for this EUT intended for grant.

3.9. Equipment Modifications

Not available for this EUT intended for grant.

4. TEST EQUIPMENT USED

Table 9 Test Equipment

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
SB2603	EMI Test Receiver	Rohde & Schwarz	ESCS30	Dec.18, 2015	1 Year
SB3321	AMN	Rohde & Schwarz	ESH2-Z5	Jan.17, 2016	1 Year
SB2604	AMN	Rohde & Schwarz	ESH3-Z5	Nov.18, 2015	1 Year
SB8501/09	EMI Test Receiver	Rohde & Schwarz	ESU40	Mar.18, 2016	1 Year
SB8501/04	Bilog Antenna	Schwarzbeck	VULB9163	Mar.18, 2016	1 Year
SB5472/02	Trilog Broadband Antenna(30M-3GHz)	Schwarzbeck	VULB9163	Jan.07 ,2016	1 Year
SB3435	Horn Antenna	Rohde & Schwarz	HF906	Jan.18, 2016	1 Year
SB8501/01	Double-Ridged Waveguide Horn Antenna(1G~18GHz)	Rohde & Schwarz	HF907	Mar.21, 2016	1 Year
SB3345	Loop Antenna	Schwarzbeck	FMZB1516	Jan.20, 2015	2 Years
SB3437	Power meter	Rohde & Schwarz	NRVD	Jul.03, 2015	1 Year
SB8501/17	Preamplifier	Rohde & Schwarz	SCU-18	Mar.26, 2016	1 Year
SB8501/16	Preamplifier	Rohde & Schwarz	SCU-26	Mar.26, 2016	1 Year
SB9059	Preamplifier	Rohde & Schwarz	SCU-40	Nov.05,2015	1 Year
SB8501/11	Horn Antenna	ETS-Lindgren	3160-09	Mar.28,2016	1 Year
SB8501/12	Horn Antenna	ETS-Lindgren	3160-10	Mar.28,2016	1 Year
SB9721/05	Power Meter	Agilent	N1913A	Dec.28, 2015	1 Year
SB9721/06	Power Sensor	Agilent	E9304A	Dec.28, 2015	1 Year
SB11818	Temperature & Humidity Chamber	EH-010U	Espec,CHINA	Jan.19, 2016	1 Year

5. DUTY CYCLE

5.1. LIMITS OF DUTY CYCLE

None; for reporting purposes only

5.2. TEST PROCEDURE

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

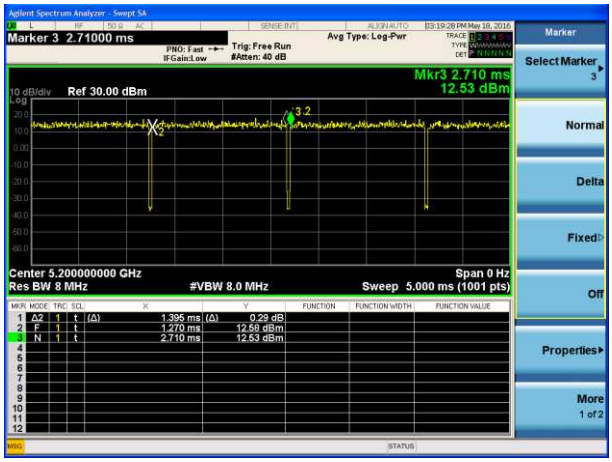
5.3. TEST SETUP

5.4. TEST DATA

Table 10 Duty Cycle Test Data

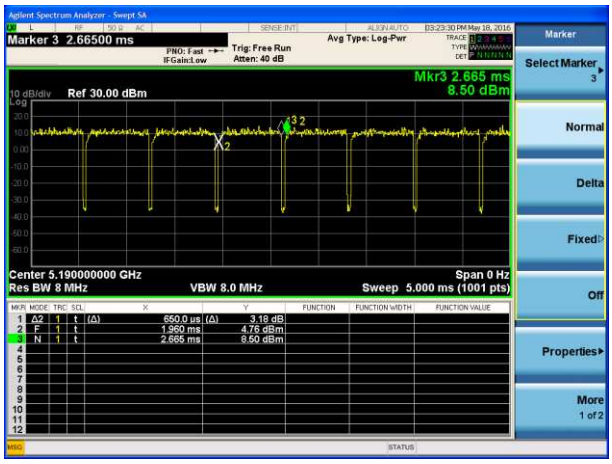
Mode	On Time (ms)	Duty Cycle(%)	Duty Factor	1/T Minimum VBW (kHz)
802.11a	1.395	96.88%	0.14	1
802.11n HT20	1.305	96.66%	0.15	1
802.11n HT40	0.65	92.20%	0.35	1.5
802.11ac	0.321	86.99%	0.61	3

802.11a

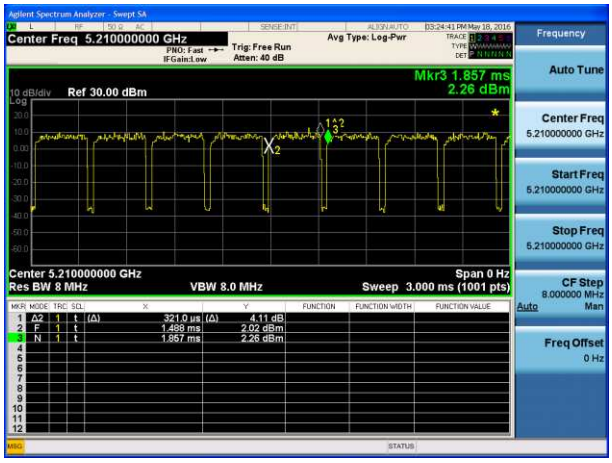


802.11n HT20

802.11n HT40



802.11ac VH80



6. 6DB BANDWIDTH MEASUREMENT

6.1. LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum 6 dB emission bandwidth of at least 500 kHz for the band 5.725-5.85 GHz.

6.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 x RBW.
c)Detector = Peak.
d)Trace mode = max hold.
e)Sweep = auto couple.
f)Allow the trace to stabilize.
g)Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3. TEST SETUP

Test Data

Table 11 6dB Bandwidth Test Data 802.11a

CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
5745	16.39	Pass
5785	16.39	Pass
5825	16.39	Pass

Table 12 6dB Bandwidth Test Data 802.11n HT20

CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
5745	17.62	Pass
5785	17.61	Pass
5825	17.64	Pass

Table 13 6dB Bandwidth Test Data 802.11n HT40

CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
5755	36.38	Pass
5795	36.43	Pass

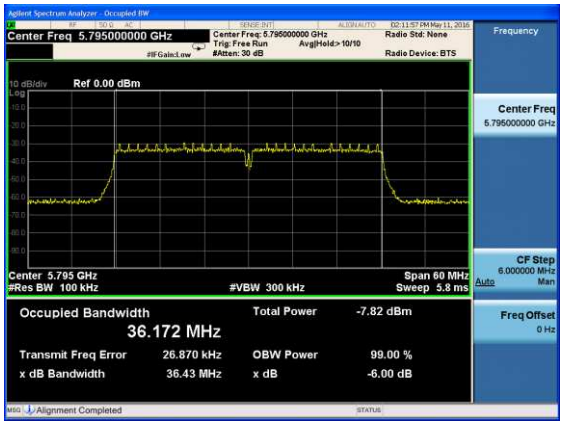
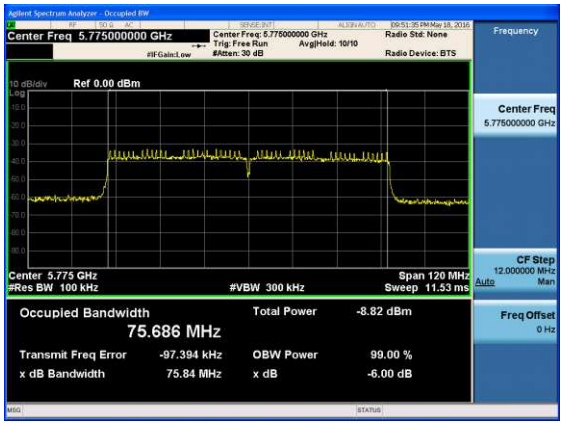


Table 14 6dB Bandwidth Test Data 802.11ac VH80

CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
5775	75.84	Pass



7. 26DB BANDWIDTH MEASUREMENT

7.1. LIMITS OF 26dB BANDWIDTH MEASUREMENT

None; for reporting purposes only..

7.2. TEST 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%.

7.3. TEST SETUP

7.4. Test Data

Table 15 26dB Bandwidth Test Data 5150~5250 MHz 802.11a

CHANNEL FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	results
5180	21.58	Pass
5200	21.66	Pass
5240	21.60	Pass

Table 16 26dB Bandwidth Test Data 5150~5250 MHz 802.11n HT20

CHANNEL FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	results
5180	21.85	Pass
5200	21.94	Pass
5240	21.80	Pass

Table 17 26dB Bandwidth 5150~5250 MHz 802.11n HT40

CHANNEL FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	results
5190	42.60	Pass
5230	40.11	Pass

Table 18 26dB Bandwidth 5150~5250 MHz 802.11ac VH80

CHANNEL FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	results
5210	81.29	Pass

Table 19 26dB Bandwidth Test Data 5725~5850 MHz 802.11a

CHANNEL FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	results
5745	21.93	Pass
5785	21.80	Pass
5825	21.73	Pass

Table 20 26dB Bandwidth Test Data 5725~5850 MHz 802.11n HT20

CHANNEL FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	results
5745	22.00	Pass
5785	21.82	Pass
5825	22.08	Pass

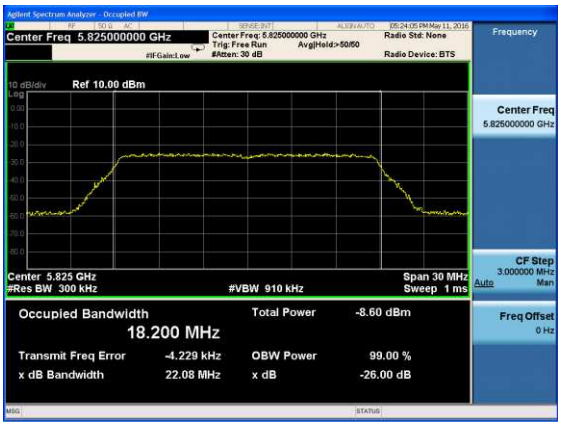


Table 21 26dB Bandwidth 5725~5850 MHz 802.11n HT40

CHANNEL FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	results
5755	41.20	Pass
5795	40.89	Pass

Table 22 26dB Bandwidth 5725~5850 MHz 802.11ac VH80

CHANNEL FREQUENCY (MHz)	26dB BANDWIDTH (MHz)	results
5775	81.94	Pass

8. 99% OCCUPIED BANDWIDTH

8.1. LIMITS OF 99%Occupied Bandwidth

None; for reporting purposes only

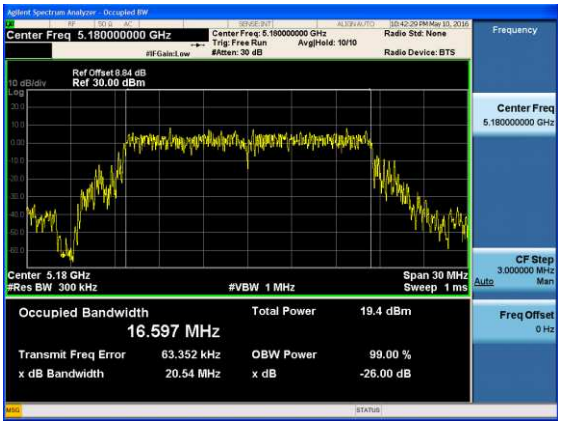
8.2. TEST PROCEDURE

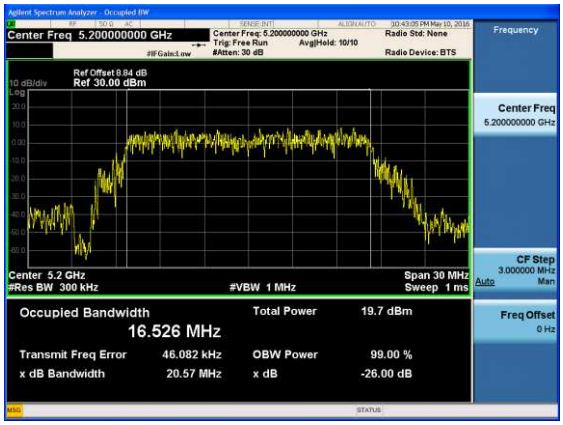
The following procedure shall be used for measuring (99 %) power bandwidth:
1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 • RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode
shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be
used.
6. Use the 99 % power bandwidth function of the instrument (if available).

8.3. TEST DATA

Table 23 99% Bandwidth Test Data 5150~5250 MHz 802.11a

CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	results
5180	16.597	Pass
5200	16.526	Pass
5240	16.488	Pass





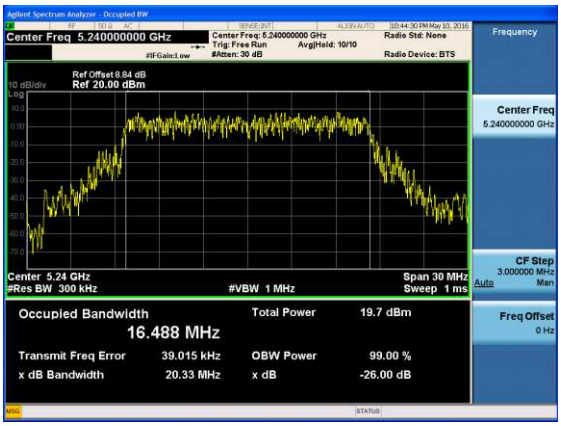
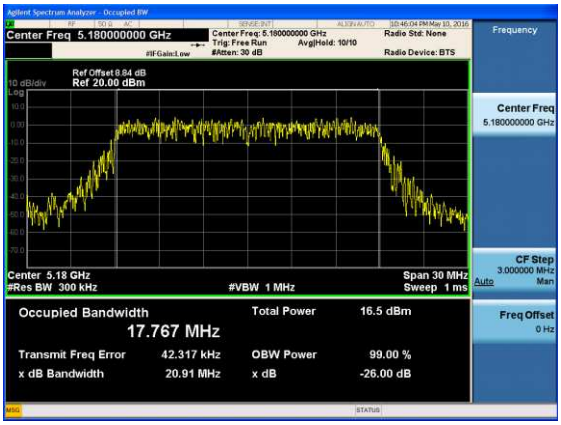
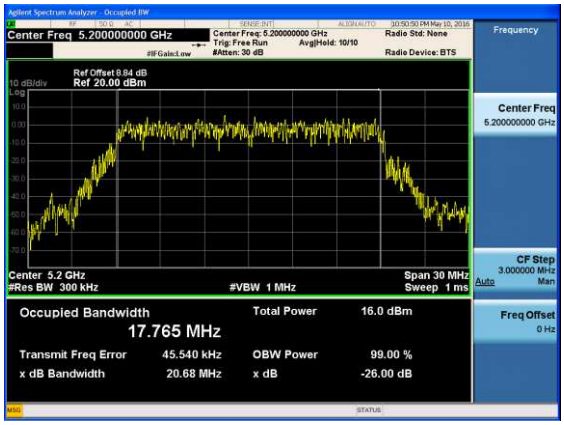


Table 24 99% Bandwidth Test Data 5150~5250 MHz 802.11n HT20

CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	results
5180	17.767	Pass
5200	17.765	Pass
5240	17.789	Pass





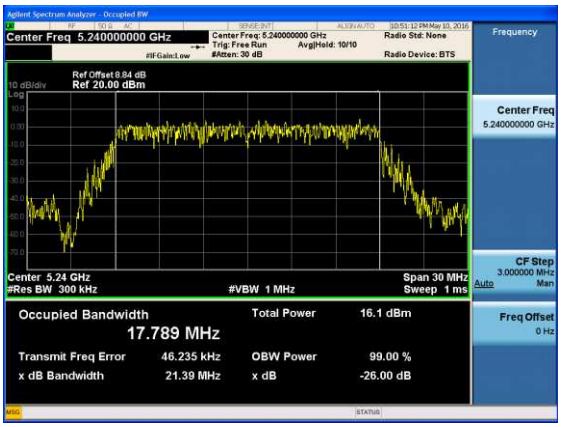
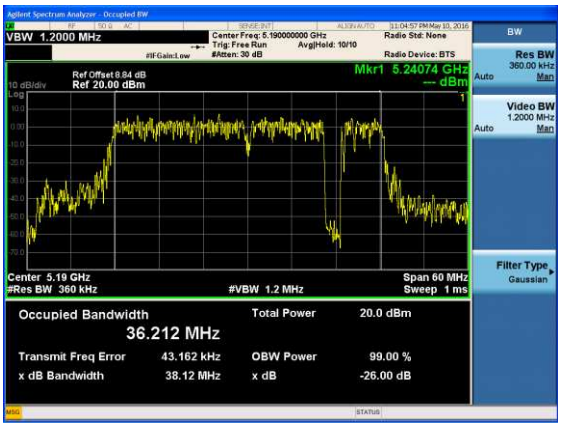


Table 25 99% Bandwidth 5150~5250 MHz 802.11n HT40

CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	results
5190	36.212	Pass
5230	36.213	Pass



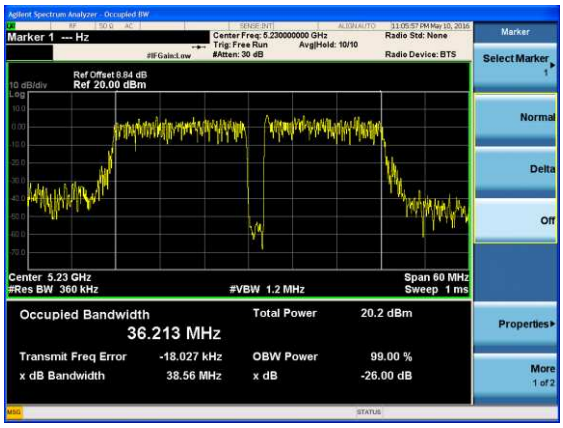


Table 26 99% Bandwidth 5150~5250 MHz 802.11ac VH80

CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	results
5210	75.808	Pass

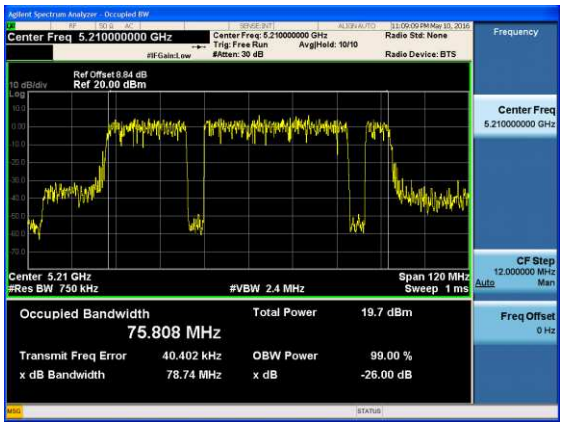
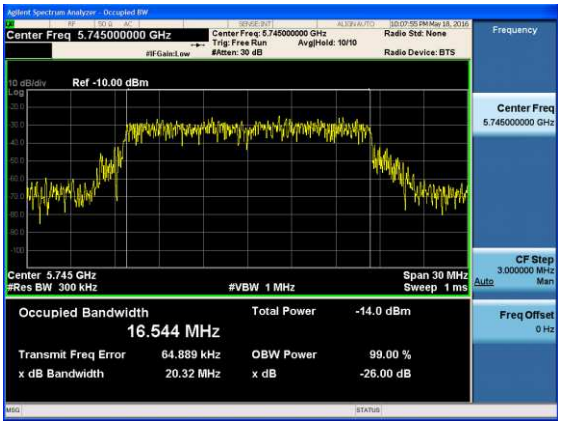


Table 27 99% Bandwidth Test Data 5725~5850 MHz 802.11a

CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	results
5745	16.544	Pass
5785	16.489	Pass
5825	16.535	Pass



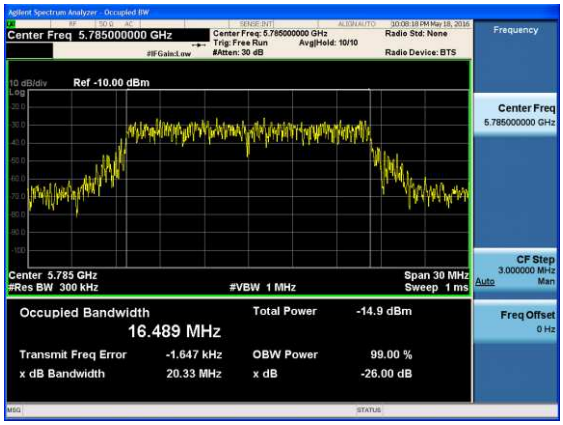
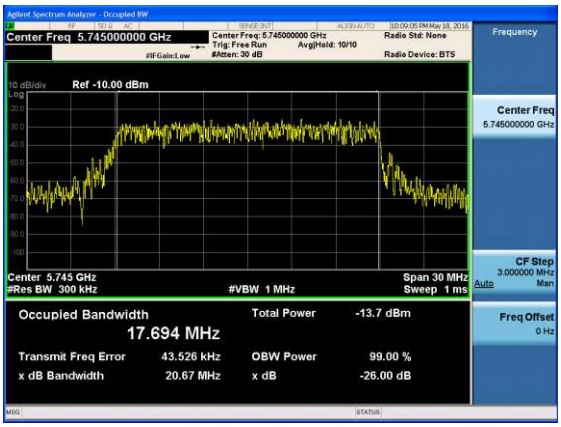
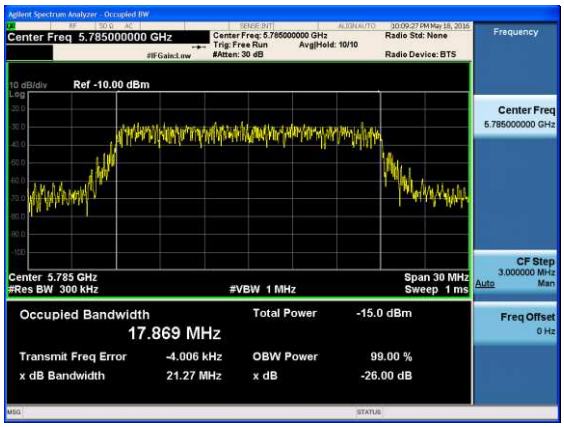


Table 28 99% Bandwidth Test Data 5725~5850 MHz 802.11n HT20

CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	results
5745	17.694	Pass
5785	17.869	Pass
5825	17.739	Pass





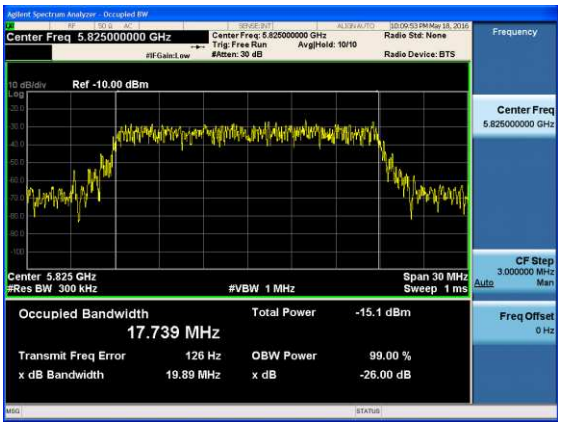
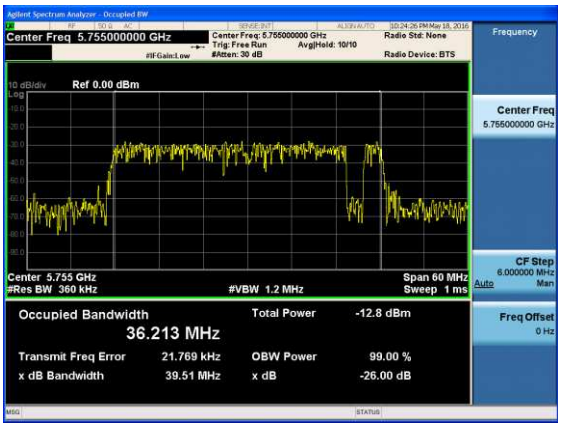


Table 29 99% Bandwidth 5725~5850 MHz 802.11n HT40

CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	results
5755	36.229	Pass
5795	36.171	Pass



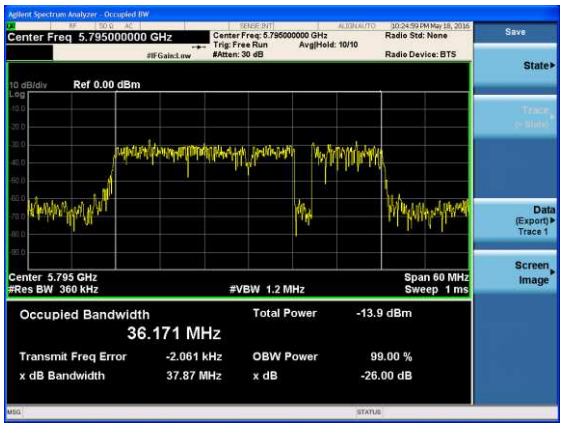
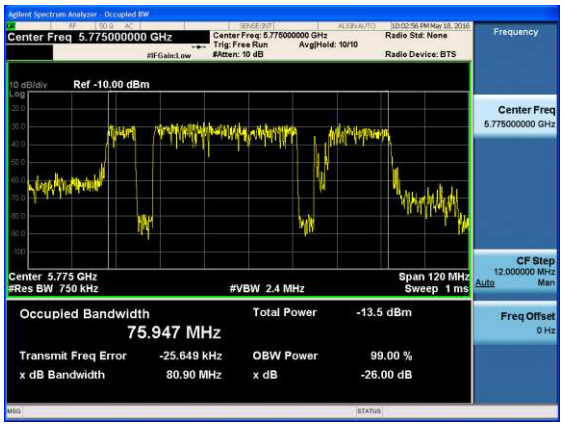


Table 30 99% Bandwidth 5725~5850 MHz 802.11ac VH80

CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	results
5775	75.947	Pass



9. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

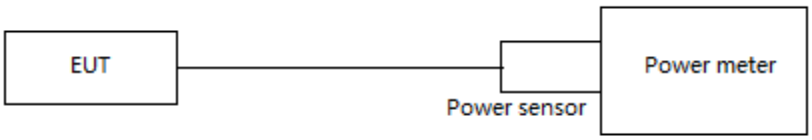
9.1. LIMITS OF Maximum Conducted Output Power Measurement

CFR 47 (FCC) part 15.2407 (a)
For the band 5.15–5.25 GHz.
For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the max-imum antenna gain does not exceed 6 dBi.
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W
RSS-247 Clause 6.2
For the band 5.15–5.25 GHz.
The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log 10 B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.
For the band 5.725-5.85 GHz, the maximum conducted output power shall not exceed 1 W.

9.2. TEST PROCEDURE

(i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.
The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section II.B.
(iii) Measure the average power of the transmitter. This measurement is an average overboth the on and off periods of the transmitter.
(iv) Adjust the measurement in dBm by adding 10 log (1/x) where x is the duty cycle (e.g.,10 log (1/0.25) if the duty cycle is 25%).the measurement result.

9.3. TEST SETUP



9.4.TEST DATA

Maximum Conducted Output Powe(FCC)

Table 31 Maximum Conducted Output Power Test Data 802.11a

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
5180	13.11	0.14	13.25	< 23.98	Pass
5200	13.53	0.14	13.67	< 23.98	Pass
5240	13.82	0.14	13.96	< 23.98	Pass
5745	-12.25	0.14	-12.11	< 30	Pass
5785	-12.80	0.14	-12.66	< 30	Pass
5825	-13.18	0.14	-13.04	< 30	Pass

Table 32 Maximum Conducted Output Power Test Data 802.11n HT20

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
5180	12.82	0.15	12.97	< 23.98	Pass
5200	13.35	0.15	13.50	< 23.98	Pass
5240	13.67	0.15	13.82	< 23.98	Pass
5745	-12.02	0.15	-11.87	< 30	Pass
5785	-12.56	0.15	-12.41	< 30	Pass
5825	-12.67	0.15	-12.52	< 30	Pass

Table 33 Maximum Conducted Output Power Test Data 802.11n HT40

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
5190	13.24	0.35	13.59	< 23.98	Pass
5230	13.97	0.35	14.32	< 23.98	Pass
5755	-12.32	0.35	-11.97	< 30	Pass
5795	-12.92	0.35	-12.67	< 30	Pass

Table 34 Maximum Conducted Output Power Test Data 802.11ac VH80

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
5210	13.23	0.61	13.84	< 23.98	Pass
5775	-12.53	0.61	-11.92	< 30	Pass

Maximum Conducted Output Powe(IC)

Table 35 Maximum Conducted Output Power Test Data 802.11a

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
5180	13.11	0.14	13.25	< 23 or <22.19	Pass
5200	13.53	0.14	13.67	< 23 or <22.17	Pass
5240	13.82	0.14	13.96	< 23 or <22.18	Pass
5745	-12.25	0.14	-12.11	< 30	Pass
5785	-12.80	0.14	-12.66	< 30	Pass
5825	-13.18	0.14	-13.04	< 30	Pass

Table 36 Maximum Conducted Output Power Test Data 802.11n HT20

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
5180	12.82	0.15	12.97	<23 or <22.48	Pass
5200	13.35	0.15	13.50	<23 or <22.52	Pass
5240	13.67	0.15	13.82	<23 or <22.49	Pass
5745	-12.02	0.15	-11.87	< 30	Pass
5785	-12.56	0.15	-12.41	< 30	Pass
5825	-12.67	0.15	-12.52	< 30	Pass

Table 37 Maximum Conducted Output Power Test Data 802.11n HT40

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
5190	13.24	0.35	13.59	< 23 or <25.59	Pass
5230	13.97	0.35	14.32	< 23 or <25.58	Pass
5755	-12.32	0.35	-11.97	< 30	Pass
5795	-12.92	0.35	-12.67	< 30	Pass

Table 38 Maximum Conducted Output Power Test Data 802.11ac VH80

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
5210	13.23	0.61	13.84	< 23 or 28.80	Pass
5775	-13.34	0.61	-12.73	< 30	Pass

10. MAXIMUM POWER SPECTRAL DENSITY LEVEL MEASUREMENT

10.1. LIMITS OF Maximum Power Spectral Density Level Measurement

CFR 47 (FCC) part 15.407 (a)
For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
RSS-247 Clause 6.2
For the band 5.15-5.25 GHz the e.i.r.p. spectral density shall not exceed 10 dBm in any1.0 MHz band
For the band 5.725-5.85 GHz the power spectral density shall not exceed 30 dBm in any 500 kHz band.

10.2. TEST PROCEDURE

1.Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power….” (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
a) If Method SA-2 or SA-2 Alternative was used, add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum.
b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the
above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may

need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and 789033 D02 General UNII Test Procedures New Rules v01r02 Page 10 integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ⩾ 1/T, where T is defined in section II.B.I.a).

b) Set VBW ⩾ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections

5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

10.3. TEST DATA

Table 39 Maximum Power Spectral Density Level Test Data 802.11a

Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	FCC Limit [dBm]	IC Limit [dBm]	Result
5180	-0.732	0.14	-0.592	11	10	Pass
5200	-1.256	0.14	-1.116	11	10	Pass
5240	-0.935	0.14	-0.795	11	10	Pass
5745	-28.389	0.14	-28.249	30	30	Pass
5785	-28.898	0.14	-28.758	30	30	Pass
5825	-29.384	0.14	-29.244	30	30	Pass

Table 40 Maximum Power Spectral Density Level Test Data 802.11n HT20

Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	FCC Limit [dBm]	IC Limit [dBm]	Result
5180	-4.807	0.15	-4.657	11	10	Pass
5200	-4.992	0.15	-4.842	11	10	Pass
5240	-4.778	0.15	-4.628	11	10	Pass
5745	-27.964	0.15	-27.814	30	30	Pass
5785	-29.018	0.15	-28.868	30	30	Pass
5825	-29.803	0.15	-29.653	30	30	Pass

Table 41 Maximum Power Spectral Density Level Test Data 802.11n HT40

Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	FCC Limit [dBm]	IC Limit [dBm]	Result
5190	-4.746	0.35	-4.396	11	10	Pass
5230	-3.479	0.35	-3.129	11	10	Pass
5755	-31.568	0.35	-31.218	30	30	Pass
5795	-32.636	0.35	-32.286	30	30	Pass

Table 42 Maximum Power Spectral Density Level Test Data 802.11n VH80

Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	FCC Limit [dBm]	IC Limit [dBm]	Result
5210	-7.076	0.61	-6.466	11	10	Pass
5775	-32.730	0.61	-32.12	30	30	Pass

11. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT

11.1. LIMITS OF Radiated Bandedge and Spurious Measurement

FCC Part 15.205 and 15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

FCC Part 15.407(b) and RSS-247 Clause 6.2

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

11.2. TEST PROCEDURE

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. For measurement below 1GHz, the EUT was placed on a turntable with 0.8 meter,above ground. For measurement above 1 GHz, test at FAR, the EUT is placed on a non-conductive table, which is 1.5 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:

(1) Span shall wide enough to fully capture the emission being measured;
(2) Set RBW=100 kHz for f < 1 GHz; VBW >= RBW; Sweep = auto; Detector function = peak; Trace = max hold;
(3) Set RBW = 1 MHz, VBW= 3MHz for f > 1 GHz for peak measurement.
Set RBW = 1 MHz, and 1/T (on time) for average measurement.

11.3.TEST DATA

9KHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 43 Radiated Emission Test Data 9k Hz-30MHz

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

The emissions don't show in following result tables are more than 20dB below the limits.

Table 44 Radiated Emission Test Data 30MHz-1GHz

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
65.891	0.9	16.6	23.1	34.7	V	0	1.0	40	5.3
581.251	3.0	10.7	23.1	42.7	V	20	1.5	46	3.3
625.095	3.2	16.6	22.6	44.3	V	0	2.0	46	1.7
699.397	3.3	18.5	19.4	41.2	V	20	1.0	46	4.8
750.031	3.5	18.5	19.5	41.8	V	30	1.2	46	4.2
792.032	3.6	18.8	17.9	40.3	V	0	1.0	46	5.7
166.188	1.5	8.7	25.0	35.2	H	38	1.2	43.5	8.3
253.041	1.9	12.1	23.2	37.2	H	0	1.0	46	8.8
375.029	2.3	14.3	28.5	45.1	H	0	1.2	46	0.9
567.089	2.9	16.6	21.7	41.2	H	20	1.0	46	4.8
625.095	3.2	18.5	22.2	43.9	H	0	1.7	46	2.1
891.069	3.9	20.1	17.2	41.2	H	0	1.0	46	4.8