



FCC TEST REPORT

FCC ID: SY4-B01011

On Behalf of

Shanghai Huace Navigation Technology LTD.

Handheld GNSS Data Collector

Model No.: LT50

Prepared for : Shanghai Huace Navigation Technology LTD.

Address : Building C, 599 Gaojing Road, Qingpu District,
Shanghai, China

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.

Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an
District, 518103, Shenzhen, Guangdong, China

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Version Number : REV0

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TEST REPORT DECLARATION

Applicant : Shanghai Huace Navigation Technology LTD.
Address : Building C, 599 Gaojing Road, Qingpu District, Shanghai, China
Manufacturer : Shanghai Huace Navigation Technology LTD.
Address : Building C, 599 Gaojing Road, Qingpu District, Shanghai, China
EUT Description : Handheld GNSS Data Collector
(A) Model No. : LT50
(B) Trademark : 

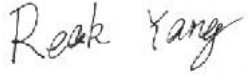
Measurement Standard Used:

FCC CFR Title 47 Part 15 Subpart E Section 15.407:2017

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....: Reak Yang
Project Engineer 

Approved by (name + signature).....: Simple Guan
Project Manager 

Date of issue.....: July 12, 2018

Revision History

Revision	Issue Date	Revisions	Revised By
00	July 12, 2018	Initial released Issue	Simple Guan

1 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	PASS
AC Power Line Conducted Emission	15.207	PASS
Peak Transmit Power	15.407(a)(1)	PASS
Power Spectral Density	15.407(a)(1)	PASS
Undesirable Emission	15.407(b)(6), 15.205/15.209	PASS
Radiated Emission	15.205/15.209	PASS
Band Edge	15.205	PASS
Frequency Stability	15.407(f)	N/A

Remark:

Pass: The EUT complies with the essential requirements in the standard.

Frequency Stability : The manufacturer stated in the user's manual.

1.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 40GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(1)

Note (1): The measurement uncertainty is for coverage factor of $k=2$ and a level of confidence of 95%.

Remark: Test according to ANSI C63.10:2013

2 General Information

2.1 General Description of EUT

Product Name:	Handheld GNSS Data Collector
Model No.:	LT50
Test Model No:	LT50
<i>Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are color and model name for commercial purpose.</i>	
Sample(s) Status:	Engineer sample
Quantity of tested samples	1
Serial No.:	T180507
Tested Sample(s) ID:	N/A
Hardware Version:	A5503_MPCB_V4.0_0905
Software Version:	A5502_V1.01
Operation Frequency:	802.11a/n(HT20)/ac(HT20): 5180~5240MHz; 5260-5320MHz; 5500-5700MHz; 5745~5825MHz 802.11n(HT40)/ac(HT40): 5190~5230MHz; 5260-5320MHz; 5510-5670MHz; 5755~5795MHz 802.11ac(HT80): 5210MHz, 5290MHz, 5530MHz, 5775MHz
Channel separation:	802.11a/n(HT20)/ac(HT20): 20MHz; 802.11n(HT40)/ac(HT40): 40MHz 802.11ac(HT80): 80MHz
Modulation technology:	CCK/OFDM/DBPSK/DAPSK
Antenna Type:	PIFA Antenna
Antenna gain:	0.2dBi For 5.15~5.25GHz 0.46dBi For 5.25~5.35GHz 0.65dBi For 5.47~5.725GHz 0.86dBi For 5.725~5.85GHz
Power supply:	DC 3.8V by battery or DC 5V from adapter input AC 120V, 60Hz

2.2 Test mode

Transmitting mode	Keep the EUT in transmitting with modulation. EUT was test with 99% duty cycle at its maximum power control level.
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

2.3 Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission
Registration Number: 293961

July 25, 2017 Certificated by IC
Registration Number: 12135A

2.4 Description of Support Units

Accessories1	:	AC Adapter
Manufacturer	:	EDAC Power Electronics Co., Ltd.
Model	:	EA1012AVRU-050
Input	:	100-240V~, 50/60Hz, 1.0A
Output	:	DC 5V, 2.4A

2.5 Deviation from Standards

None.

2.6 Abnormalities from Standard Conditions

None.

2.7 Other Information Requested by the Customer

None.

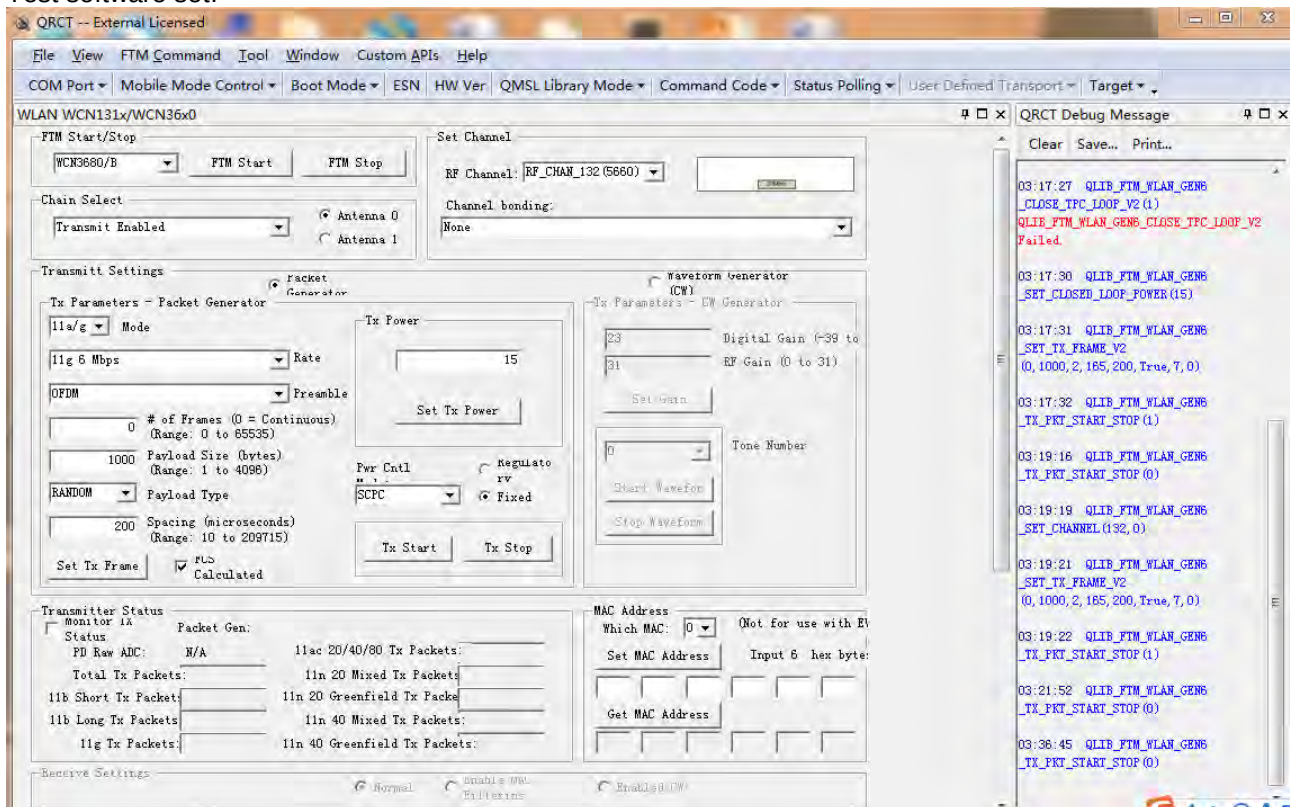
2.8 Additional instructions

Software (Used for test) from client

Mode	QRCT—External Licensed
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Channel	Power level
Lowest	Default
Middle	Default
Highest	Default

Test software set:

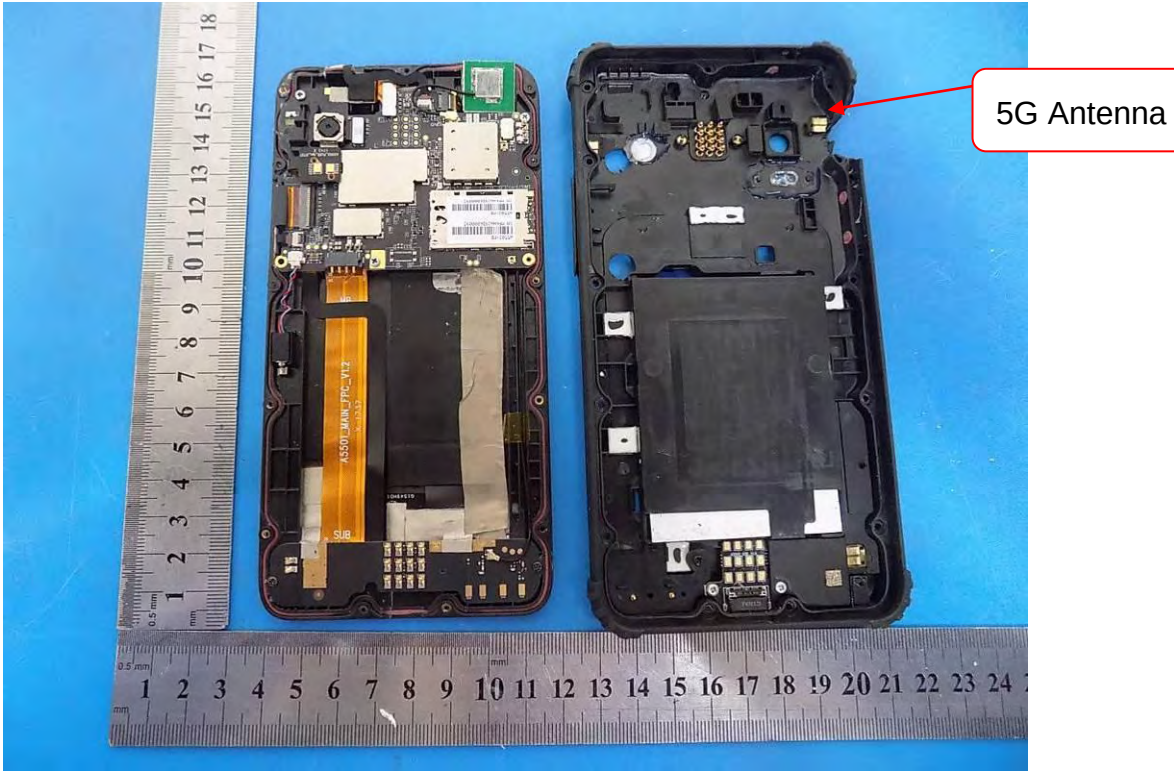


3 Test Instruments list

Equipment	Manufacturer	Model No.	Serial No.	Last cal.	Cal. Due day
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-438	2016.09.30	2018.09.29
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	2016.09.30	2018.09.29
Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2016.09.29	2018.09.28
Filter	KANGMAI	ZLPF-LDC-1000- 1959	1209002075	2017.09.22	2018.09.21
Filter	WAINWRIGHT	WHKX1.0G/15G- 10SS	SN40	2017.09.22	2018.09.21
Filter	WAINWRIGHT	WHKX2.80 /18G- 12SS	SN1	2017.09.22	2018.09.21
RF Cable	Resenberger	Cable 4	N/A	2017.09.22	2018.09.21
CMU200	ROHDE&SCHWARZ	CMU200	116785	2017.09.22	2018.09.21
CMW500	ROHDE&SCHWARZ	CMW500	1201.0002K50-117239-sM	2017.09.22	2018.09.21
Signal Analyzer	Agilent	N9020A	MY499100060	2017.09.23	2018.09.22
vector Signal Generator	Agilent	N5182A	MY49060042	2017.09.22	2018.09.21
vector Signal Generator	Agilent	E4438C	US44271917	2017.09.28	2018.09.27
Amplifier	Agilent	8449B	3008A02664	2017.09.23	2018.09.22
Test Receiver	ROHDE&SCHWARZ	ESR	1316.3003K03-102082-Wa	2017.09.23	2018.09.22
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-438	2016.09.30	2018.09.29
9*6*6 anechoic chamber	CHENYU	9*6*6	N/A	2016.07.21	2020.07.20
RF Cable	Resenberger	Cable 1	N/A	2017.09.22	2018.09.21
RF Cable	Resenberger	Cable 2	N/A	2017.09.22	2018.09.21
RF Cable	Resenberger	Cable 3	N/A	2017.09.28	2018.09.27
Power Sensor	Power Radio	RPR3006W	15100041SNO91	2017.09.23	2018.09.22
20dB Attenuator	ICPROBING	IATS1	82347	2017.09.22	2018.09.21
L.I.S.N.#1	Schwarzbeck	NSLK8126	8126466	2017.09.22	2018.09.21
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	101043	2017.09.22	2018.09.21
POWER DIVIDER	Mini-circuits	PD-2SF-0010	N/A	2017.09.22	2018.09.21
POWER DIVIDER	Mini-circuits	PD-2SF-0010	N/A	2017.09.22	2018.09.21
Temperature& Humidity test chamber	GZGONGWEN	GDS-250	080821	2017.10.22	2018.10.23

4 Test results and Measurement Data

4.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i>	
E.U.T Antenna:	
The antenna is PIFA antenna. The best case gain of the antenna is 0.2dBi For 5.15~5.25GHz, 0.46dBi For 5.25~5.35GHz , 0.65dBi For 5.47~5.725GHz, 0.86dBi For 5.725~5.85GHz 	

4.2 Conducted Emissions

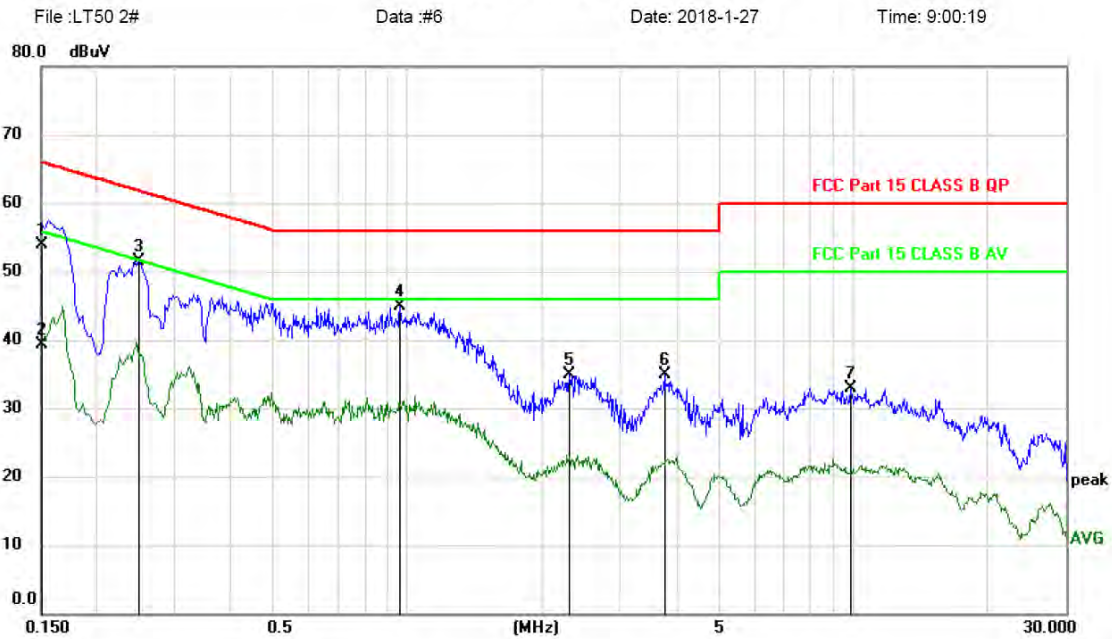
Test Requirement:	FCC Part15 C Section 15.207																
Test Method:	ANSI C63.10:2013																
Test Frequency Range:	150KHz to 30MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9KHz, VBW=30KHz																
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table> * Decreases with the logarithm of the frequency.			Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)																
	Quasi-peak	Average															
0.15-0.5	66 to 56*	56 to 46*															
0.5-5	56	46															
5-30	60	50															
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.																
Test setup:	Reference Plane Test table/Insulation plane <i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m																
Test Instruments:	Refer to section 5.10 for details																
Test mode:	Refer to section 5.3 for details																
Test results:	Pass																

Measurement Data

An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Line:

Conducted Emission Measurement



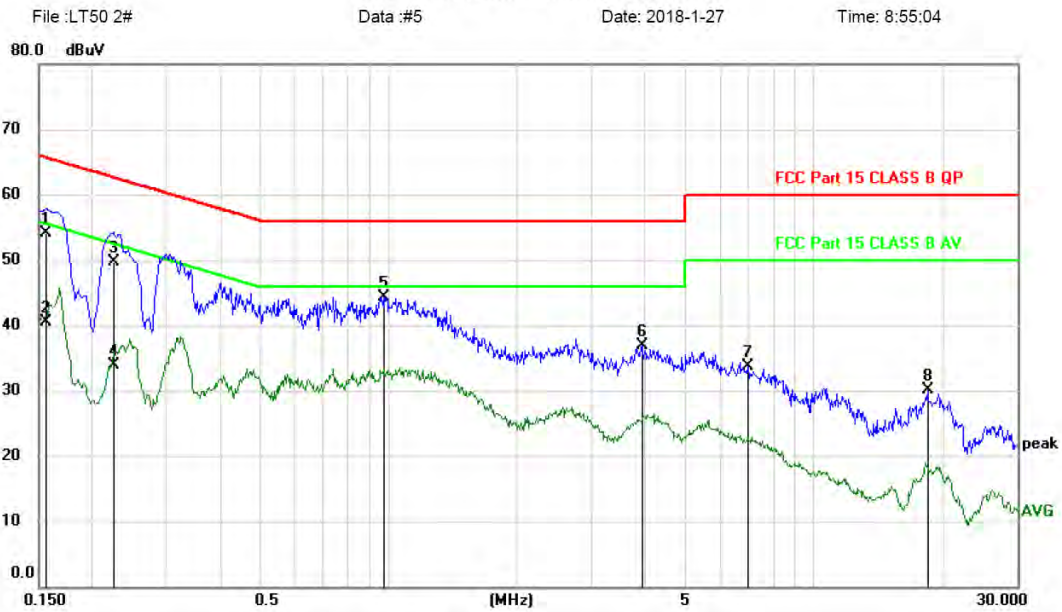
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	44.17	9.73	53.90	66.00	-12.10	QP	
2		0.1500	29.58	9.73	39.31	56.00	-16.69	AVG	
3	*	0.2490	41.67	9.76	51.43	61.79	-10.36	peak	
4		0.9630	35.01	9.83	44.84	56.00	-11.16	peak	
5		2.3070	24.87	9.96	34.83	56.00	-21.17	peak	
6		3.7740	24.89	10.10	34.99	56.00	-21.01	peak	
7		9.9120	22.48	10.35	32.83	60.00	-27.17	peak	

*:Maximum data x:Over limit !:over margin

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Neutral:

Conducted Emission Measurement

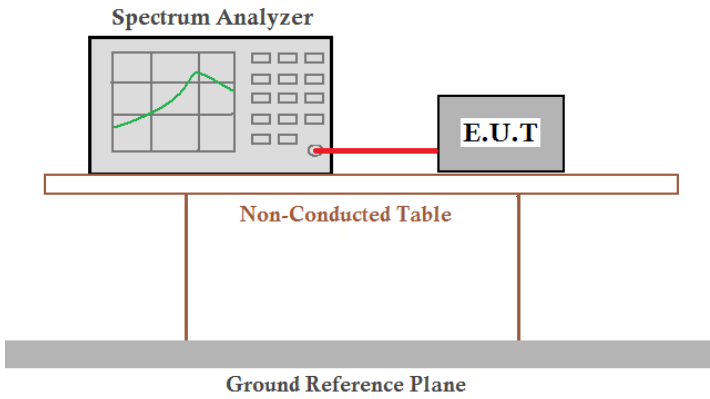


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1560	44.37	9.73	54.10	65.67	-11.57	QP	
2		0.1560	30.84	9.73	40.57	55.67	-15.10	AVG	
3		0.2250	39.92	9.75	49.67	62.63	-12.96	QP	
4		0.2250	24.21	9.75	33.96	52.63	-18.67	AVG	
5		0.9720	34.46	9.83	44.29	56.00	-11.71	peak	
6		3.9390	26.77	10.12	36.89	56.00	-19.11	peak	
7		7.0080	23.42	10.26	33.68	60.00	-26.32	peak	
8		18.4680	19.53	10.48	30.01	60.00	-29.99	peak	

*:Maximum data x:Over limit !:over margin

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

4.3 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	N/A
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a grid and a green curve on its screen, is connected to an E.U.T. (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a table labeled 'Non-Conducted Table'. This table is supported by two vertical legs, which are connected to a thick horizontal bar at the bottom labeled 'Ground Reference Plane'.
Test procedure:	According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data:**Band 1 (5150-5250 MHz):**

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT 20)	802.11ac(H T20)	802.11a	802.11n(HT 20)	802.11ac(H T20)
36	5180.00	19.617	19.408	19.539	38.29	37.35	39.76
40	5200.00	19.093	18.888	19.955	37.73	36.09	37.98
48	5240.00	18.655	19.308	19.654	37.24	37.44	39.16

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
38	5190.00	39.767	39.846	77.04	76.68
46	5230.00	38.939	39.909	61.35	77.61

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Occupied Bandwidth (MHz)
		802.11ac(HT80)	802.11ac(HT80)
42	5210.00	76.722	154.4

Band 2 (5250-5350 MHz):

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT 20)	802.11ac(H T20)	802.11a	802.11n(HT 20)	802.11ac(H T20)
52	5260.00	18.278	18.882	18.819	36.35	37.41	36.25
56	5280.00	18.137	18.746	18.745	35.43	35.76	35.77
64	5320.00	18.963	18.654	19.452	37.04	36.70	38.53

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
54	5270.00	38.541	39.554	78.75	74.70
62	5310.00	37.273	37.437	74.47	71.36

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Occupied Bandwidth (MHz)
		802.11ac(HT80)	802.11ac(HT80)
58	5290.00	76.535	155.1

Band 3 (5470-5725 MHz):

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT 20)	802.11ac(H T20)	802.11a	802.11n(HT 20)	802.11ac(H T20)
100	5500.00	18.019	18.969	18.873	36.23	37.62	35.86
116	5580.00	19.900	19.343	19.605	38.58	37.56	37.77
132	5660.00	19.803	18.602	18.685	36.70	34.31	38.22
140	5700.00	17.834	18.565	18.699	33.23	35.45	37.88

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
102	5510.00	38.069	37.940	77.41	73.03
110	5550.00	37.000	37.119	72.92	70.50
134	5670.00	37.445	37.513	74.72	71.24

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Occupied Bandwidth (MHz)
		802.11ac(HT80)	802.11ac(HT80)
106	5530.00	75.771	142.9

Band 4 (5725-5850 MHz):

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			6dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT 20)	802.11ac(H T20)	802.11a	802.11n(HT 20)	802.11ac(H T20)
149	5745.00	16.596	17.687	17.698	16.44	17.60	17.64
157	5785.00	16.530	17.686	17.716	16.46	17.60	17.63
165	5825.00	16.543	17.696	17.712	16.36	17.38	17.58

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		6dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
151	5755.00	36.025	36.070	35.18	35.23
159	5795.00	36.141	36.197	34.79	35.20

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)	6dB Occupied Bandwidth (MHz)
		802.11ac(HT80)	802.11ac(HT80)
155	5775.00	75.042	75.13

Test plots as followed:

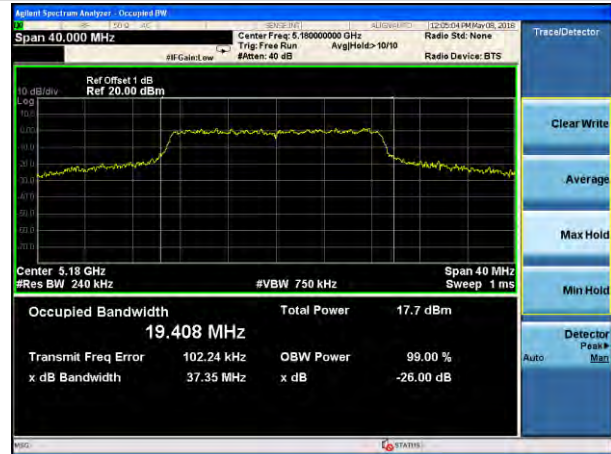
Band I (5150 - 5250 MHz)

802.11a mode



Channel 36 (5180MHz)

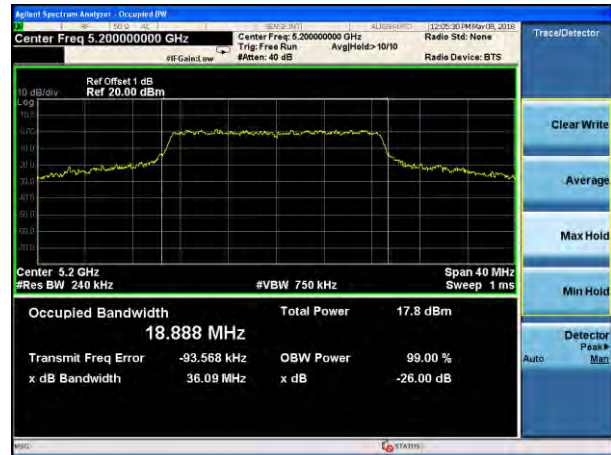
802.11n(HT20) mode



Channel 36 (5180MHz)



Channel 40 (5200MHz)



Channel 40 (5200MHz)



Channel 48 (5240MHz)



Channel 48 (5240MHz)

802.11ac(HT20) mode



Channel 36 (5180MHz)



Channel 40 (5200MHz)



Channel 48 (5240MHz)

802.11n(HT40) mode**Channel 38 (5190MHz)****802.11ac(HT40) mode****Channel 38 (5190MHz)****Channel 46 (5230MHz)****Channel 46 (5230MHz)****802.11ac(HT80) mode****Channel 40 (5210MHz)**

Band 2 (5250 - 5350 MHz)

802.11a mode

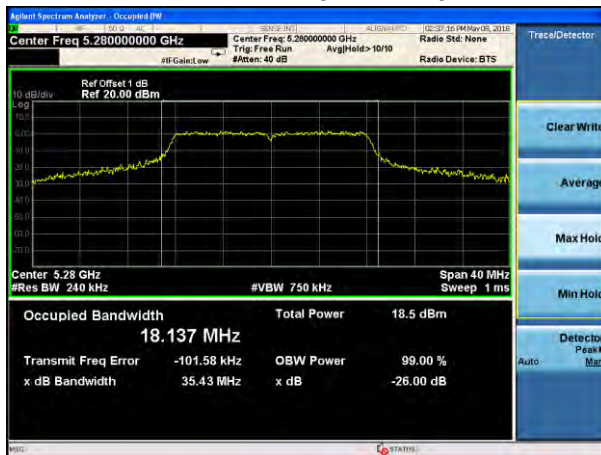


Channel 52 (5260MHz)

802.11n(HT20) mode



Channel 52 (5260MHz)



Channel 56 (5280MHz)



Channel 56 (5280MHz)



Channel 64 (5320MHz)



Channel 64 (5320MHz)

802.11ac(HT20) mode



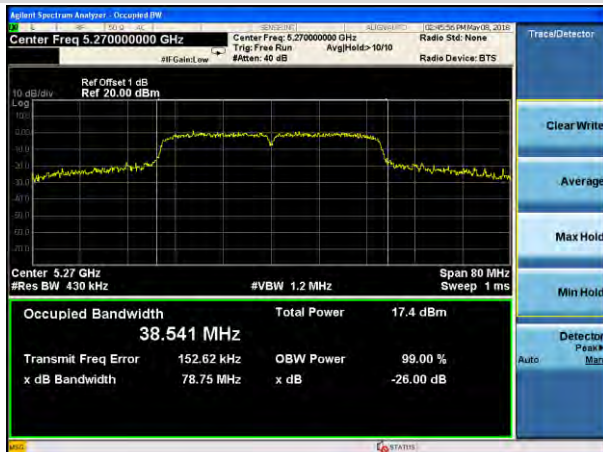
Channel 52 (5260MHz)



Channel 56 (5280MHz)



Channel 64 (5320MHz)

802.11n(HT40) mode**Channel 54 (5270MHz)****802.11ac(HT40) mode****Channel 54 (5270MHz)****Channel 62 (5310MHz)****Channel 62 (5310MHz)****802.11ac(HT80) mode****Channel 58 (5290MHz)**

Band 3 (5470 - 5725 MHz)

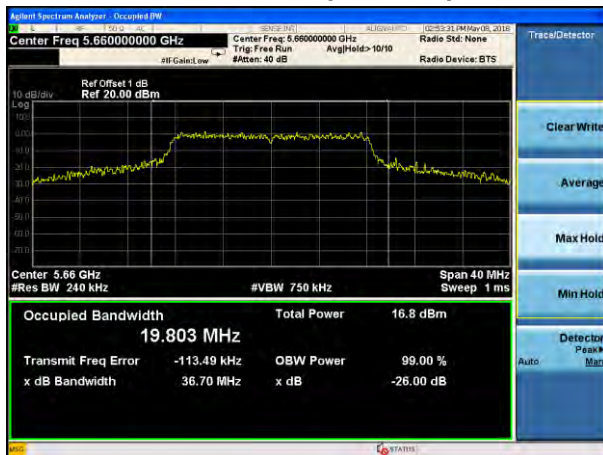
802.11a mode



Channel 100 (5500MHz)



Channel 116 (5580MHz)



Channel 132 (5660MHz)



Channel 140 (5700MHz)

802.11n(HT20) mode



Channel 100 (5500MHz)



Channel 116 (5580MHz)



Channel 132 (5660MHz)



Channel 140 (5700MHz)

802.11ac(HT20) mode



Channel 100 (5500MHz)



Channel 116 (5580MHz)



Channel 132 (5660MHz)



Channel 140 (5700MHz)

802.11n(HT40) mode

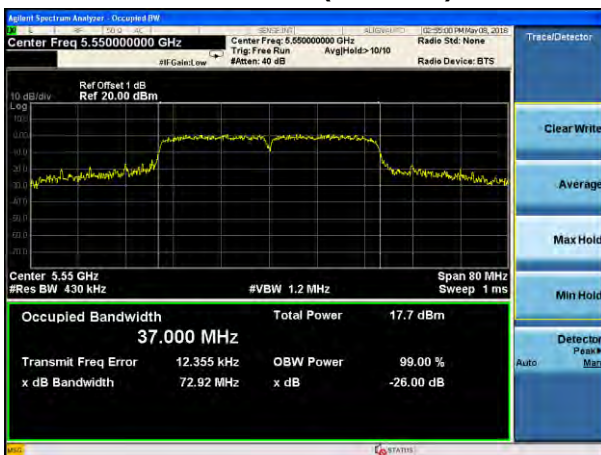


Channel 102 (5510MHz)

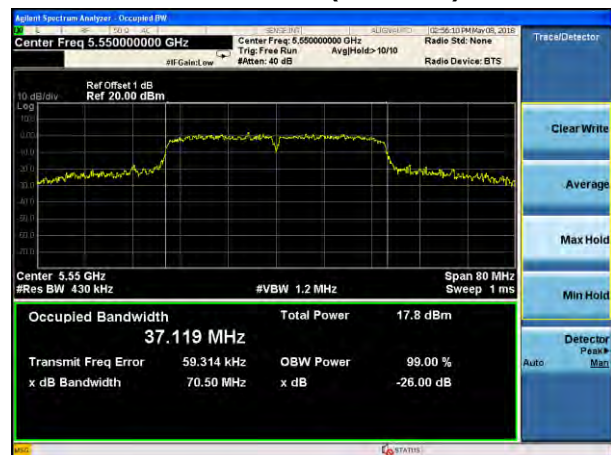
802.11ac(HT40) mode



Channel 102 (5510MHz)



Channel 110 (5550MHz)



Channel 110 (5550MHz)



Channel 134 (5670MHz)



Channel 134 (5670MHz)

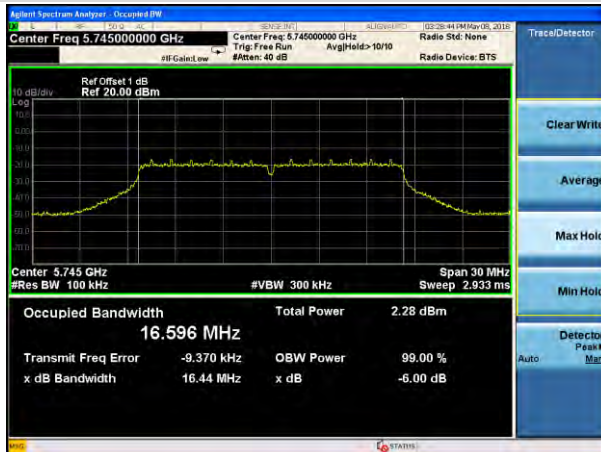
802.11ac(HT80) mode



Channel 106 (5530MHz)

Band 4 (5725 - 5850 MHz)

802.11a mode

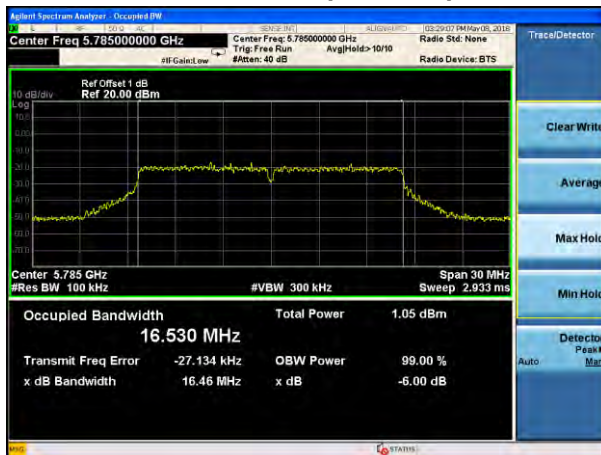


Channel 149 (5745MHz)

802.11n(HT20) mode



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

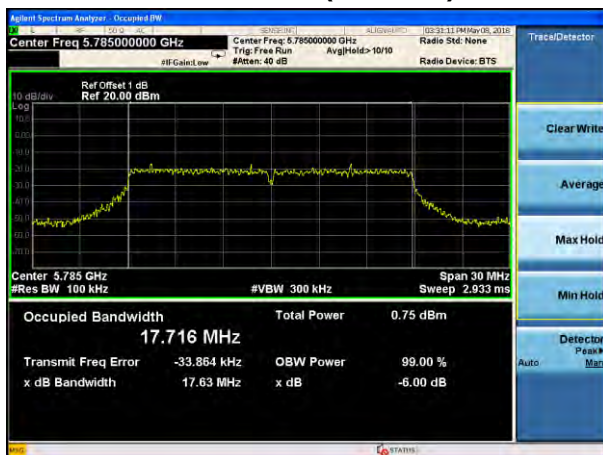


Channel 165 (5825MHz)

802.11ac(HT20) mode



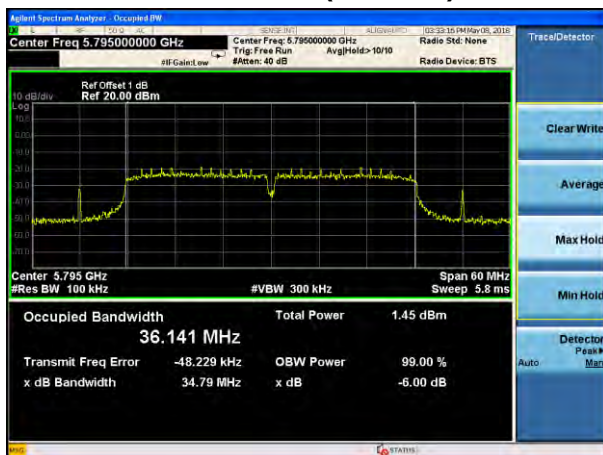
Channel 149 (5745MHz)



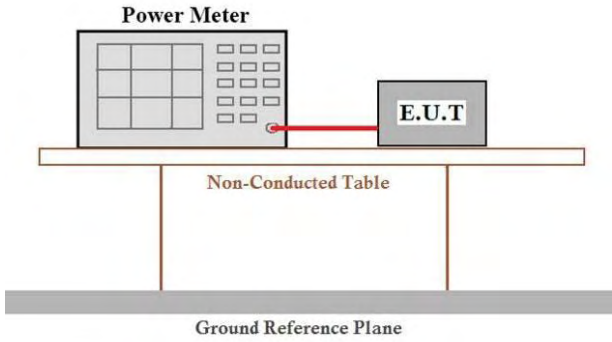
Channel 157 (5785MHz)



Channel 165 (5825MHz)

802.11n(HT40) mode**Channel 151 (5755MHz)****802.11ac(HT40) mode****Channel 151 (5755MHz)****Channel 159 (5795MHz)****Channel 159 (5795MHz)****802.11ac(HT80) mode****Channel 155(5775MHz)**

4.4 Peak Transmit Power

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	For the band 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 250mW. For the band 5.725-5.85GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 1W.
Test setup:	 The diagram illustrates the test setup. A 'Power Meter' is connected to an 'E.U.T.' (Equipment Under Test) by a red cable. Both components are placed on a 'Non-Conducted Table'. The table is supported by two vertical legs. Below the table, a 'Ground Reference Plane' is indicated.
Test procedure:	Measurement using an RF average power meter (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 a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle. b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level. c) 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 B). (iii) Measure the average power of the transmitter. This measurement is an average over both 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 percent).
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data**Band 1 (5150-5250 MHz)**

802.11a mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180.00	21.57	0.04	21.61	23.98	Pass
40	5200.00	21.52	0.04	21.56	23.98	Pass
48	5240.00	20.32	0.04	20.36	23.98	Pass

802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180.00	19.72	0.04	19.76	23.98	Pass
40	5200.00	19.54	0.04	19.58	23.98	Pass
48	5240.00	20.09	0.04	20.13	23.98	Pass

802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180.00	20.66	0.04	20.70	23.98	Pass
40	5200.00	19.70	0.04	19.74	23.98	Pass
48	5240.00	21.04	0.04	21.08	23.98	Pass

802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190.00	19.04	0.04	19.08	23.98	Pass
46	5230.00	19.70	0.04	19.74	23.98	Pass

802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190.00	19.57	0.04	19.61	23.98	Pass
46	5230.00	19.85	0.04	19.89	23.98	Pass

802.11 ac(HT80)						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
42	5210.00	20.11	0.04	20.15	23.98	Pass

Note: Output Power = Measured Power + Duty Factor

Duty Factor = $10 \log (1/\text{Duty Cycle}) = 10 \log (1/0.99) = 0.04$

Band 2 (5250 -5350 MHz)

802.11a mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
52	5260.00	20.32	0.04	20.36	23.98	Pass
56	5280.00	20.65	0.04	20.69	23.98	Pass
64	5320.00	21.10	0.04	21.14	23.98	Pass

802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
52	5260.00	20.60	0.04	20.64	23.98	Pass
56	5280.00	20.91	0.04	20.95	23.98	Pass
64	5320.00	20.83	0.04	20.87	23.98	Pass

802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
52	5260.00	20.58	0.04	20.62	23.98	Pass
56	5280.00	21.34	0.04	21.38	23.98	Pass
64	5320.00	20.26	0.04	20.30	23.98	Pass

802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
54	5270.00	21.44	0.04	21.48	23.98	Pass
62	5310.00	20.22	0.04	20.26	23.98	Pass

802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
54	5270.00	20.34	0.04	20.38	23.98	Pass
62	5310.00	20.22	0.04	20.26	23.98	Pass

802.11 ac(HT80)						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
58	5290.00	20.99	0.04	21.03	23.98	Pass

Note: Output Power = Measured Power + Duty Factor

Duty Factor = $10 \log (1/\text{Duty Cycle}) = 10 \log (1/0.99) = 0.04$

Band 3 (5470-5725 MHz)

802.11a mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
100	5500.00	19.53	0.04	19.57	23.98	Pass
116	5580.00	19.62	0.04	19.66	23.98	Pass
132	5660.00	19.19	0.04	19.23	23.98	Pass
140	5700.00	18.98	0.04	19.02	23.98	Pass

802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
100	5500.00	19.18	0.04	19.22	23.98	Pass
116	5580.00	19.50	0.04	19.54	23.98	Pass
132	5660.00	19.70	0.04	19.74	23.98	Pass
140	5700.00	19.84	0.04	19.88	23.98	Pass

802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
100	5500.00	18.14	0.04	18.18	23.98	Pass
116	5580.00	18.56	0.04	18.60	23.98	Pass
132	5660.00	19.16	0.04	19.20	23.98	Pass
140	5700.00	18.61	0.04	18.65	23.98	Pass

802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
102	5510.00	18.17	0.04	18.21	23.98	Pass
110	5550.00	18.51	0.04	18.55	23.98	Pass
134	5670.00	19.17	0.04	19.21	23.98	Pass

802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
102	5510.00	18.10	0.04	18.14	23.98	Pass
110	5550.00	18.85	0.04	18.89	23.98	Pass
134	5670.00	18.61	0.04	18.65	23.98	Pass

802.11 ac(HT80) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
106	5530.00	18.22	0.04	18.26	23.98	Pass

Note: Output Power = Measured Power + Duty Factor
Duty Factor = $10 \log (1/\text{Duty Cycle}) = 10 \log (1/0.99) = 0.04$

Band 4 (5725 - 5850)

802.11a mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
149	5745.00	14.21	0.04	14.25	30.00	Pass
157	5785.00	14.79	0.04	14.83	30.00	Pass
165	5825.00	13.65	0.04	13.69	30.00	Pass

802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
149	5745.00	12.70	0.04	12.74	30.00	Pass
157	5785.00	12.95	0.04	12.99	30.00	Pass
165	5825.00	13.06	0.04	13.10	30.00	Pass

802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
149	5745.00	13.56	0.04	13.60	30.00	Pass
157	5785.00	12.25	0.04	12.29	30.00	Pass
165	5825.00	13.98	0.04	14.02	30.00	Pass

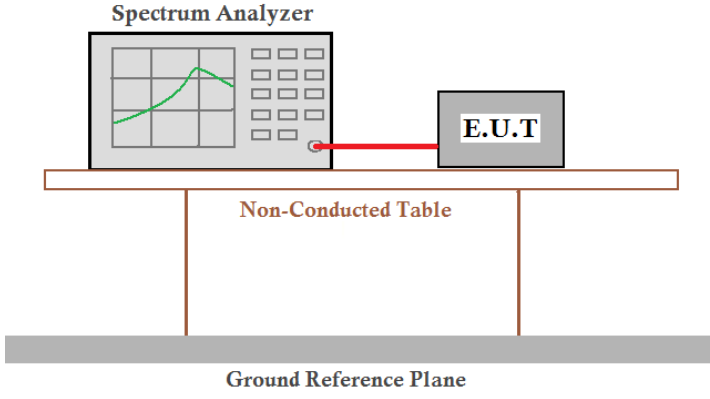
802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
151	5755.00	12.68	0.04	12.72	30.00	Pass
159	5795.00	12.87	0.04	12.91	30.00	Pass

802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
151	5755.00	12.87	0.04	12.91	30.00	Pass
159	5795.00	12.50	0.04	12.54	30.00	Pass

802.11 ac(HT80) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
155	5775.00	13.25	0.04	13.29	30.00	Pass

Note: Output Power = Measured Power + Duty Factor
Duty Factor = $10 \log (1/\text{Duty Cycle}) = 10 \log (1/0.99) = 0.04$

4.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	$\leq 11.00\text{dBm/MHz}$ for 5150MHz-5250MHz, 5250-5350MHz and 5470-5725 MHz $\leq 30.00\text{dBm/500KHz}$ for 5725MHz-5850MHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test procedure:	1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section 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...". 2) Use the peak search function on the instrument to find the peak of the spectrum. 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 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 PSD.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data**Band 1 (5150 - 5250 MHz)**

802.11a mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
36	5180.00	-7.505	0.04	-7.47	11	Pass
40	5200.00	-8.813	0.04	-8.77	11	Pass
48	5240.00	-7.702	0.04	-7.66	11	Pass

802.11n(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
36	5180.00	-8.639	0.04	-8.60	11	Pass
40	5200.00	-8.350	0.04	-8.31	11	Pass
48	5240.00	-9.684	0.04	-9.64	11	Pass

802.11ac(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
36	5180.00	-9.084	0.04	-9.04	11	Pass
40	5200.00	-8.449	0.04	-8.41	11	Pass
48	5240.00	-9.405	0.04	-9.37	11	Pass

802.11n(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5190.00	-11.391	0.04	-11.35	11	Pass
46	5230.00	-11.494	0.04	-11.45	11	Pass

802.11ac(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5190.00	-10.822	0.04	-10.78	11	Pass
46	5230.00	-11.713	0.04	-11.67	11	Pass

802.11ac(HT80) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5210.00	-13.972	0.04	-13.93	11	Pass

Note: Total PSD = Measured PSD + Duty Factor
Duty Factor = 10 log (1/Duty Cycle)

Band 2 (5250 -5350 MHz)

802.11a mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
52	5260.00	-6.924	0.04	-6.88	11	Pass
56	5280.00	-8.028	0.04	-7.99	11	Pass
64	5320.00	-8.126	0.04	-8.09	11	Pass

802.11n(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
52	5260.00	-8.276	0.04	-8.24	11	Pass
56	5280.00	-8.386	0.04	-8.35	11	Pass
64	5320.00	-9.011	0.04	-8.97	11	Pass

802.11ac(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
52	5260.00	-8.526	0.04	-8.49	11	Pass
56	5280.00	-8.145	0.04	-8.11	11	Pass
64	5320.00	-9.472	0.04	-9.43	11	Pass

802.11n(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
54	5270.00	-11.589	0.04	-11.55	11	Pass
62	5310.00	-11.981	0.04	-11.94	11	Pass

802.11ac(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
54	5270.00	-10.878	0.04	-10.84	11	Pass
62	5310.00	-11.626	0.04	-11.59	11	Pass

802.11ac(HT80) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
58	5290.00	-13.754	0.04	-13.71	11	Pass

Note: Total PSD = Measured PSD + Duty Factor

Duty Factor = 10 log (1/Duty Cycle)

Band 3 (5470 - 5725 MHz)

802.11a mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
100	5500.00	-7.244	0.04	-7.20	11	Pass
116	5580.00	-7.655	0.04	-7.62	11	Pass
132	5660.00	-7.505	0.04	-7.47	11	Pass
140	5700.00	-8.827	0.04	-8.79	11	Pass

802.11n(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
100	5500.00	-8.736	0.04	-8.70	11	Pass
116	5580.00	-6.696	0.04	-6.66	11	Pass
132	5660.00	-8.437	0.04	-8.40	11	Pass
140	5700.00	-8.500	0.04	-8.46	11	Pass

802.11ac(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
100	5500.00	-8.626	0.04	-8.59	11	Pass
116	5580.00	-8.208	0.04	-8.17	11	Pass
132	5660.00	-8.243	0.04	-8.20	11	Pass
140	5700.00	-8.871	0.04	-8.83	11	Pass

802.11n(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
102	5510.00	-11.730	0.04	-11.69	11	Pass
110	5550.00	-10.760	0.04	-10.72	11	Pass
134	5670.00	-11.013	0.04	-10.97	11	Pass

802.11ac(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
102	5510.00	-10.901	0.04	-10.86	11	Pass
110	5550.00	-10.738	0.04	-10.70	11	Pass
134	5670.00	-10.769	0.04	-10.73	11	Pass

802.11ac(HT80) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
106	5530.00	-13.857	0.04	-13.82	11	Pass

Note: Total PSD = Measured PSD + Duty Factor

Duty Factor = 10 log (1/Duty Cycle)

Band 4 (5725 - 5850 MHz)

802.11a mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/500kHz)	Duty Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
149	5745.00	-11.966	0.04	-11.93	30	Pass
157	5785.00	-11.149	0.04	-11.11	30	Pass
165	5825.00	-11.806	0.04	-11.77	30	Pass

802.11n(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/500kHz)	Duty Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
149	5745.00	-11.289	0.04	-11.25	30	Pass
157	5785.00	-11.797	0.04	-11.76	30	Pass
165	5825.00	-11.654	0.04	-11.61	30	Pass

802.11ac(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/500kHz)	Duty Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
149	5745.00	-11.308	0.04	-11.27	30	Pass
157	5785.00	-11.090	0.04	-11.05	30	Pass
165	5825.00	-11.298	0.04	-11.26	30	Pass

802.11n(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/500kHz)	Duty Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
151	5755.00	-13.975	0.04	-13.94	30	Pass
159	5795.00	-14.426	0.04	-14.39	30	Pass

802.11ac(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/500kHz)	Duty Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
151	5755.00	-11.104	0.04	-11.06	30	Pass
159	5795.00	-14.359	0.04	-14.32	30	Pass

802.11ac(HT80) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/500kHz)	Duty Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
155	5775.00	-16.201	0.04	-16.16	30	Pass

Note: Total PSD = Measured PSD + Duty Factor

Duty Factor = 10 log (1/Duty Cycle)

Test plots as followed:

Band 1 (5150 - 5250 MHz)

802.11a mode



Channel 36 (5180MHz)

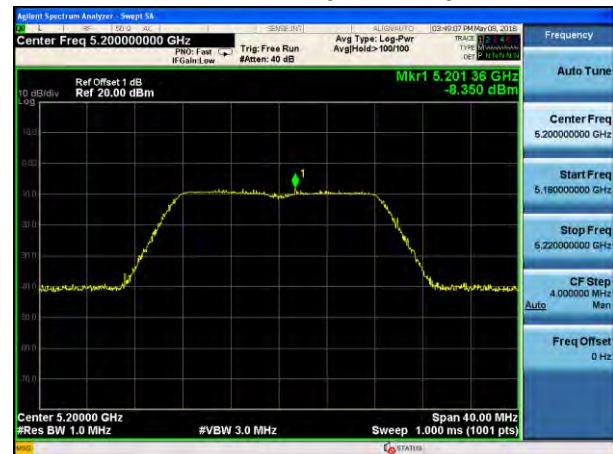
802.11n(HT20) mode



Channel 36 (5180MHz)



Channel 40 (5200MHz)



Channel 40 (5200MHz)



Channel 48 (5240MHz)



Channel 48 (5240MHz)

802.11ac(HT20) mode



Channel 36 (5180MHz)



Channel 40 (5200MHz)



Channel 48 (5240MHz)

802.11n(HT40) mode



Channel 38 (5190MHz)

802.11ac(HT40) mode



Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 46 (5230MHz)

802.11ac(HT80) mode



Channel 40 (5210MHz)

Band 2 (5250 - 5350 MHz)

802.11a mode



802.11n(HT20) mode



Channel 52 (5260MHz)



Channel 52 (5260MHz)



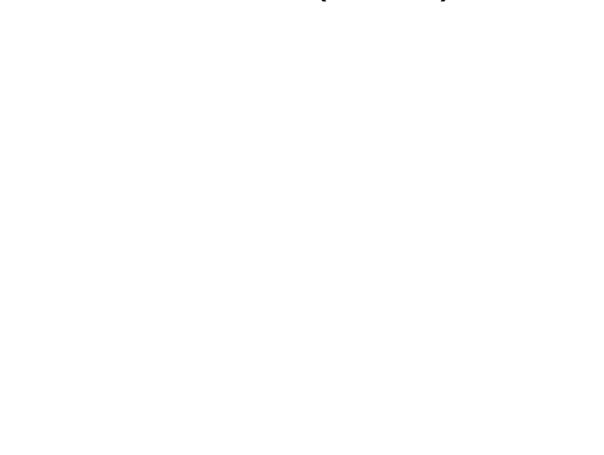
Channel 56 (5280MHz)



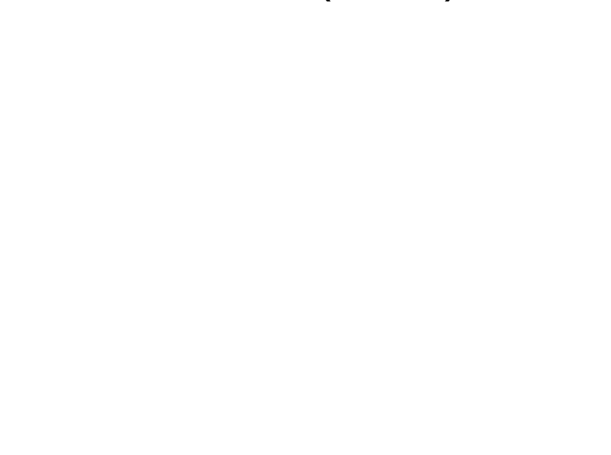
Channel 56 (5280MHz)



Channel 64 (5320MHz)



Channel 64 (5320MHz)



802.11ac(HT20) mode



Channel 52 (5260MHz)



Channel 56 (5280MHz)



Channel 64 (5320MHz)

802.11n(HT40) mode



Channel 54 (5270MHz)

802.11ac(HT40) mode



Channel 54 (5270MHz)



Channel 62 (5310MHz)



Channel 62 (5310MHz)

802.11ac(HT80) mode



Channel 58 (5290MHz)

Band 3 (5470 - 5725 MHz)

802.11a mode



Channel 100 (5500MHz)



Channel 116 (5580MHz)



Channel 132 (5660MHz)



Channel 140 (5700MHz)

802.11n(HT20) mode



Channel 100 (5500MHz)



Channel 116 (5580MHz)



Channel 132 (5660MHz)



Channel 140 (5700MHz)

802.11ac(HT20) mode



Channel 100 (5500MHz)



Channel 116 (5580MHz)



Channel 132 (5660MHz)



Channel 140 (5700MHz)

802.11n(HT40) mode



Channel 102 (5510MHz)

802.11ac(HT40) mode



Channel 102 (5510MHz)



Channel 110 (5550MHz)



Channel 110 (5550MHz)



Channel 134 (5670MHz)



Channel 134 (5670MHz)

802.11ac(HT80) mode**Channel 106 (5530MHz)**

Band 4 (5725 - 5850 MHz)

802.11a mode



Channel 149 (5745MHz)

802.11n(HT20) mode



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



Channel 165 (5825MHz)

802.11ac(HT20) mode**Channel 149 (5745MHz)****Channel 157 (5785MHz)****Channel 165 (5825MHz)**

802.11n(HT40) mode



Channel 151 (5755MHz)

802.11ac(HT40) mode



Channel 151 (5755MHz)



Channel 159 (5795MHz)



Channel 159 (5795MHz)

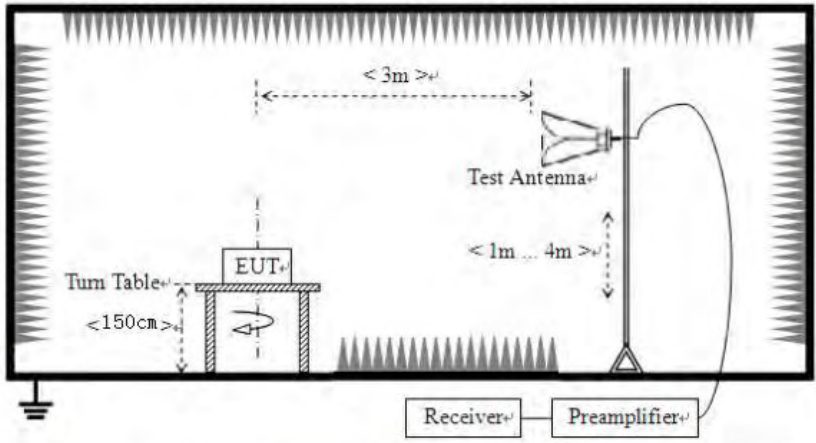
802.11ac(HT80) mode



Channel 155(5775MHz)

4.6 Band Edge

Test Requirement:	FCC Part15 E Section 15.407 and 15.205																								
Test Method:	ANSI C63.10:2013																								
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)																								
Receiver setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>AV</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr></table>					Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	AV	1MHz	3MHz	Average Value	
Frequency	Detector	RBW	VBW	Remark																					
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value																					
Above 1GHz	Peak	1MHz	3MHz	Peak Value																					
	AV	1MHz	3MHz	Average Value																					
Limit:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr><tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr><tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr><tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr><tr><td>68.2</td><td>Peak Value</td></tr></table> Undesirable emission limits: (1) 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 EIRP of -27 dBm/MHz. (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band. (3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.					Frequency	Limit (dBuV/m @3m)	Remark	30MHz-88MHz	40.0	Quasi-peak Value	88MHz-216MHz	43.5	Quasi-peak Value	216MHz-960MHz	46.0	Quasi-peak Value	960MHz-1GHz	54.0	Quasi-peak Value	Above 1GHz	54.0	Average Value	68.2	Peak Value
Frequency	Limit (dBuV/m @3m)	Remark																							
30MHz-88MHz	40.0	Quasi-peak Value																							
88MHz-216MHz	43.5	Quasi-peak Value																							
216MHz-960MHz	46.0	Quasi-peak Value																							
960MHz-1GHz	54.0	Quasi-peak Value																							
Above 1GHz	54.0	Average Value																							
	68.2	Peak Value																							
Test Procedure:	a. The EUT was placed on the top of a rotating table 1.5 m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.																								
Test setup:	Above 1GHz																								

	
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Remark:

According to KDB 789033 D02 v02r01 section G) 1) (d), for For measurements above 1000 MHz @ 3m distance, the limit of field strength is computed as follows:

$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2;$

For example, if $\text{EIRP} = -27\text{dBm}$

$E[\text{dBuV/m}] = -27 + 95.2 = 68.2\text{dBuV/m}.$

Measurement Data:**Band1**

Mode:		802.11a		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	34.29	17.18	51.47	68.20	-16.73	PK
V	5150.00	34.77	17.18	51.95	68.20	-16.25	PK
Mode:		802.11a		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	25.10	17.18	42.28	54.00	-11.72	AV
V	5150.00	27.53	17.18	44.71	54.00	-9.29	AV
Mode:		802.11a		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	33.62	17.18	50.80	68.20	-17.40	PK
V	5350.00	34.74	17.18	51.92	68.20	-16.28	PK
Mode:		802.11a		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	25.05	17.18	42.23	54.00	-11.77	AV
V	5350.00	27.06	17.18	44.24	54.00	-9.76	AV

Mode:		802.11n(HT20)		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	33.11	17.18	50.29	68.20	-17.91	PK
V	5150.00	33.35	17.18	50.53	68.20	-17.67	PK
Mode:		802.11n(HT20)		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	24.51	17.18	41.69	54.00	-12.31	AV
V	5150.00	23.47	17.18	40.65	54.00	-13.35	AV
Mode:		802.11n(HT20)		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	36.18	17.18	53.36	68.20	-14.84	PK
V	5350.00	36.62	17.18	53.80	68.20	-14.40	PK
Mode:		802.11n(HT20)		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	26.31	17.18	43.49	54.00	-10.51	AV
V	5350.00	30.28	17.18	47.46	54.00	-6.54	AV

Mode:		802.11ac(HT20)		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	30.56	17.18	47.74	68.20	-20.46	PK
V	5150.00	34.94	17.18	52.12	68.20	-16.08	PK
Mode:		802.11ac(HT20)		Frequency:		5180MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	26.16	17.18	43.34	54.00	-10.66	AV
V	5150.00	27.27	17.18	44.45	54.00	-9.55	AV
Mode:		802.11ac(HT20)		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	33.10	17.18	50.28	68.20	-17.92	PK
V	5350.00	32.11	17.18	49.29	68.20	-18.91	PK
Mode:		802.11ac(HT20)		Frequency:		5240MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	23.02	17.18	40.20	54.00	-13.80	AV
V	5350.00	26.91	17.18	44.09	54.00	-9.91	AV

Mode:		802.11n(HT40)		Frequency:		5190MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	35.93	17.20	53.13	68.20	-15.07	PK
V	5150.00	38.17	17.20	55.37	68.20	-12.83	PK
Mode:		802.11n(HT40)		Frequency:		5190MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	23.31	17.20	40.51	54.00	-13.49	AV
V	5150.00	29.17	17.20	46.37	54.00	-7.63	AV
Mode:		802.11n(HT40)		Frequency:		5230MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	34.01	17.20	51.21	68.20	-16.99	PK
V	5350.00	31.60	17.20	48.80	68.20	-19.40	PK
Mode:		802.11n(HT40)		Frequency:		5230MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	22.22	17.18	39.40	54.00	-14.60	AV
V	5350.00	24.79	17.18	41.97	54.00	-12.03	AV

Mode:		802.11ac(HT40)		Frequency:		5190MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	36.86	17.20	54.06	68.20	-14.14	PK
V	5150.00	35.52	17.20	52.72	68.20	-15.48	PK
Mode:		802.11ac(HT40)		Frequency:		5190MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	27.66	17.18	44.84	54.00	-9.16	AV
V	5150.00	27.33	17.18	44.51	54.00	-9.49	AV
Mode:		802.11ac(HT40)		Frequency:		5230MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	36.95	17.20	54.15	68.20	-14.05	PK
V	5350.00	35.84	17.20	53.04	68.20	-15.16	PK
Mode:		802.11ac(HT40)		Frequency:		5230MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	28.19	17.20	45.39	54.00	-8.61	AV
V	5350.00	24.46	17.20	41.66	54.00	-12.34	AV

Mode:		802.11ac(HT80)		Frequency:		5210MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	37.07	17.20	54.27	68.20	-13.93	PK
V	5150.00	37.40	17.20	54.60	68.20	-13.60	PK
Mode:		802.11ac(HT80)		Frequency:		5210MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	21.76	17.18	38.94	54.00	-15.06	AV
V	5150.00	29.12	17.18	46.30	54.00	-7.70	AV
Mode:		802.11ac(HT80)		Frequency:		5210MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	30.43	17.20	47.63	68.20	-20.57	PK
V	5350.00	31.05	17.20	48.25	68.20	-19.95	PK
Mode:		802.11ac(HT80)		Frequency:		5210MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	26.28	17.20	43.48	54.00	-10.52	AV
V	5350.00	29.78	17.20	46.98	54.00	-7.02	AV

Band2

Mode:		802.11a		Frequency:		5260MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	34.78	17.18	51.96	68.20	-16.24	PK
V	5150.00	34.08	17.18	51.26	68.20	-16.94	PK
Mode:		802.11a		Frequency:		5260MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	26.20	17.18	43.38	54.00	-10.62	AV
V	5150.00	29.33	17.18	46.51	54.00	-7.49	AV
Mode:		802.11a		Frequency:		5320MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	34.59	17.18	51.77	68.20	-16.43	PK
V	5350.00	33.40	17.18	50.58	68.20	-17.62	PK
Mode:		802.11a		Frequency:		5320MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	21.30	17.18	38.48	54.00	-15.52	AV
V	5350.00	23.87	17.18	41.05	54.00	-12.95	AV

Mode:		802.11n(HT20)		Frequency:		5260MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	34.16	17.18	51.34	68.20	-16.86	PK
V	5150.00	32.50	17.18	49.68	68.20	-18.52	PK
Mode:		802.11n(HT20)		Frequency:		5260MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	23.11	17.18	40.29	54.00	-13.71	AV
V	5150.00	30.63	17.18	47.81	54.00	-6.19	AV
Mode:		802.11n(HT20)		Frequency:		5320MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	30.20	17.18	47.38	68.20	-20.82	PK
V	5350.00	37.21	17.18	54.39	68.20	-13.81	PK
Mode:		802.11n(HT20)		Frequency:		5320MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	21.75	17.18	38.93	54.00	-15.07	AV
V	5350.00	28.42	17.18	45.60	54.00	-8.40	AV

Mode:		802.11ac(HT20)		Frequency:		5260MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	33.02	17.18	50.20	68.20	-18.00	PK
V	5150.00	36.50	17.18	53.68	68.20	-14.52	PK
Mode:		802.11ac(HT20)		Frequency:		5260MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	28.11	17.18	45.29	54.00	-8.71	AV
V	5150.00	26.91	17.18	44.09	54.00	-9.91	AV
Mode:		802.11ac(HT20)		Frequency:		5320MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	34.51	17.18	51.69	68.20	-16.51	PK
V	5350.00	34.09	17.18	51.27	68.20	-16.93	PK
Mode:		802.11ac(HT20)		Frequency:		5320MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	28.16	17.18	45.34	54.00	-8.66	AV
V	5350.00	27.51	17.18	44.69	54.00	-9.31	AV

Mode:		802.11n(HT40)		Frequency:		5270MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	33.89	17.20	51.09	68.20	-17.11	PK
V	5150.00	31.44	17.20	48.64	68.20	-19.56	PK
Mode:		802.11n(HT40)		Frequency:		5270MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	27.41	17.20	44.61	54.00	-9.39	AV
V	5150.00	23.36	17.20	40.56	54.00	-13.44	AV
Mode:		802.11n(HT40)		Frequency:		5310MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	36.56	17.20	53.76	68.20	-14.44	PK
V	5350.00	37.59	17.20	54.79	68.20	-13.41	PK
Mode:		802.11n(HT40)		Frequency:		5310MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	26.13	17.18	43.31	54.00	-10.69	AV
V	5350.00	27.36	17.18	44.54	54.00	-9.46	AV

Mode:		802.11ac(HT40)		Frequency:		5270MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	30.91	17.20	48.11	68.20	-20.09	PK
V	5150.00	33.93	17.20	51.13	68.20	-17.07	PK
Mode:		802.11ac(HT40)		Frequency:		5270MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	21.24	17.18	38.42	54.00	-15.58	AV
V	5150.00	28.94	17.18	46.12	54.00	-7.88	AV
Mode:		802.11ac(HT40)		Frequency:		5310MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	30.27	17.20	47.47	68.20	-20.73	PK
V	5350.00	35.78	17.20	52.98	68.20	-15.22	PK
Mode:		802.11ac(HT40)		Frequency:		5310MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	28.81	17.20	46.01	54.00	-7.99	AV
V	5350.00	26.77	17.20	43.97	54.00	-10.03	AV

Mode:		802.11ac(HT80)		Frequency:		5290MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	35.75	17.20	52.95	68.20	-15.25	PK
V	5150.00	37.33	17.20	54.53	68.20	-13.67	PK
Mode:		802.11ac(HT80)		Frequency:		5290MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5150.00	24.17	17.18	41.35	54.00	-12.65	AV
V	5150.00	24.79	17.18	41.97	54.00	-12.03	AV
Mode:		802.11ac(HT80)		Frequency:		5290MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	34.67	17.20	51.87	68.20	-16.33	PK
V	5350.00	32.33	17.20	49.53	68.20	-18.67	PK
Mode:		802.11ac(HT80)		Frequency:		5290MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5350.00	23.05	17.20	40.25	54.00	-13.75	AV
V	5350.00	27.79	17.20	44.99	54.00	-9.01	AV

Band3

Mode:		802.11a		Frequency:		5500MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5470.00	32.71	17.18	49.89	68.20	-18.31	PK
V	5470.00	37.55	17.18	54.73	68.20	-13.47	PK
Mode:		802.11a		Frequency:		5500MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5470.00	25.65	17.18	42.83	54.00	-11.17	AV
V	5470.00	26.98	17.18	44.16	54.00	-9.84	AV
Mode:		802.11a		Frequency:		5700MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5850.00	33.64	17.18	50.82	68.20	-17.38	PK
V	5850.00	34.39	17.18	51.57	68.20	-16.63	PK
Mode:		802.11a		Frequency:		5700MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5850.00	27.03	17.18	44.21	54.00	-9.79	AV
V	5850.00	27.13	17.18	44.31	54.00	-9.69	AV

Mode:		802.11n(HT20)		Frequency:		5500MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5470.00	33.05	17.18	50.23	68.20	-17.97	PK
V	5470.00	31.05	17.18	48.23	68.20	-19.97	PK
Mode:		802.11n(HT20)		Frequency:		5500MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5470.00	33.05	17.18	50.23	68.20	-17.97	AV
V	5470.00	31.05	17.18	48.23	68.20	-19.97	AV
Mode:		802.11n(HT20)		Frequency:		5700MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5850.00	30.29	17.18	47.47	68.20	-20.73	PK
V	5850.00	36.02	17.18	53.20	68.20	-15.00	PK
Mode:		802.11n(HT20)		Frequency:		5700MHz	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
H	5850.00	23.32	17.18	40.50	54.00	-13.50	AV
V	5850.00	27.65	17.18	44.83	54.00	-9.17	AV

Mode:		802.11ac(HT20)		Frequency:		5500MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5470.00	35.33	17.18	52.51	68.20	-15.69	PK
V	5470.00	38.71	17.18	55.89	68.20	-12.31	PK
Mode:		802.11ac(HT20)		Frequency:		5500MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5470.00	23.23	17.18	40.41	54.00	-13.59	AV
V	5470.00	24.10	17.18	41.28	54.00	-12.72	AV
Mode:		802.11ac(HT20)		Frequency:		5700MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5850.00	31.37	17.18	48.55	68.20	-19.65	PK
V	5850.00	36.17	17.18	53.35	68.20	-14.85	PK
Mode:		802.11ac(HT20)		Frequency:		5700MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5850.00	21.86	17.18	39.04	54.00	-14.96	AV
V	5850.00	29.63	17.18	46.81	54.00	-7.19	AV

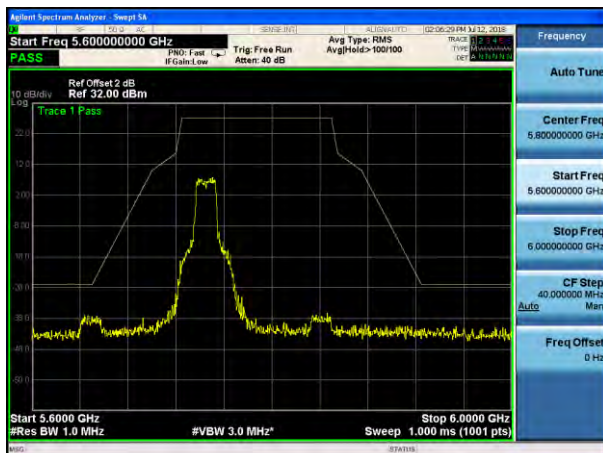
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Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5470.00	35.85	17.20	53.05	68.20	-15.15	PK
V	5470.00	38.72	17.20	55.92	68.20	-12.28	PK
Mode:		802.11n(HT40)		Frequency:		5510MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5470.00	28.44	17.20	45.64	54.00	-8.36	AV
V	5470.00	25.61	17.20	42.81	54.00	-11.19	AV
Mode:		802.11n(HT40)		Frequency:		5670MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5850.00	32.24	17.20	49.44	68.20	-18.76	PK
V	5850.00	37.77	17.20	54.97	68.20	-13.23	PK
Mode:		802.11n(HT40)		Frequency:		5670MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5850.00	23.22	17.18	40.40	54.00	-13.60	AV
V	5850.00	30.15	17.18	47.33	54.00	-6.67	AV

Mode:		802.11ac(HT40)		Frequency:		5510MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5470.00	35.27	17.20	52.47	68.20	-15.73	PK
V	5470.00	35.73	17.20	52.93	68.20	-15.27	PK
Mode:		802.11ac(HT40)		Frequency:		5510MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5470.00	25.16	17.18	42.34	54.00	-11.66	AV
V	5470.00	29.19	17.18	46.37	54.00	-7.63	AV
Mode:		802.11ac(HT40)		Frequency:		5670MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5850.00	34.20	17.20	51.40	68.20	-16.80	PK
V	5850.00	36.97	17.20	54.17	68.20	-14.03	PK
Mode:		802.11ac(HT40)		Frequency:		5670MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5850.00	25.66	17.20	42.86	54.00	-11.14	AV
V	5850.00	25.83	17.20	43.03	54.00	-10.97	AV

Mode:		802.11ac(HT80)		Frequency:		5530MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5470.00	33.93	17.20	51.13	68.20	-17.07	PK
V	5470.00	34.89	17.20	52.09	68.20	-16.11	PK
Mode:		802.11ac(HT80)		Frequency:		5530MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5470.00	25.99	17.18	43.17	54.00	-10.83	AV
V	5470.00	27.25	17.18	44.43	54.00	-9.57	AV
Mode:		802.11ac(HT80)		Frequency:		5530MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5850.00	36.74	17.20	53.94	68.20	-14.26	PK
V	5850.00	37.74	17.20	54.94	68.20	-13.26	PK
Mode:		802.11ac(HT80)		Frequency:		5530MHz	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Over limit(dB)	Detector
		(dBuV)	(dB/m)	(dBuV/m)			
H	5850.00	28.76	17.20	45.96	54.00	-8.04	AV
V	5850.00	29.52	17.20	46.72	54.00	-7.28	AV

Band4

802.11a

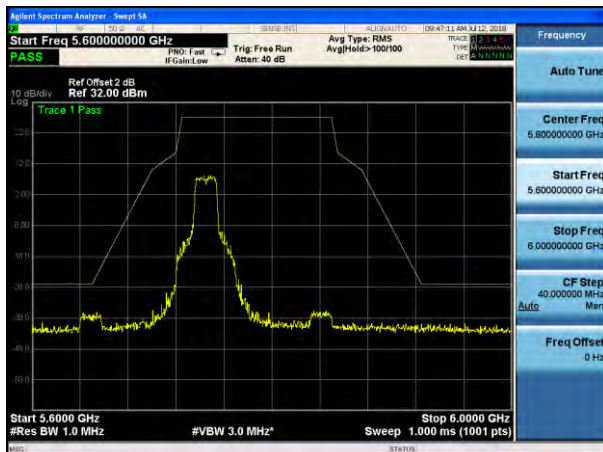


Low: 5745MHz

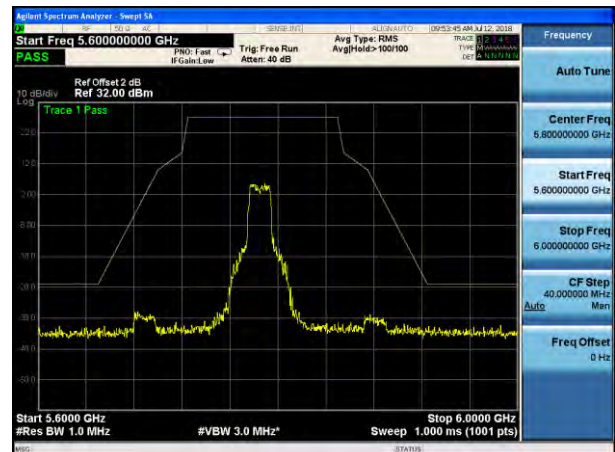


High: 5825MHz

802.11n(HT20)

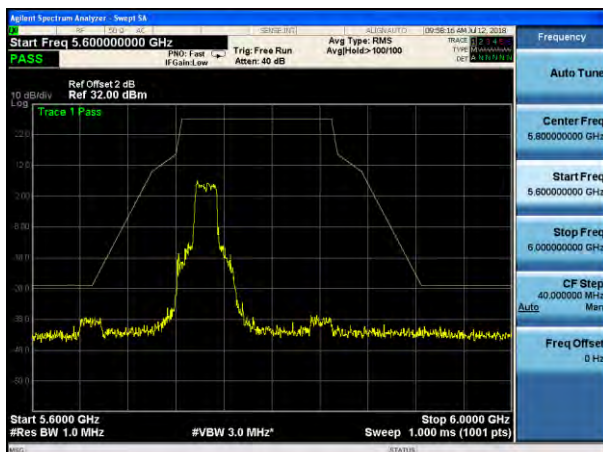


Low: 5745MHz

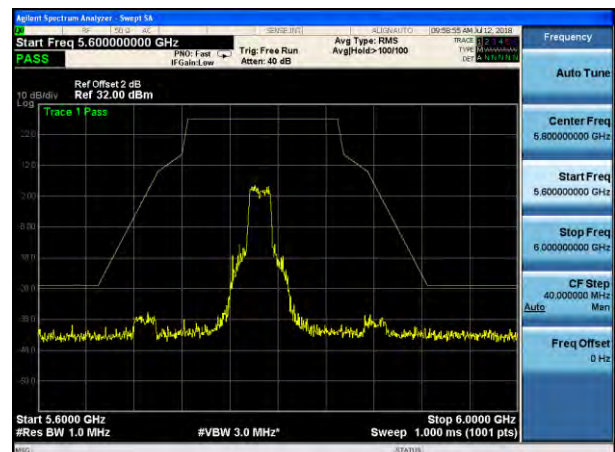


High: 5825MHz

802.11ac(HT20)

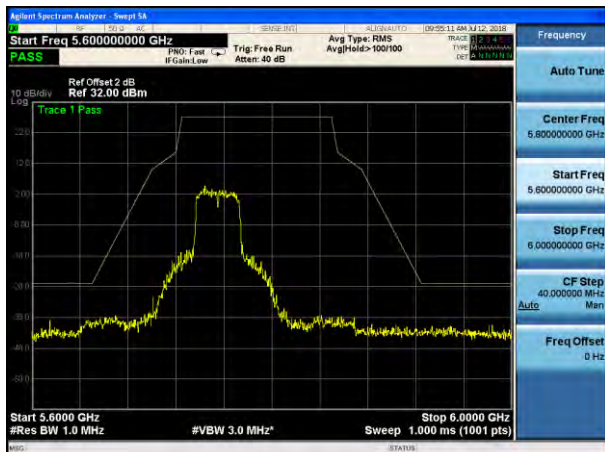


Low: 5745MHz

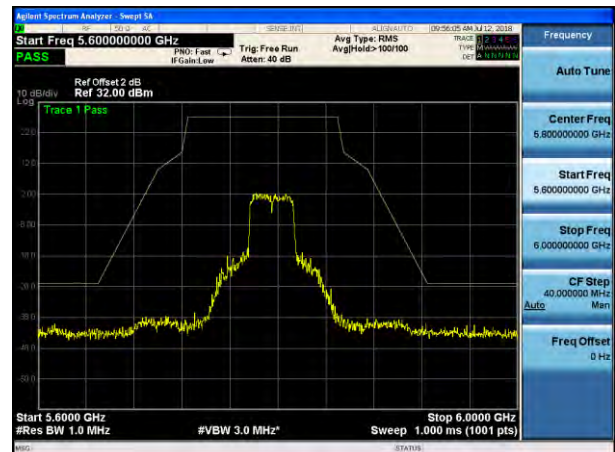


High: 5825MHz

802.11n(HT40)

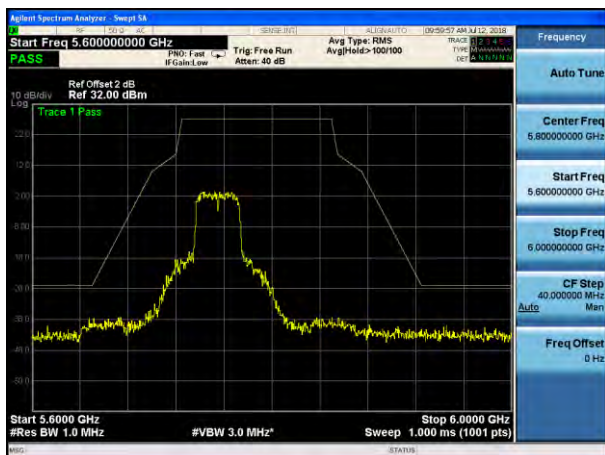


Low: 5755MHz

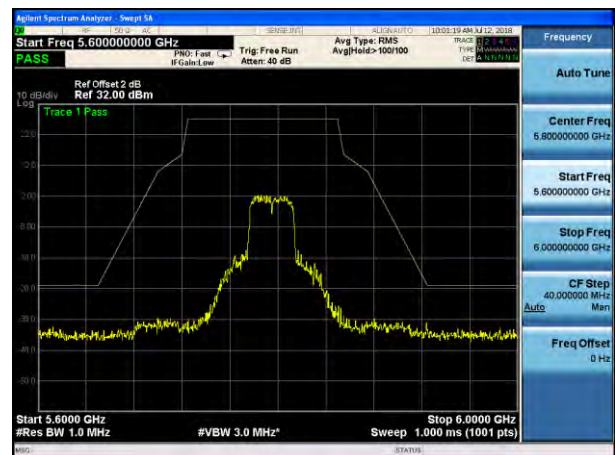


High: 5795MHz

802.11ac(HT40)



Low: 5755MHz



High: 5795MHz

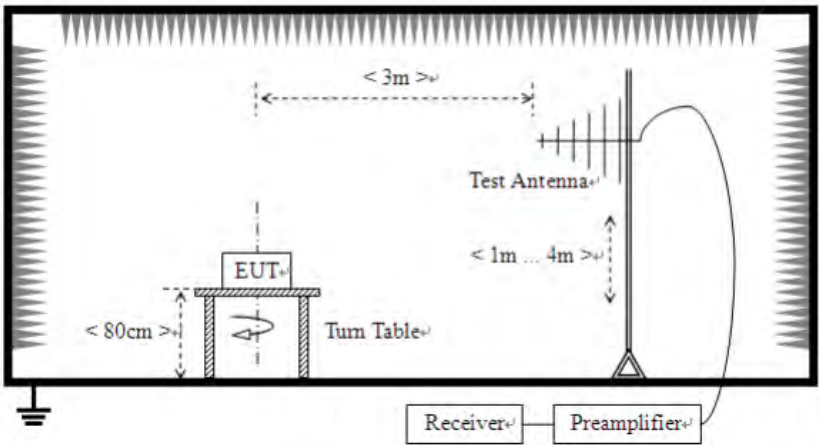
802.11ac(HT80)

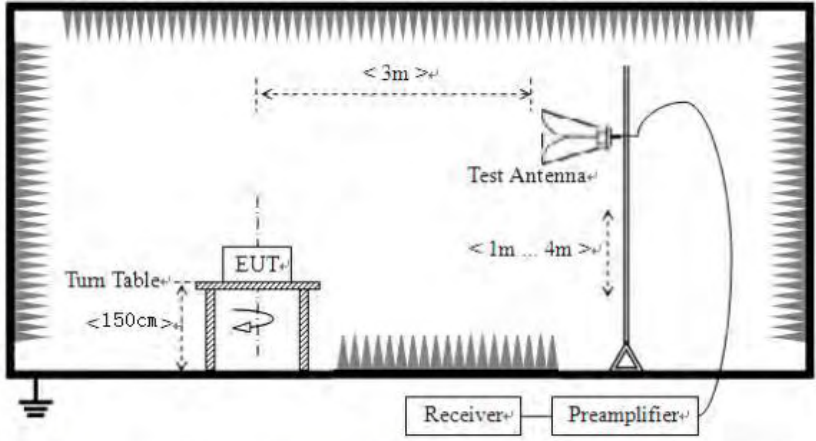


5775MHz

4.7 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	30MHz to 40GHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		AV	1MHz	3MHz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		74.0		Peak Value
			54.0		Average Value
Test Procedure:	Substitution method was performed to determine the actual ERP emission levels of the EUT. The following test procedure as below:				
	1>.Below 1GHz test procedure:				
	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.				
	2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.				
	3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.				
	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.				
	5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.				
	6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.				
	2>.Above 1GHz test procedure:				
	1. On the test site as test setup graph above,the EUT shall be placed at the 1.5m support on the turntable and in the position closest to normal use as declared by the provider.				

	transmitter under test. - The test antenna shall be raised and lowered from 1m to 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver. - Repeat step 4 for test frequency with the test antenna polarized horizontally. - Remove the transmitter and replace it with a substitution antenna - Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output. - Repeat step 7 with both antennas horizontally polarized for each test frequency. - Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula: $\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ where: Pg is the generator output power into the substitution antenna.
Test setup:	Below 1GHz  Above 1GHz

	
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data:**Below 1GHz**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
33.10	47.60	11.25	0.59	30.08	29.36	40.00	-10.64	Vertical
54.45	40.70	11.93	0.81	29.96	23.48	40.00	-16.52	Vertical
120.28	46.25	9.4	1.36	29.57	27.44	43.50	-16.06	Vertical
172.00	42.60	8.5	1.7	29.31	23.49	43.50	-20.01	Vertical
440.20	36.66	16.29	3.05	29.41	26.59	46.00	-19.41	Vertical
860.04	32.65	21.83	4.69	29.14	30.03	46.00	-15.97	Vertical
64.21	35.55	8.73	0.9	29.89	15.29	40.00	-24.71	Horizontal
99.53	33.37	11.73	1.19	29.7	16.59	43.50	-26.91	Horizontal
269.43	45.04	12.53	2.22	29.79	30.00	46.00	-16.00	Horizontal
350.48	36.30	14.5	2.62	29.73	23.69	46.00	-22.31	Horizontal
627.27	35.52	19.43	3.83	29.27	29.51	46.00	-16.49	Horizontal
955.44	40.50	22.54	5.06	29.1	39.00	46.00	-7.00	Horizontal

Above 1GHz:**802.11a(HT20) 5180MHz**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	28.16	39.67	14.62	32.65	49.80	74.00	-24.20	Vertical
15540	30.19	38.6	17.66	34.46	51.99	74.00	-22.01	Vertical
10360	32.06	39.67	14.62	32.65	53.70	74.00	-20.30	Horizontal
15540	31.45	38.6	17.66	34.46	53.25	74.00	-20.75	Horizontal

802.11a(HT20) 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	28.86	39.67	14.62	32.65	50.50	74.00	-23.50	Vertical
15600	29.93	38.6	17.66	34.46	51.73	74.00	-22.27	Vertical
10400	30.08	39.67	14.62	32.65	51.72	74.00	-22.28	Horizontal
15600	30.55	38.6	17.66	34.46	52.35	74.00	-21.65	Horizontal

802.11a(HT20) 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	30.01	39.67	14.62	32.65	51.65	74.00	-22.35	Vertical
15720	29.42	38.6	17.66	34.46	51.22	74.00	-22.78	Vertical
10480	30.00	39.67	14.62	32.65	51.64	74.00	-22.36	Horizontal
15720	31.41	38.6	17.66	34.46	53.21	74.00	-20.79	Horizontal

802.11n(HT20) 5180MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	29.95	39.67	14.62	32.65	51.59	74.00	-22.41	Vertical
15540	29.68	38.6	17.66	34.46	51.48	74.00	-22.52	Vertical
10360	31.27	39.67	14.62	32.65	52.91	74.00	-21.09	Horizontal
15540	31.61	38.6	17.66	34.46	53.41	74.00	-20.59	Horizontal

802.11n(HT20) 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	28.76	39.67	14.62	32.65	50.40	74.00	-23.60	Vertical
15600	31.69	38.6	17.66	34.46	53.49	74.00	-20.51	Vertical
10400	32.34	39.67	14.62	32.65	53.98	74.00	-20.02	Horizontal
15600	30.88	38.6	17.66	34.46	52.68	74.00	-21.32	Horizontal

802.11n(HT20) 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	30.31	39.67	14.62	32.65	51.95	74.00	-22.05	Vertical
15720	29.08	38.6	17.66	34.46	50.88	74.00	-23.12	Vertical
10480	29.30	39.67	14.62	32.65	50.94	74.00	-23.06	Horizontal
15720	30.27	38.6	17.66	34.46	52.07	74.00	-21.93	Horizontal

802.11ac(HT20) 5180MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	29.57	39.67	14.62	32.65	51.21	74.00	-22.79	Vertical
15540	30.09	38.6	17.66	34.46	51.89	74.00	-22.11	Vertical
10360	30.92	39.67	14.62	32.65	52.56	74.00	-21.44	Horizontal
15540	30.60	38.6	17.66	34.46	52.40	74.00	-21.60	Horizontal

802.11ac(HT20) 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	28.65	39.67	14.62	32.65	50.29	74.00	-23.71	Vertical
15600	31.23	38.6	17.66	34.46	53.03	74.00	-20.97	Vertical
10400	31.90	39.67	14.62	32.65	53.54	74.00	-20.46	Horizontal
15600	30.13	38.6	17.66	34.46	51.93	74.00	-22.07	Horizontal

802.11ac(HT20) 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	31.69	39.67	14.62	32.65	53.33	74.00	-20.67	Vertical
15720	28.78	38.6	17.66	34.46	50.58	74.00	-23.42	Vertical
10480	30.74	39.67	14.62	32.65	52.38	74.00	-21.62	Horizontal
15720	31.12	38.6	17.66	34.46	52.92	74.00	-21.08	Horizontal

802.11n(HT40) 5190MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380	31.29	39.67	14.62	32.65	52.93	74.00	-15.27	Vertical
15570	30.06	38.6	17.66	34.46	51.86	74.00	-22.14	Vertical
10380	30.56	39.67	14.62	32.65	52.20	74.00	-21.80	Horizontal
15570	30.62	38.6	17.66	34.46	52.42	74.00	-21.58	Horizontal

802.11n(HT40) 5230MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460	28.21	39.67	14.62	32.65	49.85	74.00	-24.15	Vertical
15690	29.57	38.6	17.66	34.46	51.37	74.00	-22.63	Vertical
10460	30.14	39.67	14.62	32.65	51.78	74.00	-22.22	Horizontal
15690	30.93	38.6	17.66	34.46	52.73	74.00	-21.27	Horizontal

802.11ac(HT40) 5190MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380	28.42	39.67	14.62	32.65	50.06	74.00	-23.94	Vertical
15570	28.77	38.6	17.66	34.46	50.57	74.00	-23.43	Vertical
10380	30.69	39.67	14.62	32.65	52.33	74.00	-21.67	Horizontal
15570	29.37	38.6	17.66	34.46	51.17	74.00	-22.83	Horizontal

802.11ac(HT40) 5230MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460	30.46	39.67	14.62	32.65	52.10	74.00	-21.90	Vertical
15690	30.67	38.6	17.66	34.46	52.47	74.00	-21.53	Vertical
10460	30.26	39.67	14.62	32.65	51.90	74.00	-22.10	Horizontal
15690	30.09	38.6	17.66	34.46	51.89	74.00	-22.11	Horizontal

802.11ac(HT80) 5210MHz

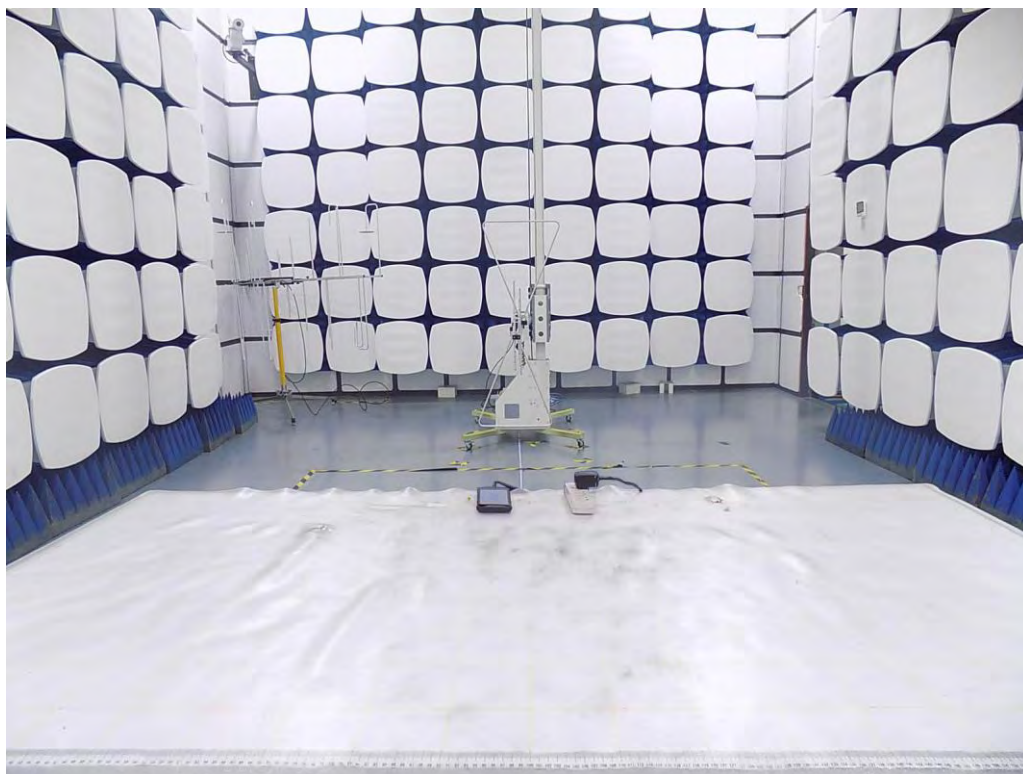
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10420	30.85	39.67	14.62	32.65	52.49	74.00	-21.51	Vertical
15630	29.86	38.6	17.66	34.46	51.66	74.00	-22.34	Vertical
10420	31.35	39.67	14.62	32.65	52.99	74.00	-21.01	Horizontal
15630	30.71	38.6	17.66	34.46	52.51	74.00	-21.49	Horizontal

Note:

1. Level = Read Level + Antenna Factor+ Cable loss- Preamp Factor.
2. The test trace is same as the ambient noise (the test frequency range: 18GHz~40GHz), therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. This Report only show the test plots of the worst case (U-NII-1).

5 Test Setup Photo

Radiated Emission



Conducted Emission



6 EUT Constructional Details

Reference to the test report No. T1880174 01

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