TEST REPORT

Applicant:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address of Applicant:	8th floor, Chuangyi Building, No. 3025 Nanhai Ave., Nanshan, Shenzhen, Guangdong 518060, China
Manufacturer:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address of Manufacturer:	8th floor, Chuangyi Building, No. 3025 Nanhai Ave., Nanshan, Shenzhen, Guangdong 518060, China
Factory:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address of Factory:	West 1st Floor, Building B, Hengchao Industrial Park, Tangtou North Ave., Bao'an, Shenzhen, Guangdong, China 518108

Equipment Under Test (EUT)

Product Name:	AUTO DIAGNOSTIC SYSTEM
Model No.:	F7S-W, F7S-D, F7S-G, F7S-E, F7S-R, F7S-M, F7S-P, F7S-N, E800, E801, E802, E803, E804, E805, E806, E807, E808, E809
Trade Mark:	FCAR
FCC ID:	2AJDD-IDIAGSF7S2
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of sample receipt:	March 27, 2020
Date of Test:	March 27, 2020-April 16, 2020
Date of report issued:	April 16, 2020
Test Result :	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	*April 16, 2020*	*Original*

Prepared By: ***Date:*** *April 16, 2020*

Project Engineer

Check By: ***Date:*** *April 16, 2020*

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.407(a)(3)	Pass
Channel Bandwidth	15.407(e)	Pass
Power Spectral Density	15.407(a)(3)	Pass
Band Edge	15.407(b)(4)	Pass
Spurious Emission	15.205/15.209/15.407(b)(4)	Pass
Frequency Stability	15.407(g)	Pass

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

Remark: Test according to ANSI C63.10:2013

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	AUTO DIAGNOSTIC SYSTEM
Model No.:	F7S-W, F7S-D, F7S-G, F7S-E, F7S-R, F7S-M, F7S-P, F7S-N, E800, E801, E802, E803, E804, E805, E806, E807, E808, E809
Test Model No:	F7S-W
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are software version and model name for commercial purpose.	
Serial No.:	7W01-1611-117R-0603
Hardware version:	V01.10
Software version:	V18042311
Test sample(s) ID:	GTS202003000223-1
Sample(s) Status:	Engineer sample
Operation Frequency:	802.11a/802.11n(HT20)/802.11ac(HT20) @5.8G Band: 5745MHz ~ 5825MHz 802.11n(HT40)/ 802.11ac(HT40) @ 5.8G Band: 5755MHz ~ 5795MHz 802.11ac(HT80): 5775MHz
Channel numbers:	802.11a/802.11n(HT20)/802.11ac(HT20) @5.8G Band: 5 802.11n(HT40)/ 802.11ac(HT40) @ 5.8G Band: 2 802.11ac(HT80): 1
Channel bandwidth:	802.11a/802.11n(HT20)/802.11ac(HT20) : 20MHz 802.11n(HT40)/802.11ac(HT40) : 40MHz 802.11ac(HT80): 80MHz
Modulation technology:	802.11a/802.11n(H20)/802.11n(H40)/802.11ac(HT20)/802.11ac(HT40) /802.11ac(HT80): Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	Integral antenna
Antenna gain:	2.0 dBi(Declared by Applicant)
Power supply:	Adapter: Model: GME24A-120200FXR Input: AC 100-240V, 50-60Hz, 0.8A Output: DC 12V, 2A DC 3.7V, 10000mAh, 37Wh Li-ion battery

Operation Frequency each of channel @ 5.8G Band							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	153	5765MHz	155	5775MHz	157	5785MHz
161	5805MHz	165	5825MHz				

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	**Frequency (MHz)**		
	5.8G Band		
	802.11a 802.11n(HT20)	802.11n(HT40)	802.11ac(HT80)
Lowest channel	5745	5755	
Middle channel	5785		5775
Highest channel	5825	5795	

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test,the test voltage was tuned from AC120V to AC240V, and found that the worst case was the AC120V. So the report just shows that condition's data.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11a	6Mbps
802.11n(HT20)	6.5Mbps
802.11n(HT40)	13Mbps
802.11ac(HT20)	6.5Mbps
802.11ac(HT40)	13.5Mbps
802.11ac(HT80)	29.3Mbps

5.3 Description of Support Units

None.

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

● **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone,

Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Additional Instructions

EUT Software Settings:

Mode	Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

Test Software Name	Ampak RFTestTool,VER:5.5		
Mode	Channel	Frequency (MHz)	Soft Set
OFDM	CH149	5745	TX level : default
	CH151	5755	
	CH155	5775	
	CH157	5785	
	CH159	5795	
	CH165	5825	

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 26 2019	June. 25 2020
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 26 2019	June. 25 2020
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 26 2019	June. 25 2020
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 26 2019	June. 25 2020
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 26 2019	June. 25 2020
9	Coaxial Cable	GTS	N/A	GTS211	June. 26 2019	June. 25 2020
10	Coaxial cable	GTS	N/A	GTS210	June. 26 2019	June. 25 2020
11	Coaxial Cable	GTS	N/A	GTS212	June. 26 2019	June. 25 2020
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 26 2019	June. 25 2020
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 26 2019	June. 25 2020
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 26 2019	June. 25 2020
15	Band filter	Amindeon	82346	GTS219	June. 26 2019	June. 25 2020
16	Power Meter	Anritsu	ML2495A	GTS540	June. 26 2019	June. 25 2020
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 26 2019	June. 25 2020
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 26 2019	June. 25 2020
19	Splitter	Agilent	11636B	GTS237	June. 26 2019	June. 25 2020
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 26 2019	June. 25 2020
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 19 2019	Oct. 18 2020
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 19 2019	Oct. 18 2020
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 19 2019	Oct. 18 2020
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 26 2019	June. 25 2020

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 26 2019	June. 25 2020
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 26 2019	June. 25 2020
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 26 2019	June. 25 2020
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 26 2019	June. 25 2020
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 26 2019	June. 25 2020

RF Conducted Test:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 26 2019	June. 25 2020
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 26 2019	June. 25 2020
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 26 2019	June. 25 2020
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 26 2019	June. 25 2020
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 26 2019	June. 25 2020
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 26 2019	June. 25 2020
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 26 2019	June. 25 2020

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: *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.*	
E.U.T Antenna:	
The antenna is integral antenna. The best case gain of the antenna is 2.0dBi, reference to the appendix II for details.	

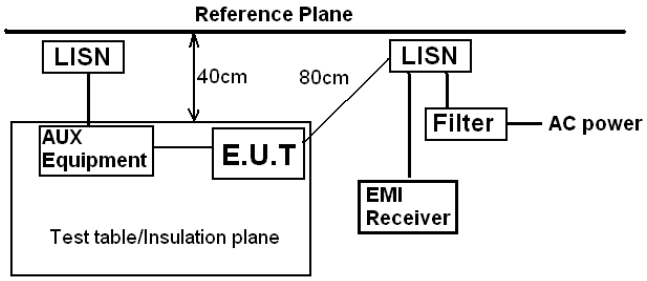
7.2 Conducted Emissions

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, Sweep time=auto
Limit:	

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

* Decreases with the logarithm of the frequency.

Test setup:



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

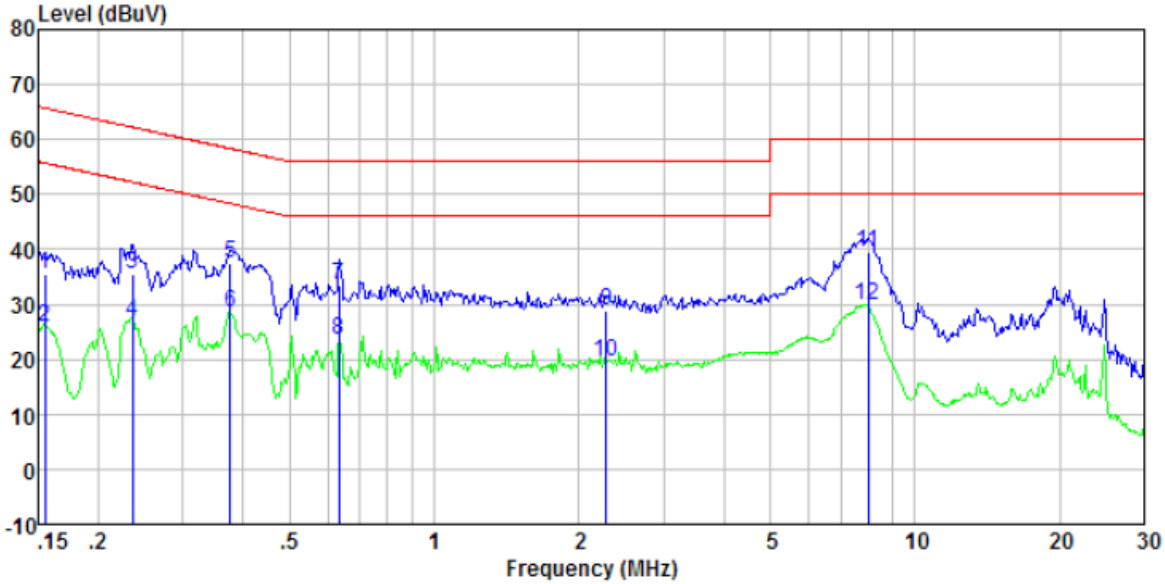
Test procedure:

1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. 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 Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

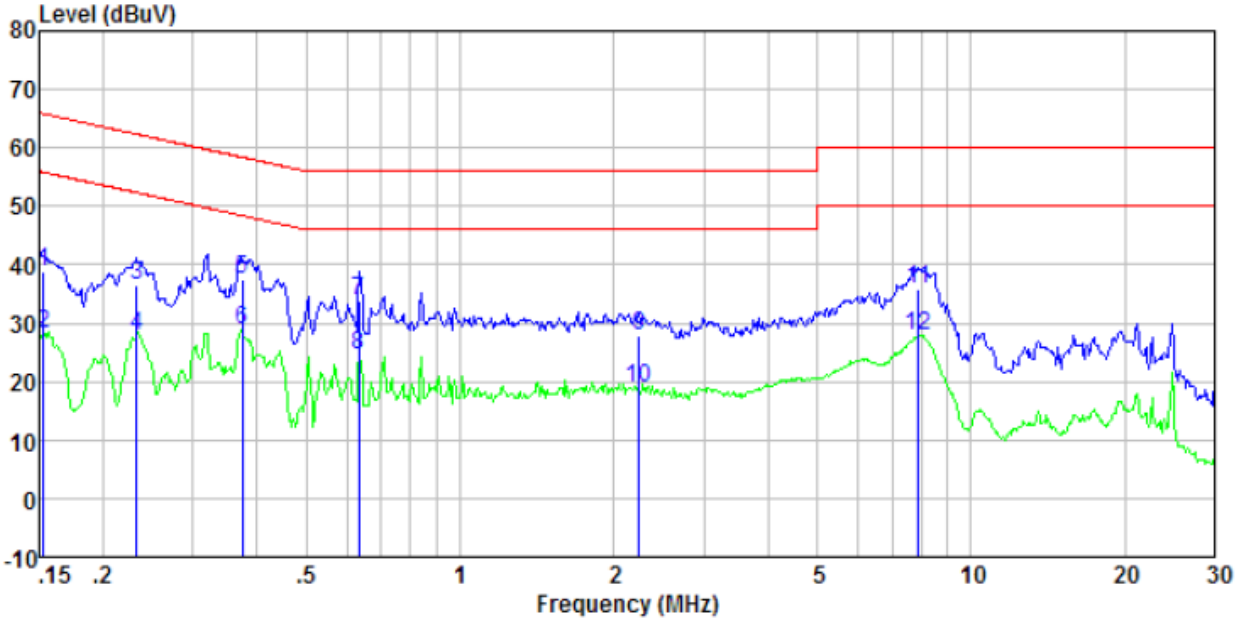
Measurement data

Line:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	15.14	20.40	0.07	35.61	65.74	-30.13	QP
0.15	5.46	20.40	0.07	25.93	55.74	-29.81	Average
0.24	14.94	20.40	0.11	35.45	62.26	-26.81	QP
0.24	6.51	20.40	0.11	27.02	52.26	-25.24	Average
0.38	17.10	20.36	0.10	37.56	58.34	-20.78	QP
0.38	8.07	20.36	0.10	28.53	48.34	-19.81	Average
0.63	13.06	20.28	0.12	33.46	56.00	-22.54	QP
0.63	3.14	20.28	0.12	23.54	46.00	-22.46	Average
2.28	8.64	20.20	0.18	29.02	56.00	-26.98	QP
2.28	-0.96	20.20	0.18	19.42	46.00	-26.58	Average
7.98	19.13	20.20	0.19	39.52	60.00	-20.48	QP
7.98	9.30	20.20	0.19	29.69	50.00	-20.31	Average

Neutral:

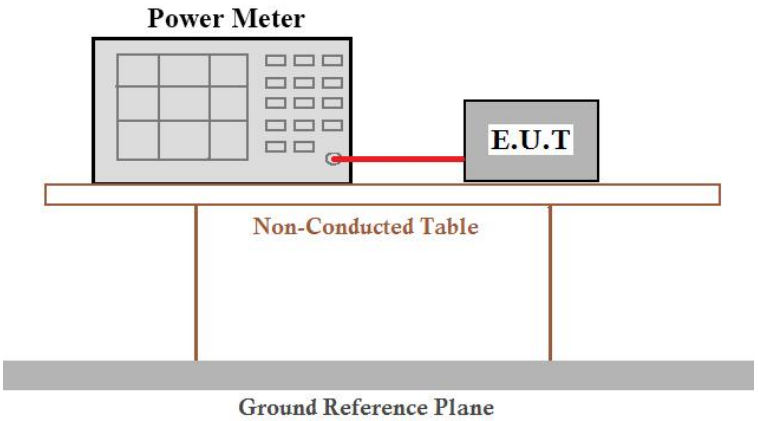


Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	18.41	20.40	0.07	38.88	65.82	-26.94	QP
0.15	7.83	20.40	0.07	28.30	55.82	-27.52	Average
0.23	16.07	20.40	0.11	36.58	62.35	-25.77	QP
0.23	7.41	20.40	0.11	27.92	52.35	-24.43	Average
0.38	17.10	20.36	0.10	37.56	58.39	-20.83	QP
0.38	8.41	20.36	0.10	28.87	48.39	-19.52	Average
0.63	13.48	20.28	0.12	33.88	56.00	-22.12	QP
0.63	4.14	20.28	0.12	24.54	46.00	-21.46	Average
2.24	7.55	20.20	0.18	27.93	56.00	-28.07	QP
2.24	-1.44	20.20	0.18	18.94	46.00	-27.06	Average
7.89	15.45	20.20	0.19	35.84	60.00	-24.16	QP
7.89	7.31	20.20	0.19	27.70	50.00	-22.30	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both *limits and measurement with the average detector receiver is unnecessary.*

7.3 Conducted Peak Output Power

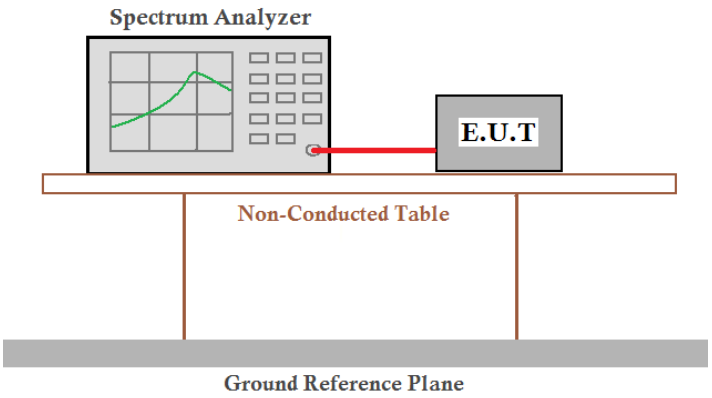
Test Requirement:	FCC Part15 E Section 15.407(a)(3)
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Test CH	Peak Output Power (dBm)						Limit(dBm)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	10.34	10.14	10.08	10.41	10.24	---	30.00	Pass
Middle	10.42	10.35	10.25	---	---	10.28		
Highest	10.15	10.32	10.15	10.55	10.37	---		

Remark: “---“ is not applicable

7.4 Channel Bandwidth

Test Requirement:	FCC Part15 E Section 15.407(e)
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

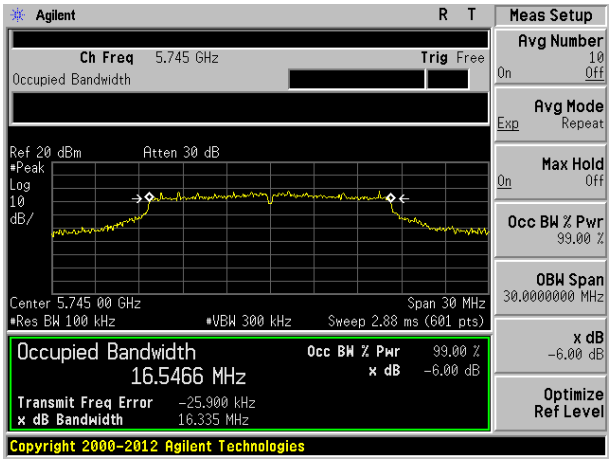
Measurement Data

5.8G Band								
Test CH	Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n(HT20)	802.11ac(HT20)	802.11n(HT40)	802.11ac(HT40)	802.11ac(HT80)		
Lowest	16.335	17.126	17.071	35.421	35.794	---	>500	Pass
Middle	16.112	17.310	17.538	---	---	75.526		
Highest	16.309	16.563	17.309	35.352	36.001	---		

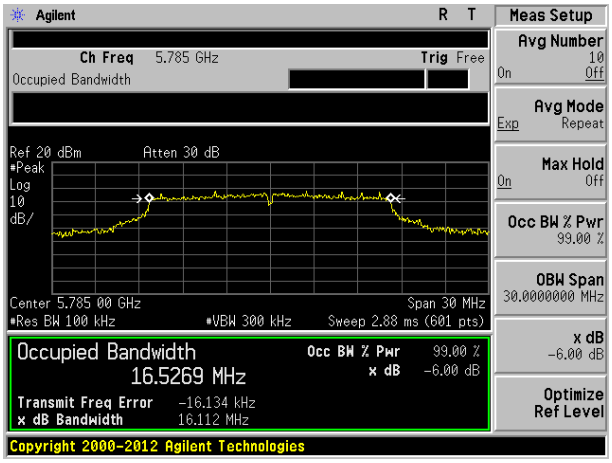
Remark: “---“ is not applicable

Test plot as follows:

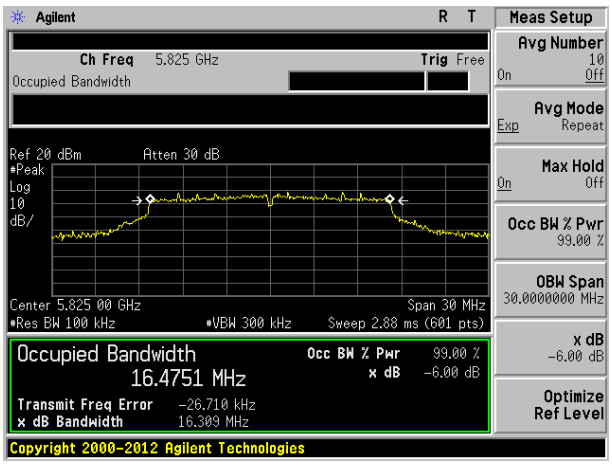
Test mode: 802.11a



Lowest channel

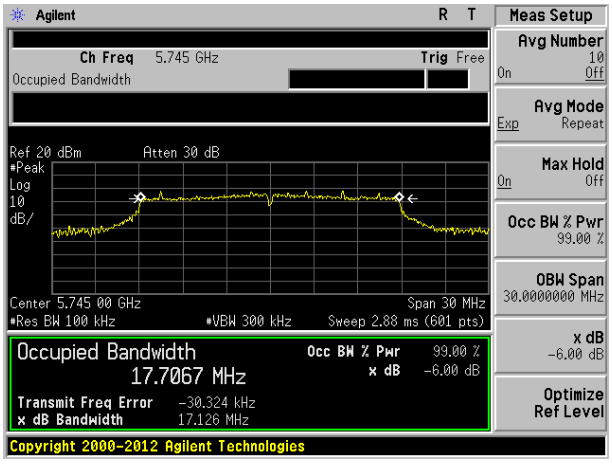


Middle channel

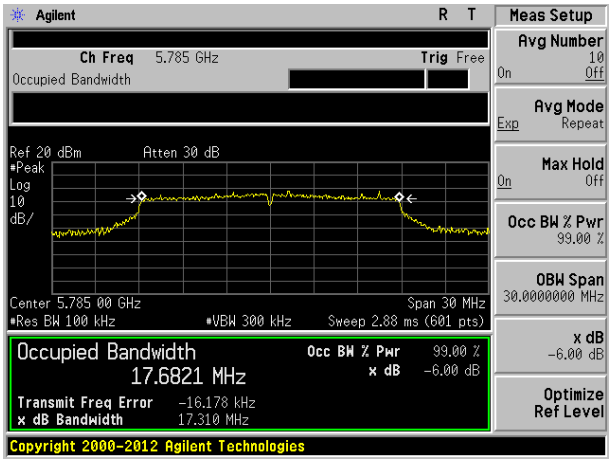


Highest channel

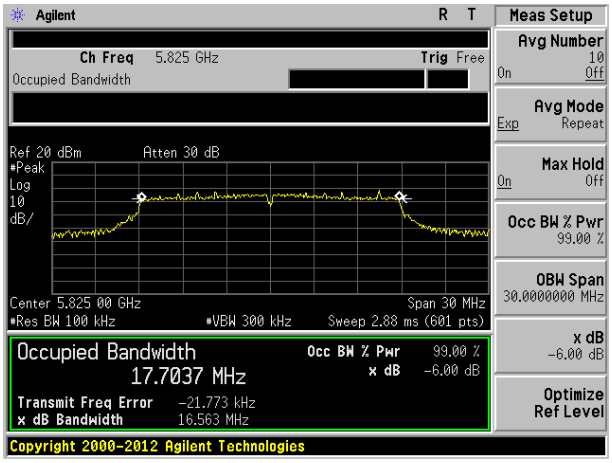
Test mode: 802.11n(HT20) @ 5.8G Band



Lowest channel

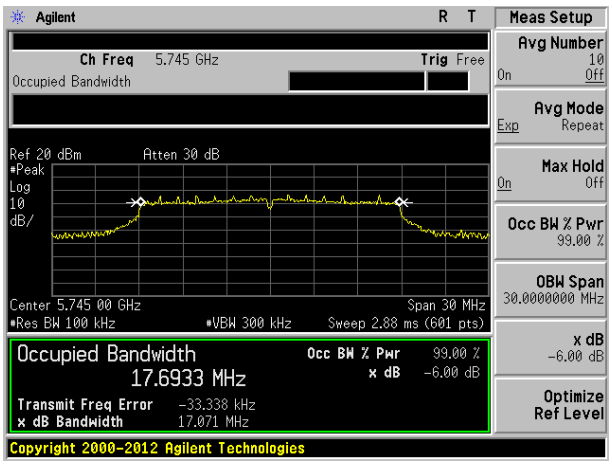


Middle channel

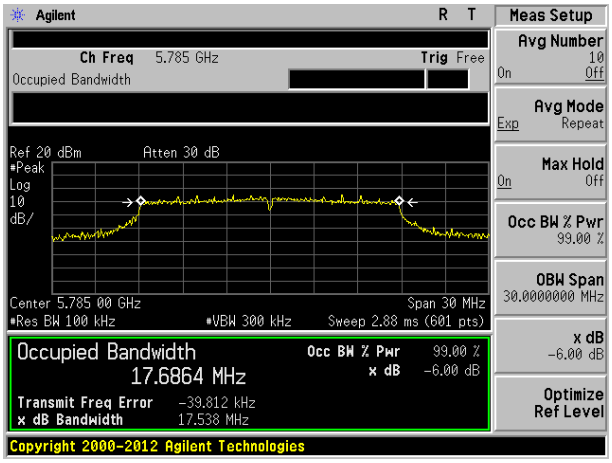


Highest channel

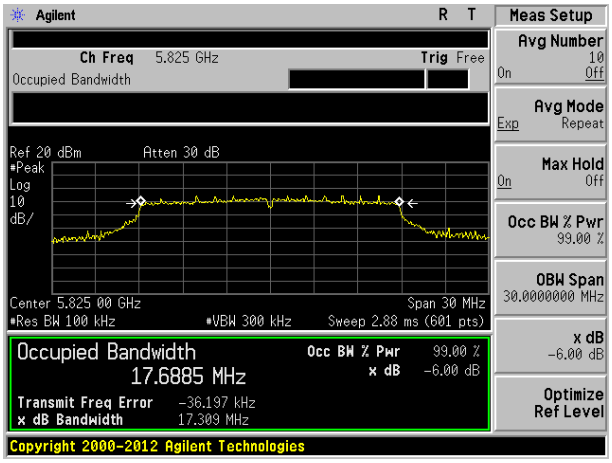
Test mode: 802.11ac(HT20) @ 5.8G Band



Lowest channel

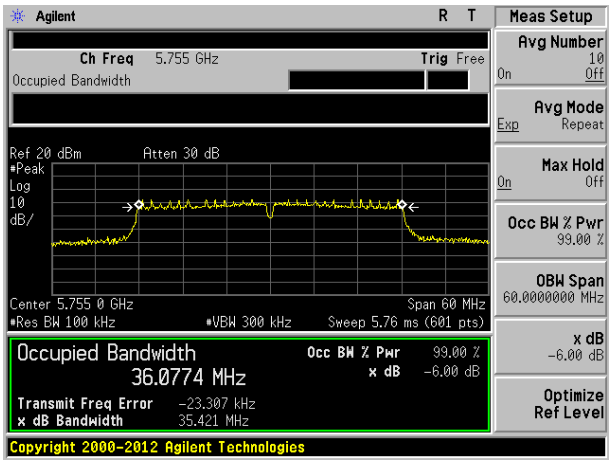


Middle channel

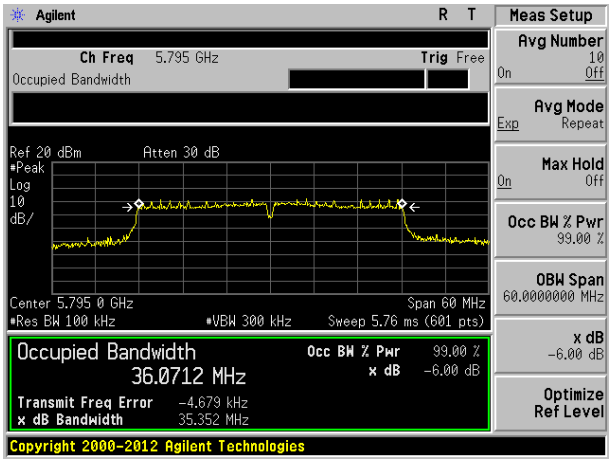


Highest channel

Test mode: 802.11n(HT40) @ 5.8G Band

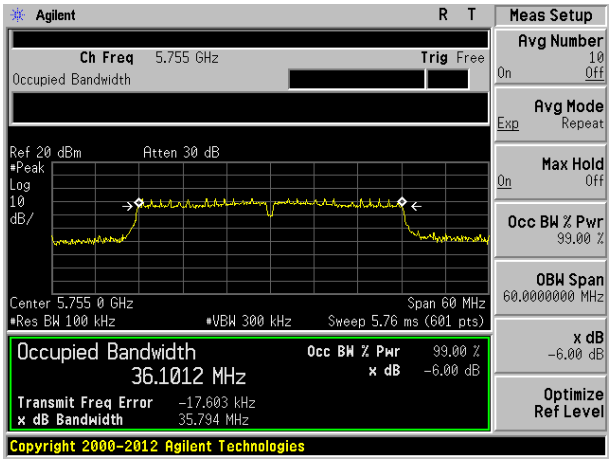


Lowest channel

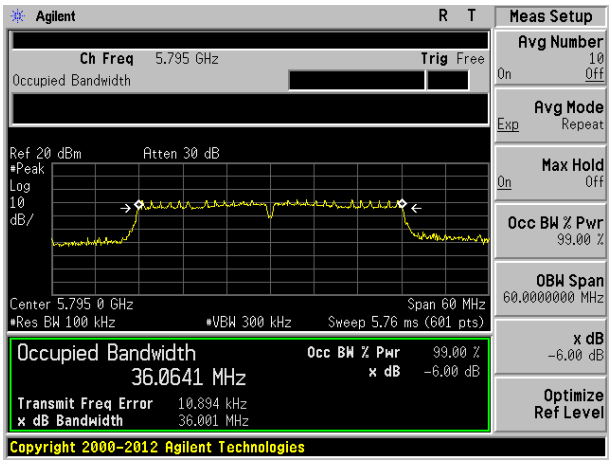


Highest channel

Test mode:802.11ac(HT40) @ 5.8G Band

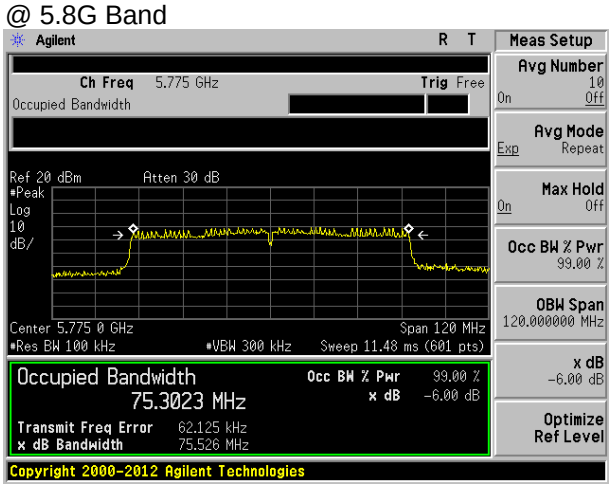


Lowest channel

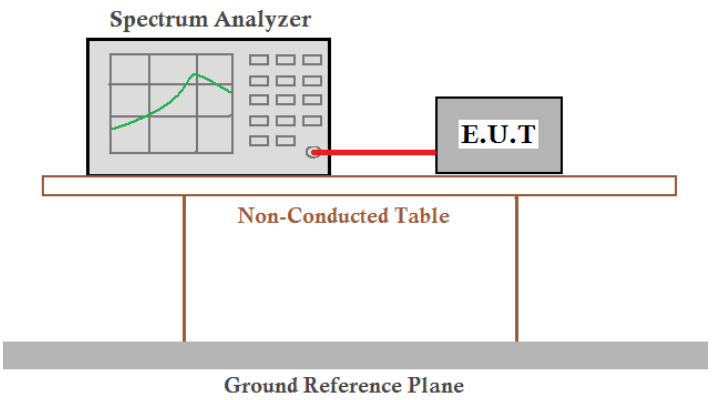


Highest channel

Test mode: 802.11ac(HT80) @ 5.8G Band



7.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407(a)(3)
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

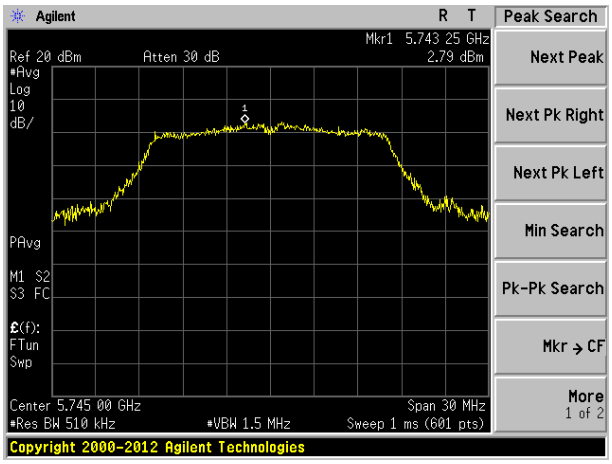
Measurement Data

5.8G Band								
Test CH	Power Spectral Density (dBm)						Limit (dBm/500kHz)	Result
	802.11a	802.11n(HT20)	802.11ac(HT20)	802.11n(HT40)	802.11ac(HT40)	802.11ac(HT80)		
Lowest	2.79	2.89	0.12	-3.06	-4.05	---	30.00	Pass
Middle	2.72	3.25	-0.29	---	---	-8.63		
Highest	3.08	3.56	-0.41	-3.98	-3.77	---		

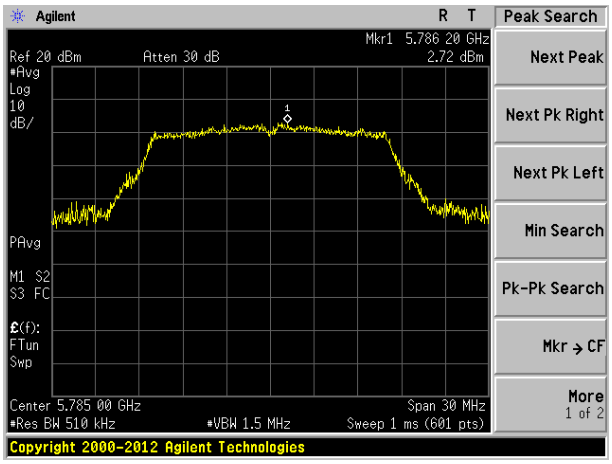
Remark: “---“ is not applicable

Test plot as follows:

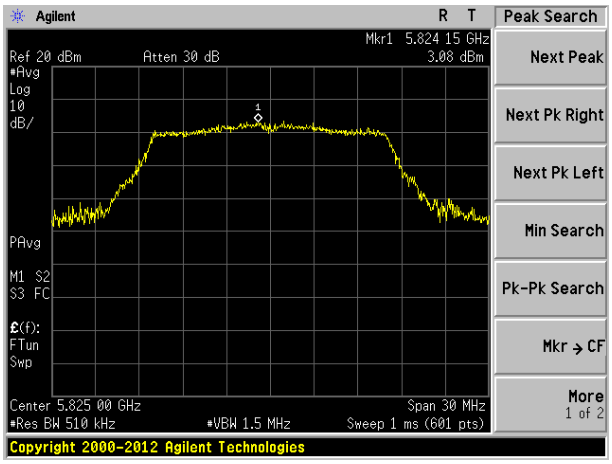
Test mode: 802.11a



Lowest channel

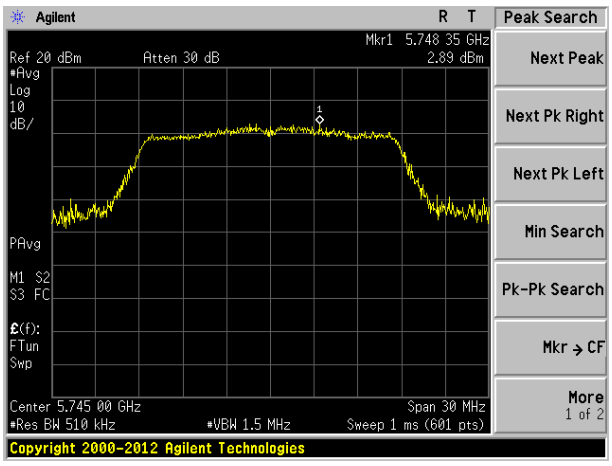


Middle channel

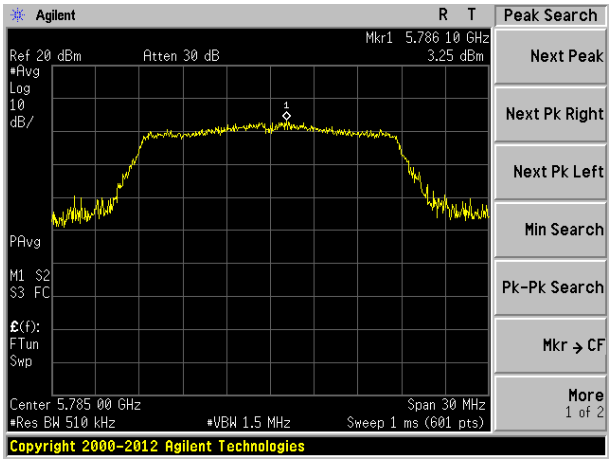


Highest channel

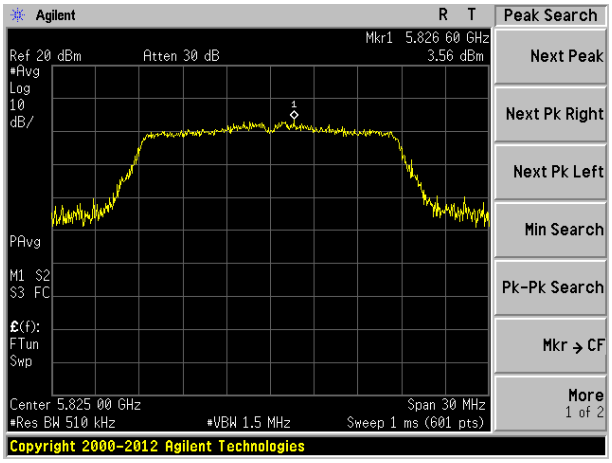
Test mode: 802.11n(HT20) @ 5.8G Band



Lowest channel

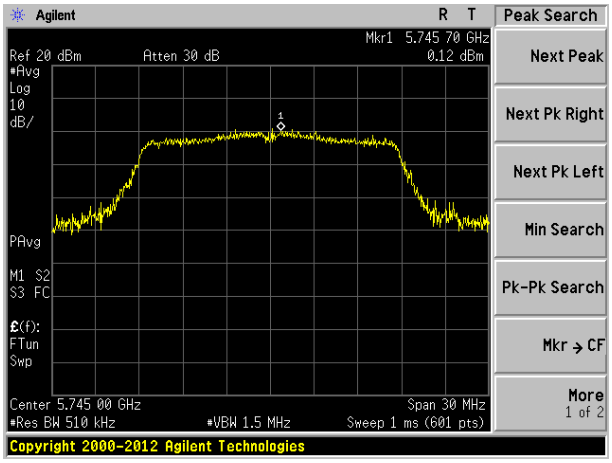


Middle channel

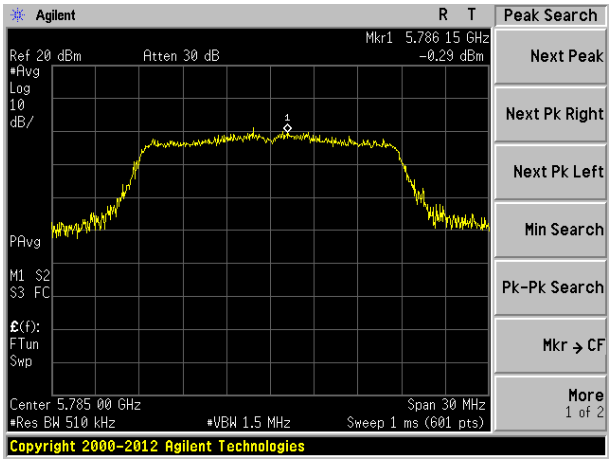


Highest channel

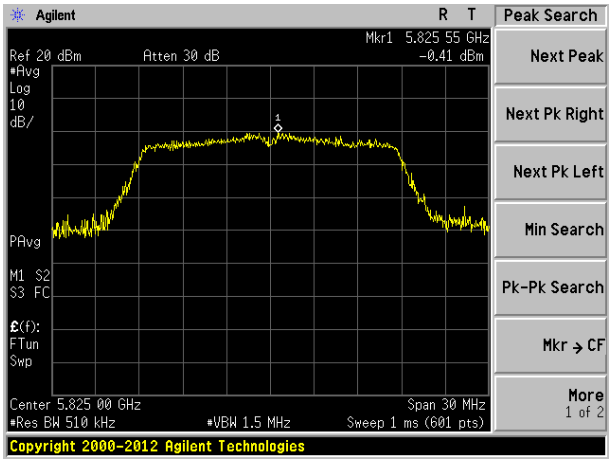
Test mode: 802.11ac(HT20)



Lowest channel

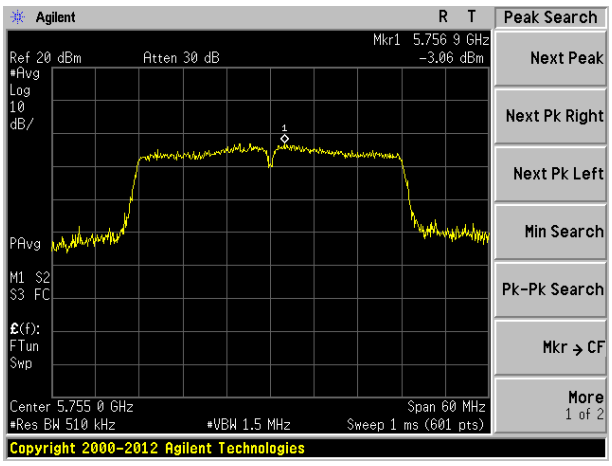


Middle channel

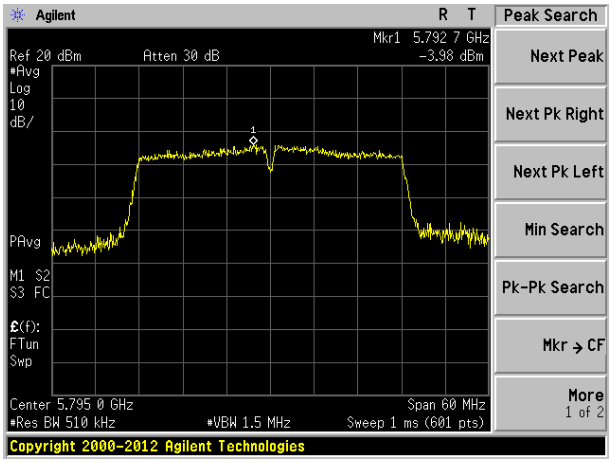


Highest channel

Test mode: 802.11n(HT40) @ 5.8G Band

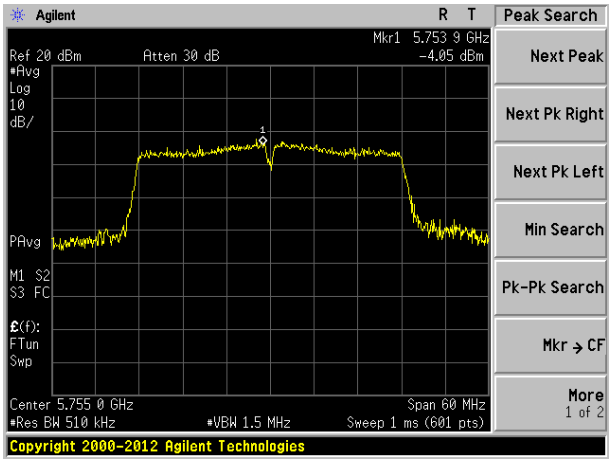


Lowest channel

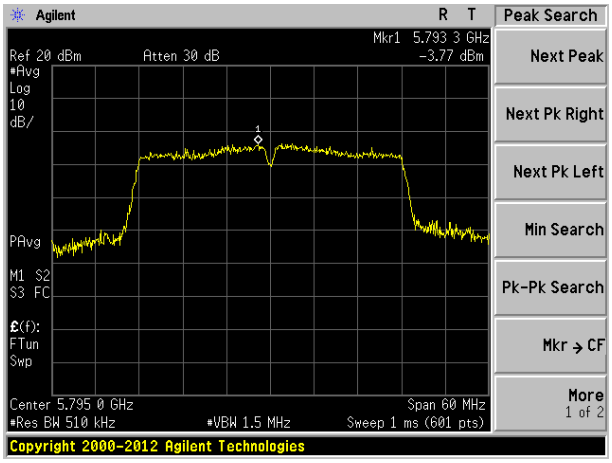


Highest channel

Test mode: 802.11ac(HT40)

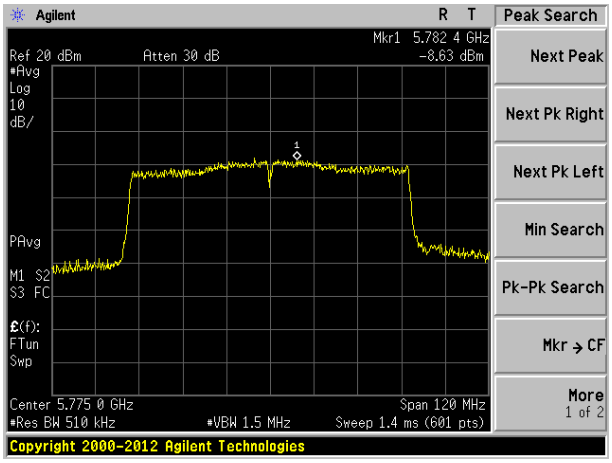


Lowest channel



Highest channel

Test mode: 802.11ac(HT80)



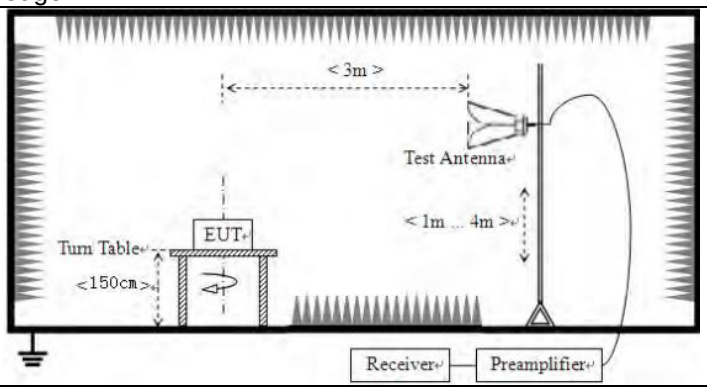
Middle channel

7.6 Band edges

7.6.1 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	9kHz to 40GHz, only worse case is reported
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
Above 1GHz	Peak	1MHz	3MHz	Peak
	RMS	1MHz	3MHz	RMS

Limit:	All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
Test setup:	
Test Procedure:	1. The EUT was placed on the top of a rotating table 1.5 meters 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 rota 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. 7. The radiation measurements are performed in X, Y, Z axis positioning.

	And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remarks:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.*
4. *According to KDB 789033 D02v02r01 section G) 1) d),for measurements above 1000 MHz @3m distance, the limit of field strength is computed as follows:*

   E[dBuV/m] = EIRP[dBm] + 95.2;

   E[dBuV/m] = -27 + 95.2 = 68.2dBuV/m.

   E[dBuV/m] = 10 + 95.2 = 105.2dBuV/m.

   E[dBuV/m] = 15.6 + 95.2 = 110.8dBuV/m.

   E[dBuV/m] = 27 + 95.2 = 122.2dBuV/m

Measurement data:

IEEE 802.11a								
Peak value:								
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
5650.00	35.25	32.36	9.72	23.83	53.50	68.20	-14.70	Horizontal
5700.00	35.63	32.50	9.79	23.84	54.08	68.20	-14.12	Horizontal
5720.00	35.79	32.53	9.81	23.85	54.28	68.20	-13.92	Horizontal
5725.00	39.67	32.53	9.83	23.86	58.17	68.20	-10.03	Horizontal
5850.00	36.06	32.70	9.99	23.87	54.88	68.20	-13.32	Horizontal
5855.00	34.11	32.72	9.99	23.88	52.94	68.20	-15.26	Horizontal
5875.00	35.34	32.74	10.04	23.89	54.23	68.20	-13.97	Horizontal
5925.00	35.41	32.80	10.11	23.90	54.42	68.20	-13.78	Horizontal
5650.00	35.53	32.36	9.72	23.83	53.78	68.20	-14.42	Vertical
5700.00	34.17	32.50	9.79	23.84	52.62	68.20	-15.58	Vertical
5720.00	35.46	32.53	9.81	23.85	53.95	68.20	-14.25	Vertical
5725.00	38.32	32.53	9.83	23.86	56.82	68.20	-11.38	Vertical
5850.00	37.69	32.70	9.99	23.87	56.51	68.20	-11.69	Vertical
5855.00	34.31	32.72	9.99	23.88	53.14	68.20	-15.06	Vertical
5875.00	35.12	32.74	10.04	23.89	54.01	68.20	-14.19	Vertical
5925.00	35.63	32.80	10.11	23.90	54.64	68.20	-13.56	Vertical

IEEE 802.11a								
Average value:								
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
5650.00	25.12	32.36	9.72	23.83	43.37	54.00	-10.63	Horizontal
5700.00	25.31	32.50	9.79	23.84	43.76	54.00	-10.24	Horizontal
5720.00	24.42	32.53	9.81	23.85	42.91	54.00	-11.09	Horizontal
5725.00	29.12	32.53	9.83	23.86	47.62	54.00	-6.38	Horizontal
5850.00	28.42	32.70	9.99	23.87	47.24	54.00	-6.76	Horizontal
5855.00	25.71	32.72	9.99	23.88	44.54	54.00	-9.46	Horizontal
5875.00	24.98	32.74	10.04	23.89	43.87	54.00	-10.13	Horizontal
5925.00	25.37	32.80	10.11	23.90	44.38	54.00	-9.62	Horizontal
5650.00	25.16	32.36	9.72	23.83	43.41	54.00	-10.59	Vertical
5700.00	25.44	32.50	9.79	23.84	43.89	54.00	-10.11	Vertical
5720.00	25.46	32.53	9.81	23.85	43.95	54.00	-10.05	Vertical
5725.00	29.13	32.53	9.83	23.86	47.63	54.00	-6.37	Vertical
5850.00	28.52	32.70	9.99	23.87	47.34	54.00	-6.66	Vertical
5855.00	24.89	32.72	9.99	23.88	43.72	54.00	-10.28	Vertical
5875.00	25.07	32.74	10.04	23.89	43.96	54.00	-10.04	Vertical
5925.00	25.39	32.80	10.11	23.90	44.40	54.00	-9.60	Vertical

Remark:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

The emission levels of other frequencies are very lower than the limit and not show in test report.

IEEE 802.11n HT20								
Peak value:								
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
5650.00	35.12	32.36	9.72	23.83	53.37	68.20	-14.83	Horizontal
5700.00	35.87	32.50	9.79	23.84	54.32	68.20	-13.88	Horizontal
5720.00	36.02	32.53	9.81	23.85	54.51	68.20	-13.69	Horizontal
5725.00	39.81	32.53	9.83	23.86	58.31	68.20	-9.89	Horizontal
5850.00	37.62	32.70	9.99	23.87	56.44	68.20	-11.76	Horizontal
5855.00	35.66	32.72	9.99	23.88	54.49	68.20	-13.71	Horizontal
5875.00	35.17	32.74	10.04	23.89	54.06	68.20	-14.14	Horizontal
5925.00	35.09	32.80	10.11	23.90	54.10	68.20	-14.10	Horizontal
5650.00	35.79	32.36	9.72	23.83	54.04	68.20	-14.16	Vertical
5700.00	35.83	32.50	9.79	23.84	54.28	68.20	-13.92	Vertical
5720.00	34.74	32.53	9.81	23.85	53.23	68.20	-14.97	Vertical
5725.00	38.33	32.53	9.83	23.86	56.83	68.20	-11.37	Vertical
5850.00	37.52	32.70	9.99	23.87	56.34	68.20	-11.86	Vertical
5855.00	35.12	32.72	9.99	23.88	53.95	68.20	-14.25	Vertical
5875.00	35.47	32.74	10.04	23.89	54.36	68.20	-13.84	Vertical
5925.00	34.98	32.80	10.11	23.90	53.99	68.20	-14.21	Vertical

IEEE 802.11n HT20								
Average value:								
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
5650.00	25.36	32.36	9.72	23.83	43.61	54.00	-10.39	Horizontal
5700.00	25.39	32.50	9.79	23.84	43.84	54.00	-10.16	Horizontal
5720.00	25.42	32.53	9.81	23.85	43.91	54.00	-10.09	Horizontal
5725.00	29.83	32.53	9.83	23.86	48.33	54.00	-5.67	Horizontal
5850.00	28.11	32.70	9.99	23.87	46.93	54.00	-7.07	Horizontal
5855.00	25.63	32.72	9.99	23.88	44.46	54.00	-9.54	Horizontal
5875.00	25.18	32.74	10.04	23.89	44.07	54.00	-9.93	Horizontal
5925.00	25.30	32.80	10.11	23.90	44.31	54.00	-9.69	Horizontal
5650.00	25.09	32.36	9.72	23.83	43.34	54.00	-10.66	Vertical
5700.00	25.44	32.50	9.79	23.84	43.89	54.00	-10.11	Vertical
5720.00	25.39	32.53	9.81	23.85	43.88	54.00	-10.12	Vertical
5725.00	29.37	32.53	9.83	23.86	47.87	54.00	-6.13	Vertical
5850.00	28.03	32.70	9.99	23.87	46.85	54.00	-7.15	Vertical
5855.00	25.36	32.72	9.99	23.88	44.19	54.00	-9.81	Vertical
5875.00	25.11	32.74	10.04	23.89	44.00	54.00	-10.00	Vertical
5925.00	25.36	32.80	10.11	23.90	44.37	54.00	-9.63	Vertical

IEEE 802.11ac HT20								
Peak value:								
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
5650.00	35.42	32.36	9.72	23.83	53.67	68.20	-14.53	Horizontal
5700.00	35.36	32.50	9.79	23.84	53.81	68.20	-14.39	Horizontal
5720.00	35.18	32.53	9.81	23.85	53.67	68.20	-14.53	Horizontal
5725.00	38.92	32.53	9.83	23.86	57.42	68.20	-10.78	Horizontal
5850.00	37.66	32.70	9.99	23.87	56.48	68.20	-11.72	Horizontal
5855.00	35.61	32.72	9.99	23.88	54.44	68.20	-13.76	Horizontal
5875.00	35.09	32.74	10.04	23.89	53.98	68.20	-14.22	Horizontal
5925.00	35.10	32.80	10.11	23.90	54.11	68.20	-14.09	Horizontal
5650.00	35.23	32.36	9.72	23.83	53.48	68.20	-14.72	Vertical
5700.00	35.44	32.50	9.79	23.84	53.89	68.20	-14.31	Vertical
5720.00	35.67	32.53	9.81	23.85	54.16	68.20	-14.04	Vertical
5725.00	38.42	32.53	9.83	23.86	56.92	68.20	-11.28	Vertical
5850.00	37.68	32.70	9.99	23.87	56.50	68.20	-11.70	Vertical
5855.00	35.29	32.72	9.99	23.88	54.12	68.20	-14.08	Vertical
5875.00	35.26	32.74	10.04	23.89	54.15	68.20	-14.05	Vertical
5925.00	35.40	32.80	10.11	23.90	54.41	68.20	-13.79	Vertical

IEEE 802.11ac HT20								
Average value:								
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
5650.00	25.69	32.36	9.72	23.83	43.94	54.00	-10.06	Horizontal
5700.00	26.33	32.50	9.79	23.84	44.78	54.00	-9.22	Horizontal
5720.00	25.14	32.53	9.81	23.85	43.63	54.00	-10.37	Horizontal
5725.00	29.30	32.53	9.83	23.86	47.80	54.00	-6.20	Horizontal
5850.00	28.45	32.70	9.99	23.87	47.27	54.00	-6.73	Horizontal
5855.00	25.60	32.72	9.99	23.88	44.43	54.00	-9.57	Horizontal
5875.00	25.11	32.74	10.04	23.89	44.00	54.00	-10.00	Horizontal
5925.00	25.37	32.80	10.11	23.90	44.38	54.00	-9.62	Horizontal
5650.00	25.09	32.36	9.72	23.83	43.34	54.00	-10.66	Vertical
5700.00	25.88	32.50	9.79	23.84	44.33	54.00	-9.67	Vertical
5720.00	25.42	32.53	9.81	23.85	43.91	54.00	-10.09	Vertical
5725.00	29.07	32.53	9.83	23.86	47.57	54.00	-6.43	Vertical
5850.00	28.52	32.70	9.99	23.87	47.34	54.00	-6.66	Vertical
5855.00	25.13	32.72	9.99	23.88	43.96	54.00	-10.04	Vertical
5875.00	25.37	32.74	10.04	23.89	44.26	54.00	-9.74	Vertical
5925.00	25.61	32.80	10.11	23.90	44.62	54.00	-9.38	Vertical

IEEE 802.11n HT40								
Peak value:								
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
5650.00	35.32	32.36	9.72	23.83	53.57	68.20	-14.63	Horizontal
5700.00	35.50	32.50	9.79	23.84	53.95	68.20	-14.25	Horizontal
5720.00	35.53	32.53	9.81	23.85	54.02	68.20	-14.18	Horizontal
5725.00	38.28	32.53	9.83	23.86	56.78	68.20	-11.42	Horizontal
5850.00	37.72	32.70	9.99	23.87	56.54	68.20	-11.66	Horizontal
5855.00	35.31	32.72	9.99	23.88	54.14	68.20	-14.06	Horizontal
5875.00	35.13	32.74	10.04	23.89	54.02	68.20	-14.18	Horizontal
5925.00	35.77	32.80	10.11	23.90	54.78	68.20	-13.42	Horizontal
5650.00	35.44	32.36	9.72	23.83	53.69	68.20	-14.51	Vertical
5700.00	35.09	32.50	9.79	23.84	53.54	68.20	-14.66	Vertical
5720.00	35.81	32.53	9.81	23.85	54.30	68.20	-13.90	Vertical
5725.00	38.62	32.53	9.83	23.86	57.12	68.20	-11.08	Vertical
5850.00	37.44	32.70	9.99	23.87	56.26	68.20	-11.94	Vertical
5855.00	35.52	32.72	9.99	23.88	54.35	68.20	-13.85	Vertical
5875.00	35.66	32.74	10.04	23.89	54.55	68.20	-13.65	Vertical
5925.00	35.08	32.80	10.11	23.90	54.09	68.20	-14.11	Vertical

IEEE 802.11n HT40								
Average value:								
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
5650.00	25.50	32.36	9.72	23.83	43.75	54.00	-10.25	Horizontal
5700.00	26.84	32.50	9.79	23.84	45.29	54.00	-8.71	Horizontal
5720.00	25.31	32.53	9.81	23.85	43.80	54.00	-10.20	Horizontal
5725.00	29.87	32.53	9.83	23.86	48.37	54.00	-5.63	Horizontal
5850.00	28.62	32.70	9.99	23.87	47.44	54.00	-6.56	Horizontal
5855.00	25.66	32.72	9.99	23.88	44.49	54.00	-9.51	Horizontal
5875.00	25.04	32.74	10.04	23.89	43.93	54.00	-10.07	Horizontal
5925.00	25.74	32.80	10.11	23.90	44.75	54.00	-9.25	Horizontal
5650.00	25.25	32.36	9.72	23.83	43.50	54.00	-10.50	Vertical
5700.00	25.17	32.50	9.79	23.84	43.62	54.00	-10.38	Vertical
5720.00	25.09	32.53	9.81	23.85	43.58	54.00	-10.42	Vertical
5725.00	29.77	32.53	9.83	23.86	48.27	54.00	-5.73	Vertical
5850.00	28.60	32.70	9.99	23.87	47.42	54.00	-6.58	Vertical
5855.00	25.70	32.72	9.99	23.88	44.53	54.00	-9.47	Vertical
5875.00	25.05	32.74	10.04	23.89	43.94	54.00	-10.06	Vertical
5925.00	25.80	32.80	10.11	23.90	44.81	54.00	-9.19	Vertical

IEEE 802.11ac HT40								
Peak value:								
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
5650.00	35.42	32.36	9.72	23.83	53.67	68.20	-14.53	Horizontal
5700.00	35.09	32.50	9.79	23.84	53.54	68.20	-14.66	Horizontal
5720.00	35.14	32.53	9.81	23.85	53.63	68.20	-14.57	Horizontal
5725.00	39.65	32.53	9.83	23.86	58.15	68.20	-10.05	Horizontal
5850.00	38.06	32.70	9.99	23.87	56.88	68.20	-11.32	Horizontal
5855.00	35.27	32.72	9.99	23.88	54.10	68.20	-14.10	Horizontal
5875.00	35.11	32.74	10.04	23.89	54.00	68.20	-14.20	Horizontal
5925.00	35.36	32.80	10.11	23.90	54.37	68.20	-13.83	Horizontal
5650.00	35.44	32.36	9.72	23.83	53.69	68.20	-14.51	Vertical
5700.00	35.30	32.50	9.79	23.84	53.75	68.20	-14.45	Vertical
5720.00	35.80	32.53	9.81	23.85	54.29	68.20	-13.91	Vertical
5725.00	38.44	32.53	9.83	23.86	56.94	68.20	-11.26	Vertical
5850.00	37.72	32.70	9.99	23.87	56.54	68.20	-11.66	Vertical
5855.00	35.89	32.72	9.99	23.88	54.72	68.20	-13.48	Vertical
5875.00	35.13	32.74	10.04	23.89	54.02	68.20	-14.18	Vertical
5925.00	35.79	32.80	10.11	23.90	54.80	68.20	-13.40	Vertical

IEEE 802.11ac HT40								
Average value:								
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
5650.00	25.53	32.36	9.72	23.83	43.78	54.00	-10.22	Horizontal
5700.00	26.33	32.50	9.79	23.84	44.78	54.00	-9.22	Horizontal
5720.00	25.42	32.53	9.81	23.85	43.91	54.00	-10.09	Horizontal
5725.00	29.55	32.53	9.83	23.86	48.05	54.00	-5.95	Horizontal
5850.00	28.67	32.70	9.99	23.87	47.49	54.00	-6.51	Horizontal
5855.00	25.44	32.72	9.99	23.88	44.27	54.00	-9.73	Horizontal
5875.00	25.51	32.74	10.04	23.89	44.40	54.00	-9.60	Horizontal
5925.00	25.79	32.80	10.11	23.90	44.80	54.00	-9.20	Horizontal
5650.00	25.15	32.36	9.72	23.83	43.40	54.00	-10.60	Vertical
5700.00	25.63	32.50	9.79	23.84	44.08	54.00	-9.92	Vertical
5720.00	25.60	32.53	9.81	23.85	44.09	54.00	-9.91	Vertical
5725.00	29.48	32.53	9.83	23.86	47.98	54.00	-6.02	Vertical
5850.00	28.72	32.70	9.99	23.87	47.54	54.00	-6.46	Vertical
5855.00	25.44	32.72	9.99	23.88	44.27	54.00	-9.73	Vertical
5875.00	25.36	32.74	10.04	23.89	44.25	54.00	-9.75	Vertical
5925.00	25.78	32.80	10.11	23.90	44.79	54.00	-9.21	Vertical

IEEE 802.11ac HT80								
Peak value:								
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
5650.00	35.84	32.36	9.72	23.83	54.09	68.20	-14.11	Horizontal
5700.00	35.20	32.50	9.79	23.84	53.65	68.20	-14.55	Horizontal
5720.00	35.11	32.53	9.81	23.85	53.60	68.20	-14.60	Horizontal
5725.00	39.86	32.53	9.83	23.86	58.36	68.20	-9.84	Horizontal
5850.00	38.47	32.70	9.99	23.87	57.29	68.20	-10.91	Horizontal
5855.00	35.20	32.72	9.99	23.88	54.03	68.20	-14.17	Horizontal
5875.00	35.19	32.74	10.04	23.89	54.08	68.20	-14.12	Horizontal
5925.00	35.42	32.80	10.11	23.90	54.43	68.20	-13.77	Horizontal
5650.00	35.63	32.36	9.72	23.83	53.88	68.20	-14.32	Vertical
5700.00	35.88	32.50	9.79	23.84	54.33	68.20	-13.87	Vertical
5720.00	35.75	32.53	9.81	23.85	54.24	68.20	-13.96	Vertical
5725.00	38.45	32.53	9.83	23.86	56.95	68.20	-11.25	Vertical
5850.00	37.96	32.70	9.99	23.87	56.78	68.20	-11.42	Vertical
5855.00	35.77	32.72	9.99	23.88	54.60	68.20	-13.60	Vertical
5875.00	35.02	32.74	10.04	23.89	53.91	68.20	-14.29	Vertical
5925.00	35.82	32.80	10.11	23.90	54.83	68.20	-13.37	Vertical

IEEE 802.11ac HT40								
Average value:								
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
5650.00	25.17	32.36	9.72	23.83	43.42	54.00	-10.58	Horizontal
5700.00	26.08	32.50	9.79	23.84	44.53	54.00	-9.47	Horizontal
5720.00	25.36	32.53	9.81	23.85	43.85	54.00	-10.15	Horizontal
5725.00	29.77	32.53	9.83	23.86	48.27	54.00	-5.73	Horizontal
5850.00	28.30	32.70	9.99	23.87	47.12	54.00	-6.88	Horizontal
5855.00	25.15	32.72	9.99	23.88	43.98	54.00	-10.02	Horizontal
5875.00	25.48	32.74	10.04	23.89	44.37	54.00	-9.63	Horizontal
5925.00	25.37	32.80	10.11	23.90	44.38	54.00	-9.62	Horizontal
5650.00	25.49	32.36	9.72	23.83	43.74	54.00	-10.26	Vertical
5700.00	25.67	32.50	9.79	23.84	44.12	54.00	-9.88	Vertical
5720.00	25.33	32.53	9.81	23.85	43.82	54.00	-10.18	Vertical
5725.00	28.58	32.53	9.83	23.86	47.08	54.00	-6.92	Vertical
5850.00	28.34	32.70	9.99	23.87	47.16	54.00	-6.84	Vertical
5855.00	25.67	32.72	9.99	23.88	44.50	54.00	-9.50	Vertical
5875.00	25.26	32.74	10.04	23.89	44.15	54.00	-9.85	Vertical
5925.00	25.29	32.80	10.11	23.90	44.30	54.00	-9.70	Vertical

Remark:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

The emission levels of other frequencies are very lower than the limit and not show

7.7 Spurious Emission

7.7.1 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 40GHz
Test site:	Measurement Distance: 3m

Receiver setup:

Frequency	Detector	RBW	VBW	Value
9kHz-150KHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	AV	1MHz	3MHz	Average Value

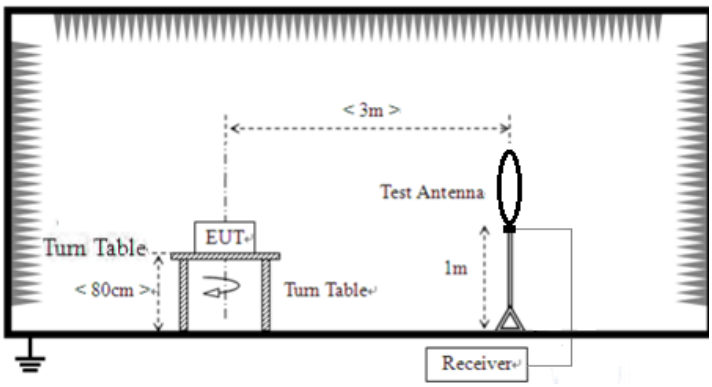
Limit:

Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	300m
1.705MHz-30MHz	30	QP	30m
30MHz-88MHz	100	QP	3m
88MHz-216MHz	150	QP	
216MHz-960MHz	200	QP	
960MHz-1GHz	500	QP	

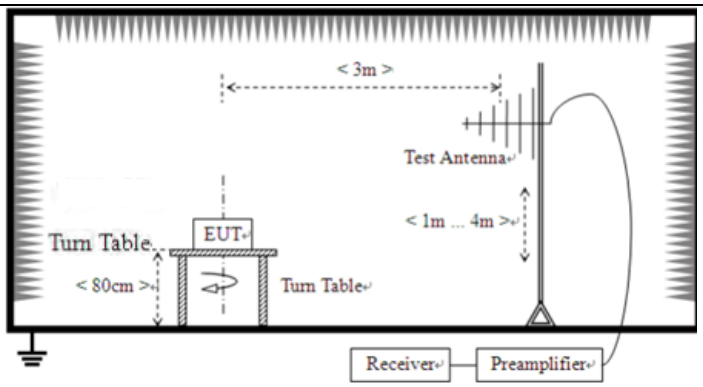
Frequency	Limit (dBm/MHz)	Remark
Above 1GHz	-27.0	Peak Value

Test setup:

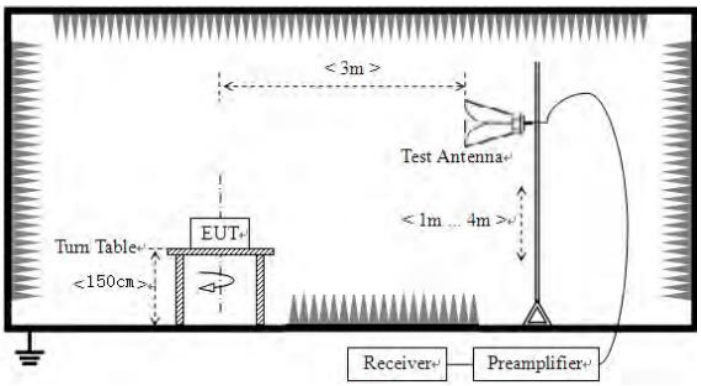
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to1GHz



For radiated emissions above 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 rota 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. 7. The radiation measurements are performed in X, Y, Z axis positioning.

	And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Remarks:

1. *Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.*

Measurement Data:

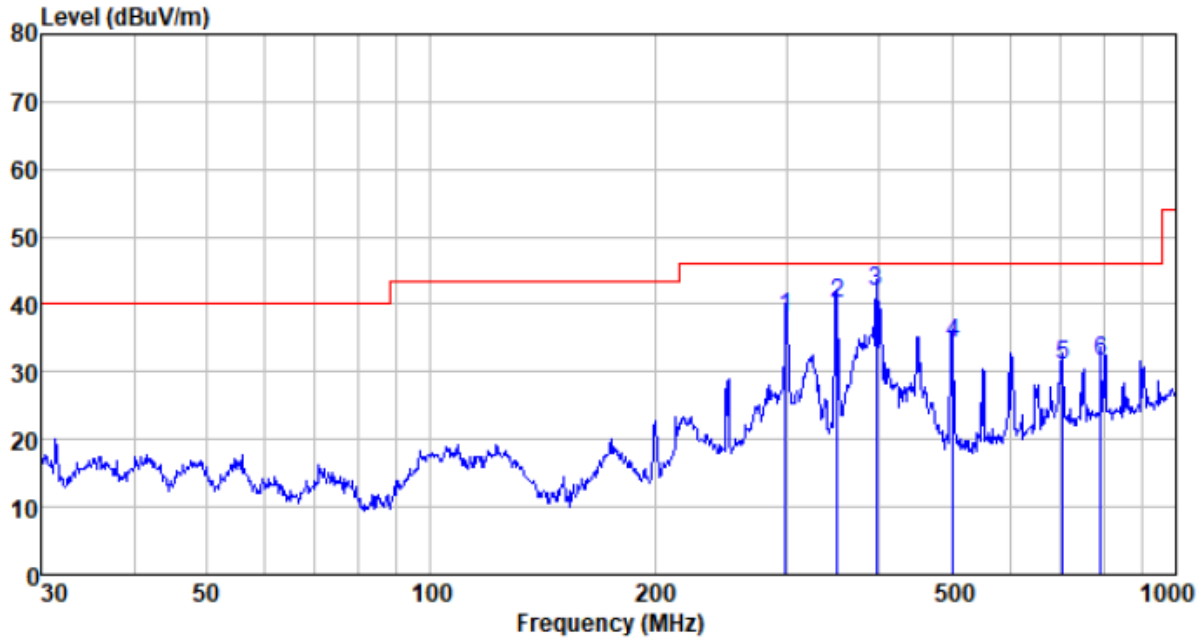
9 kHz ~ 30 MHz

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

Below 1GHz

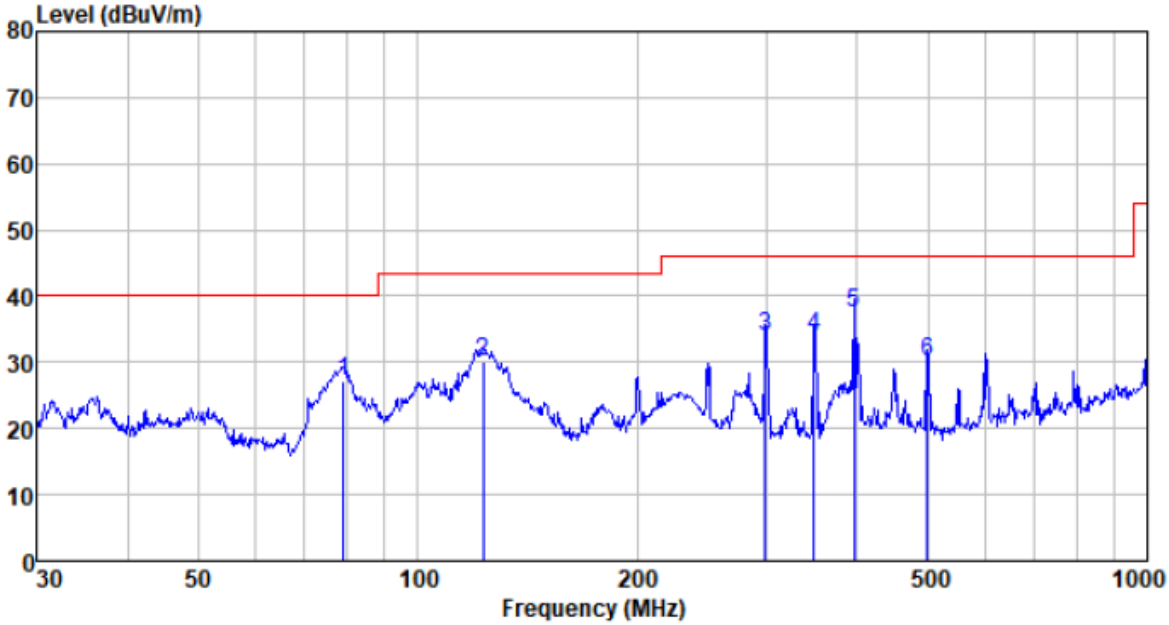
Pre-scan all test modes, found worst case at 802.11ac(HT80), and so only show the test result of 802.11ac(HT80)

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
299.316	59.51	13.60	2.35	37.42	38.04	46.00	-7.96	QP
351.708	60.41	14.56	2.63	37.48	40.12	46.00	-5.88	QP
396.242	61.24	15.25	2.83	37.52	41.80	46.00	-4.20	QP
502.940	51.07	17.35	3.32	37.51	34.23	46.00	-11.77	QP
704.226	44.76	19.66	4.10	37.63	30.89	46.00	-15.11	QP
793.396	43.49	21.28	4.43	37.62	31.58	46.00	-14.42	QP

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
78.965	55.40	7.41	1.02	36.54	27.29	40.00	-12.71	QP
122.834	56.48	9.12	1.38	36.90	30.08	43.50	-13.42	QP
299.316	55.28	13.60	2.35	37.42	33.81	46.00	-12.19	QP
349.250	54.19	14.50	2.62	37.47	33.84	46.00	-12.16	QP
396.242	56.90	15.25	2.83	37.52	37.46	46.00	-8.54	QP
499.425	46.89	17.30	3.30	37.51	29.98	46.00	-16.02	QP

Above 1GHz:

802.11a,11n(HT20),11ac(HT20),11n(HT40),11ac(HT40),11ac(HT80) all have been tested ,Only the data of worst case at each channel plan (nominal bandwidth =20MHz, 40MHz, 80MHz) is reported.

Test mode:		802.11a		Test channel:		lowest	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11490	21.33	21.64	42.97	54(Note3)	-11.03	PK
V	17235	21.85	21.80	43.65	54(Note3)	-10.35	PK
H	11490	22.49	21.83	44.32	54(Note3)	-9.68	PK
H	17235	20.97	21.67	42.64	54(Note3)	-11.36	PK

Test mode:		802.11a		Test channel:		Middle	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11570	19.87	21.64	41.51	54(Note3)	-12.49	PK
V	17355	20.36	21.80	42.16	54(Note3)	-11.84	PK
H	11570	20.65	21.83	42.48	54(Note3)	-11.52	PK
H	17355	21.77	21.67	43.44	54(Note3)	-10.56	PK

Test mode:		802.11a		Test channel:		Highest	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11650	21.53	21.64	43.17	54(Note3)	-10.83	PK
V	17475	21.12	21.80	42.92	54(Note3)	-11.08	PK
H	11650	20.36	21.83	42.19	54(Note3)	-11.81	PK
H	17475	20.74	21.67	42.41	54(Note3)	-11.59	PK

Test mode:		802.11ac(HT40)		Test channel:		Lowest	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11510	22.36	21.67	44.03	54(Note3)	-9.97	PK
V	17265	21.45	21.83	43.28	54(Note3)	-10.72	PK
H	11510	20.96	21.67	42.63	54(Note3)	-11.37	PK
H	17265	22.07	21.83	43.90	54(Note3)	-10.10	PK

Test mode:		802.11ac(HT40)		Test channel:		Highest	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11590	21.56	21.67	43.23	54(Note3)	-10.77	PK
V	17385	21.41	21.83	43.24	54(Note3)	-10.76	PK
H	11590	22.03	21.67	43.70	54(Note3)	-10.30	PK
H	17385	21.89	21.83	43.72	54(Note3)	-10.28	PK

Test mode:		802.11ac(HT80)		Test channel:		Middle	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11550.00	20.36	21.65	42.01	54(Note3)	-11.99	PK
V	17325.00	20.23	21.81	42.04	54(Note3)	-11.96	PK
H	11550.00	20.58	21.65	42.23	54(Note3)	-11.77	PK
H	17325.00	21.67	21.81	43.48	54(Note3)	-10.52	PK

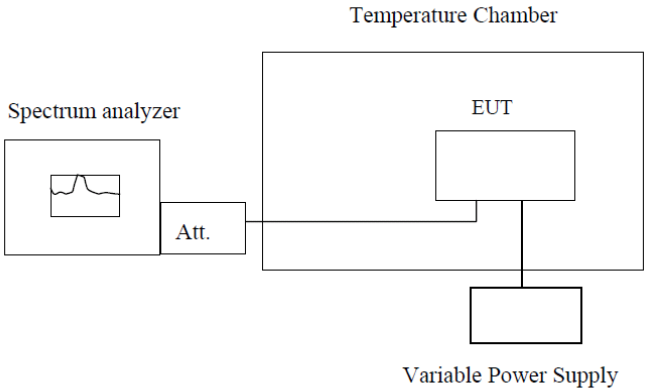
Note:

1. Measure Level = Reading Level + 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.

7.8 Frequency stability

Test Requirement:	FCC Part15 C Section 15.407(g)
Test Method:	ANSI C63.10:2013, FCC Part 2.1055
Limit:	Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Test Procedure:	The EUT was setup to ANSI C63.4, 2003; tested to 2.1055 for compliance to FCC Part 15.407(g) requirements.
Test setup:	 **Note :** Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

802.11a					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5745	5743.1487	5744.8806	5744.6330	5744.9782
	5785	5784.2937	5784.6455	5783.3629	5783.0281
	5825	5823.7646	5824.0976	5823.3956	5823.3413
-20	5745	5743.0743	5744.9087	5744.2312	5744.1410
	5785	5784.4929	5784.3224	5784.2772	5784.4421
	5825	5823.5070	5823.0990	5824.5511	5824.5202
-10	5745	5744.8945	5744.4355	5744.0140	5744.2139
	5785	5784.0161	5783.3812	5784.4210	5784.1715
	5825	5824.6972	5824.2478	5824.9301	5824.6576
0	5745	5744.9896	5743.7039	5744.9595	5744.8244
	5785	5784.8166	5783.7887	5784.7167	5784.1509
	5825	5823.0892	5824.9071	5824.9393	5824.0847
10	5745	5744.2220	5744.4753	5743.4730	5744.6410
	5785	5783.9105	5784.7174	5783.3205	5783.3504
	5825	5824.6419	5823.1586	5824.9476	5824.8801
20	5745	5744.4255	5744.6195	5743.5453	5743.6578
	5785	5783.4338	5783.2303	5784.4608	5784.7206
	5825	5823.3871	5823.9937	5824.6297	5824.5541
30	5745	5743.8328	5743.9346	5744.4308	5744.6929
	5785	5784.7123	5784.7830	5784.4475	5784.5786
	5825	5823.4881	5823.9215	5824.7831	5824.2944
40	5745	5744.1157	5744.1859	5744.1913	5744.5401
	5785	5783.0621	5783.2424	5784.0083	5784.8498
	5825	5823.0653	5823.3776	5823.7231	5823.8228
50	5745	5743.3574	5743.5340	5744.6232	5744.9475
	5785	5783.5245	5784.5020	5784.5478	5784.0804
	5825	5823.1295	5824.2705	5823.0556	5824.5494

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (DC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
3.3	5745	5744.6884	5744.6247	5743.2215	5743.2188
	5785	5784.6857	5784.4494	5783.3368	5784.1125
	5825	5824.7312	5824.9964	5823.8656	5824.3290
3.7	5745	5743.4708	5744.5194	5744.4807	5744.2587
	5785	5783.3592	5783.7345	5784.1315	5784.8414
	5825	5823.9364	5824.3768	5824.1738	5824.9051
4.1	5745	5743.5796	5744.8498	5743.5213	5743.1516
	5785	5784.3453	5784.1045	5784.0624	5784.7185
	5825	5823.5478	5824.7743	5824.1351	5824.2811

Note: The worst case is FL=5744.0953MHz, FH=5824.9844MHz

802.11n(HT20)					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5745	5746.3172	5744.5283	5743.5441	5746.6137
	5785	5785.3476	5784.7988	5783.6011	5785.9928
	5825	5825.0127	5824.4689	5824.5878	5825.4970
-20	5745	5745.5773	5744.5591	5744.6504	5745.5004
	5785	5785.8455	5784.1650	5784.6975	5785.5021
	5825	5825.7398	5824.7556	5824.4355	5825.1319
-10	5745	5745.0086	5744.1125	5744.9132	5745.1702
	5785	5785.5143	5784.9681	5784.0043	5785.2898
	5825	5825.3603	5824.4354	5824.5380	5825.7788
0	5745	5745.7020	5744.6248	5744.4815	5745.7196
	5785	5785.6100	5784.5114	5784.5357	5785.0679
	5825	5825.8631	5824.3819	5824.5870	5825.4598
10	5745	5745.9527	5744.9542	5744.6185	5745.0814
	5785	5785.6510	5784.8687	5784.4132	5785.9512
	5825	5825.0885	5824.6374	5824.2057	5825.2018
20	5745	5745.1048	5744.0389	5744.4361	5745.6419
	5785	5785.1886	5784.0245	5784.9074	5785.1415
	5825	5825.3400	5824.7407	5824.5105	5825.9934
30	5745	5745.0123	5744.1192	5744.2341	5745.8252
	5785	5785.5825	5784.7384	5784.4237	5785.5584
	5825	5825.5734	5824.1428	5824.8086	5825.8732
40	5745	5745.8489	5744.8946	5744.1864	5745.0454
	5785	5785.8237	5784.8943	5784.1095	5785.5693
	5825	5825.5666	5824.8088	5824.5868	5825.0153
50	5745	5745.5375	5744.6825	5744.6996	5745.8057
	5785	5785.4596	5784.7911	5784.7429	5785.4449
	5825	5825.3274	5824.8996	5824.4791	5825.8754

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (DC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
3.3	5745	5745.9868	5745.1779	5744.1487	5743.8761
	5785	5785.1430	5785.0584	5784.3826	5784.0857
	5825	5825.4188	5825.2429	5824.4882	5824.2632
3.7	5745	5745.3475	5745.8494	5744.0207	5744.1134
	5785	5785.1120	5785.1355	5784.6481	5784.3700
	5825	5825.6384	5825.9518	5824.7438	5824.6611
4.1	5745	5745.2319	5745.7471	5744.4399	5744.4197
	5785	5785.4220	5785.8906	5784.7078	5784.0217
	5825	5825.0703	5825.5642	5824.7910	5824.9795

Note: The worst case is FL=5743.8207MHz, FH=5825.9832MHz

802.11ac(HT20)					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5745	5743.2454	5743.6091	5743.5312	5743.4010
	5785	5783.1335	5783.5467	5783.8809	5783.0884
	5825	5823.0625	5823.9079	5824.2789	5823.3718
-20	5745	5743.8887	5744.4669	5744.3028	5743.6964
	5785	5783.6346	5784.8485	5784.8932	5783.2137
	5825	5824.0395	5824.4526	5824.2992	5823.9012
-10	5745	5744.8975	5744.3863	5744.6157	5744.8956
	5785	5784.6684	5784.6123	5784.1419	5784.8260
	5825	5824.7355	5824.1098	5824.8944	5824.6677
0	5745	5744.0386	5744.8851	5744.4503	5744.9673
	5785	5784.3015	5784.5422	5784.4154	5784.4031
	5825	5824.2250	5824.5625	5824.7606	5824.1278
10	5745	5744.9046	5744.3622	5744.9205	5744.6125
	5785	5784.2888	5784.7411	5784.4204	5784.6557
	5825	5824.8946	5824.6906	5824.4426	5824.9587
20	5745	5744.5783	5744.3799	5744.6814	5744.7752
	5785	5784.5043	5784.5648	5784.7178	5784.7483
	5825	5824.2398	5824.2959	5824.3911	5824.1115
30	5745	5744.3257	5744.8509	5744.3094	5744.3297
	5785	5784.8571	5784.5168	5784.4984	5784.3355
	5825	5824.2763	5824.3240	5824.7625	5824.4175
40	5745	5744.7511	5744.0450	5744.7888	5744.4323
	5785	5784.9991	5784.2126	5784.9687	5784.7223
	5825	5824.1861	5824.7299	5824.1102	5824.4327
50	5745	5744.4067	5744.7711	5744.6803	5744.8413
	5785	5784.3208	5784.9922	5784.6034	5784.9190
	5825	5824.6983	5824.3602	5824.7719	5824.8313

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (DC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
108	5745	5744.6947	5744.8261	5745.2006	5745.4764
	5785	5784.2901	5784.6720	5785.8253	5785.8825
	5825	5824.9130	5824.5437	5825.2825	5825.0362
120	5745	5744.9599	5744.4020	5745.6077	5745.0350
	5785	5784.7386	5784.0056	5785.3176	5785.8770
	5825	5824.0130	5824.0493	5825.2067	5825.1195
132	5745	5744.4304	5744.3241	5745.4011	5745.1608
	5785	5784.9883	5784.8086	5785.6992	5785.3145
	5825	5824.0409	5824.2783	5825.9004	5825.9545

Note: The worst case is FL=5742.3838MHz, FH=5826.7890MHz

802.11n(HT40)					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5755	5756.7804	5754.3075	5753.2252	5755.2472
	5795	5796.9686	5794.2162	5793.5149	5795.8027
-20	5755	5756.6380	5754.0127	5754.0158	5755.4882
	5795	5796.6259	5794.7076	5794.1867	5795.8374
-10	5755	5755.8998	5754.0368	5754.4554	5755.8570
	5795	5795.3768	5794.1572	5794.3993	5795.5341
0	5755	5755.3606	5754.2421	5754.4051	5755.2297
	5795	5795.1173	5794.2983	5794.0016	5795.0213
10	5755	5755.6407	5754.2076	5754.6565	5755.0393
	5795	5795.7971	5794.3368	5794.7585	5795.7819
20	5755	5755.9798	5754.5390	5754.2834	5755.0630
	5795	5795.5562	5794.0917	5794.5299	5795.6786
30	5755	5755.5532	5754.0891	5754.4723	5755.9357
	5795	5795.9660	5794.3243	5794.8309	5795.4454
40	5755	5755.2418	5754.8918	5754.6929	5755.1735
	5795	5795.6724	5794.0295	5794.3599	5795.7909
50	5755	5755.8726	5754.4359	5754.1864	5755.5917
	5795	5795.9031	5794.7917	5794.3334	5795.7036

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (DC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
3.3	5755	5756.4619	5754.0347	5756.5610	5754.4714
	5795	5795.9326	5794.6940	5796.2676	5794.8471
3.7	5755	5755.2212	5754.5803	5755.5603	5754.6894
	5795	5795.5536	5794.2027	5795.5804	5794.9382
4.1	5755	5755.6206	5754.2245	5755.0195	5754.8480
	5795	5795.9944	5794.8191	5795.1208	5794.3979

Note: The worst case is FL=5753.0680MHz, FH=5796.5693MHz

802.11ac(HT40)					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5755	5755.4083	5753.1224	5756.0545	5753.3047
	5795	5795.6162	5794.2748	5795.8754	5794.0449
-20	5755	5755.4828	5754.7687	5755.7376	5754.1622
	5795	5795.3934	5794.2431	5795.2641	5794.1380
-10	5755	5755.0508	5754.8927	5755.4426	5754.6460
	5795	5795.0835	5794.1748	5795.5102	5794.9275
0	5755	5755.0581	5754.4645	5755.4719	5754.9718
	5795	5795.5324	5794.9522	5795.3279	5794.5505
10	5755	5755.7166	5754.1453	5755.0233	5754.5970
	5795	5795.8945	5794.7373	5795.5373	5794.4392
20	5755	5755.6567	5754.0786	5755.1866	5754.8912
	5795	5795.0705	5794.9378	5795.1512	5794.7831
30	5755	5755.9001	5754.8017	5755.8543	5754.2562
	5795	5795.7216	5794.1477	5795.2472	5794.7847
40	5755	5755.1024	5754.7507	5755.2724	5754.6050
	5795	5795.8765	5794.0099	5795.4332	5794.6643
50	5755	5755.4252	5754.7639	5755.3738	5754.2242
	5795	5795.5841	5794.4383	5795.8158	5794.0812

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (DC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
3.3	5755	5756.3274	5754.4404	5755.2999	5753.7932
	5795	5795.9494	5794.4617	5795.0210	5793.9355
3.7	5755	5755.6383	5754.2834	5755.5212	5753.2892
	5795	5795.4865	5794.3749	5795.9511	5794.2040
4.1	5755	5755.3928	5754.2272	5755.0129	5754.1615
	5795	5795.2479	5794.8431	5795.6777	5794.7030

Note: The worst case is FL=5752.4120MHz, FH=5796.5192MHz

802.11ac(HT80)					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5775	5775.8687	5776.5241	5774.2629	5773.1319
-20	5775	5775.4731	5775.9258	5774.1751	5773.2599
-10	5775	5775.9487	5775.0213	5774.2449	5774.4262
0	5775	5775.7279	5775.2045	5774.7241	5774.9434
10	5775	5775.7363	5775.2008	5774.7361	5774.4278
20	5775	5775.3750	5775.9273	5774.2897	5774.4837
30	5775	5775.5255	5775.5970	5774.8657	5774.0366
40	5775	5775.2023	5775.2572	5774.2497	5774.1757
50	5775	5775.8829	5775.3802	5774.9905	5774.3174

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (DC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
3.3	5775	5774.0714	5776.2450	5776.8849	5776.7561
3.7	5775	5774.6022	5775.1546	5775.7853	5775.1887
4.1	5775	5773.2676	5776.0722	5775.7724	5776.3721

Note: The worst case is FL=5773.1168MHz, FH=5776.7635MHz

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

------END------