

FCC REPORT

Applicant: BESTOM TECHNOLOGY(HK) CO., LIMITED

Address of Applicant: R718 BuildingB1, Huayuan S&TP, No.168 BY Road XiXiang Street, Shenzhen, China

Manufacturer: GUANGZHOU JINGHUA PRECISION OPTICS CO.,LTD

Address of Manufacturer: 12 Kangda Rd.,Dongcheng Zone,Yunpu Industrial District, Huangpu,Guangzhou,China

Equipment Under Test (EUT)

Product Name: Bestable

Model No.: ET1020

FCC ID: 2ALBPET1020

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.407

Date of sample receipt: January 29, 2018

Date of Test: January 30, 2018-March 08, 2018

Date of report issued: March 09, 2018

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	March 09, 2018	Original

Prepared By:

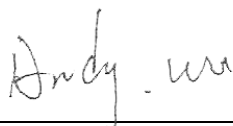


Date:

March 09, 2018

Project Engineer

Check By:



Date:

March 09, 2018

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

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

Remark: Test according to ANSI C63.10:2013 and ANSI C63.4:2014.

4.1 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%.			

5 General Information

5.1 General Description of EUT

Product Name:	Bestable
Model No.:	ET1020
Test sample(s) ID:	GTS201801000240-1
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:	2.0dBi
Power supply:	Adapter Model:JHD-AP015U-050300BC1-C Input: AC 100-240V, 50/60Hz, 0.45A Output: DC 5V, 3000mA

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
<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. Dutycycle>99%.</i>	

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, January 08, 2018.

- **Industry Canada (IC) —Registration No.: 9079A-2**

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-2, August 15, 2016.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone,
Xixiang Road, Baoan District, Shenzhen, Guangdong, China

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

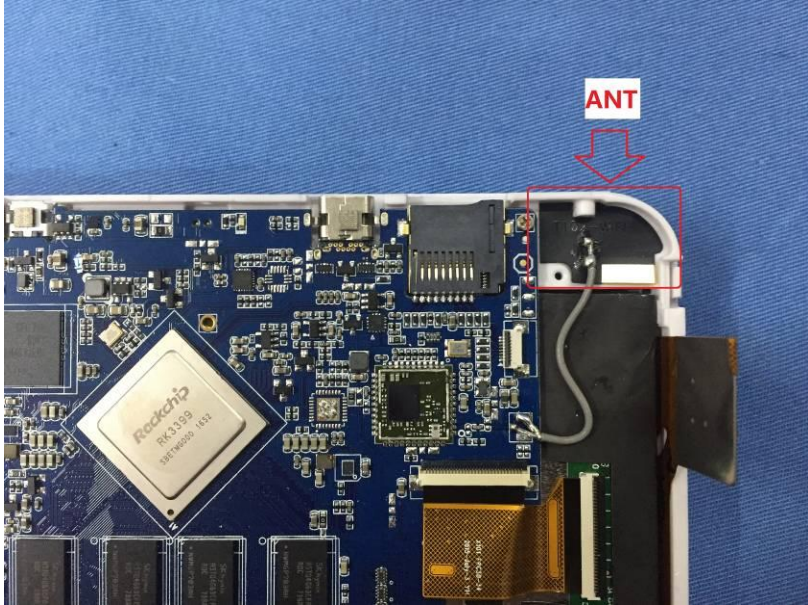
Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 03 2015	July 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June 28 2017	June 27 2018
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June 28 2017	June 27 2018
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June 28 2017	June 27 2018
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 28 2017	June 27 2018
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 28 2017	June 27 2018
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	June 28 2017	June 27 2018
10	Coaxial Cable	GTS	N/A	GTS211	June 28 2017	June 27 2018
11	Coaxial cable	GTS	N/A	GTS210	June 28 2017	June 27 2018
12	Coaxial Cable	GTS	N/A	GTS212	June 28 2017	June 27 2018
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June 28 2017	June 27 2018
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June 28 2017	June 27 2018
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 28 2017	June 27 2018
16	Band filter	Amindeon	82346	GTS219	June 28 2017	June 27 2018
17	Power Meter	Anritsu	ML2495A	GTS540	June 28 2017	June 27 2018
18	Power Sensor	Anritsu	MA2411B	GTS541	June 28 2017	June 27 2018

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	7.0(L)x3.0(W)x3.0(H)	GTS264	May.16 2014	May.15 2019
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	June 28 2017	June 27 2018
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	June 28 2017	June 27 2018
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 28 2017	June 27 2018
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	June 28 2017	June 27 2018
6	Coaxial Cable	GTS	N/A	GTS227	June 28 2017	June 27 2018
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

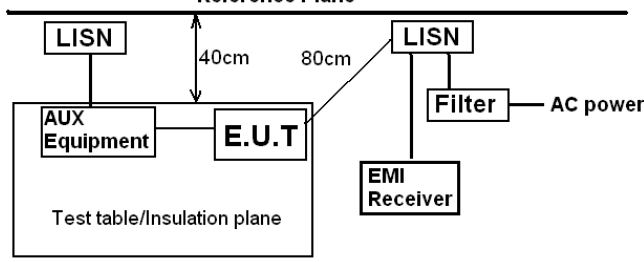
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	June 28 2017	June 27 2018

7 Test results and Measurement Data

7.1 Antenna requirement

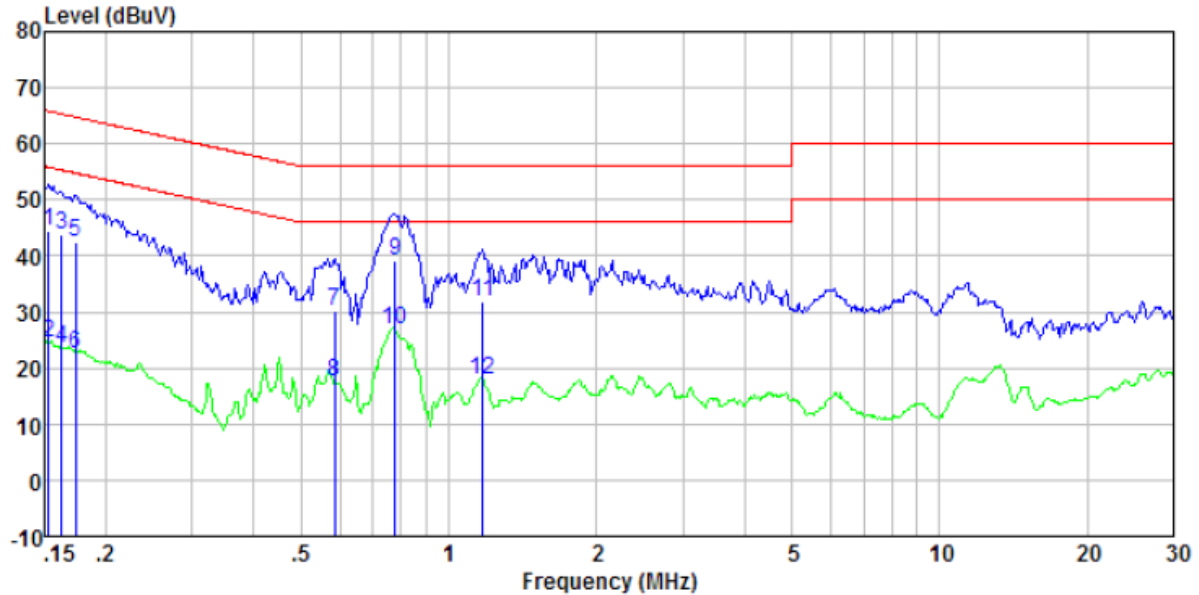
Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique 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 integral antenna. The best case gain of the antenna is 2.0dBi. 	

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:	Reference Plane  Remark: E.U.T: Equipment Under Test LISN: Line Impedance 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 5.3 for details		
Test results:	Pass		

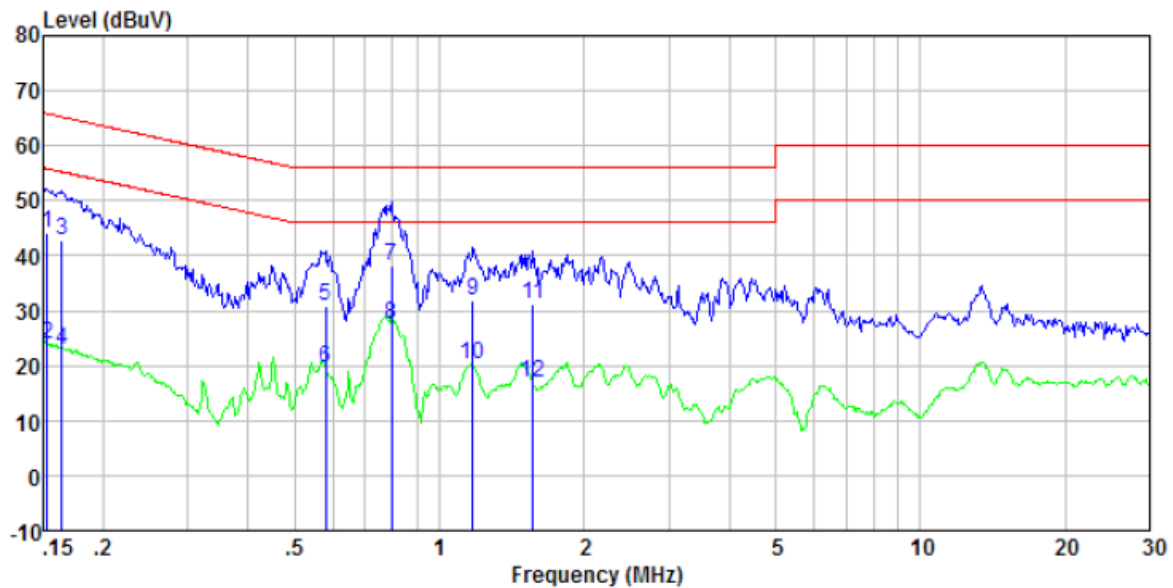
Measurement data

Line:



Freq MHz	Reading level dBuV	LIISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.153	44.15	0.40	0.07	44.62	65.82	-21.20	QP
0.153	24.12	0.40	0.07	24.59	55.82	-31.23	Average
0.162	43.26	0.40	0.08	43.74	65.34	-21.60	QP
0.162	22.94	0.40	0.08	23.42	55.34	-31.92	Average
0.174	41.93	0.40	0.09	42.42	64.77	-22.35	QP
0.174	22.20	0.40	0.09	22.69	54.77	-32.08	Average
0.585	29.91	0.29	0.12	30.32	56.00	-25.68	QP
0.585	17.04	0.29	0.12	17.45	46.00	-28.55	Average
0.779	38.73	0.24	0.14	39.11	56.00	-16.89	QP
0.779	26.55	0.24	0.14	26.93	46.00	-19.07	Average
1.172	31.55	0.20	0.16	31.91	56.00	-24.09	QP
1.172	17.54	0.20	0.16	17.90	46.00	-28.10	Average

Neutral:

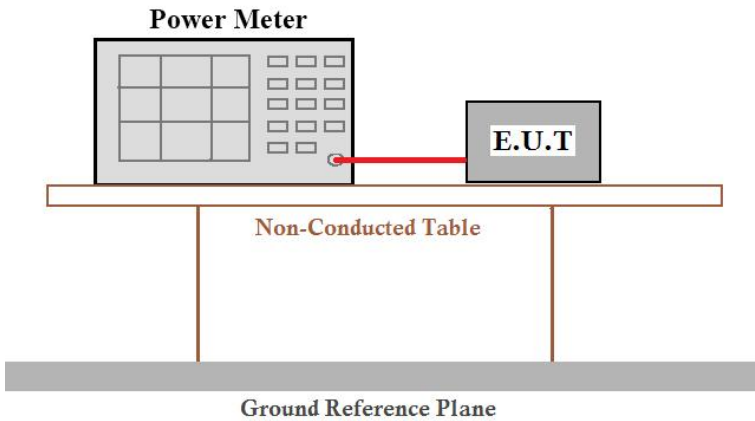


Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.153	43.78	0.40	0.07	44.25	65.82	-21.57	QP
0.153	23.47	0.40	0.07	23.94	55.82	-31.88	Average
0.164	42.40	0.40	0.08	42.88	65.25	-22.37	QP
0.164	22.37	0.40	0.08	22.85	55.25	-32.40	Average
0.579	30.59	0.29	0.12	31.00	56.00	-25.00	QP
0.579	19.28	0.29	0.12	19.69	46.00	-26.31	Average
0.796	37.91	0.24	0.14	38.29	56.00	-17.71	QP
0.796	27.14	0.24	0.14	27.52	46.00	-18.48	Average
1.172	31.44	0.20	0.16	31.80	56.00	-24.20	QP
1.172	19.92	0.20	0.16	20.28	46.00	-25.72	Average
1.568	30.71	0.20	0.17	31.08	56.00	-24.92	QP
1.568	16.51	0.20	0.17	16.88	46.00	-29.12	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 KDB789033 D02 General UNII Test Procedures New Rules v01
Limit:	30dBm
Test setup:	 The diagram illustrates the test setup. A Power Meter is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Power Meter and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

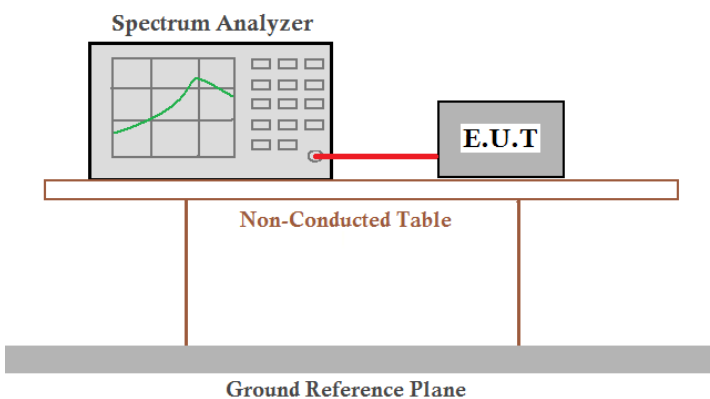
Measurement Data

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	2.46	2.48	2.44	1.67	2.18	---	30.00	Pass
Middle	2.54	2.00	2.67	---	---	2.13		
Highest	2.11	1.99	2.57	1.53	2.67	---		

Remark: “---” is not applicable

7.4 Channel Bandwidth

Test Requirement:	FCC Part15 E Section 15.407(e)
Test Method:	ANSI C63.10:2013 and KDB789033 D02 General UNII Test Procedures New Rules v01
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

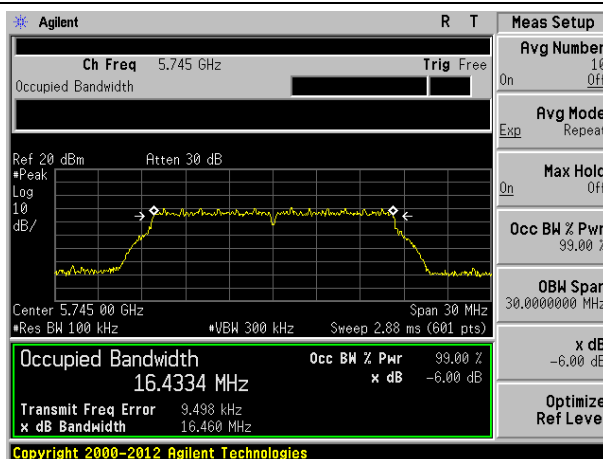
Measurement Data

5.8G Band								
Test CH	6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n(H T20)	802.11ac(HT20)	802.11n(H T40)	802.11ac(HT40)	802.11ac(HT80)		
Lowest	16.460	17.596	17.639	35.878	35.923	---	>500	Pass
Middle	16.516	17.631	17.627	---	---	75.387		
Highest	16.501	17.626	17.654	35.820	35.601	---		

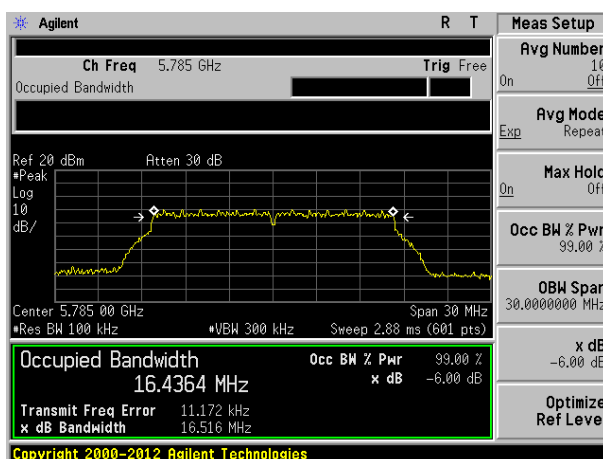
Remark: “---” is not applicable

Test plot as follows:

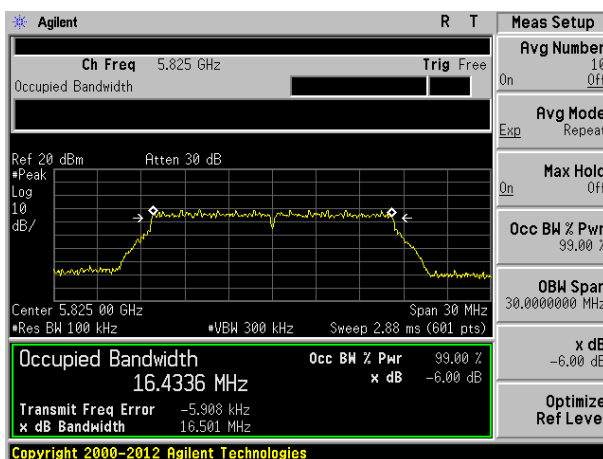
Test mode: 802.11a



Lowest channel

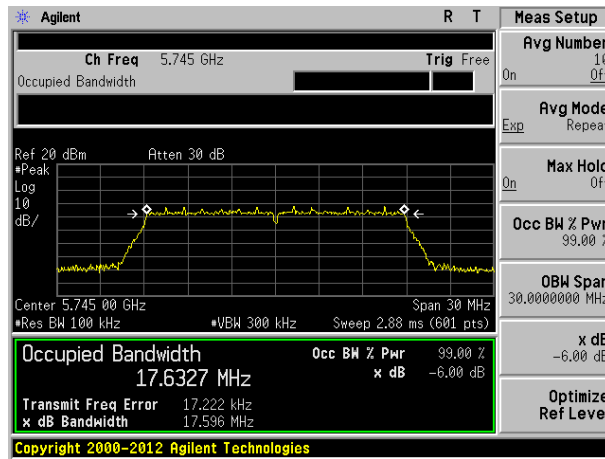


Middle channel

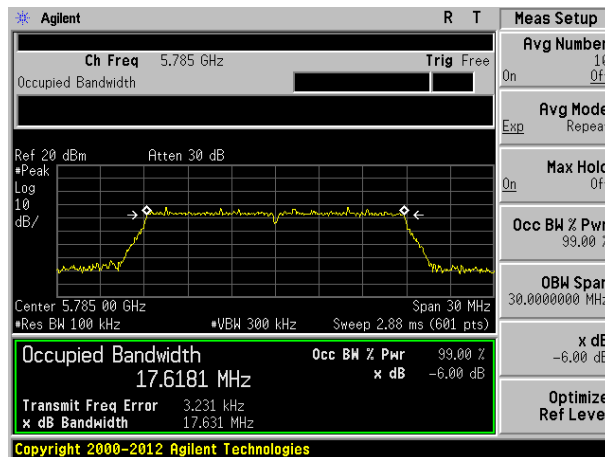


Highest channel

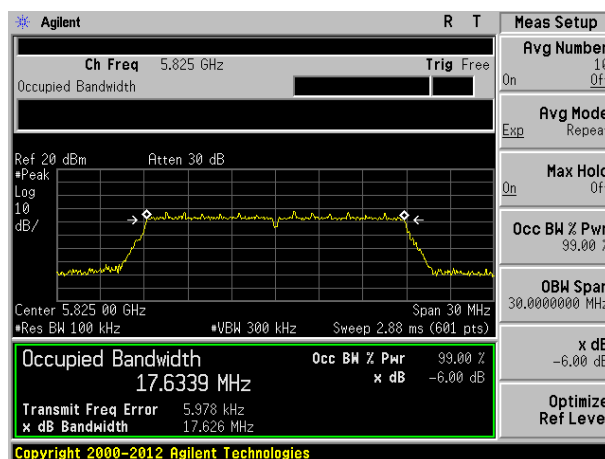
Test mode: 802.11n(HT20) @ 5.8G Band



Lowest channel

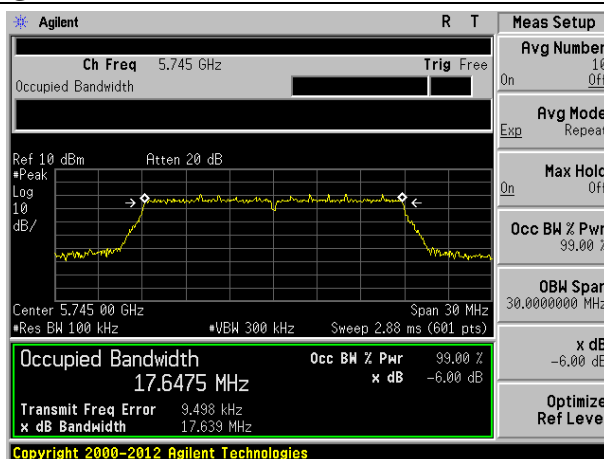


Middle channel

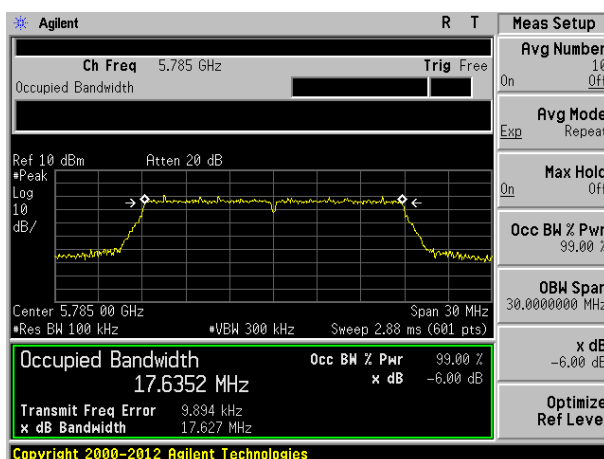


Highest channel

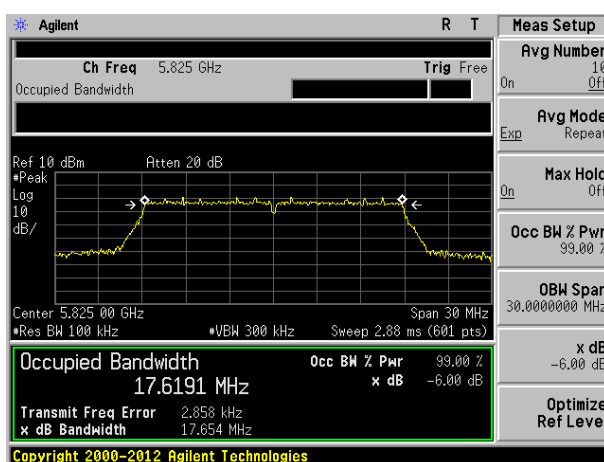
Test mode: 802.11ac(HT20) @ 5.8G Band



Lowest channel

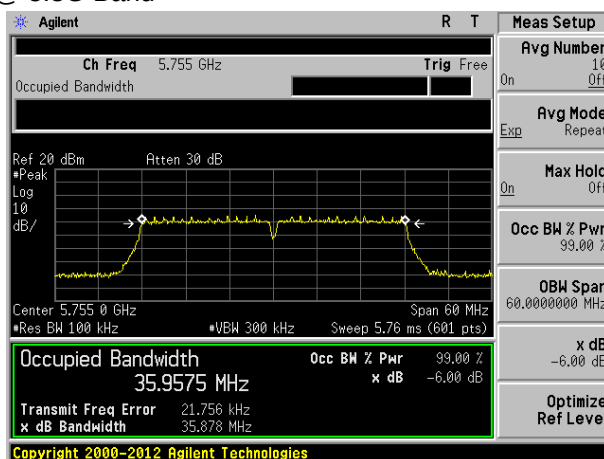


Middle channel

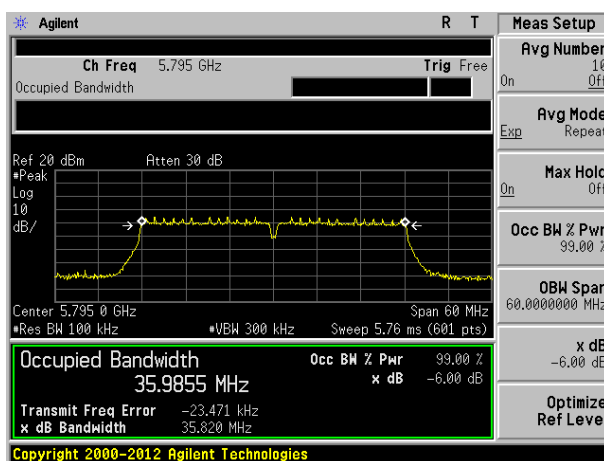


Highest channel

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

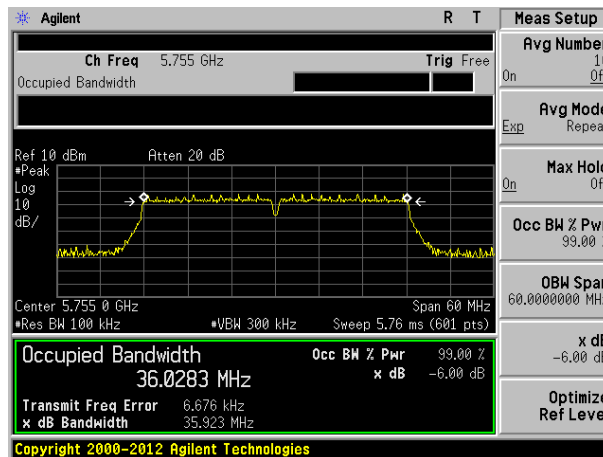


Lowest channel



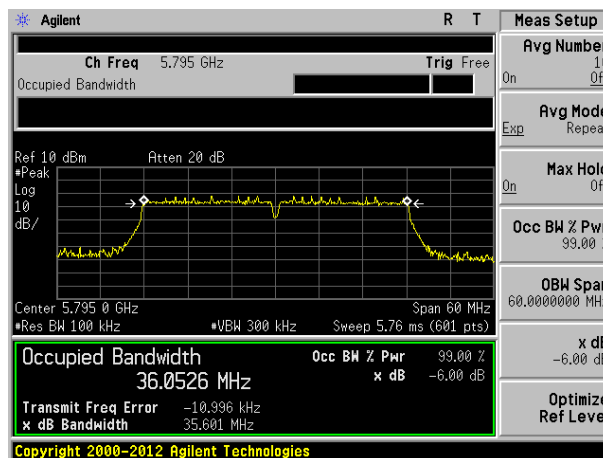
Highest channel

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

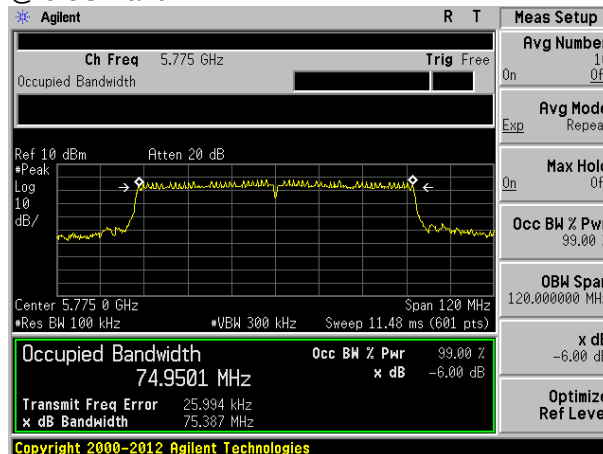


Lowest channel

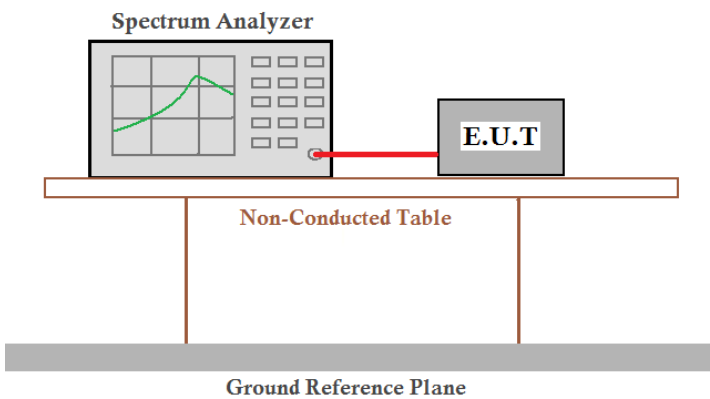
Highest channel



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 KDB789033 D02 General UNII Test Procedures New Rules v01
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

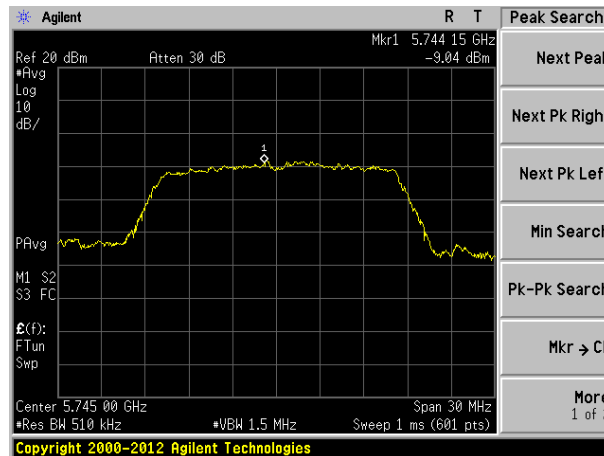
Measurement Data

5.8G Band								
Test CH	Power Spectral Density (dBm)						Limit (dBm/500kHz)	Result
	802.11a	802.11n(HT 20)	802.11ac(H T20)	802.11n(HT 40)	802.11ac(H T40)	802.11ac(H T80)		
Lowest	-9.04	-8.90	-9.55	-11.26	-11.27	---	30.00	Pass
Middle	-8.34	-9.17	-9.62	---	---	-12.10		
Highest	-8.69	-9.45	-9.60	-11.95	-11.16	---		

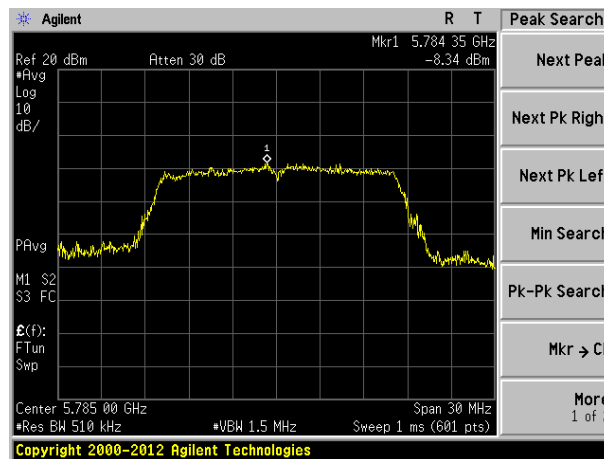
Remark: "---" is not applicable

Test plot as follows:

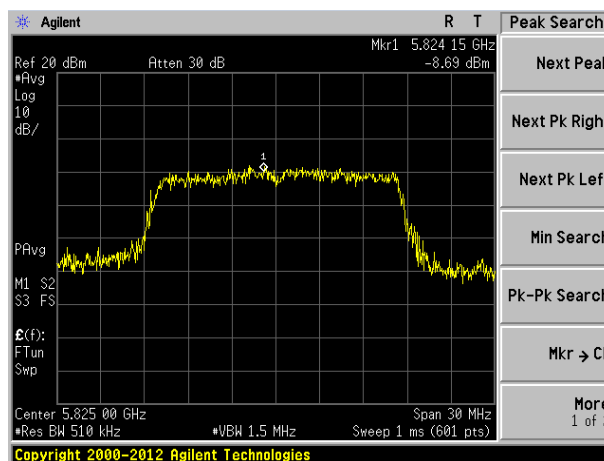
Test mode: 802.11a



Lowest channel

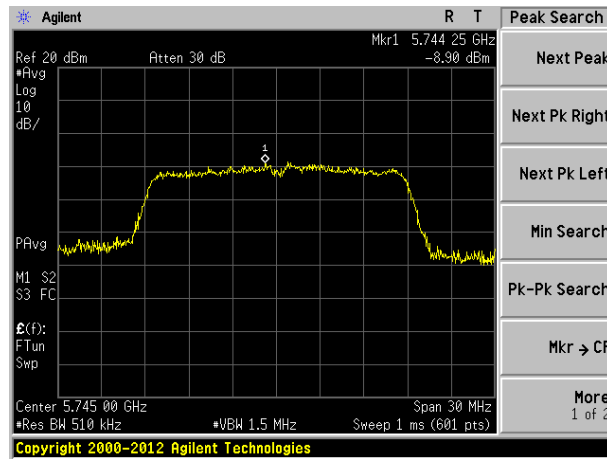


Middle channel

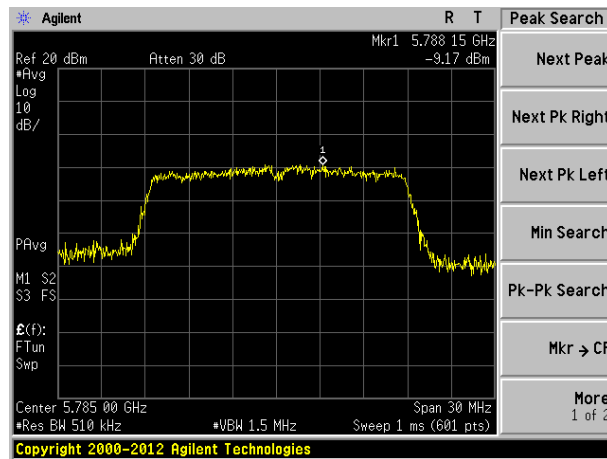


Highest channel

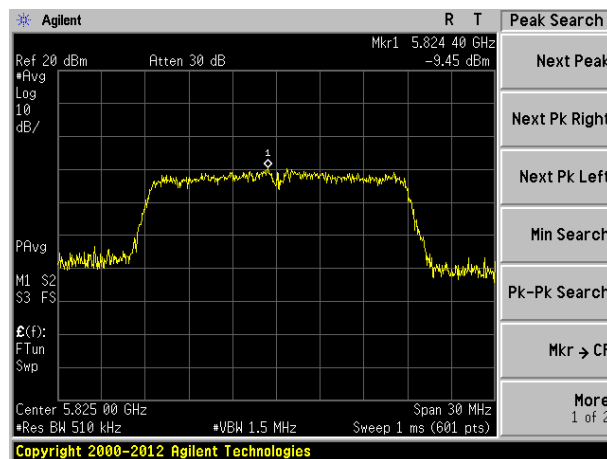
Test mode: 802.11n(HT20) @ 5.8G Band



Lowest channel

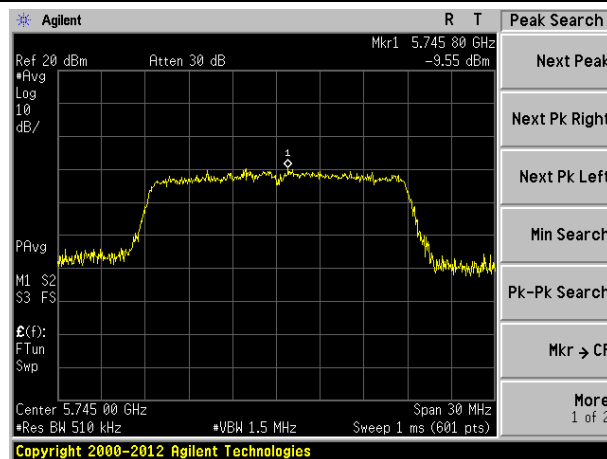


Middle channel

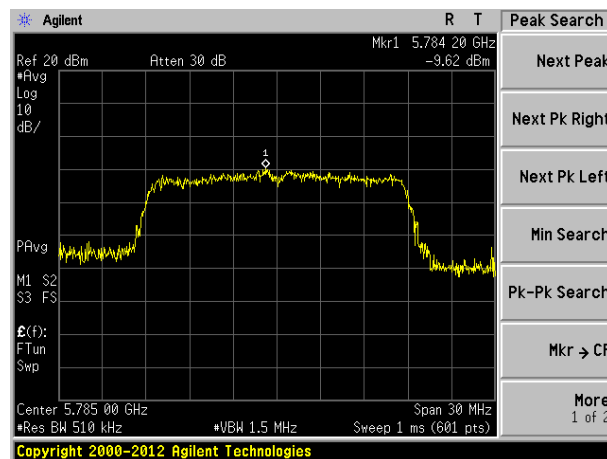


Highest channel

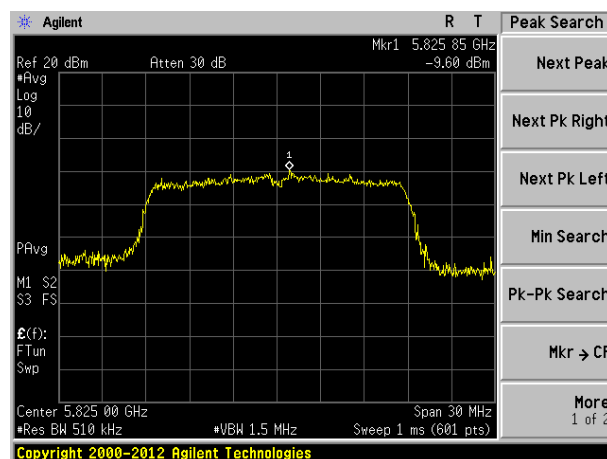
Test mode: 802.11ac(HT20)



Lowest channel

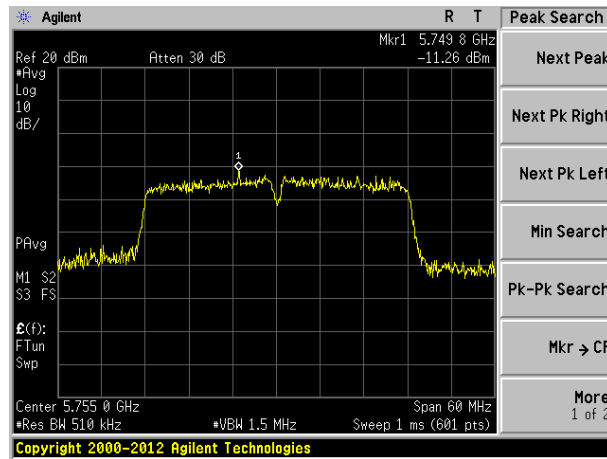


Middle channel

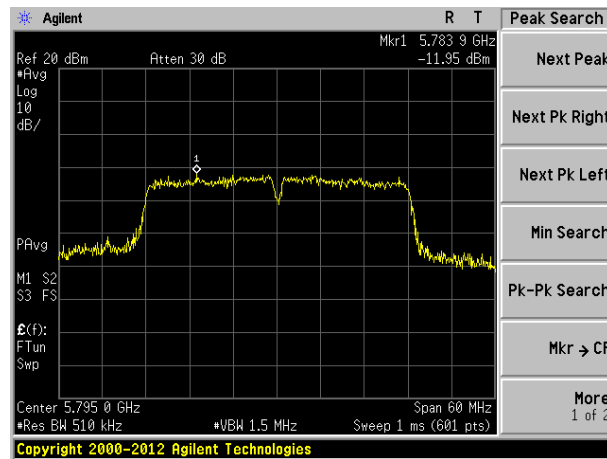


Highest channel

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

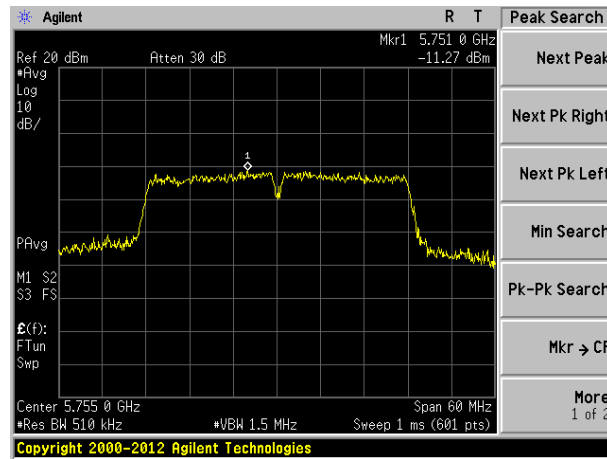


Lowest channel

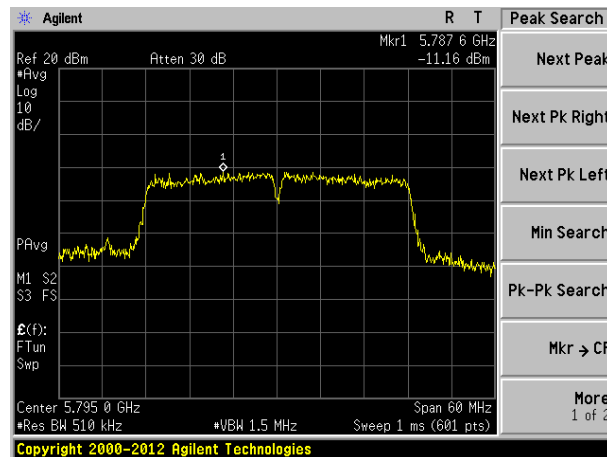


Highest channel

Test mode: 802.11ac(HT40)

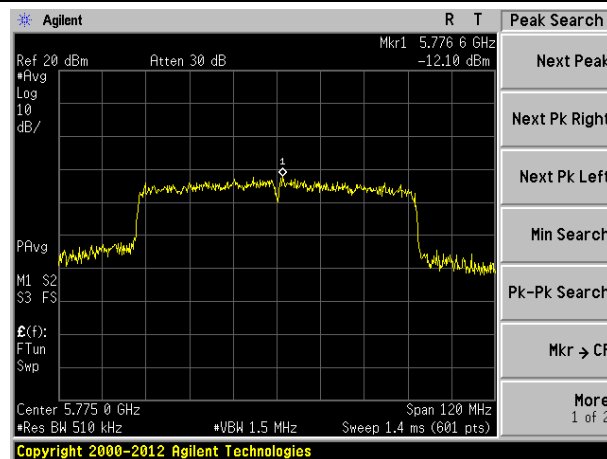


Lowest channel



Highest channel

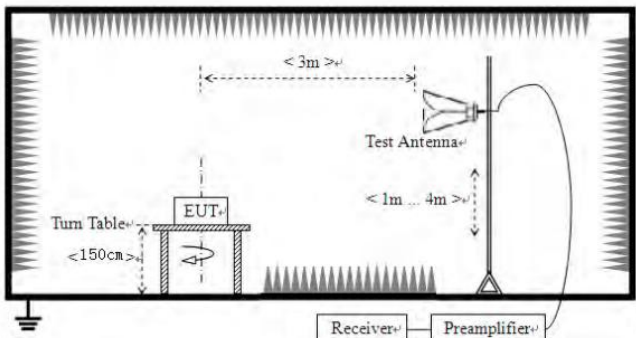
Test mode: 802.11ac(HT80)



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:	30MHz 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	Average
Limit:	Frequency		Limit (dBuV/m @3m)		Value
	Above 1GHz		54.00		Average
			74.00		Peak
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 5.3 for details				

Test results:	Pass
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Remark:

According to KDB 789033 D02V01 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 $\text{EIRP} = -27\text{dBm}$

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

The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.

Measurement data:

Remark: The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.

Test mode:	802.11a	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	41.67	32.68	9.97	23.86	60.46	68.20	-7.74	Horizontal
5725.00	41.73	32.68	9.97	23.86	60.52	68.20	-7.68	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	29.31	32.68	9.97	23.86	48.10	54.00	-5.90	Horizontal
5725.00	27.27	32.68	9.97	23.86	46.06	54.00	-7.94	Vertical

Test mode:	802.11a	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	36.59	32.70	9.99	23.87	55.41	68.20	-12.79	Horizontal
5850.00	39.18	32.70	9.99	23.87	58.00	68.20	-10.20	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	25.93	32.70	9.99	23.87	44.75	54.00	-9.25	Horizontal
5850.00	26.72	32.70	9.99	23.87	45.54	54.00	-8.46	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.

Test mode:	802.11n(HT20) @ 5.8G Band	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	41.22	32.68	9.97	23.86	60.01	68.20	-8.19	Horizontal
5725.00	41.19	32.68	9.97	23.86	59.98	68.20	-8.22	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	28.87	32.68	9.97	23.86	47.66	54.00	-6.34	Horizontal
5725.00	26.88	32.68	9.97	23.86	45.67	54.00	-8.33	Vertical

Test mode:	802.11n(HT20) @ 5.8G Band	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	36.06	32.70	9.99	23.87	54.88	68.20	-13.32	Horizontal
5850.00	38.69	32.70	9.99	23.87	57.51	68.20	-10.69	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	25.49	32.70	9.99	23.87	44.31	54.00	-9.69	Horizontal
5850.00	26.22	32.70	9.99	23.87	45.04	54.00	-8.96	Vertical

Remark:

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.

Test mode:	802.11ac(HT20)	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	40.99	32.68	9.97	23.86	59.78	68.20	-8.42	Horizontal
5725.00	40.93	32.68	9.97	23.86	59.72	68.20	-8.48	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	28.66	32.68	9.97	23.86	47.45	54.00	-6.55	Horizontal
5725.00	26.69	32.68	9.97	23.86	45.48	54.00	-8.52	Vertical

Test mode:	802.11ac(HT20)	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	35.80	32.70	9.99	23.87	54.62	68.20	-13.58	Horizontal
5850.00	38.45	32.70	9.99	23.87	57.27	68.20	-10.93	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	25.27	32.70	9.99	23.87	44.09	54.00	-9.91	Horizontal
5850.00	25.97	32.70	9.99	23.87	44.79	54.00	-9.21	Vertical

Remark:

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.

Test mode:	802.11n(HT40) @ 5.8G Band	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	37.84	32.68	9.97	23.86	56.63	68.20	-11.57	Horizontal
5725.00	37.14	32.68	9.97	23.86	55.93	68.20	-12.27	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	25.60	32.68	9.97	23.86	44.39	54.00	-9.61	Horizontal
5725.00	23.98	32.68	9.97	23.86	42.77	54.00	-11.23	Vertical

Test mode:	802.11n(HT40) @ 5.8G Band	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	32.09	32.70	9.99	23.87	50.91	68.20	-17.29	Horizontal
5850.00	35.00	32.70	9.99	23.87	53.82	68.20	-14.38	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	22.16	32.70	9.99	23.87	40.98	54.00	-13.02	Horizontal
5850.00	22.43	32.70	9.99	23.87	41.25	54.00	-12.75	Vertical

Remark:

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.

Test mode:	802.11ac(HT40)	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	37.49	32.68	9.97	23.86	56.28	68.20	-11.92	Horizontal
5725.00	36.73	32.68	9.97	23.86	55.52	68.20	-12.68	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	25.26	32.68	9.97	23.86	44.05	54.00	-9.95	Horizontal
5725.00	23.68	32.68	9.97	23.86	42.47	54.00	-11.53	Vertical

Test mode:	802.11ac(HT40)	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	31.69	32.70	9.99	23.87	50.51	68.20	-17.69	Horizontal
5850.00	34.63	32.70	9.99	23.87	53.45	68.20	-14.75	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5850.00	21.82	32.70	9.99	23.87	40.64	54.00	-13.36	Horizontal
5850.00	22.04	32.70	9.99	23.87	40.86	54.00	-13.14	Vertical

Remark:

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.

Test mode:	802.11ac(HT80)	Test channel:	Middle
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	33.60	32.53	9.83	23.84	52.12	68.20	-16.08	Horizontal
5850.00	36.10	32.7	9.99	23.87	54.92	68.20	-13.28	Horizontal
5725.00	38.06	32.53	9.83	23.84	56.58	68.20	-11.62	Vertical
5850.00	39.38	32.7	9.99	23.87	58.20	68.20	-10.00	Vertical

Average value:

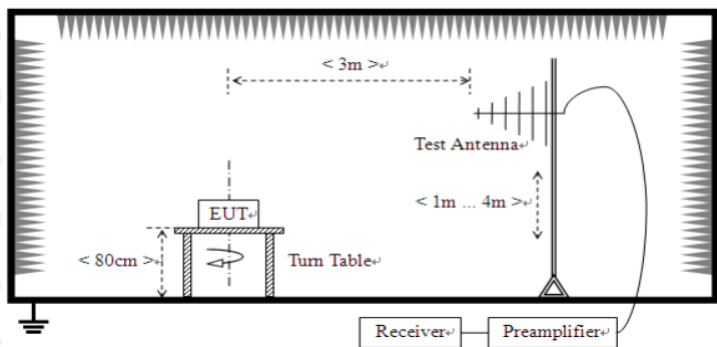
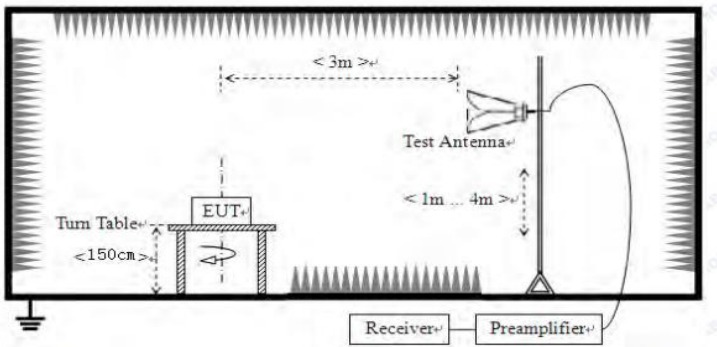
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5725.00	21.13	32.53	9.83	23.84	39.65	54.00	-14.35	Horizontal
5850.00	20.94	32.7	9.99	23.87	39.76	54.00	-14.24	Horizontal
5725.00	22.00	32.53	9.83	23.84	40.52	54.00	-13.48	Vertical
5850.00	23.25	32.7	9.99	23.87	42.07	54.00	-11.93	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:	30MHz to 40GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	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
	Frequency		Limit (dBm/MHz)		Remark
	Above 1GHz		-27.0		Peak Value
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				
					
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below				

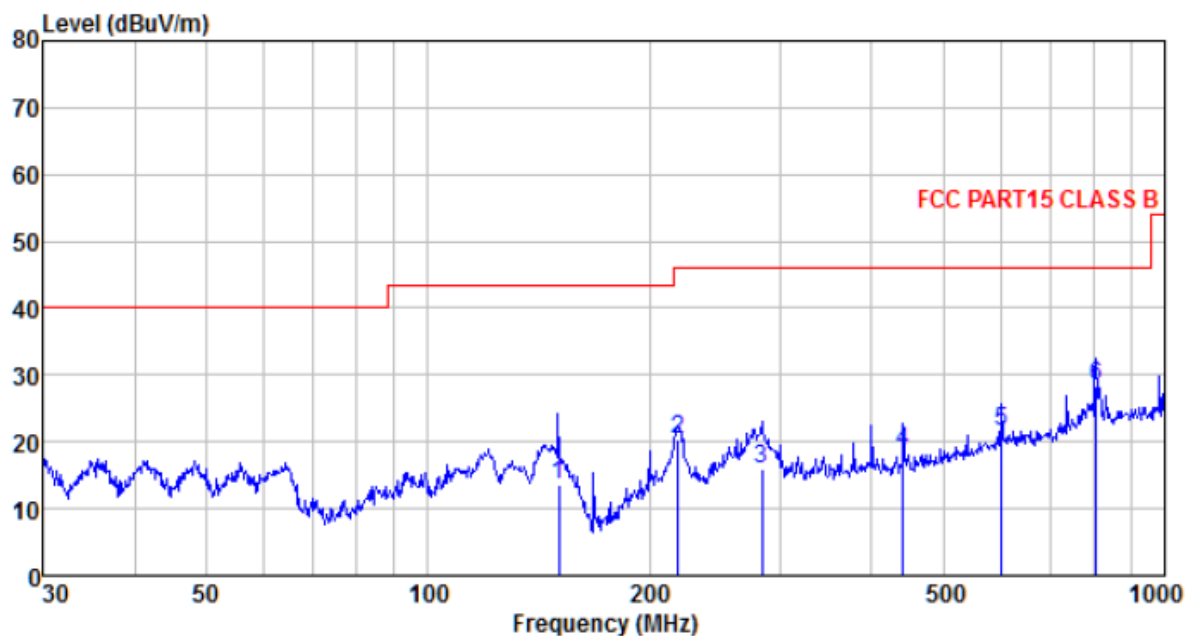
	1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. 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 5.3 for details
Test results:	Pass

Measurement Data

Below 1GHz

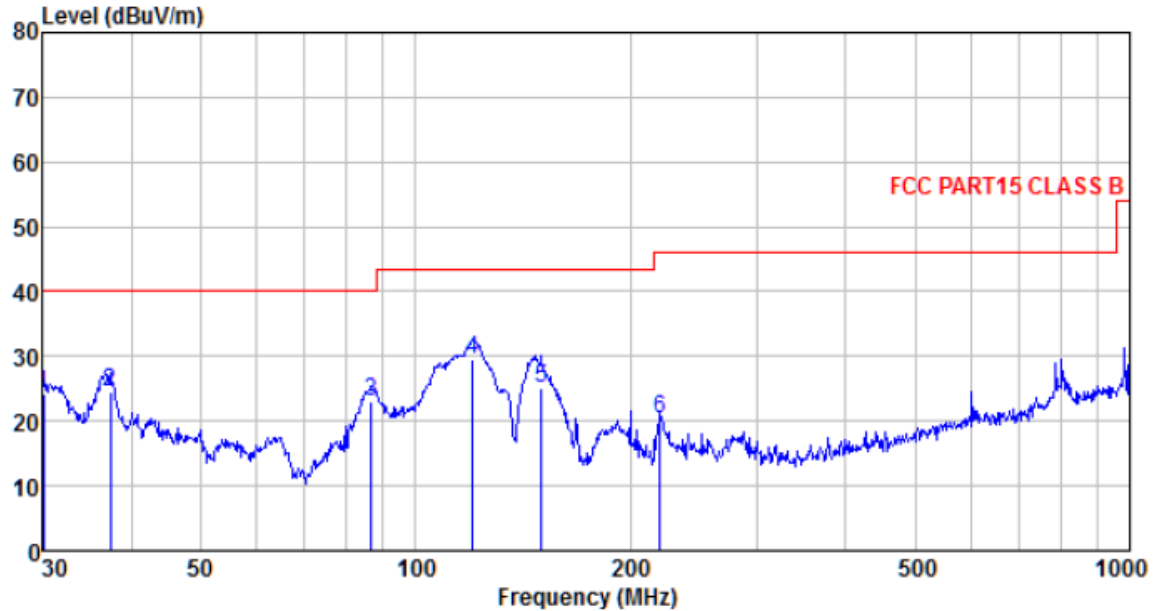
Only the data of worst case at each channel plan (nominal bandwidth =20MHz, 40MHz, 80MHz) is reported.

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
150.538	41.46	7.65	1.57	37.08	13.60	43.50	-29.90	QP
218.309	44.80	11.09	1.95	37.35	20.49	46.00	-25.51	QP
283.979	37.93	13.16	2.29	37.41	15.97	46.00	-30.03	QP
441.743	36.89	16.20	3.06	37.52	18.63	46.00	-27.37	QP
601.427	35.96	19.50	3.73	37.54	21.65	46.00	-24.35	QP
807.429	40.12	21.47	4.49	37.62	28.46	46.00	-17.54	QP

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
30.105	47.45	11.20	0.55	35.01	24.19	40.00	-15.81	QP
37.416	47.53	11.77	0.64	35.51	24.43	40.00	-15.57	QP
86.807	48.92	9.68	1.08	36.61	23.07	40.00	-16.93	QP
120.277	55.69	9.42	1.36	36.88	29.59	43.50	-13.91	QP
150.011	52.97	7.65	1.57	37.08	25.11	43.50	-18.39	QP
219.845	44.49	11.13	1.96	37.35	20.23	46.00	-25.77	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	22.39	21.64	44.03	54(Note3)	-9.97	PK
V	17235	20.12	21.8	41.92	54(Note3)	-12.08	PK
H	11490	20.19	21.83	42.02	54(Note3)	-11.98	PK
H	17235	18.99	21.67	40.66	54(Note3)	-13.34	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	20.22	21.64	41.86	54(Note3)	-12.14	PK
V	17355	18.91	21.8	40.71	54(Note3)	-13.29	PK
H	11570	16.57	21.83	38.40	54(Note3)	-15.60	PK
H	17355	17.23	21.67	38.90	54(Note3)	-15.10	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	20.39	21.64	42.03	54(Note3)	-11.97	PK
V	17475	18.00	21.8	39.80	54(Note3)	-14.20	PK
H	11650	18.23	21.83	40.06	54(Note3)	-13.94	PK
H	17475	16.29	21.67	37.96	54(Note3)	-16.04	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	21.78	21.67	43.45	54(Note3)	-10.55	PK
V	17265	20.39	21.83	42.22	54(Note3)	-11.78	PK
H	11510	20.92	21.67	42.59	54(Note3)	-11.41	PK
H	17265	20.19	21.83	42.02	54(Note3)	-11.98	PK

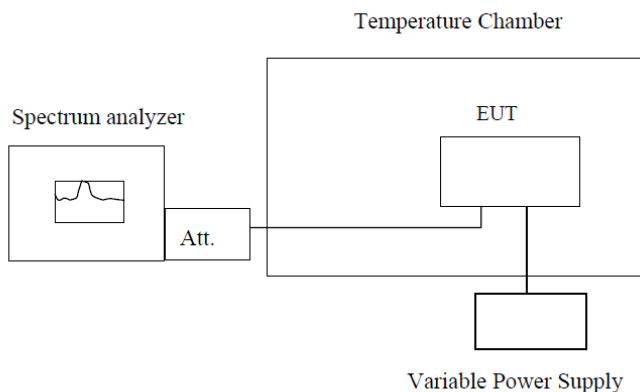
Test mode:		802.11ac(HT40)			Test channel:		Highest
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11590	22.48	21.67	44.15	54(Note3)	-9.85	PK
V	17385	20.61	21.83	42.44	54(Note3)	-11.56	PK
H	11590	21.64	21.67	43.31	54(Note3)	-10.69	PK
H	17385	22.21	21.83	44.04	54(Note3)	-9.96	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	21.55	21.65	43.20	54(Note3)	-10.80	PK
V	17325.00	20.68	21.81	42.49	54(Note3)	-11.51	PK
H	11550.00	20.05	21.65	41.70	54(Note3)	-12.30	PK
H	17325.00	19.50	21.81	41.31	54(Note3)	-12.69	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 5.3 for details
Test results:	Pass

Measurement data:

802.11a					
Frequency stability versus Temp.					
Power Supply: AC 120V/60Hz					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5745	5744.6616	5744.1867	5744.5237	5744.3060
	5785	5784.9111	5784.2104	5783.2801	5783.5483
	5825	5824.7200	5824.4391	5823.6371	5824.4540
-20	5745	5744.2355	5744.4820	5744.3495	5744.0184
	5785	5784.0592	5784.8244	5784.8291	5784.4146
	5825	5824.7795	5824.0824	5824.6863	5824.0140
-10	5745	5744.9815	5744.5233	5744.1295	5744.5994
	5785	5784.0270	5784.1157	5784.9848	5784.6031
	5825	5824.1765	5824.6382	5824.6919	5824.9655
0	5745	5744.5106	5744.7738	5744.3192	5744.5233
	5785	5784.0037	5784.7685	5784.6775	5784.4886
	5825	5824.9658	5824.1494	5824.0096	5824.3078
10	5745	5744.9987	5744.6136	5744.1636	5744.1787
	5785	5784.7860	5784.0938	5784.7704	5784.7860
	5825	5824.3003	5824.5126	5824.9405	5824.8106
20	5745	5744.1945	5744.4757	5744.0990	5744.3043
	5785	5784.8316	5784.2242	5784.8833	5784.5058
	5825	5824.9508	5824.0659	5824.8588	5824.1650
30	5745	5744.3376	5744.7450	5744.1669	5744.3734
	5785	5784.3695	5784.4141	5784.9987	5784.1288
	5825	5824.3434	5824.7844	5824.3252	5824.7272
40	5745	5744.7395	5744.8906	5744.8610	5744.1661
	5785	5784.4583	5784.0710	5784.1972	5784.9080
	5825	5824.2329	5824.9402	5824.1515	5824.8059
50	5745	5744.9220	5744.6667	5744.2303	5744.4649
	5785	5784.4041	5784.5814	5784.2690	5784.5227
	5825	5824.9844	5824.6840	5824.8118	5824.2347

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (AC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
108	5745	5744.5171	5744.9950	5744.1235	5744.5778
	5785	5784.5284	5784.7508	5784.7495	5784.2948
	5825	5824.8977	5824.1014	5824.9186	5824.0055
120	5745	5744.9052	5744.8847	5744.0953	5744.3901
	5785	5784.3138	5784.3157	5784.5108	5784.2903
	5825	5824.1164	5824.6376	5824.6984	5824.2674
138	5745	5744.1342	5744.5242	5744.3985	5744.1311
	5785	5784.2978	5784.2161	5784.4533	5784.3180
	5825	5824.1444	5824.2648	5824.2955	5824.4004

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

802.11n(HT20)					
Frequency stability versus Temp.					
Power Supply: AC 120V/60Hz					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5745	5745.9757	5744.5116	5743.8207	5746.5709
	5785	5785.1911	5784.7787	5784.2797	5786.0592
	5825	5825.7881	5824.7424	5824.1456	5825.6386
-20	5745	5745.8438	5744.0676	5744.9488	5745.5988
	5785	5785.2729	5784.4826	5784.1951	5785.9769
	5825	5825.2271	5824.0226	5824.0482	5825.8362
-10	5745	5745.4441	5744.6199	5744.7640	5745.5702
	5785	5785.7775	5784.4612	5784.1895	5785.3978
	5825	5825.5007	5824.0969	5824.5792	5825.6875
0	5745	5745.0191	5744.6380	5744.4645	5745.4738
	5785	5785.3583	5784.6096	5784.2522	5785.9300
	5825	5825.5666	5824.4205	5824.9028	5825.8787
10	5745	5745.8588	5744.1590	5744.5270	5745.6094
	5785	5785.4349	5784.8434	5784.5936	5785.1177
	5825	5825.7655	5824.8220	5824.2466	5825.5600
20	5745	5745.5862	5744.4749	5744.5688	5745.8852
	5785	5785.9647	5784.0684	5784.7651	5785.2473
	5825	5825.2952	5824.1637	5824.7064	5825.7245
30	5745	5745.7913	5744.9509	5744.3637	5745.0353
	5785	5785.9413	5784.5948	5784.3111	5785.0337
	5825	5825.7695	5824.2396	5824.6125	5825.6232
40	5745	5745.5513	5744.1976	5744.5771	5745.0952
	5785	5785.4489	5784.5884	5784.7525	5785.4946
	5825	5825.2319	5824.3699	5824.8908	5825.4231
50	5745	5745.7982	5744.6498	5744.2418	5745.9454
	5785	5785.4384	5784.5285	5784.8200	5785.8873
	5825	5825.9832	5824.4069	5824.0852	5825.9531

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (AC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
108	5745	5745.8696	5746.6934	5744.2643	5743.9224
	5785	5785.6630	5785.8763	5784.9634	5784.3616
	5825	5825.8989	5825.5723	5824.1677	5824.8873
120	5745	5745.6239	5745.6820	5744.2768	5744.7535
	5785	5785.4092	5785.4154	5784.5738	5784.6833
	5825	5825.0882	5825.6376	5824.7535	5824.4699
138	5745	5745.7045	5745.5162	5744.7542	5744.1807
	5785	5785.3745	5785.4269	5784.2289	5784.9452
	5825	5825.2240	5825.8983	5824.8925	5824.4258

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

802.11ac(HT20)					
Frequency stability versus Temp.					
Power Supply: AC 120V/60Hz					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5745	5744.3923	5742.6446	5743.3634	5744.1821
	5785	5784.8005	5784.4916	5784.5220	5784.3744
	5825	5824.8876	5824.1411	5824.4975	5824.2775
-20	5745	5744.4588	5744.5574	5744.5956	5744.3334
	5785	5784.1155	5784.4033	5784.0737	5784.4735
	5825	5824.0220	5824.1170	5824.2980	5824.7414
-10	5745	5744.6181	5744.7280	5744.7374	5744.6620
	5785	5784.8971	5784.5375	5784.0407	5784.8624
	5825	5824.0122	5824.0071	5824.6064	5824.7145
0	5745	5744.0955	5744.4350	5744.7047	5744.9804
	5785	5784.6013	5784.7288	5784.3229	5784.6105
	5825	5824.3840	5824.3533	5824.2919	5824.4179
10	5745	5744.1618	5744.8542	5744.8633	5744.8154
	5785	5784.3363	5784.3514	5784.1879	5784.2290
	5825	5824.7669	5824.6283	5824.0008	5824.0806
20	5745	5744.3477	5744.9503	5744.1653	5744.8295
	5785	5784.1092	5784.6199	5784.1701	5784.3537
	5825	5824.6504	5824.3467	5824.0275	5824.7147
30	5745	5744.3367	5744.0241	5744.7904	5744.8687
	5785	5784.5619	5784.6359	5784.9220	5784.0597
	5825	5824.4280	5824.6126	5824.1665	5824.8513
40	5745	5744.0949	5744.7554	5744.8159	5744.7578
	5785	5784.4051	5784.7140	5784.4015	5784.6339
	5825	5824.5649	5824.2908	5824.3244	5824.3559
50	5745	5744.6216	5744.4769	5744.2796	5744.6474
	5785	5784.2423	5784.9007	5784.9706	5784.7465
	5825	5824.8481	5824.5459	5824.9115	5824.5411

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (AC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
108	5745	5742.3838	5743.9562	5746.4225	5746.3583
	5785	5784.2463	5783.5146	5785.1537	5786.1390
	5825	5824.9686	5823.1348	5825.0500	5826.7890
120	5745	5744.4915	5744.8213	5745.0140	5745.5979
	5785	5784.6094	5784.2804	5785.0978	5785.3602
	5825	5824.9491	5824.1815	5825.3571	5825.2780
138	5745	5744.4936	5744.8338	5745.7667	5745.6480
	5785	5784.8495	5784.5300	5785.3042	5785.3718
	5825	5824.8230	5824.1906	5825.6275	5825.1536

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

802.11n(HT40)					
Frequency stability versus Temp.					
Power Supply: AC 120V/60Hz					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5755	5755.9138	5753.9053	5753.0680	5755.8855
	5795	5795.3619	5794.3431	5794.3571	5795.7987
-20	5755	5755.1469	5754.6262	5754.0720	5755.1122
	5795	5795.8645	5794.1444	5794.1400	5795.5495
-10	5755	5755.7804	5754.8887	5754.7977	5755.7680
	5795	5795.8464	5794.1599	5794.5225	5795.6703
0	5755	5755.6725	5754.1556	5754.4945	5755.6793
	5795	5795.7795	5794.4134	5794.1413	5795.3930
10	5755	5755.5067	5754.1134	5754.0948	5755.8255
	5795	5795.7965	5794.9139	5794.9536	5795.3965
20	5755	5755.0752	5754.7681	5754.8650	5755.7901
	5795	5795.7585	5794.8045	5794.8432	5795.4462
30	5755	5755.2773	5754.3823	5754.0978	5755.0153
	5795	5795.9901	5794.9976	5794.2614	5795.2429
40	5755	5755.2659	5754.2642	5754.8686	5755.1082
	5795	5795.9982	5794.4689	5794.1766	5795.4809
50	5755	5755.8978	5754.6626	5754.1101	5755.4261
	5795	5795.8188	5794.5478	5794.4368	5795.4949

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (AC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
108	5755	5755.8279	5753.8085	5756.0023	5754.3687
	5795	5795.4176	5793.5190	5796.5693	5794.4127
120	5755	5755.2933	5753.9114	5755.9309	5754.3105
	5795	5795.2243	5794.6866	5795.5414	5794.3119
138	5755	5755.3962	5754.9151	5755.8910	5754.0917
	5795	5795.8708	5794.5476	5795.8263	5794.4761

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

802.11ac(HT40)					
Frequency stability versus Temp.					
Power Supply: AC 120V/60Hz					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5755	5757.8688	5754.3746	5756.7291	5752.4120
	5795	5795.8281	5794.7670	5796.3870	5794.7359
-20	5755	5755.5840	5754.2600	5756.8837	5754.3618
	5795	5795.6783	5794.2365	5796.5192	5794.7323
-10	5755	5755.3096	5754.5333	5755.2905	5754.2501
	5795	5795.7631	5794.5415	5795.8085	5794.9899
0	5755	5755.2754	5754.3807	5755.4677	5754.1541
	5795	5795.6609	5794.1437	5795.3939	5794.0362
10	5755	5755.7782	5754.1267	5755.8550	5754.1927
	5795	5795.7420	5794.1641	5795.3179	5794.5610
20	5755	5755.4399	5754.9297	5755.3875	5754.3229
	5795	5795.5223	5794.7964	5795.9305	5794.6084
30	5755	5755.7951	5754.8440	5755.8226	5754.8116
	5795	5795.6736	5794.4598	5795.8454	5794.8865
40	5755	5755.6159	5754.3422	5755.7588	5754.1935
	5795	5795.1454	5794.9479	5795.3287	5794.8066
50	5755	5755.9858	5754.3651	5755.9626	5754.9335
	5795	5795.8294	5794.4723	5795.6525	5794.4923

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (AC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
108	5755	5755.6385	5753.7449	5756.6863	5753.0716
	5795	5795.7764	5794.6459	5796.4842	5793.6416
120	5755	5755.0738	5754.5262	5756.2793	5754.7545
	5795	5795.9876	5794.1404	5796.0095	5794.1799
138	5755	5755.4771	5754.7239	5755.2679	5754.3330
	5795	5795.5949	5794.1774	5795.6962	5794.4569

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

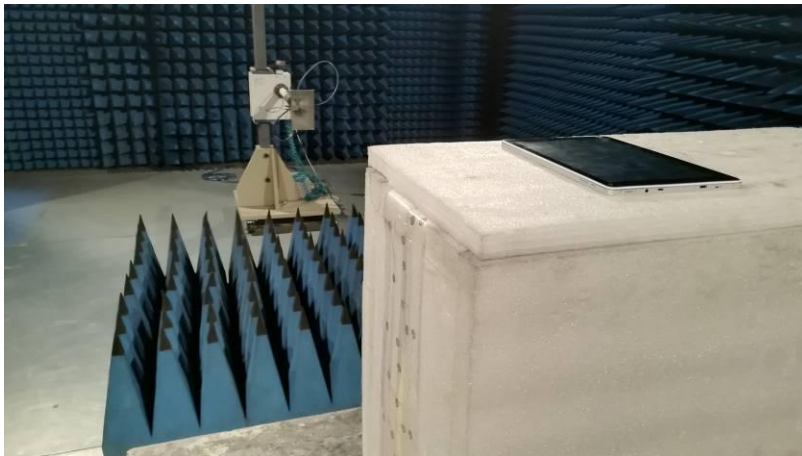
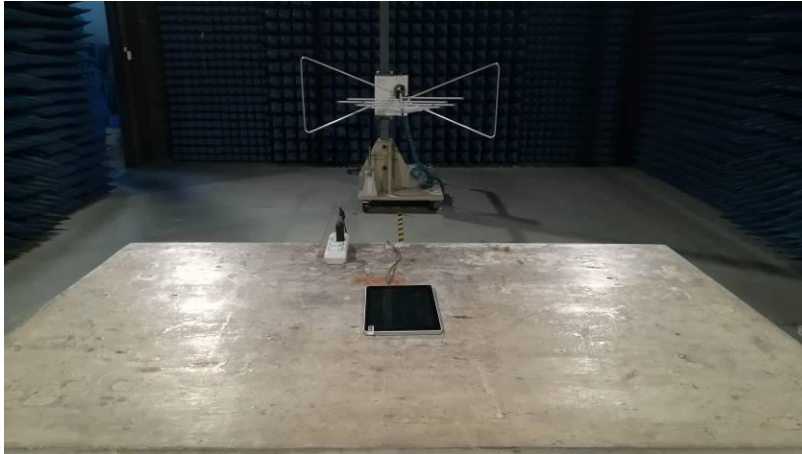
802.11ac(HT80)					
Frequency stability versus Temp.					
Power Supply: AC 120V/60Hz					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5775	5775.4663	5776.2707	5773.1168	5774.5981
-20	5775	5775.4754	5775.9040	5774.6277	5774.6754
-10	5775	5775.5268	5775.2032	5774.7804	5774.8272
0	5775	5775.7302	5775.8445	5774.8820	5774.1184
10	5775	5775.6725	5775.3013	5774.6521	5774.4777
20	5775	5775.0690	5775.8842	5774.0649	5774.9866
30	5775	5775.1734	5775.2498	5774.3219	5774.3908
40	5775	5775.3923	5775.7362	5774.8017	5774.2007
50	5775	5775.7096	5775.2008	5774.9905	5774.5181

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (AC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
108	5775	5773.5857	5776.7635	5776.4780	5775.9371
120	5775	5773.8037	5776.2733	5776.0786	5776.4336
138	5775	5774.5036	5775.4583	5776.6134	5775.0786

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

8 Test Setup Photo

Radiated Emission



Conducted Emission



9 EUT Constructional Details

Reference to the test report No. GTS201801000240E01

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