FCC REPORT

Applicant:	Quantum Creations LLC.
Address of Applicant:	15705 NW 13th Ave, Miami Gardens, Miami, Florida 33169, United States
Manufacturer/Factory:	Shenzhen Mele Star Technology Ltd.
Address of Manufacturer/Factory:	1F, Bldg#1, 28 Cuijing Road, Pingshan District, Shenzhen, PR China.

Equipment Under Test (EUT)

Product Name:	MINI PC
Model No.:	A-1153-AB3, A-1153-AB3-1, A-1153-AB3-2, A-1153-AB3-3, A-1153-AB3-4, A-1153-AB3-5, A-1153-AB3-6, A-1153-AB3-7,A-1153-AB3-8, A-1153-AB3-9
Trade Mark:	AZULLE®
FCC ID:	2AFJI20171153
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.407:2017
Date of sample receipt:	July 03, 2017
Date of Test:	July 04-10, 2017
Date of report issued:	July 11, 2017
Test Result :	PASS *

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

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*July 11, 2017*	*Original*

Prepared By: Bill. Yuan ***Date:*** *July 11, 2017*

Project Engineer

Check By: Andy. Wu ***Date:*** *July 11, 2017*

Reviewer

3 Contents

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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	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 40GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(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:	MINI PC
Model No.:	A-1153-AB3, A-1153-AB3-1, A-1153-AB3-2, A-1153-AB3-3, A-1153-AB3-4, A-1153-AB3-5, A-1153-AB3-6, A-1153-AB3-7,A-1153-AB3-8, A-1153-AB3-9
Test Model No:	A-1153-AB3
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are color and model name for commercial purpose.	
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: 6 802.11n(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:	SWITCHING ADAPTER MODEL:ADS-25D-12 12024E INPUT: AC 100-240V, 50/60Hz, Max 0.7A OUTPUT: DC 12V, 2.0A

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 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.

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.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 22, 2016.

● **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

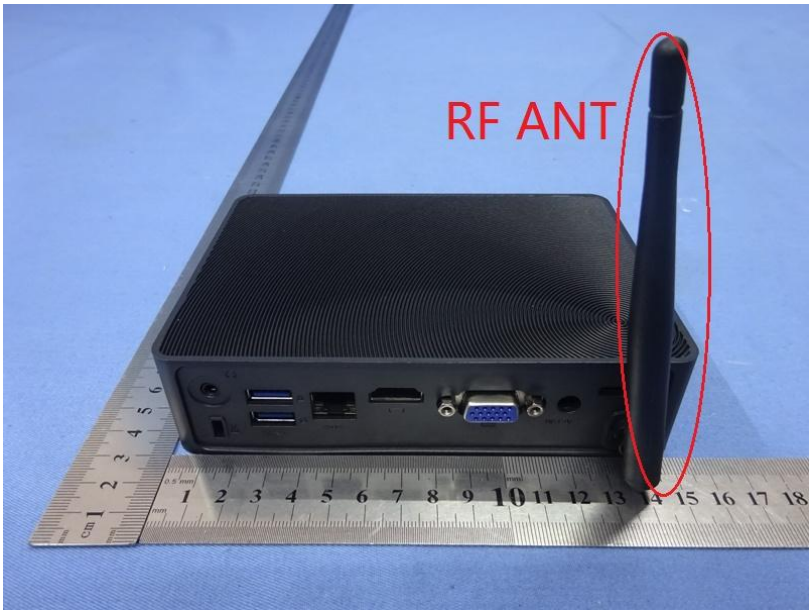
Standard requirement:	FCC Part15 C Section 15.203

15.203 requirement:

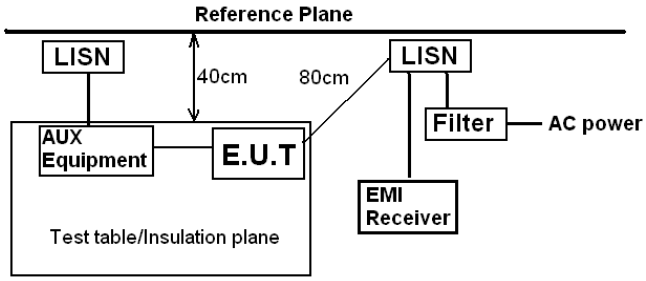
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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.

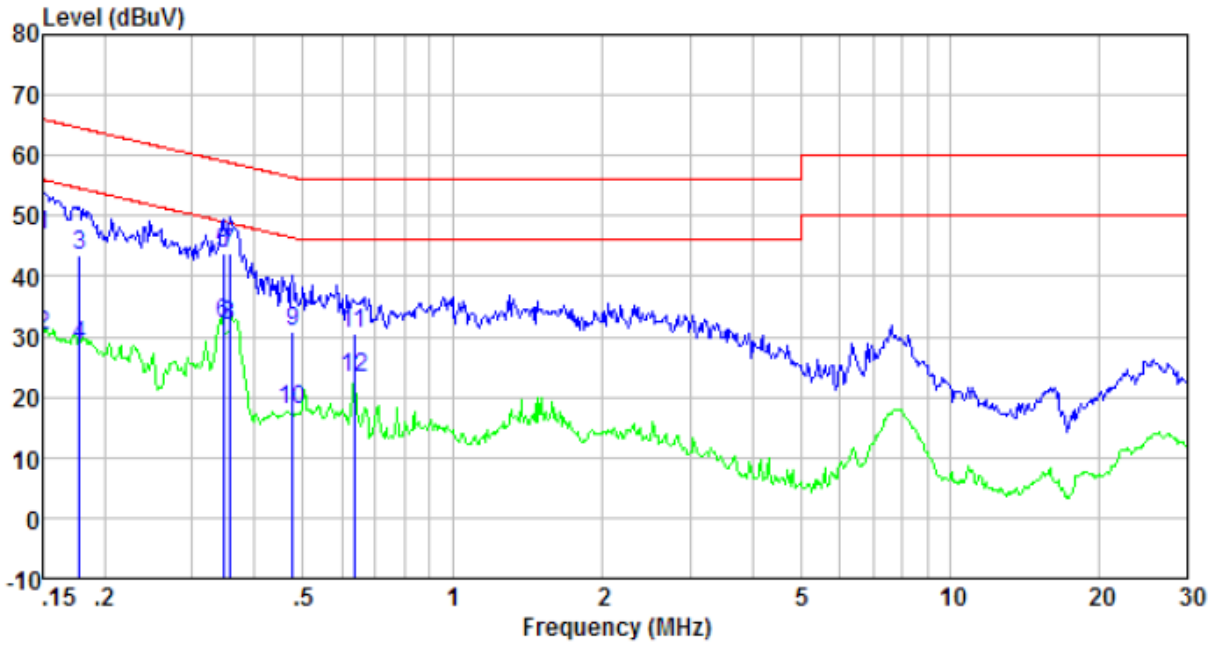


7.2 Conducted Emissions

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 5.3 for details
Test results:	Pass

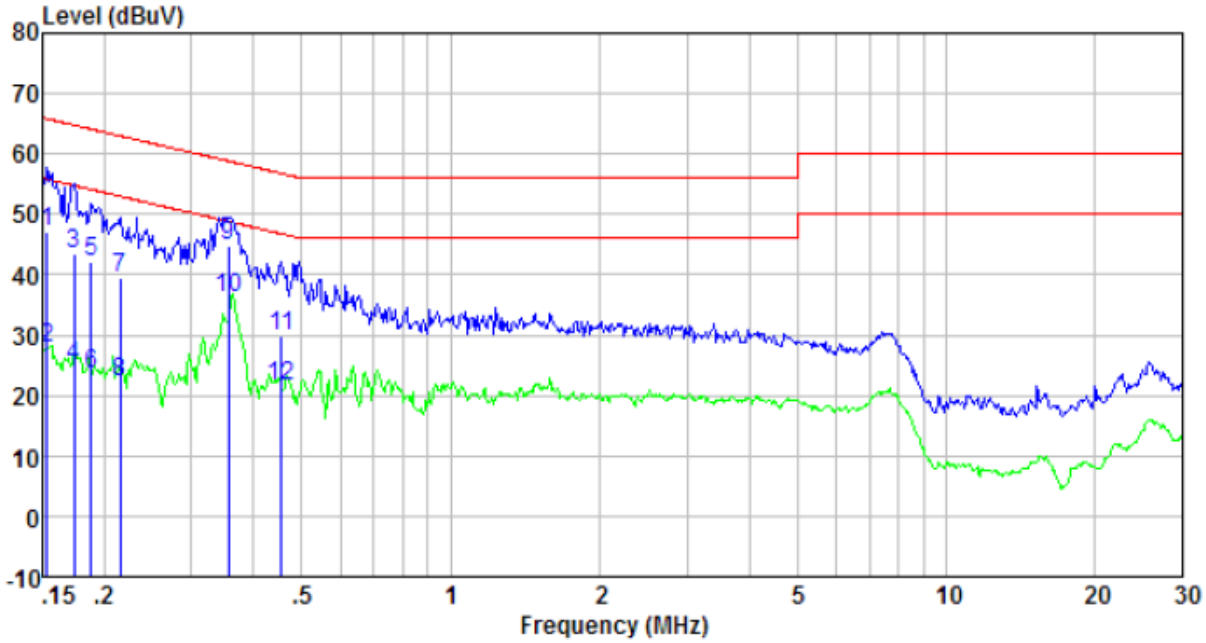
Measurement data

Line:



Freq MHz	Reading level dBuV	lISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.150	46.24	0.42	0.12	46.78	66.00	-19.22	QP
0.150	29.63	0.42	0.12	30.17	56.00	-25.83	Average
0.178	42.78	0.42	0.13	43.33	64.59	-21.26	QP
0.178	28.12	0.42	0.13	28.67	54.59	-25.92	Average
0.346	43.17	0.43	0.10	43.70	59.05	-15.35	QP
0.346	31.54	0.43	0.10	32.07	49.05	-16.98	Average
0.356	43.24	0.43	0.10	43.77	58.83	-15.06	QP
0.356	31.33	0.43	0.10	31.86	48.83	-16.97	Average
0.476	30.26	0.39	0.11	30.76	56.41	-25.65	QP
0.476	17.31	0.39	0.11	17.81	46.41	-28.60	Average
0.634	30.21	0.30	0.13	30.64	56.00	-25.36	QP
0.634	22.80	0.30	0.13	23.23	46.00	-22.77	Average

Neutral:

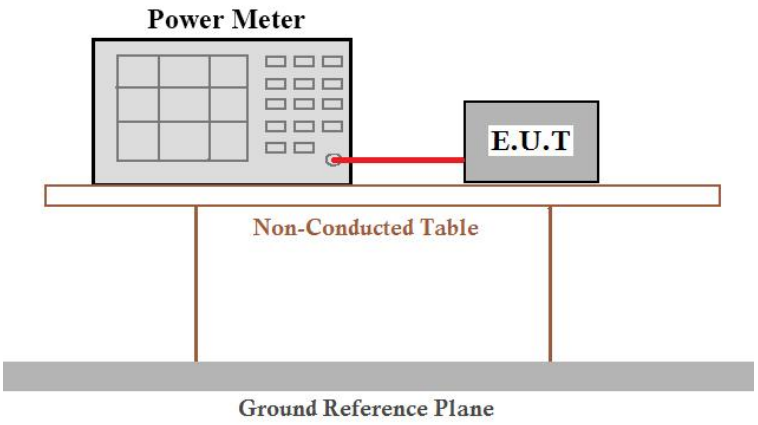


Freq MHz	Reading level dBuV	lISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.153	46.48	0.41	0.12	47.01	65.82	-18.81	QP
0.153	27.20	0.41	0.12	27.73	55.82	-28.09	Average
0.174	42.84	0.41	0.13	43.38	64.77	-21.39	QP
0.174	24.45	0.41	0.13	24.99	54.77	-29.78	Average
0.188	41.44	0.41	0.13	41.98	64.11	-22.13	QP
0.188	23.12	0.41	0.13	23.66	54.11	-30.45	Average
0.215	38.77	0.42	0.13	39.32	63.01	-23.69	QP
0.215	21.77	0.42	0.13	22.32	53.01	-30.69	Average
0.356	44.14	0.41	0.10	44.65	58.83	-14.18	QP
0.356	35.53	0.41	0.10	36.04	48.83	-12.79	Average
0.456	29.25	0.37	0.11	29.73	56.76	-27.03	QP
0.456	20.93	0.37	0.11	21.41	46.76	-25.35	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:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

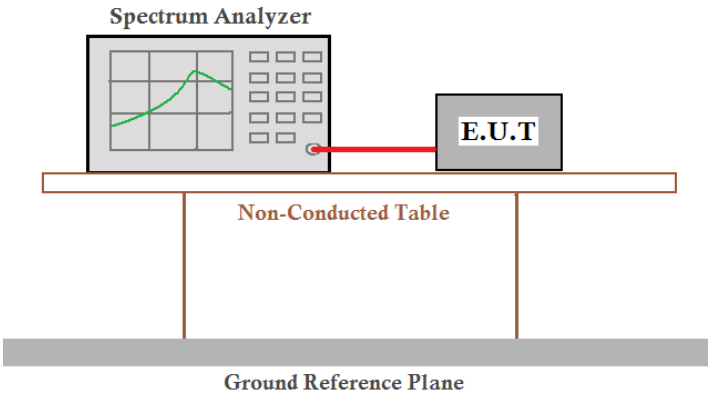
Measurement Data

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	13.85	11.65	11.37	11.50	8.02	---	30.00	Pass
Middle	13.77	11.77	11.22	---	---	7.53		
Highest	13.91	11.71	11.68	11.64	8.12	---		

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

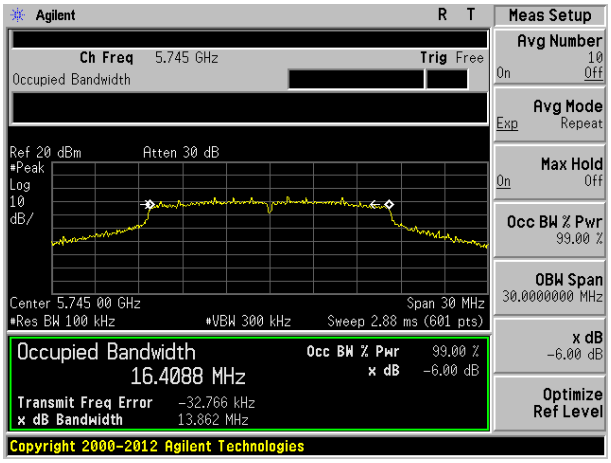
Measurement Data

5.8G Band								
Test CH	Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n(HT20)	802.11ac(HT20)	802.11n(HT40)	802.11ac(HT40)	802.11ac(HT80)		
Lowest	13.862	12.037	13.241	35.164	33.851	N/A	>500	Pass
Middle	13.875	13.154	12.609	N/A	N/A	75.405		
Highest	15.186	11.759	13.235	33.920	33.836	N/A		

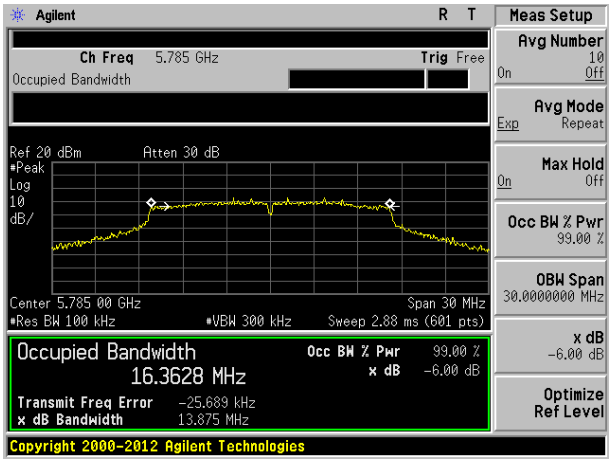
Remark: “---“ is not applicable

Test plot as follows:

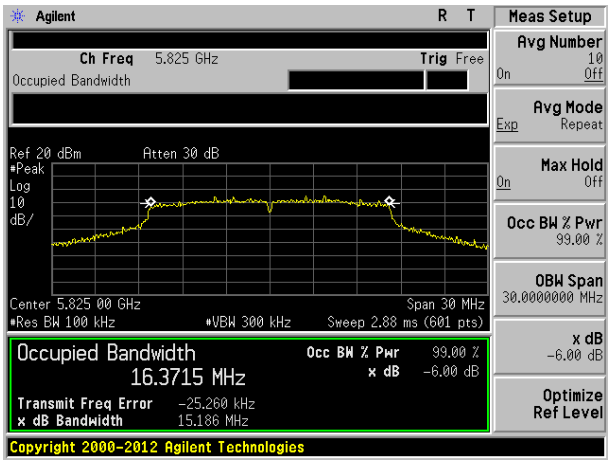
Test mode: 802.11a



Lowest channel

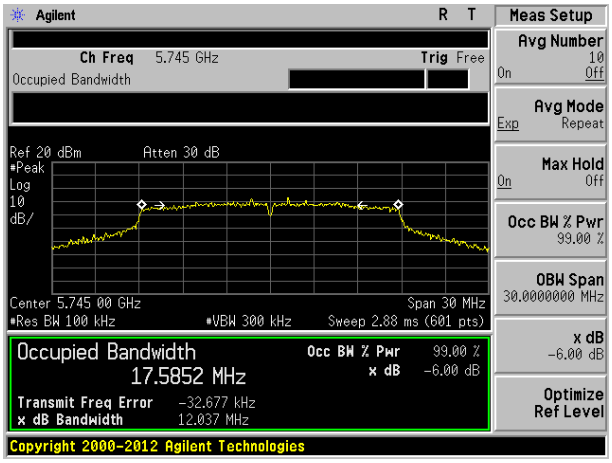


Middle channel

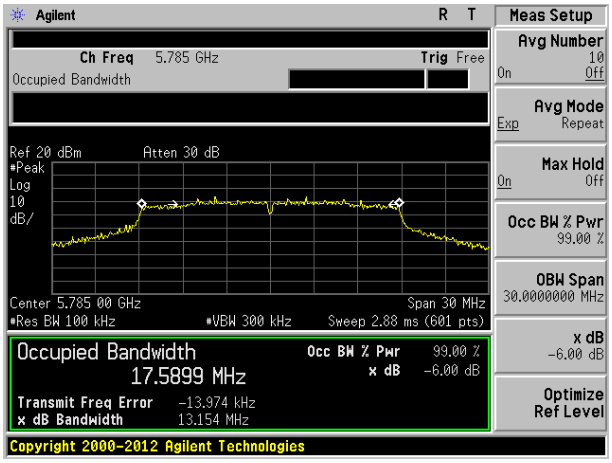


Highest channel

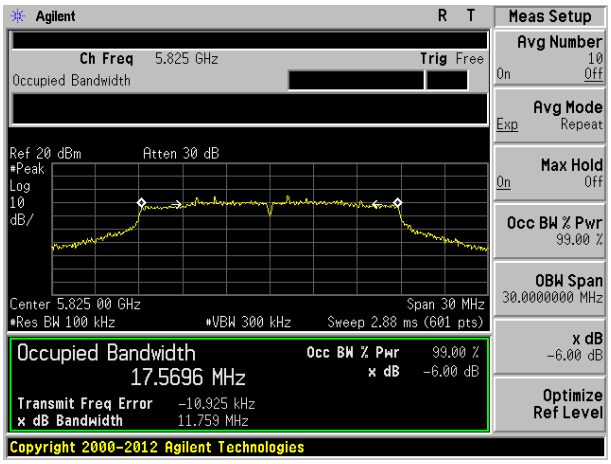
Test mode: 802.11n(HT20) @ 5.8G Band



Lowest channel

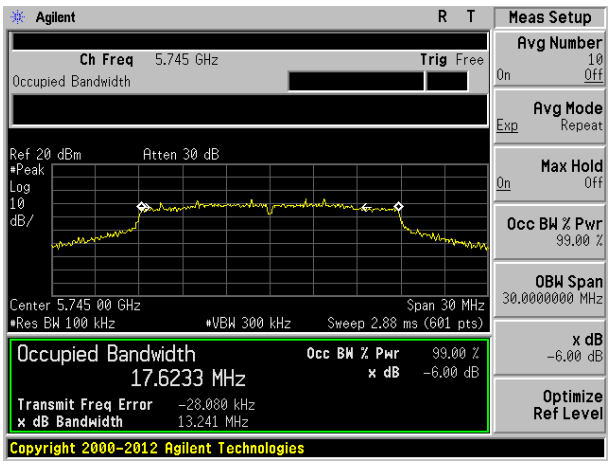


Middle channel

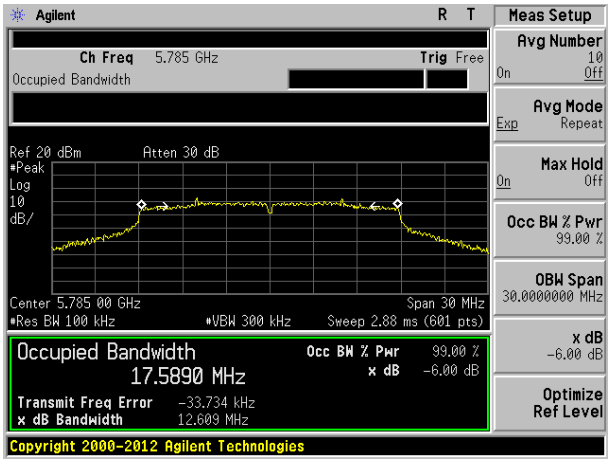


Highest channel

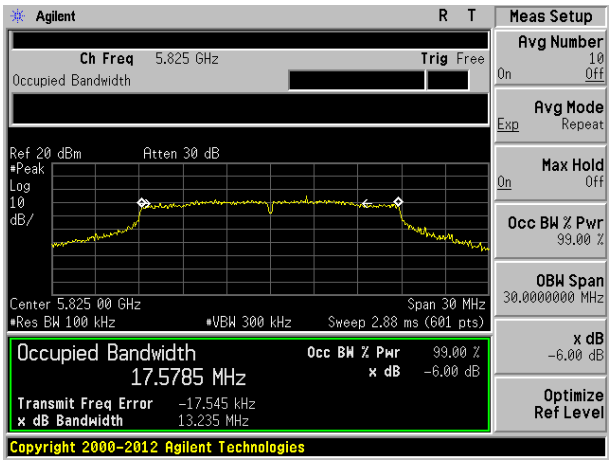
Test mode: 802.11ac(HT20) @ 5.8G Band



Lowest channel

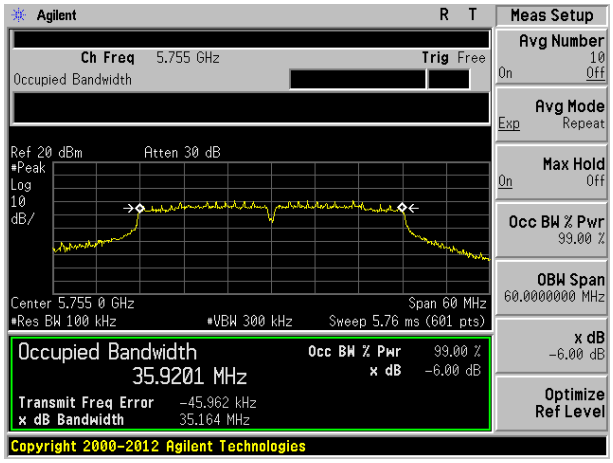


Middle channel

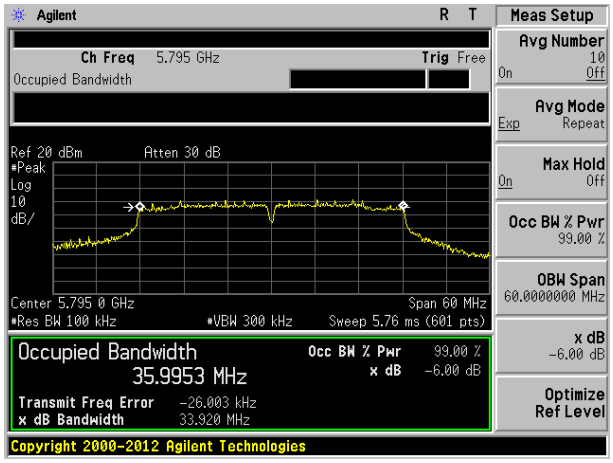


Highest channel

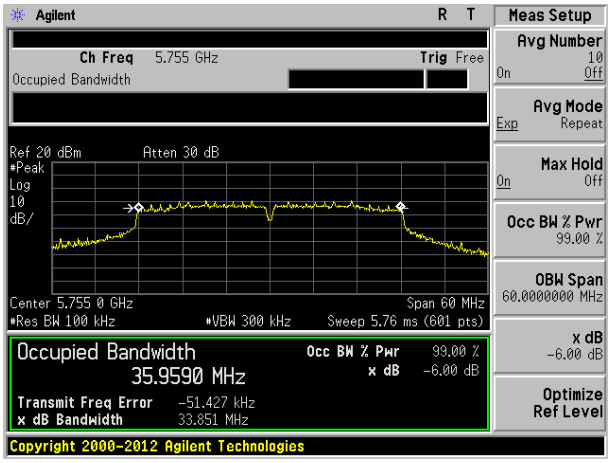
Test mode: 802.11n(HT40) @ 5.8G Band



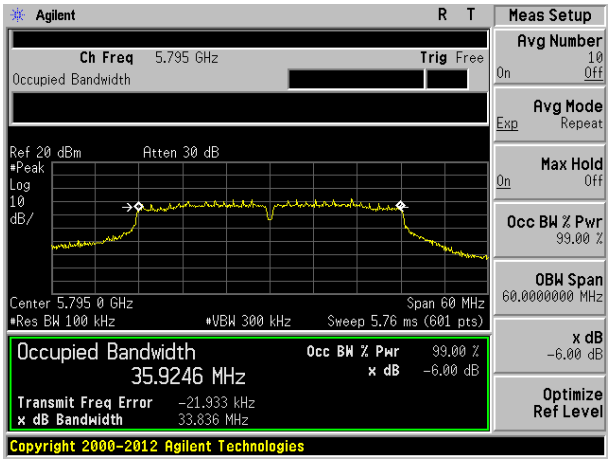
Lowest channel



Highest channel

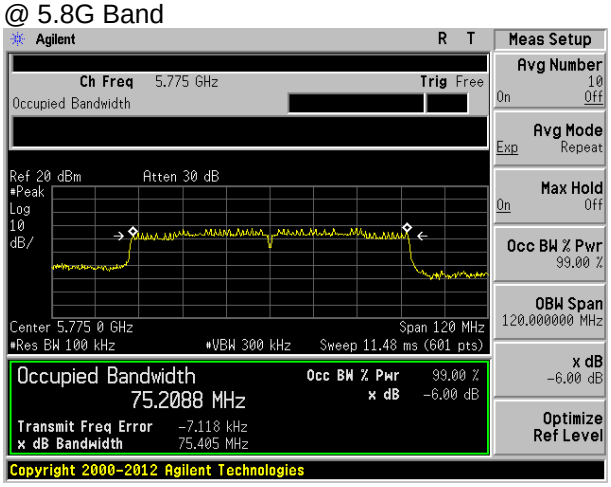


Lowest channel

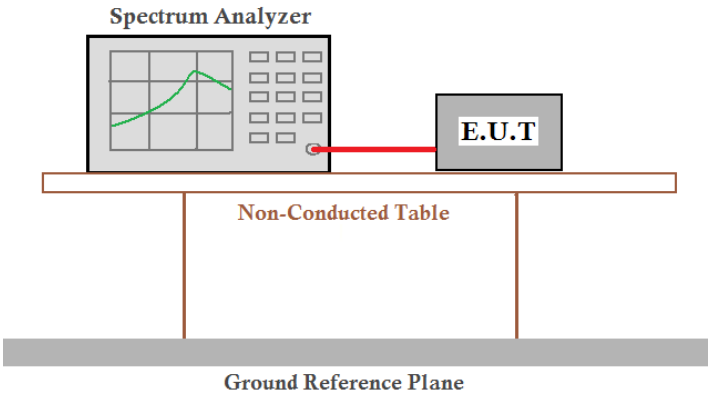


Highest channel

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

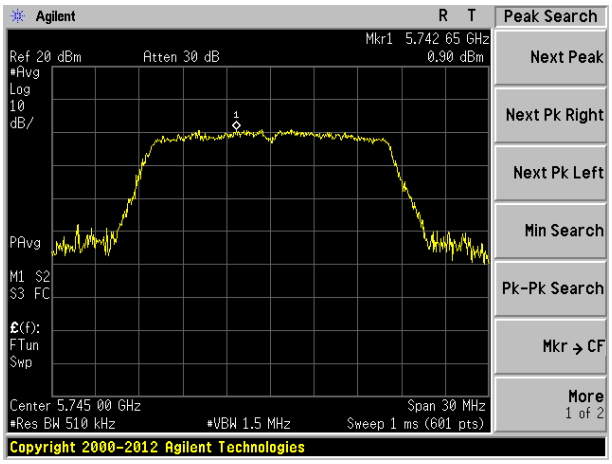
Measurement Data

5.8G Band								
Test CH	Power Spectral Density (dBm)						Limit (dBm/500kHz)	Result
	802.11a	802.11n(HT20)	802.11ac(HT20)	802.11n(HT40)	802.11ac(HT40)	802.11ac(HT80)		
Lowest	0.90	-0.19	-2.35	-3.39	-4.76	---	30.00	Pass
Middle	0.81	0.18	-1.60	---	---	-8.55		
Highest	0.43	-0.31	-1.29	-3.38	-4.09	---		

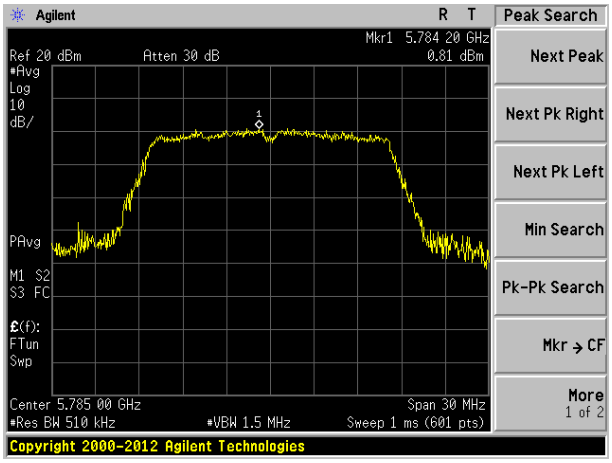
Remark: “---“ is not applicable

Test plot as follows:

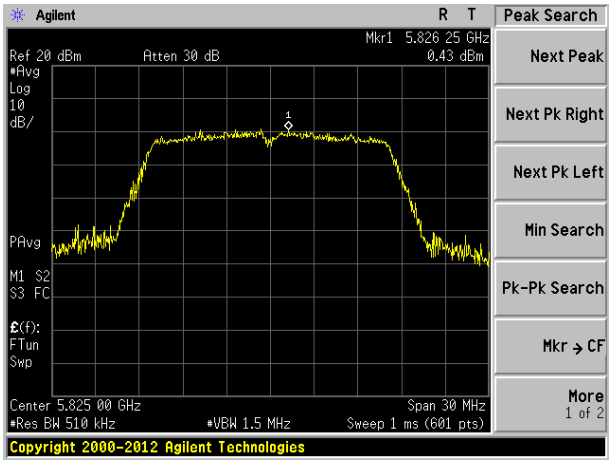
Test mode: 802.11a



Lowest channel

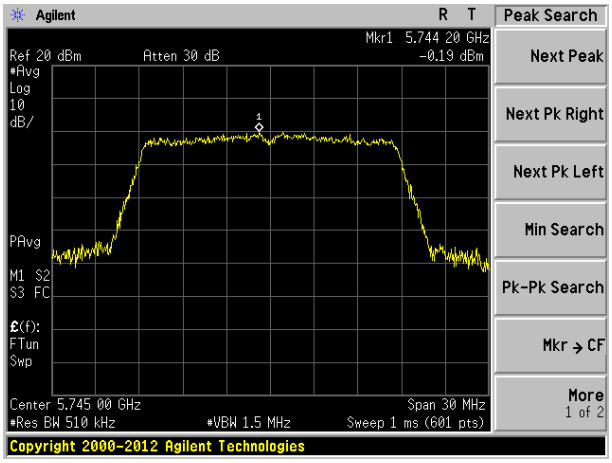


Middle channel

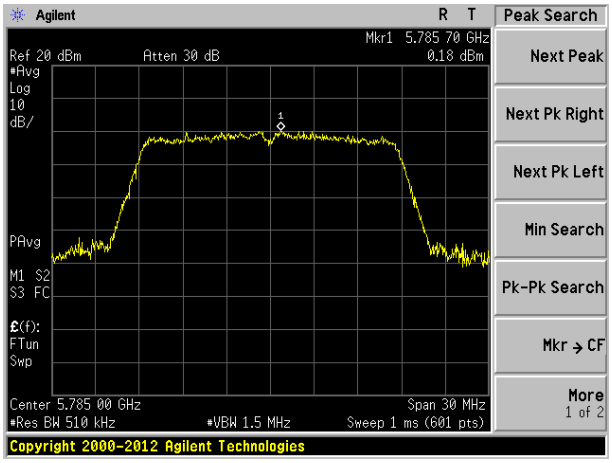


Highest channel

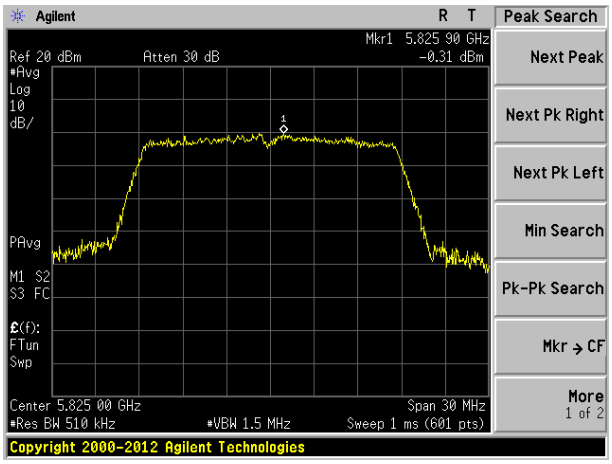
Test mode: 802.11n(HT20) @ 5.8G Band



Lowest channel

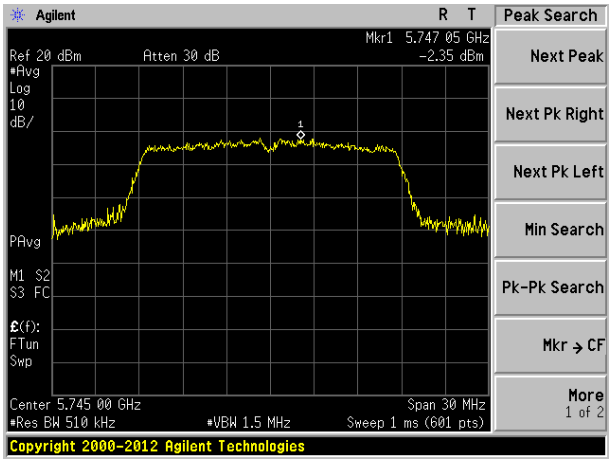


Middle channel

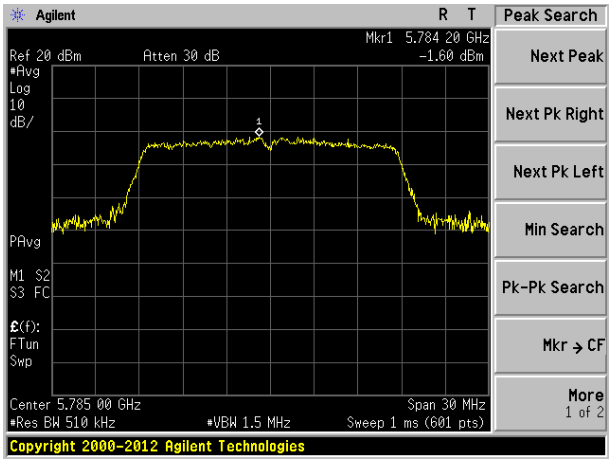


Highest channel

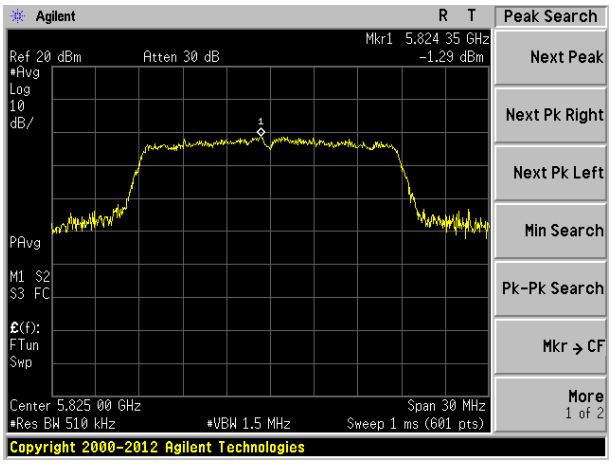
Test mode: 802.11ac(HT20)



Lowest channel

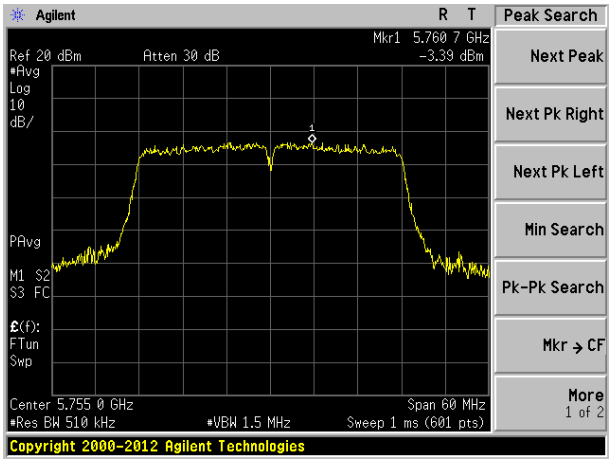


Middle channel

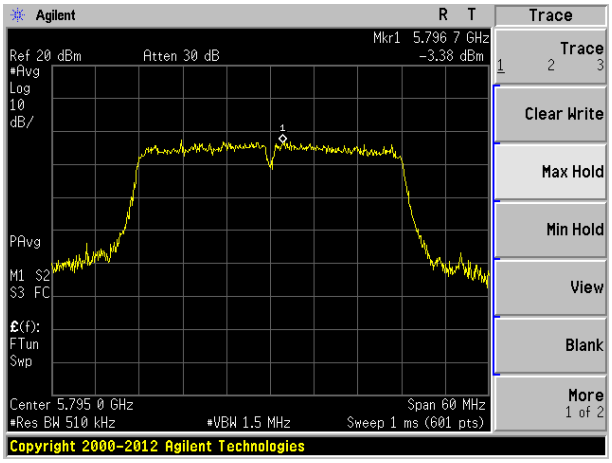


Highest channel

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

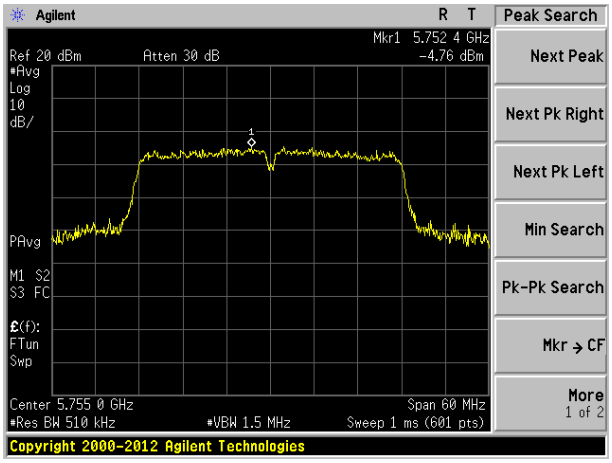


Lowest channel

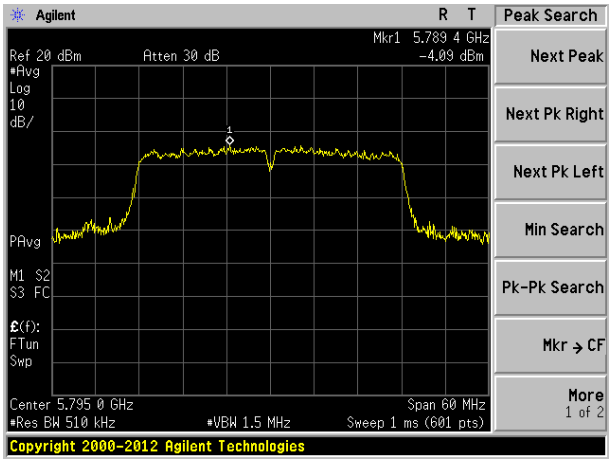


Highest channel

Test mode: 802.11ac(HT40)

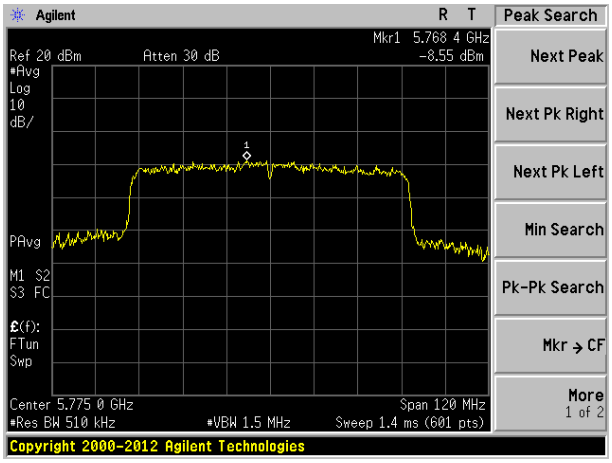


Lowest channel



Highest channel

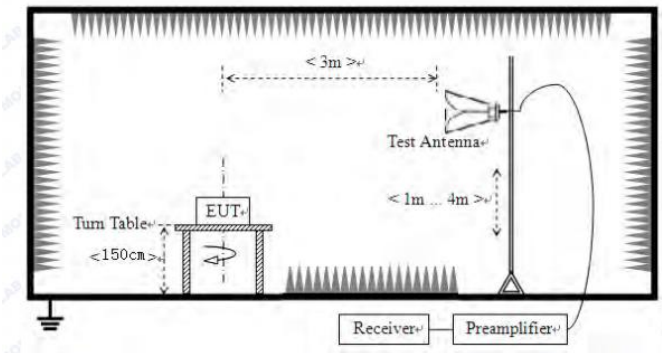
Test mode: 802.11ac(HT80)



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 Above 1GHz / Peak / 1MHz / 10Hz / Average
Limit:	Frequency / Limit (dBuV/m @3m) / Value Above 1GHz / 54.00 / Average Above 1GHz / 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

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

For example, if EIRP = -27dBm

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

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
5725.00	39.67	32.68	9.97	23.86	58.46	68.20	-9.74	Horizontal
5725.00	38.32	32.68	9.97	23.86	57.11	68.20	-11.09	Vertical

RMS 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
5725.00	30.05	32.68	9.97	23.86	48.84	54.00	-5.16	Horizontal
5725.00	29.13	32.68	9.97	23.86	47.92	54.00	-6.08	Vertical

Test mode:	802.11a	Test channel:	Highest

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
5850.00	35.99	32.70	9.99	23.87	54.81	68.20	-13.39	Horizontal
5850.00	37.90	32.70	9.99	23.87	56.72	68.20	-11.48	Vertical

RMS 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
5850.00	30.80	32.70	9.99	23.87	49.62	54.00	-4.38	Horizontal
5850.00	30.68	32.70	9.99	23.87	49.50	54.00	-4.50	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

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
5725.00	36.68	32.68	9.97	23.86	55.47	68.2	-12.73	Horizontal
5725.00	38.93	32.68	9.97	23.86	57.72	68.2	-10.48	Vertical

RMS 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
5725.00	31.83	32.68	9.97	23.86	50.62	54.00	-3.38	Horizontal
5725.00	31.52	32.68	9.97	23.86	50.31	54.00	-3.69	Vertical

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

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
5850.00	40.24	32.70	9.99	23.87	59.06	68.2	-9.14	Horizontal
5850.00	41.69	32.70	9.99	23.87	60.51	68.2	-7.69	Vertical

RMS 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
5850.00	30.04	32.70	9.99	23.87	48.86	54.00	-5.14	Horizontal
5850.00	30.32	32.70	9.99	23.87	49.14	54.00	-4.86	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

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
5725.00	39.33	32.68	9.97	23.86	58.12	68.2	-10.08	Horizontal
5725.00	37.94	32.68	9.97	23.86	56.73	68.2	-11.47	Vertical

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
5725.00	28.32	32.68	9.97	23.86	47.11	54.00	-6.89	Horizontal
5725.00	29.39	32.68	9.97	23.86	48.18	54.00	-5.82	Vertical

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

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
5850.00	38.77	32.74	10.04	23.87	57.68	68.2	-10.52	Horizontal
5850.00	36.78	32.74	10.04	23.87	55.69	68.2	-12.51	Vertical

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
5850.00	28.64	32.74	10.04	23.87	47.55	54.00	-6.45	Horizontal
5850.00	29.26	32.74	10.04	23.87	48.17	54.00	-5.83	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

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
5725.00	35.48	32.53	9.83	23.84	54.00	68.2	-14.20	Horizontal
5725.00	39.40	32.53	9.83	23.84	57.92	68.2	-10.28	Vertical

RMS 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
5725.00	31.37	32.53	9.83	23.84	49.89	54.00	-4.11	Horizontal
5725.00	29.50	32.53	9.83	23.84	48.02	54.00	-5.98	Vertical

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

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
5850.00	37.25	32.7	9.99	23.87	56.07	68.2	-12.13	Horizontal
5850.00	36.16	32.7	9.99	23.87	54.98	68.2	-13.22	Vertical

RMS 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
5850.00	29.86	32.7	9.99	23.87	48.68	54.00	-5.32	Horizontal
5850.00	29.15	32.7	9.99	23.87	47.97	54.00	-6.03	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

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
5725.00	34.75	32.53	9.83	23.84	53.27	68.2	-14.93	Horizontal
5725.00	36.02	32.53	9.83	23.84	54.54	68.2	-13.63	Vertical

RMS 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
5725.00	30.01	32.53	9.83	23.84	48.53	54.00	-5.47	Horizontal
5725.00	29.96	32.53	9.83	23.84	48.48	54.00	-5.52	Vertical

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

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
5850.00	38.57	32.7	9.99	23.87	57.39	68.2	-10.81	Horizontal
5850.00	37.94	32.7	9.99	23.87	56.76	68.2	-11.44	Vertical

RMS 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
5850.00	29.21	32.7	9.99	23.87	48.03	54.00	-5.97	Horizontal
5850.00	31.46	32.7	9.99	23.87	50.28	54.00	-3.72	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

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
5725.00	37.10	32.53	9.83	23.84	55.62	68.2	12.58	Horizontal
5850.00	38.80	32.7	9.99	23.87	57.62	68.2	-10.58	Vertical

RMS 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
5725.00	28.47	32.53	9.83	23.84	46.99	54.00	-7.01	Horizontal
5850.00	29.13	32.7	9.99	23.87	47.95	54.00	-6.05	Vertical

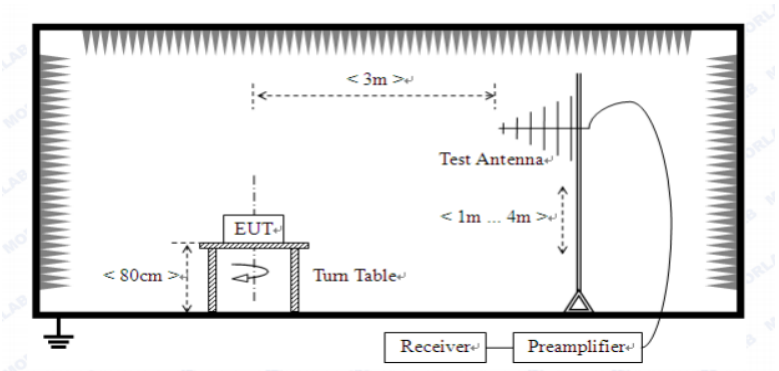
Remark:

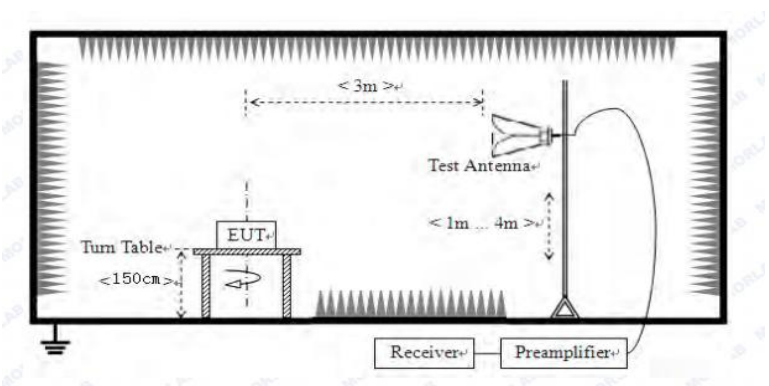
1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

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

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Test Frequency Range:</td><td>30MHz to 40GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr>
<tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr>
<tr><td>Frequency</td><td>Limit (dBm/MHz)</td><td>Remark</td></tr>
<tr><td>Above 1GHz</td><td>-27.0</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>Below 1GHz
 

Above 1GHz
 
</td></tr>
<tr><td>Test Procedure:</td><td>1. The EUT was placed on the top of a rotating table (0.8m for below</td></tr>
</table>

	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.

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
30.64	50.37	11.30	0.56	30.10	32.13	40.00	-7.87	Vertical
70.83	47.89	7.38	0.95	29.85	26.37	40.00	-13.63	Vertical
135.51	49.74	7.57	1.47	29.48	29.30	43.50	-14.20	Vertical
272.28	42.10	12.63	2.24	29.81	27.16	46.00	-18.84	Vertical
482.22	36.59	17.14	3.23	29.33	27.63	46.00	-18.37	Vertical
724.26	34.93	20.16	4.18	29.20	30.07	46.00	-15.93	Vertical
75.45	41.93	7.35	0.99	29.82	20.45	40.00	-19.55	Horizontal
181.92	46.54	8.80	1.75	29.27	27.82	43.50	-15.68	Horizontal
440.20	32.55	16.29	3.05	29.41	22.48	46.00	-23.52	Horizontal
524.55	39.78	17.98	3.42	29.30	31.88	46.00	-14.12	Horizontal
689.57	37.75	19.74	4.05	29.21	32.33	46.00	-13.67	Horizontal
833.32	38.02	21.59	4.58	29.17	35.02	46.00	-10.98	Horizontal

Above 1GHz:

802.11a(HT20) 5745MHz

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
11490.00	31.44	39.85	14.98	34.6	51.67	74	-22.33	Vertical
17235.00	33.59	45.51	18.98	33.95	64.13	74	-9.87	Vertical
11490.00	31.92	39.85	14.98	34.6	52.15	74	-21.85	Horizontal
17235.00	33.99	45.51	18.98	33.95	64.53	74	-9.47	Horizontal
11490.00	20.77	39.85	14.98	34.6	41.00	54	-13.00	Vertical
17235.00	20.45	45.51	18.98	33.95	50.99	54	-3.01	Vertical
11490.00	18.53	39.85	14.98	34.6	38.76	54	-15.24	Horizontal
17235.00	19.89	45.51	18.98	33.95	50.43	54	-3.57	Horizontal

802.11a(HT20) 5785MHz

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
11570.00	35.00	39.76	14.99	34.75	55.00	74	-19.00	Vertical
17355.00	31.86	46.19	18.98	34.45	62.58	74	-11.42	Vertical
11570.00	35.38	39.76	14.99	34.75	55.38	74	-18.62	Horizontal
17355.00	31.82	46.19	18.98	34.45	62.54	74	-11.46	Horizontal
11570.00	20.25	39.76	14.99	34.75	40.25	54	-13.75	Vertical
17355.00	17.47	46.19	18.98	34.45	48.19	54	-5.81	Vertical
11570.00	18.31	39.76	14.99	34.75	38.31	54	-15.69	Horizontal
17355.00	19.96	46.19	18.98	34.45	50.68	54	-3.32	Horizontal

802.11a(HT20) 5825MHz

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
11650.00	34.86	39.61	14.99	34.86	54.60	74	-19.40	Vertical
17475.00	33.43	46.78	18.97	34.95	64.23	74	-9.77	Vertical
11650.00	34.53	39.61	14.99	34.86	54.27	74	-19.73	Horizontal
17475.00	35.82	46.78	18.97	34.95	66.62	74	-7.38	Horizontal
11650.00	18.67	39.61	14.99	34.86	38.41	54	-15.59	Vertical
17475.00	17.26	46.78	18.97	34.95	48.06	54	-5.94	Vertical
11650.00	19.33	39.61	14.99	34.86	39.07	54	-14.93	Horizontal
17475.00	17.47	46.78	18.97	34.95	48.27	54	-5.73	Horizontal

802.11n(HT20) 5745MHz

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
11490.00	34.76	39.85	14.98	34.6	54.99	74	-19.01	Vertical
17235.00	33.60	45.51	18.98	33.95	64.14	74	-9.86	Vertical
11490.00	31.91	39.85	14.98	34.6	52.14	74	-21.86	Horizontal
17235.00	33.29	45.51	18.98	33.95	63.83	74	-10.17	Horizontal
11490.00	19.09	39.85	14.98	34.6	39.32	54	-14.68	Vertical
17235.00	19.55	45.51	18.98	33.95	50.09	54	-3.91	Vertical
11490.00	18.24	39.85	14.98	34.6	38.47	54	-15.53	Horizontal
17235.00	17.91	45.51	18.98	33.95	48.45	54	-5.55	Horizontal

802.11n(HT20) 5785MHz

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
11570.00	34.26	39.76	14.99	34.75	54.26	74	-19.74	Vertical
17355.00	32.28	46.19	18.98	34.45	63.00	74	-11.00	Vertical
11570.00	33.75	39.76	14.99	34.75	53.75	74	-20.25	Horizontal
17355.00	31.70	46.19	18.98	34.45	62.42	74	-11.58	Horizontal
11570.00	19.74	39.76	14.99	34.75	39.74	54	-14.26	Vertical
17355.00	18.32	46.19	18.98	34.45	49.04	54	-4.96	Vertical
11570.00	17.46	39.76	14.99	34.75	37.46	54	-16.54	Horizontal
17355.00	18.52	46.19	18.98	34.45	49.24	54	-4.76	Horizontal

802.11n(HT20) 5825MHz

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
11650.00	33.05	39.61	14.99	34.86	52.79	74	-21.21	Vertical
17475.00	33.93	46.78	18.97	34.95	64.73	74	-9.27	Vertical
11650.00	34.04	39.61	14.99	34.86	53.78	74	-20.22	Horizontal
17475.00	32.32	46.78	18.97	34.95	63.12	74	-10.88	Horizontal
11650.00	18.23	39.61	14.99	34.86	37.97	54	-16.03	Vertical
17475.00	17.45	46.78	18.97	34.95	48.25	54	-5.75	Vertical
11650.00	17.14	39.61	14.99	34.86	36.88	54	-17.12	Horizontal
17475.00	17.77	46.78	18.97	34.95	48.57	54	-5.43	Horizontal

802.11ac(HT20) 5745MHz

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
11490.00	31.18	39.85	14.98	34.6	51.41	74	-22.59	Vertical
17235.00	34.39	45.51	18.98	33.95	64.93	74	-9.07	Vertical
11490.00	34.82	39.85	14.98	34.6	55.05	74	-18.95	Horizontal
17235.00	33.11	45.51	18.98	33.95	63.65	74	-10.35	Horizontal
11490.00	19.15	39.85	14.98	34.6	39.38	54	-14.62	Vertical
17235.00	19.93	45.51	18.98	33.95	50.47	54	-3.53	Vertical
11490.00	17.53	39.85	14.98	34.6	37.76	54	-16.24	Horizontal
17235.00	18.57	45.51	18.98	33.95	49.11	54	-4.89	Horizontal

802.11ac(HT20) 5785MHz

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
11570.00	35.57	39.76	14.99	34.75	55.57	74	-18.43	Vertical
17355.00	30.83	46.19	18.98	34.45	61.55	74	-12.45	Vertical
11570.00	33.36	39.76	14.99	34.75	53.36	74	-20.64	Horizontal
17355.00	34.95	46.19	18.98	34.45	65.67	74	-8.33	Horizontal
11570.00	20.99	39.76	14.99	34.75	40.99	54	-13.01	Vertical
17355.00	18.09	46.19	18.98	34.45	48.81	54	-5.19	Vertical
11570.00	17.20	39.76	14.99	34.75	37.20	54	-16.80	Horizontal
17355.00	19.71	46.19	18.98	34.45	50.43	54	-3.57	Horizontal

802.11ac(HT20) 5825MHz

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
11650.00	35.89	39.61	14.99	34.86	55.63	74	-18.37	Vertical
17475.00	32.17	46.78	18.97	34.95	62.97	74	-11.03	Vertical
11650.00	33.00	39.61	14.99	34.86	52.74	74	-21.26	Horizontal
17475.00	31.11	46.78	18.97	34.95	61.91	74	-12.09	Horizontal
11650.00	18.37	39.61	14.99	34.86	38.11	54	-15.89	Vertical
17475.00	19.89	46.78	18.97	34.95	50.69	54	-3.31	Vertical
11650.00	20.45	39.61	14.99	34.86	40.19	54	-13.81	Horizontal
17475.00	19.54	46.78	18.97	34.95	50.34	54	-3.66	Horizontal

802.11n(HT40) 5755MHz

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
11510.00	34.58	39.85	14.98	34.63	54.78	74	-19.22	Vertical
17265.00	30.78	45.51	18.98	34.09	61.18	74	-12.82	Vertical
11510.00	34.48	39.85	14.98	34.63	54.68	74	-19.32	Horizontal
17265.00	30.42	45.51	18.98	34.09	60.82	74	-13.18	Horizontal
11510.00	19.73	39.85	14.98	34.63	39.93	54	-14.07	Vertical
17265.00	18.35	45.51	18.98	34.09	48.75	54	-5.25	Vertical
11510.00	18.01	39.85	14.98	34.63	38.21	54	-15.79	Horizontal
17265.00	20.19	45.51	18.98	34.09	50.59	54	-3.41	Horizontal

802.11n(HT40) 5795MHz

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
11590.00	32.27	39.71	14.99	34.78	52.19	74	-21.81	Vertical
17385.00	32.41	46.49	18.98	34.59	63.29	74	-10.71	Vertical
11590.00	35.91	39.71	14.99	34.78	55.83	74	-18.17	Horizontal
17385.00	30.94	46.49	18.98	34.59	61.82	74	-12.18	Horizontal
11590.00	17.09	39.71	14.99	34.78	37.01	54	-16.99	Vertical
17385.00	17.20	46.49	18.98	34.59	48.08	54	-5.92	Vertical
11590.00	18.94	39.71	14.99	34.78	38.86	54	-15.14	Horizontal
17385.00	18.00	46.49	18.98	34.59	48.88	54	-5.12	Horizontal

802.11ac(HT40) 5755MHz

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
11510.00	35.21	39.85	14.98	34.63	55.41	74	-18.59	Vertical
17265.00	32.57	45.51	18.98	34.09	62.97	74	-11.03	Vertical
11510.00	35.69	39.85	14.98	34.63	55.89	74	-18.11	Horizontal
17265.00	33.35	45.51	18.98	34.09	63.75	74	-10.25	Horizontal
11510.00	17.27	39.85	14.98	34.63	37.47	54	-16.53	Vertical
17265.00	18.01	45.51	18.98	34.09	48.41	54	-5.59	Vertical
11510.00	20.59	39.85	14.98	34.63	40.79	54	-13.21	Horizontal
17265.00	17.75	45.51	18.98	34.09	48.15	54	-5.85	Horizontal

802.11ac(HT40) 5795MHz

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
11590.00	34.42	39.71	14.99	34.78	54.34	74	-19.66	Vertical
17385.00	30.67	46.49	18.98	34.59	61.55	74	-12.45	Vertical
11590.00	35.09	39.71	14.99	34.78	50.01	74	-18.99	Horizontal
17385.00	30.38	46.49	18.98	34.59	61.26	74	-12.74	Horizontal
11590.00	25.08	39.71	14.99	34.78	45.00	54	-9.00	Vertical
17385.00	19.67	46.49	18.98	34.59	51.55	54	-3.45	Vertical
11590.00	25.98	39.71	14.99	34.78	49.90	54	-8.10	Horizontal
17385.00	18.84	46.49	18.98	34.59	51.72	54	-4.28	Horizontal

802.11ac(HT80) 5775MHz

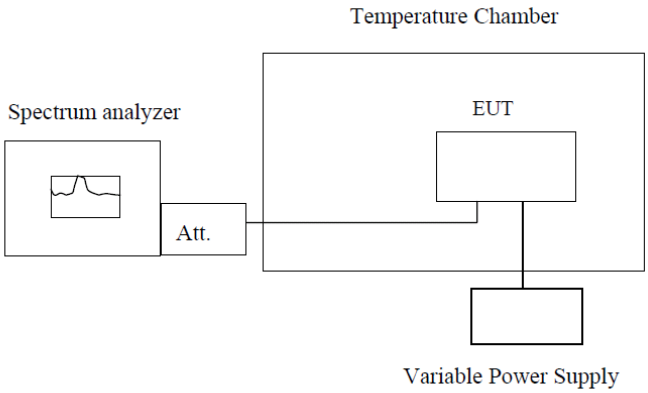
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
11550.00	35.28	39.76	14.98	34.72	55.30	74	-18.70	Vertical
17325.00	31.94	46.19	18.98	34.31	62.80	74	-11.20	Vertical
11550.00	35.45	39.76	14.98	34.72	53.47	74	-18.53	Horizontal
17325.00	32.78	46.19	18.98	34.31	65.64	74	-10.36	Horizontal
11550.00	28.30	39.76	14.98	34.72	48.32	54	-5.68	Vertical
17325.00	19.37	46.19	18.98	34.31	50.23	54	-3.77	Vertical
11550.00	25.80	39.76	14.98	34.72	45.82	54	-8.18	Horizontal
17325.00	18.98	46.19	18.98	34.31	49.84	54	-4.16	Horizontal

Note:

1. Level = Read Level + Antenna Factor+ Cable loss- Preamp Factor.

2. The test trace is same as the ambient noise (the test frequency range: 18GHz~40GHz), therefore no data appear in the report.

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	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5745	5743.0302	5744.1556	5744.2613	5743.3041
	5785	5784.1201	5783.3088	5783.2664	5782.7812
	5825	5823.8526	5824.1625	5822.2227	5822.8056
-20	5745	5744.7299	5743.4057	5744.7047	5744.6214
	5785	5783.0067	5784.1940	5784.3845	5784.5720
	5825	5824.7684	5823.1323	5824.7691	5824.8299
-10	5745	5743.8662	5743.7967	5744.9488	5744.9848
	5785	5784.8448	5783.7267	5784.0480	5784.7969
	5825	5824.9480	5824.5123	5824.9075	5824.0742
0	5745	5743.3776	5743.7060	5744.3406	5744.9140
	5785	5783.0715	5784.6229	5784.3416	5783.7054
	5825	5823.0033	5824.8055	5824.8000	5824.0733
10	5745	5744.5459	5743.4945	5744.5218	5744.5160
	5785	5784.8936	5783.0098	5784.3532	5784.3318
	5825	5823.6037	5823.9313	5824.1110	5824.9953
20	5745	5744.9410	5744.2743	5744.6371	5744.9431
	5785	5784.4691	5783.6755	5784.7238	5783.9856
	5825	5824.6210	5823.8166	5824.8046	5824.3259
30	5745	5743.8383	5743.1869	5744.0249	5744.8932
	5785	5784.5497	5784.6526	5783.4290	5783.1087
	5825	5823.6334	5824.0741	5823.7204	5823.9118
40	5745	5744.2785	5744.2952	5743.8820	5744.2352
	5785	5784.4654	5784.2599	5784.2623	5784.0802
	5825	5824.7652	5824.3493	5824.2001	5824.8649
50	5745	5743.8188	5744.5067	5744.0265	5743.7614
	5785	5783.7339	5783.2345	5784.0107	5784.4315
	5825	5823.7479	5824.7577	5824.0267	5824.9885

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
102	5745	5744.7460	5744.3696	5744.9550	5744.5700
	5785	5784.2273	5784.7881	5783.7133	5784.6475
	5825	5823.6214	5824.3046	5824.6056	5824.8272
120	5745	5744.4597	5744.5155	5743.2279	5743.8474
	5785	5783.2630	5783.1581	5784.5639	5783.5271
	5825	5823.4312	5824.2821	5823.8535	5824.4484
138	5745	5743.7509	5743.4244	5744.6991	5744.7393
	5785	5784.2143	5783.0291	5784.3245	5784.9476
	5825	5824.1934	5824.8501	5824.2599	5824.9493

Note: The worst case is FL=5743.0302MHz, FH=5824.9953MHz

802.11n(HT20)					
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	5745	5742.7437	5743.9651	5741.6655	5741.0970
	5785	5784.2283	5784.4807	5782.5529	5784.1383
	5825	5824.4368	5824.8502	5824.0085	5824.8468
-20	5745	5744.7418	5744.0124	5744.0642	5744.5626
	5785	5784.4133	5784.6515	5784.3514	5784.0929
	5825	5824.5650	5824.7329	5824.5086	5824.3081
-10	5745	5744.9269	5744.5499	5744.2130	5744.1688
	5785	5784.5715	5784.0370	5784.2143	5784.5753
	5825	5824.4667	5824.7411	5824.9399	5824.6733
0	5745	5744.3529	5744.1841	5744.8938	5744.9934
	5785	5784.1741	5784.3324	5784.2298	5784.7940
	5825	5824.6858	5824.0036	5824.2547	5824.8597
10	5745	5744.3363	5744.2243	5744.9825	5744.5560
	5785	5784.5175	5784.3541	5784.0098	5784.1762
	5825	5824.8883	5824.5552	5824.8565	5824.2586
20	5745	5744.2383	5744.0222	5744.5464	5744.9671
	5785	5784.1733	5784.4745	5784.4284	5784.5033
	5825	5824.5695	5824.8167	5824.5865	5824.1343
30	5745	5744.8614	5744.7241	5744.9203	5744.4709
	5785	5784.7772	5784.3426	5784.0420	5784.4695
	5825	5824.8034	5824.1427	5824.5778	5824.9385
40	5745	5744.8450	5744.0693	5744.0728	5744.1810
	5785	5784.6370	5784.8643	5784.7487	5784.5530
	5825	5824.8956	5824.6445	5824.5268	5824.7790
50	5745	5744.9457	5744.4646	5744.8355	5744.9903
	5785	5784.1685	5784.0575	5784.2110	5784.7770
	5825	5824.7811	5824.2737	5824.8277	5824.7398

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
102	5745	5742.6803	5744.2155	5746.5212	5746.3422
	5785	5784.3841	5784.0629	5786.5015	5786.2322
	5825	5824.5542	5824.9847	5825.7049	5826.3574
120	5745	5744.8861	5744.4316	5745.1127	5746.0814
	5785	5784.4326	5784.4869	5785.0630	5785.5963
	5825	5824.9328	5824.2569	5825.1296	5825.3811
138	5745	5744.5575	5744.8437	5745.8528	5745.3526
	5785	5784.5598	5784.1243	5785.2077	5785.7809
	5825	5824.1280	5824.7558	5825.7400	5825.6344

Note: The worst case is FL=5741.0970MHz, FH=5826.3574MHz

802.11ac(HT20)					
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	5745	5747.7485	5742.4676	5742.4188	5746.5443
	5785	5786.2622	5783.8117	5782.6676	5785.1291
	5825	5826.0182	5824.6856	5822.1809	5825.7679
-20	5745	5745.2962	5744.3210	5744.9311	5745.8859
	5785	5785.1948	5784.1585	5784.8452	5785.4841
	5825	5825.5545	5824.1749	5824.9285	5825.4561
-10	5745	5745.9272	5744.3923	5744.4154	5745.7533
	5785	5785.9201	5784.9383	5784.4642	5785.3793
	5825	5825.1328	5824.9545	5824.1368	5825.1524
0	5745	5745.7858	5744.7969	5744.4741	5745.1758
	5785	5785.9672	5784.8913	5784.0033	5785.0085
	5825	5825.0166	5824.3454	5824.2287	5825.6793
10	5745	5745.9372	5744.9385	5744.8295	5745.6131
	5785	5785.0661	5784.1494	5784.9472	5785.9042
	5825	5825.0035	5824.5168	5824.1425	5825.3954
20	5745	5745.2194	5744.1538	5744.6145	5745.5084
	5785	5785.5042	5784.1984	5784.0965	5785.1782
	5825	5825.9159	5824.7215	5824.4857	5825.8638
30	5745	5745.4064	5744.5769	5744.1700	5745.8125
	5785	5785.7258	5784.8197	5784.1078	5785.4705
	5825	5825.3342	5824.5180	5824.2712	5825.6175
40	5745	5745.8648	5744.0932	5744.4043	5745.4775
	5785	5785.9397	5784.5778	5784.0032	5785.7978
	5825	5825.3366	5824.7250	5824.5100	5825.4472
50	5745	5745.4655	5744.0249	5744.3160	5745.4641
	5785	5785.4779	5784.2756	5784.4072	5785.7912
	5825	5825.2306	5824.7169	5824.8038	5825.0387

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
102	5745	5746.3967	5745.3492	5743.4901	5744.1073
	5785	5786.6327	5785.3081	5784.6820	5784.7521
	5825	5826.3226	5825.2597	5824.1542	5824.9156
120	5745	5746.4725	5745.9257	5744.6001	5744.8729
	5785	5785.7330	5785.6478	5784.1082	5784.6586
	5825	5825.7985	5825.6836	5824.3274	5824.3093
138	5745	5745.3016	5745.7539	5744.2186	5744.3671
	5785	5785.5029	5785.1749	5784.5758	5784.0678
	5825	5825.9995	5825.2613	5824.7977	5824.7855

Note: The worst case is FL=5742.4188MHz, FH=5826.3226MHz

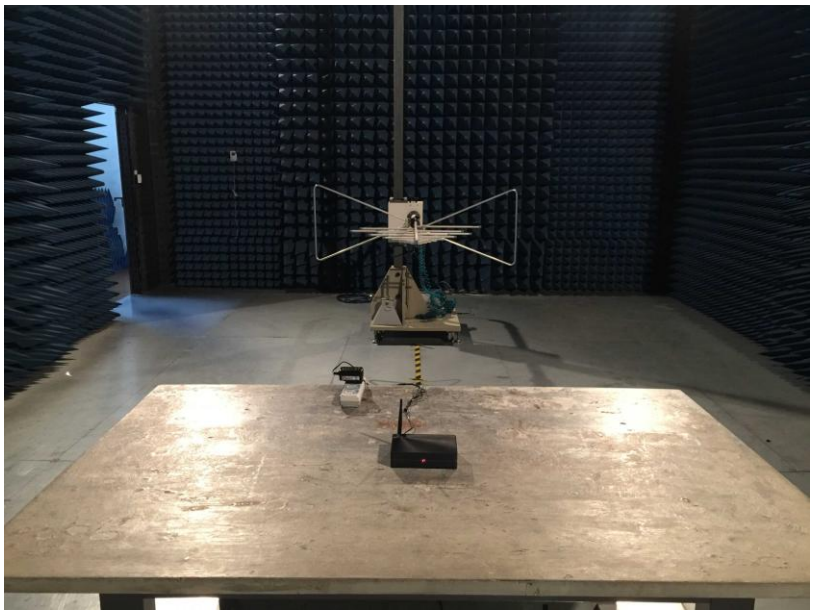
802.11n(HT40)					
Frequency stability versus Temp.					
Power Supply: AC 120V/60Hz					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5755	5757.6666	5754.3065	5752.9130	5757.4889
	5795	5796.4666	5794.3974	5792.4759	5796.4868
-20	5755	5756.3015	5754.2723	5753.0206	5755.1874
	5795	5796.4981	5794.8019	5793.7587	5795.4950
-10	5755	5755.7432	5754.4842	5754.9521	5755.6247
	5795	5795.9053	5794.6043	5794.9009	5795.2756
0	5755	5755.7834	5754.5528	5754.9804	5755.3146
	5795	5795.9743	5794.9769	5794.9322	5795.9528
10	5755	5755.8509	5754.3453	5754.4543	5755.2965
	5795	5795.0849	5794.9398	5794.7590	5795.8942
20	5755	5755.8010	5754.2840	5754.7403	5755.2267
	5795	5795.2239	5794.0509	5794.6084	5795.1479
30	5755	5755.5101	5754.4138	5754.0807	5755.1392
	5795	5795.1803	5794.3764	5794.2827	5795.5343
40	5755	5755.5570	5754.9810	5754.2560	5755.7866
	5795	5795.9540	5794.3634	5794.4275	5795.2129
50	5755	5755.3128	5754.5054	5754.5714	5755.4589
	5795	5795.6850	5794.8251	5794.2769	5795.3897

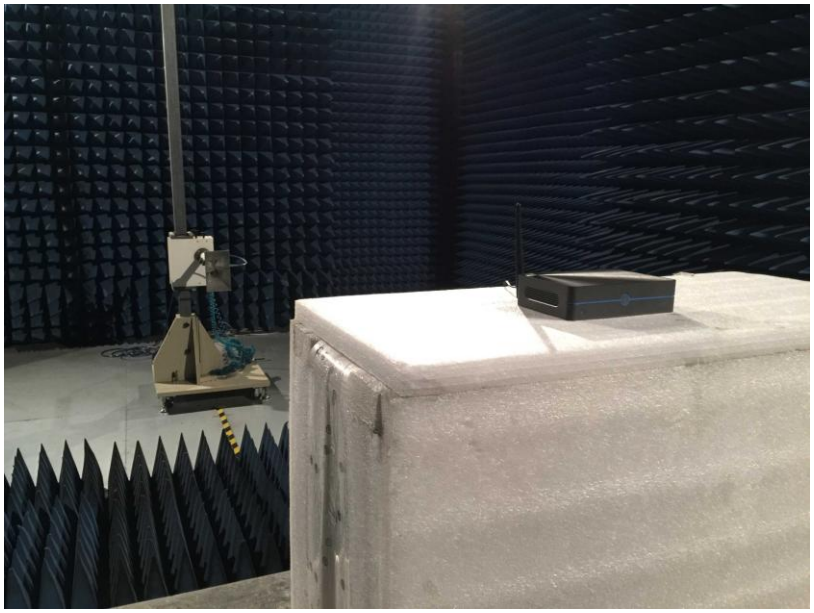
Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
102	5755	5755.3108	5754.0056	5756.7220	5752.5301
	5795	5795.7445	5794.2561	5795.7387	5793.6873
120	5755	5755.2352	5754.4188	5755.7217	5753.6908
	5795	5795.9931	5794.0684	5795.9517	5793.5667
138	5755	5755.6381	5754.7489	5755.9703	5754.3480
	5795	5795.6837	5794.3910	5795.9492	5794.4174

Note: The worst case is FL=5752.5301MHz, FH=5796.4981MHz

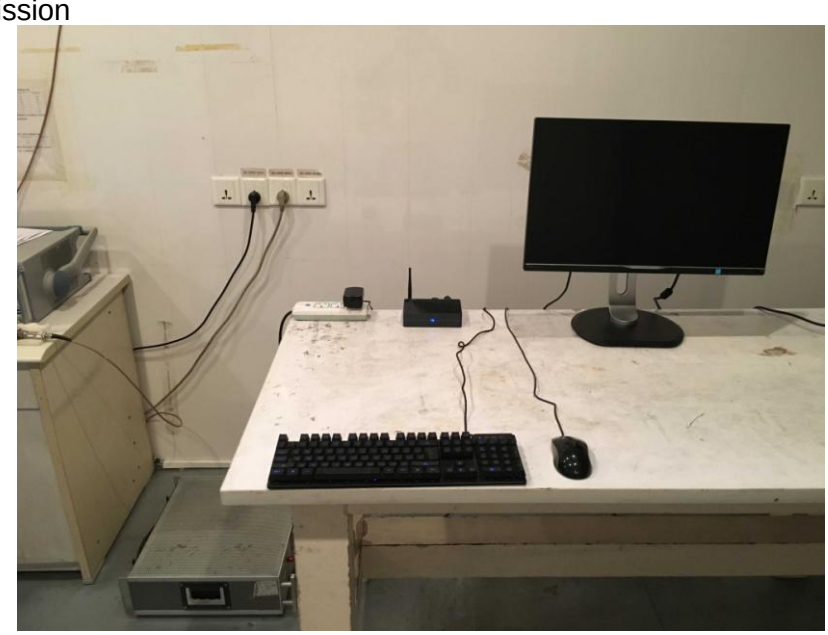
8 Test Setup Photo

Radiated Emission





Conducted Emission



9 EUT Constructional Details

Reference to the test report No. GTS201708000157E01

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