TEST REPORT

Applicant:	Quantum Creations LLC.
Address of Applicant:	15705 NW 13th Ave, Miami Gardens, Miami Beach, Florida, United States 33169
Manufacturer/Factory:	QUTHC Limited
Address of Manufacturer/Factory:	7th Floor, Building C, Longsheng Industrial Park, Huiyang District, Huizhou City, Guangdong province (516211) P.R.China

Equipment Under Test (EUT)

Product Name:	Access4
Model No.:	AG3221, AG3111, AG3112, AG3113, AG3222, AG3223, AG3211, AG3212, AG3213, AG3121, AG3122, AG3123
Trade Mark:	AZULLE
FCC ID:	2AFJI-ACCESS4
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of sample receipt:	April 27, 2020
Date of Test:	April 27, 2020-May 07, 2020
Date of report issued:	May 07, 2020
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	*May 07, 2020*	*Original*

Prepared By: *Tiger Chen* ***Date:*** *May 07, 2020*

Project Engineer

Check By: *Robinson Lo* ***Date:*** *May 07, 2020*

Reviewer

3 Contents

4 Test Summary

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

Remarks：

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

2. Test according to ANSI C63.10:2013.

4.1 Measurement Uncertainty

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

5 General Information

5.1 General Description of EUT

Product Name:	Access4
Model No.:	AG3221, AG3111, AG3112, AG3113, AG3222, AG3223, AG3211, AG3212, AG3213, AG3121, AG3122, AG3123
Test Model No:	AG3221

Remark: All models have the same motherboard and wifi module,the difference between different model is DDR capacity, EMMC capacity and OS,the following table illustrates these differences.

Model	Processor	DDR capacity	eMMC capacity	OS
AG3111	Gemini Lake	2	32	Windows 10 Pro
AG3112	Gemini Lake	2	32	Windows IOT
AG3113	Gemini Lake	2	32	NO OS
AG3221	Gemini Lake	4	64	Windows 10 Pro
AG3222	Gemini Lake	4	64	Windows IOT
AG3223	Gemini Lake	4	64	NO OS
AG3211	Gemini Lake	4	32	Windows 10 Pro
AG3212	Gemini Lake	4	32	Windows IOT
AG3213	Gemini Lake	4	32	NO OS
AG3121	Gemini Lake	2	64	Windows 10 Pro
AG3122	Gemini Lake	2	64	Windows IOT
AG3123	Gemini Lake	2	64	NO OS

Serial No.:	ACCESS4-2004200001
Hardware Version:	V30
Software Version:	V1.10
Test sample(s) ID:	GTS202004000210-1
Sample(s) Status:	Engineer sample
Operation Frequency:	802.11a/802.11n(HT20)/802.11ac(HT20): 5745MHz ~ 5825MHz 802.11n(HT40)/ 802.11ac(HT40): 5755MHz ~ 5795MHz 802.11ac(HT80): 5775MHz
Channel numbers:	802.11a/802.11n(HT20)/802.11ac(HT20): 5 802.11n(HT40)/ 802.11ac(HT40): 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:	Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	ANT 1: FPCB Antenna ANT 2: Integral Antenna
Antenna gain:	ANT 1: 0.5dBi ANT 2: 3.7dBi

Power supply:	SWITCHING ADAPTOR Model No.:FJ-SW126G0503000N Input: AC 100-240V 50/60Hz 0.6A Max Output: DC 5.0V 3.0A 15.0W

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	153	5765MHz	155	5775MHz
157	5785MHz	159	5795MHz	161	5805MHz	163	5815MHz
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)**		
	802.11 a/n/ac(HT20)	802.11 n/ac(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(HT80)	29.3Mbps

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
PHILIPS	LCD monitor	19PFL3120/T3	AU1A1212002906

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

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

● **FCC —Registration No.: 381383**

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

● **IC —Registration No.: 9079A**

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

● **NVLAP (LAB CODE:600179-0)**

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

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone,
Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

5.8 Additional Instructions

Test Software	Special test command provided by manufacturer
Power level setup	Default

6 Test Instruments list

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

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

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

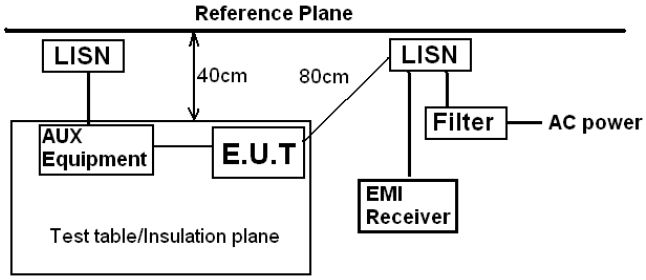
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020

7 Test results and Measurement Data

7.1 Antenna requirement

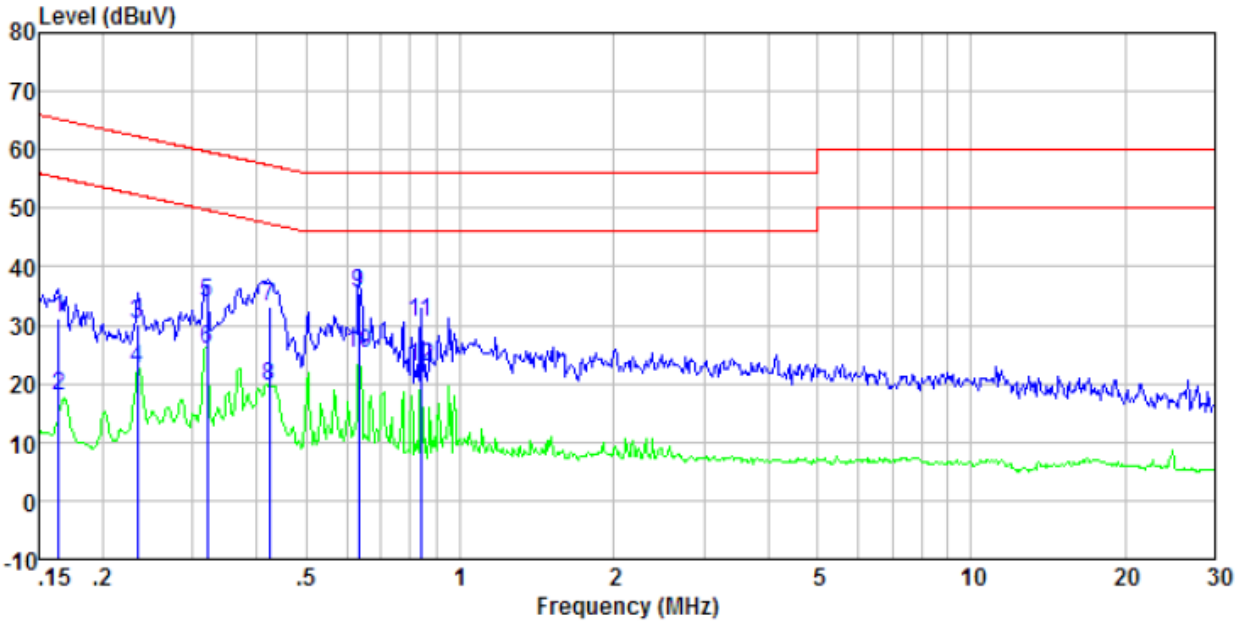
Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The ANT1 is FPSB antenna, the best case gain of the antenna is 0.5dBi; The ANT2 is integral antenna, the best case gain of the antenna is 3.7dBi, reference to the appendix II for details	

7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto
Limit:	Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 * Decreases with the logarithm of the frequency.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test environment:	Temp.: 25 °C / Humid.: 52% / Press.: 1012mbar
Test voltage:	AC 120V, 60Hz
Test results:	Pass

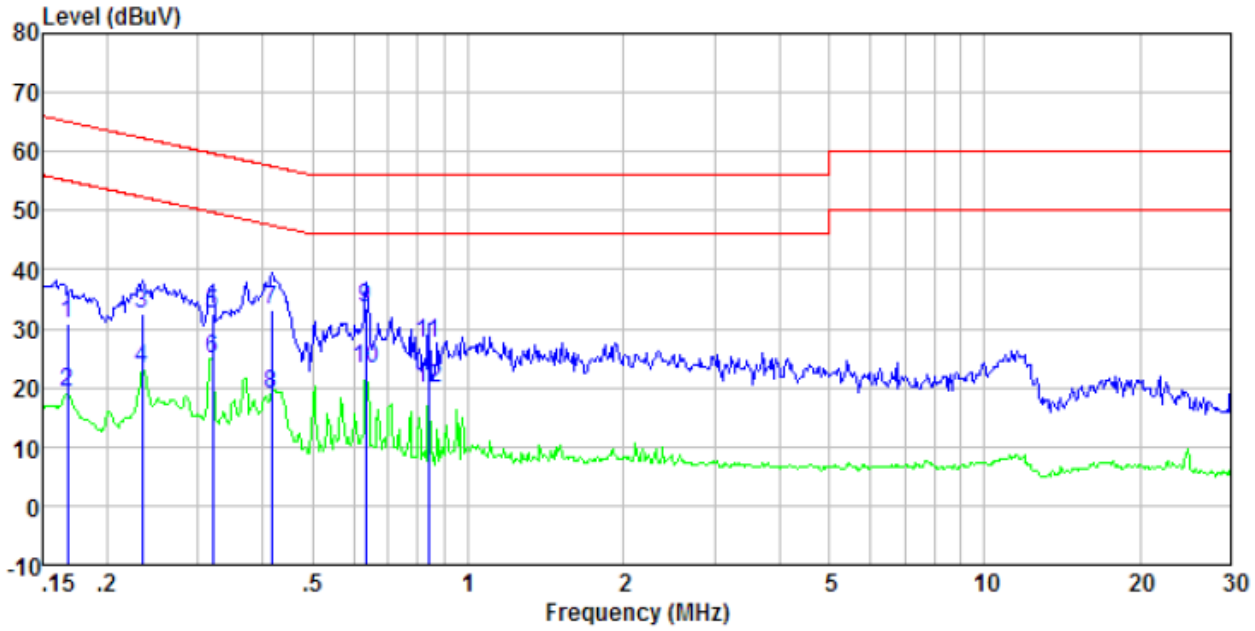
Remark: Both high and low voltages have been tested to show only the worst low voltage test data.

Measurement data
Line:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.16	10.57	20.40	0.08	31.05	65.25	-34.20	QP
0.16	-2.47	20.40	0.08	18.01	55.25	-37.24	Average
0.23	9.66	20.40	0.11	30.17	62.30	-32.13	QP
0.23	2.13	20.40	0.11	22.64	52.30	-29.66	Average
0.32	13.25	20.39	0.10	33.74	59.71	-25.97	QP
0.32	5.24	20.39	0.10	25.73	49.71	-23.98	Average
0.42	12.81	20.34	0.11	33.26	57.37	-24.11	QP
0.42	-0.92	20.34	0.11	19.53	47.37	-27.84	Average
0.63	15.20	20.28	0.12	35.60	56.00	-20.40	QP
0.63	4.68	20.28	0.12	25.08	46.00	-20.92	Average
0.84	10.28	20.23	0.14	30.65	56.00	-25.35	QP
0.84	2.56	20.23	0.14	22.93	46.00	-23.07	Average

Neutral:

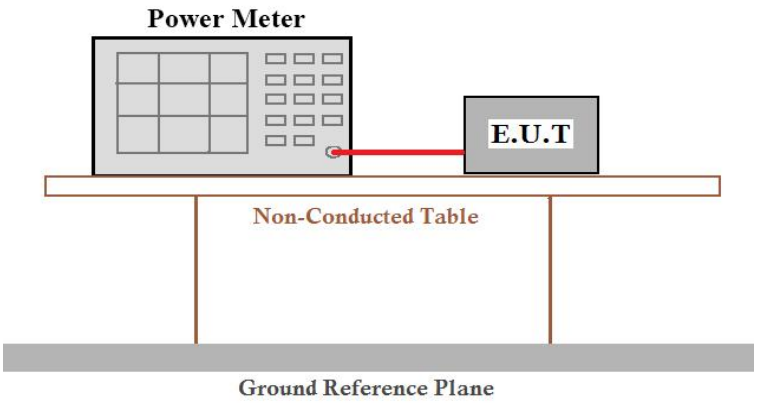


Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	10.47	20.40	0.09	30.96	65.08	-34.12	QP
0.17	-1.38	20.40	0.09	19.11	55.08	-35.97	Average
0.23	11.84	20.40	0.11	32.35	62.30	-29.95	QP
0.23	2.54	20.40	0.11	23.05	52.30	-29.25	Average
0.32	12.15	20.39	0.10	32.64	59.71	-27.07	QP
0.32	4.34	20.39	0.10	24.83	49.71	-24.88	Average
0.42	12.77	20.35	0.11	33.23	57.51	-24.28	QP
0.42	-1.51	20.35	0.11	18.95	47.51	-28.56	Average
0.63	12.98	20.28	0.12	33.38	56.00	-22.62	QP
0.63	2.70	20.28	0.12	23.10	46.00	-22.90	Average
0.84	7.13	20.23	0.14	27.50	56.00	-28.50	QP
0.84	-0.39	20.23	0.14	19.98	46.00	-26.02	Average

Notes:

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

7.3 Conducted Peak Output Power

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

Measurement Data

ANT: 1

Test CH	Peak Output Power (dBm)	Limit(dBm)	Result
	802.11a (SISO)		
Lowest	6.97	30	Pass
Middle	5.98		
Highest	5.86		

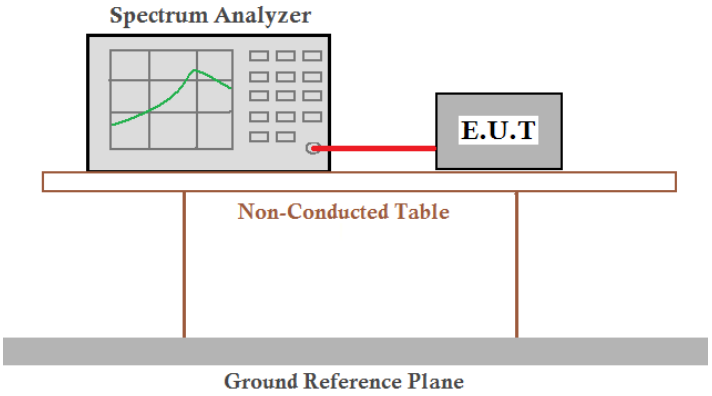
ANT: 2

Test CH	Peak Output Power (dBm)	Limit(dBm)	Result
	802.11a (SISO)		
Lowest	7.02	30	Pass
Middle	5.88		
Highest	5.77		

ANT1 + ANT2:

Test mode	Channel	Read Level (dBm)		Read Level (mW)	Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	Result
802.11n (HT20) (MIMO)	Lowest	ANT1	5.13	3.26	6.44	8.09	30	Pass
		ANT2	5.02	3.18				
	Middle	ANT1	4.82	3.03	6.36	8.03		
		ANT2	5.22	3.33				
	Highest	ANT1	6.62	4.59	8.88	9.48		
		ANT2	6.32	4.29				
802.11ac(HT20) (MIMO)	Lowest	ANT1	5.97	3.95	7.90	8.98		
		ANT2	5.97	3.95				
	Middle	ANT1	6.55	4.52	8.29	9.18		
		ANT2	5.76	3.77				
	Highest	ANT1	4.31	2.69	5.41	7.33		
		ANT2	4.33	2.71				
802.11n (HT40) (MIMO)	Lowest	ANT1	5.67	3.69	6.82	8.34		
		ANT2	4.96	3.13				
	Highest	ANT1	5.24	3.34	7.62	8.82		
		ANT2	6.31	4.28				
802.11ac(HT40) (MIMO)	Lowest	ANT1	5.91	3.90	7.79	8.91		
		ANT2	5.90	3.89				
	Highest	ANT1	5.81	3.81	8.62	9.35		
		ANT2	6.82	4.81				
802.11ac(HT80) (MIMO)	Middle	ANT1	4.53	2.84	6.36	8.04		
		ANT2	5.47	3.52				

7.4 Channel Bandwidth

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

Measurement Data

Antenna 1:

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	15.130	13.926	16.089	35.134	28.840	---	>500	Pass
Middle	13.860	13.908	14.156	---	---	72.650		
Highest	15.560	15.156	17.198	32.319	35.060	---		

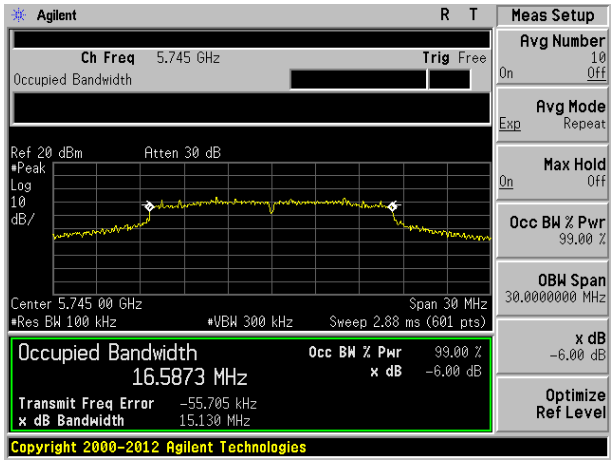
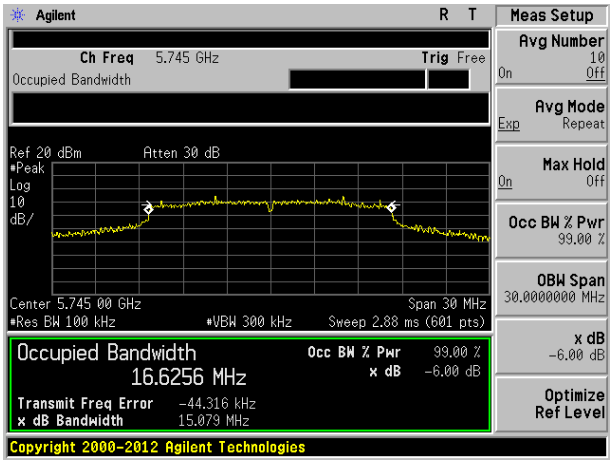
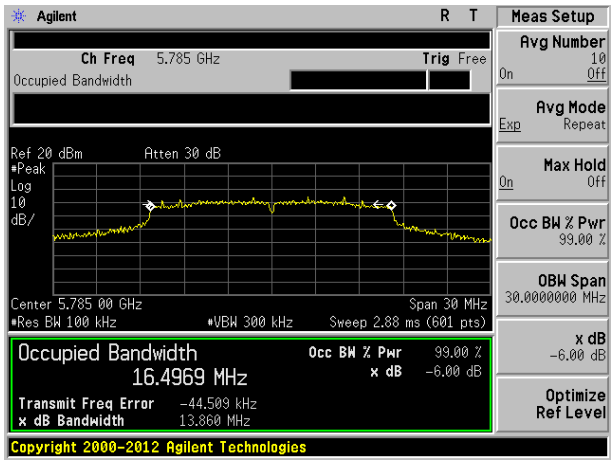
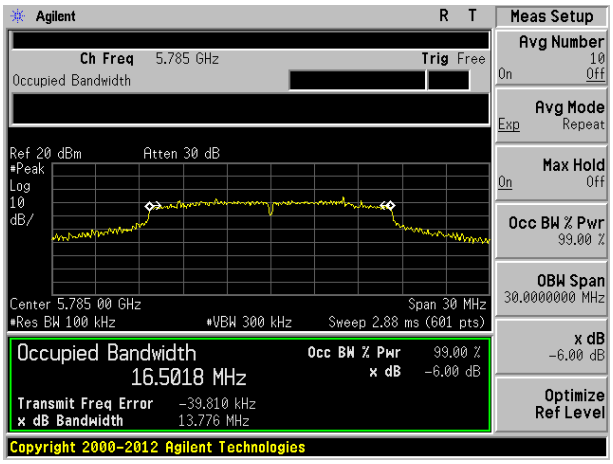
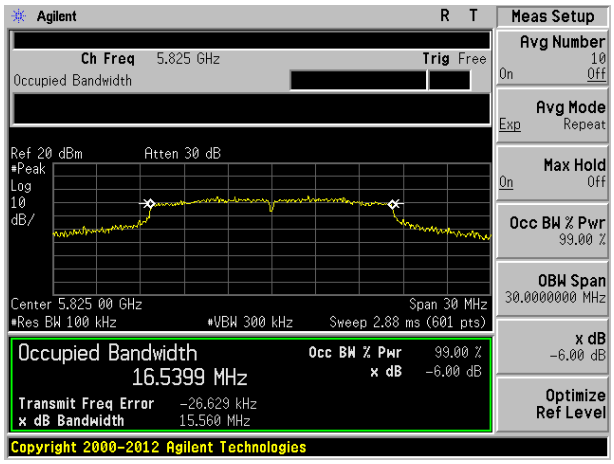
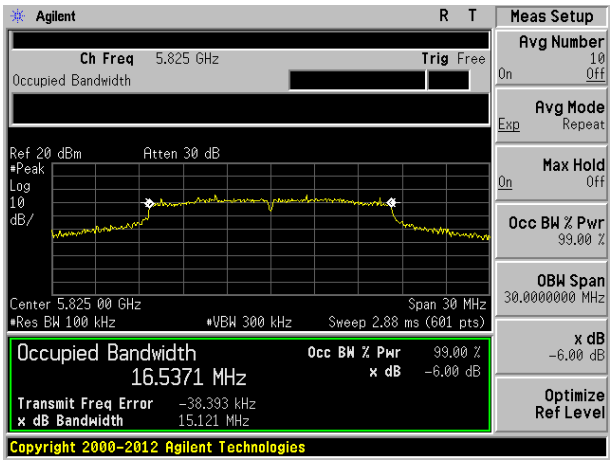
Antenna 2:

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	15.079	13.868	14.731	35.081	35.176	---	>500	Pass
Middle	13.776	13.249	15.117	---	---	63.902		
Highest	15.121	15.032	15.266	33.850	33.914	---		

Remark: "---"is not applicable

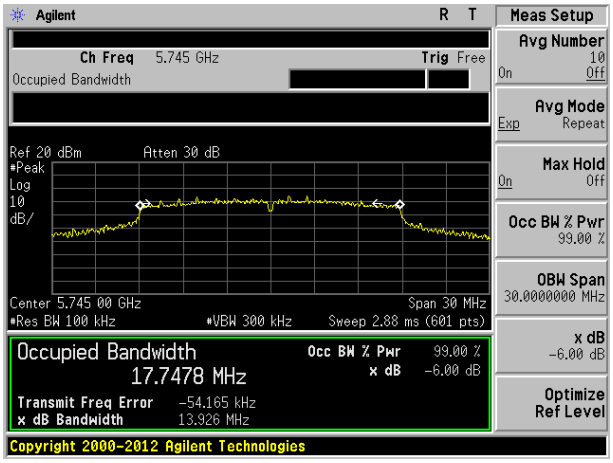
Test plot as follows:

Test mode: 802.11a

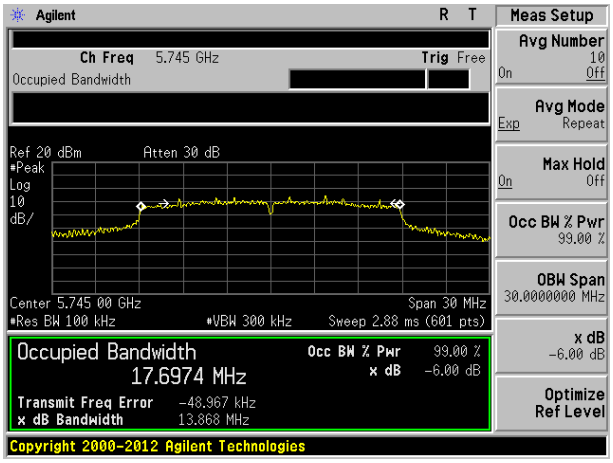
Antenna 1:	Antenna 2:
	
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

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

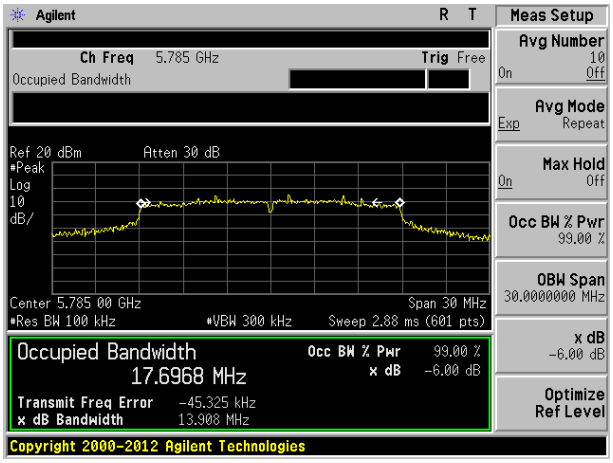
Antenna 1:	Antenna 2:



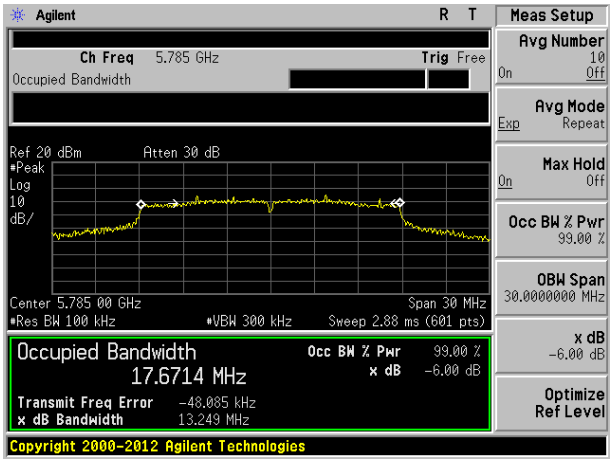
Lowest channel



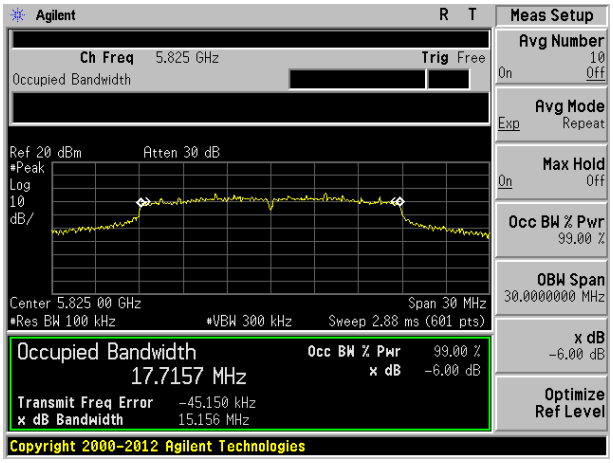
Lowest channel



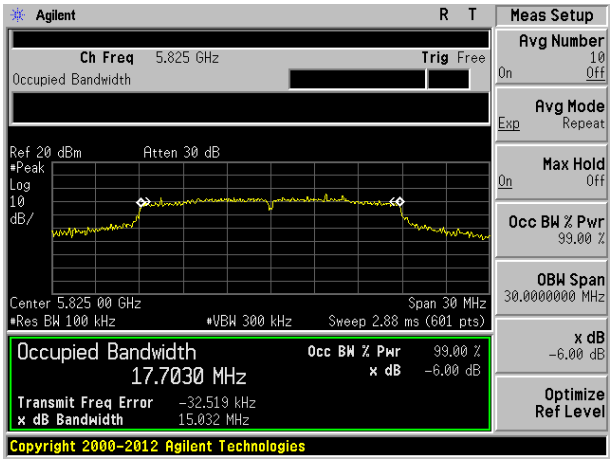
Middle channel



Middle channel



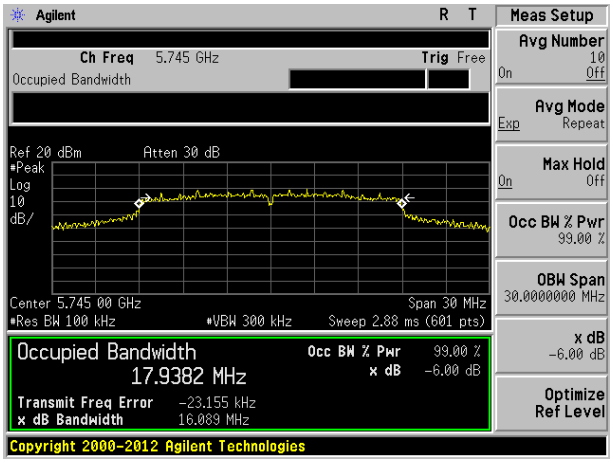
Highest channel



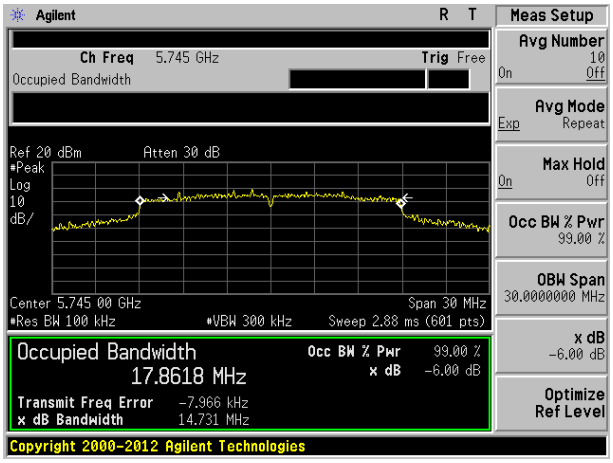
Highest channel

Test mode: 802.11ac(HT20)

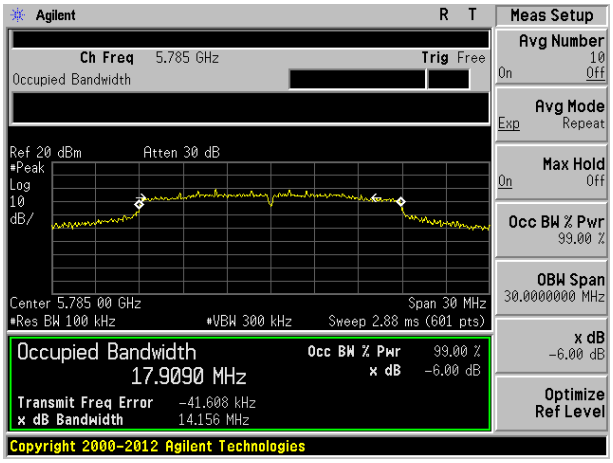
Antenna 1:	Antenna 2:



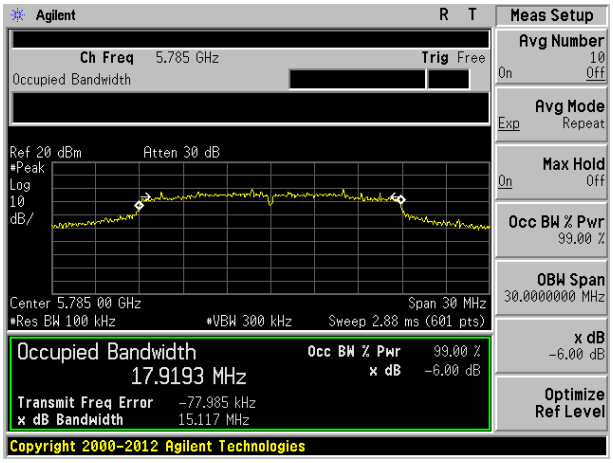
Lowest channel



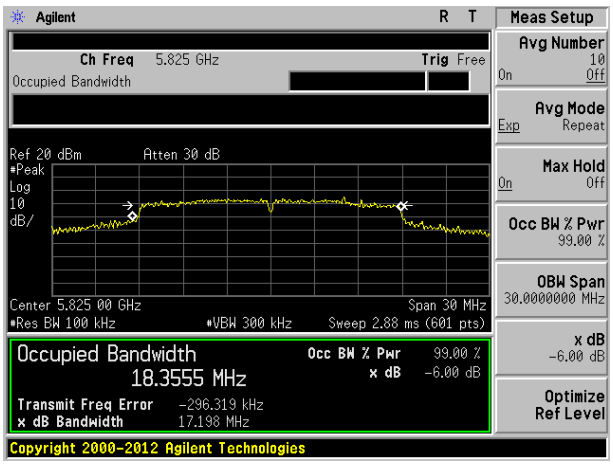
Lowest channel



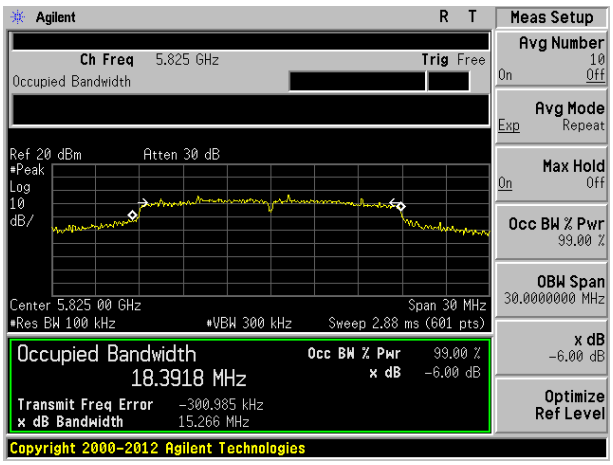
Middle channel



Middle channel



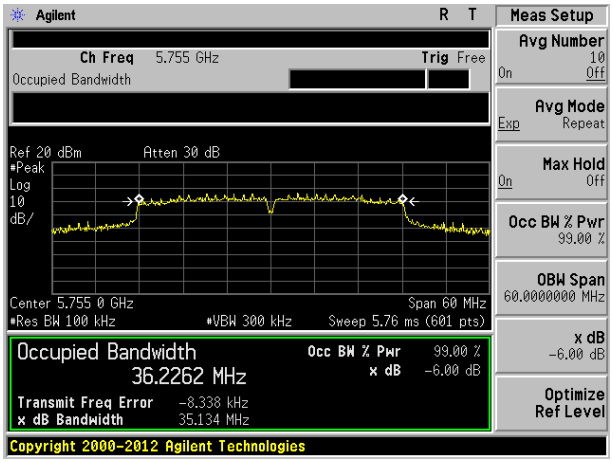
Highest channel



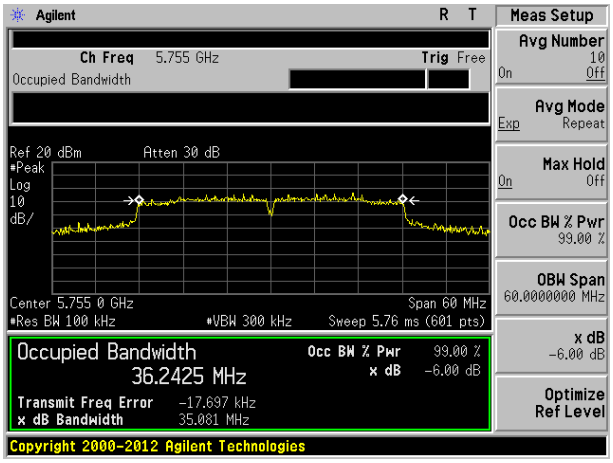
Highest channel

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

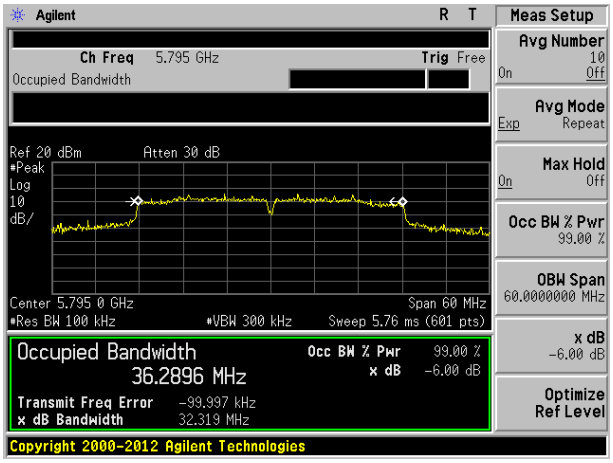
Antenna 1:	Antenna 2:



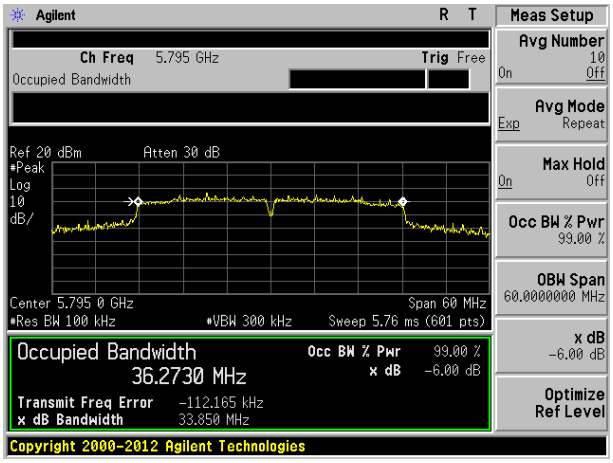
Lowest channel



Lowest channel



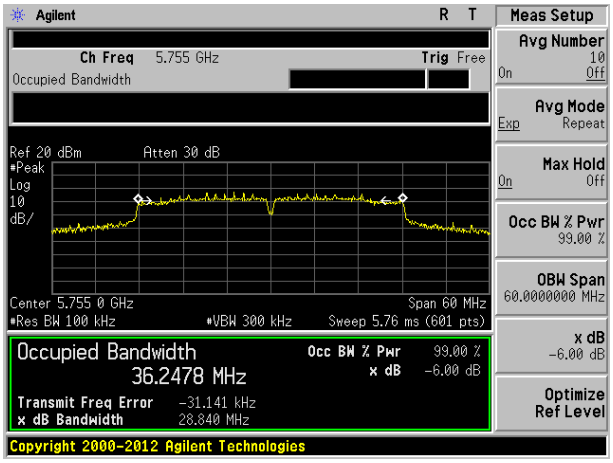
Highest channel



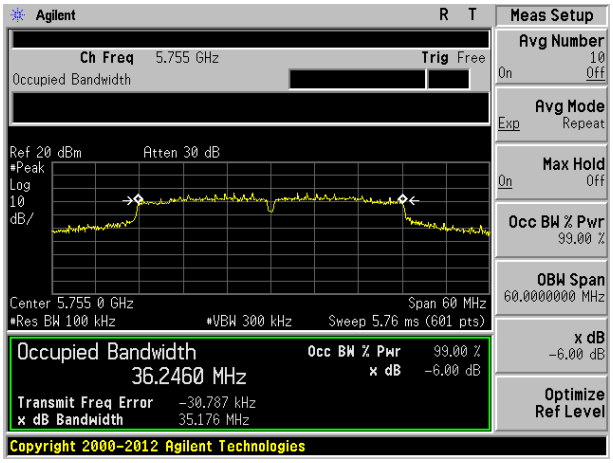
Highest channel

Test mode: 802.11ac(HT40)

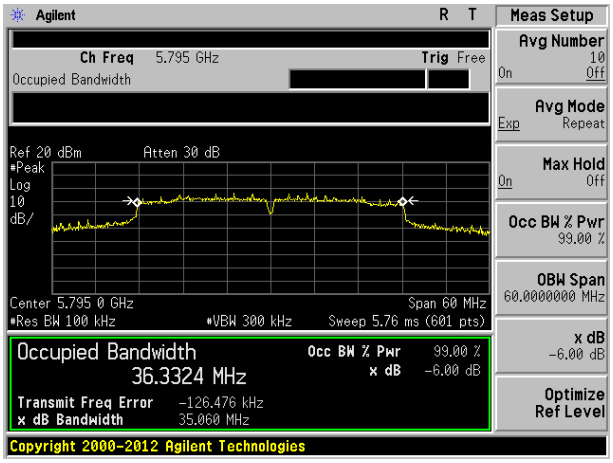
Antenna 1:	Antenna 2:



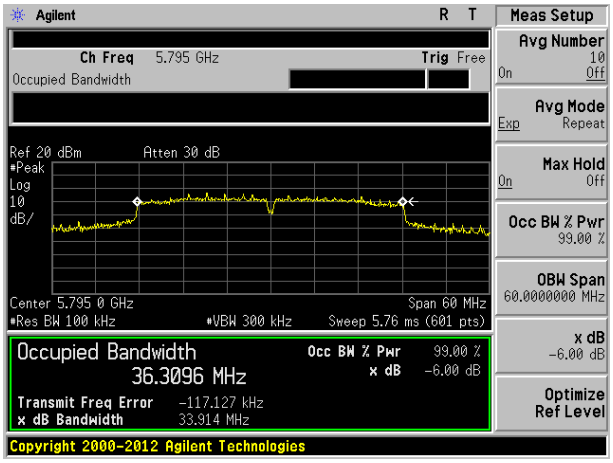
Lowest channel



Lowest channel



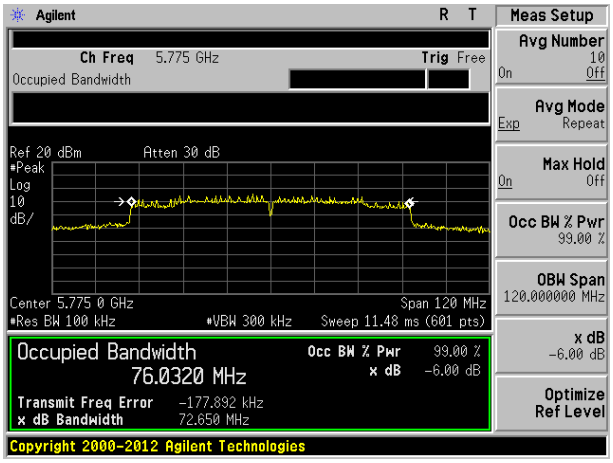
Highest channel



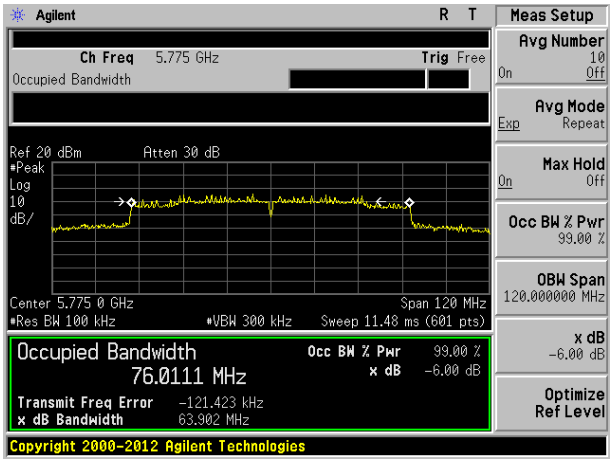
Highest channel

Test mode: 802.11ac(HT80)

Antenna 1:	Antenna 2:

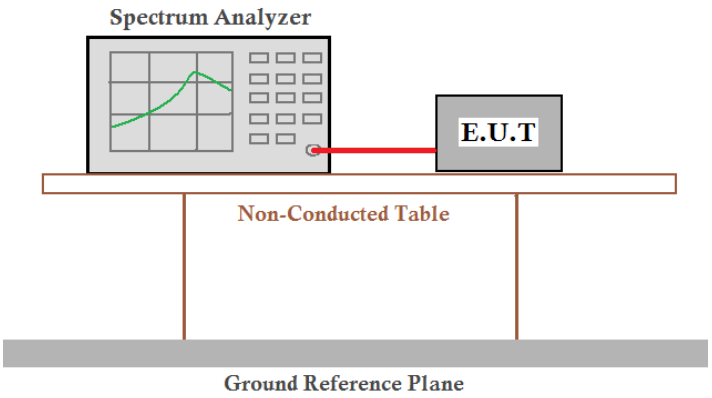


Middle channel



Middle channel

7.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407(a)(3)
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	30dBm/500kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

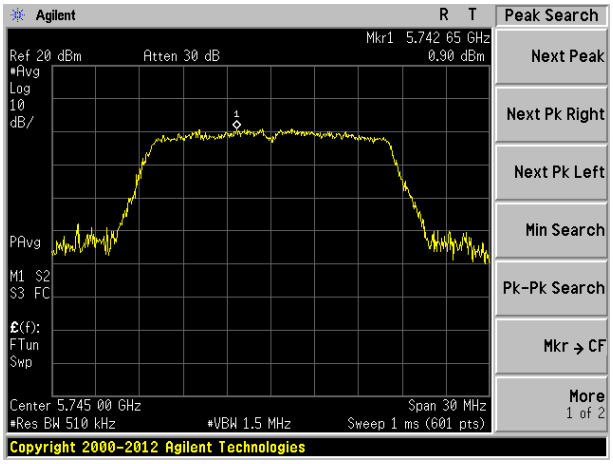
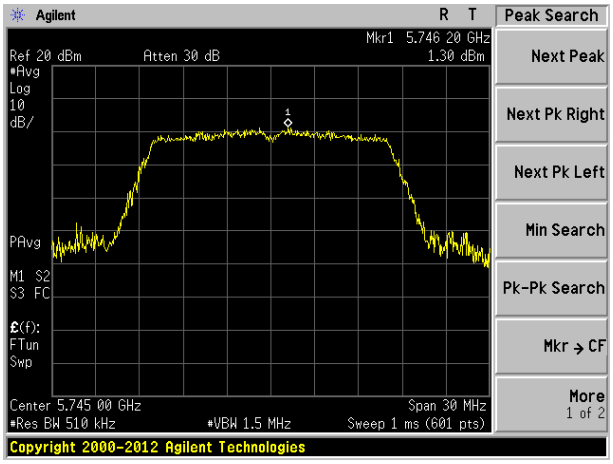
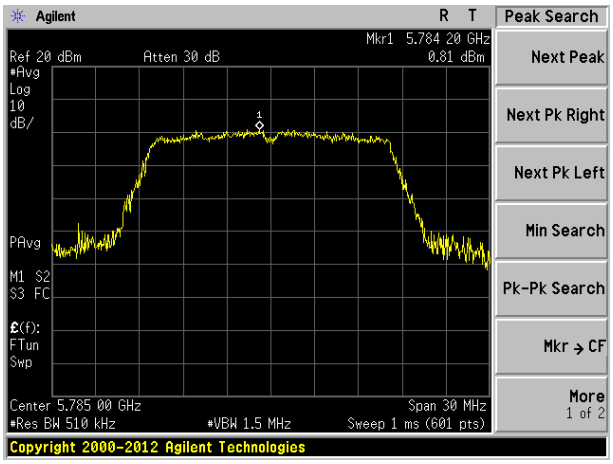
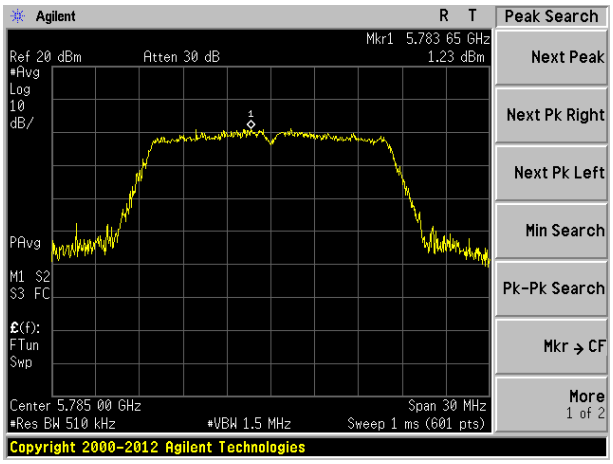
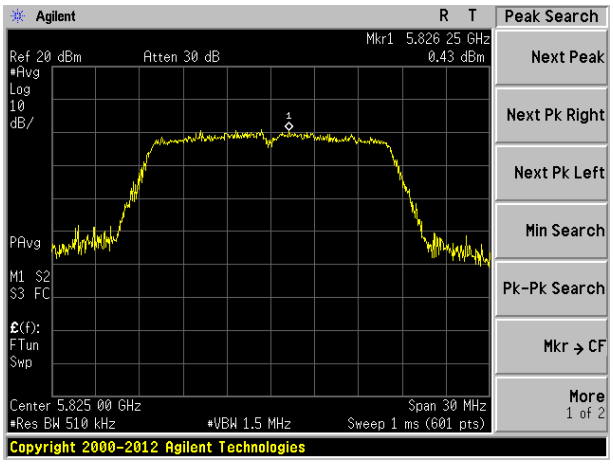
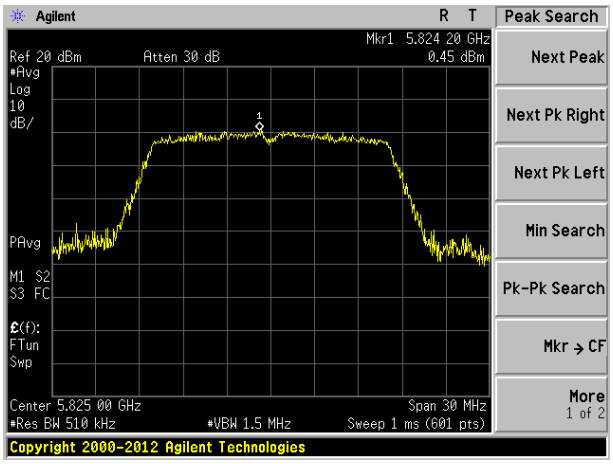
5.8G Band				
Test CH	Power Spectral Density (dBm/500kHz)			
	802.11a		Limit	Result
Lowest	ANT 1	0.90	30	Pass
	ANT 2	1.30		
Middle	ANT 1	0.81		
	ANT 2	1.23		
Highest	ANT 1	0.43		
	ANT 2	0.45		

Antenna 1+Antenna 2：MIMO without beam forming:

5.8G Band							
Test mode	Channel	Read Level (dBm)		Read Level (mW)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11n (HT20) (MIMO)	Lowest	ANT1	-0.19	0.96	2.96	30	Pass
		ANT2	-0.09	1.02			
	Middle	ANT1	0.18	1.04	2.90		
		ANT2	-0.42	0.91			
	Highest	ANT1	-0.31	0.93	2.75		
		ANT2	-0.49	0.95			
802.11ac(HT20) (MIMO)	Lowest	ANT1	-0.21	0.95	2.65		
		ANT2	-0.51	0.89			
	Middle	ANT1	0.08	1.02	2.93		
		ANT2	-0.25	0.94			
	Highest	ANT1	-0.59	0.87	2.58		
		ANT2	-0.27	0.94			
802.11n (HT40) (MIMO)	Lowest	ANT1	-3.39	0.46	-0.11		
		ANT2	-2.86	0.52			
	Highest	ANT1	-3.38	0.46	-0.21		
		ANT2	-3.07	0.49			
802.11ac(HT40) (MIMO)	Lowest	ANT1	-3.06	0.49	-0.05		
		ANT2	-3.07	0.49			
	Highest	ANT1	-2.79	0.53	0.14		
		ANT2	-2.95	0.51			
802.11ac(HT80) (MIMO)	Middle	ANT1	-7.43	0.18	-4.05		
		ANT2	-6.72	0.21			

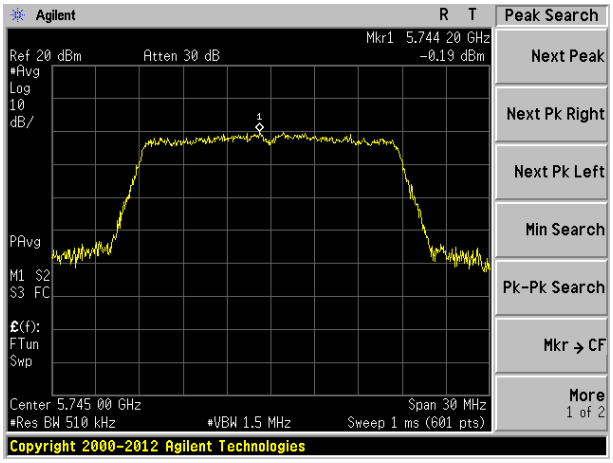
Test plot as follows:

Test mode: 802.11a

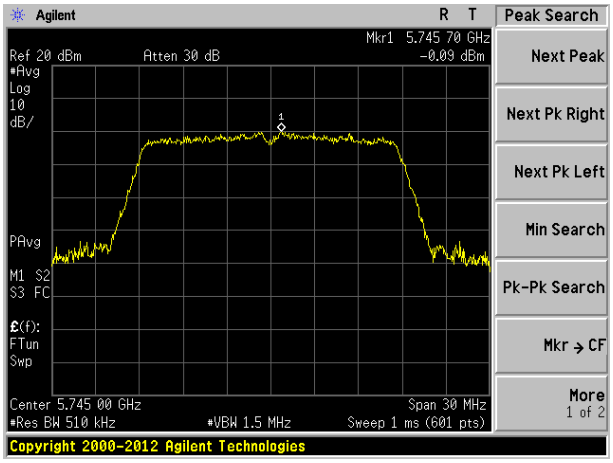
Antenna 1:	Antenna 2:
	
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

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

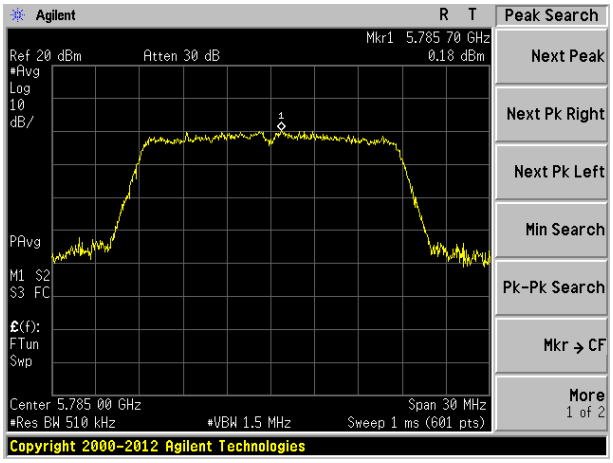
Antenna 1:	Antenna 2:



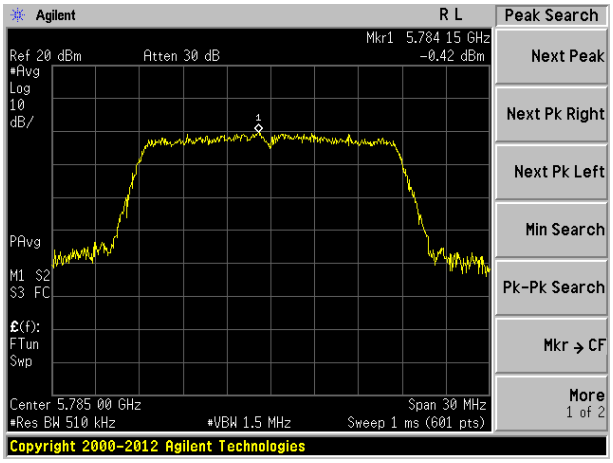
Lowest channel



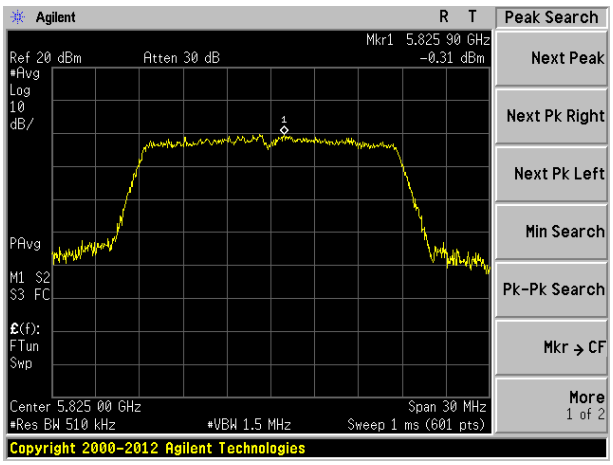
Lowest channel



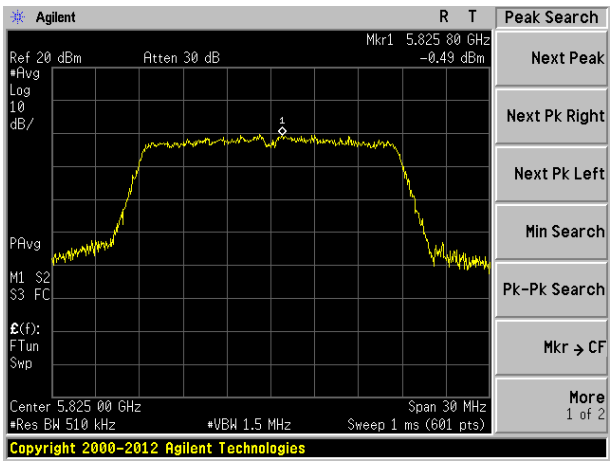
Middle channel



Middle channel



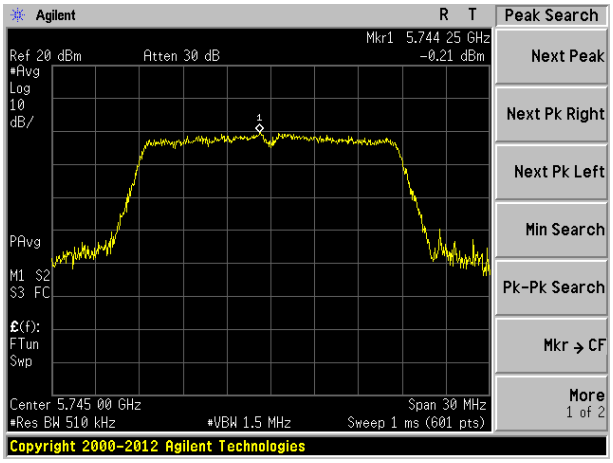
Highest channel



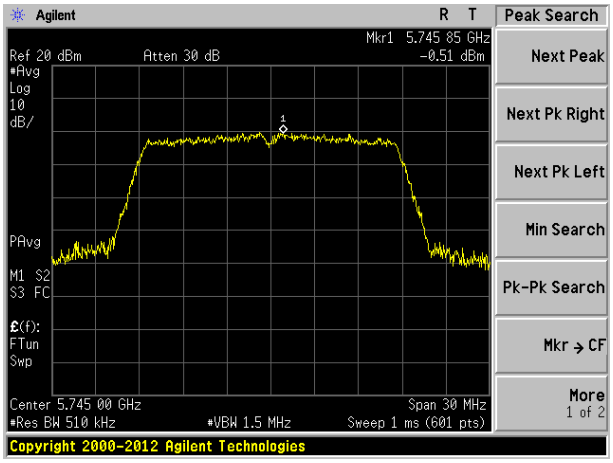
Highest channel

Test mode: 802.11ac(HT20)

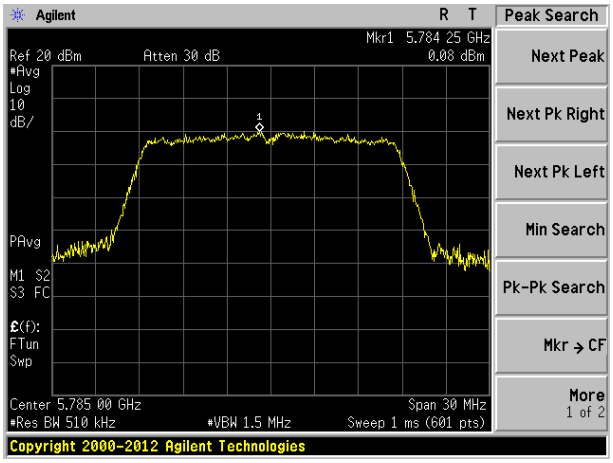
Antenna 1:	Antenna 2:



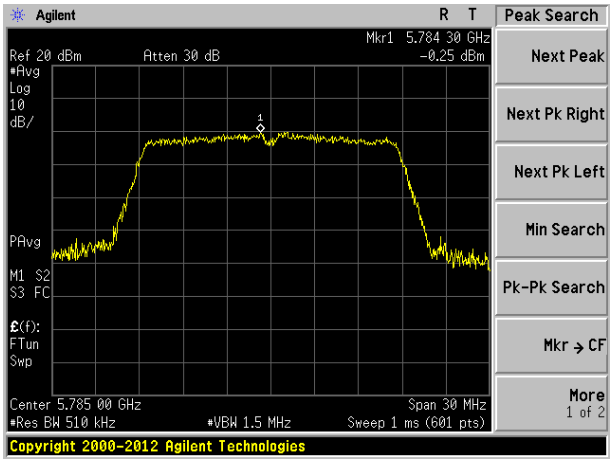
Lowest channel



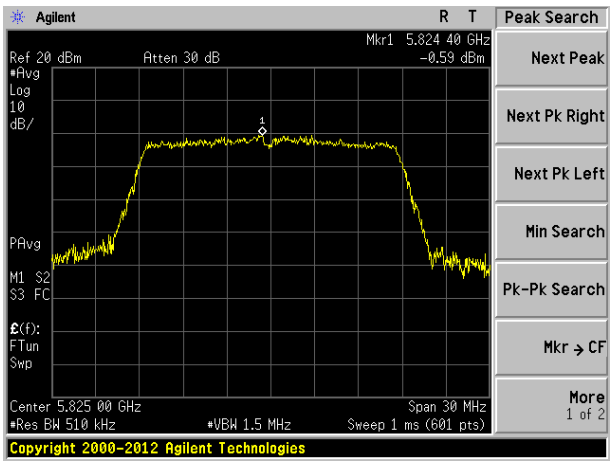
Lowest channel



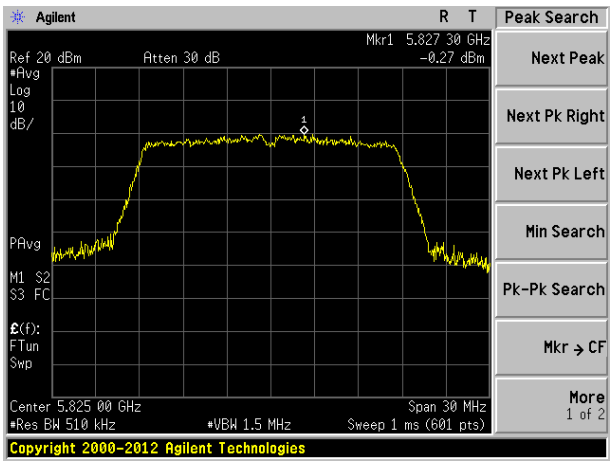
Middle channel



Middle channel



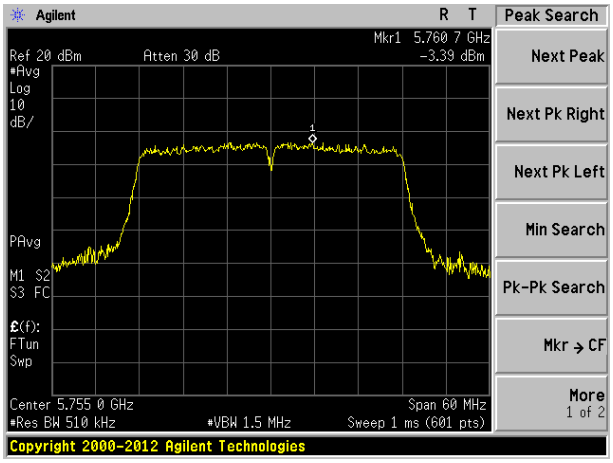
Highest channel



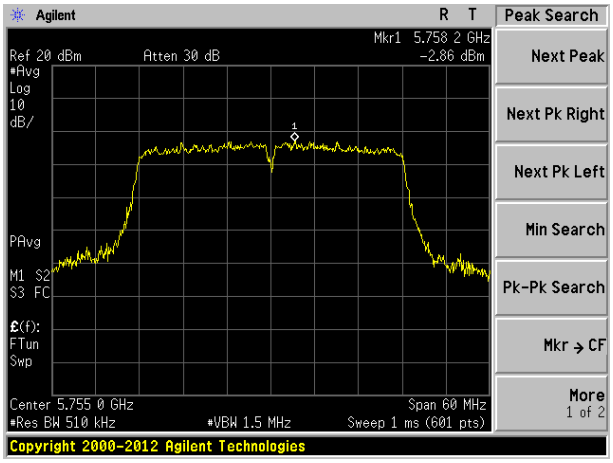
Highest channel

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

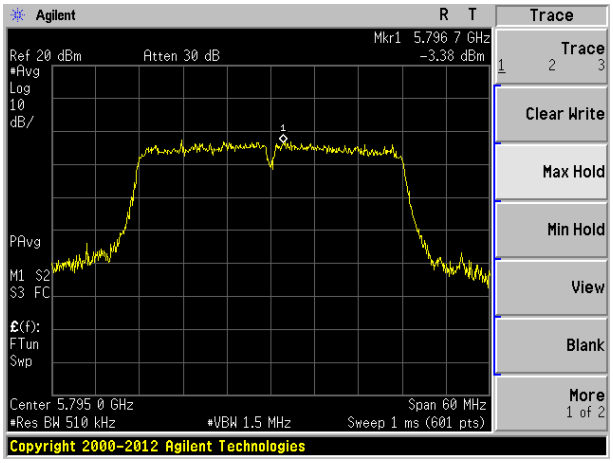
Antenna 1:	Antenna 2:



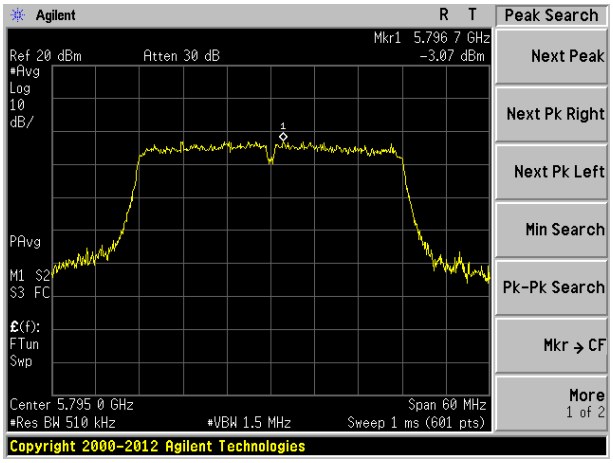
Lowest channel



Lowest channel



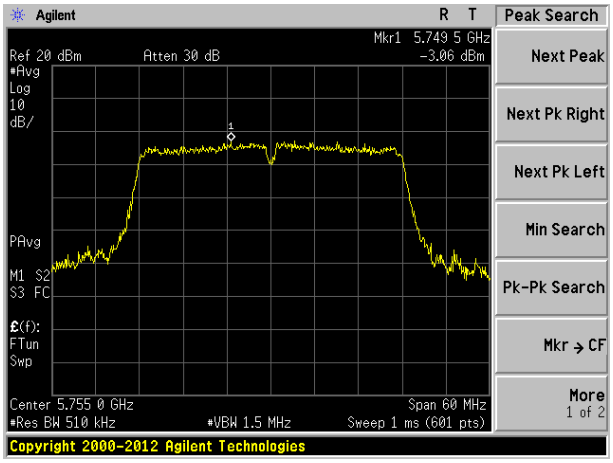
Highest channel



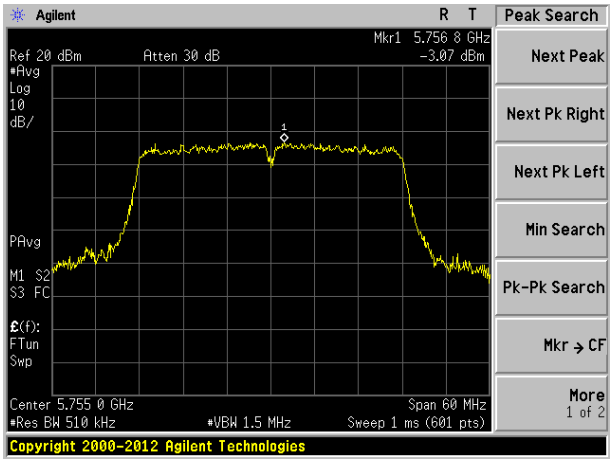
Highest channel

Test mode: 802.11ac(HT40)

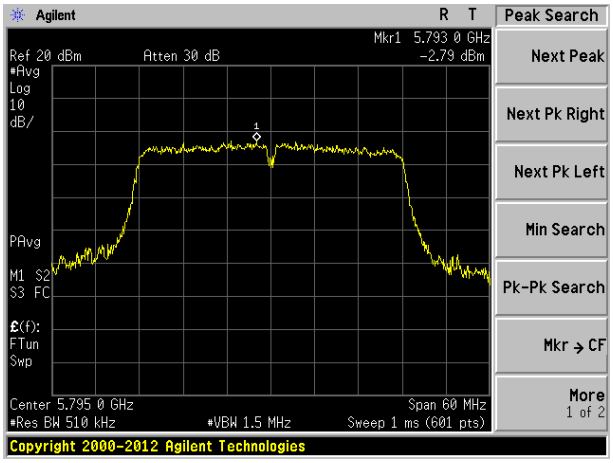
Antenna 1:	Antenna 2:



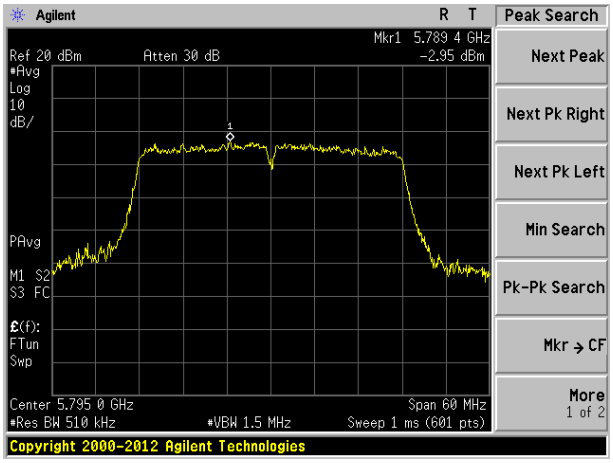
Lowest channel



Lowest channel

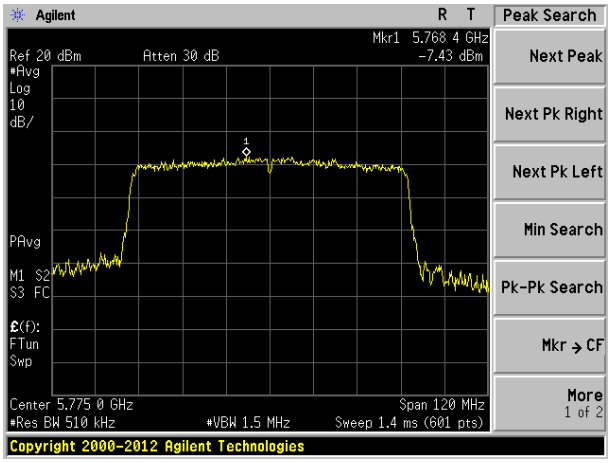
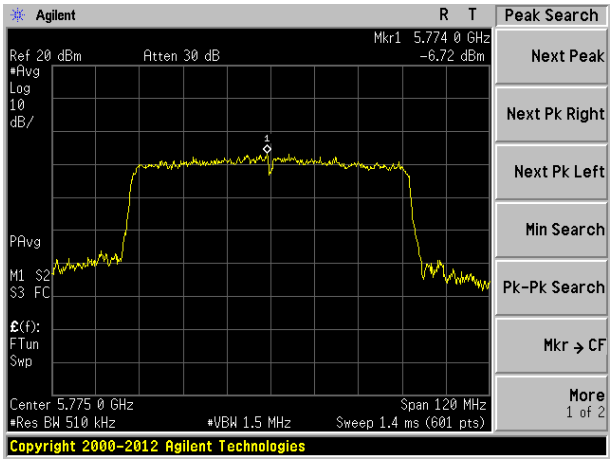


Highest channel



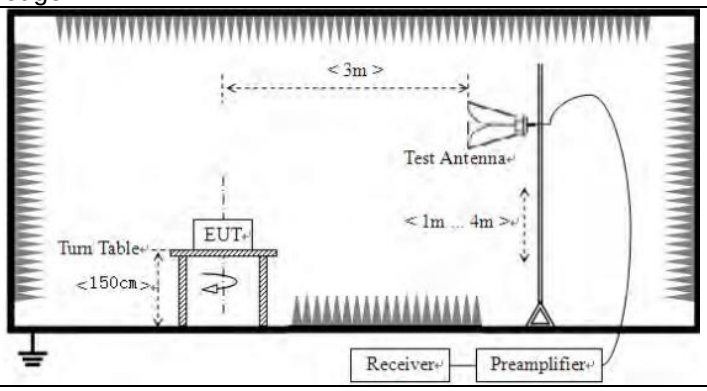
Highest channel

Test mode: 802.11ac(HT80)

Antenna 1:	Antenna 2:
	
Middle channel	Middle channel

7.6 Band edge

7.6.1 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013</td></tr>
<tr><td>Test Frequency Range:</td><td>9kHz to 40GHz, only worse case is reported</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 rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>RMS</td><td>1MHz</td><td>3MHz</td><td>RMS</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.</td></tr>
<tr><td>Test setup:</td><td> 
</td></tr>
<tr><td>Test Procedure:</td><td>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.</td></tr>
</table>

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

Remarks:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.*
4. *According to KDB 789033 D02v02r01 section G) 1) d),for measurements above 1000 MHz @3m distance, the limit of field strength is computed as follows:*
   E[dBuV/m] = EIRP[dBm] + 95.2;
   E[dBuV/m] = -27 + 95.2 = 68.2dBuV/m.
   E[dBuV/m] = 10 + 95.2 = 105.2dBuV/m.
   E[dBuV/m] = 15.6 + 95.2 = 110.8dBuV/m.
   E[dBuV/m] = 27 + 95.2 = 122.2dBuV/m
5. *Only show the worst case ant 1 test data..*

Measurement data:

IEEE 802.11a								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650	29.63	32.36	9.72	23.83	47.88	68.2	-20.32	Horizontal
5700	28.68	32.5	9.79	23.84	47.13	105.2	-58.07	Horizontal
5720	31.73	32.53	9.81	23.85	50.22	110.8	-60.58	Horizontal
5725	29.99	32.53	9.83	23.86	48.49	122.2	-73.71	Horizontal
5850	29.6	32.7	9.99	23.87	48.42	122.2	-73.78	Horizontal
5855	32.07	32.72	9.99	23.88	50.9	110.8	-59.9	Horizontal
5875	28.19	32.74	10.04	23.89	47.08	105.2	-58.12	Horizontal
5925	28.58	32.8	10.11	23.9	47.59	68.2	-20.61	Horizontal
5650	30.7	32.36	9.72	23.83	48.95	68.2	-19.25	Vertical
5700	32.04	32.5	9.79	23.84	50.49	105.2	-54.71	Vertical
5720	28.9	32.53	9.81	23.85	47.39	110.8	-63.41	Vertical
5725	29.53	32.53	9.83	23.86	48.03	122.2	-74.17	Vertical
5850	30.9	32.7	9.99	23.87	49.72	122.2	-72.48	Vertical
5855	30.35	32.72	9.99	23.88	49.18	110.8	-61.62	Vertical
5875	28.79	32.74	10.04	23.89	47.68	105.2	-57.52	Vertical
5925	33.39	32.8	10.11	23.9	52.4	68.2	-15.8	Vertical

IEEE 802.11n(HT20)								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	30.03	32.36	9.72	23.83	48.28	68.2	-19.92	Horizontal
5700.00	30.37	32.5	9.79	23.84	48.82	105.2	-56.38	Horizontal
5720.00	31.39	32.53	9.81	23.85	49.88	110.8	-60.92	Horizontal
5725.00	29.61	32.53	9.83	23.86	48.11	122.2	-74.09	Horizontal
5850.00	30.24	32.7	9.99	23.87	49.06	122.2	-73.14	Horizontal
5855.00	32.51	32.72	9.99	23.88	51.34	110.8	-59.46	Horizontal
5875.00	32.08	32.74	10.04	23.89	50.97	105.2	-54.23	Horizontal
5925.00	31.37	32.8	10.11	23.9	50.38	68.2	-17.82	Horizontal
5650.00	33.77	32.36	9.72	23.83	52.02	68.2	-16.18	Vertical
5700.00	33.81	32.5	9.79	23.84	52.26	105.2	-52.94	Vertical
5720.00	29.73	32.53	9.81	23.85	48.22	110.8	-62.58	Vertical
5725.00	31.56	32.53	9.83	23.86	50.06	122.2	-72.14	Vertical
5850.00	32.26	32.7	9.99	23.87	51.08	122.2	-71.12	Vertical
5855.00	32.27	32.72	9.99	23.88	51.1	110.8	-59.7	Vertical
5875.00	33.2	32.74	10.04	23.89	52.09	105.2	-53.11	Vertical
5925.00	31.61	32.8	10.11	23.9	50.62	68.2	-17.58	Vertical

IEEE 802.11n(HT40)								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	29.45	32.36	9.72	23.83	47.7	68.2	-20.5	Horizontal
5700.00	30.67	32.5	9.79	23.84	49.12	105.2	-56.08	Horizontal
5720.00	30.49	32.53	9.81	23.85	48.98	110.8	-61.82	Horizontal
5725.00	28.77	32.53	9.83	23.86	47.27	122.2	-74.93	Horizontal
5850.00	33.05	32.7	9.99	23.87	51.87	122.2	-70.33	Horizontal
5855.00	30.49	32.72	9.99	23.88	49.32	110.8	-61.48	Horizontal
5875.00	29.44	32.74	10.04	23.89	48.33	105.2	-56.87	Horizontal
5925.00	31.67	32.8	10.11	23.9	50.68	68.2	-17.52	Horizontal
5650.00	29.23	32.36	9.72	23.83	47.48	68.2	-20.72	Vertical
5700.00	28.53	32.5	9.79	23.84	46.98	105.2	-58.22	Vertical
5720.00	29.4	32.53	9.81	23.85	47.89	110.8	-62.91	Vertical
5725.00	29.59	32.53	9.83	23.86	48.09	122.2	-74.11	Vertical
5850.00	32.23	32.7	9.99	23.87	51.05	122.2	-71.15	Vertical
5855.00	29.34	32.72	9.99	23.88	48.17	110.8	-62.63	Vertical
5875.00	31.33	32.74	10.04	23.89	50.22	105.2	-54.98	Vertical
5925.00	31.08	32.8	10.11	23.9	50.09	68.2	-18.11	Vertical

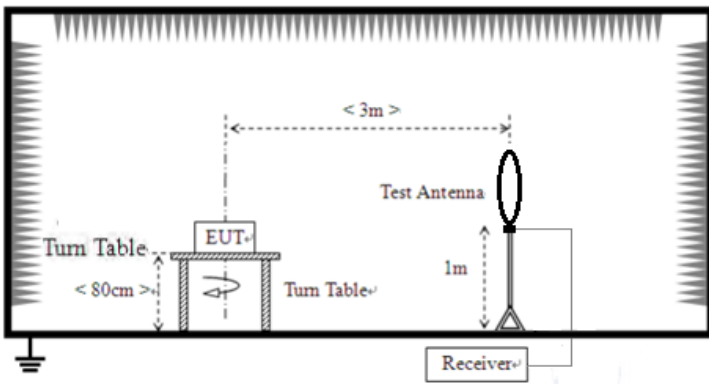
IEEE 802.11ac(HT20)								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	28.96	32.36	9.72	23.83	47.21	68.2	-20.99	Horizontal
5700.00	30.76	32.5	9.79	23.84	49.21	105.2	-55.99	Horizontal
5720.00	33.93	32.53	9.81	23.85	52.42	110.8	-58.38	Horizontal
5725.00	28.87	32.53	9.83	23.86	47.37	122.2	-74.83	Horizontal
5850.00	30.25	32.7	9.99	23.87	49.07	122.2	-73.13	Horizontal
5855.00	33.71	32.72	9.99	23.88	52.54	110.8	-58.26	Horizontal
5875.00	28.02	32.74	10.04	23.89	46.91	105.2	-58.29	Horizontal
5925.00	28.17	32.8	10.11	23.9	47.18	68.2	-21.02	Horizontal
5650.00	32.7	32.36	9.72	23.83	50.95	68.2	-17.25	Vertical
5700.00	28.11	32.5	9.79	23.84	46.56	105.2	-58.64	Vertical
5720.00	33.15	32.53	9.81	23.85	51.64	110.8	-59.16	Vertical
5725.00	29.43	32.53	9.83	23.86	47.93	122.2	-74.27	Vertical
5850.00	31.17	32.7	9.99	23.87	49.99	122.2	-72.21	Vertical
5855.00	30.97	32.72	9.99	23.88	49.8	110.8	-61	Vertical
5875.00	31.87	32.74	10.04	23.89	50.76	105.2	-54.44	Vertical
5925.00	29.72	32.8	10.11	23.9	48.73	68.2	-19.47	Vertical

IEEE 802.11ac(HT40)								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	33.23	32.36	9.72	23.83	51.48	68.2	-16.72	Horizontal
5700.00	28.38	32.5	9.79	23.84	46.83	105.2	-58.37	Horizontal
5720.00	33.7	32.53	9.81	23.85	52.19	110.8	-58.61	Horizontal
5725.00	33.1	32.53	9.83	23.86	51.6	122.2	-70.6	Horizontal
5850.00	32.23	32.7	9.99	23.87	51.05	122.2	-71.15	Horizontal
5855.00	30.21	32.72	9.99	23.88	49.04	110.8	-61.76	Horizontal
5875.00	32.99	32.74	10.04	23.89	51.88	105.2	-53.32	Horizontal
5925.00	28.5	32.8	10.11	23.9	47.51	68.2	-20.69	Horizontal
5650.00	31.89	32.36	9.72	23.83	50.14	68.2	-18.06	Vertical
5700.00	28.34	32.5	9.79	23.84	46.79	105.2	-58.41	Vertical
5720.00	33.37	32.53	9.81	23.85	51.86	110.8	-58.94	Vertical
5725.00	33.8	32.53	9.83	23.86	52.3	122.2	-69.9	Vertical
5850.00	29.15	32.7	9.99	23.87	47.97	122.2	-74.23	Vertical
5855.00	33.5	32.72	9.99	23.88	52.33	110.8	-58.47	Vertical
5875.00	29.16	32.74	10.04	23.89	48.05	105.2	-57.15	Vertical
5925.00	33.25	32.8	10.11	23.9	52.26	68.2	-15.94	Vertical

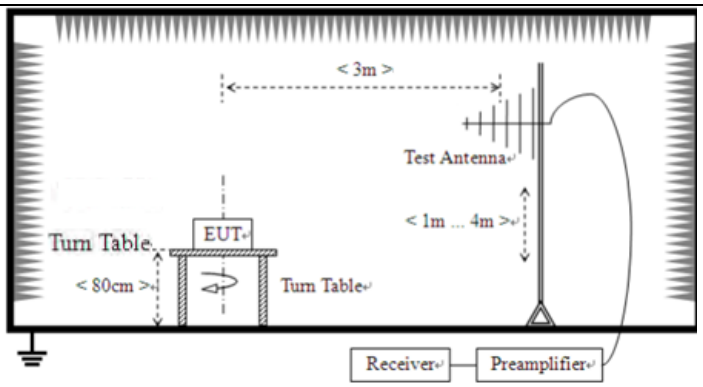
IEEE 802.11ac(HT80)								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	32.36	32.36	9.72	23.83	50.61	68.2	-17.59	Horizontal
5700.00	29.69	32.5	9.79	23.84	48.14	105.2	-57.06	Horizontal
5720.00	28.54	32.53	9.81	23.85	47.03	110.8	-63.77	Horizontal
5725.00	29.56	32.53	9.83	23.86	48.06	122.2	-74.14	Horizontal
5850.00	30.96	32.7	9.99	23.87	49.78	122.2	-72.42	Horizontal
5855.00	33.35	32.72	9.99	23.88	52.18	110.8	-58.62	Horizontal
5875.00	33.89	32.74	10.04	23.89	52.78	105.2	-52.42	Horizontal
5925.00	29.59	32.8	10.11	23.9	48.6	68.2	-19.6	Horizontal
5650.00	28.81	32.36	9.72	23.83	47.06	68.2	-21.14	Vertical
5700.00	33.92	32.5	9.79	23.84	52.37	105.2	-52.83	Vertical
5720.00	30.27	32.53	9.81	23.85	48.76	110.8	-62.04	Vertical
5725.00	31.6	32.53	9.83	23.86	50.1	122.2	-72.1	Vertical
5850.00	29.52	32.7	9.99	23.87	48.34	122.2	-73.86	Vertical
5855.00	31.7	32.72	9.99	23.88	50.53	110.8	-60.27	Vertical
5875.00	28.99	32.74	10.04	23.89	47.88	105.2	-57.32	Vertical
5925.00	32.94	32.8	10.11	23.9	51.95	68.2	-16.25	Vertical

7.7 Spurious Emission

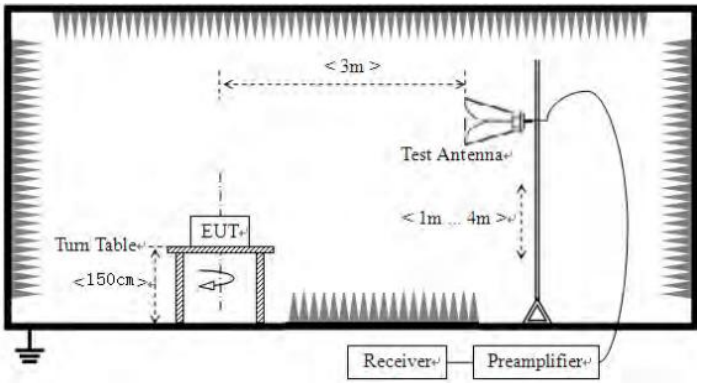
7.7.1 Radiated Emission Method

<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>9kHz to 40GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Value</th></tr>
<tr><td>9kHz-150KHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>AV</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (uV/m)</th><th>Value</th><th>Measurement Distance</th></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(KHz)</td><td>QP</td><td>300m</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(KHz)</td><td>QP</td><td>300m</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>QP</td><td>30m</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>QP</td><td rowspan="4">3m</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>QP</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>QP</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>QP</td></tr>
</table>
<table>
<tr><th>Frequency</th><th>Limit (dBm/MHz)</th><th>Remark</th></tr>
<tr><td>Above 1GHz</td><td>-27.0</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions from 9kHz to 30MHz
 

For radiated emissions from 30MHz to1GHz</td></tr>
</table>



For radiated emissions above 1GHz



Test Procedure:

1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
7. The radiation measurements are performed in X, Y, Z axis positioning.

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

Remarks:

1. *Only show the worst case ant 1 test data.*
2. *Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.*

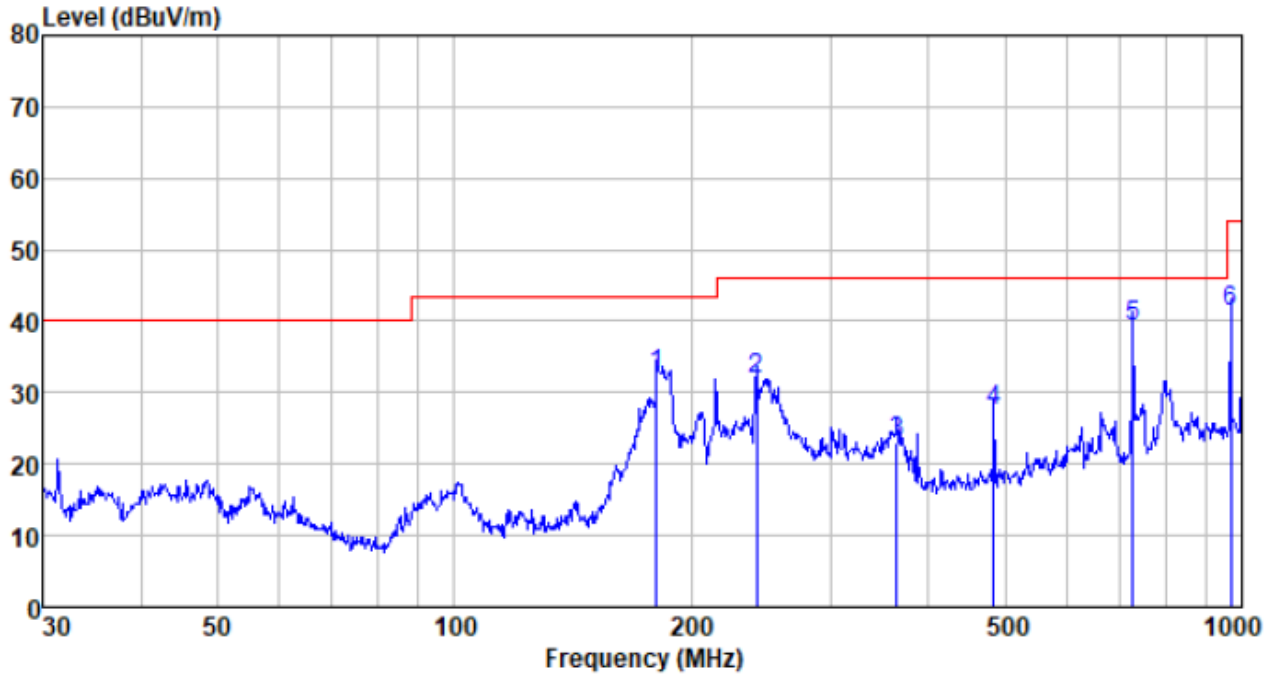
Measurement Data:

9 kHz ~ 30 MHz

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

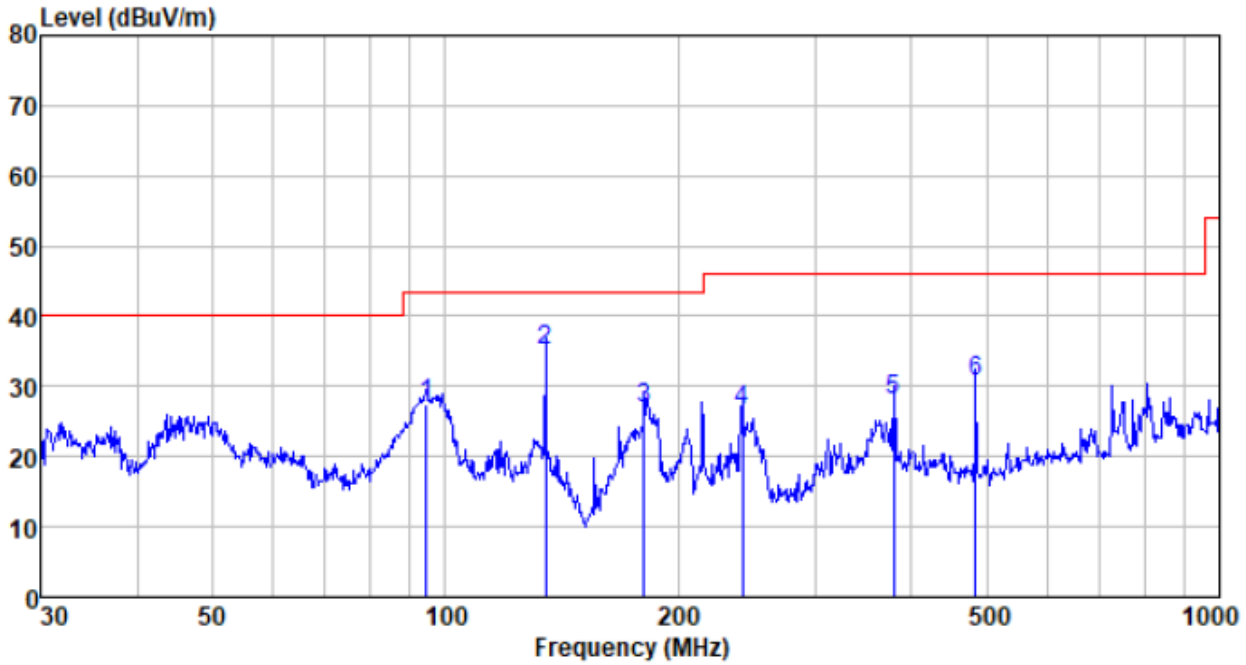
Below 1GHz

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
180.649	58.96	8.98	1.74	37.24	32.44	43.50	-11.06	QP
241.676	55.13	11.89	2.08	37.37	31.73	46.00	-14.27	QP
364.260	43.21	14.75	2.69	37.49	23.16	46.00	-22.84	QP
483.910	44.58	17.01	3.23	37.51	27.31	46.00	-18.69	QP
726.805	52.69	20.10	4.19	37.63	39.35	46.00	-6.65	QP
968.934	51.08	22.59	5.11	37.54	41.24	54.00	-12.76	QP

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
94.428	51.63	11.38	1.15	36.68	27.48	43.50	-16.02	QP
134.559	62.72	7.82	1.47	36.98	35.03	43.50	-8.47	QP
180.649	53.47	8.98	1.74	37.24	26.95	43.50	-16.55	QP
241.676	49.83	11.89	2.08	37.37	26.43	46.00	-19.57	QP
379.914	47.86	15.00	2.76	37.50	28.12	46.00	-17.88	QP
483.910	47.83	17.01	3.23	37.51	30.56	46.00	-15.44	QP

Above 1GHz:

ANT 1:

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

Test mode:		802.11a(SISO)		Test channel:		lowest	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector
V	11510.00	28.63	21.64	50.27	54(Note3)	-3.73	PK
V	17265.00	26.36	21.80	48.16	54(Note3)	-5.84	PK
H	11510.00	26.43	21.83	48.26	54(Note3)	-5.74	PK
H	17265.00	25.23	21.67	46.90	54(Note3)	-7.10	PK

ANT 2:

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

Test mode:		802.11a(SISO)		Test channel:		lowest	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector
V	11570.00	26.46	21.64	48.10	54(Note3)	-5.90	PK
V	17355.00	25.15	21.80	46.95	54(Note3)	-7.05	PK
H	11570.00	22.81	21.83	44.64	54(Note3)	-9.36	PK
H	17355.00	23.47	21.67	45.14	54(Note3)	-8.86	PK

ANT 1+ANT2:

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

Test mode:	802.11n(HT20)(MIMO)			Test channel:		Lowest	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector
V	11510.00	28.02	21.67	49.69	54(Note3)	-4.31	PK
V	17265.00	26.63	21.83	48.46	54(Note3)	-5.54	PK
H	11510.00	27.16	21.67	48.83	54(Note3)	-5.17	PK
H	17265.00	26.43	21.83	48.26	54(Note3)	-5.74	PK

Test mode:	802.11ac(HT40)(MIMO)			Test channel:		Lowest	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector
V	11590.00	28.72	21.67	50.39	54(Note3)	-3.61	PK
V	17385.00	26.85	21.83	48.68	54(Note3)	-5.32	PK
H	11590.00	27.88	21.67	49.55	54(Note3)	-4.45	PK
H	17385.00	28.45	21.83	50.28	54(Note3)	-3.72	PK

Test mode:	802.11ac(HT80)(MIMO)			Test channel:		Middle	
Antenna Pol.	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector
V	11550.00	26.25	21.65	47.90	54(Note3)	-6.10	PK
V	17325.00	24.38	21.81	46.19	54(Note3)	-7.81	PK
H	11550.00	23.72	21.65	45.37	54(Note3)	-8.63	PK
H	17325.00	23.18	21.81	44.99	54(Note3)	-9.01	PK

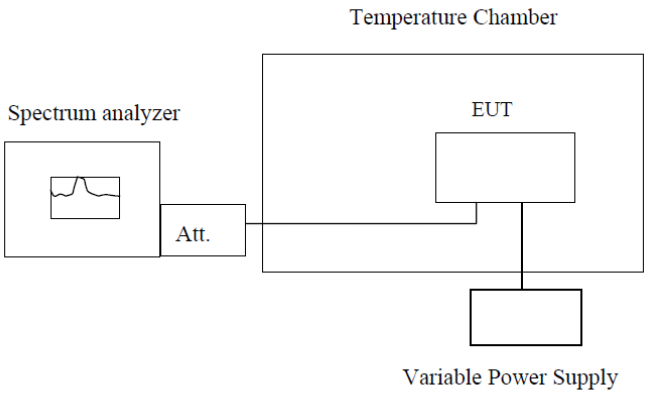
Note:

1. Measure Level = Reading Level + Factor.

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

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

7.8 Frequency stability

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

Measurement data:

802.11(HT20)					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5745	5747.1831	5744.0791	5743.8392	5747.6476
	5785	5787.8606	5784.1531	5784.9883	5786.2674
	5825	5826.5761	5824.4130	5824.1687	5825.7440
-20	5745	5746.1278	5744.4113	5744.1864	5745.0187
	5785	5786.4484	5784.2721	5784.2555	5785.0800
	5825	5826.2159	5824.2760	5824.7351	5825.1737
-10	5745	5746.2677	5744.6409	5744.8054	5745.7360
	5785	5786.4707	5784.0945	5784.6409	5785.0802
	5825	5825.0749	5824.7369	5824.8799	5825.1125
0	5745	5745.1347	5744.7821	5744.6471	5745.1468
	5785	5785.3047	5784.7186	5784.6649	5785.0604
	5825	5825.5638	5824.9283	5824.9426	5825.9464
10	5745	5745.4768	5744.6509	5744.1867	5745.9674
	5785	5785.3392	5784.3451	5784.5157	5785.4826
	5825	5825.8280	5824.0321	5824.9598	5825.9144
20	5745	5745.6986	5744.4618	5744.8449	5745.9975
	5785	5785.3428	5784.0467	5784.1711	5785.5595
	5825	5825.4090	5824.1521	5824.4610	5825.5034
30	5745	5745.8296	5744.1480	5744.8846	5745.0212
	5785	5785.5027	5784.5652	5784.4321	5785.9987
	5825	5825.7772	5824.0329	5824.3295	5825.8521
40	5745	5745.1937	5744.1119	5744.6948	5745.0000
	5785	5785.7968	5784.2090	5784.3656	5785.7887
	5825	5825.2010	5824.6806	5824.4360	5825.5698
50	5745	5745.1314	5744.2320	5744.6569	5745.2404
	5785	5785.6502	5784.6345	5784.2466	5785.7259
	5825	5825.3476	5824.9718	5824.2413	5825.2820

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)
3.3	5745	5746.0904	5746.3360	5742.9903	5742.8481
	5785	5786.3293	5785.8849	5783.4552	5782.7035
	5825	5826.0635	5825.4156	5823.4353	5823.8786
3.7	5745	5745.8840	5745.6587	5743.5913	5744.9804
	5785	5785.2044	5785.2523	5784.7018	5784.2023
	5825	5825.9223	5825.9469	5824.5435	5824.3932
4.1	5745	5745.6551	5745.2407	5744.9952	5744.7619
	5785	5785.5886	5785.9816	5784.0202	5784.7582
	5825	5825.7821	5825.4295	5824.8829	5824.1427

Note: The worst case is FL=5742.8481MHz, FH=5826.5761MHz

802.11(HT40)					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5755	5755.1329	5752.4902	5752.5891	5756.6263
	5795	5795.2137	5793.7152	5793.5203	5795.3105
-20	5755	5755.6319	5754.8676	5753.2213	5755.0104
	5795	5795.7663	5794.6590	5794.8174	5795.7312
-10	5755	5755.6278	5754.9203	5754.2304	5755.5256
	5795	5795.7221	5794.6044	5794.3056	5795.8709
0	5755	5755.5288	5754.6872	5754.4579	5755.3716
	5795	5795.7172	5794.9227	5794.7460	5795.9256
10	5755	5755.5756	5754.2690	5754.2862	5755.1002
	5795	5795.7922	5794.3509	5794.5067	5795.9406
20	5755	5755.1327	5754.1988	5754.7427	5755.5750
	5795	5795.0588	5794.7198	5794.5410	5795.2590
30	5755	5755.8855	5754.1674	5754.6243	5755.2351
	5795	5795.5299	5794.6309	5794.8600	5795.4906
40	5755	5755.2026	5754.1414	5754.9928	5755.2602
	5795	5795.5569	5794.6045	5794.2624	5795.4861
50	5755	5755.0579	5754.3564	5754.4280	5755.2255
	5795	5795.5597	5794.6965	5794.9078	5795.2017

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)
3.3	5755	5757.5518	5753.4138	5755.7250	5754.0061
	5795	5797.8966	5794.2689	5795.1343	5794.0550
3.7	5755	5757.1491	5754.8147	5755.9939	5754.1053
	5795	5796.3155	5794.1233	5795.8679	5794.2409
4.1	5755	5755.3833	5754.5111	5755.6131	5754.7150
	5795	5795.0137	5794.6585	5795.2969	5794.4971

Note: The worst case is FL=5752.4902MHz, FH=5797.8966MHz

802.11(HT80)(MIMO)					
Frequency stability versus Temp.					
Power Supply: DC 3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5775	5775.3812	5775.1222	5774.2688	5773.9088
-20	5775	5775.4995	5775.8239	5774.3282	5773.5163
-10	5775	5775.5498	5775.6940	5774.8174	5773.6424
0	5775	5775.5294	5775.9793	5774.8590	5774.9031
10	5775	5775.7769	5775.1818	5774.5575	5774.5177
20	5775	5775.6325	5775.5574	5774.3269	5774.2614
30	5775	5775.2301	5775.8757	5774.0359	5774.1085
40	5775	5775.2755	5775.6289	5774.4655	5774.7608
50	5775	5775.2553	5775.0939	5774.9905	5774.4925

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)
3.3	5775	5773.6848	5777.5108	5777.7646	5776.1990
3.7	5775	5773.7014	5777.8090	5777.8193	5775.4322
4.1	5775	5773.1627	5775.3726	5777.6555	5776.5021

Note: The worst case is FL=5777.8193MHz, FH=5773.1627MHz

8 Test Setup Photo

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

9 EUT Constructional Details

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

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