

FCC REPORT

Applicant: Resonian, Inc

Address of Applicant: 15615 Alton PKWY STE 450 Irvine, California 92618, United States

Manufacturer: Shenzhen SDMC Technology Co.,Ltd

Address of Manufacturer: 7/F, W2-A, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, China, 518027

Equipment Under Test (EUT)

Product Name: Android TV Box

Model No.: RSTV-A4K-16

Trade Mark: Kinetic TV

FCC ID: 2ARUM-RSTVA4K166769

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

Date of sample receipt: November 20, 2018

Date of Test: November 21, 2018-December 05, 2018

Date of report issued: December 06, 2018

Test Result : PASS *

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

Authorized Signature:



Robinson Lo

Laboratory Manager

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

2 Version

Version No.	Date	Description
00	December 06, 2018	Original

Prepared By:

Tiger Chen

Date:

December 06, 2018

Project Engineer

Check By:

Robinson

Date:

December 06, 2018

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.407(a)(3)	Pass
Channel Bandwidth	15.407(e)	Pass
Power Spectral Density	15.407(a)(3)	Pass
Band Edge	15.407(b)(4)	Pass
Spurious Emission	15.205/15.209/15.407(b)(4)	Pass
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	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 40GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	Android TV Box
Model No.:	RSTV-A4K-16
Serial No.:	181100090001-181100099950
Hardware Version:	V2
Software Version:	V9.3
Test sample(s) ID:	GTS201811000126-1
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:	802.11a/802.11n(H20)/802.11n(H40)/802.11ac(HT20)/802.11ac(HT40) /802.11ac(HT80): Orthogonal Frequency Division Multiplexing (OFDM) MIMO: 802.11n/ac SISO: 802.11a
Antenna Type:	Integral Antenna
Antenna gain:	ANT A: 2.14dBi ANT B: 2.54dBi
Power supply:	Adapter MODEL:SA12V-050200U INPUT: AC 100-240V, 50/60Hz,0.4A OUTPUT: DC 5V, 2 A

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
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

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

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

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

5.3 Description of Support Units

None.

5.4 Test Facility

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

- **FCC —Registration No.:381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383, January 08, 2018.

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

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. Has been

Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone,

Xixiang Road, Baoan District, Shenzhen, Guangdong, China

Tel: 0755-27798480

Fax: 0755-27798960

5.6 Additional Instructions

EUT Fixed Frequency Settings:

Test Software	Ampark RFTTestTool, VER:5.3		
Power level setup			
Mode	Channel	Frequency (MHz)	Level Set
OFDM	CH149	5745	TX level : default
	CH151	5755	
	CH155	5775	
	CH157	5785	
	CH159	5795	
	CH165	5825	

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 27 2018	June. 26 2019
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019

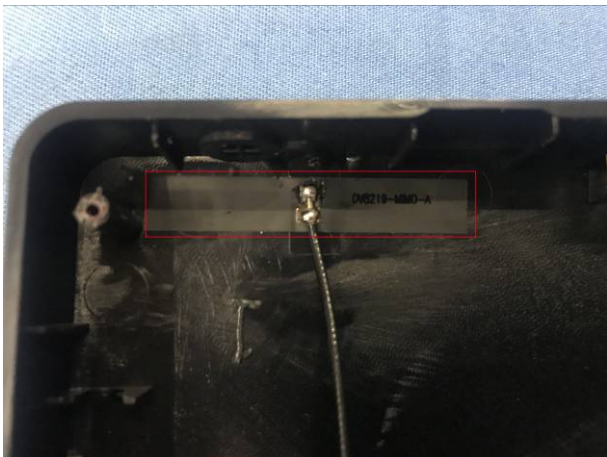
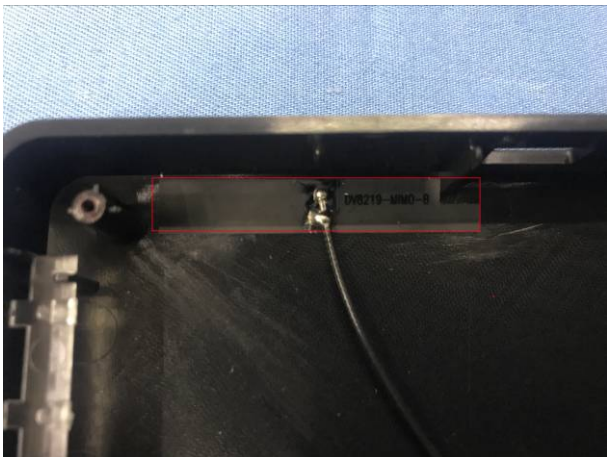
Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.16 2014	May.15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 27 2018	June. 26 2019
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 27 2018	June. 26 2019
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. 27 2018	June. 26 2019
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 27 2018	June. 26 2019

RF Conducted:						
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. 27 2018	June. 26 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 27 2018	June. 26 2019
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 27 2018	June. 26 2019
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 27 2018	June. 26 2019
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 27 2018	June. 26 2019
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 27 2018	June. 26 2019
8	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019
9	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 27 2018	June. 26 2019

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. 27 2018	June. 26 2019
2	Barometer	ChangChun	DYM3	GTS255	June. 27 2018	June. 26 2019

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
<i>15.203 requirement:</i> <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i>	
E.U.T Antenna:	
<i>The antenna is Integral antenna, the best case gain of the ANT A is 2.14dBi and ANT B is 2.54dBi</i>  	

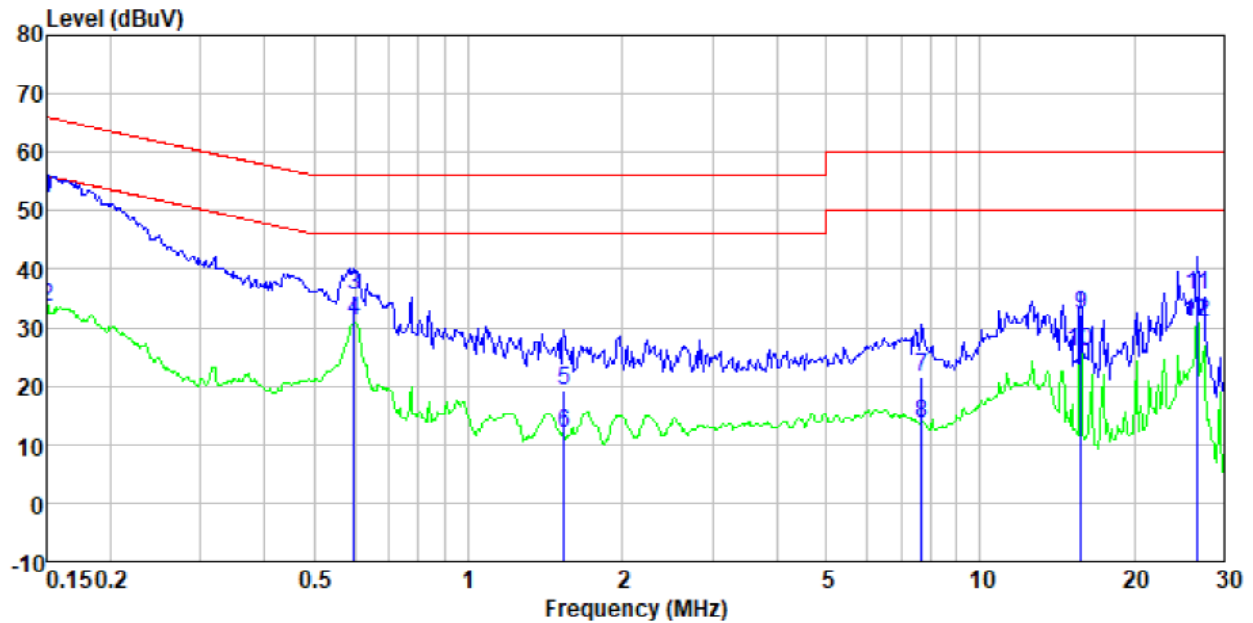
7.2 Conducted Emissions

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

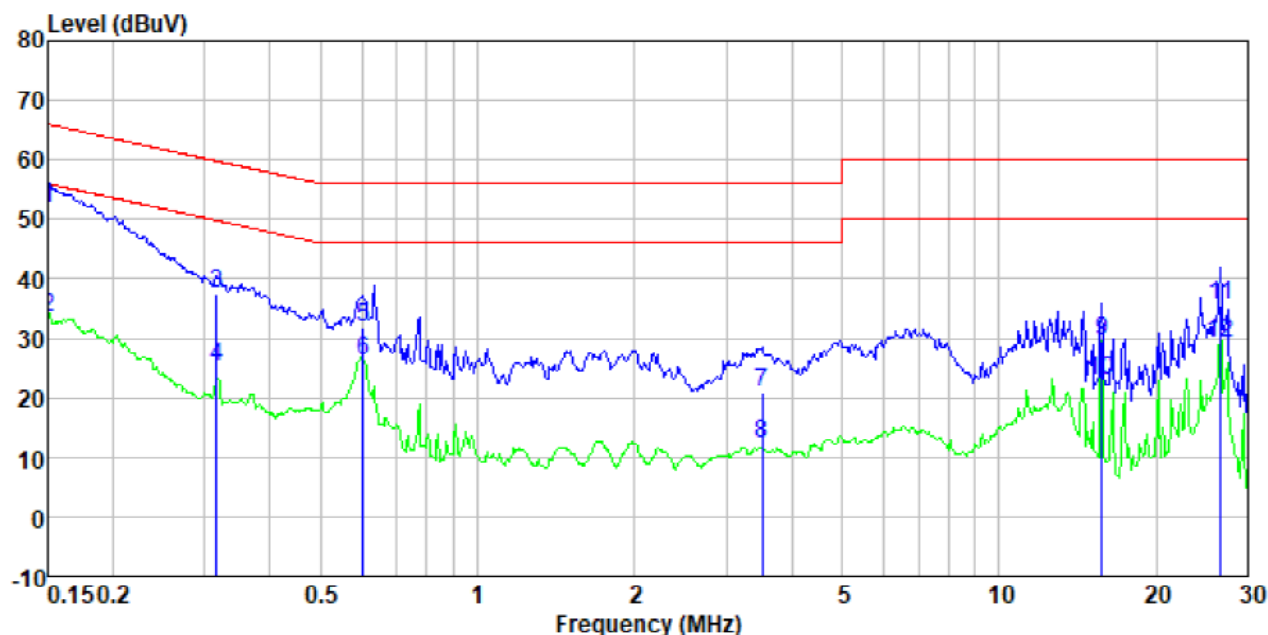
Measurement data

Line:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	51.78	0.40	0.07	52.25	66.00	-13.75	QP
0.15	32.95	0.40	0.07	33.42	56.00	-22.58	Average
0.60	35.04	0.29	0.12	35.45	56.00	-20.55	QP
0.60	30.67	0.29	0.12	31.08	46.00	-14.92	Average
1.54	18.75	0.20	0.17	19.12	56.00	-36.88	QP
1.54	11.42	0.20	0.17	11.79	46.00	-34.21	Average
7.69	21.00	0.20	0.19	21.39	60.00	-38.61	QP
7.69	13.06	0.20	0.19	13.45	50.00	-36.55	Average
15.72	31.59	0.22	0.21	32.02	60.00	-27.98	QP
15.72	25.47	0.22	0.21	25.90	50.00	-24.10	Average
26.56	34.76	0.37	0.23	35.36	60.00	-24.64	QP
26.56	30.32	0.37	0.23	30.92	50.00	-19.08	Average

Neutral:

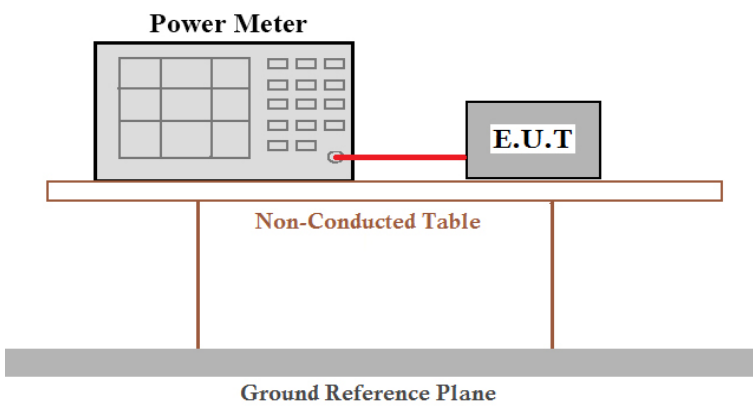


Freq MHz	Reading level dBuV	LISM/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	51.28	0.40	0.07	51.75	66.00	-14.25	QP
0.15	32.90	0.40	0.07	33.37	56.00	-22.63	Average
0.32	37.15	0.39	0.10	37.64	59.80	-22.16	QP
0.32	24.73	0.39	0.10	25.22	49.80	-24.58	Average
0.60	31.54	0.28	0.12	31.94	56.00	-24.06	QP
0.60	25.75	0.28	0.12	26.15	46.00	-19.85	Average
3.51	20.52	0.20	0.18	20.90	56.00	-35.10	QP
3.51	11.74	0.20	0.18	12.12	46.00	-33.88	Average
15.72	28.93	0.22	0.21	29.36	60.00	-30.64	QP
15.72	22.48	0.22	0.21	22.91	50.00	-27.09	Average
26.56	34.91	0.37	0.23	35.51	60.00	-24.49	QP
26.56	28.45	0.37	0.23	29.05	50.00	-20.95	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 A:

Test CH	Peak Output Power (dBm)						Limit(dBm)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	10.55	10.56	10.17	11.10	10.97	---	30.00	Pass
Middle	11.62	11.42	11.53	---	---	9.71		
Highest	12.77	12.90	12.77	12.44	12.63	---		

ANT B:

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	13.30	12.93	12.78	13.53	13.67	---	30.00	Pass
Middle	13.66	13.69	13.91	---	---	11.58		
Highest	14.52	14.46	14.48	14.30	14.31	---		

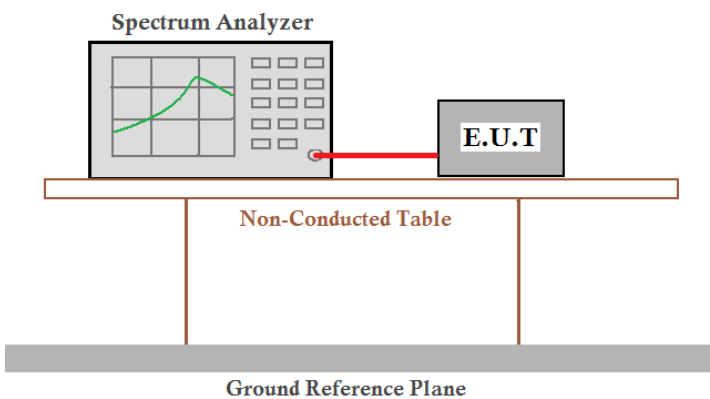
Remark: "---"is not applicable

MIMO:

Test mode	Channel	ANT A power (dBm)	ANT B power (dBm)	MIMO power (dBm)	Limit (dBm)	Result
802.11n(HT20)	Lowest	10.56	12.93	14.92	30	Pass
	Middle	11.42	13.69	15.71		
	Highest	12.90	14.46	16.76		
802.11ac(HT20)	Lowest	10.17	12.78	14.68		
	Middle	11.53	13.91	15.89		
	Highest	12.77	14.48	16.72		
802.11n(HT40)	Lowest	11.10	13.53	15.49		
	Highest	12.44	14.30	16.45		
802.11ac(HT40)	Lowest	10.97	13.67	15.54		
	Highest	12.63	14.31	16.56		
802.11ac(HT80)	Middle	9.71	11.58	13.76		

Note: transmit signals are completely *uncorrelated*,
Directional gain= $10 \times \log [(10^{2.14/10} + 10^{2.54/10})/2] = 2.34\text{dBi}$

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

ANT A:

Test CH	Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	16.390	17.645	17.639	35.865	36.126	---	>500	Pass
Middle	16.357	17.661	17.612	---	---	75.845		
Highest	16.398	17.639	17.609	36.134	36.085	---		

ANT B:

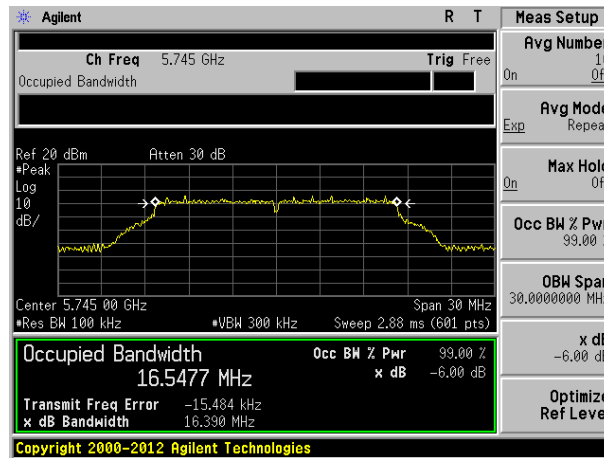
Test CH	Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	16.364	17.625	17.616	36.330	36.196	---	>500	Pass
Middle	16.424	17.607	17.635	---	---	75.562		
Highest	16.395	17.606	17.635	36.452	36.308	---		

Remark: “---”is not applicable

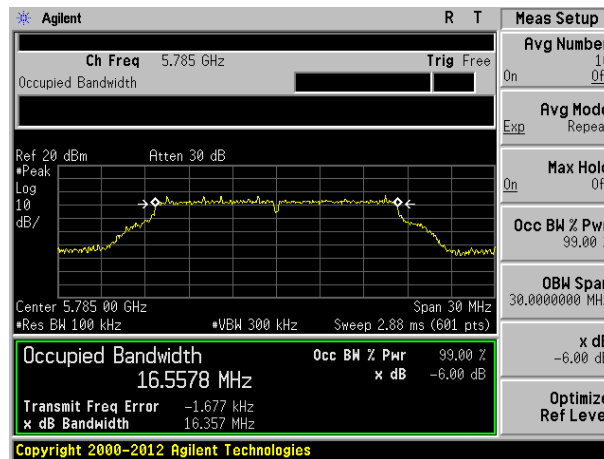
Test plot as follows:

ANT A:

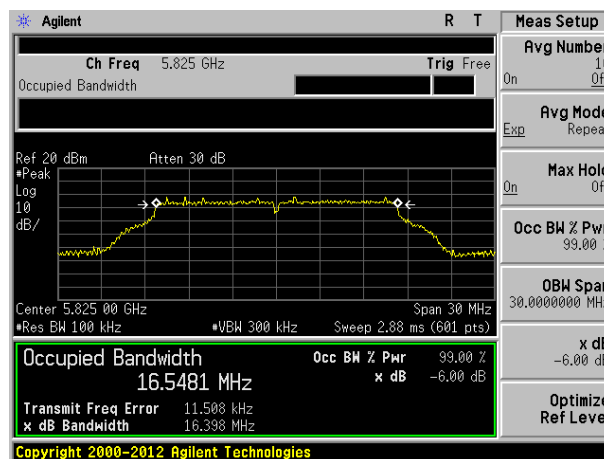
Test mode: 802.11a



Lowest channel

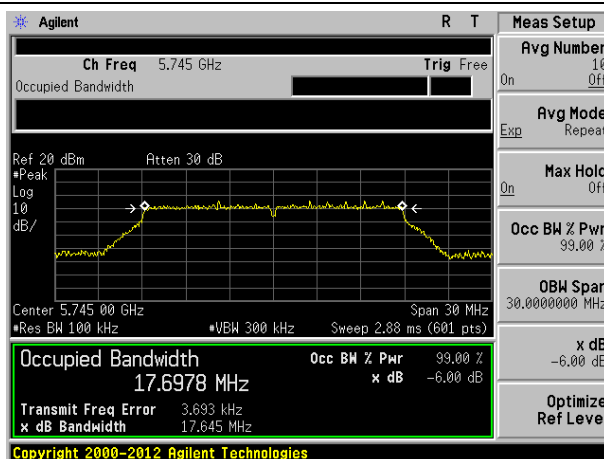


Middle channel

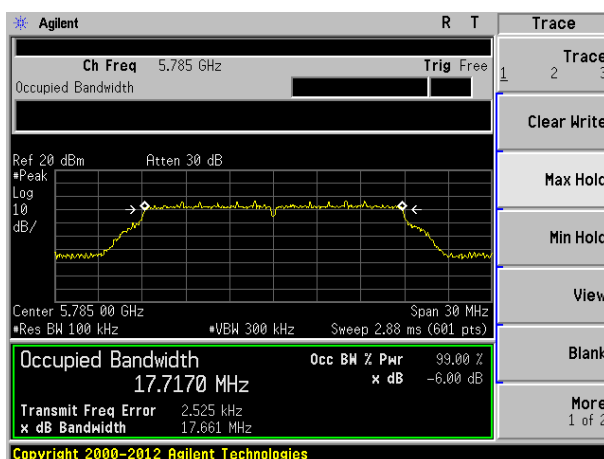


Highest channel

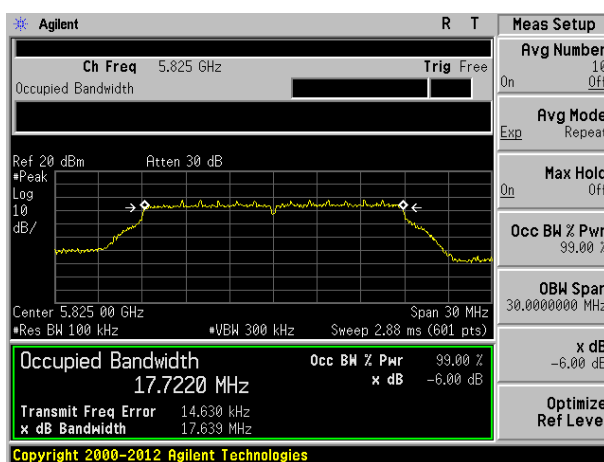
Test mode: 802.11n(HT20)



Lowest channel

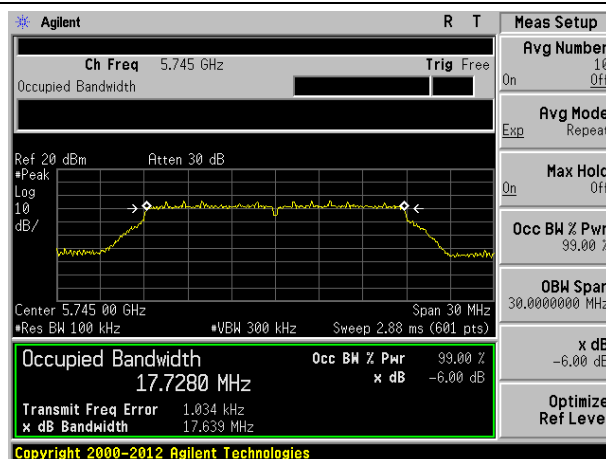


Middle channel

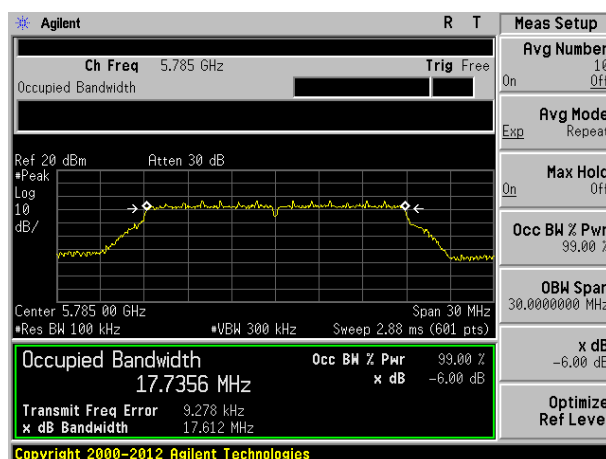


Highest channel

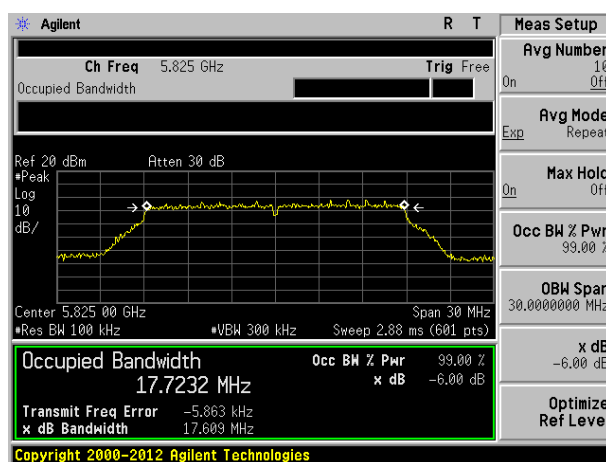
Test mode: 802.11ac(HT20)



Lowest channel

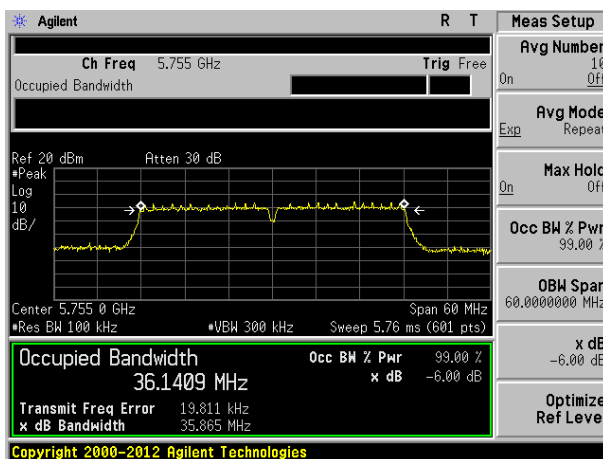


Middle channel

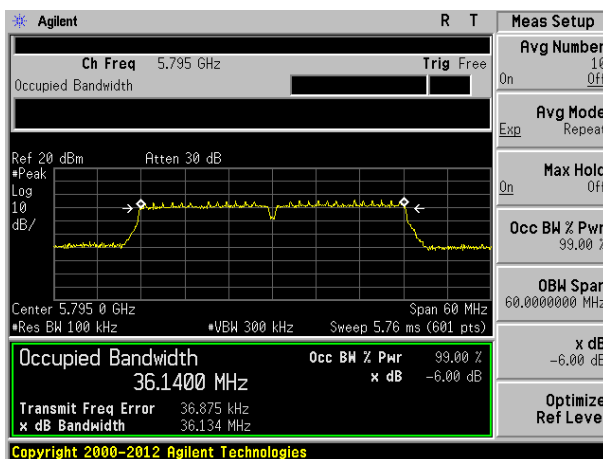


Highest channel

Test mode: 802.11n(HT40)

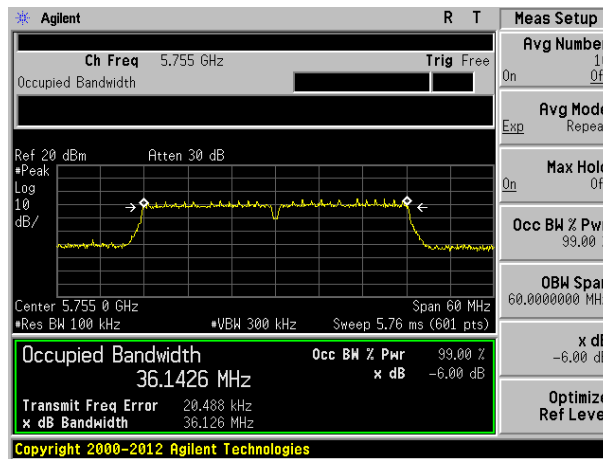


Lowest channel

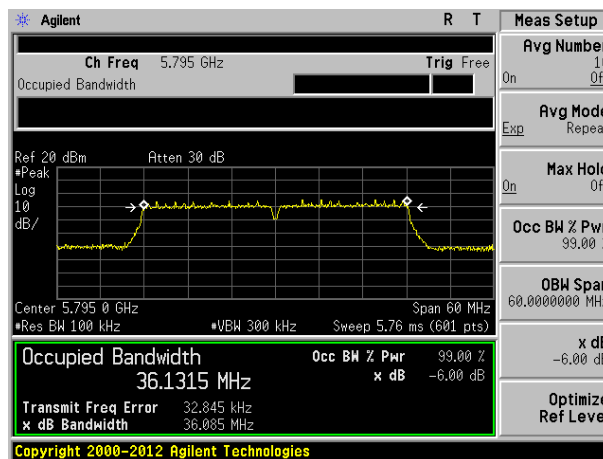


Highest channel

Test mode: 802.11ac(HT40)

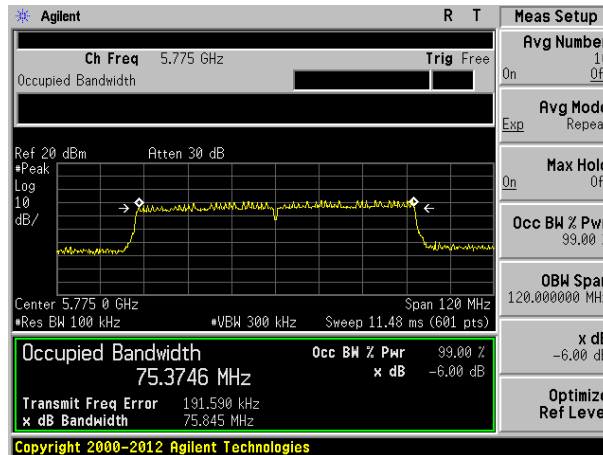


Lowest channel



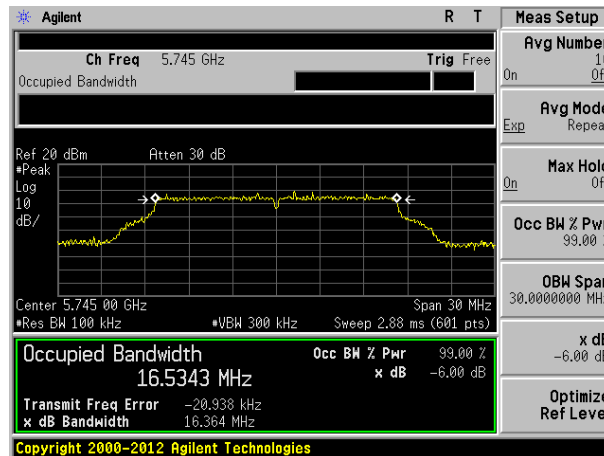
Highest channel

Test mode: 802.11ac(HT80)

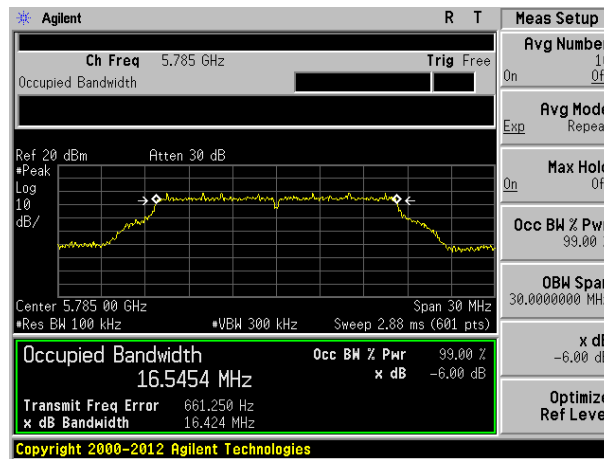


ANT B:

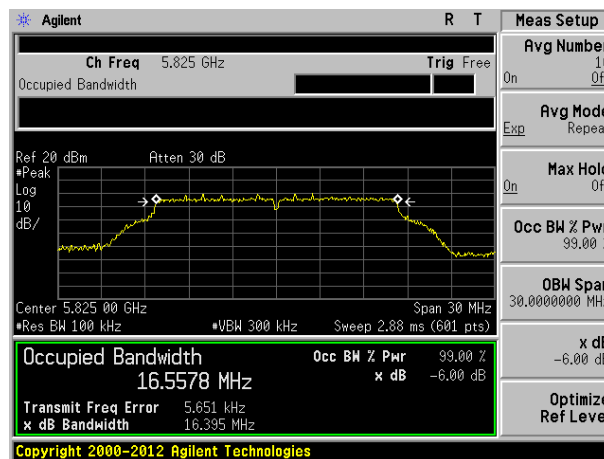
Test mode: 802.11a



Lowest channel

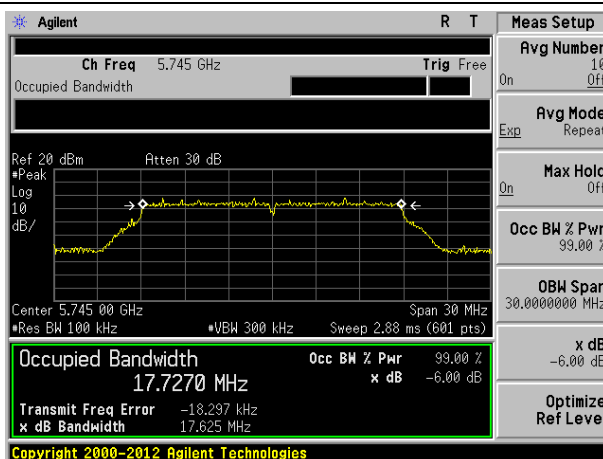


Middle channel

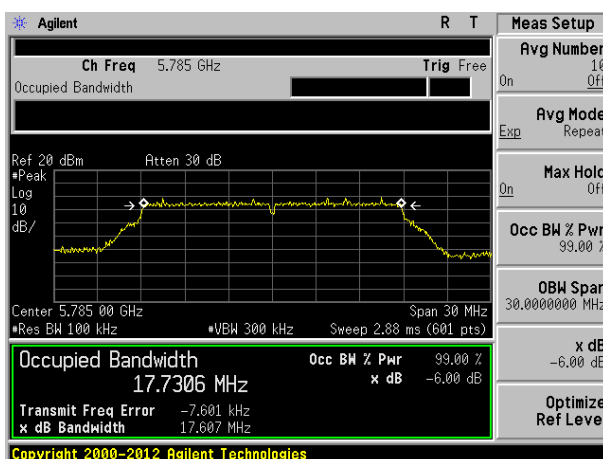


Highest channel

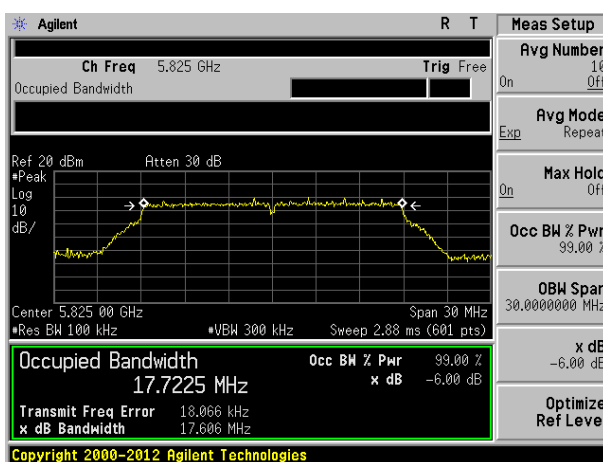
Test mode: 802.11n(HT20)



Lowest channel

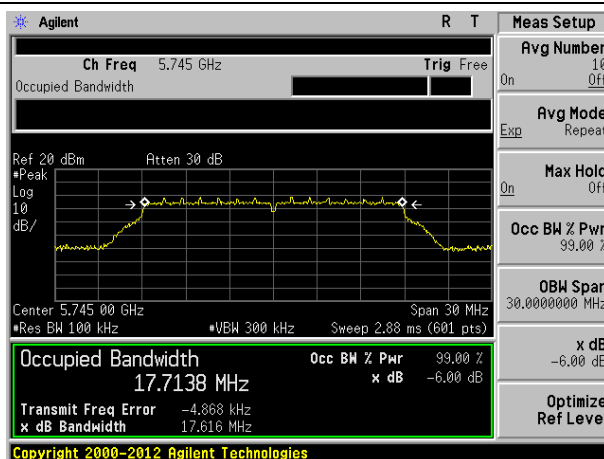


Middle channel

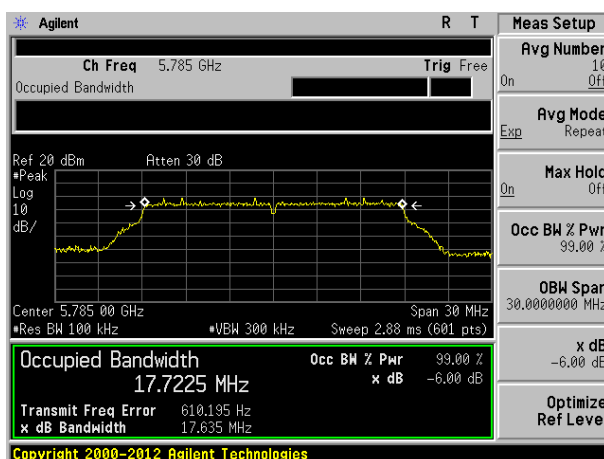


Highest channel

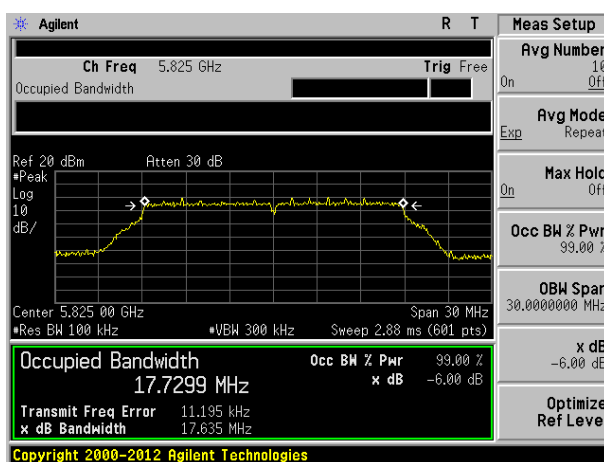
Test mode: 802.11ac(HT20)



Lowest channel

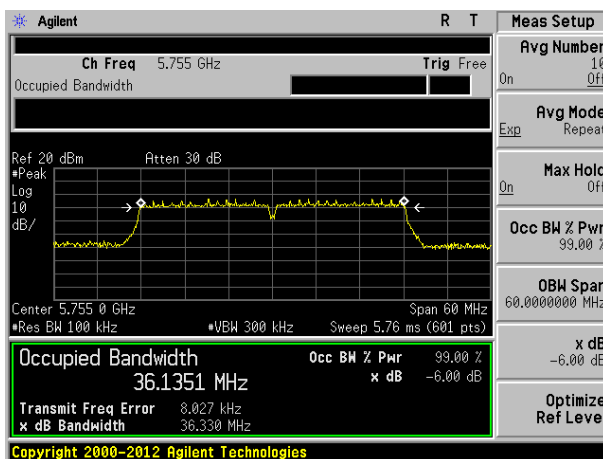


Middle channel

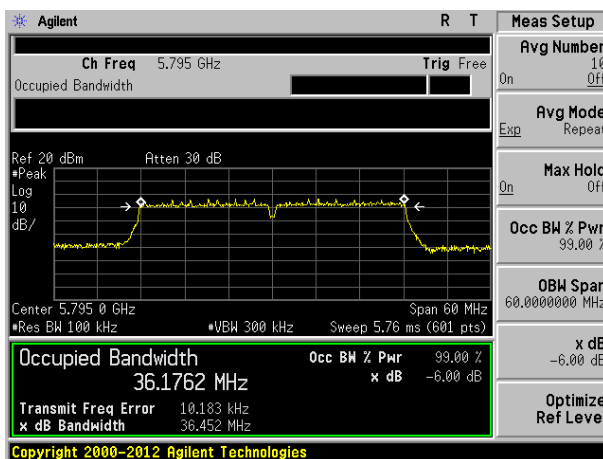


Highest channel

Test mode: 802.11n(HT40)

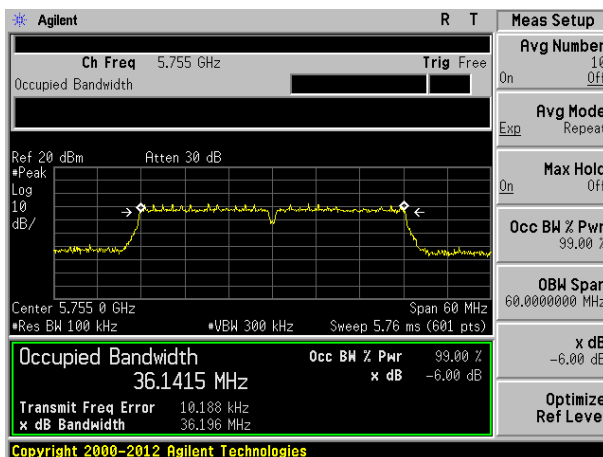


Lowest channel

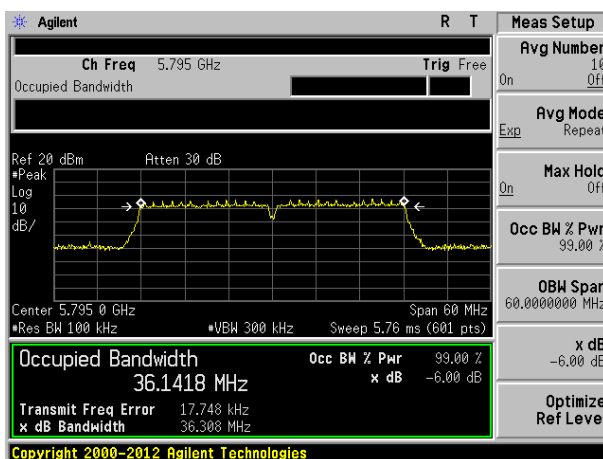


Highest channel

Test mode: 802.11ac(HT40)

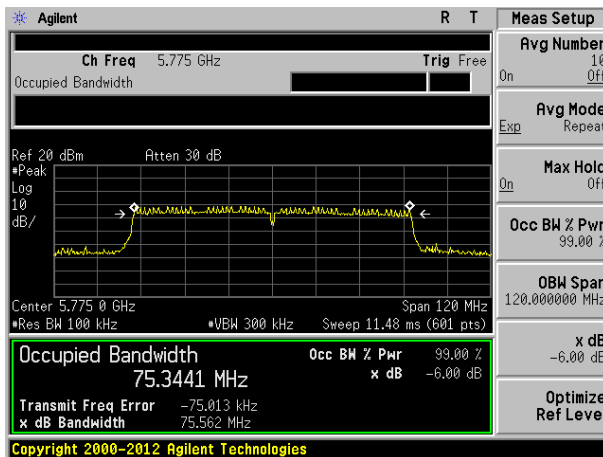


Lowest channel

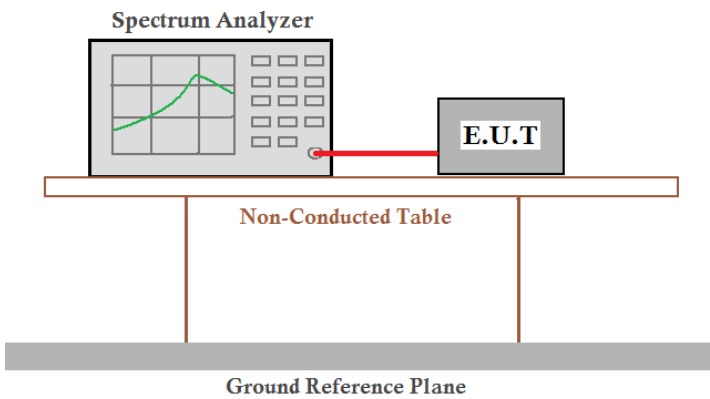


Highest channel

Test mode: 802.11ac(HT80)



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

ANT A:

Test CH	Power Spectral Density (dBm)						Limit (dBm/500k Hz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	-0.65	-0.05	-1.30	-2.70	-2.11	---	30.00	Pass
Middle	0.82	-0.36	0.52	---	---	-10.77		
Highest	2.42	2.24	1.85	-0.97	-1.48	---		

ANT B:

Test CH	Power Spectral Density (dBm)						Limit (dBm/500k Hz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	2.67	1.55	1.99	1.15	-4.58	---	30.00	Pass
Middle	3.17	3.31	3.21	---	---	-5.47		
Highest	3.41	3.91	3.27	1.12	0.98	---		

Remark: "---"is not applicable

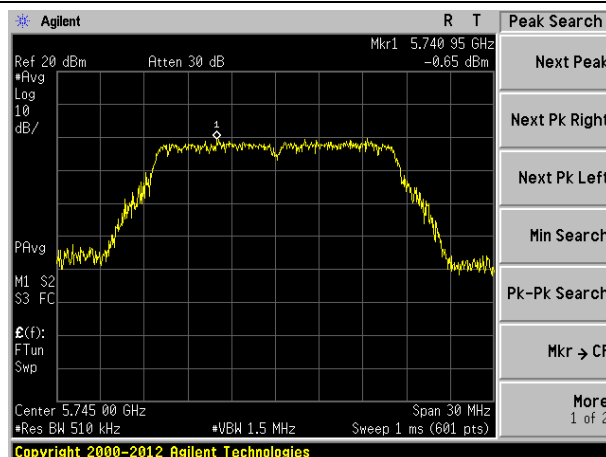
MIMO:

Test mode	Channel	ANT A power (dBm)	ANT B power (dBm)	MIMO power (dBm)	Limit dBm/500kHz	Result
802.11n(HT20)	Lowest	-0.05	1.55	3.64	30	Pass
	Middle	-0.36	3.31	4.86		
	Highest	2.24	3.91	6.17		
802.11ac(HT20)	Lowest	-1.30	1.99	3.66		
	Middle	0.52	3.21	5.08		
	Highest	1.85	3.27	5.63		
802.11n(HT40)	Lowest	-2.70	1.15	2.65		
	Highest	-0.97	1.12	3.21		
802.11ac(HT40)	Lowest	-2.11	-4.58	-0.16		
	Highest	-1.48	0.98	2.93		
802.11ac(HT80)	Middle	-10.77	-5.47	-4.35		

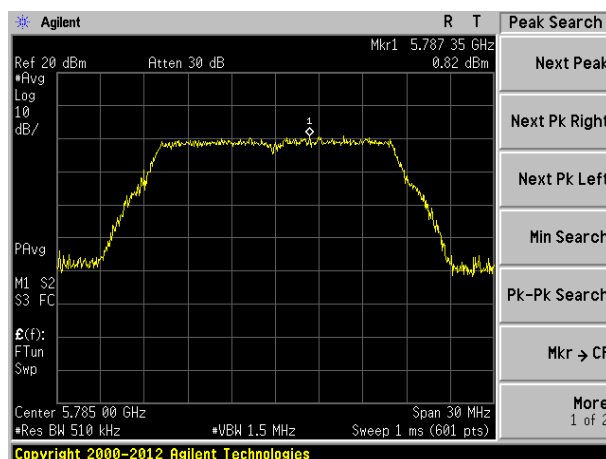
Test plot as follows:

ANT A:

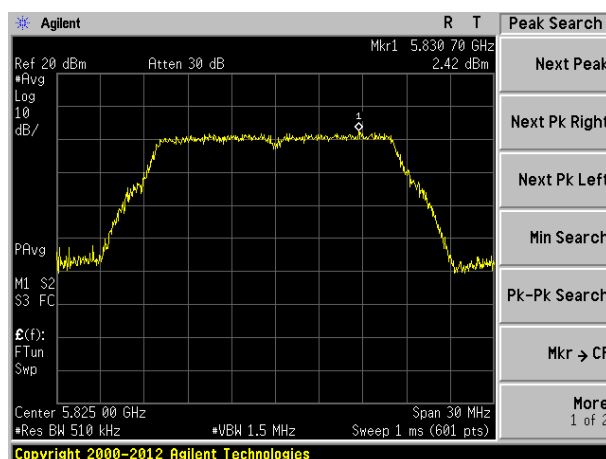
Test mode: 802.11a



Lowest channel

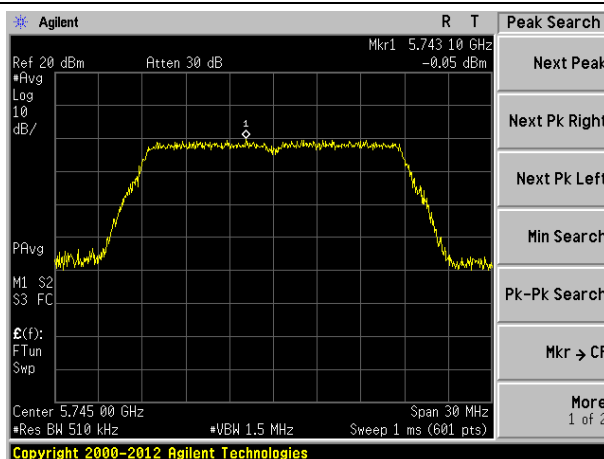


Middle channel

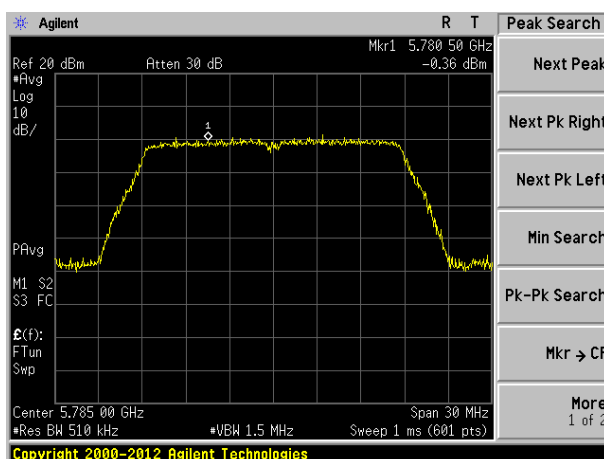


Highest channel

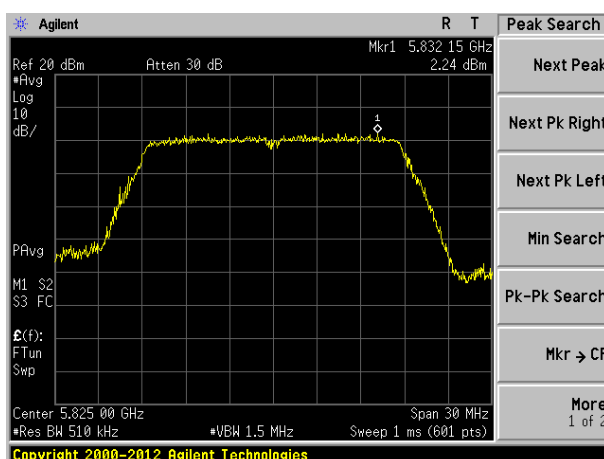
Test mode: 802.11n(HT20)



Lowest channel

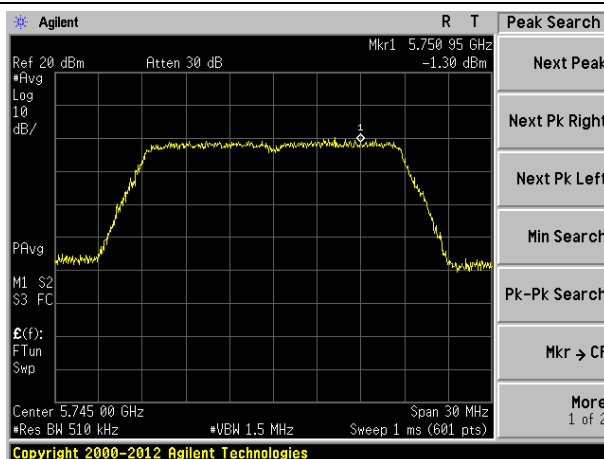


Middle channel

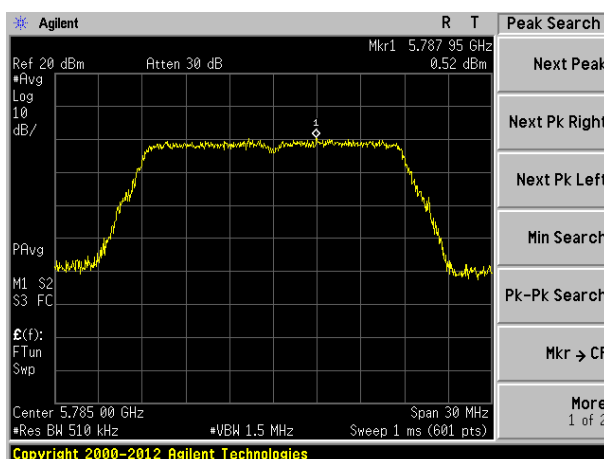


Highest channel

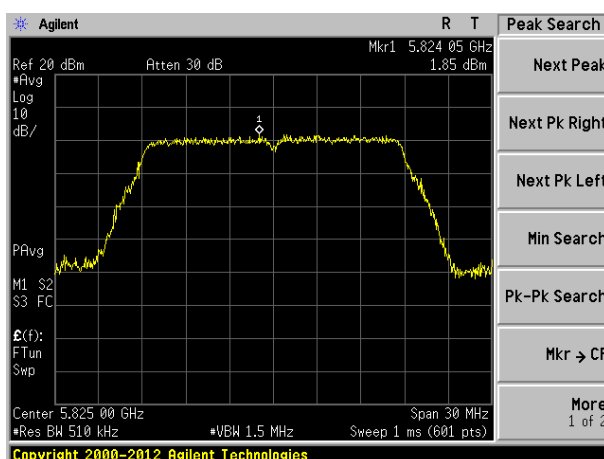
Test mode: 802.11ac(HT20)



Lowest channel

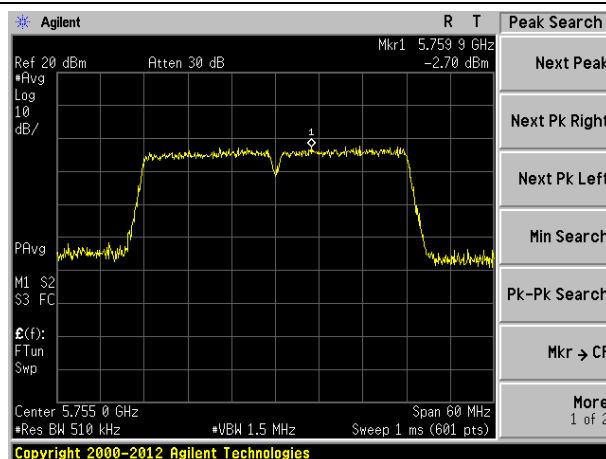


Middle channel

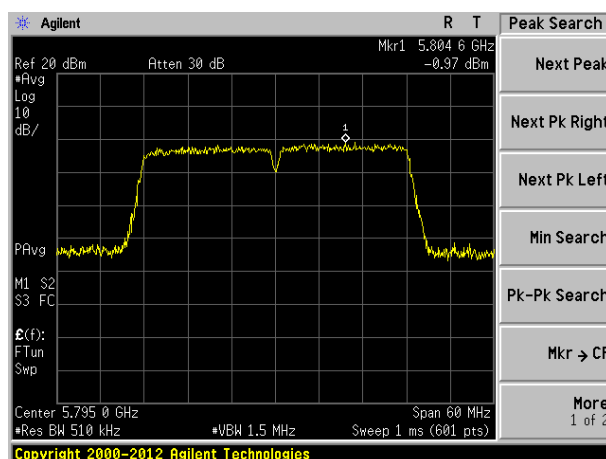


Highest channel

Test mode: 802.11n(HT40)

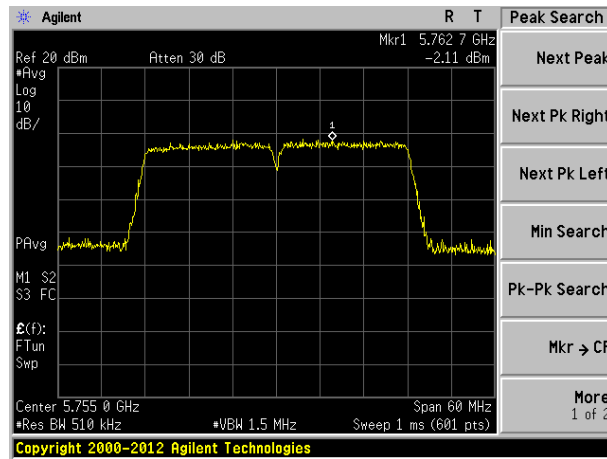


Lowest channel

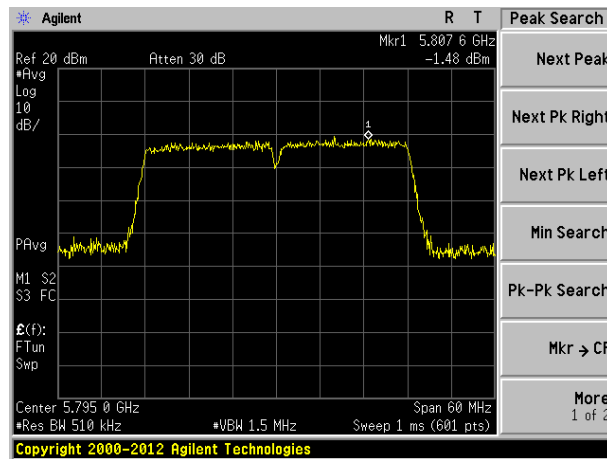


Highest channel

Test mode: 802.11ac(HT40)

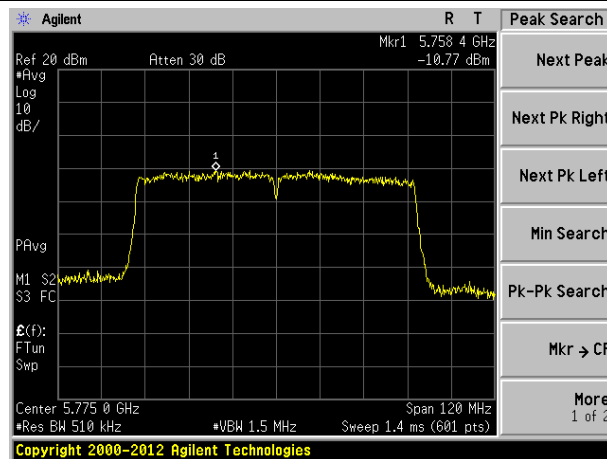


Lowest channel



Highest channel

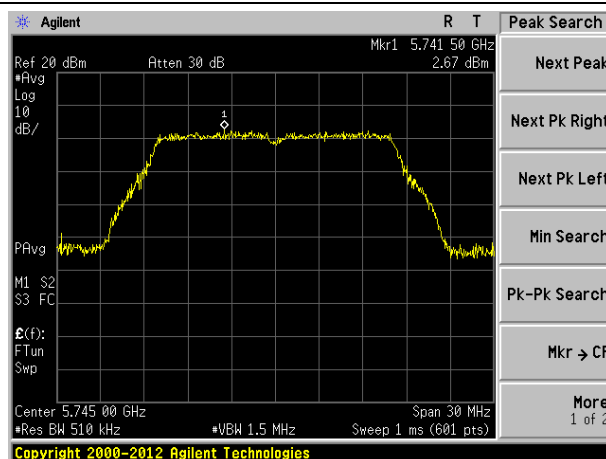
Test mode: 802.11ac(HT80)



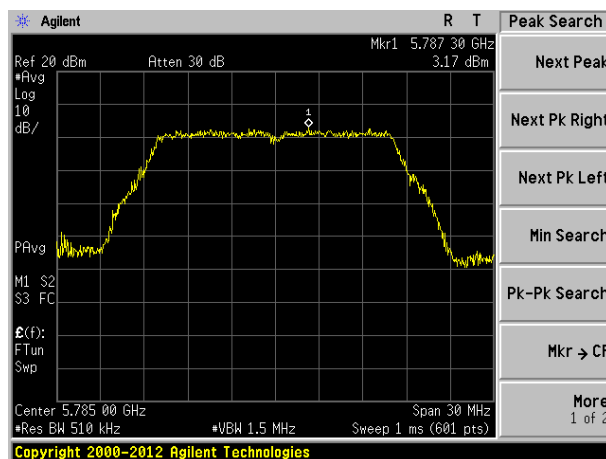
Middle channel

ANT B:

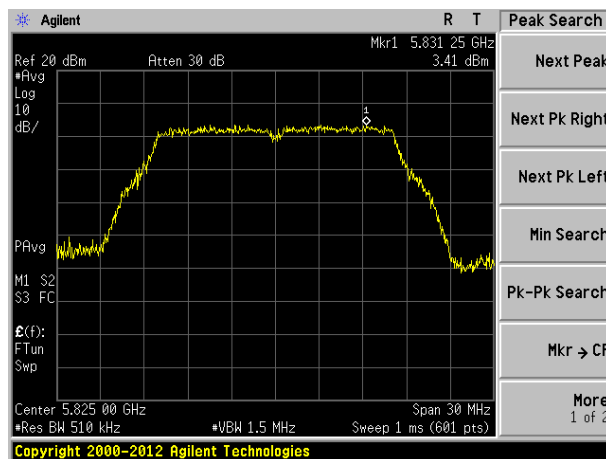
Test mode: 802.11a



Lowest channel

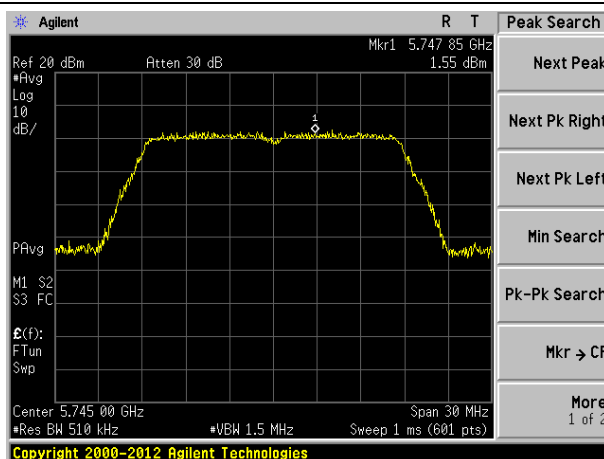


Middle channel

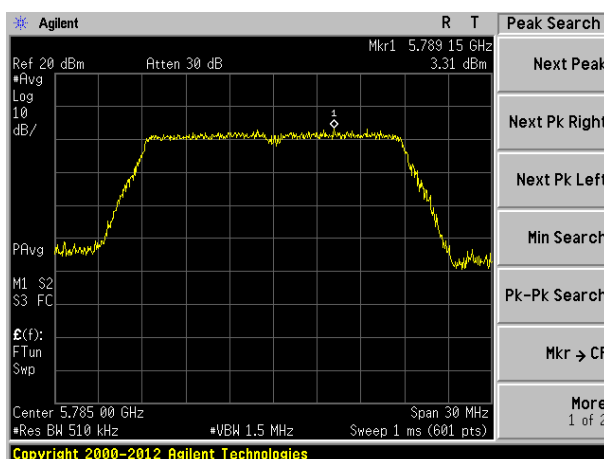


Highest channel

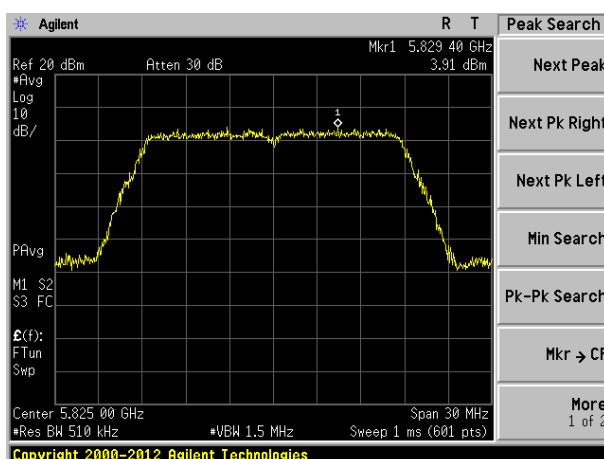
Test mode: 802.11n(HT20)



Lowest channel

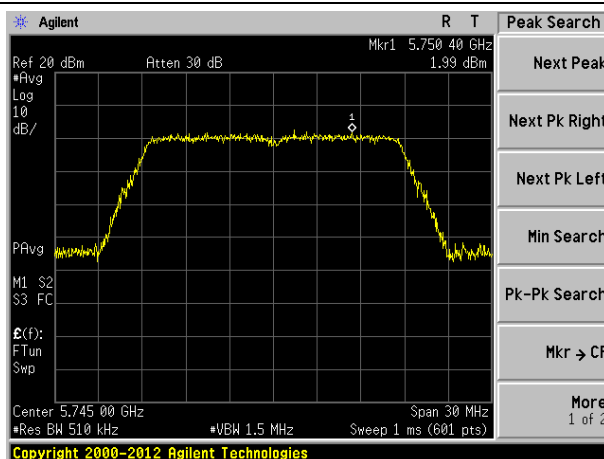


Middle channel

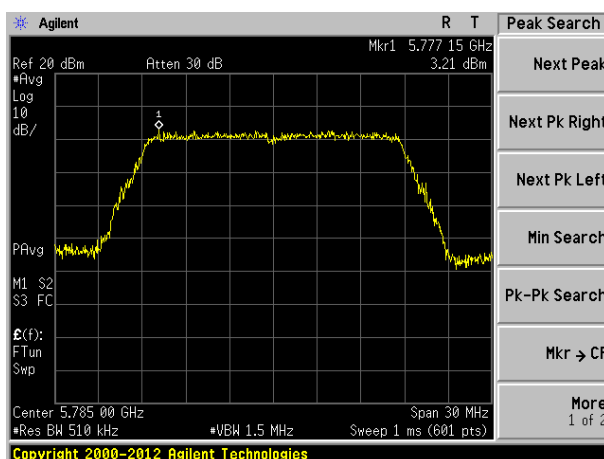


Highest channel

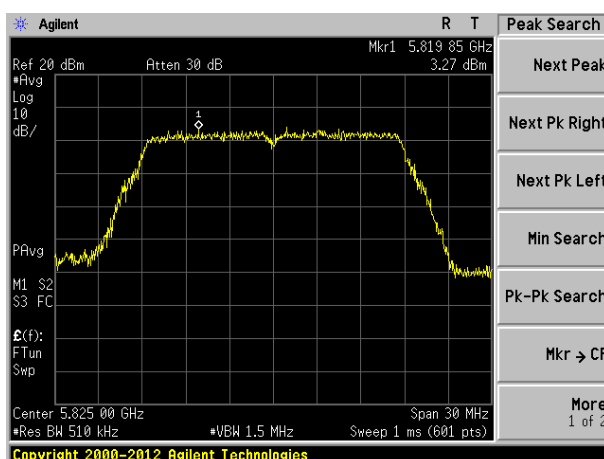
Test mode: 802.11ac(HT20)



Lowest channel

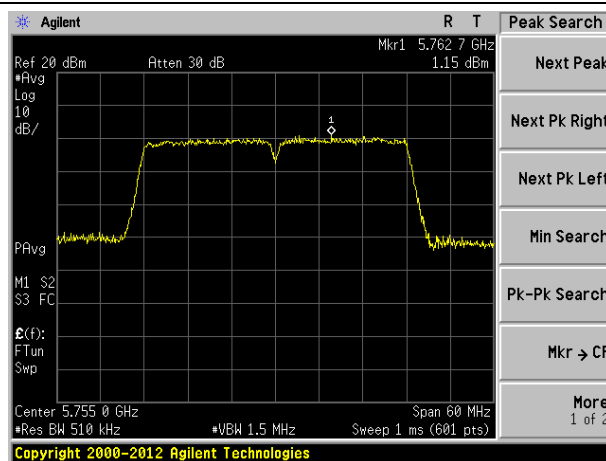


Middle channel

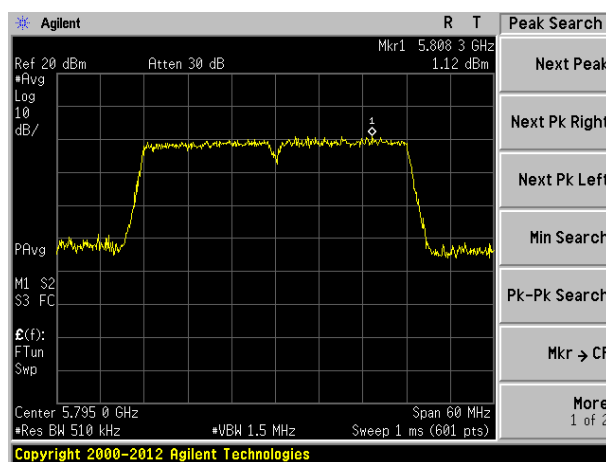


Highest channel

Test mode: 802.11n(HT40)

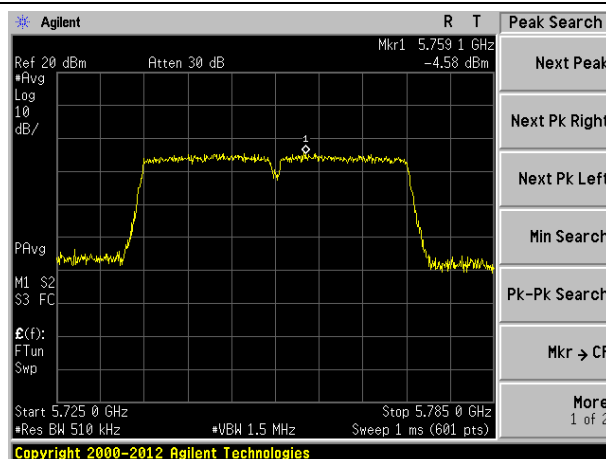


Lowest channel

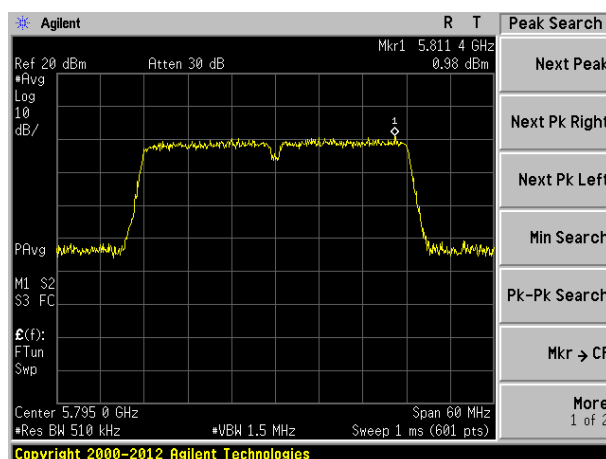


Highest channel

Test mode: 802.11ac(HT40)

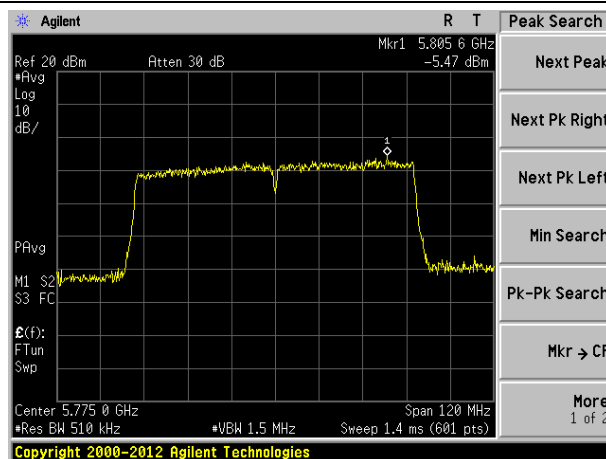


Lowest channel



Highest channel

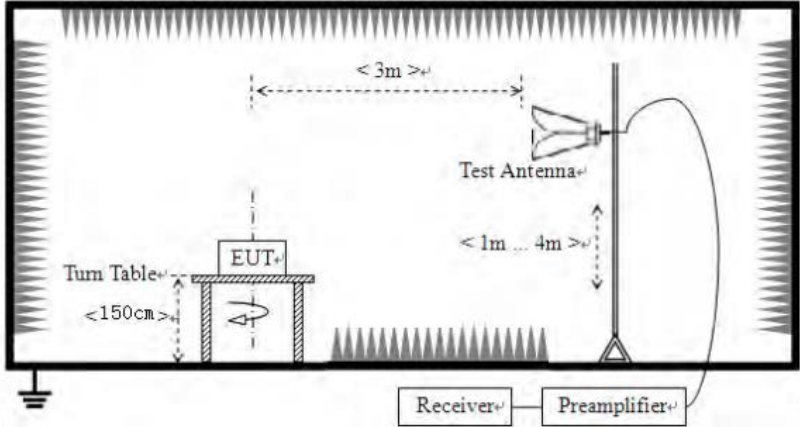
Test mode: 802.11ac(HT80)



Middle channel

7.6 Band edge

7.6.1 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	9kHz to 40GHz, only worse case is reported				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Above 1GHz	Peak	1MHz	3MHz	Peak
		RMS	1MHz	3MHz	RMS
Limit:	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.				
Test setup:					
Test Procedure:	1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-				

	peak or average method as specified and then reported in a data sheet. 7. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remarks:

1. Only the worst case Main Antenna test data..
2. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.
5. 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:
 $E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2;$
 $E[\text{dBuV/m}] = -27 + 95.2 = 68.2\text{dBuV/m}.$
 $E[\text{dBuV/m}] = 10 + 95.2 = 105.2\text{dBuV/m}.$
 $E[\text{dBuV/m}] = 15.6 + 95.2 = 110.8\text{dBuV/m}.$
 $E[\text{dBuV/m}] = 27 + 95.2 = 122.2\text{dBuV/m}$

Measurement data:

IEEE 802.11a								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	35.73	32.36	9.72	23.83	53.98	68.2	-14.22	Horizontal
5700.00	36.11	32.5	9.79	23.84	54.56	105.2	-50.64	Horizontal
5720.00	37.28	32.53	9.81	23.85	55.77	110.8	-55.03	Horizontal
5725.00	42.04	32.53	9.83	23.86	60.54	122.2	-61.66	Horizontal
5850.00	43.29	32.7	9.99	23.87	62.11	122.2	-60.09	Horizontal
5855.00	35.69	32.72	9.99	23.88	54.52	110.8	-56.28	Horizontal
5875.00	37.74	32.74	10.04	23.89	56.63	105.2	-48.57	Horizontal
5925.00	38.39	32.8	10.11	23.9	57.4	68.2	-10.8	Horizontal
5650.00	36.58	32.36	9.72	23.83	54.83	68.2	-13.37	Vertical
5700.00	36.11	32.5	9.79	23.84	54.56	105.2	-50.64	Vertical
5720.00	37.14	32.53	9.81	23.85	55.63	110.8	-55.17	Vertical
5725.00	44.08	32.53	9.83	23.86	62.58	122.2	-59.62	Vertical
5850.00	43.49	32.7	9.99	23.87	62.31	122.2	-59.89	Vertical
5855.00	36.41	32.72	9.99	23.88	55.24	110.8	-55.56	Vertical
5875.00	35.11	32.74	10.04	23.89	54	105.2	-51.2	Vertical
5925.00	36.25	32.8	10.11	23.9	55.26	68.2	-12.94	Vertical

IEEE 802.11n HT20								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	36.93	32.36	9.72	23.83	55.18	68.2	-13.02	Horizontal
5700.00	37.11	32.5	9.79	23.84	55.56	105.2	-49.64	Horizontal
5720.00	37.69	32.53	9.81	23.85	56.18	110.8	-54.62	Horizontal
5725.00	44.02	32.53	9.83	23.86	62.52	122.2	-59.68	Horizontal
5850.00	41.44	32.7	9.99	23.87	60.26	122.2	-61.94	Horizontal
5855.00	36.47	32.72	9.99	23.88	55.3	110.8	-55.5	Horizontal
5875.00	36.84	32.74	10.04	23.89	55.73	105.2	-49.47	Horizontal
5925.00	35.08	32.8	10.11	23.9	54.09	68.2	-14.11	Horizontal
5650.00	35.89	32.36	9.72	23.83	54.14	68.2	-14.06	Vertical
5700.00	36.11	32.5	9.79	23.84	54.56	105.2	-50.64	Vertical
5720.00	35.68	32.53	9.81	23.85	54.17	110.8	-56.63	Vertical
5725.00	43.75	32.53	9.83	23.86	62.25	122.2	-59.95	Vertical
5850.00	41.55	32.7	9.99	23.87	60.37	122.2	-61.83	Vertical
5855.00	36.22	32.72	9.99	23.88	55.05	110.8	-55.75	Vertical
5875.00	35.91	32.74	10.04	23.89	54.8	105.2	-50.4	Vertical
5925.00	36.08	32.8	10.11	23.9	55.09	68.2	-13.11	Vertical

IEEE 802.11ac HT20								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	36.97	32.36	9.72	23.83	55.22	68.2	-12.98	Horizontal
5700.00	36.11	32.5	9.79	23.84	54.56	105.2	-50.64	Horizontal
5720.00	37.12	32.53	9.81	23.85	55.61	110.8	-55.19	Horizontal
5725.00	44.84	32.53	9.83	23.86	63.34	122.2	-58.86	Horizontal
5850.00	40.08	32.7	9.99	23.87	58.9	122.2	-63.3	Horizontal
5855.00	36.47	32.72	9.99	23.88	55.3	110.8	-55.5	Horizontal
5875.00	37.13	32.74	10.04	23.89	56.02	105.2	-49.18	Horizontal
5925.00	35.32	32.8	10.11	23.9	54.33	68.2	-13.87	Horizontal
5650.00	35.79	32.36	9.72	23.83	54.04	68.2	-14.16	Vertical
5700.00	36.13	32.5	9.79	23.84	54.58	105.2	-50.62	Vertical
5720.00	36.68	32.53	9.81	23.85	55.17	110.8	-55.63	Vertical
5725.00	46.17	32.53	9.83	23.86	64.67	122.2	-57.53	Vertical
5850.00	42.1	32.7	9.99	23.87	60.92	122.2	-61.28	Vertical
5855.00	36.58	32.72	9.99	23.88	55.41	110.8	-55.39	Vertical
5875.00	37.03	32.74	10.04	23.89	55.92	105.2	-49.28	Vertical
5925.00	36.79	32.8	10.11	23.9	55.8	68.2	-12.4	Vertical

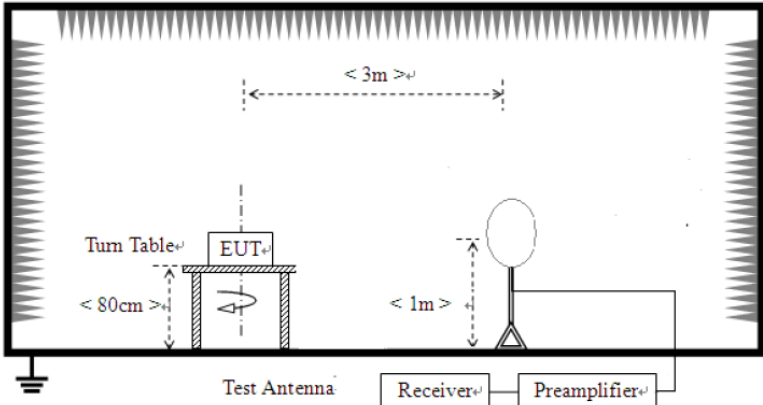
IEEE 802.11n HT40								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	38.33	32.36	9.72	23.83	56.58	68.2	-11.62	Horizontal
5700.00	37.65	32.5	9.79	23.84	56.1	105.2	-49.1	Horizontal
5720.00	36.54	32.53	9.81	23.85	55.03	110.8	-55.77	Horizontal
5725.00	40.08	32.53	9.83	23.86	58.58	122.2	-63.62	Horizontal
5850.00	37.89	32.7	9.99	23.87	56.71	122.2	-65.49	Horizontal
5855.00	36.44	32.72	9.99	23.88	55.27	110.8	-55.53	Horizontal
5875.00	35.43	32.74	10.04	23.89	54.32	105.2	-50.88	Horizontal
5925.00	36.97	32.8	10.11	23.9	55.98	68.2	-12.22	Horizontal
5650.00	36.96	32.36	9.72	23.83	55.21	68.2	-12.99	Vertical
5700.00	35.33	32.5	9.79	23.84	53.78	105.2	-51.42	Vertical
5720.00	37.13	32.53	9.81	23.85	55.62	110.8	-55.18	Vertical
5725.00	44.69	32.53	9.83	23.86	63.19	122.2	-59.01	Vertical
5850.00	43.21	32.7	9.99	23.87	62.03	122.2	-60.17	Vertical
5855.00	37.89	32.72	9.99	23.88	56.72	110.8	-54.08	Vertical
5875.00	38.01	32.74	10.04	23.89	56.9	105.2	-48.3	Vertical
5925.00	37.42	32.8	10.11	23.9	56.43	68.2	-11.77	Vertical

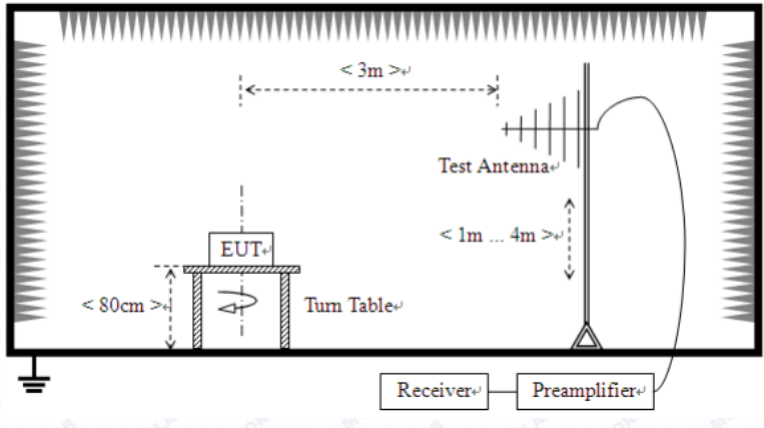
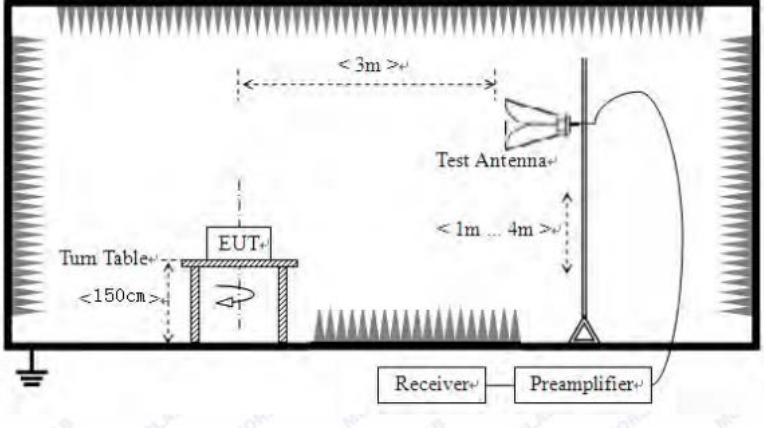
IEEE 802.11ac HT40								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	37.99	32.36	9.72	23.83	56.24	68.2	-11.96	Horizontal
5700.00	38.13	32.5	9.79	23.84	56.58	105.2	-48.62	Horizontal
5720.00	36.58	32.53	9.81	23.85	55.07	110.8	-55.73	Horizontal
5725.00	44.63	32.53	9.83	23.86	63.13	122.2	-59.07	Horizontal
5850.00	43.21	32.7	9.99	23.87	62.03	122.2	-60.17	Horizontal
5855.00	36.57	32.72	9.99	23.88	55.4	110.8	-55.4	Horizontal
5875.00	37.89	32.74	10.04	23.89	56.78	105.2	-48.42	Horizontal
5925.00	37.46	32.8	10.11	23.9	56.47	68.2	-11.73	Horizontal
5650.00	36.97	32.36	9.72	23.83	55.22	68.2	-12.98	Vertical
5700.00	37.6	32.5	9.79	23.84	56.05	105.2	-49.15	Vertical
5720.00	38.01	32.53	9.81	23.85	56.5	110.8	-54.3	Vertical
5725.00	44.69	32.53	9.83	23.86	63.19	122.2	-59.01	Vertical
5850.00	42.87	32.7	9.99	23.87	61.69	122.2	-60.51	Vertical
5855.00	36.9	32.72	9.99	23.88	55.73	110.8	-55.07	Vertical
5875.00	35.76	32.74	10.04	23.89	54.65	105.2	-50.55	Vertical
5925.00	37.13	32.8	10.11	23.9	56.14	68.2	-12.06	Vertical

IEEE 802.11ac HT80								
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5650.00	36.97	32.36	9.72	23.83	55.22	68.2	-12.98	Horizontal
5700.00	34.63	32.5	9.79	23.84	53.08	105.2	-52.12	Horizontal
5720.00	35.21	32.53	9.81	23.85	53.7	110.8	-57.1	Horizontal
5725.00	44.08	32.53	9.83	23.86	62.58	122.2	-59.62	Horizontal
5850.00	41.3	32.7	9.99	23.87	60.12	122.2	-62.08	Horizontal
5855.00	35.87	32.72	9.99	23.88	54.7	110.8	-56.1	Horizontal
5875.00	34.6	32.74	10.04	23.89	53.49	105.2	-51.71	Horizontal
5925.00	36.98	32.8	10.11	23.9	55.99	68.2	-12.21	Horizontal
5650.00	35.12	32.36	9.72	23.83	53.37	68.2	-14.83	Vertical
5700.00	36.07	32.5	9.79	23.84	54.52	105.2	-50.68	Vertical
5720.00	35.67	32.53	9.81	23.85	54.16	110.8	-56.64	Vertical
5725.00	43.42	32.53	9.83	23.86	61.92	122.2	-60.28	Vertical
5850.00	41.28	32.7	9.99	23.87	60.1	122.2	-62.1	Vertical
5855.00	36.5	32.72	9.99	23.88	55.33	110.8	-55.47	Vertical
5875.00	34.8	32.74	10.04	23.89	53.69	105.2	-51.51	Vertical
5925.00	36.97	32.8	10.11	23.9	55.98	68.2	-12.22	Vertical

7.7 Spurious Emission

7.7.1 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 40GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9kHz-150KHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		AV	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (uV/m)	Value	Measurement Distance	
	0.009MHz-0.490MHz	2400/F(KHz)	QP	300m	
	0.490MHz-1.705MHz	24000/F(KHz)	QP	300m	
	1.705MHz-30MHz	30	QP	30m	
	30MHz-88MHz	100	QP	3m	
	88MHz-216MHz	150	QP		
	216MHz-960MHz	200	QP		
	960MHz-1GHz	500	QP		
	Frequency	Limit (dBm/MHz)	Remark		
	Above 1GHz	-27.0	Peak Value		
Test setup:	For radiated emissions from 9kHz to 30MHz				
	 For radiated emissions from 30MHz to 1GHz				

	 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 the worst case Main Antenna 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.

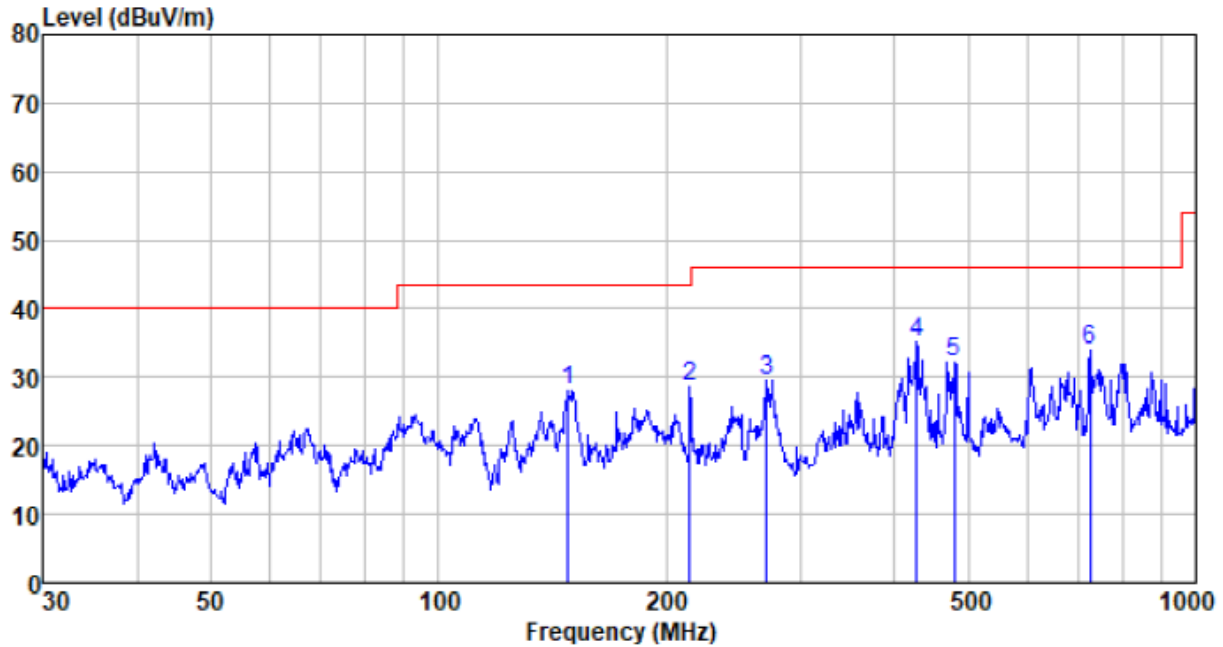
Measurement Data:

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.

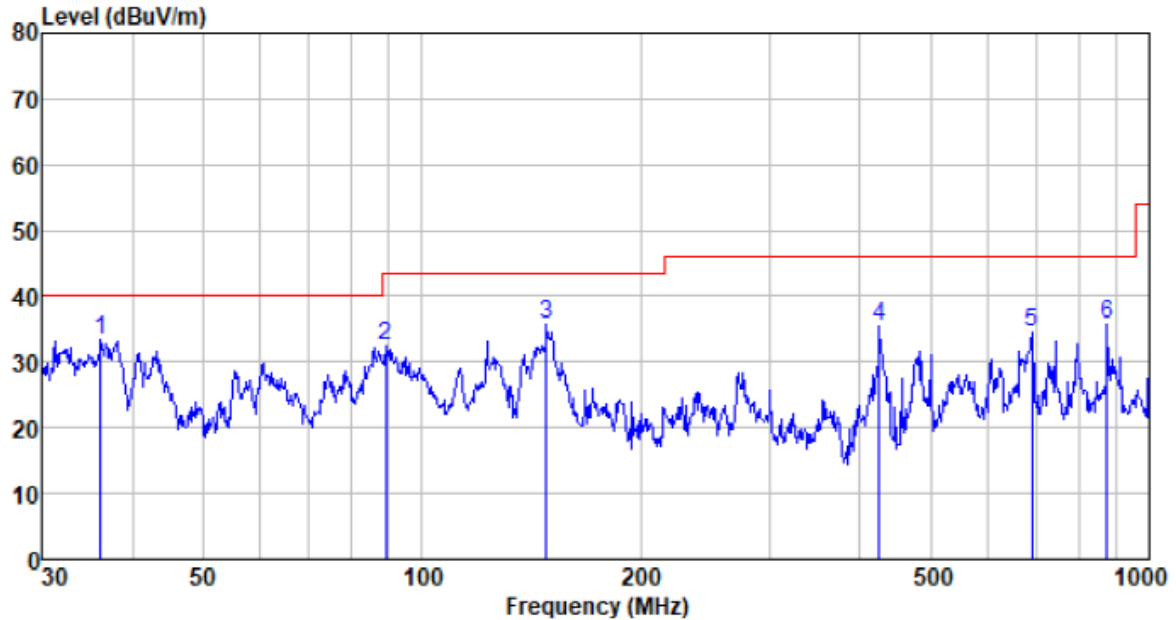
Below 1GHz

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
148.441	56.51	7.57	1.08	37.07	28.09	43.50	-15.41	QP
214.514	53.71	10.95	1.28	37.35	28.59	43.50	-14.91	QP
271.325	52.67	12.80	1.47	37.40	29.54	46.00	-16.46	QP
428.019	54.73	15.91	1.88	37.52	35.00	46.00	-11.00	QP
478.846	50.74	16.93	2.04	37.51	32.20	46.00	-13.80	QP
724.261	48.80	20.03	2.72	37.63	33.92	46.00	-12.08	QP

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
36.127	57.00	11.52	0.14	35.43	33.23	40.00	-6.77	QP
89.276	57.85	10.45	0.67	36.63	32.34	43.50	-11.16	QP
148.441	64.07	7.57	1.08	37.07	35.65	43.50	-7.85	QP
425.028	55.34	15.87	1.87	37.52	35.56	46.00	-10.44	QP
689.565	49.84	19.59	2.66	37.62	34.47	46.00	-11.53	QP
875.247	48.30	22.09	2.96	37.60	35.75	46.00	-10.25	QP

Above 1GHz:

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

Test mode:		802.11a		Test channel:		lowest	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11490	23.29	21.64	44.93	54(Note3)	-9.07	PK
V	17235	21.02	21.8	42.82	54(Note3)	-11.18	PK
H	11490	21.09	21.83	42.92	54(Note3)	-11.08	PK
H	17235	19.89	21.67	41.56	54(Note3)	-12.44	PK

Test mode:		802.11a		Test channel:		Middle	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11570	21.12	21.64	42.76	54(Note3)	-11.24	PK
V	17355	19.81	21.8	41.61	54(Note3)	-12.39	PK
H	11570	17.47	21.83	39.30	54(Note3)	-14.70	PK
H	17355	18.13	21.67	39.80	54(Note3)	-14.20	PK

Test mode:		802.11a		Test channel:		Highest	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11650	21.29	21.64	42.93	54(Note3)	-11.07	PK
V	17475	18.90	21.8	40.70	54(Note3)	-13.30	PK
H	11650	19.13	21.83	40.96	54(Note3)	-13.04	PK
H	17475	17.19	21.67	38.86	54(Note3)	-15.14	PK

Test mode:		802.11ac(HT40)		Test channel:		Lowest	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11510	22.68	21.67	44.35	54(Note3)	-9.65	PK
V	17265	21.29	21.83	43.12	54(Note3)	-10.88	PK
H	11510	21.82	21.67	43.49	54(Note3)	-10.51	PK
H	17265	21.09	21.83	42.92	54(Note3)	-11.08	PK

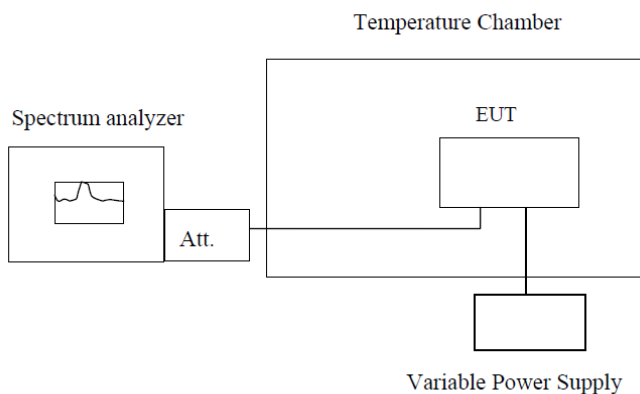
Test mode:		802.11ac(HT40)		Test channel:		Highest	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11590	23.38	21.67	45.05	54(Note3)	-8.95	PK
V	17385	21.51	21.83	43.34	54(Note3)	-10.66	PK
H	11590	22.54	21.67	44.21	54(Note3)	-9.79	PK
H	17385	23.11	21.83	44.94	54(Note3)	-9.06	PK

Test mode:		802.11ac(HT80)		Test channel:		Middle	
Antenna Pol.	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dBuV/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector
V	11550	26.25	21.65	47.90	54(Note3)	-6.10	PK
V	17325	24.38	21.81	46.19	54(Note3)	-7.81	PK
H	11550	23.72	21.65	45.37	54(Note3)	-8.63	PK
H	17325	23.18	21.81	44.99	54(Note3)	-9.01	PK

Notes:

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:

HT 20MHz					
Frequency stability versus Temp.					
Power Supply: AC 120V					
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
-30	5745	5743.5355	5743.3393	5744.3117	5743.8880
	5785	5783.8733	5784.1835	5782.2344	5784.8529
	5825	5823.7991	5824.5781	5823.7042	5824.2788
-20	5745	5743.1651	5743.9107	5744.5128	5744.4150
	5785	5784.1508	5783.7963	5784.8217	5784.9916
	5825	5823.1881	5824.1113	5824.8669	5824.8438
-10	5745	5743.2982	5744.3482	5744.5324	5744.9062
	5785	5783.6210	5784.0812	5784.0829	5784.1946
	5825	5823.9820	5823.2727	5824.6046	5824.4284
0	5745	5743.5008	5744.5253	5744.5652	5744.7714
	5785	5784.2617	5783.2121	5784.1333	5783.5848
	5825	5823.2310	5824.6744	5824.6540	5823.4602
10	5745	5744.0717	5744.8759	5743.6529	5743.7505
	5785	5783.8330	5783.6384	5784.3854	5784.9715
	5825	5824.9661	5824.4425	5824.3614	5824.0859
20	5745	5743.6226	5744.9763	5743.6499	5743.6629
	5785	5783.8612	5784.7943	5783.2976	5783.8708
	5825	5823.6656	5824.6232	5823.9801	5824.7999
30	5745	5743.2096	5744.5427	5743.1723	5744.6038
	5785	5783.4976	5784.8179	5784.5611	5783.6410
	5825	5824.8859	5824.1563	5824.0498	5824.6628
40	5745	5744.9480	5743.0048	5743.1343	5743.5982
	5785	5783.8406	5783.8026	5784.0258	5784.5467
	5825	5823.7201	5823.6368	5824.4025	5824.7174
50	5745	5743.0272	5744.9615	5744.5435	5744.0884
	5785	5784.0078	5784.2533	5783.4958	5783.7870
	5825	5824.4062	5824.4759	5824.9875	5824.0469

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
108	5745	5744.8323	5743.2018	5743.0965	5743.1014
	5785	5784.3107	5783.5030	5784.3482	5783.6796
	5825	5823.0858	5823.1538	5823.7586	5823.6429
120	5745	5743.8937	5744.5760	5743.6209	5744.5136
	5785	5783.9798	5783.0157	5783.9382	5784.9887
	5825	5823.6674	5824.9714	5824.2640	5824.1653
132	5745	5744.4259	5744.1214	5744.2915	5744.0930
	5785	5783.6219	5783.0461	5784.7388	5784.4420
	5825	5823.0238	5824.2739	5824.9998	5823.8610

HT40 MHz					
Frequency stability versus Temp.					
Power Supply: AC 120V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5755	5756.5780	5754.9257	5756.8934	5753.7533
	5795	5796.0667	5794.9876	5796.5861	5793.4685
-20	5755	5755.3004	5754.8468	5756.7137	5753.9745
	5795	5795.5845	5794.6319	5795.7301	5793.1379
-10	5755	5755.7886	5754.0755	5755.7327	5753.9464
	5795	5795.3936	5794.8362	5795.0086	5793.9841
0	5755	5755.7193	5754.9888	5755.6166	5753.4706
	5795	5795.7150	5794.3076	5795.5915	5794.4763
10	5755	5755.7961	5754.1742	5755.6768	5754.2235
	5795	5795.0839	5794.1677	5795.8900	5794.1067
20	5755	5755.5901	5754.8733	5755.1223	5754.7871
	5795	5795.5954	5794.1822	5795.0670	5794.3091
30	5755	5755.4174	5754.6858	5755.3371	5754.3527
	5795	5795.4791	5794.9183	5795.8935	5794.8002
40	5755	5755.7038	5754.1753	5755.0633	5754.7265
	5795	5795.3287	5794.5585	5795.4378	5794.8110
50	5755	5755.6951	5754.0928	5755.8937	5754.2109
	5795	5795.5635	5794.3695	5795.5534	5794.1254

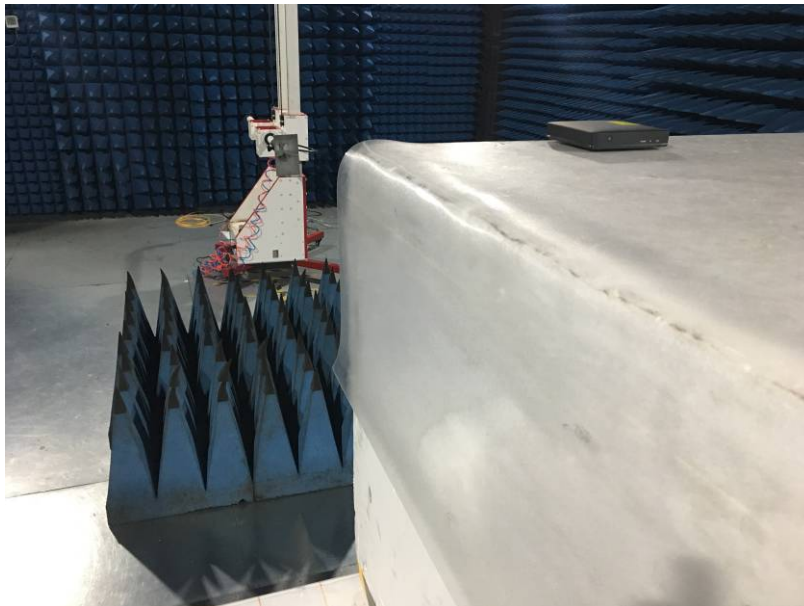
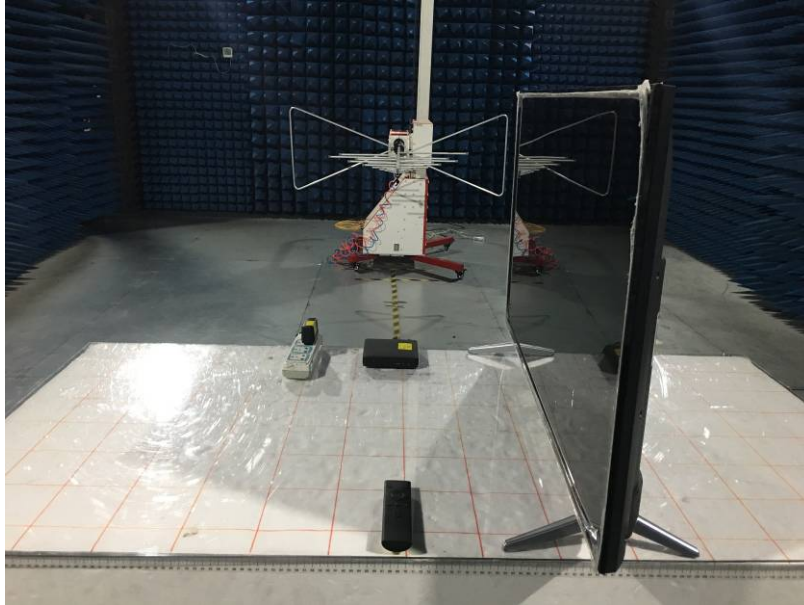
Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
108	5755	5756.1819	5754.2600	5756.7766	5754.1889
	5795	5795.8748	5794.3174	5795.5451	5794.8396
120	5755	5755.0910	5754.2353	5755.4359	5754.4736
	5795	5795.8215	5794.8349	5795.2268	5794.7397
132	5755	5755.3612	5754.9027	5755.0454	5754.4180
	5795	5795.0016	5794.4018	5795.0329	5794.7064

HT80 MHz					
Frequency stability versus Temp.					
Power Supply: AC 120V					
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	5775.7557	5776.6469	5774.5679	5772.0164
-20	5775	5775.4711	5775.3885	5774.8160	5772.2120
-10	5775	5775.2312	5775.8691	5774.1953	5774.6608
0	5775	5775.5089	5775.1866	5774.6484	5774.6373
10	5775	5775.3855	5775.9142	5774.1953	5774.3716
20	5775	5775.3358	5775.9525	5774.9677	5774.6834
30	5775	5775.0200	5775.0043	5774.1135	5774.2515
40	5775	5775.6985	5775.5732	5774.4424	5774.4088
50	5775	5775.4719	5775.7889	5774.9905	5774.0443

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VAC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
108	5775	5773.1995	5775.0535	5776.9409	5775.0659
120	5775	5774.8678	5775.1793	5777.5635	5776.8275
132	5775	5772.0436	5777.0404	5777.3877	5777.5920

8 Test Setup Photo

Radiated Emission



Conducted Emission



9 EUT Constructional Details

Reference to the test report No. GTS201811000126F01

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