

# FCC REPORT

**Applicant:** Nuvvyo Inc.

**Address of Applicant:** 555 Legget Drive Tower B Suite 836 Kanata, ON K2K2X3, Canada

**Manufacturer:** Nuvvyo Inc.

**Address of Manufacturer:** 555 Legget Drive Tower B Suite 836 Kanata, ON K2K2X3, Canada

**Factory:** SHENZHEN GIEC DIGITAL CO., LTD

**Address of Factory:** 1st&3rd Building, No.26 Puzai Road, Pingdi, Longgang District, Shenzhen, China

**Equipment Under Test (EUT)**

Product Name: OTA streamer

Model No.: TABLO DUAL LITE DVR, TABLO DUAL 64 DVR, TDNS2B-01-CN, TDNS2B-02-CN, TDNS2B-03-CN, TDSS2B-01-CN, TDSS2B-02-CN, TDSS2B-03-CN

**FCC ID:** 2AOR7-TABLO201

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

**Date of sample receipt:** July 18, 2019

**Date of Test:** July 19, 2019- August 08, 2019

**Date of report issue:** August 09, 2019

**Test Result :** PASS \*

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

Authorized Signature:



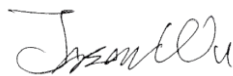
**Robinson Lo**  
**Laboratory Manager**

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	August 09, 2019	Original

Prepared By:




Date:

August 09, 2019

Project Engineer

Check By:



Date:

August 09, 2019

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
Peak Transmit Power	15.407(a)(1)	PASS
Power Spectral Density	15.407(a)(1)	PASS
Undesirable Emission	15.407(b)(6), 15.205/15.209	PASS
Radiated Emission	15.205/15.209	PASS
Band Edge	15.407(b)(1)	PASS
Frequency Stability	15.407(g)	PASS

Remark:

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

### 4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 3.80 dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 3.97 dB	(1)
Radiated Emission	1GHz ~ 40GHz	± 4.29dB	(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%.

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

## 5 General Information

### 5.1 General Description of EUT

Product Name:	OTA streamer			
Model No.:	TABLO DUAL LITE DVR, TABLO DUAL 64 DVR, TDNS2B-01-CN, TDNS2B-02-CN, TDNS2B-03-CN, TDSS2B-01-CN, TDSS2B-02-CN, TDSS2B-03-CN			
Test Model No:	TDNS2B-02-CN			
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is model name for commercial purpose.				
Serial No.:	GI-C02205463 ~GI-C16777215			
Hardware Version:	ATSC-MPEG-13G/VER1.0-1-20180115			
Software Version:	2.2.26 1919814			
Test sample(s) ID:	GTS201907000127 -1			
Sample(s) Status:	Engineer sample			
Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	U-NII Band I	IEEE 802.11a	5180-5240	4
		IEEE 802.11n/ac 20MHz	5180-5240	4
		IEEE 802.11n/ac 40MHz	5190-5230	2
		IEEE 802.11ac 80MHz	5210	1
Modulation technology:	OFDM MIMO: 802.11n/ac SISO: 802.11a			
Antenna Type:	Integral Antenna			
Antenna gain:	ANT 1: 2.5dBi ANT 2: 2.5dBi			
Power supply:	Adapter Model No: TEKA018-1201500UK Input: AC 100-240V, 50/60Hz, 0.5A MAX Output: DC 12V, 1.5 A			

Note: The 2 transmit signals are completely uncorrelated with each other, Directional gain = G ANT=2.5dBi

<b>Channel list for 802.11a/n/ac(HT20)</b>							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz

<b>Channel list for 802.11n(HT40)/ac(HT40)</b>							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz				

<b>Channel list for 802.11ac(HT80)</b>							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210MHz						

## 5.2 Test mode

Transmitting mode	Keep the EUT in transmitting with modulation..
<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:	
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.	
Mode	Data rate
802.11a/n/ac(HT20)	6/6.5 Mbps
802.11n/ac(HT40)	13.5 Mbps
802.11ac(HT80)	29.3 Mbps

## 5.3 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> <li>● <b>FCC —Registration No.: 381383</b> 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.</li> <li>● <b>Industry Canada (IC) —Registration No.: 9079A-2</b> 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.</li> <li>● <b>NVLAP (LAB CODE:600179-0)</b> Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0</li> <li>● <b>CNAS (No. CNAS L5775)</b> CNAS has accredited Global United Technology Services Co., Ltd., to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.</li> </ul>
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## 5.4 Test Location

All tests were performed at:
Global United Technology Services Co., Ltd. Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, sBaoan District, Shenzhen, Guangdong, China 518102 Tel: 0755-27798480 Fax: 0755-27798960

## 5.5 Description of Support Units

Manufacturer	Description	Model	Serial Number
IBM Thinkpad	Notebook PC	2374	L3-G0686

## 5.6 Deviation from Standards

None.
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## 5.7 Abnormalities from Standard Conditions

None.
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## 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. 20 2018	Oct. 19 2019
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 20 2018	Oct. 19 2019
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 20 2018	Oct. 19 2019
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 26 2019	June. 25 2020

<b>Conducted Emission</b>						
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	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	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

<b>RF Conducted Test:</b>						
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

<b>General used equipment:</b>						
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:

<b>Standard requirement:</b>	FCC Part15 C Section 15.203
<i>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.</i>	
<b>E.U.T Antenna:</b>	
<i>The antennas are integral antenna, the best case gain of the antennas are 2.5dBi, reference to the appendix II for details</i>	

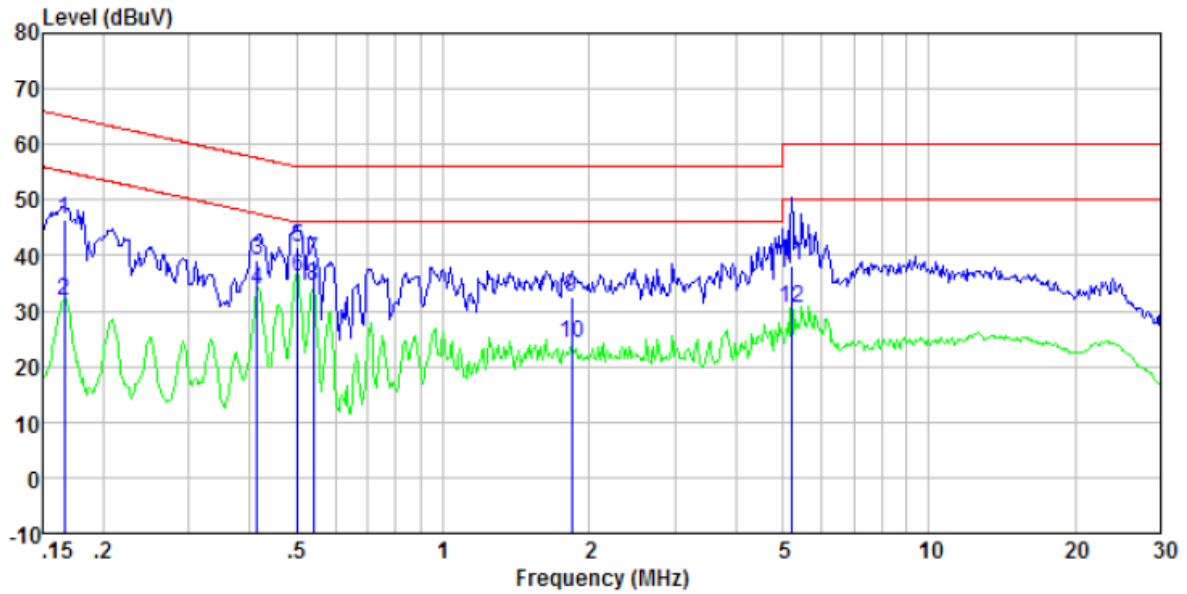
## 7.2 Conducted Emissions

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					
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 procedure	<p>The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 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.</p>					
Test setup:	<p><i>Remark</i>  E.U.T: Equipment Under Test  LISN: Line Impedance Stabilization Network  Test table height=0.8m</p>					
Test Instruments:	Refer to section 5.10 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.

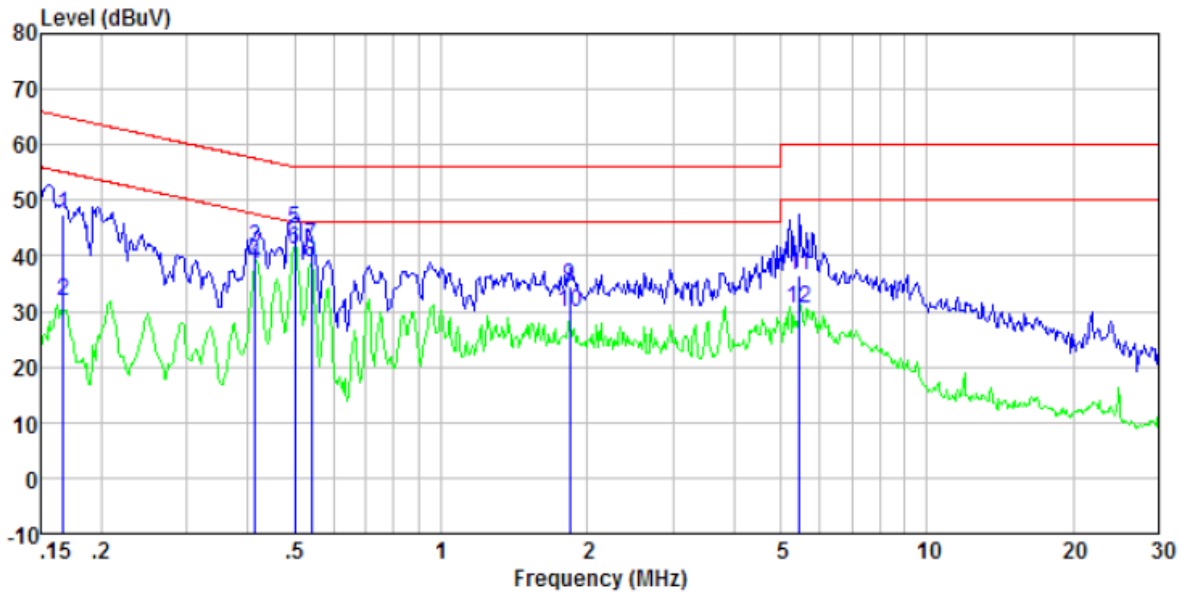
**Measurement data:**

**Line:**



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	46.12	0.40	0.08	46.60	65.16	-18.56	QP
0.17	31.33	0.40	0.08	31.81	55.16	-23.35	Average
0.41	38.84	0.35	0.11	39.30	57.55	-18.25	QP
0.41	33.30	0.35	0.11	33.76	47.55	-13.79	Average
0.50	41.20	0.31	0.11	41.62	56.00	-14.38	QP
0.50	35.89	0.31	0.11	36.31	46.00	-9.69	Average
0.54	38.62	0.30	0.11	39.03	56.00	-16.97	QP
0.54	33.98	0.30	0.11	34.39	46.00	-11.61	Average
1.84	32.16	0.20	0.17	32.53	56.00	-23.47	QP
1.84	23.99	0.20	0.17	24.36	46.00	-21.64	Average
5.22	37.67	0.20	0.17	38.04	60.00	-21.96	QP
5.22	30.28	0.20	0.17	30.65	50.00	-19.35	Average

**Neutral:**

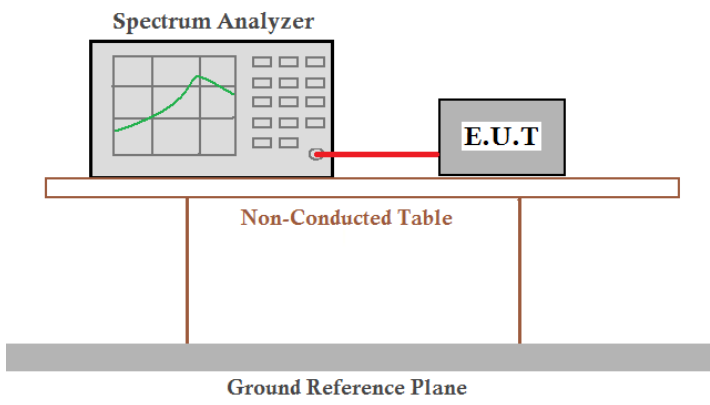


Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	46.87	0.40	0.08	47.35	65.12	-17.77	QP
0.17	31.27	0.40	0.08	31.75	55.12	-23.37	Average
0.41	41.12	0.35	0.11	41.58	57.55	-15.97	QP
0.41	38.17	0.35	0.11	38.63	47.55	-8.92	Average
0.50	44.40	0.32	0.11	44.83	56.01	-11.18	QP
0.50	40.79	0.32	0.11	41.22	46.01	-4.79	Average
0.54	41.36	0.30	0.11	41.77	56.00	-14.23	QP
0.54	38.34	0.30	0.11	38.75	46.00	-7.25	Average
1.84	34.00	0.20	0.17	34.37	56.00	-21.63	QP
1.84	29.56	0.20	0.17	29.93	46.00	-16.07	Average
5.48	36.12	0.20	0.17	36.49	60.00	-23.51	QP
5.48	30.21	0.20	0.17	30.58	50.00	-19.42	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

### 7.3 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	N/A
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test procedure:	According to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

**Measurement Data:**

**ANT 1:**

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT 20)	802.11ac(H T20)	802.11a	802.11n(HT 20)	802.11ac(H T20)
36	5180	16.4405	17.6119	17.6216	22.860	22.333	22.404
40	5200	16.4157	17.6095	17.5971	21.770	22.289	22.669
48	5240	16.4364	17.6020	17.6182	22.015	22.092	22.097

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
38	5190	36.0661	35.9755	42.452	41.848
46	5230	36.0324	36.0774	42.328	41.637

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Occupied Bandwidth (MHz)
		802.11ac(HT80)	802.11ac(HT80)
42	5210	75.0495	80.523

**ANT 2:**

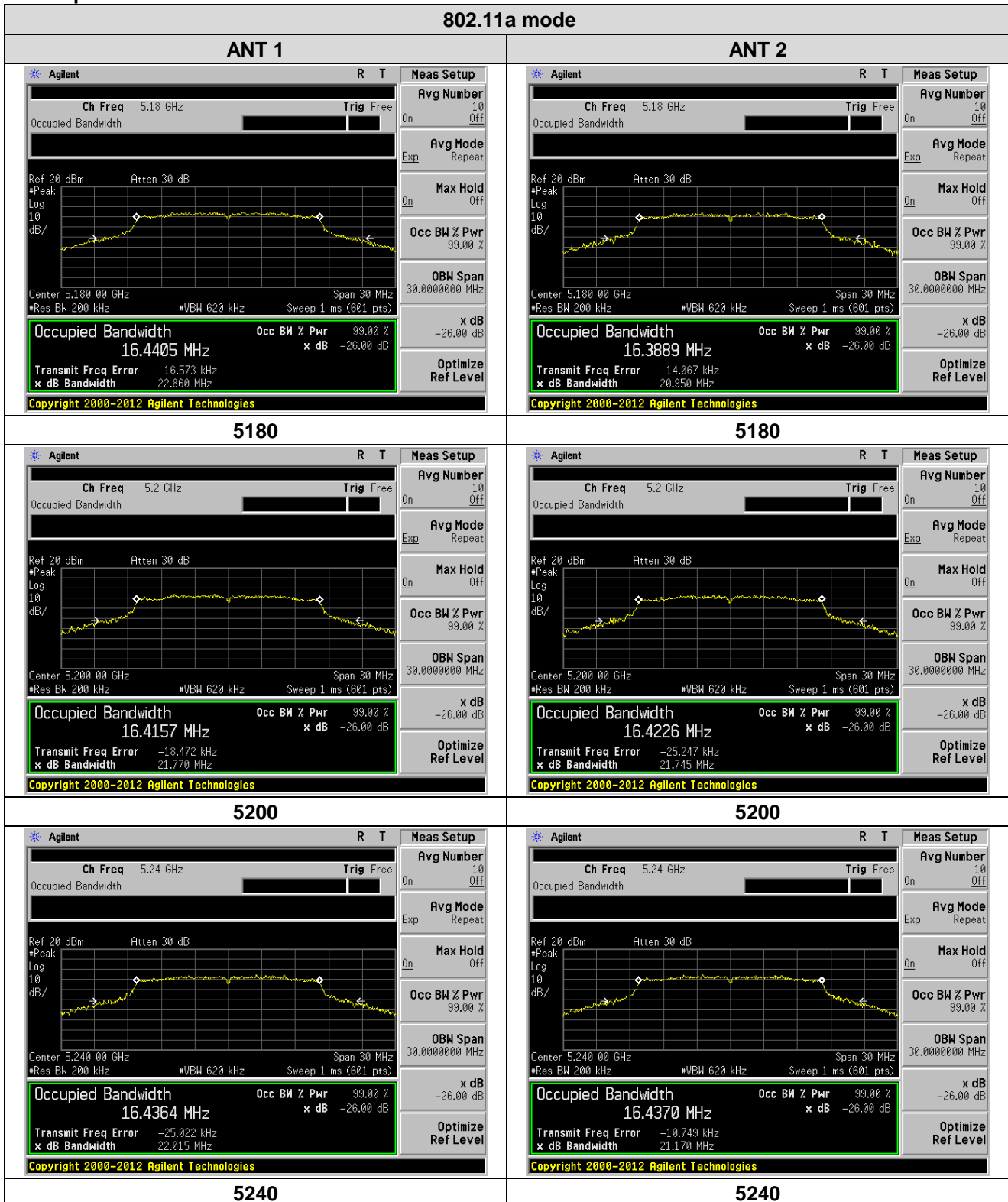
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT 20)	802.11ac(H T20)	802.11a	802.11n(HT 20)	802.11ac(H T20)
36	5180	16.3889	17.6289	17.6165	20.950	22.677	23.125
40	5200	16.4226	17.5931	17.6253	21.745	21.458	22.127
48	5240	16.4370	17.6214	17.5999	21.170	23.786	22.075

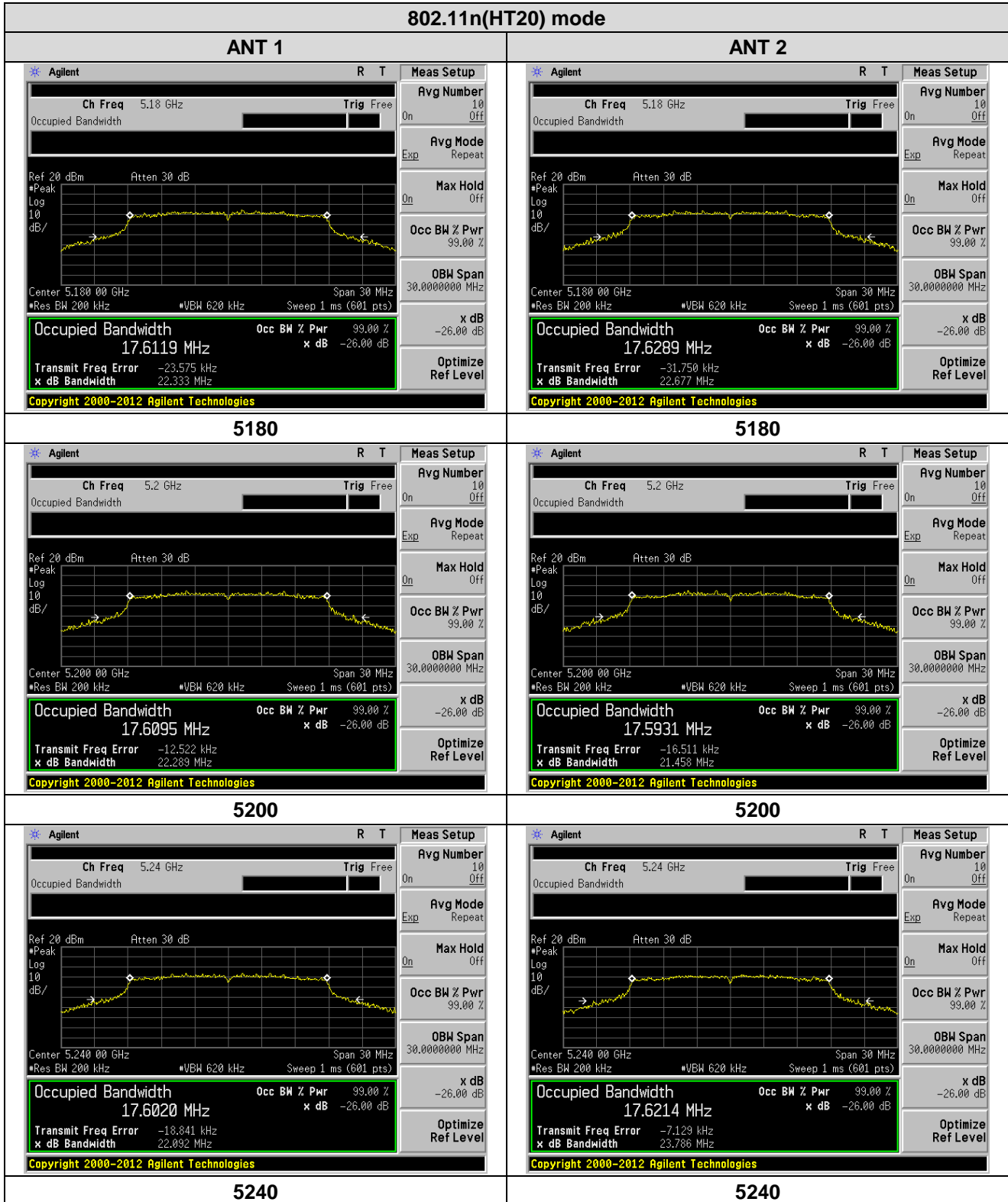
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
38	5190	35.9904	35.9518	41.818	41.111
46	5230	36.0233	35.9897	43.285	41.813

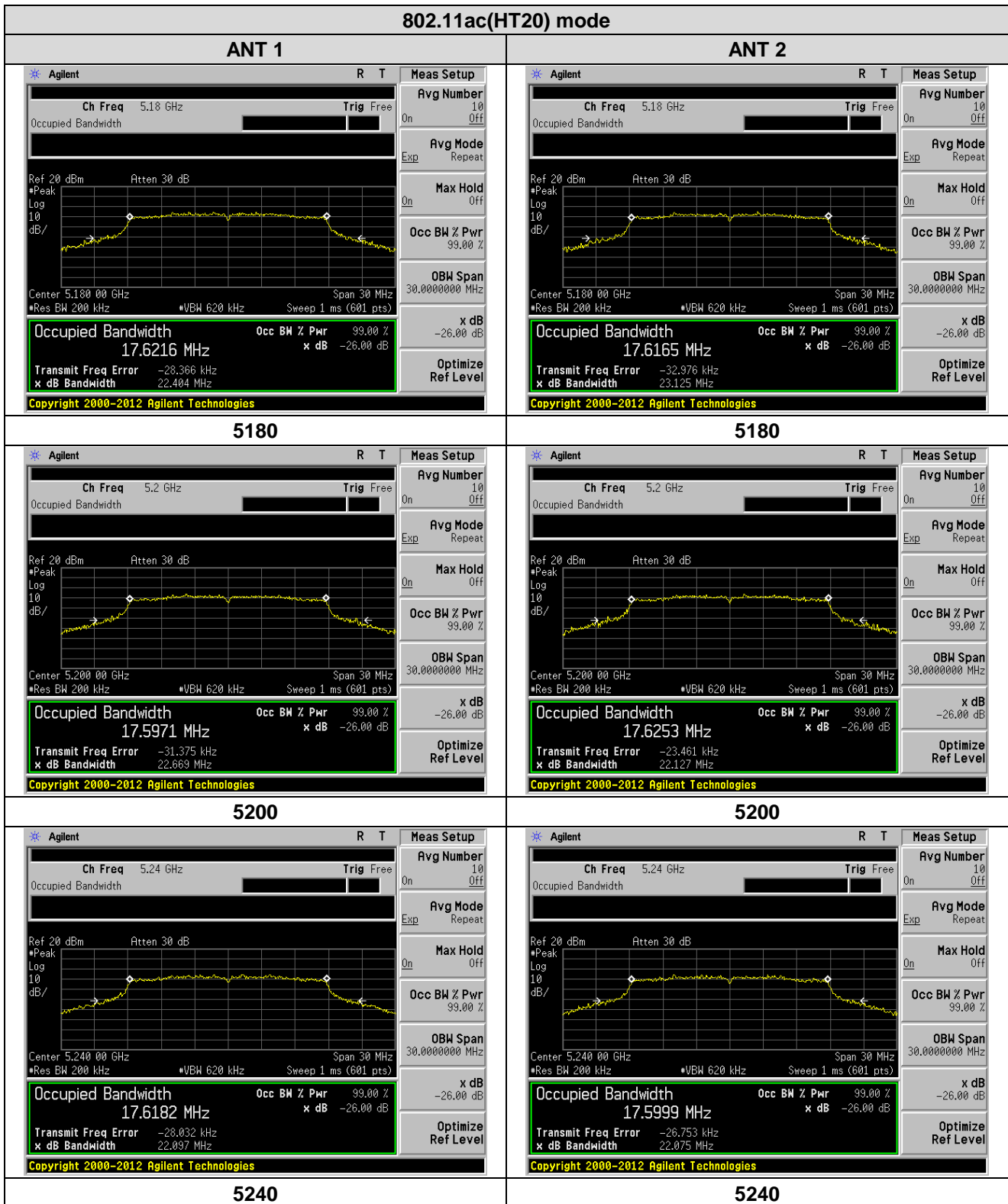
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Occupied Bandwidth (MHz)
		802.11ac(HT80)	802.11ac(HT80)
42	5210	75.1309	81.308

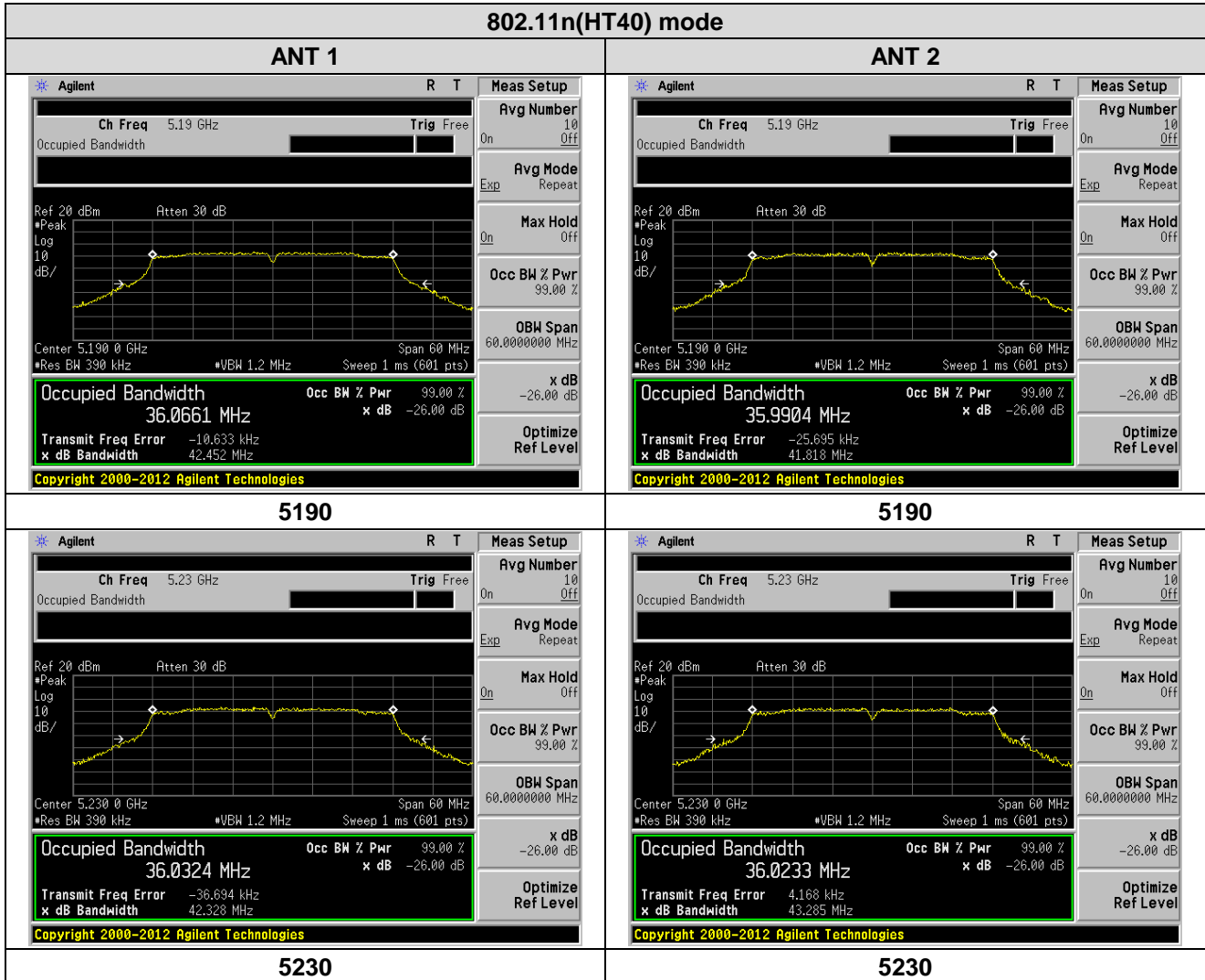


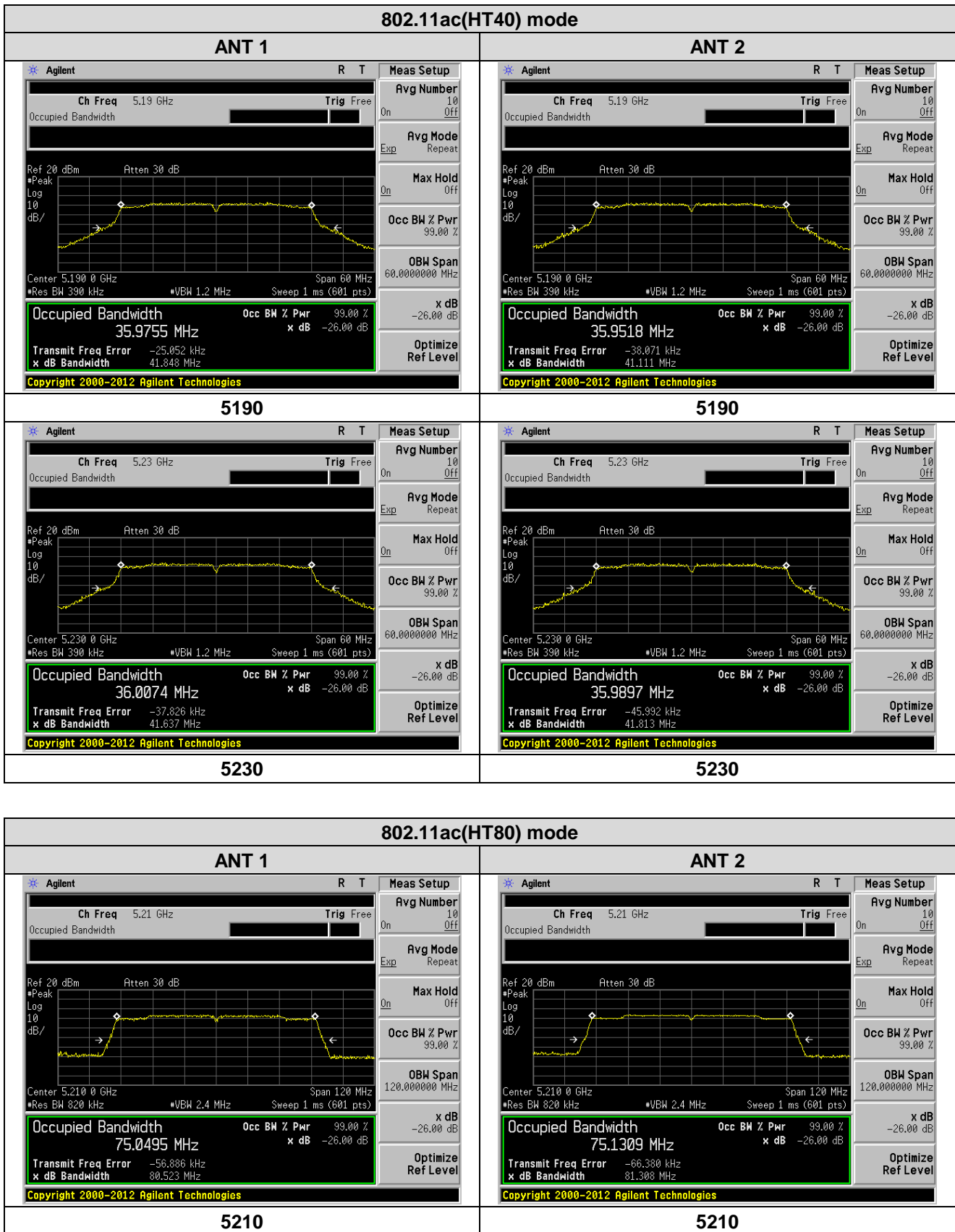
Test plots as followed:



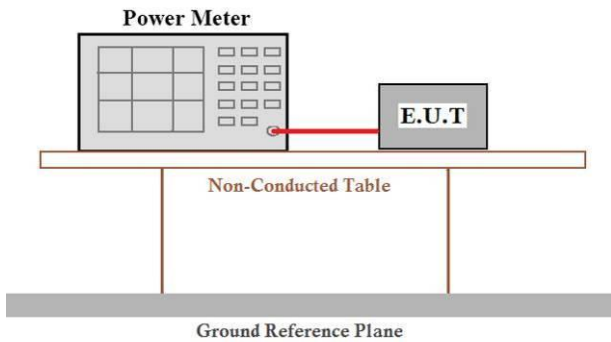








## 7.4 Peak Transmit Power

Test Requirement:	FCC Part15 E Section 15.407	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤1W(30dBm) for master device
		≤250mW(23.98dBm) for client device
	5250-5350	≤250mW(23.98dBm) for client device or 11dBm+10logB*
	5470-5725	≤250mW(23.98dBm) for client device or 11dBm+10logB*
Remark: *Where B is the 26dB emission bandwidth in MHz. The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.		
Test setup:	 <p>The diagram illustrates the test setup. A Power Meter is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. The table is supported by two legs and sits on a Ground Reference Plane.</p>	
Test procedure:	<p><b>Measurement using an RF average power meter</b></p> <p>(i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied</p> <p>a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle.</p> <p>b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.</p> <p>c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.</p> <p>(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B).</p> <p>(iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.</p> <p>(iv) Adjust the measurement in dBm by adding <math>10 \log(1/x)</math> where x is the duty cycle (e.g., <math>10 \log(1/0.25)</math> if the duty cycle is 25 percent).</p>	
Test Instruments:	Refer to section 5.10 for details	
Test mode:	Refer to section 5.2 for details	
Test results:	Pass	

**Measurement Data**

Modulation	Duty cycle	Duty Factor
802.11a	98.8%	0.05
802.11n(HT20)	98.8%	0.05
802.11n(HT40)	97.5%	0.11
802.11ac(HT20)	98.9%	0.05
802.11ac(HT40)	97.4%	0.11
802.11ac(HT80)	95.2%	0.21

**ANT 1:**

802.11a mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180	8.32	0.05	8.37	23.98	Pass
40	5200	8.27	0.05	8.32	23.98	Pass
48	5240	8.15	0.05	8.20	23.98	Pass
802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180	8.28	0.05	8.33	23.98	Pass
40	5200	8.16	0.05	8.21	23.98	Pass
48	5240	8.10	0.05	8.15	23.98	Pass
802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180	8.35	0.05	8.40	23.98	Pass
40	5200	8.29	0.05	8.34	23.98	Pass
48	5240	8.28	0.05	8.33	23.98	Pass
802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190	6.59	0.11	6.70	23.98	Pass
46	5230	6.37	0.11	6.48	23.98	Pass
802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190	6.43	0.11	6.54	23.98	Pass
46	5230	6.61	0.11	6.72	23.98	Pass
802.11 ac(HT80)						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
42	5210	5.42	0.21	5.63	23.98	Pass

**ANT 2:**

802.11a mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180	8.26	0.05	8.31	23.98	Pass
40	5200	8.29	0.05	8.34	23.98	Pass
48	5240	8.14	0.05	8.19	23.98	Pass
802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180	8.30	0.05	8.35	23.98	Pass
40	5200	8.31	0.05	8.36	23.98	Pass
48	5240	8.11	0.05	8.16	23.98	Pass
802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180	8.37	0.05	8.42	23.98	Pass
40	5200	8.56	0.05	8.61	23.98	Pass
48	5240	8.45	0.05	8.50	23.98	Pass
802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190	6.57	0.11	6.68	23.98	Pass
46	5230	6.26	0.11	6.37	23.98	Pass
802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190	6.65	0.11	6.76	23.98	Pass
46	5230	6.63	0.11	6.74	23.98	Pass
802.11 ac(HT80)						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
42	5210	5.44	0.21	5.65	23.98	Pass

Note: The 2 transmit signals are completely uncorrelated with each other, Directional gain = G ANT=2.5dBi

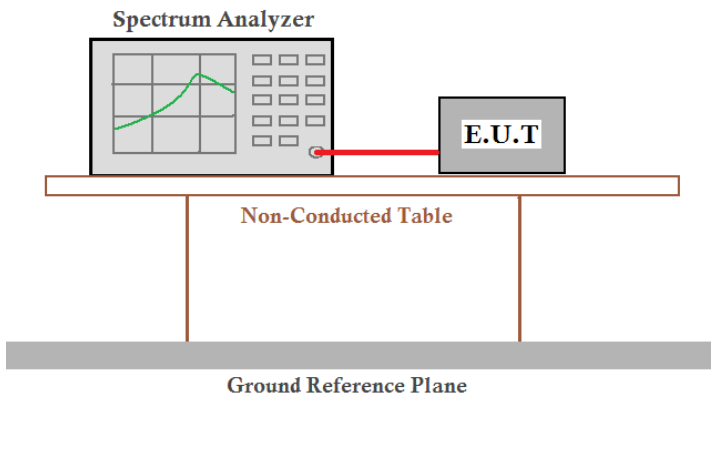


**MIMO without beam forming:**

Test mode	Frequency (MHz)	ANT 1 power (dBm)	ANT 2 power (dBm)	MIMO power (dBm)	Limit (dBm)	Result
802.11n(HT20)	5180	8.33	8.35	11.35	23.98	Pass
	5200	8.21	8.36	11.30		
	5240	8.15	8.16	11.17		
802.11ac(HT20)	5180	8.40	8.42	11.42		
	5200	8.34	8.61	11.49		
	5240	8.33	8.50	11.43		
802.11n(HT40)	5190	6.70	6.68	9.70		
	5230	6.48	6.37	9.43		
802.11ac(HT40)	5190	6.54	6.76	9.66		
	5230	6.72	6.74	9.74		
802.11ac(HT80)	5210	5.63	5.65	8.65		

Note: The 2 transmit signals are completely uncorrelated with each other, Directional gain = G ANT=2.5dBi

## 7.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm in 1MHz for master device
		≤11dBm in 1MHz for client device
	5250-5350	≤11dBm in 1MHz for client device
	5470-5725	≤11dBm in 1MHz for client device
Remark: The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.		
Test setup:	 <p>The diagram shows a Spectrum Analyzer on the left and an E.U.T. on the right, connected by a red cable. They are both on a table labeled 'Non-Conducted Table'. Below the table is a 'Ground Reference Plane'.</p>	
Test procedure:	<ol style="list-style-type: none"> <li>1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...".</li> <li>2) Use the peak search function on the instrument to find the peak of the spectrum.</li> <li>3) Make the following adjustments to the peak value of the spectrum, if applicable: <ol style="list-style-type: none"> <li>a) If Method SA-2 or SA-2 Alternative was used, add <math>10 \log(1/x)</math>, where <math>x</math> is the duty cycle, to the peak of the spectrum.</li> <li>b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.</li> </ol> </li> <li>4) The result is the PSD.</li> </ol>	
Test Instruments:	Refer to section 5.10 for details	
Test mode:	Refer to section 5.2 for details	
Test results:	Pass	

**Measurement Data**

Modulation	Duty cycle	Duty Factor
802.11a	98.8%	0.05
802.11n(HT20)	98.8%	0.05
802.11n(HT40)	97.5%	0.11
802.11ac(HT20)	98.9%	0.05
802.11ac(HT40)	97.4%	0.11
802.11ac(HT80)	95.2%	0.21

**ANT 1:**

802.11a mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
36	5180	-2.22	0.05	-2.17	11	Pass
40	5200	-2.74	0.05	-2.69	11	Pass
48	5240	-3.09	0.05	-3.04	11	Pass
802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
36	5180	-2.49	0.05	-2.44	11	Pass
40	5200	-3.06	0.05	-3.01	11	Pass
48	5240	-3.59	0.05	-3.54	11	Pass
802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
36	5180	-2.03	0.05	-1.98	11	Pass
40	5200	-2.47	0.05	-2.42	11	Pass
48	5240	-2.38	0.05	-2.33	11	Pass
802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
38	5190	-5.99	0.11	-5.88	11	Pass
46	5230	-6.47	0.11	-6.36	11	Pass
802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
38	5190	-6.18	0.11	-6.07	11	Pass
46	5230	-5.85	0.11	-5.74	11	Pass
802.11 ac(HT80)						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
42	5210	-7.80	0.21	-7.59	11	Pass

**ANT 2:**

802.11a mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
36	5180	-2.70	0.05	-2.65	11	Pass
40	5200	-2.35	0.05	-2.30	11	Pass
48	5240	-3.11	0.05	-3.06	11	Pass
802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
36	5180	-2.33	0.05	-2.28	11	Pass
40	5200	-2.27	0.05	-2.22	11	Pass
48	5240	-3.41	0.05	-3.36	11	Pass
802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
36	5180	-2.17	0.05	-2.12	11	Pass
40	5200	-1.73	0.05	-1.68	11	Pass
48	5240	-1.85	0.05	-1.80	11	Pass
802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
38	5190	-6.02	0.11	-5.91	11	Pass
46	5230	-6.76	0.11	-6.65	11	Pass
802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
38	5190	-5.61	0.11	-5.50	11	Pass
46	5230	-5.67	0.11	-5.56	11	Pass
802.11 ac(HT80)						
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD Power(dBm/MHz)	Limit (dBm/MHz)	Result
42	5210	-7.36	0.21	-7.15	11	Pass

Note: Output Power = Measured Power + Duty Factor

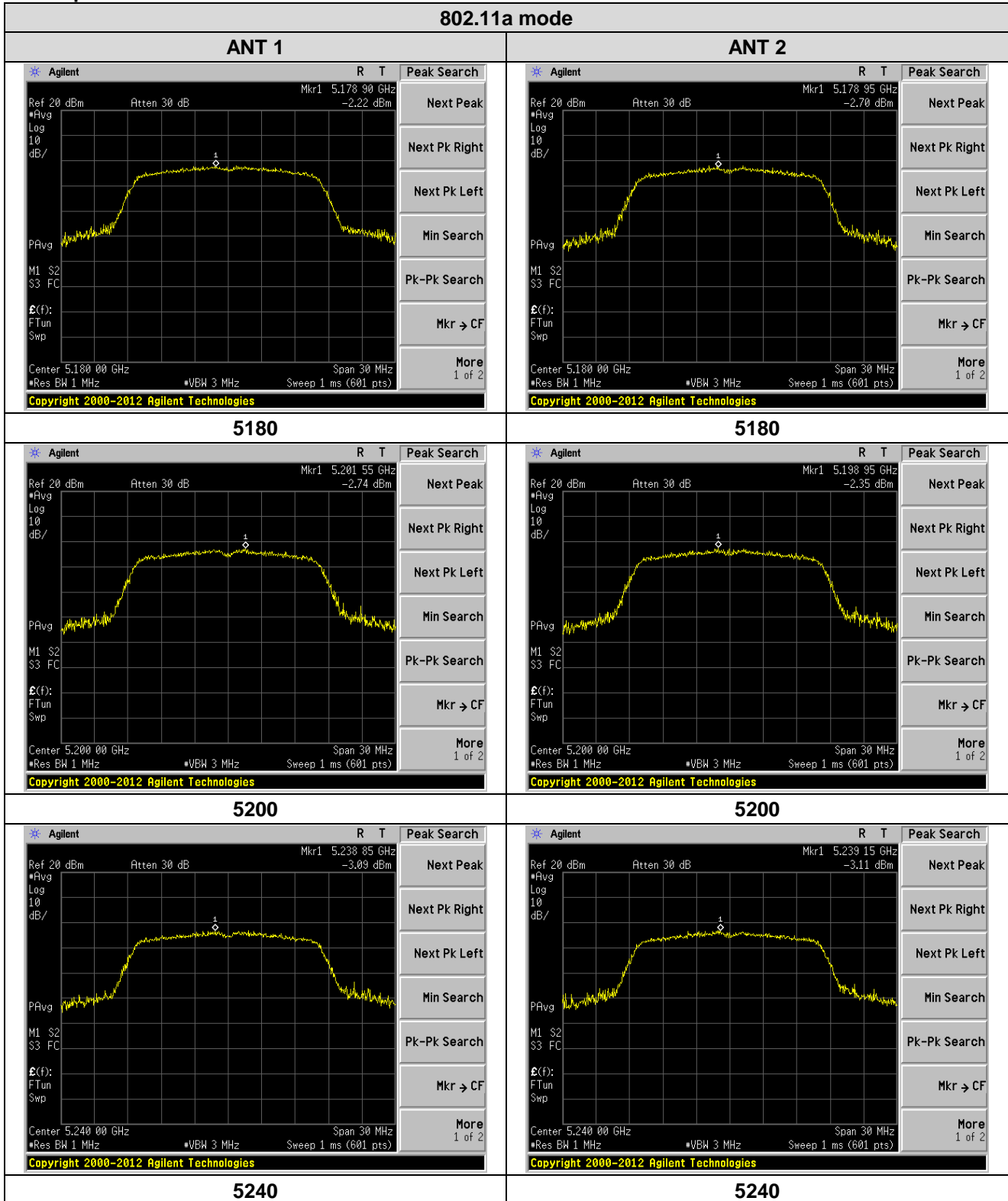
Duty Factor = 10 log (1/Duty Cycle)

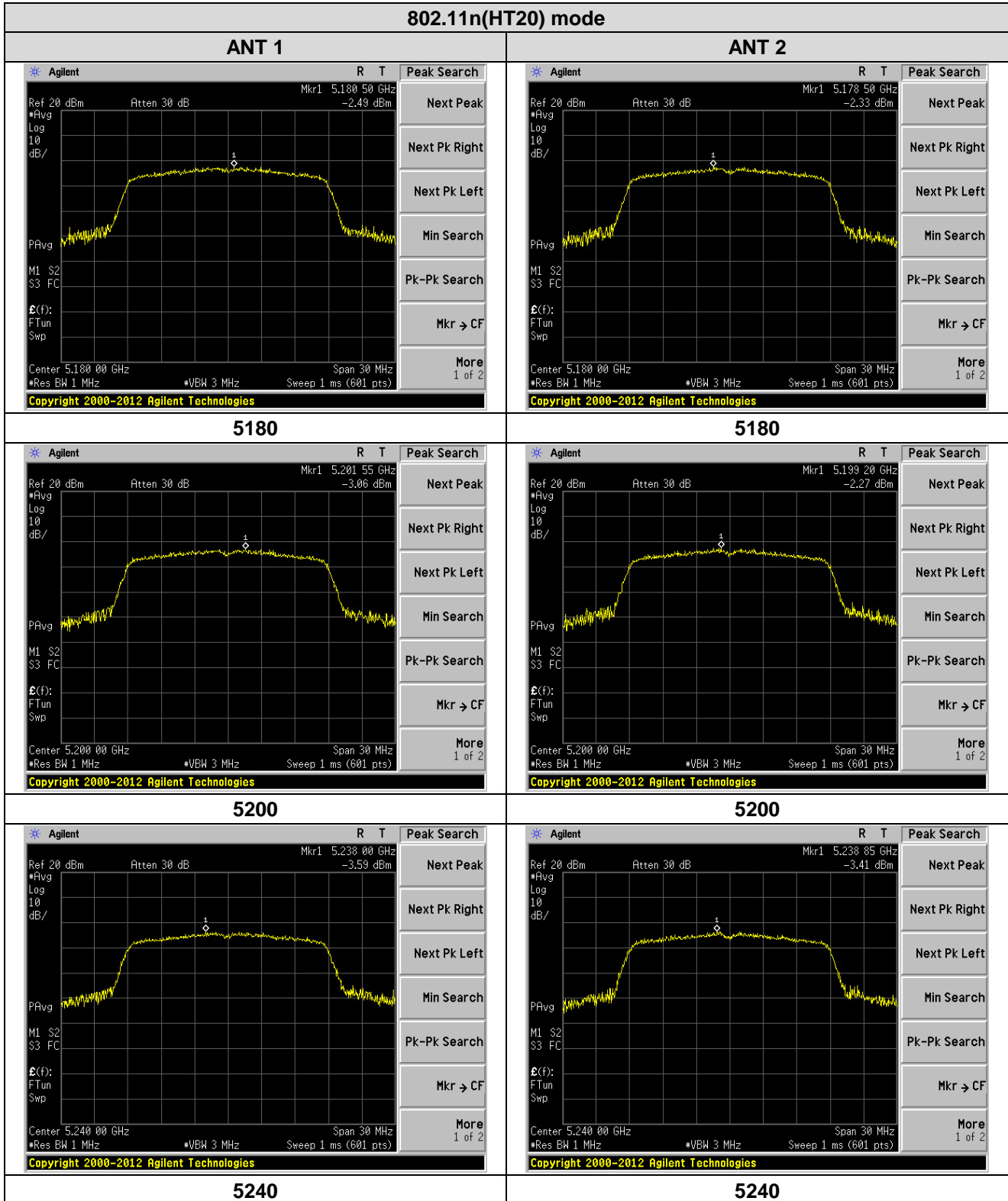
**MIMO worse case:**

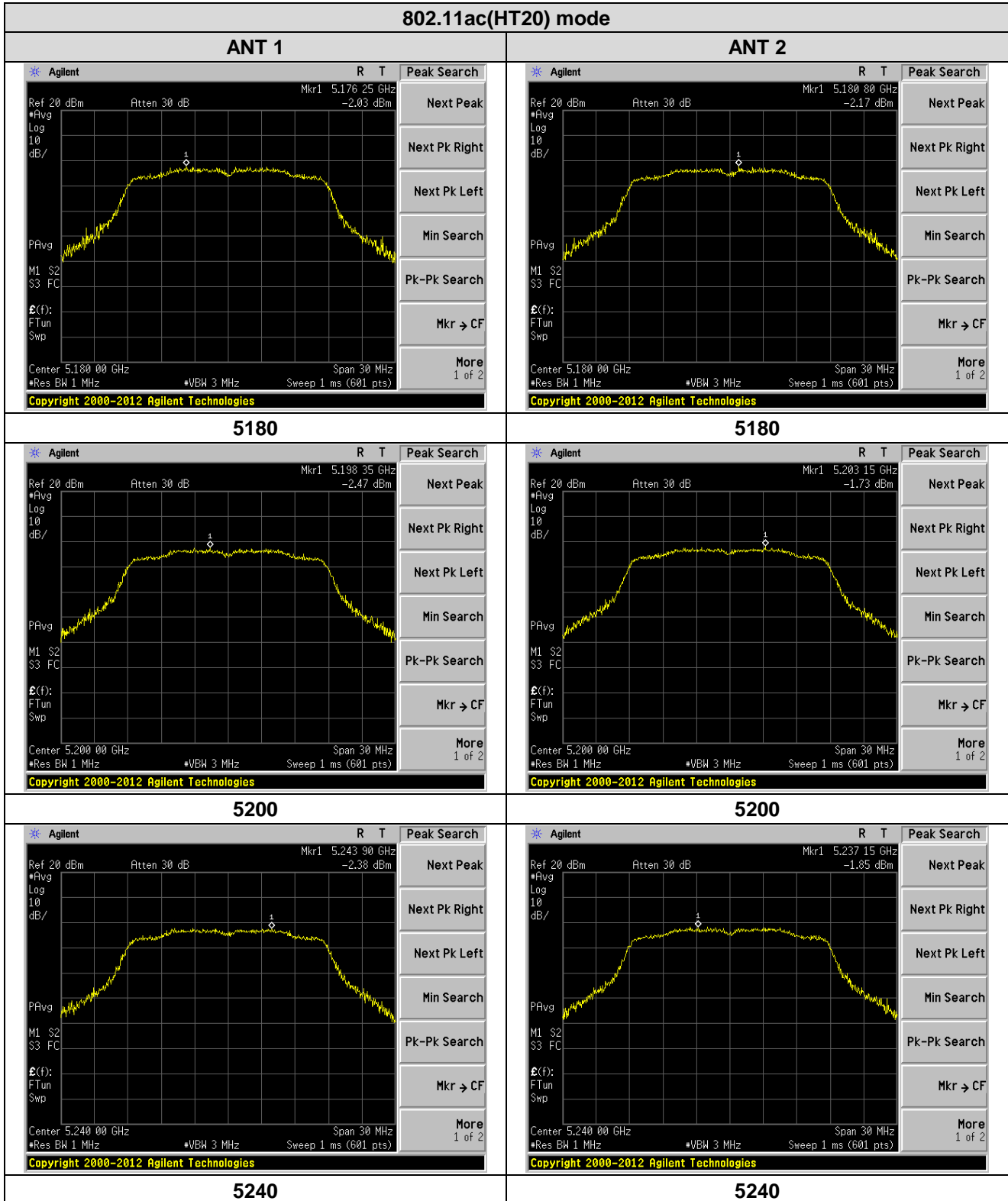
$-1.68\text{dBm} + 10\log 2 = 1.33\text{dBm} < 11\text{dBm}$

Result:Pass

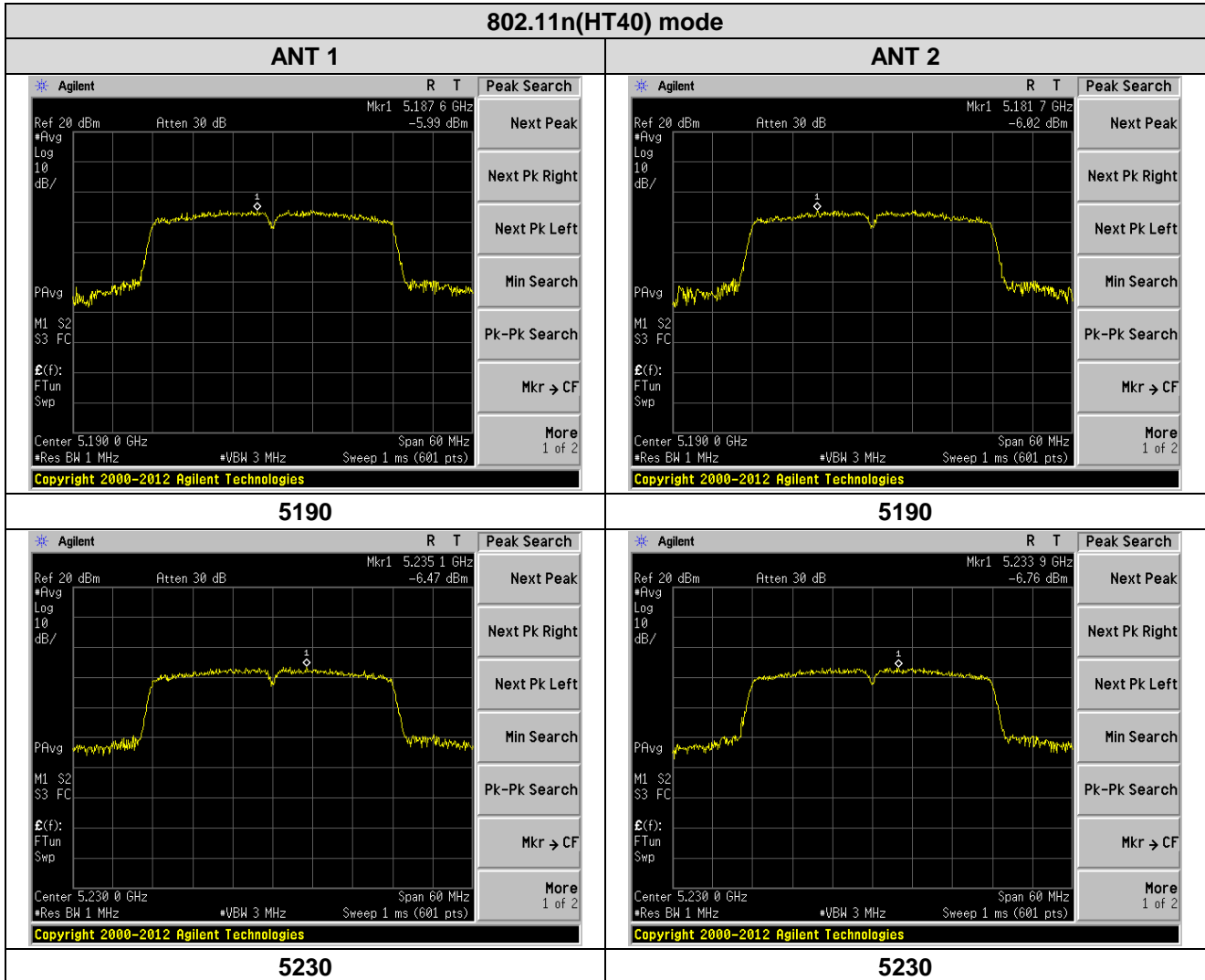
Test plots as followed:



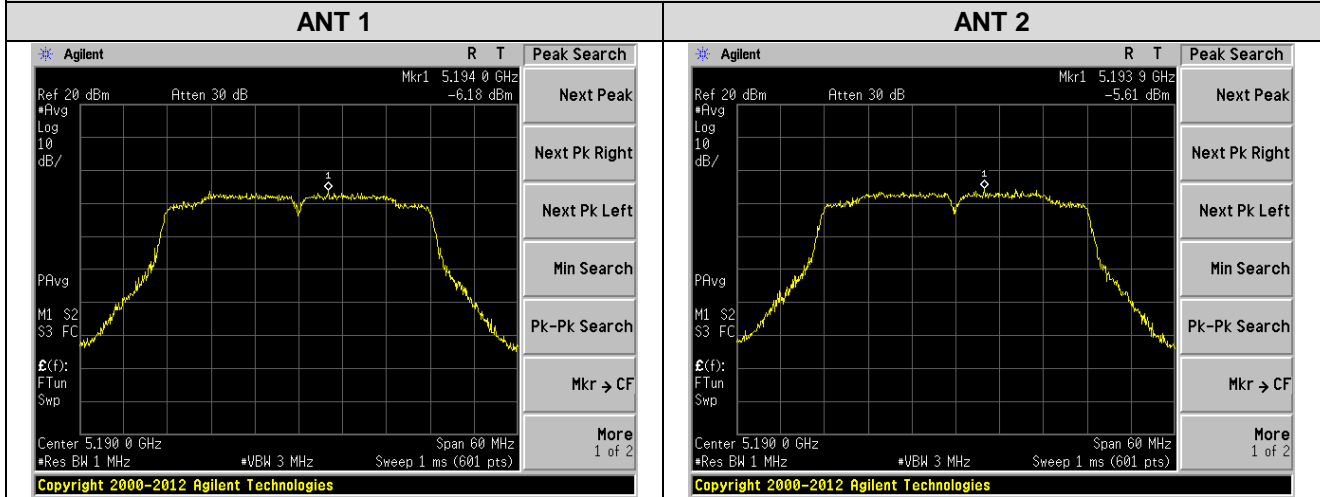




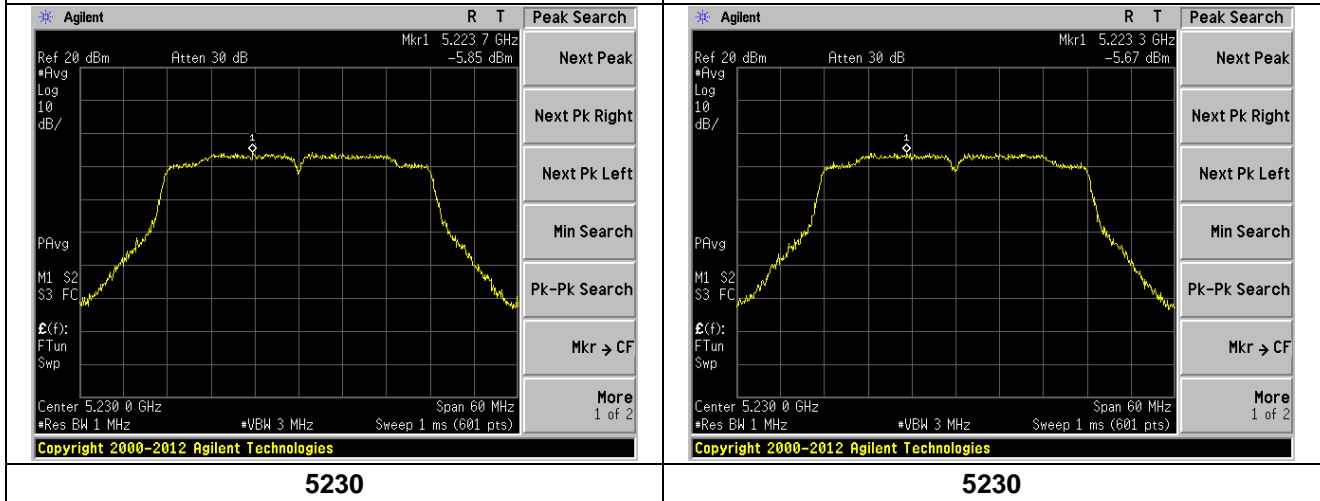




## 802.11ac(HT40) mode

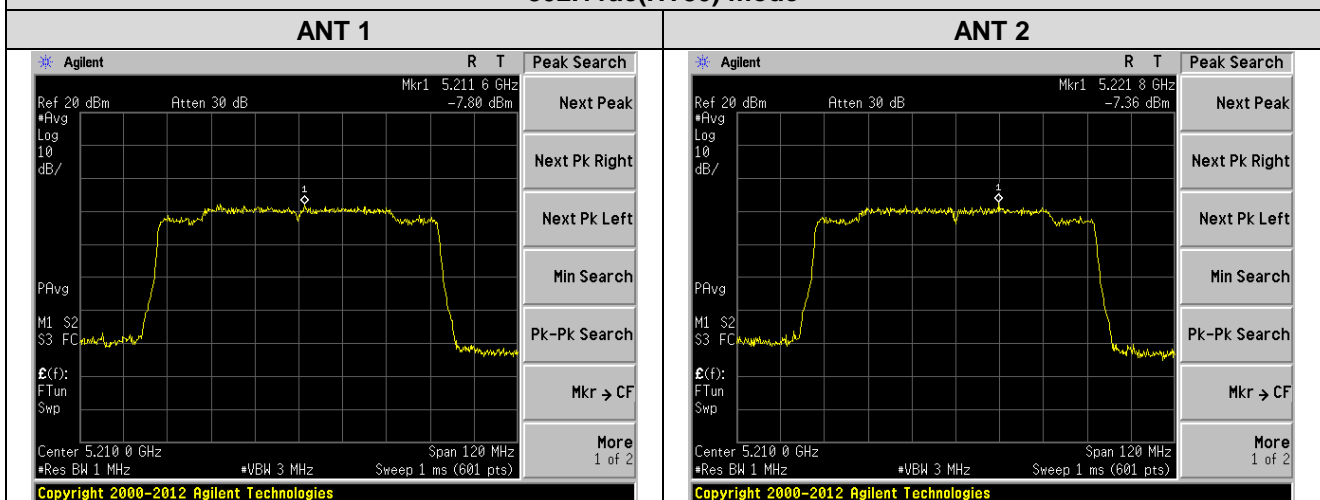


**5190**



**5230**

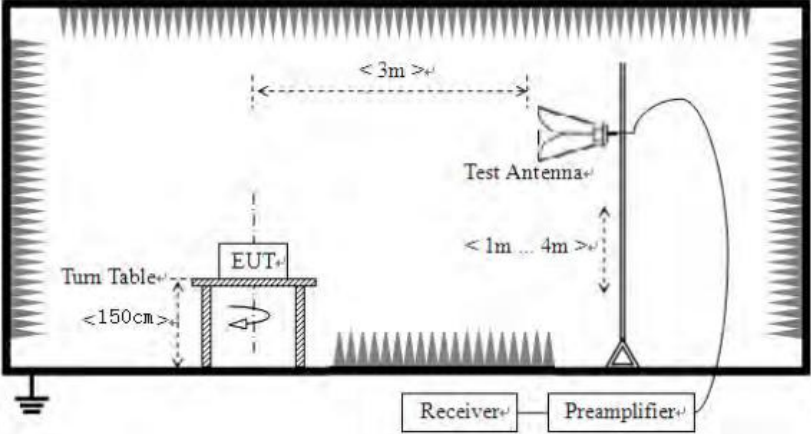
## 802.11ac(HT80) mode



**5210**

## 7.6 Band Edge

Test Requirement:	FCC Part15 E Section 15.407 and 15.205				
Test Method:	ANSI C63.10:2013				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (dBuV/m @3m)		Remark	
	30MHz-88MHz	40.0		Quasi-peak Value	
	88MHz-216MHz	43.5		Quasi-peak Value	
	216MHz-960MHz	46.0		Quasi-peak Value	
	960MHz-1GHz	54.0		Quasi-peak Value	
	Above 1GHz	54.0		Average Value	
		68.2		Peak Value	
<p>Undesirable emission limits:</p> <p>(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.</p> <p>(2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.</p> <p>(3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.</p>					
Test Procedure:	<p>a. The EUT was placed on the top of a rotating table 1.5 m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. 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.</p> <p>d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. 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</p>				

	<p>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.</p>
<p>Test setup:</p>	<p>For radiated emissions above 1GHz</p> 
<p>Test Instruments:</p>	<p>Refer to section 5.10 for details</p>
<p>Test mode:</p>	<p>Refer to section 5.2 for details</p>
<p>Test results:</p>	<p>Pass</p>

**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 D02 v02r01 section G) 1) (d), for For measurements above 1000 MHz @ 3m distance, the limit of field strength is computed as follows:  
 $E[dBuV/m] = EIRP[dBm] + 95.2;$   
 For example, if  $EIRP = -27dBm$   
 $E[dBuV/m] = -27 + 95.2 = 68.2dBuV/m.$

**Measurement Data:**

802.11a SISO Mode ANT1 is worse case PK								
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
5150.00	43.35	32.07	8.99	37.49	46.92	68.20	-21.28	Horizontal
5350.00	45.63	31.75	9.29	37.20	49.47	68.20	-18.73	Horizontal
5150.00	46.39	32.07	8.99	37.49	49.96	68.20	-18.24	Vertical
5350.00	43.54	31.75	9.29	37.20	47.38	68.20	-20.82	Vertical

802.11a SISO Mode ANT1 is worse case AV								
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
5150.00	37.11	32.07	8.99	37.49	40.68	54.00	-13.32	Horizontal
5350.00	32.35	31.75	9.29	37.20	36.19	54.00	-17.81	Horizontal
5150.00	35.35	32.07	8.99	37.49	38.92	54.00	-15.08	Vertical
5350.00	31.76	31.75	9.29	37.20	35.60	54.00	-18.40	Vertical

802.11n(HT20) MIMO mode PK								
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
5150.00	46.63	32.07	8.99	37.49	50.20	68.20	-18.00	Horizontal
5350.00	46.94	31.75	9.29	37.20	50.78	68.20	-17.42	Horizontal
5150.00	42.36	32.07	8.99	37.49	45.93	68.20	-22.27	Vertical
5350.00	44.81	31.75	9.29	37.20	48.65	68.20	-19.55	Vertical

802.11n(HT20) MIMO mode AV								
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
5150.00	33.50	32.07	8.99	37.49	37.07	54.00	-16.93	Horizontal
5350.00	34.34	31.75	9.29	37.20	38.18	54.00	-15.82	Horizontal
5150.00	34.24	32.07	8.99	37.49	37.81	54.00	-16.19	Vertical
5350.00	31.43	31.75	9.29	37.20	35.27	54.00	-18.73	Vertical

802.11ac(HT20) MIMO mode					PK			
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
5150.00	44.69	32.07	8.99	37.49	48.26	68.20	-19.94	Horizontal
5350.00	43.08	31.75	9.29	37.20	46.92	68.20	-21.28	Horizontal
5150.00	41.71	32.07	8.99	37.49	45.28	68.20	-22.92	Vertical
5350.00	43.63	31.75	9.29	37.20	47.47	68.20	-20.73	Vertical

802.11ac(HT20) MIMO mode					AV			
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
5150.00	31.70	32.07	8.99	37.49	35.27	54.00	-18.73	Horizontal
5350.00	37.69	31.75	9.29	37.20	41.53	54.00	-12.47	Horizontal
5150.00	31.27	32.07	8.99	37.49	34.84	54.00	-19.16	Vertical
5350.00	35.47	31.75	9.29	37.20	39.31	54.00	-14.69	Vertical

802.11n(HT40) MIMO mode					PK			
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
5150.00	46.07	32.07	8.99	37.49	49.64	68.20	-18.56	Horizontal
5350.00	42.40	31.75	9.29	37.20	46.24	68.20	-21.96	Horizontal
5150.00	44.78	32.07	8.99	37.49	48.35	68.20	-19.85	Vertical
5350.00	43.61	31.75	9.29	37.20	47.45	68.20	-20.75	Vertical

802.11n(HT40) MIMO mode					AV			
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
5150.00	33.39	32.07	8.99	37.49	36.96	54.00	-17.04	Horizontal
5350.00	33.38	31.75	9.29	37.20	37.22	54.00	-16.78	Horizontal
5150.00	31.19	32.07	8.99	37.49	34.76	54.00	-19.24	Vertical
5350.00	37.01	31.75	9.29	37.20	40.85	54.00	-13.15	Vertical

<b>802.11ac(HT40)</b>		MIMO mode			<b>PK</b>			
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
5150.00	42.03	32.07	8.99	37.49	45.60	68.20	-22.60	Horizontal
5350.00	41.12	31.75	9.29	37.20	44.96	68.20	-23.24	Horizontal
5150.00	43.68	32.07	8.99	37.49	47.25	68.20	-20.95	Vertical
5350.00	44.79	31.75	9.29	37.20	48.63	68.20	-19.57	Vertical

<b>802.11ac(HT40)</b>		MIMO mode			<b>AV</b>			
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
5150.00	31.40	32.07	8.99	37.49	34.97	54.00	-19.03	Horizontal
5350.00	35.64	31.75	9.29	37.20	39.48	54.00	-14.52	Horizontal
5150.00	35.40	32.07	8.99	37.49	38.97	54.00	-15.03	Vertical
5350.00	34.94	31.75	9.29	37.20	38.78	54.00	-15.22	Vertical

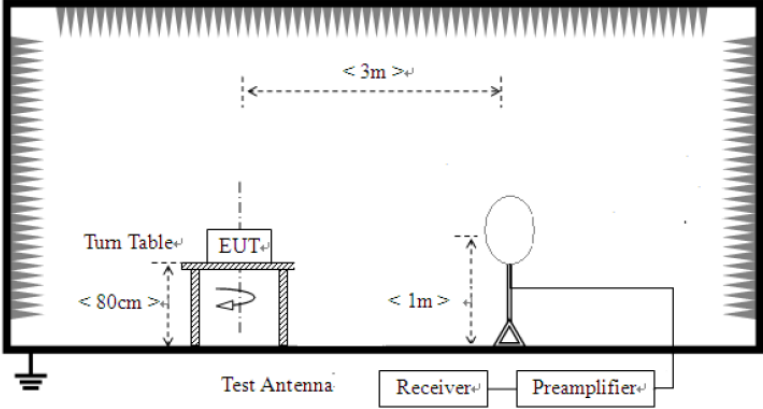
<b>802.11ac(HT80)</b>		MIMO mode			<b>PK</b>			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
5150.00	41.98	32.07	8.99	37.49	45.55	68.20	-22.65	Horizontal
5350.00	46.55	31.75	9.29	37.20	50.39	68.20	-17.81	Horizontal
5150.00	42.12	32.07	8.99	37.49	45.69	68.20	-22.51	Vertical
5350.00	44.04	31.75	9.29	37.20	47.88	68.20	-20.32	Vertical

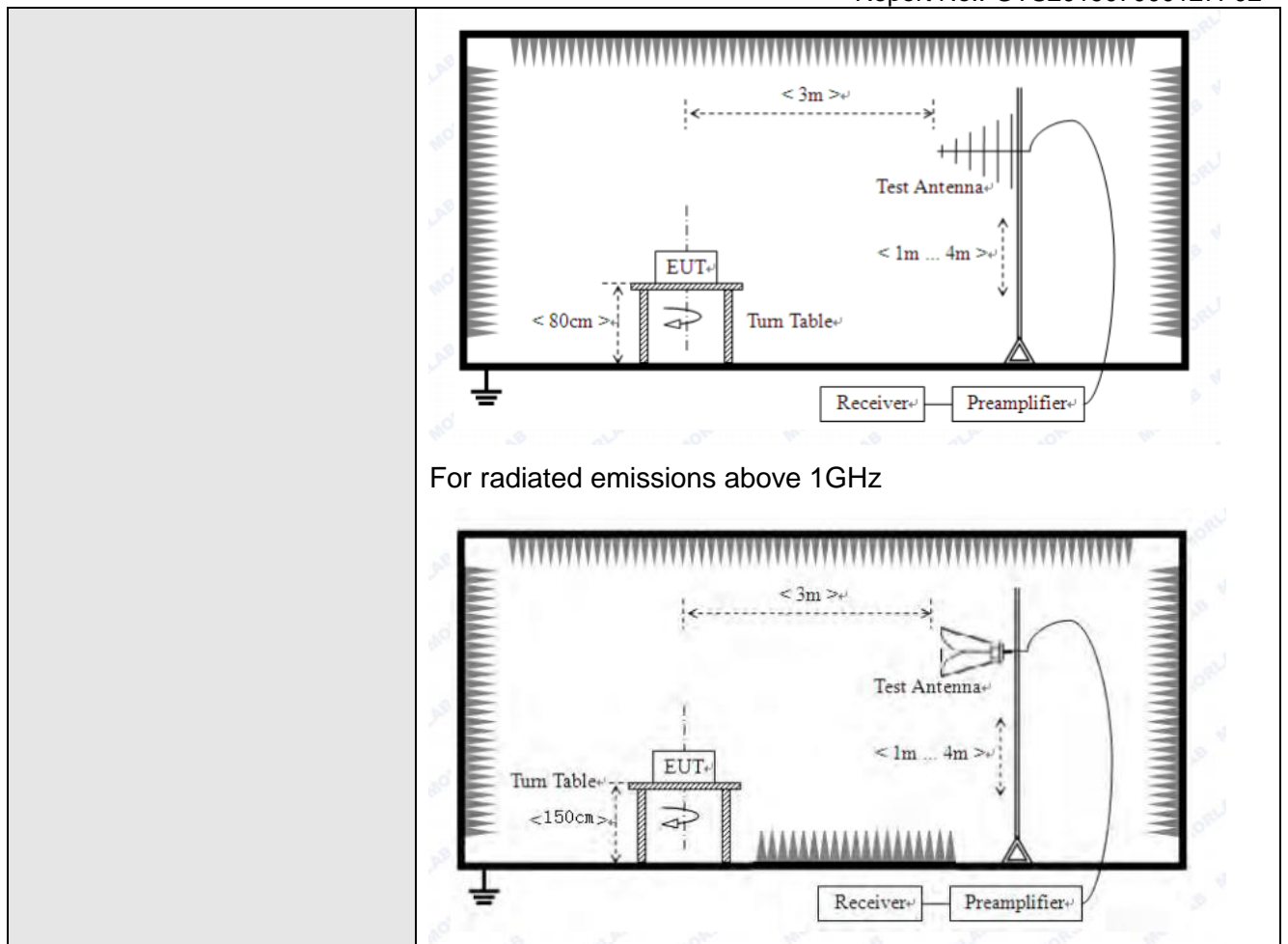
<b>802.11ac(HT80)</b>		MIMO mode			<b>AV</b>			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
5150.00	36.49	32.07	8.99	37.49	40.06	54.00	-13.94	Horizontal
5350.00	35.55	31.75	9.29	37.20	39.39	54.00	-14.61	Horizontal
5150.00	34.44	32.07	8.99	37.49	38.01	54.00	-15.99	Vertical
5350.00	34.02	31.75	9.29	37.20	37.86	54.00	-16.14	Vertical

## 7.7 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 40GHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
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	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
RMS		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	30m	
	1.705MHz-30MHz	30	QP	30m	
	30MHz-88MHz	100	QP	3m	
	88MHz-216MHz	150	QP		
	216MHz-960MHz	200	QP		
	960MHz-1GHz	500	QP		
	Above 1GHz	500	Average		
		5000	Peak		
Test Procedure:	<p>Substitution method was performed to determine the actual ERP emission levels of the EUT.</p> <p>The following test procedure as below:</p> <p>1&gt;.Below 1GHz test procedure:</p> <ol style="list-style-type: none"> <li>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.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>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.</li> <li>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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> </ol> <p>2&gt;.Above 1GHz test procedure:</p>				



	<ol style="list-style-type: none"> <li>1. On the test site as test setup graph above, the EUT shall be placed at the 0.8m support on the turntable and in the position closest to normal use as declared by the provider.</li> <li>2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter. The output of the test antenna shall be connected to the measuring receiver.</li> <li>3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.</li> <li>4. The test antenna shall be raised and lowered from 1m to 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.</li> <li>5. Repeat step 4 for test frequency with the test antenna polarized horizontally.</li> <li>6. Remove the transmitter and replace it with a substitution antenna</li> <li>7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.</li> <li>8. Repeat step 7 with both antennas horizontally polarized for each test frequency.</li> <li>9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:  <math display="block">\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}</math>                     where:                      Pg is the generator output power into the substitution antenna.</li> </ol>
<p>Test setup:</p>	<p>For radiated emissions from 9kHz to 30MHz</p>  <p>For radiated emissions from 30MHz to 1GHz</p>



Test Instruments:	Refer to section 5.10 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.

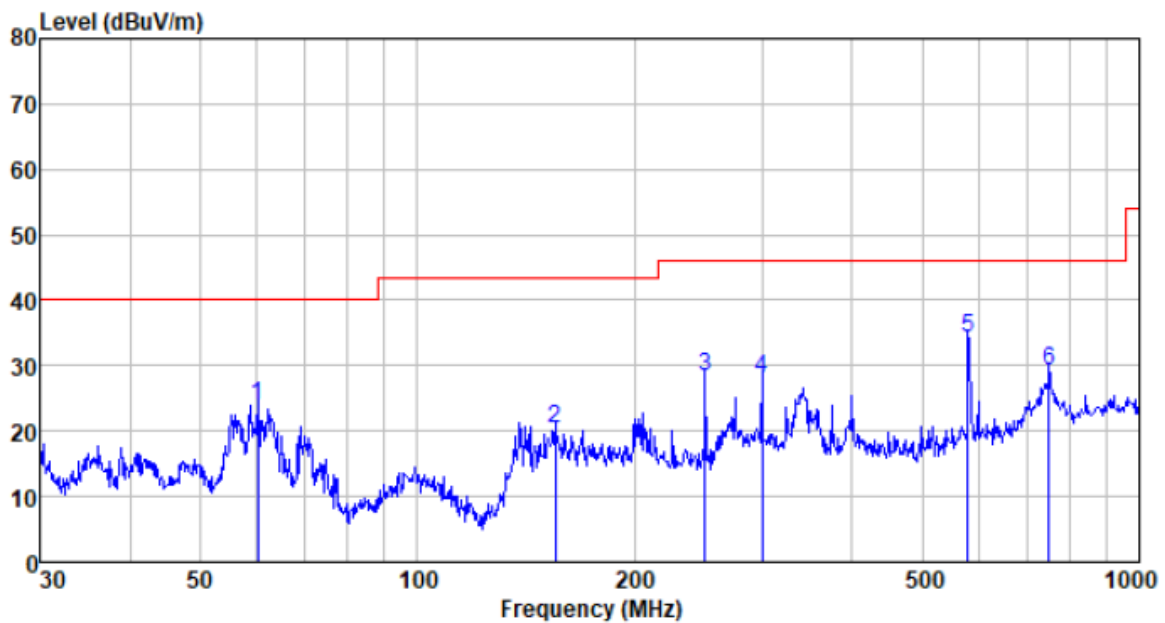
**Measurement Data:**

**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.

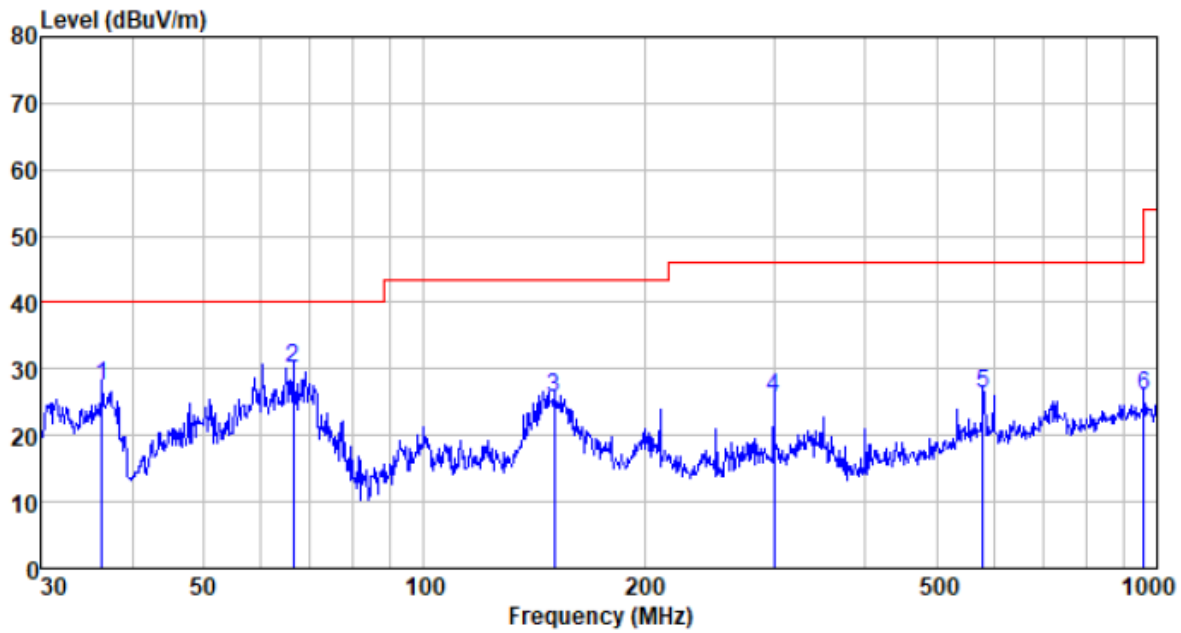
**30MHz~ 1GHz**

**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
60.069	47.98	11.30	0.86	36.32	23.82	40.00	-16.18	QP
155.364	47.97	8.00	1.60	37.11	20.46	43.50	-23.04	QP
250.301	51.44	12.18	2.12	37.38	28.36	46.00	-17.64	QP
300.367	49.62	13.60	2.36	37.42	28.16	46.00	-17.84	QP
578.670	48.97	19.06	3.64	37.53	34.14	46.00	-11.86	QP
750.108	42.16	20.53	4.28	37.62	29.35	46.00	-16.65	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
36.381	50.60	11.58	0.62	35.45	27.35	40.00	-12.65	QP
66.266	56.67	8.88	0.91	36.40	30.06	40.00	-9.94	QP
150.538	53.56	7.65	1.57	37.08	25.70	43.50	-17.80	QP
300.367	47.25	13.60	2.36	37.42	25.79	46.00	-20.21	QP
578.670	41.01	19.06	3.64	37.53	26.18	46.00	-19.82	QP
958.794	35.98	22.54	5.08	37.55	26.05	46.00	-19.95	QP

Note: All modulations have been tested, only worse case is reported

**Above 1GHz:**

**802.11a 5180MHz** SISO mode,ANT1 is worse case PK

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
10360.00	32.55	39.67	14.62	32.65	54.19	74.00	-19.81	Vertical
15540.00	32.59	38.60	17.66	34.46	54.39	74.00	-19.61	Vertical
10360.00	31.97	39.67	14.62	32.65	53.61	74.00	-20.39	Horizontal
15540.00	31.87	38.60	17.66	34.46	53.67	74.00	-20.33	Horizontal

AV

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
10360.00	22.26	39.67	14.62	32.65	43.90	54.00	-10.10	Vertical
15540.00	22.77	38.60	17.66	34.46	44.57	54.00	-9.43	Vertical
10360.00	19.46	39.67	14.62	32.65	41.10	54.00	-12.90	Horizontal
15540.00	21.75	38.60	17.66	34.46	43.55	54.00	-10.45	Horizontal

**802.11a 5200MHz** SISO mode,ANT1 is worse case PK

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
10400.00	33.87	39.75	14.63	32.71	55.54	74.00	-18.46	Vertical
15600.00	36.32	38.33	17.67	34.17	58.15	74.00	-15.85	Vertical
10400.00	32.79	39.75	14.63	32.71	54.46	74.00	-19.54	Horizontal
15600.00	36.16	38.33	17.67	34.17	57.99	74.00	-16.01	Horizontal

AV

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
10400.00	19.56	39.75	14.63	32.71	41.23	54.00	-12.77	Vertical
15600.00	21.22	38.33	17.67	34.17	43.05	54.00	-10.95	Vertical
10400.00	20.01	39.75	14.63	32.71	41.68	54.00	-12.32	Horizontal
15600.00	22.75	38.33	17.67	34.17	44.58	54.00	-9.42	Horizontal

**802.11a 5240MHz** SISO mode,ANT1 is worse case PK

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
10480.00	32.53	39.82	14.68	32.86	54.17	74.00	-19.83	Vertical
15720.00	35.30	38.09	17.73	33.66	57.46	74.00	-16.54	Vertical
10480.00	37.46	39.82	14.68	32.86	59.10	74.00	-14.90	Horizontal
15720.00	37.41	38.09	17.73	33.66	59.57	74.00	-14.43	Horizontal

AV

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
10480.00	19.21	39.82	14.68	32.86	40.85	54.00	-13.15	Vertical
15720.00	20.22	38.09	17.73	33.66	42.38	54.00	-11.62	Vertical
10480.00	20.89	39.82	14.68	32.86	42.53	54.00	-11.47	Horizontal
15720.00	22.15	38.09	17.73	33.66	44.31	54.00	-9.69	Horizontal

**802.11n(HT20) 5180MHz** MIMO mode PK

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
10360.00	34.62	39.67	14.62	32.65	56.26	74.00	-17.74	Vertical
15540.00	31.33	38.60	17.66	34.46	53.13	74.00	-20.87	Vertical
10360.00	34.85	39.67	14.62	32.65	56.49	74.00	-17.51	Horizontal
15540.00	31.48	38.60	17.66	34.46	53.28	74.00	-20.72	Horizontal

AV

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
10360.00	22.07	39.67	14.62	32.65	43.71	54.00	-10.29	Vertical
15540.00	21.44	38.60	17.66	34.46	43.24	54.00	-10.76	Vertical
10360.00	20.11	39.67	14.62	32.65	41.75	54.00	-12.25	Horizontal
15540.00	19.20	38.60	17.66	34.46	41.00	54.00	-13.00	Horizontal

**802.11n(HT20) 5200MHz**

MIMO mode

PK

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
10400.00	37.12	39.75	14.63	32.71	58.79	74.00	-15.21	Vertical
15600.00	35.30	38.33	17.67	34.17	57.13	74.00	-16.87	Vertical
10400.00	34.20	39.75	14.63	32.71	55.87	74.00	-18.13	Horizontal
15600.00	32.13	38.33	17.67	34.17	53.96	74.00	-20.04	Horizontal

AV

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
10400.00	19.78	39.75	14.63	32.71	41.45	54.00	-12.55	Vertical
15600.00	20.35	38.33	17.67	34.17	42.18	54.00	-11.82	Vertical
10400.00	22.70	39.75	14.63	32.71	44.37	54.00	-9.63	Horizontal
15600.00	20.32	38.33	17.67	34.17	42.15	54.00	-11.85	Horizontal

**802.11n(HT20) 5240MHz**

MIMO mode

PK

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
10480.00	34.98	39.82	14.68	32.86	56.62	74.00	-17.38	Vertical
15720.00	36.80	38.09	17.73	33.66	58.96	74.00	-15.04	Vertical
10480.00	35.28	39.82	14.68	32.86	56.92	74.00	-17.08	Horizontal
15720.00	33.23	38.09	17.73	33.66	55.39	74.00	-18.61	Horizontal

AV

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
10480.00	21.98	39.82	14.68	32.86	43.62	54.00	-10.38	Vertical
15720.00	18.96	38.09	17.73	33.66	41.12	54.00	-12.88	Vertical
10480.00	19.36	39.82	14.68	32.86	41.00	54.00	-13.00	Horizontal
15720.00	21.03	38.09	17.73	33.66	43.19	54.00	-10.81	Horizontal

**802.11ac(HT20) 5180MHz**

MIMO mode

PK

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
10360.00	36.95	39.67	14.62	32.65	58.59	74.00	-15.41	Vertical
15540.00	35.58	38.60	17.66	34.46	57.38	74.00	-16.62	Vertical
10360.00	33.67	39.67	14.62	32.65	55.31	74.00	-18.69	Horizontal
15540.00	36.24	38.60	17.66	34.46	58.04	74.00	-15.96	Horizontal

AV

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
10360.00	19.87	39.67	14.62	32.65	41.51	54.00	-12.49	Vertical
15540.00	21.75	38.60	17.66	34.46	43.55	54.00	-10.45	Vertical
10360.00	21.46	39.67	14.62	32.65	43.10	54.00	-10.90	Horizontal
15540.00	19.13	38.60	17.66	34.46	40.93	54.00	-13.07	Horizontal

**802.11ac(HT20) 5200MHz**

MIMO mode

PK

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
10400.00	32.87	39.75	14.63	32.71	54.54	74.00	-19.46	Vertical
15600.00	31.44	38.33	17.67	34.17	53.27	74.00	-20.73	Vertical
10400.00	36.94	39.75	14.63	32.71	58.61	74.00	-15.39	Horizontal
15600.00	35.86	38.33	17.67	34.17	57.69	74.00	-16.31	Horizontal

AV

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
10400.00	20.33	39.75	14.63	32.71	42.00	54.00	-12.00	Vertical
15600.00	21.59	38.33	17.67	34.17	43.42	54.00	-10.58	Vertical
10400.00	20.59	39.75	14.63	32.71	42.26	54.00	-11.74	Horizontal
15600.00	20.94	38.33	17.67	34.17	42.77	54.00	-11.23	Horizontal



**802.11ac(HT20) 5240MHz**

MIMO mode

PK

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
10480.00	33.72	39.82	14.68	32.86	55.36	74.00	-18.64	Vertical
15720.00	36.01	38.09	17.73	33.66	58.17	74.00	-15.83	Vertical
10480.00	31.36	39.82	14.68	32.86	53.00	74.00	-21.00	Horizontal
15720.00	34.68	38.09	17.73	33.66	56.84	74.00	-17.16	Horizontal

AV

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
10480.00	21.43	39.82	14.68	32.86	43.07	54.00	-10.93	Vertical
15720.00	20.57	38.09	17.73	33.66	42.73	54.00	-11.27	Vertical
10480.00	21.23	39.82	14.68	32.86	42.87	54.00	-11.13	Horizontal
15720.00	22.08	38.09	17.73	33.66	44.24	54.00	-9.76	Horizontal

**802.11n (HT40) 5190MHz**

MIMO mode

PK

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
10380.00	31.52	39.71	14.63	32.68	53.18	74.00	-20.82	Vertical
15570.00	34.64	38.46	17.67	34.32	56.45	74.00	-17.55	Vertical
10380.00	34.07	39.71	14.63	32.68	55.73	74.00	-18.27	Horizontal
15570.00	31.78	38.46	17.67	34.32	53.59	74.00	-20.41	Horizontal

AV

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
10380.00	22.59	39.71	14.63	32.68	44.25	54.00	-9.75	Vertical
15570.00	20.59	38.46	17.67	34.32	42.40	54.00	-11.60	Vertical
10380.00	22.72	39.71	14.63	32.68	44.38	54.00	-9.62	Horizontal
15570.00	21.60	38.46	17.67	34.32	43.41	54.00	-10.59	Horizontal

**802.11n(HT40) 5230MHz**

MIMO mode

PK

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
10460.00	31.25	39.75	14.65	32.74	52.91	74.00	-21.09	Vertical
15690.00	31.36	38.33	17.69	34.03	53.35	74.00	-20.65	Vertical
10460.00	37.22	39.75	14.65	32.74	58.88	74.00	-15.12	Horizontal
15690.00	31.66	38.33	17.69	34.03	53.65	74.00	-20.35	Horizontal

AV

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
10460.00	22.12	39.75	14.65	32.74	43.78	54.00	-10.22	Vertical
15690.00	21.18	38.33	17.69	34.03	43.17	54.00	-10.83	Vertical
10460.00	20.64	39.75	14.65	32.74	42.30	54.00	-11.70	Horizontal
15690.00	19.18	38.33	17.69	34.03	41.17	54.00	-12.83	Horizontal

**802.11ac (HT40) 5190MHz**

MIMO mode

PK

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
10380.00	31.96	39.71	14.63	32.68	53.62	74.00	-20.38	Vertical
15570.00	35.04	38.46	17.67	34.32	56.85	74.00	-17.15	Vertical
10380.00	32.00	39.71	14.63	32.68	53.66	74.00	-20.34	Horizontal
15570.00	37.50	38.46	17.67	34.32	59.31	74.00	-14.69	Horizontal

AV

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
10380.00	21.21	39.71	14.63	32.68	42.87	54.00	-11.13	Vertical
15570.00	20.15	38.46	17.67	34.32	41.96	54.00	-12.04	Vertical
10380.00	19.36	39.71	14.63	32.68	41.02	54.00	-12.98	Horizontal
15570.00	19.80	38.46	17.67	34.32	41.61	54.00	-12.39	Horizontal

**802.11ac(HT40) 5230MHz** MIMO mode PK

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
10460.00	34.44	39.75	14.65	32.74	56.10	74.00	-17.90	Vertical
15690.00	33.96	38.33	17.69	34.03	55.95	74.00	-18.05	Vertical
10460.00	31.49	39.75	14.65	32.74	53.15	74.00	-20.85	Horizontal
15690.00	21.21	38.33	17.69	34.03	43.20	74.00	-30.80	Horizontal

## AV

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
10460.00	19.78	39.75	14.65	32.74	41.44	54.00	-12.56	Vertical
15690.00	20.27	38.33	17.69	34.03	42.26	54.00	-11.74	Vertical
10460.00	20.23	39.75	14.65	32.74	41.89	54.00	-12.11	Horizontal
15690.00	22.35	38.33	17.69	34.03	44.34	54.00	-9.66	Horizontal

**802.11ac(HT80) 5210MHz** MIMO mode PK

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
10420.00	32.63	39.82	14.66	32.80	54.31	74.00	-19.69	Vertical
15630.00	31.03	38.09	17.71	33.81	53.02	74.00	-20.98	Vertical
10420.00	31.69	39.82	14.66	32.80	53.37	74.00	-20.63	Horizontal
15630.00	32.66	38.09	17.71	33.81	54.65	74.00	-19.35	Horizontal

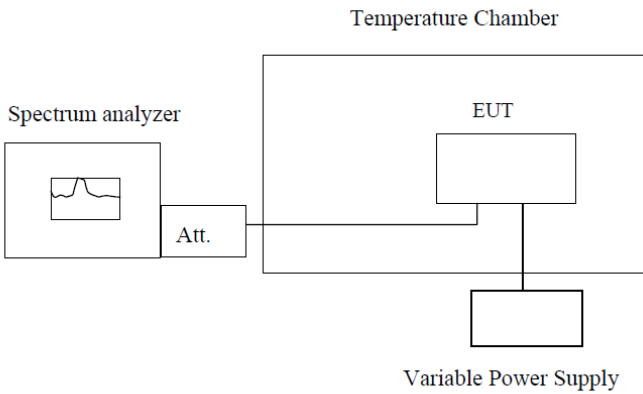
## AV

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
10420.00	19.53	39.82	14.66	32.80	41.21	54.00	-12.79	Vertical
15630.00	22.81	38.09	17.71	33.81	44.80	54.00	-9.20	Vertical
10420.00	19.19	39.82	14.66	32.80	40.87	54.00	-13.13	Horizontal
15630.00	22.34	38.09	17.71	33.81	44.33	54.00	-9.67	Horizontal

## Notes:

1. Level = Read Level + Antenna Factor+ Cable loss- Preamp Factor.
2. The test trace is same as the ambient noise (the test frequency range: 18GHz~40GHz), therefore no data appear in the report.
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, 2014; tested to 2.1055 for compliance to FCC Part 15.407(g) requirements.
Test setup:	 <p style="text-align: center;"><b>Note :</b> Measurement setup for testing on Antenna connector</p>
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remark: Set the EUT transmits at un-modulation mode to test frequency stability.

**Measurement data:**

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	5180	5179.2985	5180.8805	5180.9869	5179.5596
	5200	5199.6092	5200.0376	5200.2529	5199.4331
	5220	5219.6052	5220.4402	5220.4755	5219.1929
	5240	5239.8981	5240.3457	5240.7768	5239.2800
-20	5180	5179.1246	5180.3634	5180.3523	5179.8506
	5200	5199.9593	5200.2396	5200.2221	5199.4556
	5220	5219.4403	5220.2512	5220.8966	5219.8882
	5240	5239.2140	5240.1120	5240.1733	5239.0853
-10	5180	5179.2505	5180.8985	5180.4930	5179.8735
	5200	5199.0875	5200.2070	5200.6013	5199.3222
	5220	5219.0116	5220.9649	5220.3753	5219.0261
	5240	5239.1608	5240.2498	5240.3167	5239.2681
0	5180	5179.5277	5180.7679	5180.1603	5179.6676
	5200	5199.1155	5200.0702	5200.6630	5199.5041
	5220	5219.0147	5220.0975	5220.1472	5219.3375
	5240	5239.8257	5240.2362	5240.7451	5239.7498
10	5180	5179.4713	5180.4723	5180.3441	5179.3556
	5200	5199.3628	5200.8494	5200.9873	5199.5701
	5220	5219.6208	5220.0145	5220.8290	5219.6571
	5240	5239.0313	5240.7420	5240.8731	5239.2159
20	5180	5179.4591	5180.6479	5180.7821	5179.0387
	5200	5199.5478	5200.9698	5200.4611	5199.7449
	5220	5219.6020	5220.0943	5220.3962	5219.6797
	5240	5239.9569	5240.6349	5240.7568	5239.9216
30	5180	5179.6126	5180.6159	5180.6369	5179.1347
	5200	5199.2434	5200.7515	5200.8227	5199.0061
	5220	5219.9766	5220.1292	5220.5493	5219.0904
	5240	5239.6958	5240.3040	5240.9854	5239.6027
40	5180	5179.9005	5180.3408	5180.9971	5179.8380
	5200	5199.7505	5200.2748	5200.2901	5199.3330
	5220	5219.2133	5220.2358	5220.4939	5219.7691
	5240	5239.7151	5240.4904	5240.0640	5239.0490
50	5180	5179.2043	5180.8553	5180.1702	5179.6486
	5200	5199.6664	5200.4425	5200.5999	5199.0614
	5220	5219.7369	5220.7726	5220.0367	5219.0370
	5240	5239.7871	5240.4997	5240.4296	5239.0523

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)
102	5180	5180.4304	5180.6707	5179.6286	5179.1626
	5200	5200.9273	5200.7142	5199.3166	5199.4377
	5220	5220.9547	5220.3453	5219.6340	5219.5049
	5240	5240.3067	5240.1091	5239.0332	5239.5517
120	5180	5180.2441	5180.4489	5179.1464	5179.6160
	5200	5200.0139	5200.0581	5199.5032	5199.3014
	5220	5220.5706	5220.7576	5219.2870	5219.7513
	5240	5240.7500	5240.5722	5239.9033	5239.9001
138	5180	5180.9075	5180.5486	5179.3659	5179.4713
	5200	5200.6120	5200.2501	5199.6351	5199.8830
	5220	5220.5258	5220.3273	5219.1156	5219.6279
	5240	5240.9855	5240.2968	5239.8148	5239.7074

## 8 Test Setup Photo

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

## 9 EUT Constructional Details

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

---END---