TEST REPORT

Applicant:	CanDo International, Inc.
Address of Applicant:	138 E Lemon Ave, Monrovia, California 91016, United States
Manufacturer:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address of Manufacturer:	8F, Chuangyi Bldg., No. 3025, Nanhai Ave., Nanshan, Shenzhen, China
Factory:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address of Factory:	4th Floor, Building A, Jianggu Industrial Park, No. 1 Zhenye Road, Tangxiayong Community, Yanluo Street, Songgang, Shenzhen, China

Equipment Under Test (EUT)

Product Name:	AUTO DIAGNOSTIC SYSTEM
Model No.:	HD PRO III
FCC ID:	2AKNY-IDSAPRO
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of sample receipt:	May 29, 2020
Date of Test:	May 29, 2020-June 02, 2020
Date of report issue:	June 02, 2020
Test Result :	PASS *

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

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*June 02, 2020*	*Original*

Prepared By:  ***Date:*** *June 02, 2020*

Project Engineer

Check By:  ***Date:*** *June 02, 2020*

Reviewer

3 Contents

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	PASS
AC Power Line Conducted Emission	15.207	PASS
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	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	AUTO DIAGNOSTIC SYSTEM
Model No.:	HD PRO III
Serial No.:	CD01-2005-2180-0006
Hardware version:	2.00_20200429
Software version:	5.1.1, APK/V30042817
Test sample(s) ID:	GTS202005000226-1
Sample(s) Status:	Engineer sample
Operation Frequency:	802.11a/802.11n(HT20)/802.11ac(HT20): 5180MHz ~ 5240MHz; 802.11n(HT40)/ 802.11ac(HT40): 5190MHz ~ 5230MHz 802.11ac(HT80): 5210MHz
Channel numbers:	802.11a/802.11n(HT20)/802.11ac(HT20): 4; 802.11n(HT40)/ 802.11ac(HT40): 2 802.11ac(HT80): 1
Channel separation:	802.11a/802.11n(HT20)/802.11ac(HT20): 20MHz; 802.11n(HT40)/ 802.11ac(HT40): 40MHz 802.11ac(HT80): 80MHz
Modulation technology:	OFDM
Antenna Type:	Integral antenna
Antenna gain:	2.0 dBi(Declared by Applicant)
Power supply:	SWITCHING POWER ADAPTER Model: GME24A-120200FXR Input: AC 100-240V, 50-60Hz, 0.8A Output: DC 12V, 2A Battery: DC 3.7V, 5000mAh, 18.5Wh

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

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

Channel list for 802.11ac(HT80)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210MHz						

5.2 Test mode

Transmitting mode	Keep the EUT in transmitting with modulation. EUT was test with 99% duty cycle at its maximum power control level.
Remark: During the test,the test voltage was tuned from AC100V to AC240V, and found that the worst case was the AC120V. So the report just shows that condition's data.	

5.3 Test Facility

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

● **FCC —Registration No.: 381383**

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

● **IC —Registration No.: 9079A**

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

● **NVLAP (LAB CODE:600179-0)**

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

5.4 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, 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

None.

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Additional Instructions

EUT Software Settings:

Mode	Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

Test Software Name	Ampak RFTestTool,VER:5.5		
Mode	Channel	Frequency (MHz)	Soft Set
OFDM	CH36	5180	TX level : default
	CH38	5190	
	CH40	5200	
	CH42	5210	
	CH44	5220	
	CH46	5230	
	CH48	5240	

6 Test Instruments list

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

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

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

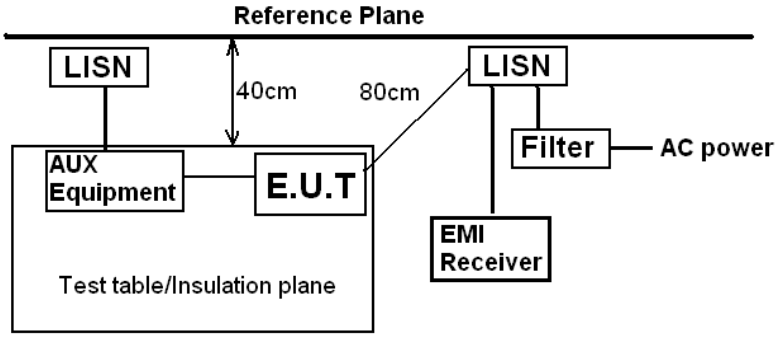
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020

7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: *An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.*	
E.U.T Antenna:	
The antenna is integral antenna, the best case gain of the main antenna is 2.0dBi, reference to the appendix II for details .	

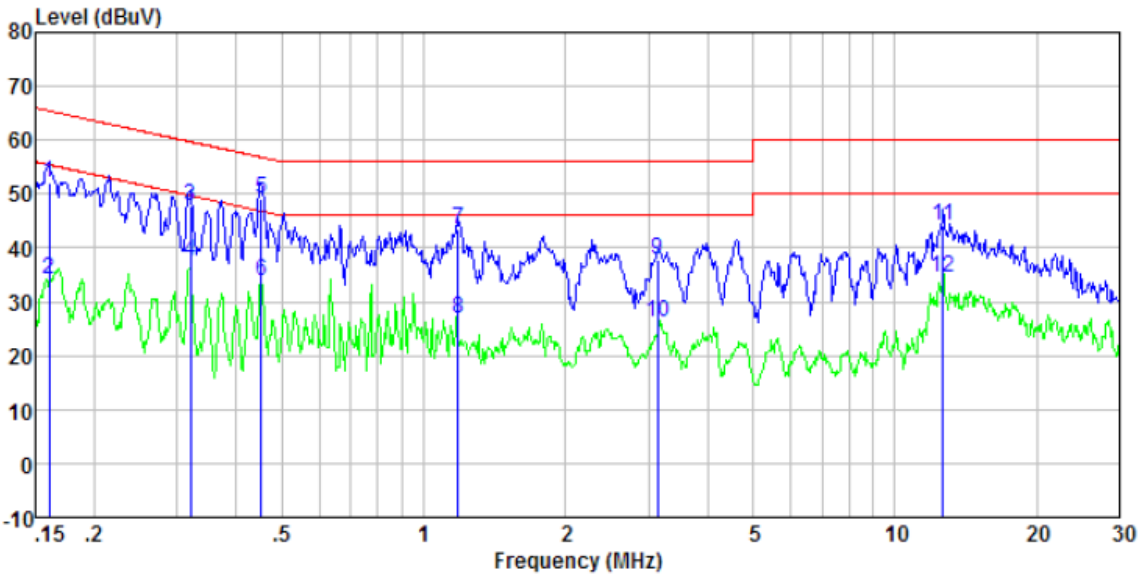
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9KHz, VBW=30KHz
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	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.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
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.

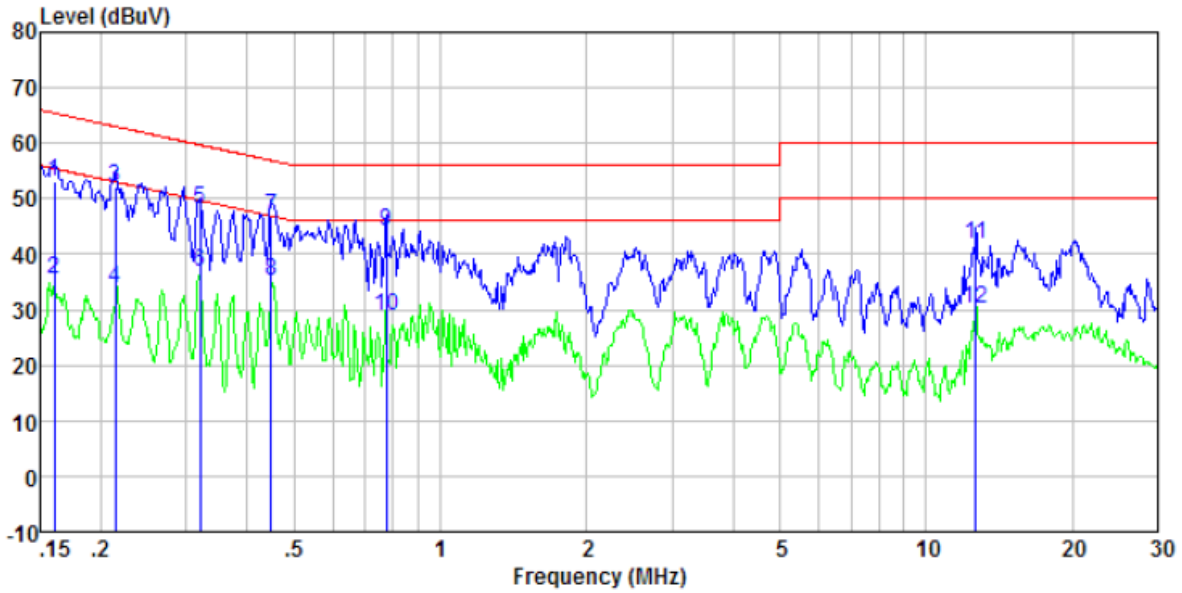
Measurement Data

Line:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.16	51.66	0.40	0.08	52.14	65.43	-13.29	QP
0.16	33.59	0.40	0.08	34.07	55.43	-21.36	Average
0.32	47.43	0.39	0.10	47.92	59.71	-11.79	QP
0.32	36.90	0.39	0.10	37.39	49.71	-12.32	Average
0.45	48.53	0.33	0.11	48.97	56.85	-7.88	QP
0.45	33.24	0.33	0.11	33.68	46.85	-13.17	Average
1.18	42.96	0.20	0.16	43.32	56.00	-12.68	QP
1.18	26.47	0.20	0.16	26.83	46.00	-19.17	Average
3.14	37.42	0.20	0.19	37.81	56.00	-18.19	QP
3.14	25.86	0.20	0.19	26.25	46.00	-19.75	Average
12.65	43.84	0.20	0.21	44.25	60.00	-15.75	QP
12.65	34.24	0.20	0.21	34.65	50.00	-15.35	Average

Neutral:

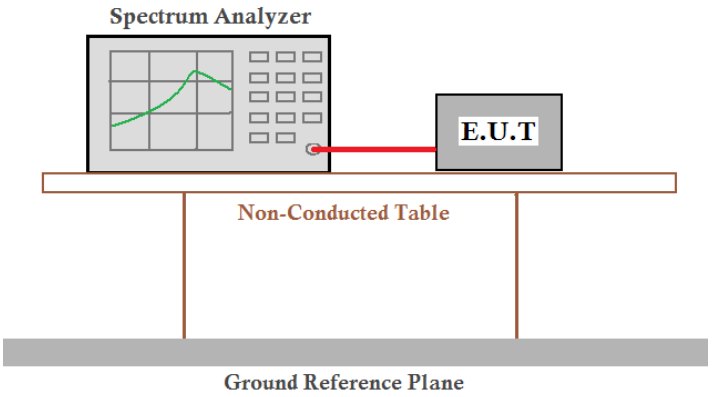


Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.16	52.73	0.40	0.08	53.21	65.43	-12.22	QP
0.16	34.91	0.40	0.08	35.39	55.43	-20.04	Average
0.21	51.61	0.40	0.11	52.12	63.05	-10.93	QP
0.21	33.38	0.40	0.11	33.89	53.05	-19.16	Average
0.32	47.47	0.39	0.10	47.96	59.71	-11.75	QP
0.32	36.38	0.39	0.10	36.87	49.71	-12.84	Average
0.45	46.25	0.33	0.11	46.69	56.89	-10.20	QP
0.45	34.63	0.33	0.11	35.07	46.89	-11.82	Average
0.78	43.86	0.24	0.14	44.24	56.00	-11.76	QP
0.78	28.41	0.24	0.14	28.79	46.00	-17.21	Average
12.65	41.36	0.20	0.21	41.77	60.00	-18.23	QP
12.65	29.75	0.20	0.21	30.16	50.00	-19.84	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 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:	
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

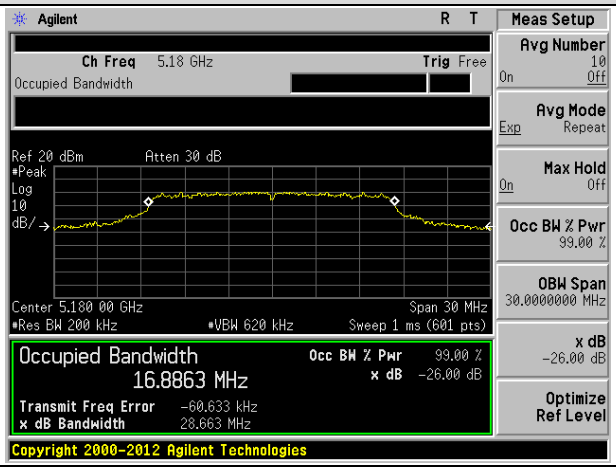
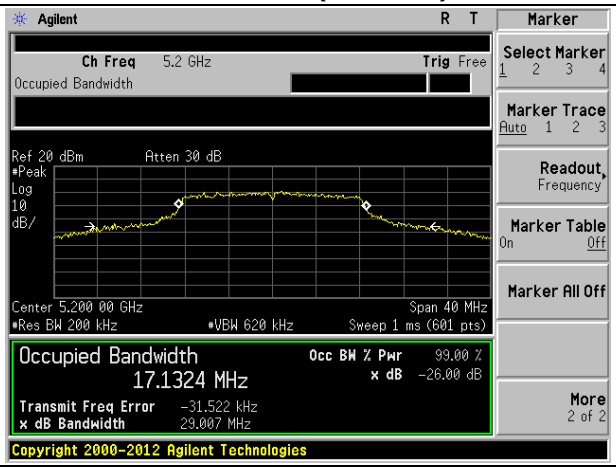
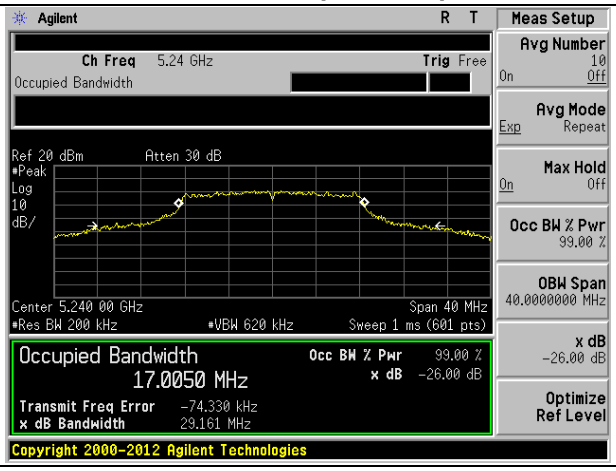
Measurement Data:

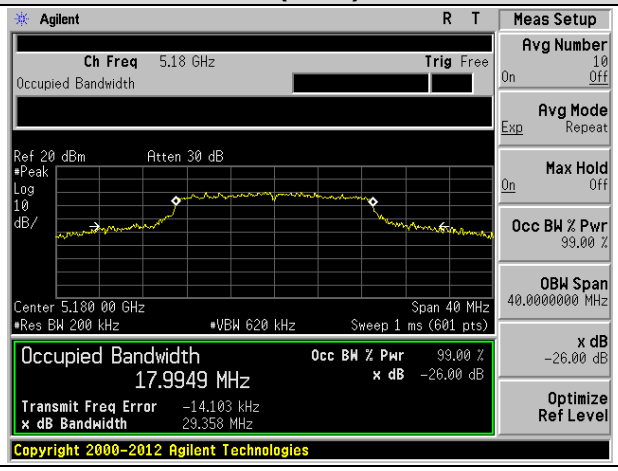
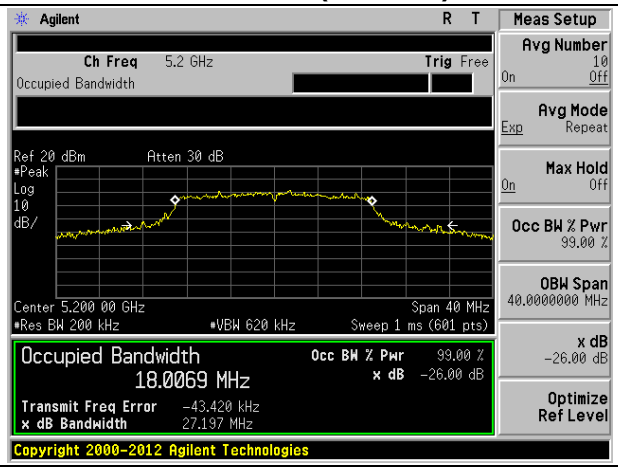
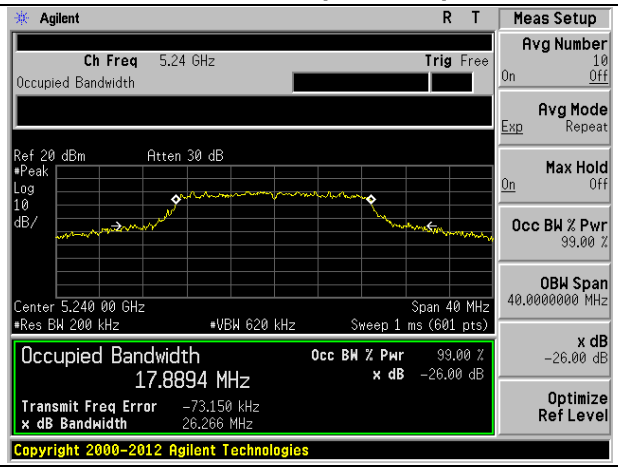
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT20)	802.11ac(HT20)	802.11a	802.11n(HT20)	802.11ac(HT20)
36	5180.00	16.8863	17.9949	17.9350	28.663	29.358	26.000
40	5200.00	17.1324	18.0069	17.9855	29.007	27.197	27.175
48	5240.00	17.0050	17.8894	18.0082	29.161	26.266	29.383

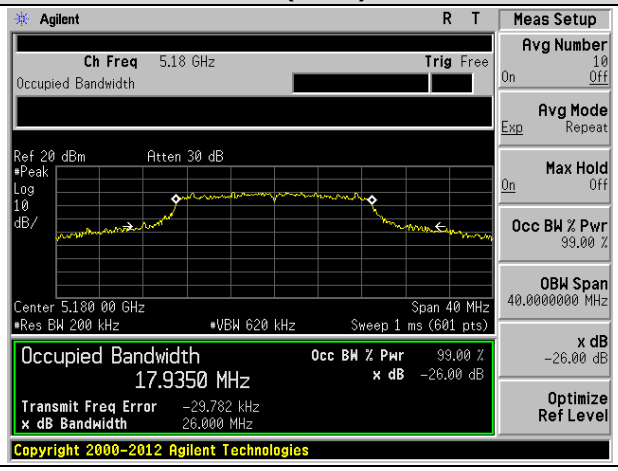
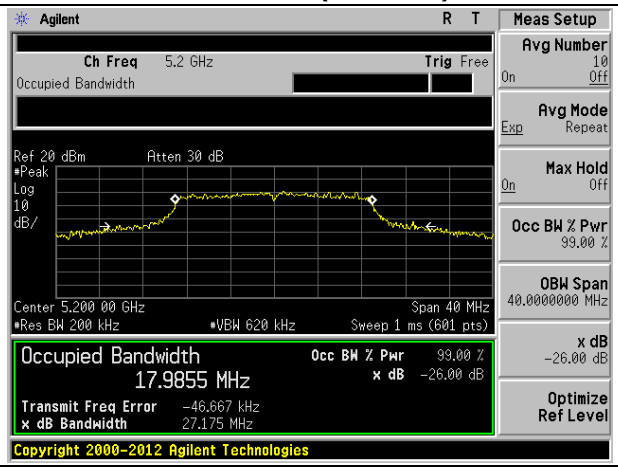
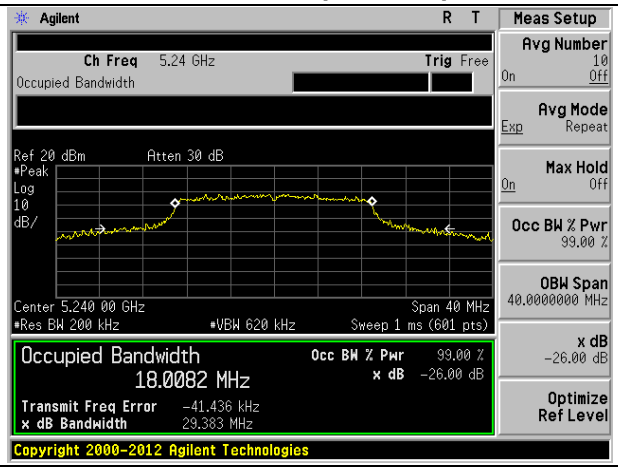
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
38	5190.00	36.0933	36.0933	49.255	46.534
46	5230.00	36.1166	36.1363	45.621	50.305

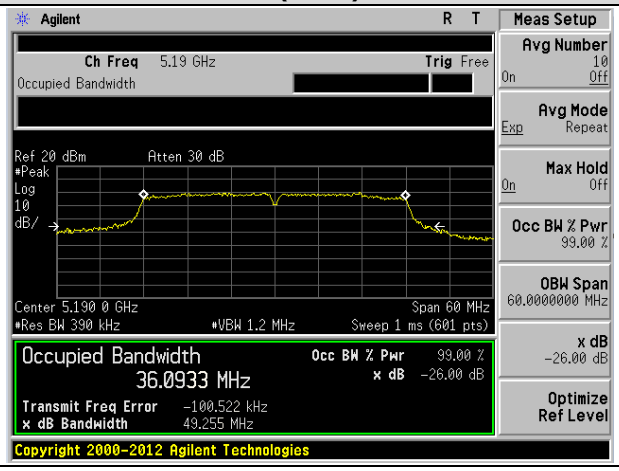
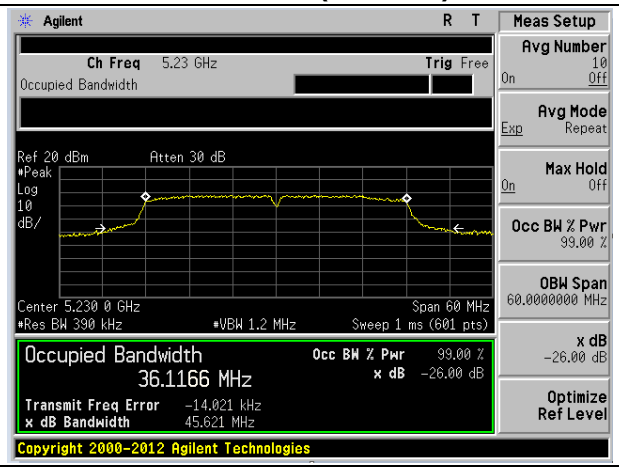
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Occupied Bandwidth (MHz)
		802.11ac(HT80)	802.11ac(HT80)
42	5210.00	75.0151	80.066

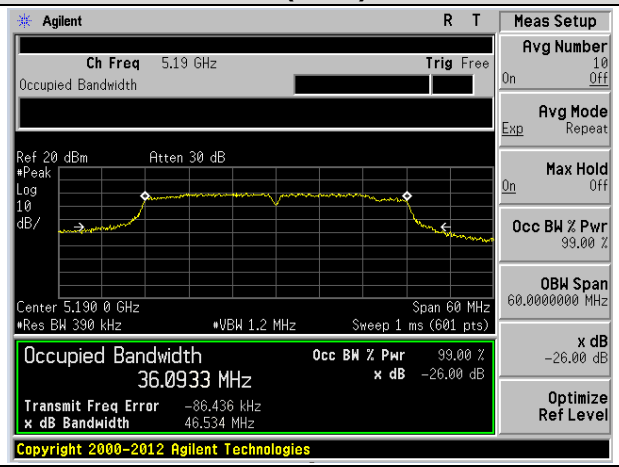
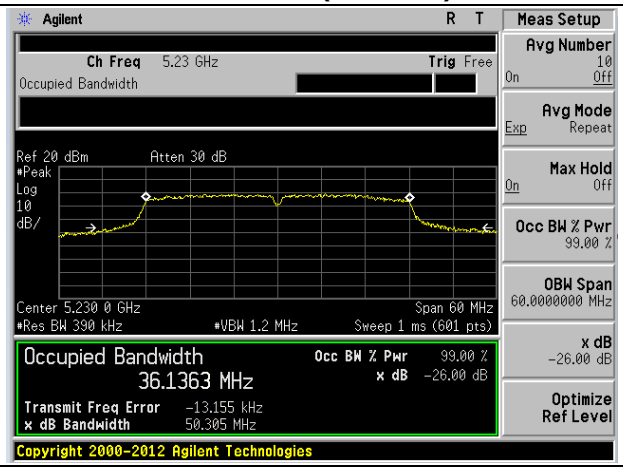
Test plots as followed:

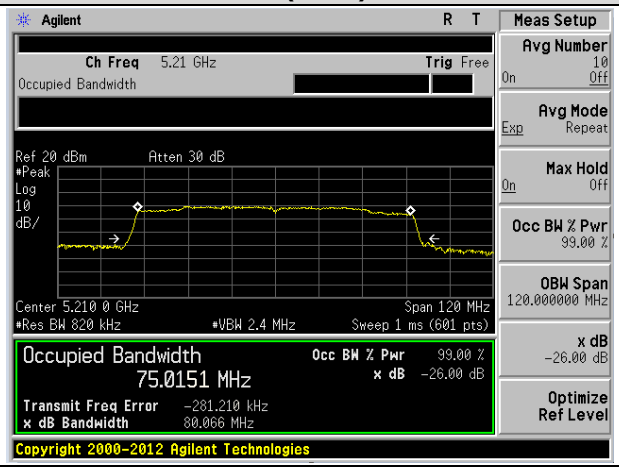
802.11a mode

Channel 36 (5180MHz)

Channel 40 (5200MHz)

Channel 48 (5240MHz)

802.11n(HT20) mode

Channel 36 (5180MHz)

Channel 40 (5200MHz)

Channel 48 (5240MHz)

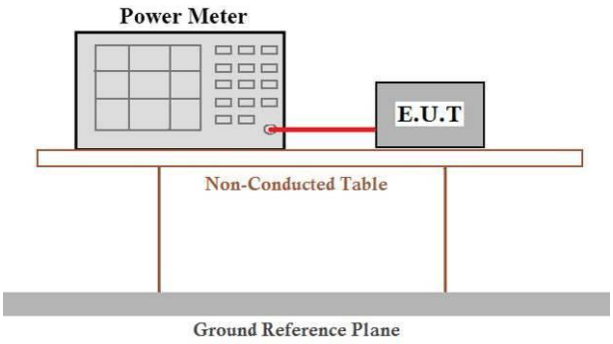
802.11ac(HT20) mode

Channel 36 (5180MHz)

Channel 40 (5200MHz)

Channel 48 (5240MHz)

802.11n(HT40) mode

Channel 38 (5190MHz)

Channel 46 (5230MHz)

802.11ac(HT40) mode

Channel 38 (5190MHz)

Channel 46 (5230MHz)

802.11ac(HT80) mode

Channel 40 (5210MHz)

7.4 Peak Transmit Power

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 E Section 15.407</td></tr>
<tr><td>Test Method:</td><td>KDB 789033 D02 General U-NII Test Procedures New Rules v02r01</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency band (MHz)</th><th>Limit</th></tr>
<tr><td rowspan="2">5150-5250</td><td>≤1W(30dBm) for master device</td></tr>
<tr><td>≤250mW(23.98dBm) for client device</td></tr>
<tr><td>5250-5350</td><td>≤250mW(23.98dBm) for client device or 11dBm+10logB*</td></tr>
<tr><td>5470-5725</td><td>≤250mW(23.98dBm) for client device or 11dBm+10logB*</td></tr>
<tr><td colspan="2">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.</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td> 
</td></tr>
<tr><td>Test procedure:</td><td>Measurement using an RF average power meter
(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
a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B).
(iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
(iv) Adjust the measurement in dBm by adding 10 log(1/x) where x is the duty cycle (e.g., 10log(1/0.25) if the duty cycle is 25 percent).</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 5.10 for details</td></tr>
<tr><td>Test mode:</td><td>Refer to section 5.2 for details</td></tr>
<tr><td>Test results:</td><td>Pass</td></tr>
</table>

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

802.11a mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180.00	12.05	0.05	12.10	23.98	Pass
40	5200.00	12.08	0.05	12.13	23.98	Pass
48	5240.00	12.06	0.05	12.11	23.98	Pass

802.11n(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180.00	10.44	0.05	10.49	23.98	Pass
40	5200.00	10.51	0.05	10.56	23.98	Pass
48	5240.00	10.27	0.05	10.32	23.98	Pass

802.11ac(HT20) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
36	5180.00	10.75	0.05	10.80	23.98	Pass
40	5200.00	10.83	0.05	10.88	23.98	Pass
48	5240.00	10.71	0.05	10.76	23.98	Pass

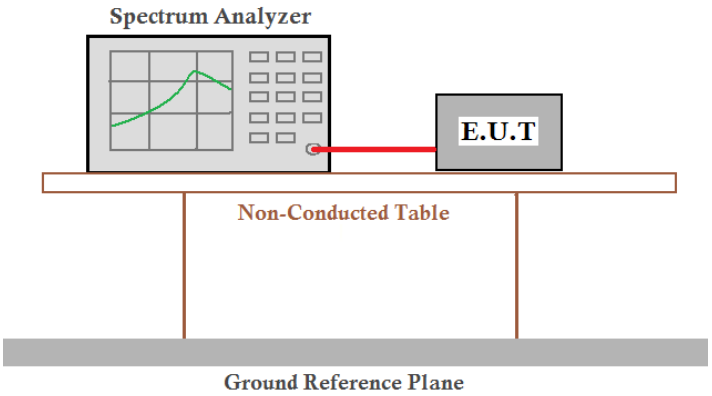
802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190.00	10.65	0.11	10.76	23.98	Pass
46	5230.00	10.81	0.11	10.92	23.98	Pass

802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190.00	10.52	0.11	10.63	23.98	Pass
46	5230.00	10.41	0.11	10.52	23.98	Pass

802.11 ac(HT80)						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
42	5210.00	10.15	0.21	10.36	23.98	Pass

Note: Output Power = Measured Power + Duty Factor
Duty Factor = 10 log (1/Duty Cycle)

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:	<table><tr><td>Frequency band (MHz)</td><td>Limit</td></tr><tr><td rowspan="2">5150-5250</td><td>≤17dBm in 1MHz for master device</td></tr><tr><td>≤11dBm in 1MHz for client device</td></tr><tr><td>5250-5350</td><td>≤11dBm in 1MHz for client device</td></tr><tr><td>5470-5725</td><td>≤11dBm in 1MHz for client device</td></tr><tr><td colspan="2">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.</td></tr></table>
Test setup:	
Test procedure:	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…”. 2) Use the peak search function on the instrument to find the peak of the spectrum. 3) Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum. 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. 4) The result is the PSD.
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

802.11a mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
36	5180.00	4.73	0.05	4.78	11	Pass
40	5200.00	4.56	0.05	4.61	11	Pass
48	5240.00	4.42	0.05	4.47	11	Pass

802.11n(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
36	5180.00	3.83	0.05	3.88	11	Pass
40	5200.00	4.29	0.05	4.34	11	Pass
48	5240.00	3.96	0.05	4.01	11	Pass

802.11ac(HT20) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
36	5180.00	4.1	0.05	4.15	11	Pass
40	5200.00	4.22	0.05	4.27	11	Pass
48	5240.00	2.32	0.05	2.37	11	Pass

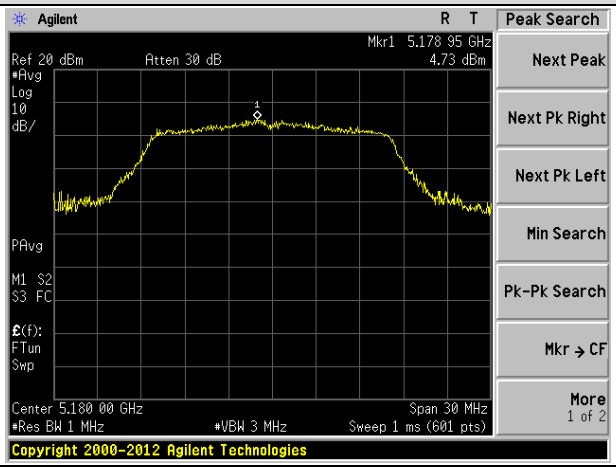
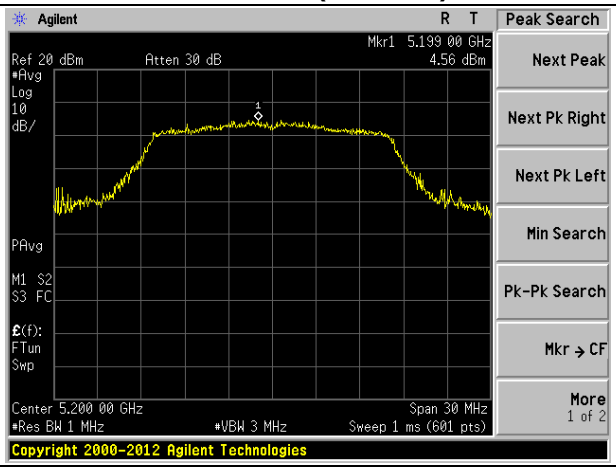
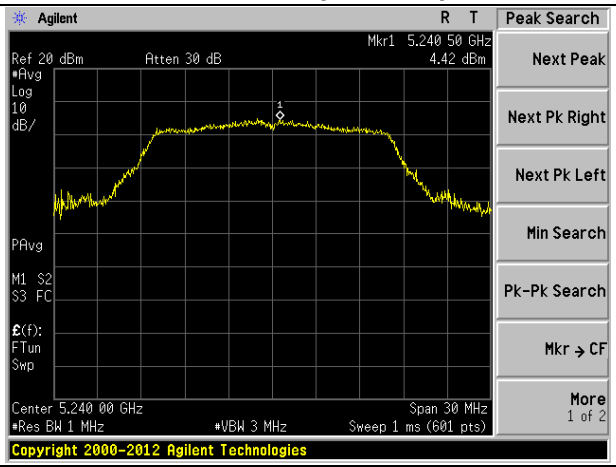
802.11n(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5190.00	0.26	0.11	0.37	11	Pass
46	5230.00	0.67	0.11	0.78	11	Pass

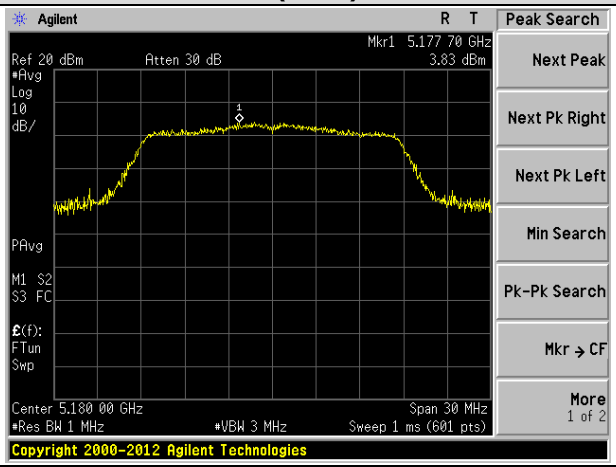
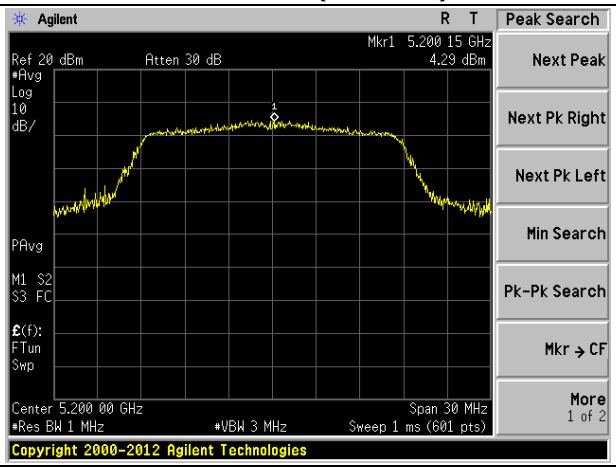
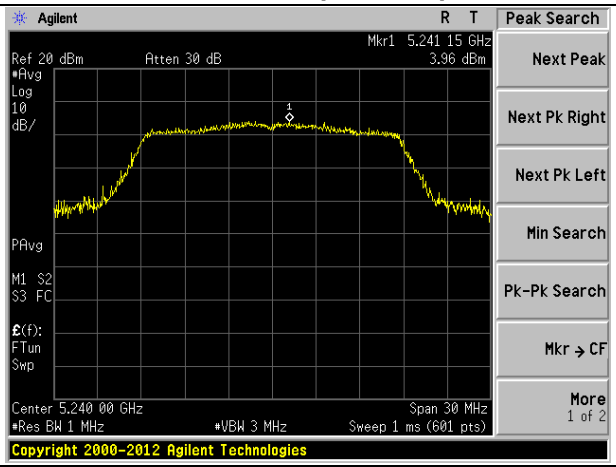
802.11ac(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5190.00	0.06	0.11	0.17	11	Pass
46	5230.00	0.43	0.11	0.54	11	Pass

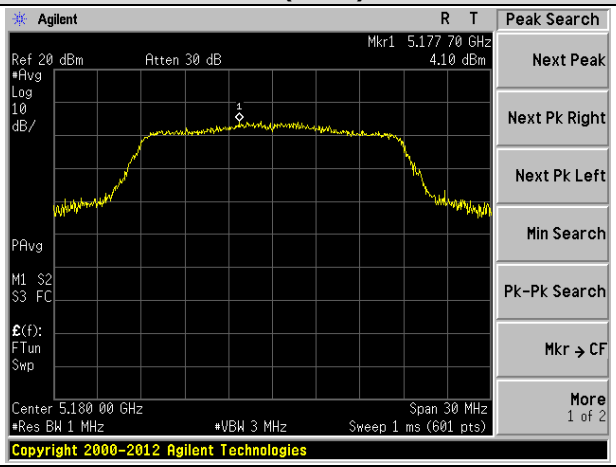
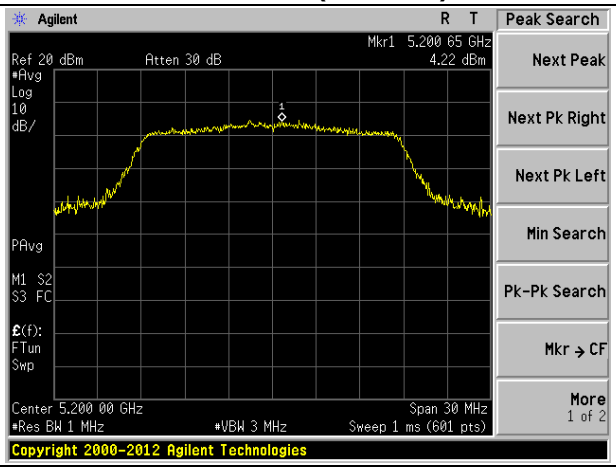
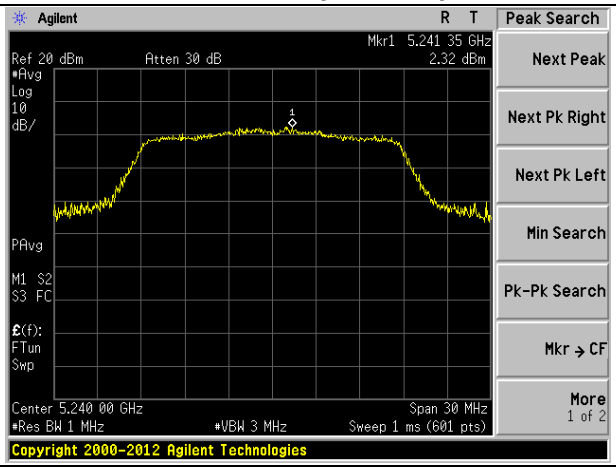
802.11ac(HT80) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5210.00	-2.67	0.21	-2.46	11	Pass

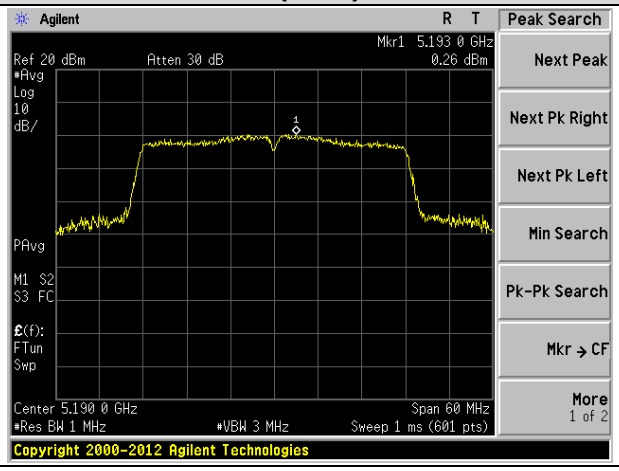
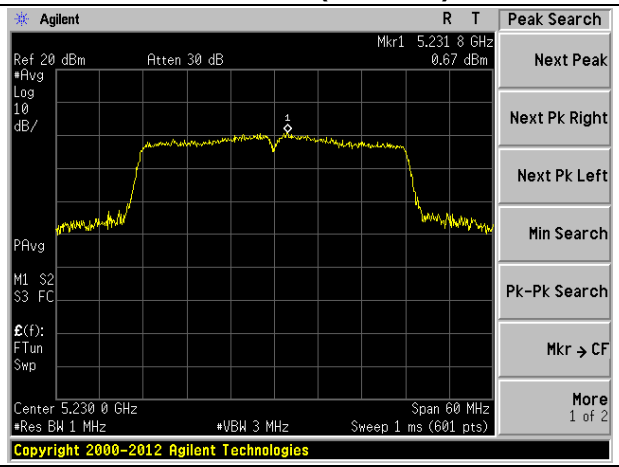
Note: Total PSD = Measured PSD + Duty Factor
Duty Factor = 10 log (1/Duty Cycle)

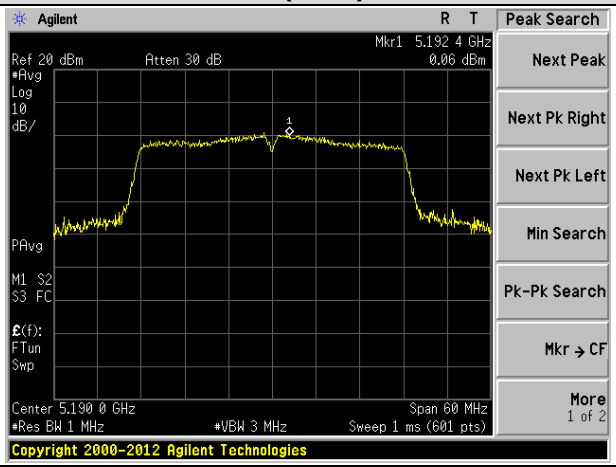
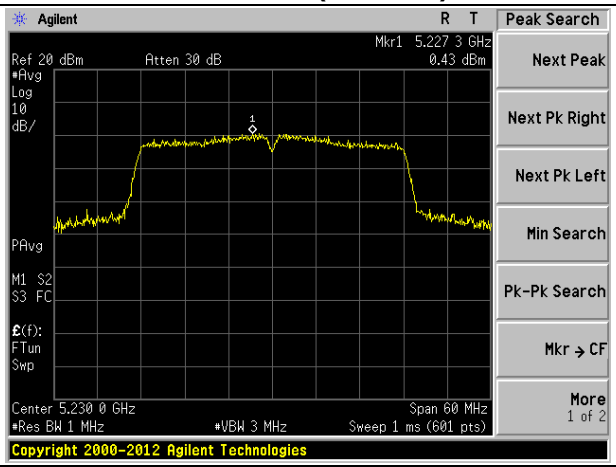
Test plots as followed:

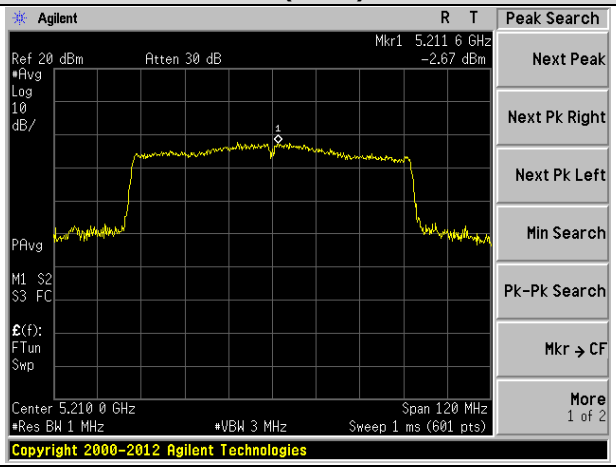
802.11a mode

Channel 36 (5180MHz)

Channel 40 (5200MHz)

Channel 48 (5240MHz)

802.11n(HT20) mode

Channel 36 (5180MHz)

Channel 40 (5200MHz)

Channel 48 (5240MHz)

802.11ac(HT20) mode

Channel 36 (5180MHz)

Channel 40 (5200MHz)

Channel 48 (5240MHz)

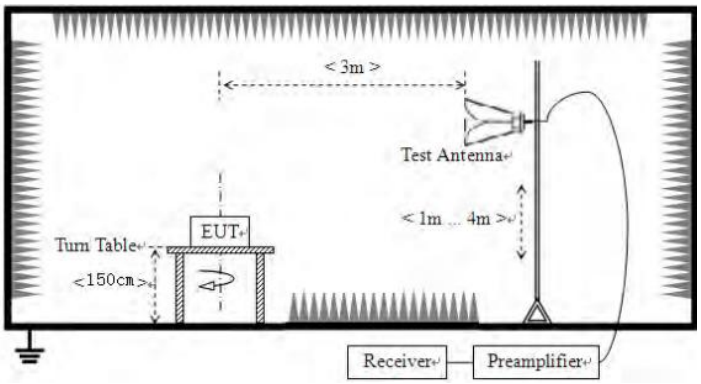
802.11n(HT40) mode

Channel 38 (5190MHz)

Channel 46 (5230MHz)

802.11ac(HT40) mode

Channel 38 (5190MHz)

Channel 46 (5230MHz)

802.11ac(HT80) mode

Channel 40 (5210MHz)

7.6 Band Edge

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 E Section 15.407 and 5.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>AV</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (dBuV/m @3m)</th><th>Remark</th></tr>
<tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr>
<tr><td>68.2</td><td>Peak Value</td></tr>
</table>
Undesirable emission limits:
(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.
(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.
(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.
</td></tr>
<tr><td>Test Procedure:</td><td>
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.
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.
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.
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 rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
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
</td></tr>
</table>

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

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.*
4. *According to KDB 789033 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:

Peak measurement

802.11a(HT20)					Lowest			
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	47.47	32.07	8.99	37.49	51.04	68.20	-17.16	Vertical
5150.00	42.39	32.07	8.99	37.49	45.96	54.00	-8.04	Vertical
5150.00	45.23	32.07	8.99	37.49	48.80	68.20	-19.40	Horizontal
5150.00	41.11	32.07	8.99	37.49	44.68	54.00	-9.32	Horizontal

802.11a(HT20)					Highest			
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
5350.00	47.13	31.75	9.29	37.20	50.97	68.20	-17.23	Vertical
5350.00	42.44	31.75	9.29	37.20	46.28	54.00	-7.72	Vertical
5350.00	45.29	31.75	9.29	37.20	49.13	68.20	-19.07	Horizontal
5350.00	41.68	31.75	9.29	37.20	45.52	54.00	-8.48	Horizontal

802.11n(HT20)								
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	46.56	32.07	8.99	37.49	50.13	68.20	-18.07	Vertical
5150.00	40.64	32.07	8.99	37.49	44.21	54.00	-9.79	Vertical
5150.00	46.02	32.07	8.99	37.49	49.59	68.20	-18.61	Horizontal
5150.00	42.44	32.07	8.99	37.49	46.01	54.00	-7.99	Horizontal

802.11n(HT20)					Highest			
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
5350.00	44.65	31.75	9.29	37.20	48.49	68.20	-19.71	Vertical
5350.00	37.96	31.75	9.29	37.20	41.80	54.00	-12.20	Vertical
5350.00	45.45	31.75	9.29	37.20	49.29	68.20	-18.91	Horizontal
5350.00	38.97	31.75	9.29	37.20	42.81	54.00	-11.19	Horizontal

802.11ac(HT20)					Lowest			
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	46.14	32.07	8.99	37.49	49.71	68.20	-18.49	Vertical
5150.00	41.51	32.07	8.99	37.49	45.08	54.00	-8.92	Vertical
5150.00	44.93	32.07	8.99	37.49	48.50	68.20	-19.70	Horizontal
5150.00	40.73	32.07	8.99	37.49	44.30	54.00	-9.70	Horizontal

802.11ac(HT20)					Highest			
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
5350.00	45.98	31.75	9.29	37.20	49.82	68.20	-18.38	Vertical
5350.00	37.04	31.75	9.29	37.20	40.88	54.00	-13.12	Vertical
5350.00	47.05	31.75	9.29	37.20	50.89	68.20	-17.31	Horizontal
5350.00	38.87	31.75	9.29	37.20	42.71	54.00	-11.29	Horizontal

802.11n(HT40)					Lowest			
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	46.86	32.07	8.99	37.49	50.43	68.20	-17.77	Vertical
5150.00	39.59	32.07	8.99	37.49	43.16	54.00	-10.84	Vertical
5150.00	47.46	32.07	8.99	37.49	51.03	68.20	-17.17	Horizontal
5150.00	39.62	32.07	8.99	37.49	43.19	54.00	-10.81	Horizontal

802.11n(HT40)					Highest			
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
5350.00	44.29	31.75	9.29	37.20	48.13	68.20	-20.07	Vertical
5350.00	39.14	31.75	9.29	37.20	42.98	54.00	-11.02	Vertical
5350.00	46.98	31.75	9.29	37.20	50.82	68.20	-17.38	Horizontal
5350.00	41.17	31.75	9.29	37.20	45.01	54.00	-8.99	Horizontal

802.11ac(HT40)					Lowest			
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	47.49	32.07	8.99	37.49	51.06	68.20	-17.14	Vertical
5150.00	40.63	32.07	8.99	37.49	44.20	54.00	-9.80	Vertical
5150.00	44.06	32.07	8.99	37.49	47.63	68.20	-20.57	Horizontal
5150.00	38.12	32.07	8.99	37.49	41.69	54.00	-12.31	Horizontal

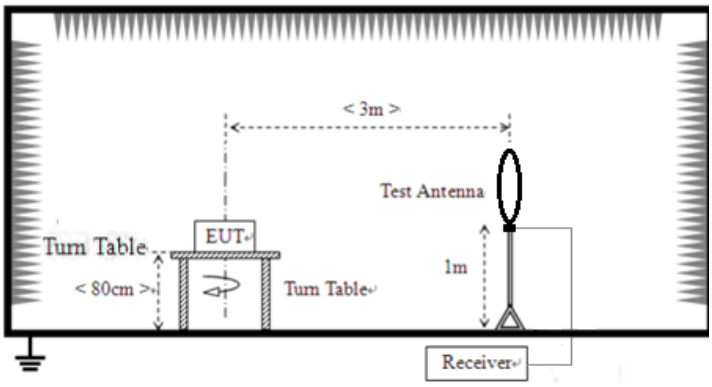
802.11ac(HT40)					Highest			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
5350.00	44.29	31.75	9.29	37.20	48.13	68.20	-20.07	Vertical
5350.00	39.97	31.75	9.29	37.20	43.81	54.00	-10.19	Vertical
5350.00	44.61	31.75	9.29	37.20	48.45	68.20	-19.75	Horizontal
5350.00	40.69	31.75	9.29	37.20	44.53	54.00	-9.47	Horizontal

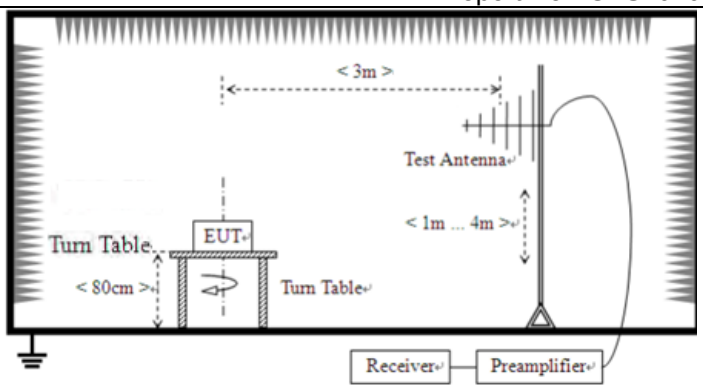
802.11ac(HT80)					Lowest			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
5150.00	44.42	32.07	8.99	37.49	47.99	68.20	-20.21	Vertical
5150.00	41.60	32.07	8.99	37.49	45.17	54.00	-8.83	Vertical
5150.00	46.55	32.07	8.99	37.49	50.12	68.20	-18.08	Horizontal
5150.00	41.66	32.07	8.99	37.49	45.23	54.00	-8.77	Horizontal

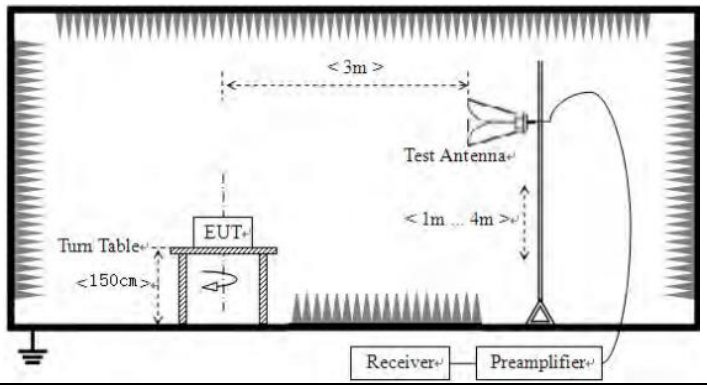
802.11ac(HT80)					Highest			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
5350.00	46.57	31.75	9.29	37.20	50.41	68.20	-17.79	Vertical
5350.00	40.13	31.75	9.29	37.20	43.97	54.00	-10.03	Vertical
5350.00	47.62	31.75	9.29	37.20	51.46	68.20	-16.74	Horizontal
5350.00	40.57	31.75	9.29	37.20	44.41	54.00	-9.59	Horizontal

7.7 Radiated Emission

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Test Frequency Range:</td><td>9kHz to 40GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Value</th></tr>
<tr><td>9kHz-150KHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>AV</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (uV/m)</th><th>Value</th><th>Measurement Distance</th></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(KHz)</td><td>QP</td><td>300m</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(KHz)</td><td>QP</td><td>300m</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>QP</td><td>30m</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>QP</td><td rowspan="6">3m</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>QP</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>QP</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>QP</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>500</td><td>Average</td></tr>
<tr><td>5000</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure:</td><td>Substitution method was performed to determine the actual ERP emission levels of the EUT.
The following test procedure as below:
1>.Below 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 rotable 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.
2>.Above 1GHz test procedure:</td></tr>
</table>

	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. 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. 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. 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. 5. Repeat step 4 for test frequency with the test antenna polarized horizontally. 6. Remove the transmitter and replace it with a substitution antenna 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. 8. Repeat step 7 with both antennas horizontally polarized for each test frequency. 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: EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) where: Pg is the generator output power into the substitution antenna.
Test setup:	For radiated emissions from 9kHz to 30MHz  For radiated emissions from 30MHz to1GHz

<table>
<tr><td></td><td colspan="6"> 

For radiated emissions above 1GHz

</td></tr>
<tr><td>Test Instruments:</td><td colspan="6">Refer to section 5.10 for details</td></tr>
<tr><td>Test mode:</td><td colspan="6">Refer to section 5.2 for details</td></tr>
<tr><td>Test environment:</td><td>Temp.:</td><td>25 °C</td><td>Humid.:</td><td>52%</td><td>Press.:</td><td>1012mbar</td></tr>
<tr><td>Test voltage:</td><td colspan="6">AC 120V, 60Hz</td></tr>
<tr><td>Test results:</td><td colspan="6">Pass</td></tr>
</table>

Remarks:

1. 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:

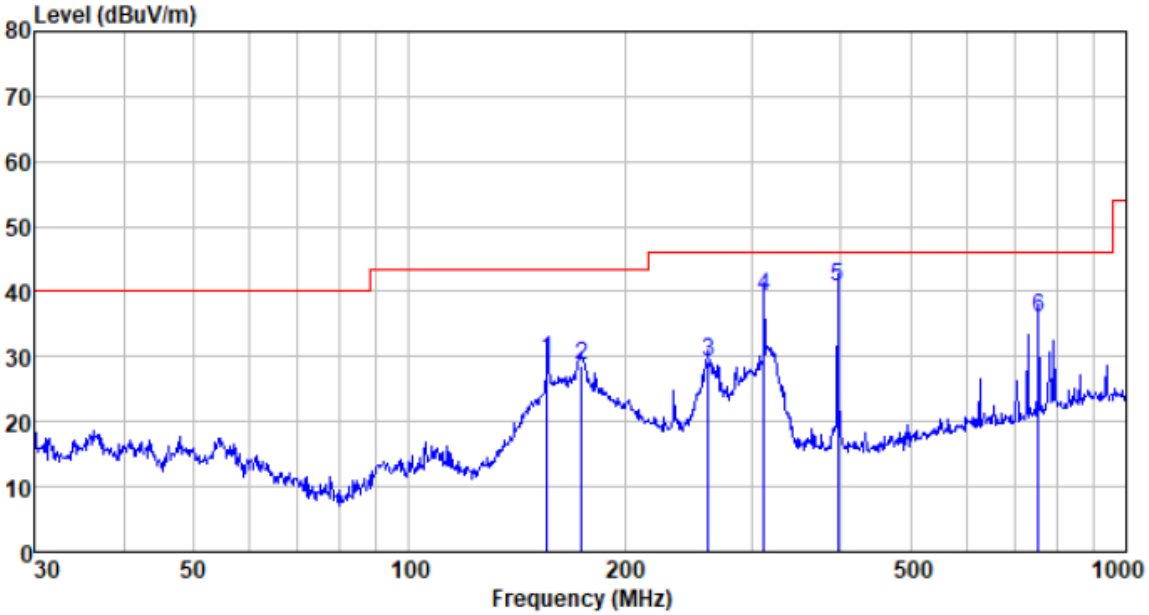
9 kHz ~ 30 MHz

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**

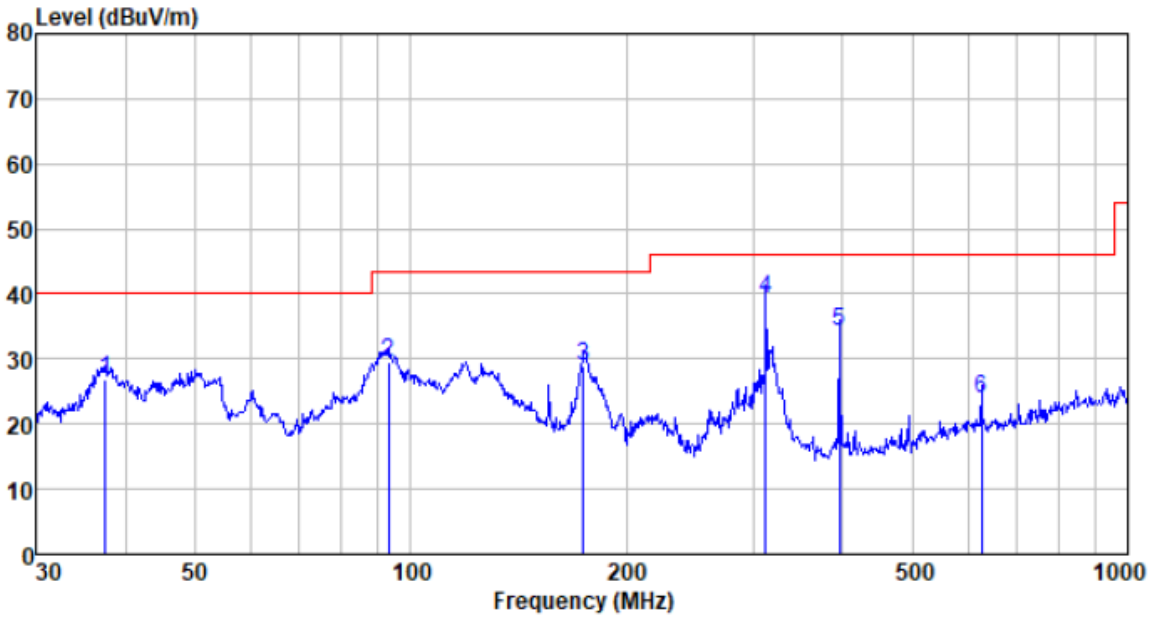
Pre-scan all test modes, found worst case at 802.11ac(HT80), and so only show the test result of 802.11ac(HT80)

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
155.910	57.08	8.05	1.60	37.11	29.62	43.50	-13.88	QP
173.814	55.52	8.63	1.71	37.21	28.65	43.50	-14.85	QP
261.058	51.79	12.51	2.18	37.39	29.09	46.00	-16.91	QP
312.179	60.52	13.85	2.42	37.43	39.36	46.00	-6.64	QP
396.242	60.32	15.25	2.83	37.52	40.88	46.00	-5.12	QP
755.387	48.62	20.66	4.29	37.62	35.95	46.00	-10.05	QP

Vertical:



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
37.548	50.00	11.80	0.64	35.52	26.92	40.00	-13.08	QP
93.113	53.92	11.18	1.14	36.66	29.58	43.50	-13.92	QP
173.814	55.90	8.63	1.71	37.21	29.03	43.50	-14.47	QP
312.179	60.38	13.85	2.42	37.43	39.22	46.00	-6.78	QP
396.242	53.56	15.25	2.83	37.52	34.12	46.00	-11.88	QP
625.078	38.22	19.52	3.82	37.56	24.00	46.00	-22.00	QP

Above 1GHz:

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

802.11 n(HT20) mode								
CH. No.	Antenna Pol.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB/m)	Measure Level(dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
36	H	10360.00	17.22	21.64	38.86	54(Note3)	-15.14	PK
	H	15540.00	15.98	21.80	37.78	54(Note3)	-16.22	PK
	V	10360.00	22.09	21.64	43.73	54(Note3)	-10.27	PK
	V	15540.00	16.99	21.80	38.79	54(Note3)	-15.21	PK
40	H	10400.00	23.05	21.67	44.72	54(Note3)	-9.28	PK
	H	15600.00	19.51	21.83	41.34	54(Note3)	-12.66	PK
	V	10400.00	19.61	21.67	41.28	54(Note3)	-12.72	PK
	V	15600.00	18.31	21.83	40.14	54(Note3)	-13.86	PK
48	H	10480.00	14.21	21.64	35.85	54(Note3)	-18.15	PK
	H	15720.00	15.67	22.16	37.83	54(Note3)	-16.17	PK
	V	10480.00	21.92	21.64	43.56	54(Note3)	-10.44	PK
	V	15720.00	24.01	22.16	46.17	54(Note3)	-7.83	PK

802.11n(HT40) mode								
CH. No.	Antenna Pol.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB/m)	Measure Level(dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
38	H	10380.00	23.04	21.64	44.68	54(Note3)	-9.32	PK
	H	15570.00	23.93	21.80	45.73	54(Note3)	-8.27	PK
	V	10380.00	16.08	21.64	37.72	54(Note3)	-16.28	PK
	V	15570.00	22.77	21.80	44.57	54(Note3)	-9.43	PK
46	H	10460.00	17.35	21.67	39.02	54(Note3)	-14.98	PK
	H	15690.00	13.78	21.83	35.61	54(Note3)	-18.39	PK
	V	10460.00	22.65	21.67	44.32	54(Note3)	-9.68	PK
	V	15690.00	13.73	21.83	35.56	54(Note3)	-18.44	PK

802.11ac(HT80) mode								
CH. No.	Antenna Pol.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB/m)	Measure Level(dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
42	H	10420.00	19.53	21.65	41.18	54(Note3)	-12.82	PK
	H	15630.00	18.95	21.81	40.76	54(Note3)	-13.24	PK
	V	10420.00	18.57	21.65	40.22	54(Note3)	-13.78	PK
	V	15630.00	25.11	21.81	46.92	54(Note3)	-7.08	PK

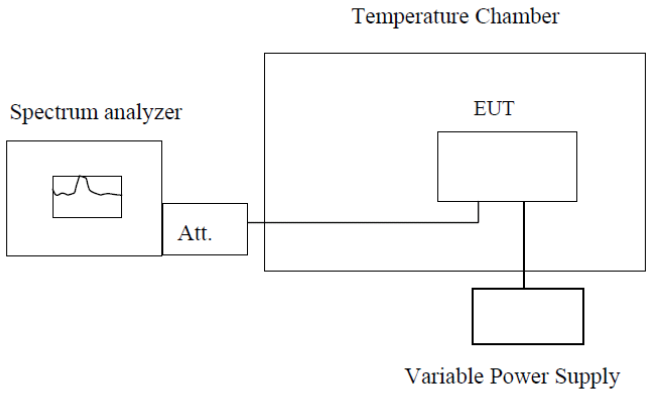
Notes:

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, 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

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

Measurement data:

Frequency stability versus Temp.					
Power Supply: DC3.7V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5180	5177.6748	5180.2668	5182.4755	5179.5691
	5200	5199.9969	5200.3496	5202.6428	5197.4299
	5220	5219.4227	5220.2496	5220.9357	5219.0295
	5240	5239.8304	5240.2670	5240.3790	5239.2909
-20	5180	5179.2372	5180.9753	5180.8825	5179.1260
	5200	5199.6633	5200.1498	5200.0934	5199.5683
	5220	5219.1607	5220.8366	5220.6648	5219.1205
	5240	5239.2938	5240.1649	5240.0116	5239.4059
-10	5180	5179.3053	5180.6353	5180.4447	5179.5885
	5200	5199.3373	5200.4834	5200.2524	5199.3044
	5220	5219.5091	5220.1028	5220.6699	5219.7917
	5240	5239.5480	5240.7787	5240.6865	5239.5626
0	5180	5179.4038	5180.6851	5180.7854	5179.0942
	5200	5199.7219	5200.1681	5200.2088	5199.3420
	5220	5219.3200	5220.3767	5220.2515	5219.4885
	5240	5239.6733	5240.7851	5240.4529	5239.6998
10	5180	5179.2750	5180.0629	5180.1435	5179.2558
	5200	5199.3854	5200.4457	5200.9440	5199.3519
	5220	5219.2596	5220.8806	5220.9397	5219.4162
	5240	5239.7139	5240.5926	5240.6409	5239.0005
20	5180	5179.0293	5180.9072	5180.2477	5179.7244
	5200	5199.3197	5200.1161	5200.9460	5199.2323
	5220	5219.4542	5220.1237	5220.9192	5219.8101
	5240	5239.0448	5240.8192	5240.6576	5239.3219
30	5180	5179.8279	5180.8585	5180.4519	5179.7660
	5200	5199.1226	5200.6819	5200.2334	5199.1831
	5220	5219.9827	5220.9854	5220.1175	5219.7472
	5240	5239.2745	5240.3161	5240.4761	5239.4978
40	5180	5179.5537	5180.3114	5180.1132	5179.1921
	5200	5199.5580	5200.6512	5200.5086	5199.0237
	5220	5219.8404	5220.4180	5220.9639	5219.6886
	5240	5239.0055	5240.6330	5240.5499	5239.0409
50	5180	5179.9106	5180.1295	5180.8014	5179.7021
	5200	5199.3388	5200.3508	5200.1223	5199.6908
	5220	5219.9971	5220.0244	5220.4119	5219.4927
	5240	5239.0809	5240.1777	5240.1467	5239.9847

Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
3.3	5180	5180.4217	5182.3568	5179.8517	5177.4131
	5200	5200.2330	5201.7658	5199.7021	5198.4415
	5220	5220.1659	5221.6232	5219.3686	5218.6781
	5240	5240.5936	5241.5059	5239.8535	5239.7885
3.7	5180	5180.8279	5181.3387	5179.5459	5179.8884
	5200	5200.0121	5201.3317	5199.3865	5199.6601
	5220	5220.5323	5221.9757	5219.9492	5219.4401
	5240	5240.8380	5240.6204	5239.5128	5239.9866
4.1	5180	5180.6196	5180.2673	5179.5581	5179.4783
	5200	5200.5687	5200.4096	5199.4207	5199.1175
	5220	5220.4283	5220.3935	5219.4496	5219.4983
	5240	5240.2979	5240.0000	5239.8579	5239.8118

Note: The worst case is FL=5176.0081MHz, FH=5240.9986MHz

8 Test Setup Photo

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

9 EUT Constructional Details

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

---END---