TEST REPORT

Applicant:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address of Applicant:	8th floor, Chuangyi Building, No. 3025 Nanhai Ave., Nanshan, Shenzhen, Guangdong 518060, China
Manufacturer:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address of Manufacturer:	8th floor, Chuangyi Building, No. 3025 Nanhai Ave., Nanshan, Shenzhen, Guangdong 518060, China
Factory:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address of Factory:	West 1st Floor, Building B, Hengchao Industrial Park, Tangtou North Ave., Bao'an, Shenzhen, Guangdong, China 518108

Equipment Under Test (EUT)

Product Name:	AUTO DIAGNOSTIC SYSTEM
Model No.:	F7S-W, F7S-D, F7S-G, F7S-E, F7S-R, F7S-M, F7S-P, F7S-N, E800, E801, E802, E803, E804, E805, E806, E807, E808, E809
Trade Mark:	FCAR
FCC ID:	2AJDD-IDIAGSF7S2
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of sample receipt:	March 27, 2020
Date of Test:	March 27, 2020-April 16, 2020
Date of report issue:	April 16, 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	*April 16, 2020*	*Original*

Prepared By: ***Date:*** *April 16, 2020*

Project Engineer

Check By: ***Date:*** *April 16, 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.:	F7S-W, F7S-D, F7S-G, F7S-E, F7S-R, F7S-M, F7S-P, F7S-N, E800, E801, E802, E803, E804, E805, E806, E807, E808, E809
Test Model No:	F7S-W
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are software version and model name for commercial purpose.	
Serial No.:	7W01-1611-117R-0603
Hardware version:	V01.10
Software version:	V18042311
Test sample(s) ID:	GTS202003000223-1
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:	Adapter: Model: GME24A-120200FXR Input: AC 100-240V, 50-60Hz, 0.8A Output: DC 12V, 2A DC 3.7V, 10000mAh, 37Wh Li-ion battery

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(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 AC120V 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

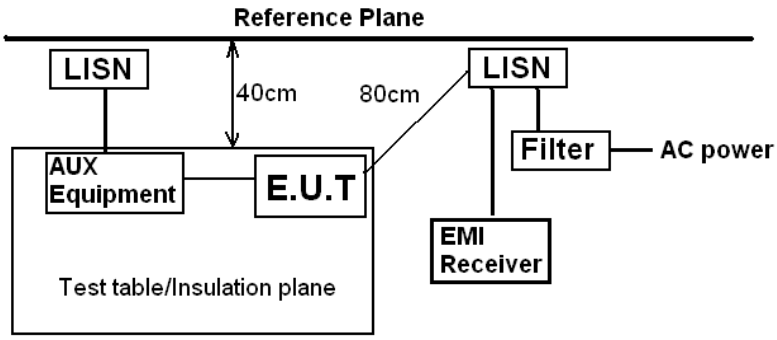
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020

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 .	

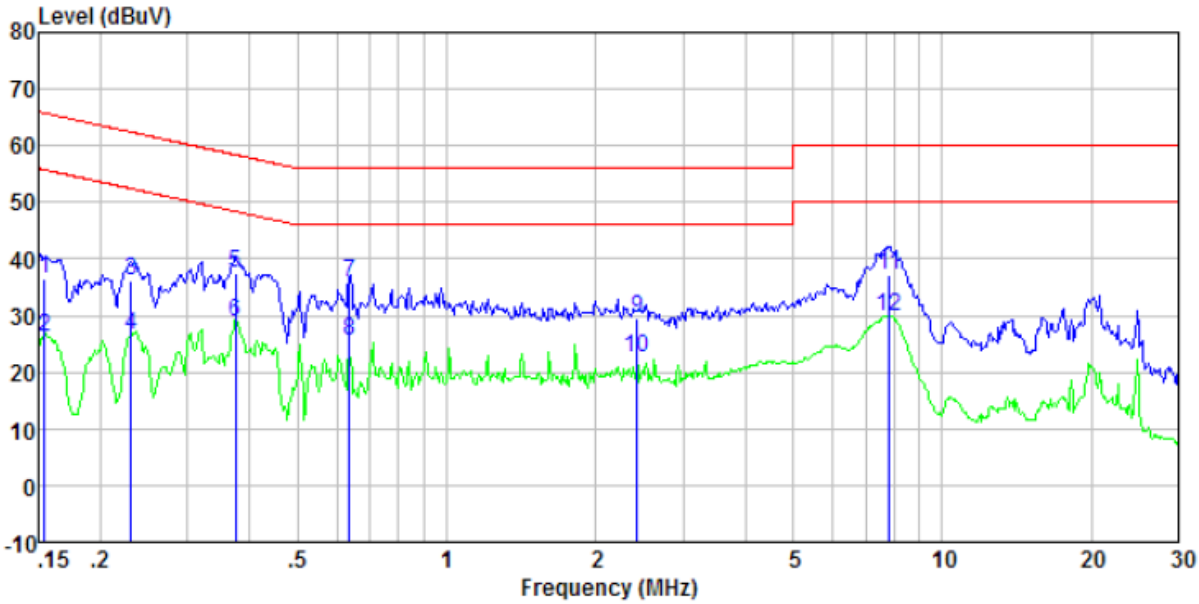
7.2 Conducted Emissions

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.

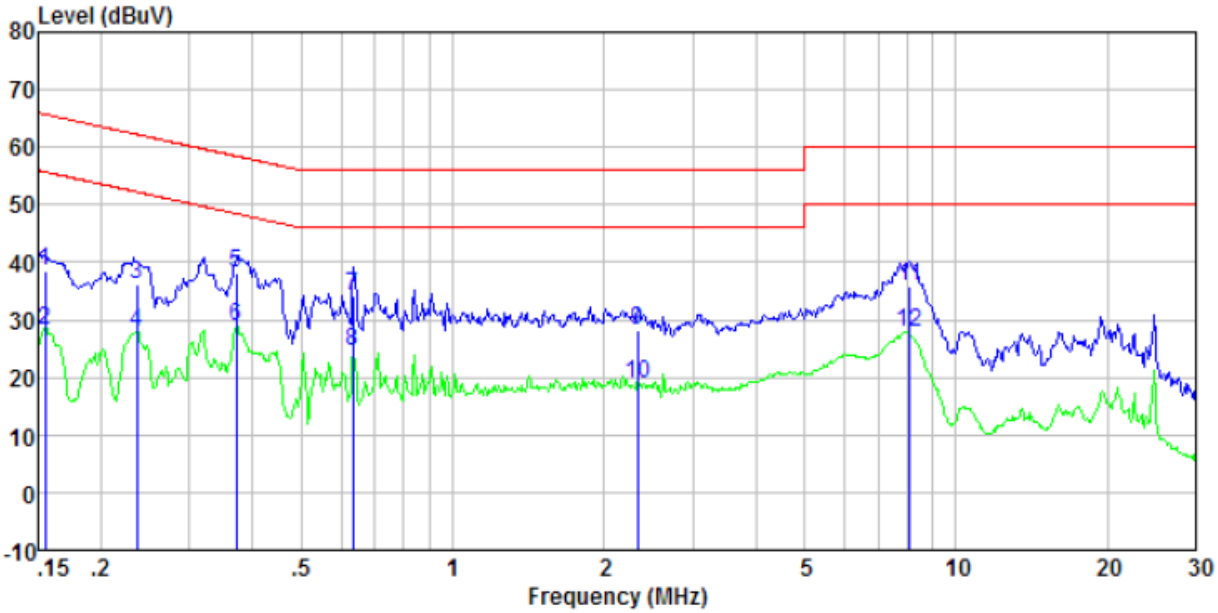
Measurement Data

Line:



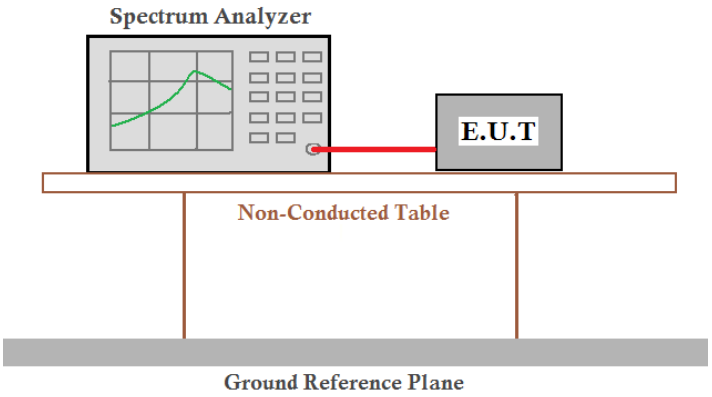
Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	16.09	20.40	0.07	36.56	65.78	-29.22	QP
0.15	5.74	20.40	0.07	26.21	55.78	-29.57	Average
0.23	15.71	20.40	0.11	36.22	62.44	-26.22	QP
0.23	5.91	20.40	0.11	26.42	52.44	-26.02	Average
0.38	17.07	20.36	0.10	37.53	58.39	-20.86	QP
0.38	8.46	20.36	0.10	28.92	48.39	-19.47	Average
0.64	15.32	20.27	0.12	35.71	56.00	-20.29	QP
0.64	5.26	20.27	0.12	25.65	46.00	-20.35	Average
2.42	9.25	20.20	0.18	29.63	56.00	-26.37	QP
2.42	2.32	20.20	0.18	22.70	46.00	-23.30	Average
7.81	16.90	20.20	0.19	37.29	60.00	-22.71	QP
7.81	9.36	20.20	0.19	29.75	50.00	-20.25	Average

Neutral:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	18.18	20.40	0.07	38.65	65.74	-27.09	QP
0.15	7.83	20.40	0.07	28.30	55.74	-27.44	Average
0.24	15.78	20.40	0.11	36.29	62.26	-25.97	QP
0.24	7.41	20.40	0.11	27.92	52.26	-24.34	Average
0.37	17.64	20.36	0.10	38.10	58.47	-20.37	QP
0.37	8.44	20.36	0.10	28.90	48.47	-19.57	Average
0.63	13.73	20.28	0.12	34.13	56.00	-21.87	QP
0.63	4.16	20.28	0.12	24.56	46.00	-21.44	Average
2.33	7.82	20.20	0.18	28.20	56.00	-27.80	QP
2.33	-1.59	20.20	0.18	18.79	46.00	-27.21	Average
8.11	15.55	20.20	0.19	35.94	60.00	-24.06	QP
8.11	7.43	20.20	0.19	27.82	50.00	-22.18	Average

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

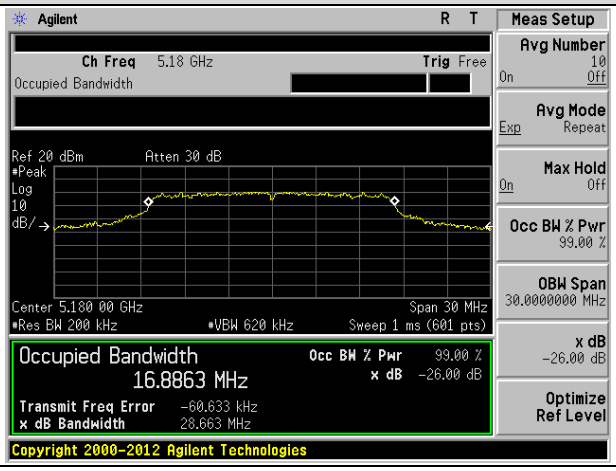
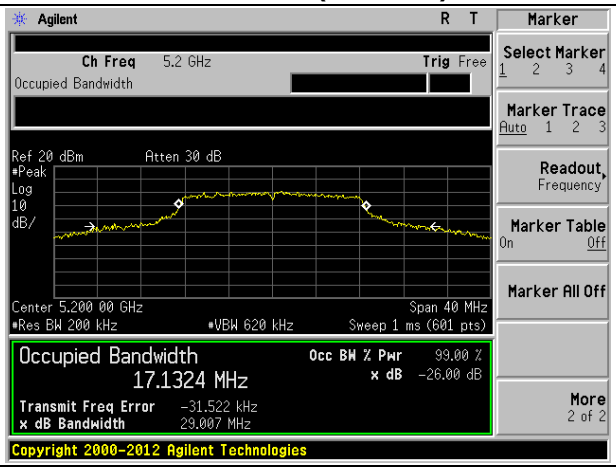
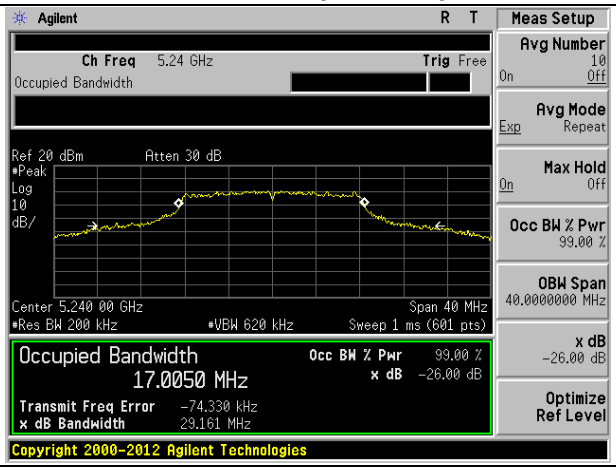
Measurement Data:

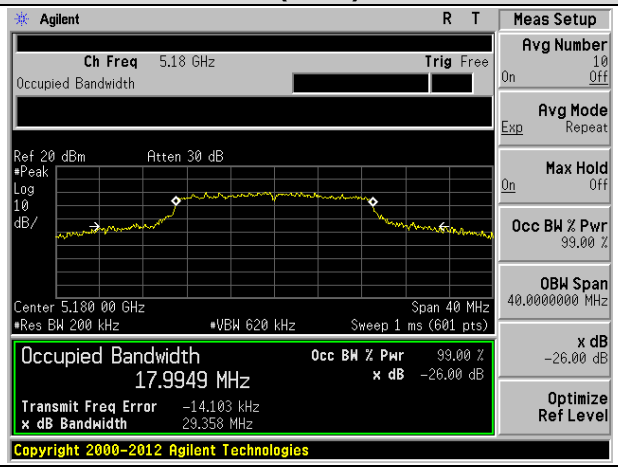
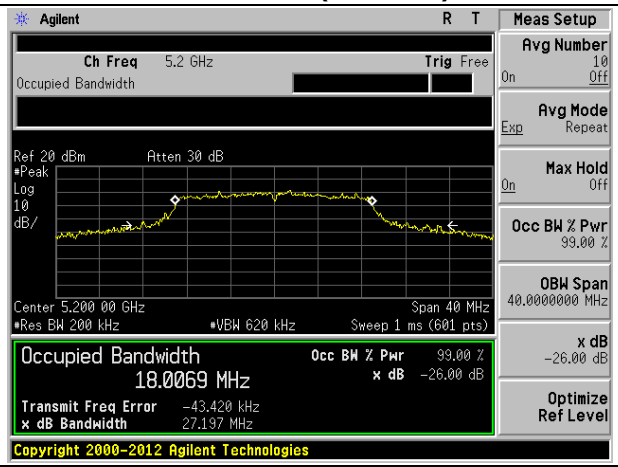
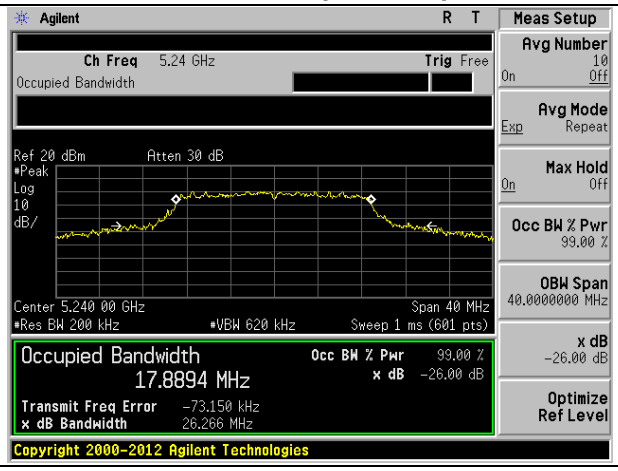
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT20)	802.11ac(HT20)	802.11a	802.11n(HT20)	802.11ac(HT20)
36	5180.00	16.8863	17.9949	17.9350	28.663	29.358	26.000
40	5200.00	17.1324	18.0069	17.9855	29.007	27.197	27.175
48	5240.00	17.0050	17.8894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

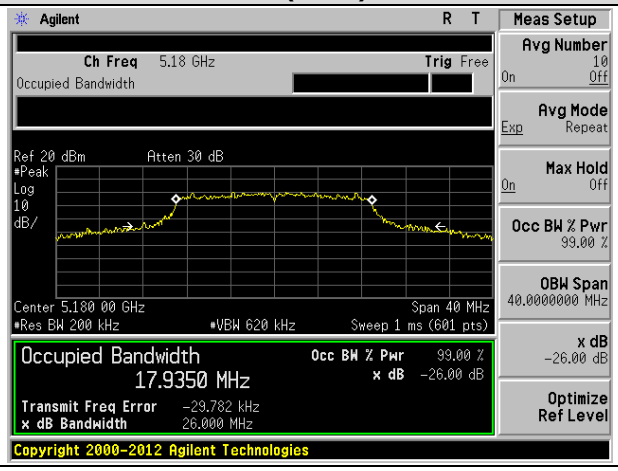
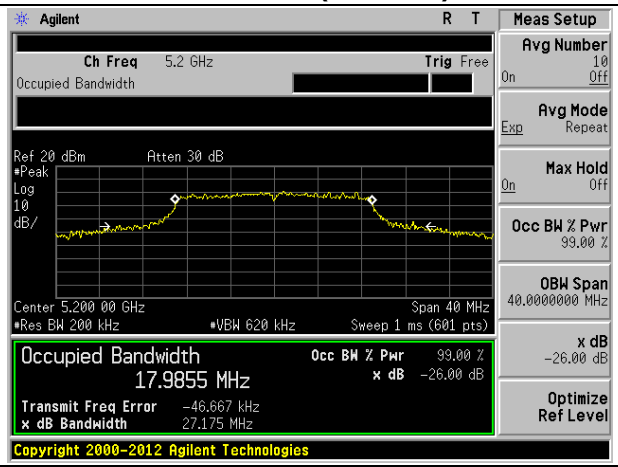
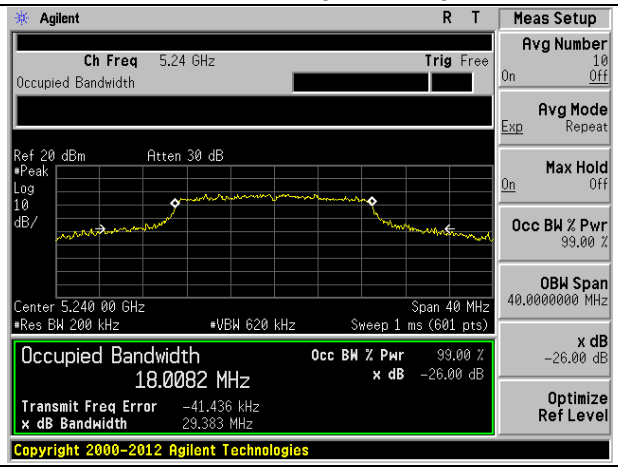
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
38	5190.00	36.0933	36.0933	49.255	46.534
46	5230.00	36.1166	36.1363	45.621	50.305

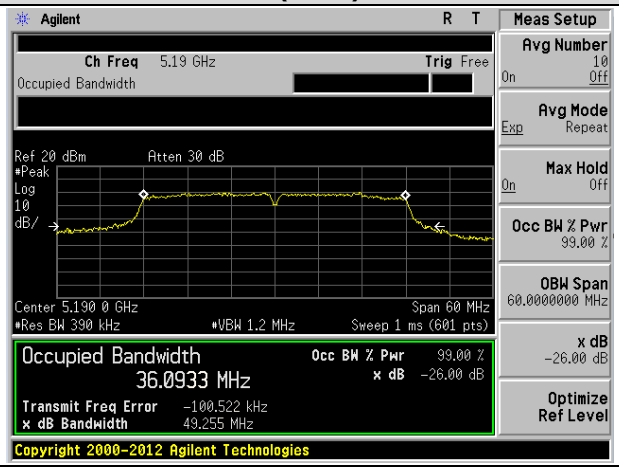
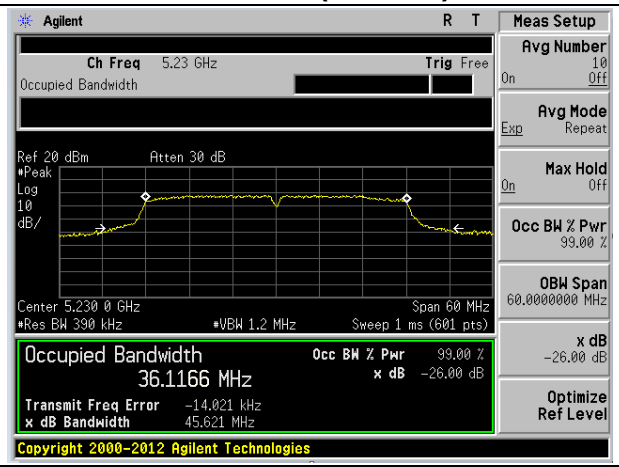
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Occupied Bandwidth (MHz)
		802.11ac(HT80)	802.11ac(HT80)
42	5210.00	75.0151	80.066

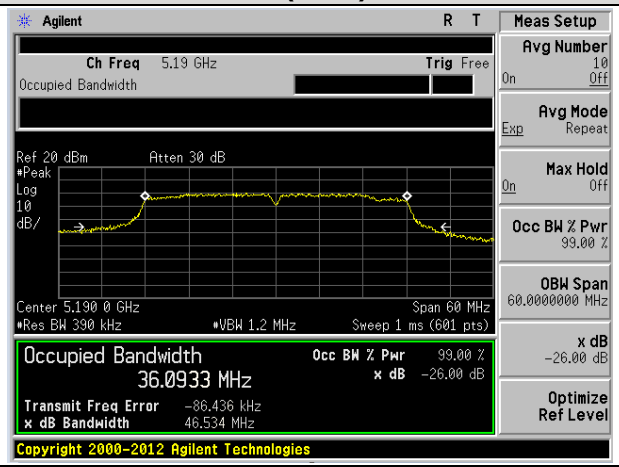
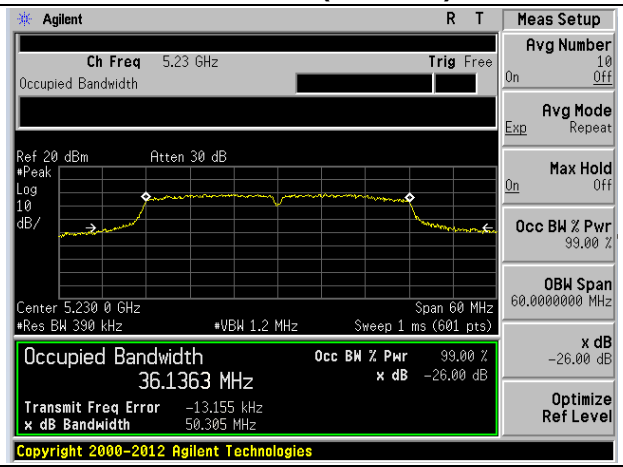
Test plots as followed:

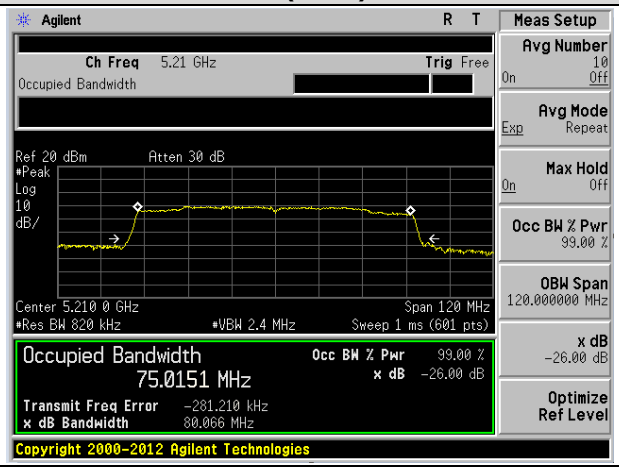
802.11a mode

Channel 36 (5180MHz)

Channel 40 (5200MHz)

Channel 48 (5240MHz)

802.11n(HT20) mode

Channel 36 (5180MHz)

Channel 40 (5200MHz)

Channel 48 (5240MHz)

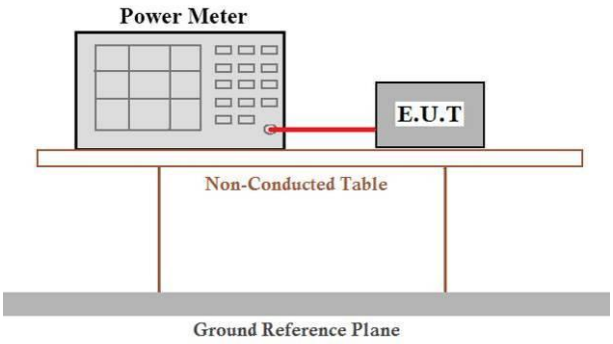
802.11ac(HT20) mode

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	12.02	0.05	12.07	23.98	Pass
40	5200.00	12.09	0.05	12.14	23.98	Pass
48	5240.00	12.05	0.05	12.10	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	10.42	0.05	10.47	23.98	Pass
40	5200.00	10.64	0.05	10.69	23.98	Pass
48	5240.00	10.28	0.05	10.33	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	10.77	0.05	10.82	23.98	Pass
40	5200.00	10.81	0.05	10.86	23.98	Pass
48	5240.00	10.70	0.05	10.75	23.98	Pass

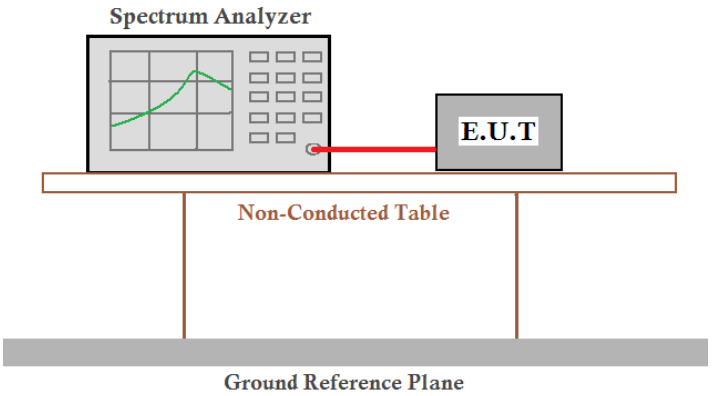
802.11n(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190.00	10.62	0.11	10.73	23.98	Pass
46	5230.00	10.86	0.11	10.97	23.98	Pass

802.11 ac(HT40) mode						
CH No.	Frequency (MHz)	Measured Power (dBm)	Duty Factor	Output Power (dBm)	Limit (dBm)	Result
38	5190.00	10.51	0.11	10.62	23.98	Pass
46	5230.00	10.42	0.11	10.53	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	10.17	0.21	10.38	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

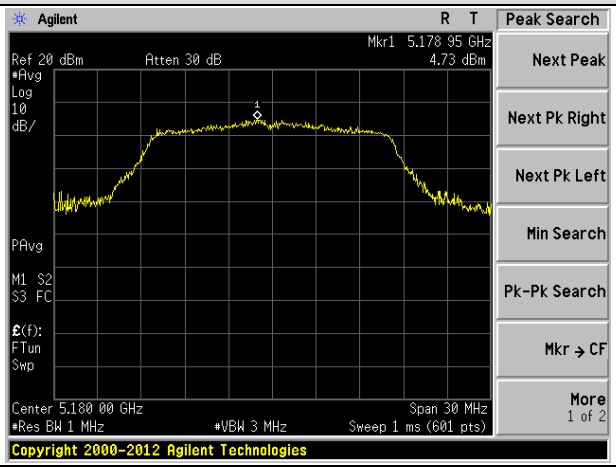
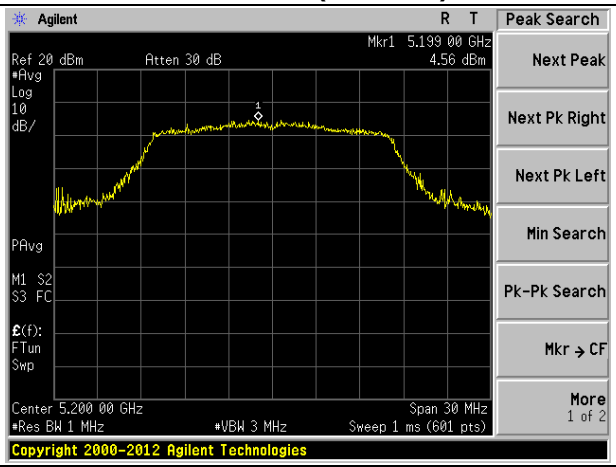
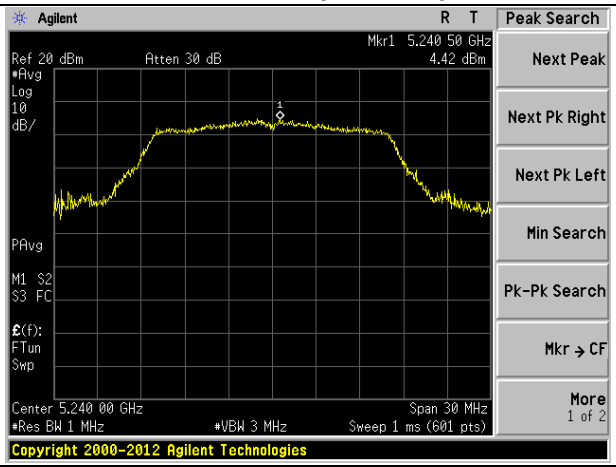
802.11n(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5190.00	0.26	0.11	0.37	11	Pass
46	5230.00	0.67	0.11	0.78	11	Pass

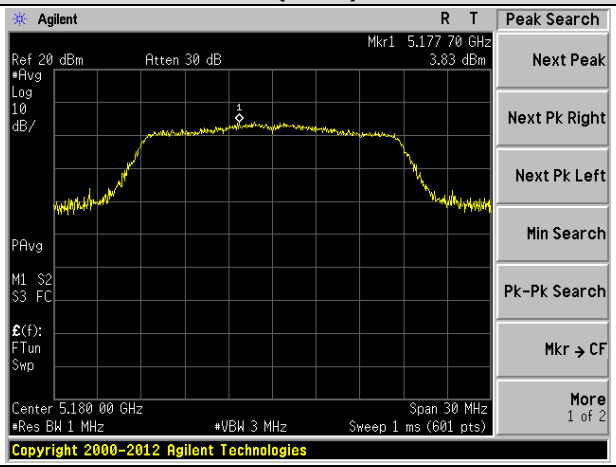
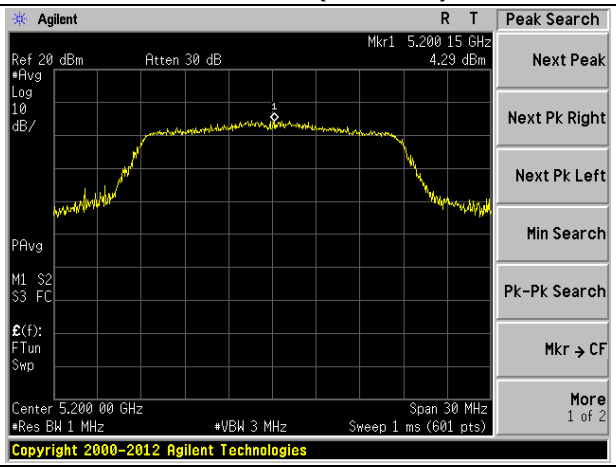
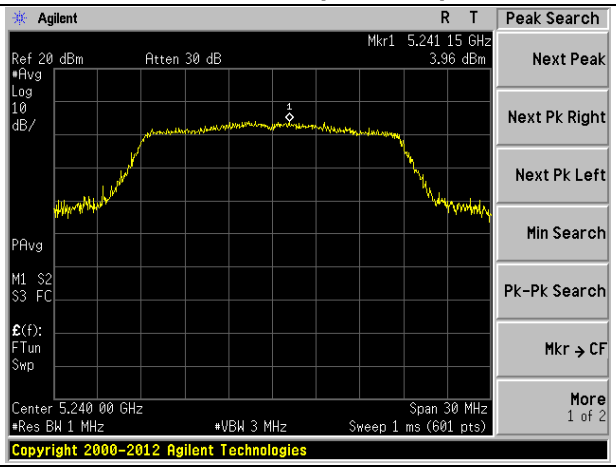
802.11ac(HT40) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5190.00	0.06	0.11	0.17	11	Pass
46	5230.00	0.43	0.11	0.54	11	Pass

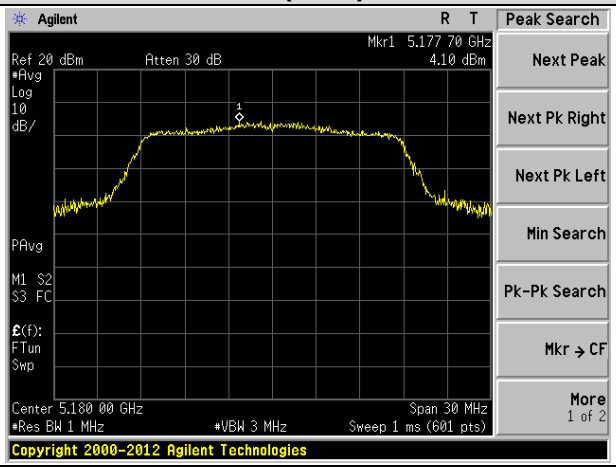
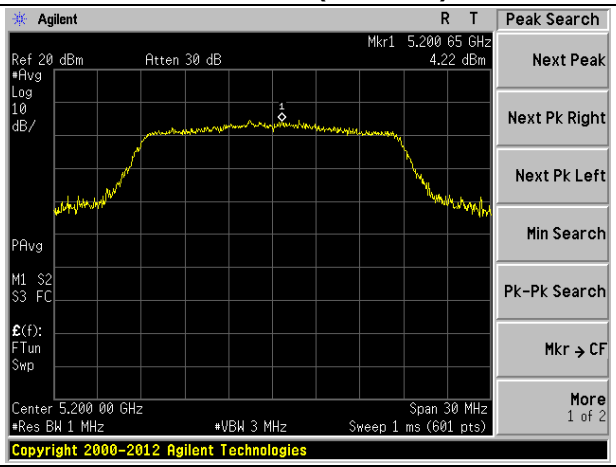
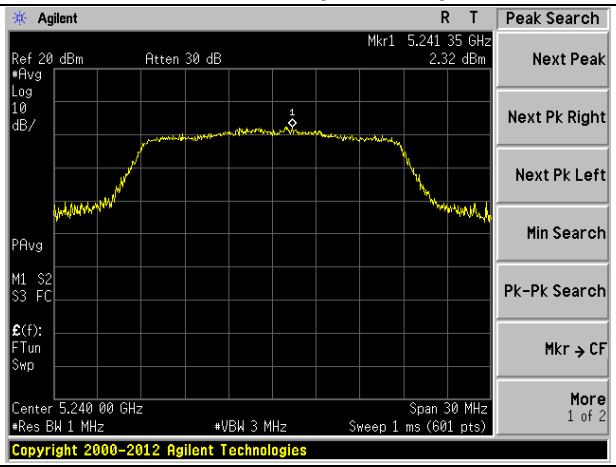
802.11ac(HT80) mode						
Channel No.	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Result
38	5210.00	-2.67	0.21	-2.46	11	Pass

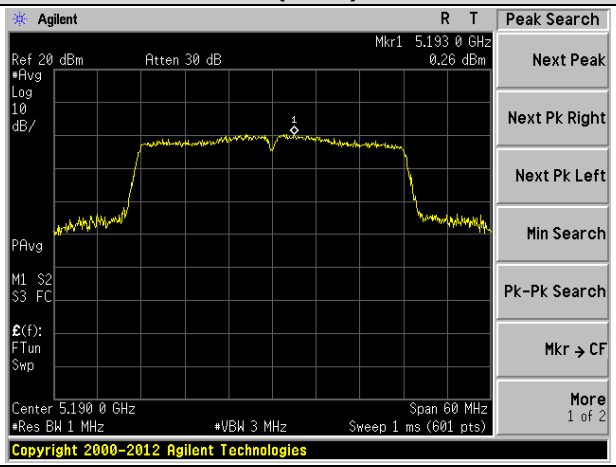
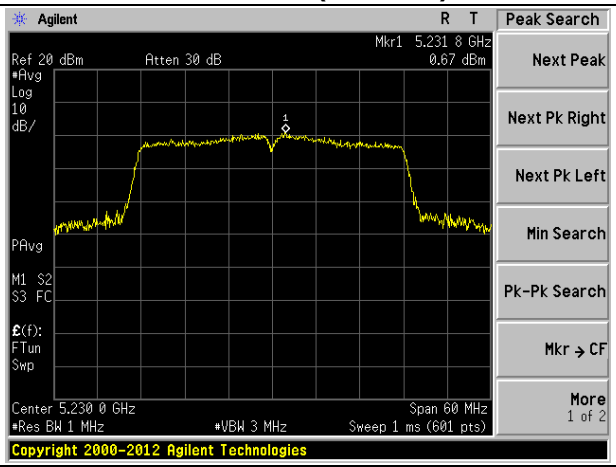
Note: Total PSD = Measured PSD + Duty Factor
Duty Factor = 10 log (1/Duty Cycle)

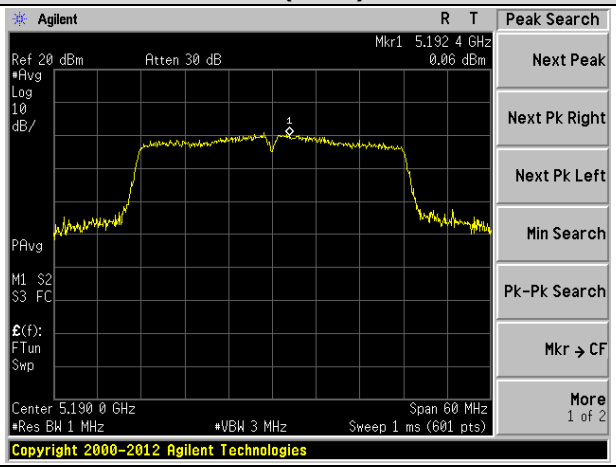
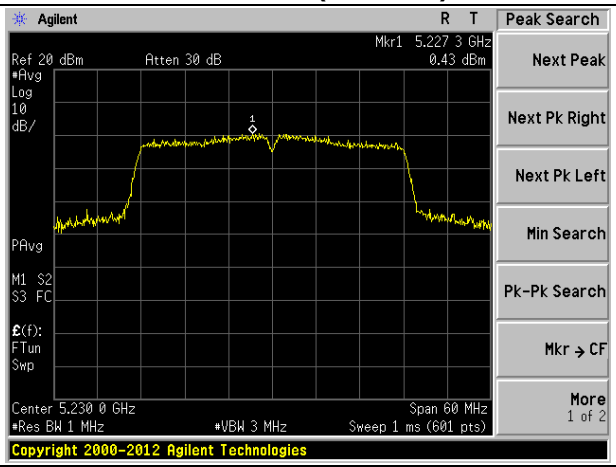
Test plots as followed:

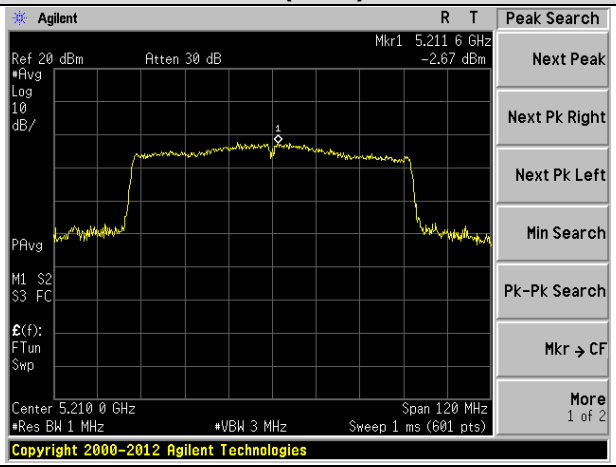
802.11a mode

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)

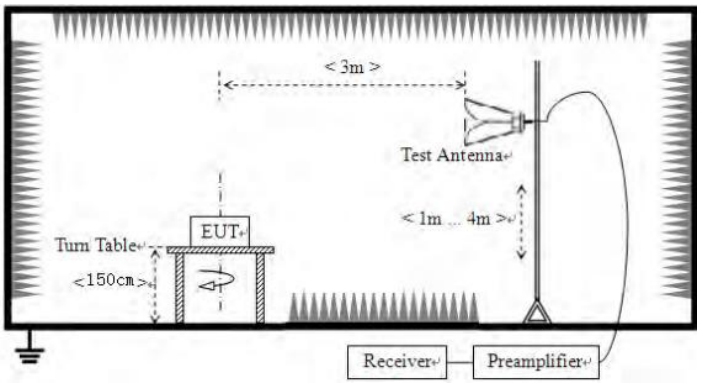
802.11n(HT40) mode

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	45.50	32.07	8.99	37.49	49.07	68.20	-19.13	Vertical
5150.00	42.00	32.07	8.99	37.49	45.57	54.00	-8.43	Vertical
5150.00	46.31	32.07	8.99	37.49	49.88	68.20	-18.32	Horizontal
5150.00	42.69	32.07	8.99	37.49	46.26	54.00	-7.74	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	45.26	31.75	9.29	37.20	49.10	68.20	-19.10	Vertical
5350.00	39.14	31.75	9.29	37.20	42.98	54.00	-11.02	Vertical
5350.00	45.75	31.75	9.29	37.20	49.59	68.20	-18.61	Horizontal
5350.00	42.76	31.75	9.29	37.20	46.60	54.00	-7.40	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	48.00	32.07	8.99	37.49	51.57	68.20	-16.63	Vertical
5150.00	40.27	32.07	8.99	37.49	43.84	54.00	-10.16	Vertical
5150.00	46.77	32.07	8.99	37.49	50.34	68.20	-17.86	Horizontal
5150.00	39.21	32.07	8.99	37.49	42.78	54.00	-11.22	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	46.38	31.75	9.29	37.20	50.22	68.20	-17.98	Vertical
5350.00	38.16	31.75	9.29	37.20	42.00	54.00	-12.00	Vertical
5350.00	44.53	31.75	9.29	37.20	48.37	68.20	-19.83	Horizontal
5350.00	42.73	31.75	9.29	37.20	46.57	54.00	-7.43	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	46.84	32.07	8.99	37.49	50.41	68.20	-17.79	Vertical
5150.00	40.99	32.07	8.99	37.49	44.56	54.00	-9.44	Vertical
5150.00	47.59	32.07	8.99	37.49	51.16	68.20	-17.04	Horizontal
5150.00	41.09	32.07	8.99	37.49	44.66	54.00	-9.34	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	46.22	31.75	9.29	37.20	50.06	68.20	-18.14	Vertical
5350.00	37.62	31.75	9.29	37.20	41.46	54.00	-12.54	Vertical
5350.00	44.99	31.75	9.29	37.20	48.83	68.20	-19.37	Horizontal
5350.00	39.68	31.75	9.29	37.20	43.52	54.00	-10.48	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	45.46	32.07	8.99	37.49	49.03	68.20	-19.17	Vertical
5150.00	39.12	32.07	8.99	37.49	42.69	54.00	-11.31	Vertical
5150.00	45.85	32.07	8.99	37.49	49.42	68.20	-18.78	Horizontal
5150.00	42.01	32.07	8.99	37.49	45.58	54.00	-8.42	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	45.95	31.75	9.29	37.20	49.79	68.20	-18.41	Vertical
5350.00	37.88	31.75	9.29	37.20	41.72	54.00	-12.28	Vertical
5350.00	47.55	31.75	9.29	37.20	51.39	68.20	-16.81	Horizontal
5350.00	38.78	31.75	9.29	37.20	42.62	54.00	-11.38	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	44.96	32.07	8.99	37.49	48.53	68.20	-19.67	Vertical
5150.00	41.69	32.07	8.99	37.49	45.26	54.00	-8.74	Vertical
5150.00	44.57	32.07	8.99	37.49	48.14	68.20	-20.06	Horizontal
5150.00	42.63	32.07	8.99	37.49	46.20	54.00	-7.80	Horizontal

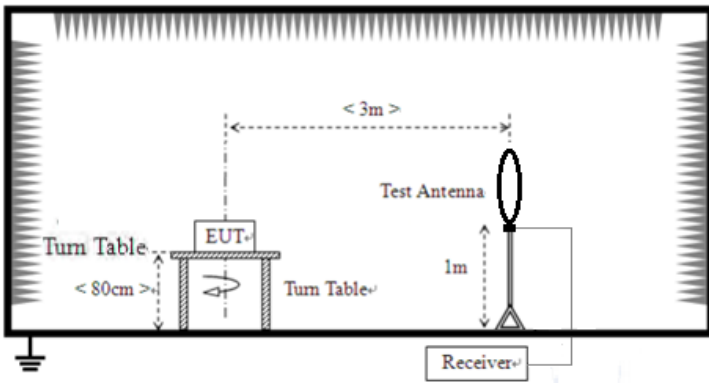
802.11ac(HT40)					Highest			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
5350.00	44.87	31.75	9.29	37.20	48.71	68.20	-19.49	Vertical
5350.00	40.28	31.75	9.29	37.20	44.12	54.00	-9.88	Vertical
5350.00	44.29	31.75	9.29	37.20	48.13	68.20	-20.07	Horizontal
5350.00	40.39	31.75	9.29	37.20	44.23	54.00	-9.77	Horizontal

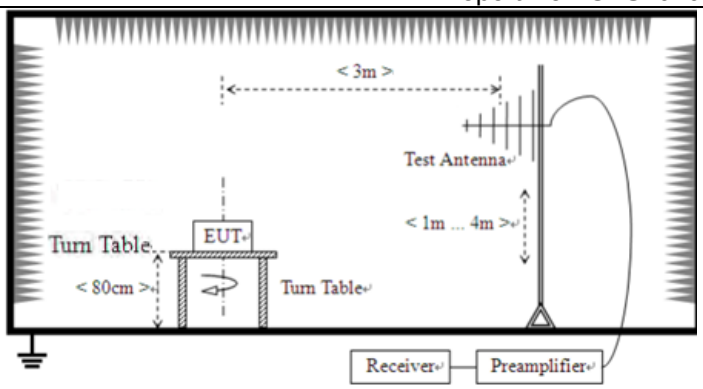
802.11ac(HT80)					Lowest			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
5150.00	47.62	32.07	8.99	37.49	51.19	68.20	-17.01	Vertical
5150.00	38.28	32.07	8.99	37.49	41.85	54.00	-12.15	Vertical
5150.00	45.43	32.07	8.99	37.49	49.00	68.20	-19.20	Horizontal
5150.00	41.23	32.07	8.99	37.49	44.80	54.00	-9.20	Horizontal

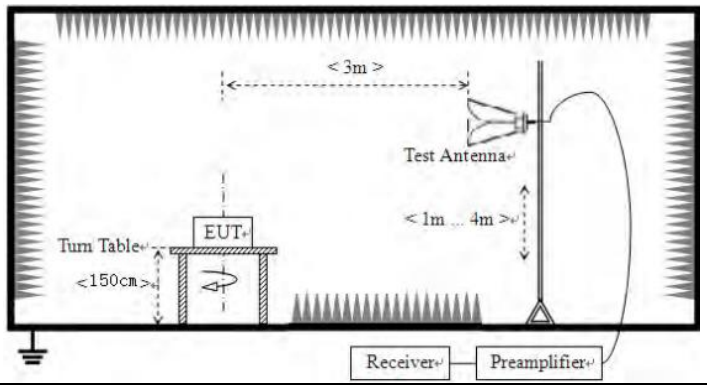
802.11ac(HT80)					Highest			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
5350.00	45.76	31.75	9.29	37.20	49.60	68.20	-18.60	Vertical
5350.00	38.13	31.75	9.29	37.20	41.97	54.00	-12.03	Vertical
5350.00	44.95	31.75	9.29	37.20	48.79	68.20	-19.41	Horizontal
5350.00	38.23	31.75	9.29	37.20	42.07	54.00	-11.93	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:

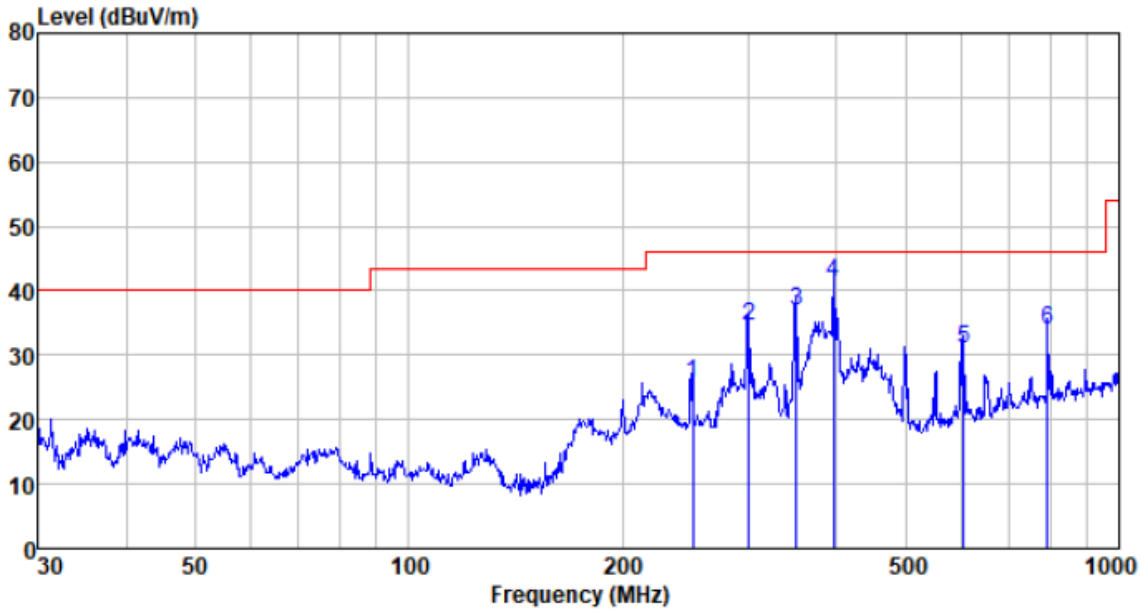
9 kHz ~ 30 MHz

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**

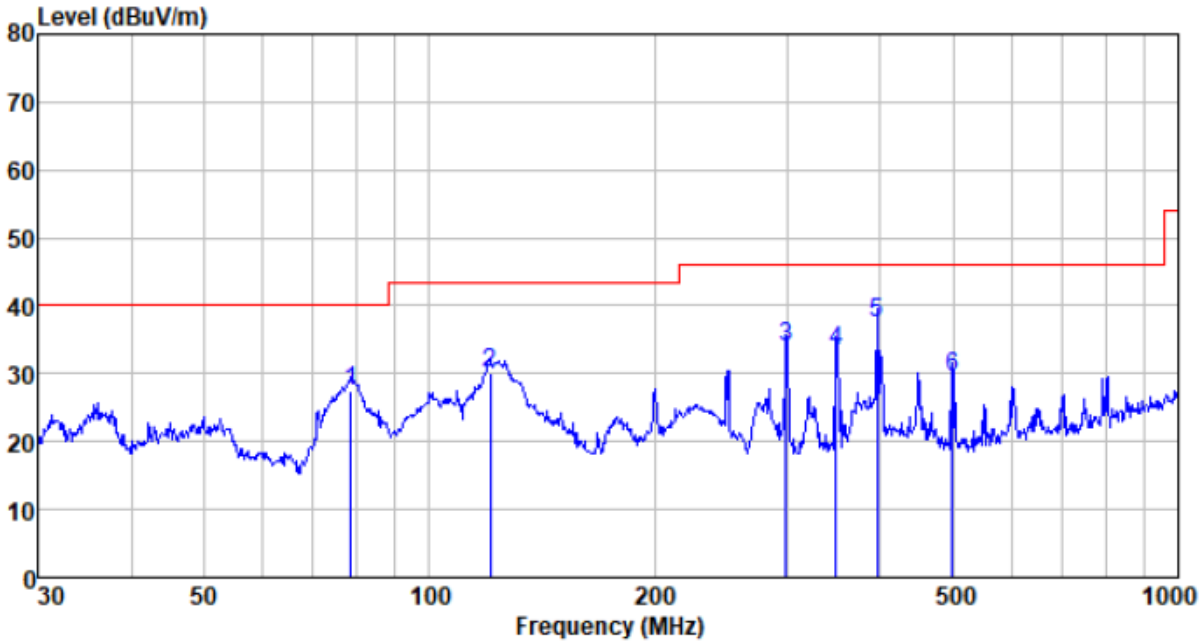
Pre-scan all test modes, found worst case at 802.11ac(HT20), and so only show the test result of 802.11ac(HT20)

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
251.180	48.86	12.18	2.13	37.38	25.79	46.00	-20.21	QP
301.422	56.07	13.63	2.37	37.42	34.65	46.00	-11.35	QP
351.708	57.22	14.56	2.63	37.48	36.93	46.00	-9.07	QP
396.242	60.77	15.25	2.83	37.52	41.33	46.00	-4.67	QP
603.539	45.42	19.50	3.73	37.54	31.11	46.00	-14.89	QP
793.396	45.72	21.28	4.43	37.62	33.81	46.00	-12.19	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	
78.689	55.52	7.41	1.02	36.53	27.42	40.00	-12.58	QP
120.699	56.27	9.42	1.37	36.89	30.17	43.50	-13.33	QP
299.316	55.31	13.60	2.35	37.42	33.84	46.00	-12.16	QP
349.250	53.73	14.50	2.62	37.47	33.38	46.00	-12.62	QP
396.242	56.91	15.25	2.83	37.52	37.47	46.00	-8.53	QP
499.425	46.41	17.30	3.30	37.51	29.50	46.00	-16.50	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	17.28	21.64	38.92	54(Note3)	-15.08	PK
	H	15540.00	16.04	21.80	37.84	54(Note3)	-16.16	PK
	V	10360.00	22.21	21.64	43.85	54(Note3)	-10.15	PK
	V	15540.00	17.08	21.80	38.88	54(Note3)	-15.12	PK
40	H	10400.00	23.14	21.67	44.81	54(Note3)	-9.19	PK
	H	15600.00	19.56	21.83	41.39	54(Note3)	-12.61	PK
	V	10400.00	19.70	21.67	41.37	54(Note3)	-12.63	PK
	V	15600.00	18.36	21.83	40.19	54(Note3)	-13.81	PK
48	H	10480.00	14.26	21.64	35.90	54(Note3)	-18.1	PK
	H	15720.00	15.73	22.16	37.89	54(Note3)	-16.11	PK
	V	10480.00	22.01	21.64	43.65	54(Note3)	-10.35	PK
	V	15720.00	24.10	22.16	46.26	54(Note3)	-7.74	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	23.10	21.64	44.74	54(Note3)	-9.26	PK
	H	15570.00	24.05	21.80	45.85	54(Note3)	-8.15	PK
	V	10380.00	16.17	21.64	37.81	54(Note3)	-16.19	PK
	V	15570.00	22.86	21.80	44.66	54(Note3)	-9.34	PK
46	H	10460.00	17.40	21.67	39.07	54(Note3)	-14.93	PK
	H	15690.00	13.87	21.83	35.70	54(Note3)	-18.30	PK
	V	10460.00	22.70	21.67	44.37	54(Note3)	-9.63	PK
	V	15690.00	13.78	21.83	35.61	54(Note3)	-18.39	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	19.65	21.65	41.30	54(Note3)	-12.70	PK
	H	15630.00	19.04	21.81	40.85	54(Note3)	-13.15	PK
	V	10420.00	18.66	21.65	40.31	54(Note3)	-13.69	PK
	V	15630.00	25.16	21.81	46.97	54(Note3)	-7.03	PK

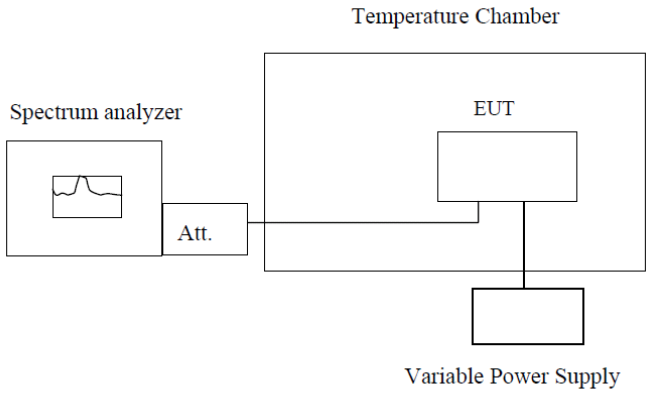
Notes:

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	5179.3289	5182.3084	5182.0465	5178.2142
	5200	5199.0853	5200.8855	5200.2872	5199.7363
	5220	5219.9953	5220.5395	5220.7845	5219.8277
	5240	5239.7379	5240.7604	5240.8027	5239.5986
-20	5180	5179.3428	5180.7841	5180.5711	5179.8685
	5200	5199.1684	5200.9779	5200.8929	5199.5939
	5220	5219.4664	5220.5473	5220.3829	5219.8463
	5240	5239.5001	5240.1177	5240.2882	5239.9218
-10	5180	5179.6932	5180.5558	5180.1690	5179.2353
	5200	5199.8115	5200.2603	5200.0922	5199.5809
	5220	5219.2276	5220.3636	5220.9061	5219.7499
	5240	5239.3214	5240.5866	5240.6064	5239.0060
0	5180	5179.7043	5180.1658	5180.9959	5179.3823
	5200	5199.6183	5200.1998	5200.3151	5199.5867
	5220	5219.1712	5220.7234	5220.3025	5219.7300
	5240	5239.9806	5240.9610	5240.3917	5239.5795
10	5180	5179.9464	5180.6466	5180.7276	5179.8591
	5200	5199.3460	5200.0448	5200.7182	5199.3362
	5220	5219.0096	5220.3358	5220.3271	5219.9437
	5240	5239.8674	5240.3730	5240.4620	5239.5630
20	5180	5179.6646	5180.9545	5180.1221	5179.7249
	5200	5199.6770	5200.6523	5200.5004	5199.1062
	5220	5219.6497	5220.7528	5220.6972	5219.9096
	5240	5239.1512	5240.3438	5240.9809	5239.9572
30	5180	5179.2601	5180.9955	5180.0588	5179.5414
	5200	5199.3633	5200.1115	5200.0160	5199.4001
	5220	5219.8589	5220.8687	5220.9954	5219.4068
	5240	5239.0148	5240.6983	5240.0974	5239.4346
40	5180	5179.3367	5180.4318	5180.3664	5179.2395
	5200	5199.2933	5200.0380	5200.7106	5199.1355
	5220	5219.5089	5220.9543	5220.5571	5219.5659
	5240	5239.5397	5240.3964	5240.8278	5239.6413
50	5180	5179.5451	5180.5127	5180.5242	5179.6447
	5200	5199.0046	5200.0294	5200.2941	5199.9297
	5220	5219.4679	5220.0437	5220.3719	5219.5009
	5240	5239.9715	5240.6867	5240.3423	5239.6554

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	5180.3597	5180.0538	5179.0022	5178.2710
	5200	5200.0955	5200.9617	5199.5915	5198.9700
	5220	5220.1444	5220.8600	5219.9211	5218.3890
	5240	5240.7057	5240.8907	5239.8314	5238.4959
3.7	5180	5180.5831	5180.2845	5179.2151	5179.8514
	5200	5200.3234	5200.6839	5199.5744	5199.6428
	5220	5220.6090	5220.1245	5219.8790	5219.4348
	5240	5240.1015	5240.8390	5239.6026	5239.3548
4.1	5180	5180.3158	5180.1466	5179.6740	5179.7478
	5200	5200.8297	5200.0851	5199.1306	5199.7503
	5220	5220.8746	5220.3932	5219.0764	5219.8290
	5240	5240.5508	5240.8589	5239.8852	5239.1767

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---