

# FCC Test Report

Product Name	WIFI Module
Model No	RF-WKD
FCC ID	VTV-RFWKD

Applicant	TSC Auto ID Technology Co., Ltd.
Address	9F., No. 95, Minquan Rd. Xindian Dist. New Taipei City 23141, Taiwan

Date of Receipt	Dec. 11, 2014
Issued Date	Jan. 16, 2015
Report No.	14C0347R-RFUSP05V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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# Test Report

Issued Date: Jan. 16, 2015

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**QuiTek**

Product Name	WIFI Module
Applicant	TSC Auto ID Technology Co., Ltd.
Address	9F., No. 95, Minquan Rd. Xindian Dist. New Taipei City 23141, Taiwan
Manufacturer	TSC Auto ID Technology Co., Ltd.
Model No.	RF-WKD
FCC ID.	VTV-RFWKD
EUT Rated Voltage	DC 3.3V
EUT Test Voltage	AC 120V/60Hz
Trade Name	TSC
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2014 ANSI C63.10: 2009 789033 D02 General UNII Test Procedures New Rules v01
Test Result	Complied

Documented By

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( Senior Adm. Specialist / Jinn Chen )

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( Assistant Engineer / Nova Chu )

Approved By

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*Vincent Lin*

( Director / Vincent Lin )

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	WIFI Module
Trade Name	TSC
FCC ID.	VTV-RFWKD
Model No.	RF-WKD
Frequency Range	802.11a/n-20MHz: 5180-5320MHz, 5500-5700MHz, 5745-5825MHz 802.11n-40MHz: 5190-5310, 5510-5670MHz, 5755-5795MHz
Number of Channels	802.11a/n-20MHz: 24; 802.11n-40MHz: 11
Data Rate	802.11a: 6 - 54Mbps 802.11n: up to 300Mbps
Channel Control	Auto
Type of Modulation	802.11a/n:OFDM, BPSK, QPSK, 16QAM, 64QAM
Antenna type	PIFA Antenna
Antenna Gain	Refer to the table "Antenna List"

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	TSC	P393B-70B140R(Main) P393B-70-82-L(Aux)	PIFA Antenna	3.2dBi For 5.15~5.25GHz 3.2dBi For 5.25~5.35GHz 3.0dBi For 5.47~5.725GHz 2.1dBi For 5.725~5.850GHz

Note: The antenna of EUT is conform to FCC 15.203

## 802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 40:	5200 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz
Channel 52:	5260 MHz	Channel 56:	5280 MHz	Channel 60:	5300 MHz	Channel 64:	5320 MHz
Channel 100:	5500 MHz	Channel 104:	5520 MHz	Channel 108:	5540 MHz	Channel 112:	5560 MHz
Channel 116:	5580 MHz	Channel 120:	5600 MHz	Channel 124:	5620 MHz	Channel 128:	5640 MHz
Channel 132:	5660 MHz	Channel 136:	5680 MHz	Channel 140:	5700 MHz	Channel 149:	5745 MHz
Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz	Channel 165:	5825 MHz

## 802.11n-40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz	Channel 54:	5270 MHz	Channel 62:	5310 MHz
Channel 102:	5510 MHz	Channel 110:	5550 MHz	Channel 118:	5590 MHz	Channel 126:	5630 MHz
Channel 134:	5670 MHz	Channel 151:	5755 MHz	Channel 159:	5795 MHz		

## Note:

1. This device is a WIFI Module with a built-in 802.11a/b/g/n WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report. (802.11a is chain A, 802.11n is chain A + chain B)
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps、802.11n-20BW is 14.4Mbps、802.11n-40BW is 30Mbps)
5. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit (802.11a-6Mbps) Mode 2: Transmit (802.11n-20BW 14.4Mbps) Mode 3: Transmit (802.11n-40BW 30Mbps)
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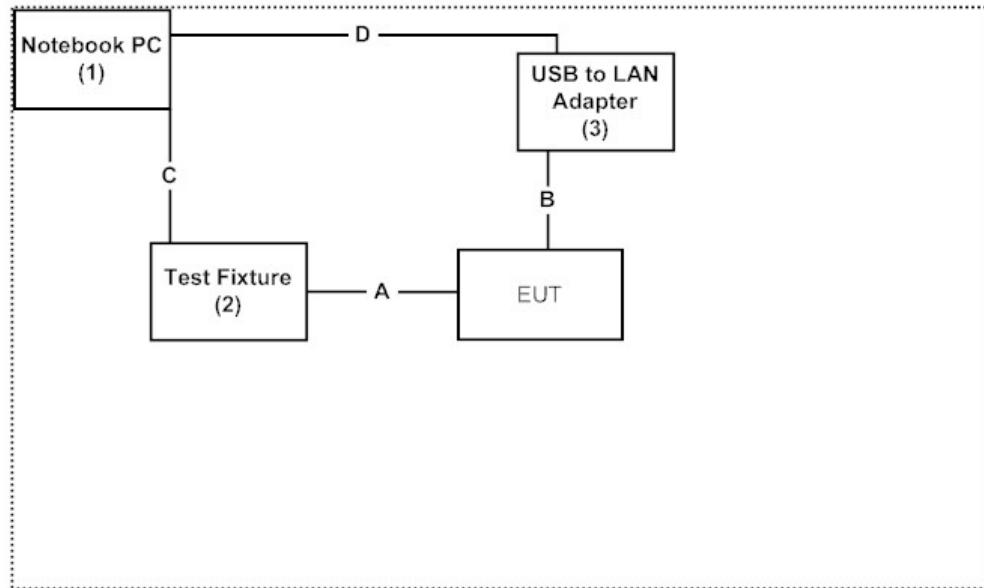
### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
(1) Notebook PC	DELL	PPT	N/A	Non-Shielded, 0.8m
(2) Test Fixture	Logitech	N/A	N/A	N/A
(3) USB to LAN Adapter	Aibo	CA-USB-RJ45B	G0X01JHA	N/A

Signal Cable Type		Signal cable Description
A	Sign Cable	Non-Shielded, 0.15m, with two ferrite cores bonded.
B	USB Cable	Non-Shielded, 0.2m
C	RS232 to USB Cable	Shielded, 1.7m
D	LAN Cable	Non-Shielded, 1.4m

### 1.4. Configuration of tested System



### 1.5. EUT Exercise Software

- (1) Setup the EUT as shown on Section 1.4
- (2) Execute “ART2-GUI 2.3” program on the Notebook PC.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Start the continuous transmission.
- (5) Verify that the EUT works properly.

## 1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : <http://tw.quietek.com/modules/myalbum/>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on  
Federal Communications Commission  
FCC Engineering Laboratory  
7435 Oakland Mills Road  
Columbia, MD 21046  
Registration Number: 92195

Site Name: Quietek Corporation  
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E-Mail : [service@quietek.com](mailto:service@quietek.com)

FCC Accreditation Number: TW1014

## 2. Conducted Emission

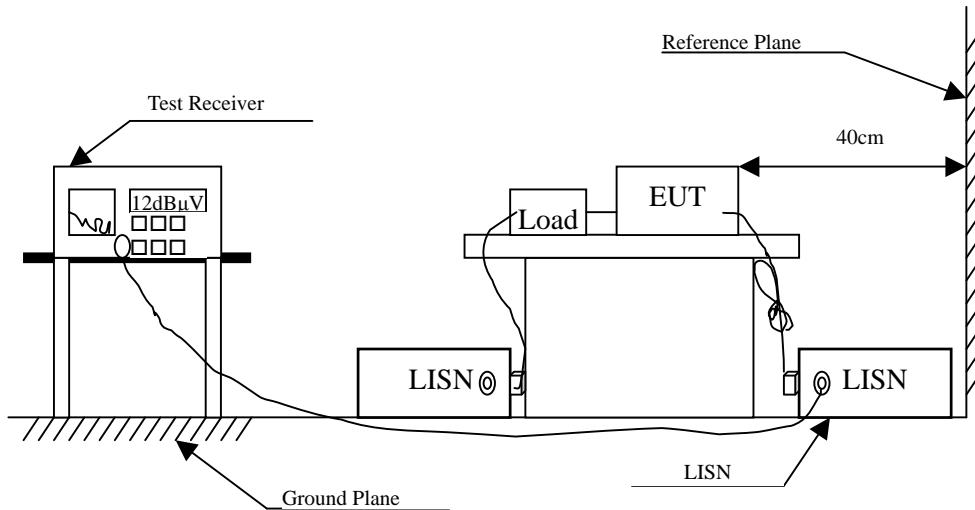
### 2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2014	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2014	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2014	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2014	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2014	
	No.1 Shielded Room				

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

### 2.2. Test Setup



### 2.3. Limits

<b>FCC Part 15 Subpart C Paragraph 15.207 (dB<math>\mu</math>V) Limit</b>		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

### 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /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 C63.10:2009 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.10, 2009; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

### 2.5. Uncertainty

± 2.26 dB

**2.6. Test Result of Conducted Emission**

Product : WIFI Module  
Test Item : Conducted Emission Test  
Power Line : Line 1  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.158	9.747	34.680	44.427	-21.344	65.771
0.170	9.743	32.900	42.644	-22.785	65.429
0.212	9.739	28.440	38.179	-26.050	64.229
0.341	9.745	26.150	35.895	-24.648	60.543
0.505	9.753	33.100	42.853	-13.147	56.000
0.654	9.759	26.900	36.659	-19.341	56.000
<b>Average</b>					
0.158	9.747	26.160	35.907	-19.864	55.771
0.170	9.743	13.810	23.554	-31.875	55.429
0.212	9.739	20.420	30.159	-24.070	54.229
0.341	9.745	10.480	20.225	-30.318	50.543
0.505	9.753	21.420	31.173	-14.827	46.000
0.654	9.759	19.760	29.519	-16.481	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : WIFI Module  
Test Item : Conducted Emission Test  
Power Line : Line 2  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.166	9.747	33.830	43.577	-21.966	65.543
0.212	9.749	28.580	38.329	-25.900	64.229
0.373	9.747	28.450	38.197	-21.432	59.629
0.498	9.752	32.750	42.502	-13.555	56.057
7.912	9.920	27.580	37.500	-22.500	60.000
21.162	10.105	25.840	35.945	-24.055	60.000
<b>Average</b>					
0.166	9.747	28.500	38.247	-17.296	55.543
0.212	9.749	24.300	34.049	-20.180	54.229
0.373	9.747	15.410	25.157	-24.472	49.629
0.498	9.752	28.740	38.492	-7.565	46.057
7.912	9.920	22.630	32.550	-17.450	50.000
21.162	10.105	20.160	30.265	-19.735	50.000

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : WIFI Module  
Test Item : Conducted Emission Test  
Power Line : Line 1  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5310MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.170	9.743	31.770	41.514	-23.915	65.429
0.216	9.739	29.070	38.809	-25.305	64.114
0.377	9.747	28.700	38.447	-21.067	59.514
0.525	9.753	32.540	42.293	-13.707	56.000
1.263	9.795	25.850	35.645	-20.355	56.000
21.170	10.065	26.590	36.655	-23.345	60.000
<b>Average</b>					
0.170	9.743	19.210	28.954	-26.475	55.429
0.216	9.739	21.590	31.329	-22.785	54.114
0.377	9.747	24.340	34.087	-15.427	49.514
0.525	9.753	24.320	34.073	-11.927	46.000
1.263	9.795	17.130	26.925	-19.075	46.000
21.170	10.065	19.700	29.765	-20.235	50.000

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : WIFI Module  
Test Item : Conducted Emission Test  
Power Line : Line 2  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5310MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.162	9.747	34.780	44.527	-21.130	65.657
0.314	9.744	26.650	36.394	-24.920	61.314
0.377	9.747	28.840	38.587	-20.927	59.514
0.529	9.754	32.420	42.174	-13.826	56.000
7.931	9.920	27.330	37.250	-22.750	60.000
21.205	10.105	25.610	35.715	-24.285	60.000
<b>Average</b>					
0.162	9.747	20.840	30.587	-25.070	55.657
0.314	9.744	20.460	30.204	-21.110	51.314
0.377	9.747	18.490	28.237	-21.277	49.514
0.529	9.754	24.910	34.664	-11.336	46.000
7.931	9.920	21.940	31.860	-18.140	50.000
21.205	10.105	20.650	30.755	-19.245	50.000

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : WIFI Module  
Test Item : Conducted Emission Test  
Power Line : Line 1  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5550MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.154	9.749	33.630	43.378	-22.508	65.886
0.205	9.739	27.460	37.199	-27.230	64.429
0.267	9.742	25.920	35.662	-26.995	62.657
0.490	9.752	32.790	42.542	-13.744	56.286
8.056	9.910	27.490	37.400	-22.600	60.000
21.369	10.068	27.010	37.078	-22.922	60.000
<b>Average</b>					
0.154	9.749	19.990	29.738	-26.148	55.886
0.205	9.739	15.970	25.709	-28.720	54.429
0.267	9.742	20.280	30.022	-22.635	52.657
0.490	9.752	27.340	37.092	-9.194	46.286
8.056	9.910	22.110	32.020	-17.980	50.000
21.369	10.068	20.660	30.728	-19.272	50.000

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : WIFI Module  
Test Item : Conducted Emission Test  
Power Line : Line 2  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5550MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.220	9.750	28.520	38.270	-25.730	64.000
0.267	9.752	25.860	35.612	-27.045	62.657
0.509	9.753	33.100	42.853	-13.147	56.000
1.283	9.798	26.680	36.478	-19.522	56.000
8.021	9.920	27.580	37.500	-22.500	60.000
20.986	10.101	26.380	36.481	-23.519	60.000
<b>Average</b>					
0.220	9.750	20.710	30.460	-23.540	54.000
0.267	9.752	18.890	28.642	-24.015	52.657
0.509	9.753	21.730	31.483	-14.517	46.000
1.283	9.798	17.030	26.828	-19.172	46.000
8.021	9.920	22.510	32.430	-17.570	50.000
20.986	10.101	23.120	33.221	-16.779	50.000

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : WIFI Module  
Test Item : Conducted Emission Test  
Power Line : Line 1  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.201	9.650	37.990	47.640	-16.903	64.543
0.650	9.675	32.410	42.085	-13.915	56.000
1.025	9.695	26.620	36.315	-19.685	56.000
1.345	9.723	27.420	37.143	-18.857	56.000
1.873	9.762	22.760	32.522	-23.478	56.000
2.994	9.803	20.580	30.383	-25.617	56.000
<b>Average</b>					
0.201	9.650	28.260	37.910	-16.633	54.543
0.650	9.675	24.180	33.855	-12.145	46.000
1.025	9.695	16.440	26.135	-19.865	46.000
1.345	9.723	15.860	25.583	-20.417	46.000
1.873	9.762	12.440	22.202	-23.798	46.000
2.994	9.803	11.650	21.453	-24.547	46.000

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : WIFI Module  
Test Item : Conducted Emission Test  
Power Line : Line 2  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.201	9.660	35.390	45.050	-19.493	64.543
0.279	9.665	24.350	34.015	-28.299	62.314
0.408	9.662	24.350	34.012	-24.617	58.629
0.611	9.673	33.820	43.493	-12.507	56.000
0.931	9.700	29.250	38.950	-17.050	56.000
1.962	9.767	25.580	35.347	-20.653	56.000
<b>Average</b>					
0.201	9.660	28.300	37.960	-16.583	54.543
0.279	9.665	13.910	23.575	-28.739	52.314
0.408	9.662	16.680	26.342	-22.287	48.629
0.611	9.673	24.680	34.353	-11.647	46.000
0.931	9.700	19.100	28.800	-17.200	46.000
1.962	9.767	16.470	26.237	-19.763	46.000

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

### 3. Maximun conducted output power

#### 3.1. Test Equipment

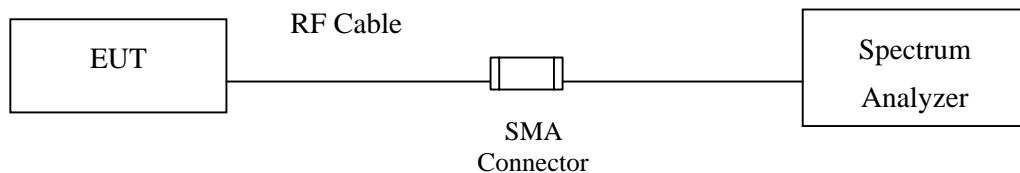
Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Power Meter	Anritsu	ML2495A/6K00003357	May, 2014
X Power Sensor	Anritsu	MA2411B/0738448	Jun., 2014
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

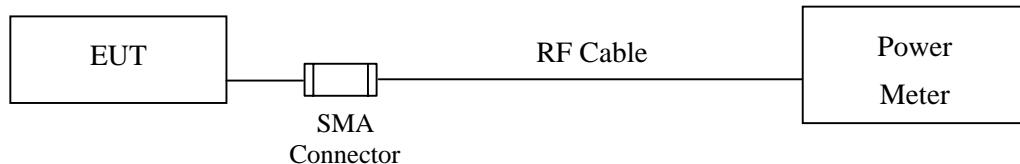
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.

#### 3.2. Test Setup

##### 26dBc Occupied Bandwidth



##### Conduction Power Measurement (for 802.11an)



### 3.3. Limits

#### 3.3.1. For the band 5.15-5.25 GHz,

- (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
- (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
- (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 3.3.2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 3.3.3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any

corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

### **3.4. Test Procedure**

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater than the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW $\leq$ 40MHz) Maximum conducted output power using KDB 789033 section E)3)b)  
Method PM-G (Measurement using a gated RF average power meter)

Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b)  
Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D01 section F) procedure is used for measurements.

### **3.5. Uncertainty**

$\pm 1.27$  dB

**3.6. Test Result of Maximum conducted output power**

Product : WIFI Module  
Test Item : Maximum conducted output power  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

**CHAIN A**

Cable loss=1dB		Maximum conducted output power									
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit	
		6	9	12	18	24	36	48	54		
		Measurement Level (dBm)									
36	5180	16.16	--	--	--	--	--	--	--	<24dBm	
44	5220	16.01	15.93	15.86	15.79	15.71	15.63	15.56	15.48	<24dBm	
48	5240	16.1	--	--	--	--	--	--	--	<24dBm	
52	5260	16.08	--	--	--	--	--	--	--	<24dBm	
60	5300	16.03	15.96	15.89	15.81	15.73	15.64	15.55	15.47	<24dBm	
64	5320	16.07	--	--	--	--	--	--	--	<24dBm	
100	5500	16.26	--	--	--	--	--	--	--	<24dBm	
116	5580	15.95	15.87	15.81	15.73	15.64	15.57	15.46	15.38	<24dBm	
140	5700	16.07	--	--	--	--	--	--	--	<24dBm	
149	5745	16.13	--	--	--	--	--	--	--	<30dBm	
157	5785	15.95	15.88	15.81	15.73	15.64	15.56	15.49	15.41	<30dBm	
165	5825	16.05	--	--	--	--	--	--	--	<30dBm	

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

**CHAIN B**

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		6	9	12	18	24	36	48	54	
		Measurement Level (dBm)								
36	5180	15.15	--	--	--	--	--	--	--	<24dBm
44	5220	15.34	15.28	15.21	15.14	15.05	14.96	14.88	14.8	<24dBm
48	5240	15.29	--	--	--	--	--	--	--	<24dBm
52	5260	15.57	--	--	--	--	--	--	--	<24dBm
60	5300	15.41	15.33	15.24	15.17	15.11	15.02	14.95	14.88	<24dBm
64	5320	15.33	--	--	--	--	--	--	--	<24dBm
100	5500	15.47	--	--	--	--	--	--	--	<24dBm
116	5580	15.44	15.36	15.28	15.21	15.13	15.04	14.96	14.89	<24dBm
140	5700	15.29	--	--	--	--	--	--	--	<24dBm
149	5745	15.43	--	--	--	--	--	--	--	<30dBm
157	5785	15.17	15.09	15.01	14.93	14.85	14.78	14.71	14.63	<30dBm
165	5825	15.37	--	--	--	--	--	--	--	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

**Maximum conducted output power Measurement:****CHAIN A**

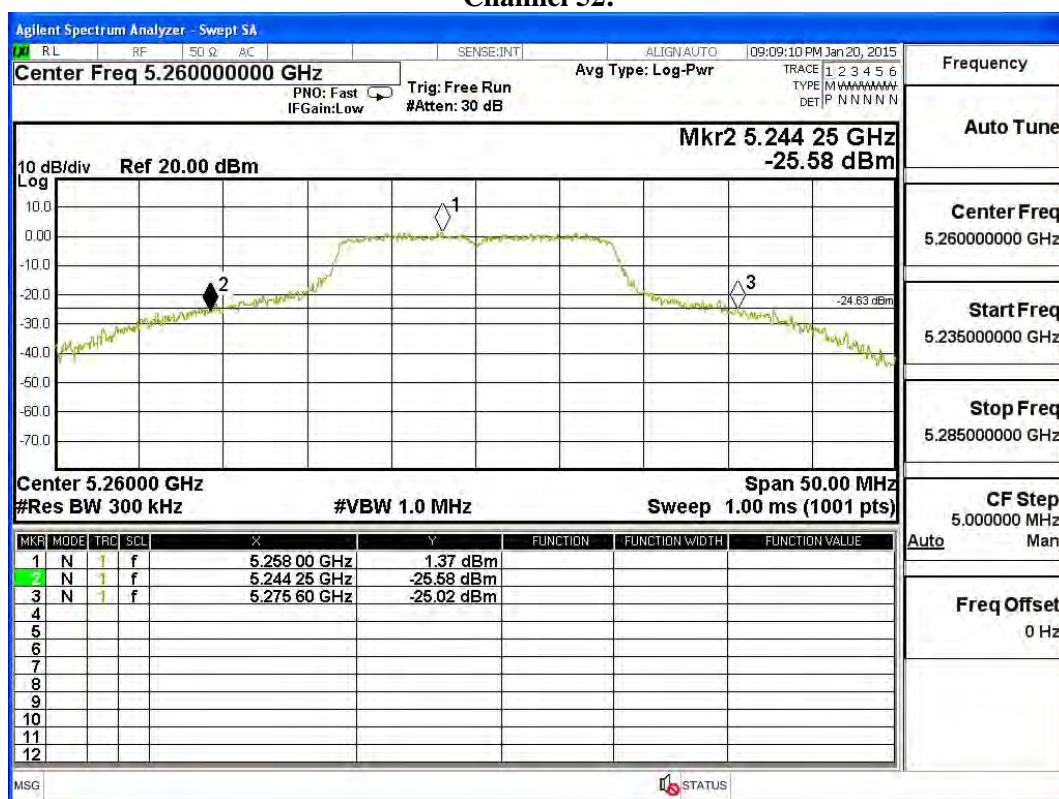
Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit	
				(dBm)	(dBm)+10log(BW)
36	5180	--	16.16	24	--
44	5220	--	16.01	24	--
48	5240	--	16.1	24	--
52	5260	31.350	16.08	24	25.96
60	5300	27.800	16.03	24	25.44
64	5320	24.800	16.07	24	24.94
100	5500	36.450	16.26	24	26.62
116	5580	27.300	15.95	24	25.36
140	5700	33.450	16.07	24	26.24
149	5745	--	16.13	30	--
157	5785	--	15.95	30	--
165	5825	--	16.05	30	--

Note:

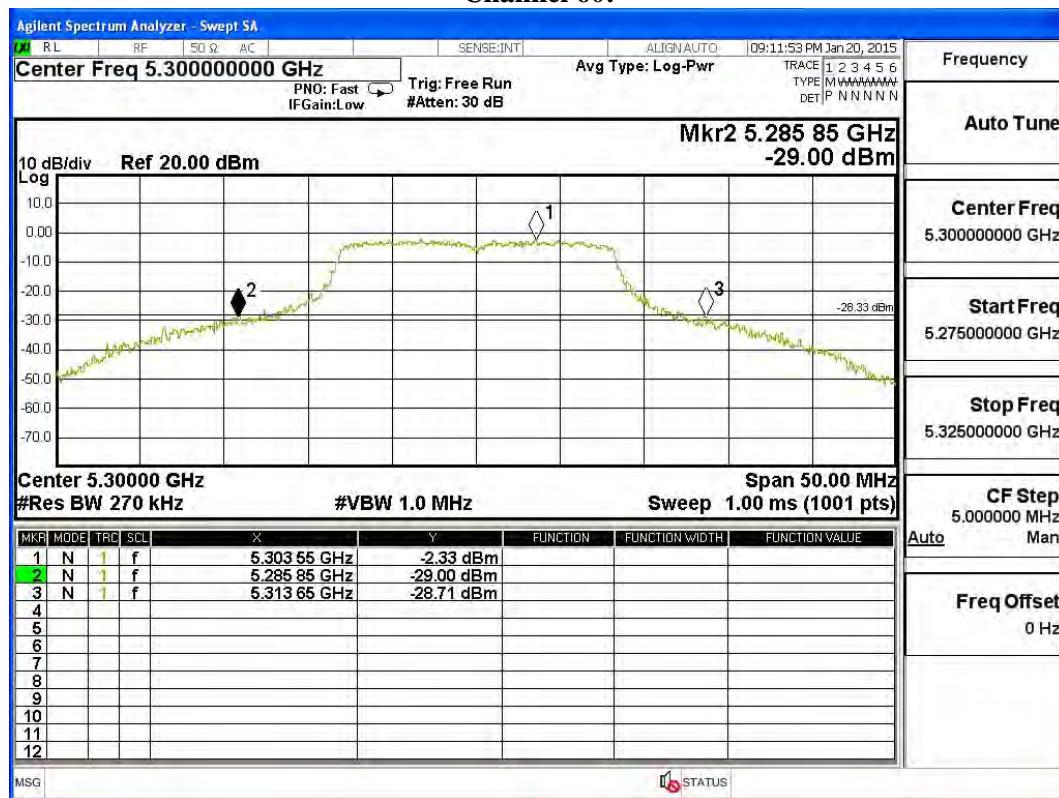
1. Power Output Value =Reading value on average power meter + cable loss
2. 26 dB Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

### 26dBc Occupied Bandwidth:

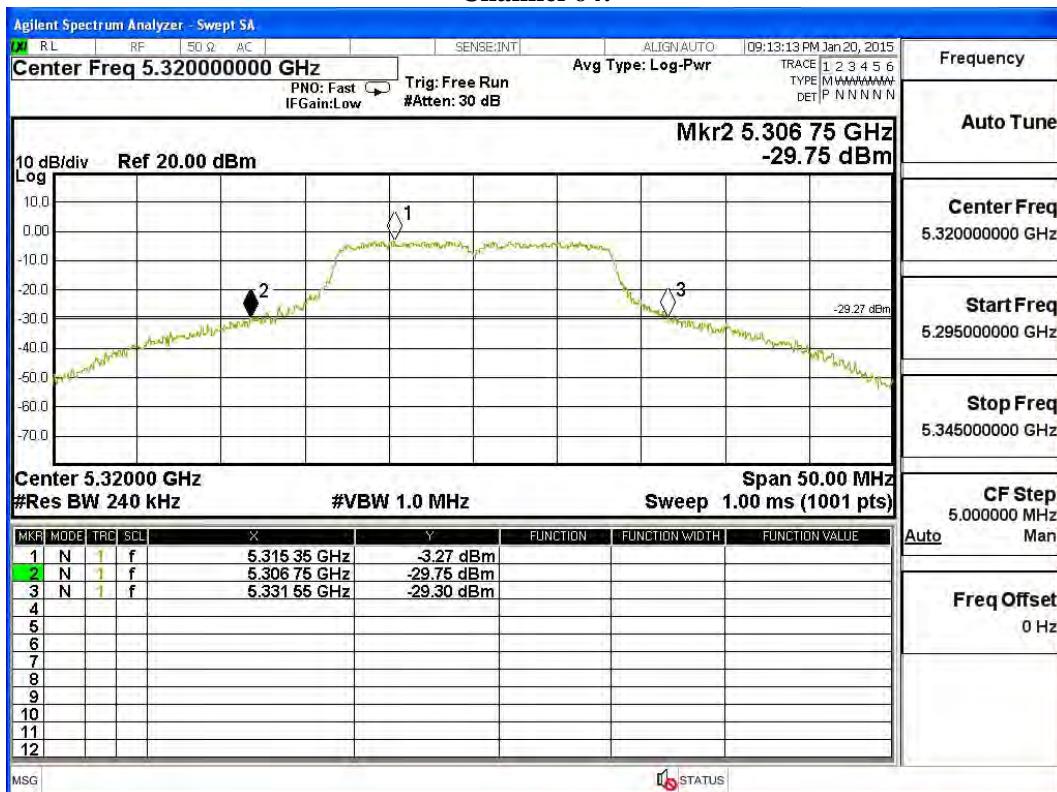
#### Channel 52:



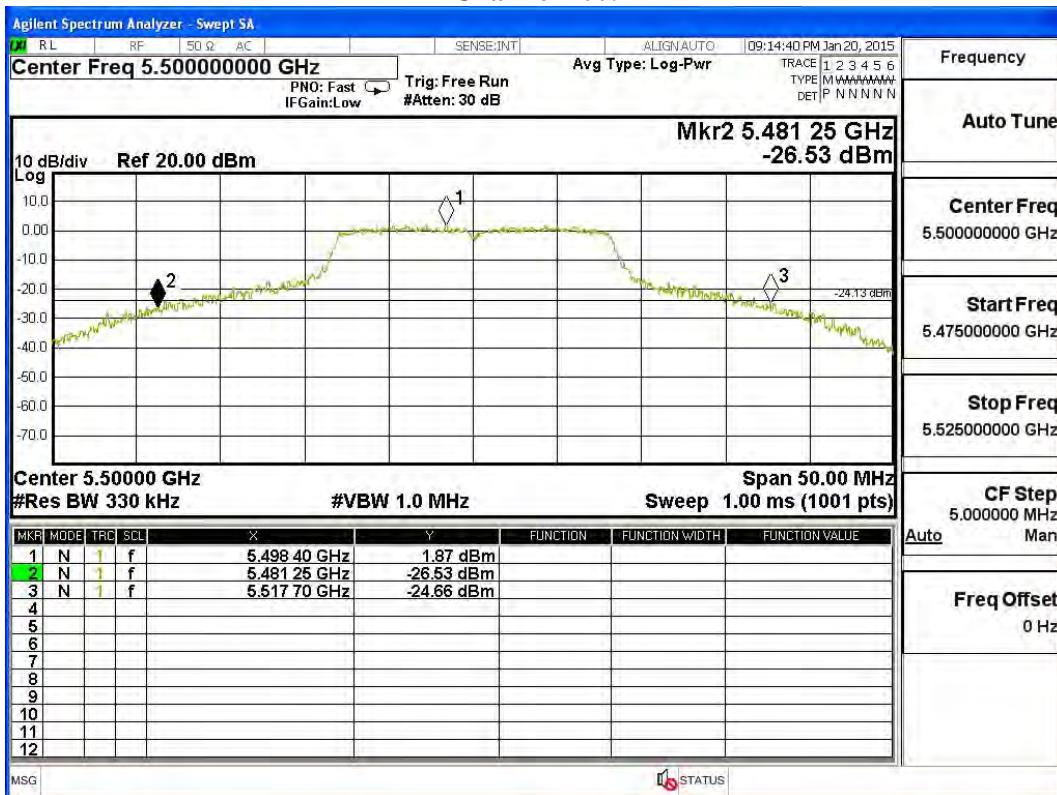
### Channel 60:



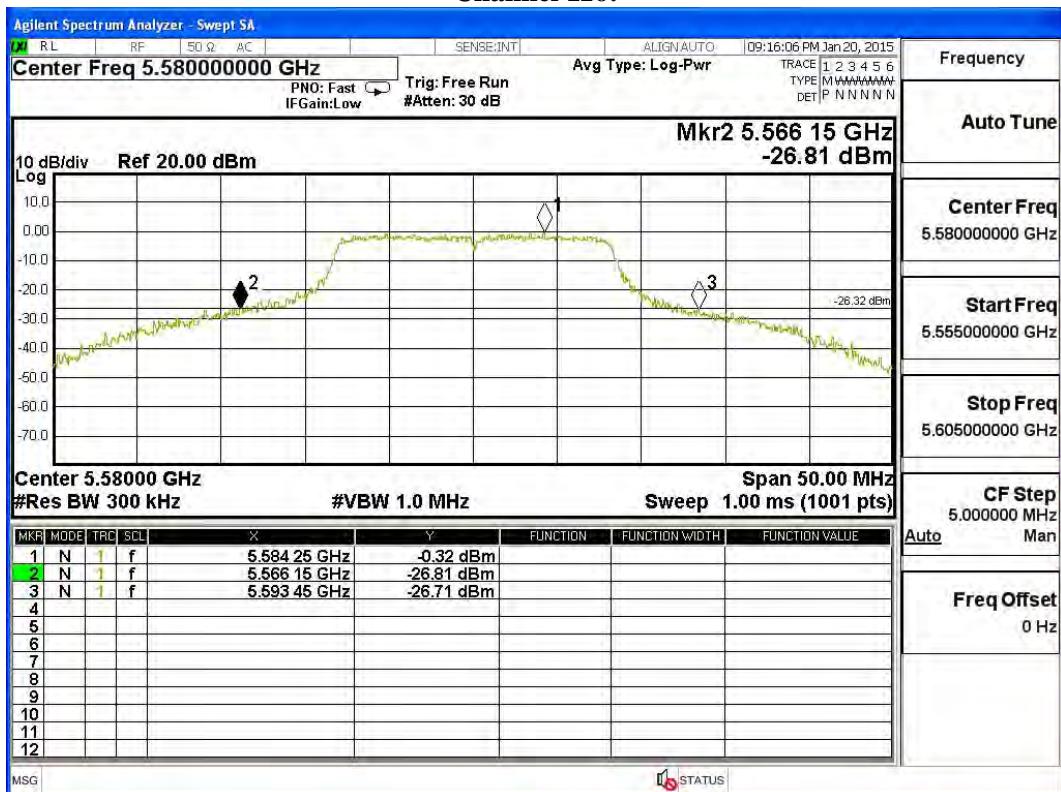
## Channel 64:



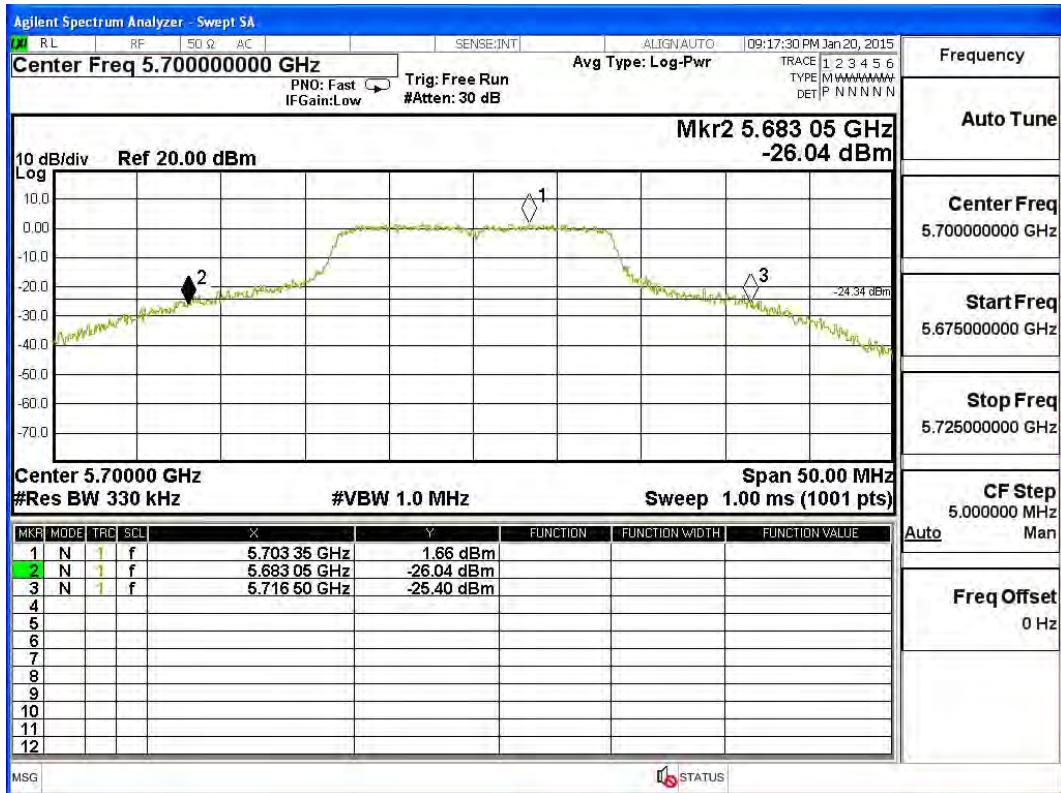
## Channel 100:



## Channel 116:



## Channel 140:



Product : WIFI Module  
Test Item : Maximum conducted output power  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)

**CHAIN A**

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	
		Measurement Level (dBm)								
36	5180	13.24	--	--	--	--	--	--	--	<24dBm
44	5220	14.21	14.13	14.04	13.95	13.88	13.81	13.73	13.67	<24dBm
48	5240	14.83	--	--	--	--	--	--	--	<24dBm
52	5260	14.66	--	--	--	--	--	--	--	<24dBm
60	5300	13.92	13.83	13.74	13.66	13.58	13.5	13.42	13.34	<24dBm
64	5320	14.61	--	--	--	--	--	--	--	<24dBm
100	5500	13.62	--	--	--	--	--	--	--	<24dBm
116	5580	13.52	13.43	13.36	13.29	13.21	13.13	13.07	12.99	<24dBm
140	5700	14.68	--	--	--	--	--	--	--	<24dBm
149	5745	15.03	--	--	--	--	--	--	--	<30dBm
157	5785	14.79	14.71	14.62	14.56	14.47	14.4	14.31	14.24	<30dBm
165	5825	14.41	--	--	--	--	--	--	--	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

**CHAIN B**

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	
		Measurement Level (dBm)								
36	5180	14.63	--	--	--	--	--	--	--	<24dBm
44	5220	14.64	14.56	14.49	14.41	14.33	14.24	14.37	14.29	<24dBm
48	5240	12.71	--	--	--	--	--	--	--	<24dBm
52	5260	12.73	--	--	--	--	--	--	--	<24dBm
60	5300	13.21	13.13	13.04	12.97	12.89	12.8	12.73	12.64	<24dBm
64	5320	13.08	--	--	--	--	--	--	--	<24dBm
100	5500	14.87	--	--	--	--	--	--	--	<24dBm
116	5580	14.15	14.07	13.99	13.92	13.84	13.77	13.69	13.63	<24dBm
140	5700	13.53	--	--	--	--	--	--	--	<24dBm
149	5745	13.36	--	--	--	--	--	--	--	<30dBm
157	5785	13.02	12.93	12.86	12.77	12.71	12.64	12.57	12.51	<30dBm
165	5825	13.33	--	--	--	--	--	--	--	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

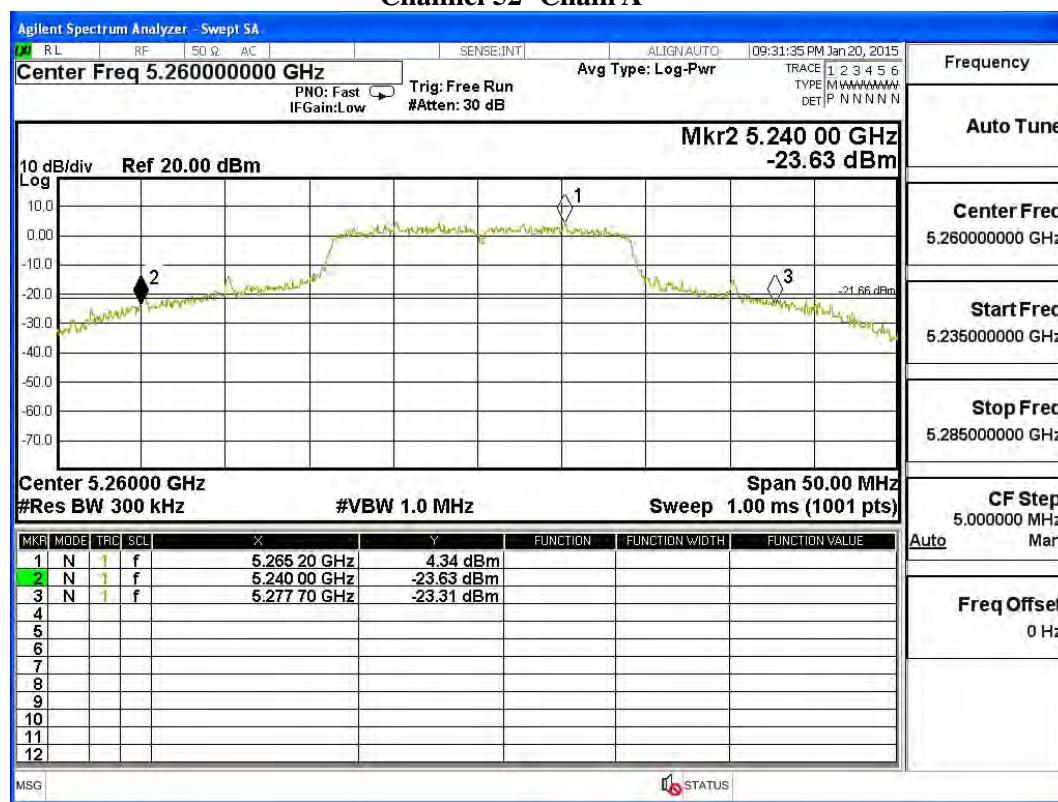
**Maximum conducted output power Measurement:****(CHAIN A+ B)**

Channel Number	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit	
						(dBm)	(dBm+10log(BW))
36	5180	--	13.24	14.63	17.00	24	--
44	5220	--	14.21	14.64	17.44	24	--
48	5240	--	14.83	12.71	16.91	24	--
52	5260	23.600	14.66	12.73	16.81	24	24.73
60	5300	30.300	13.92	13.21	16.59	24	25.81
64	5320	21.900	14.61	13.08	16.92	24	24.40
100	5500	23.300	13.62	14.87	17.30	24	24.67
116	5580	22.300	13.52	14.15	16.86	24	24.48
140	5700	22.700	14.68	13.53	17.15	24	24.56
149	5745	--	15.03	13.36	17.29	30	--
157	5785	--	14.79	13.02	17.00	30	--
165	5825	--	14.41	13.33	16.91	30	--

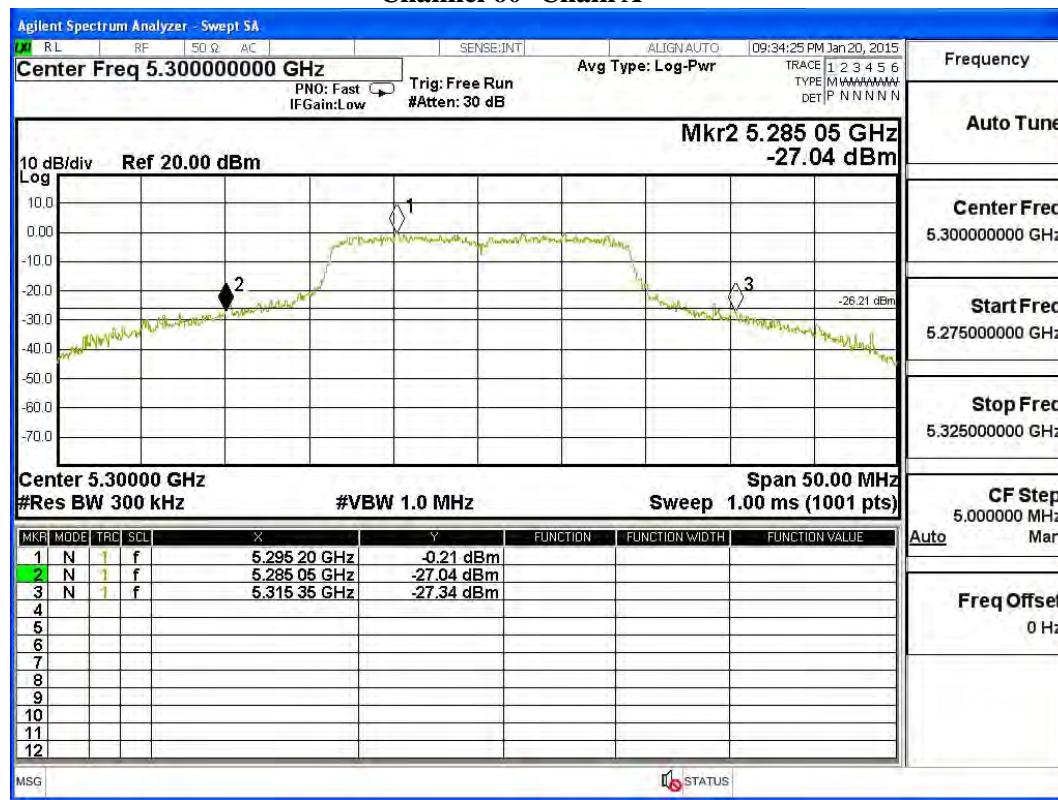
Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) =  $10\log(\text{Chain A Power (mW}) + \text{Chain B Power (mW)})$
3. 26 dB Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

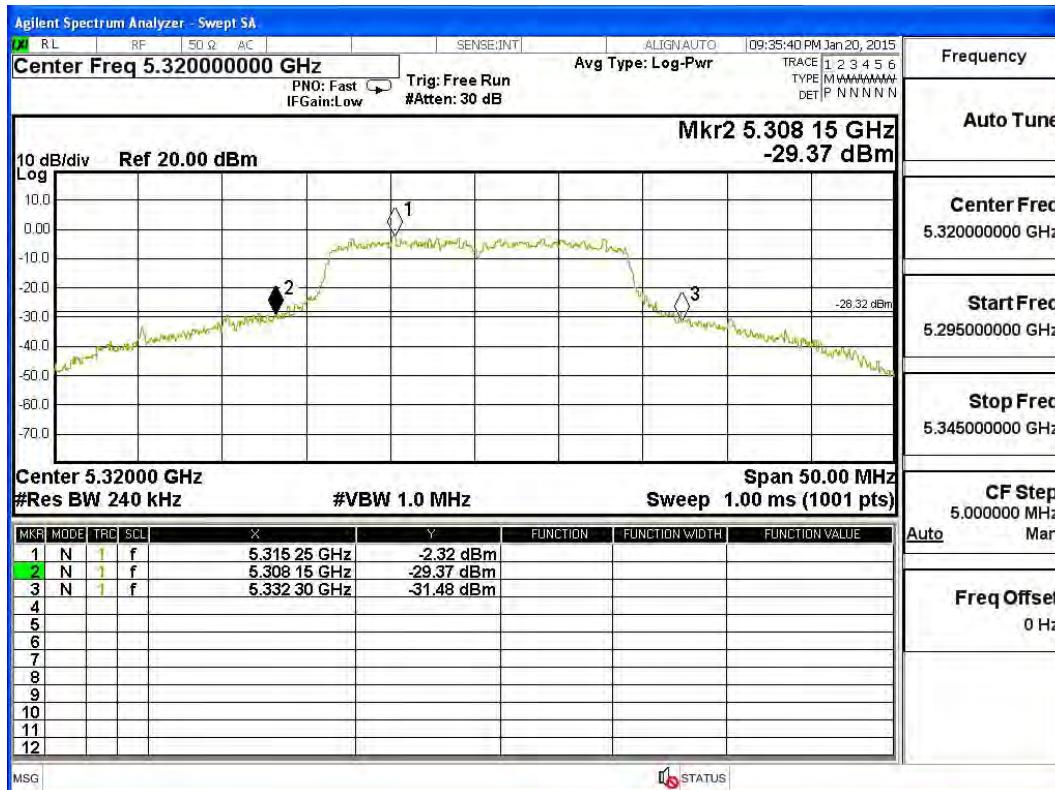
**26dBc Occupied Bandwidth:  
Channel 52 -Chain A**



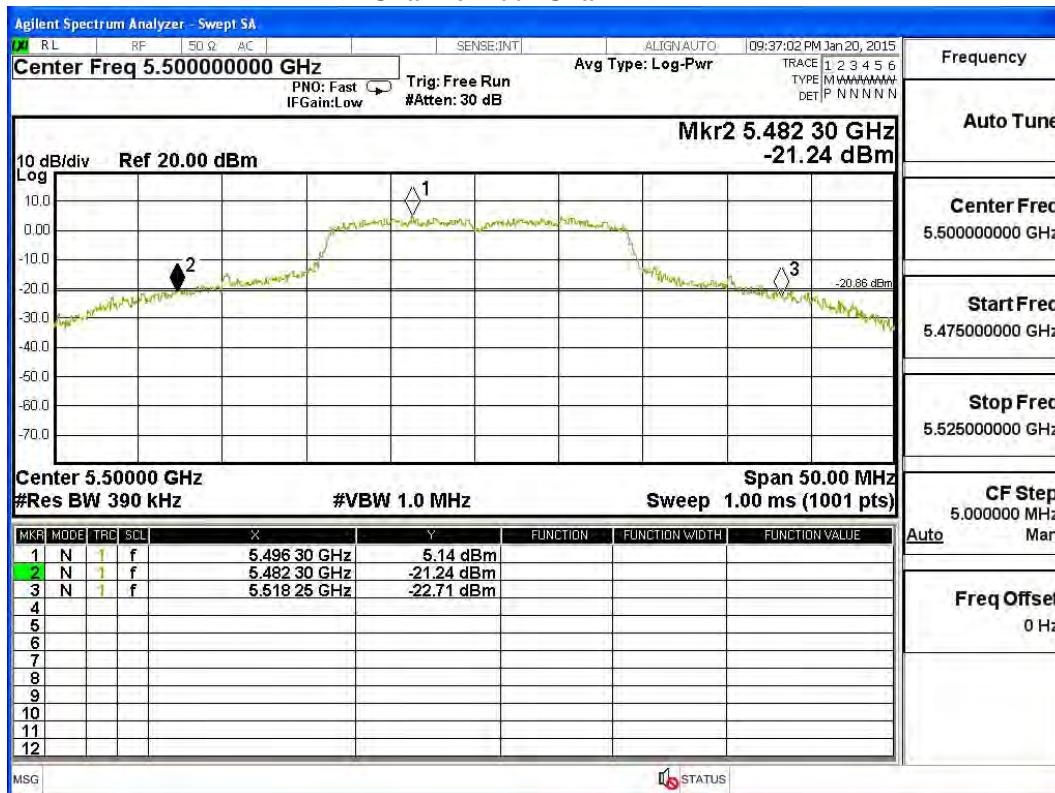
**Channel 60 -Chain A**



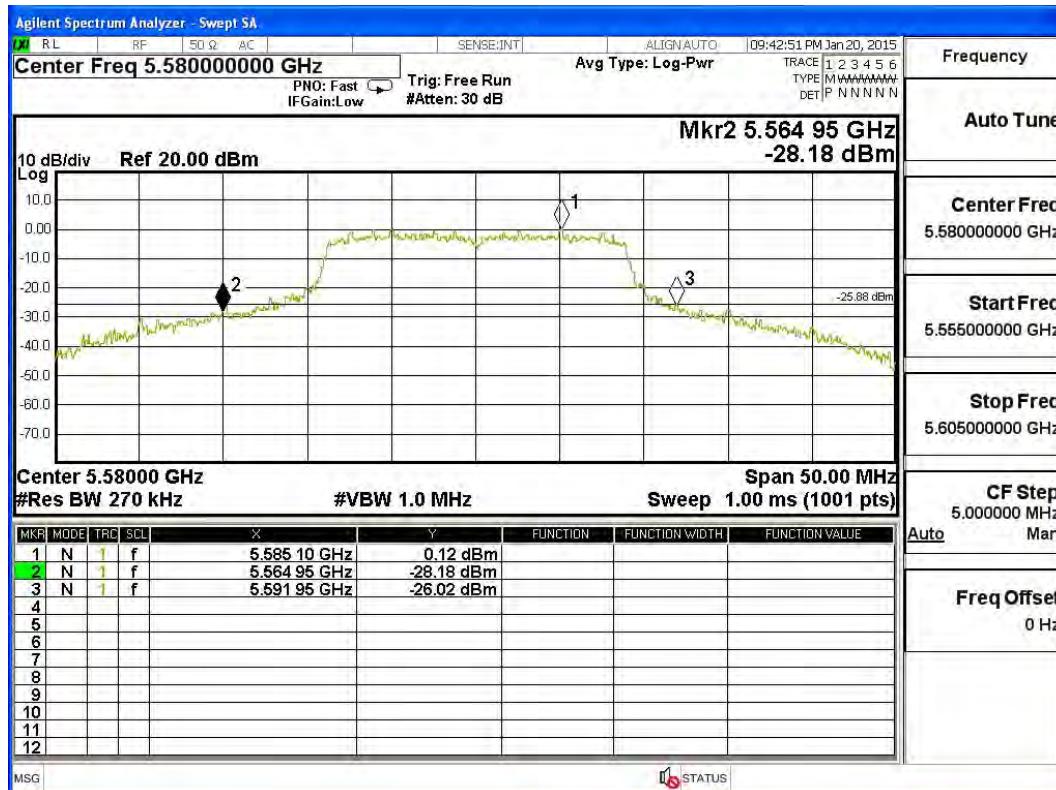
## Channel 64 -Chain A



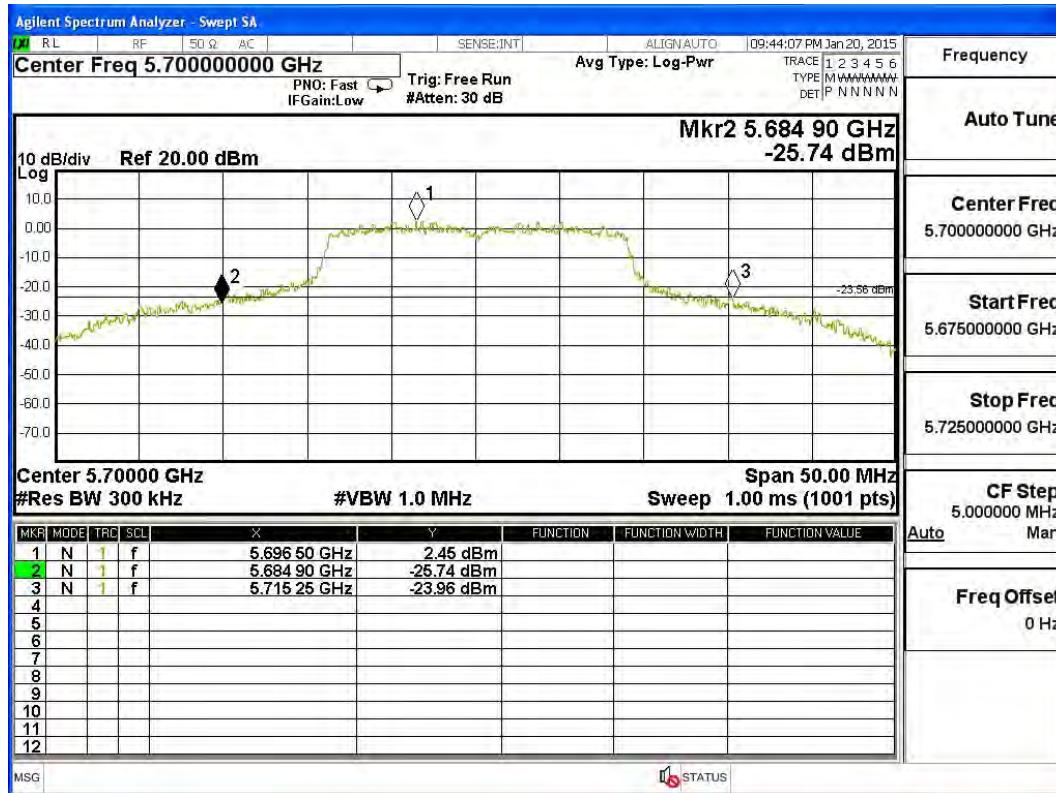
## Channel 100 -Chain A



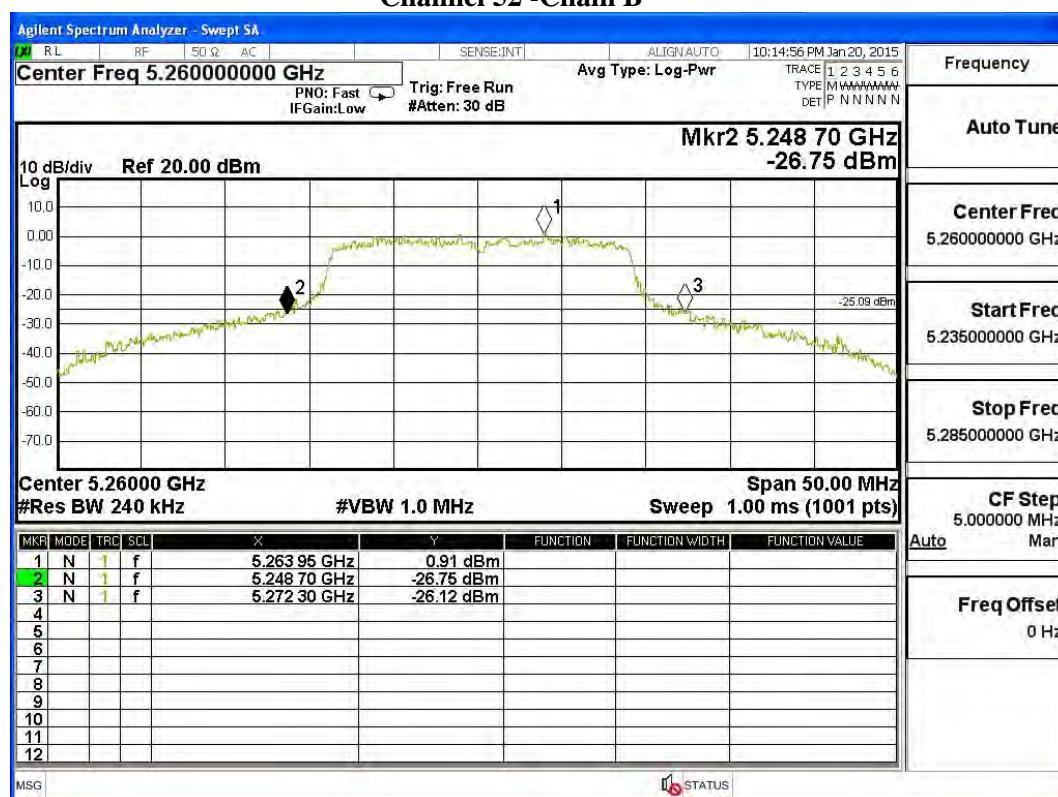
## Channel 116 -Chain A



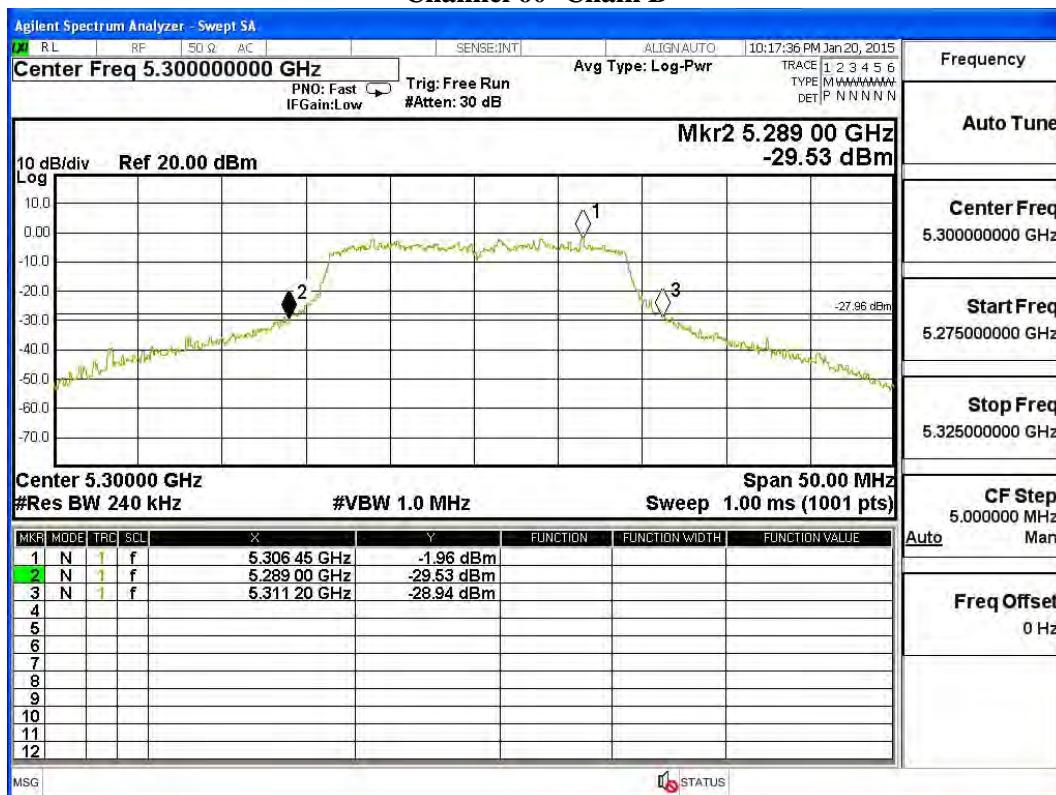
## Channel 140 -Chain A



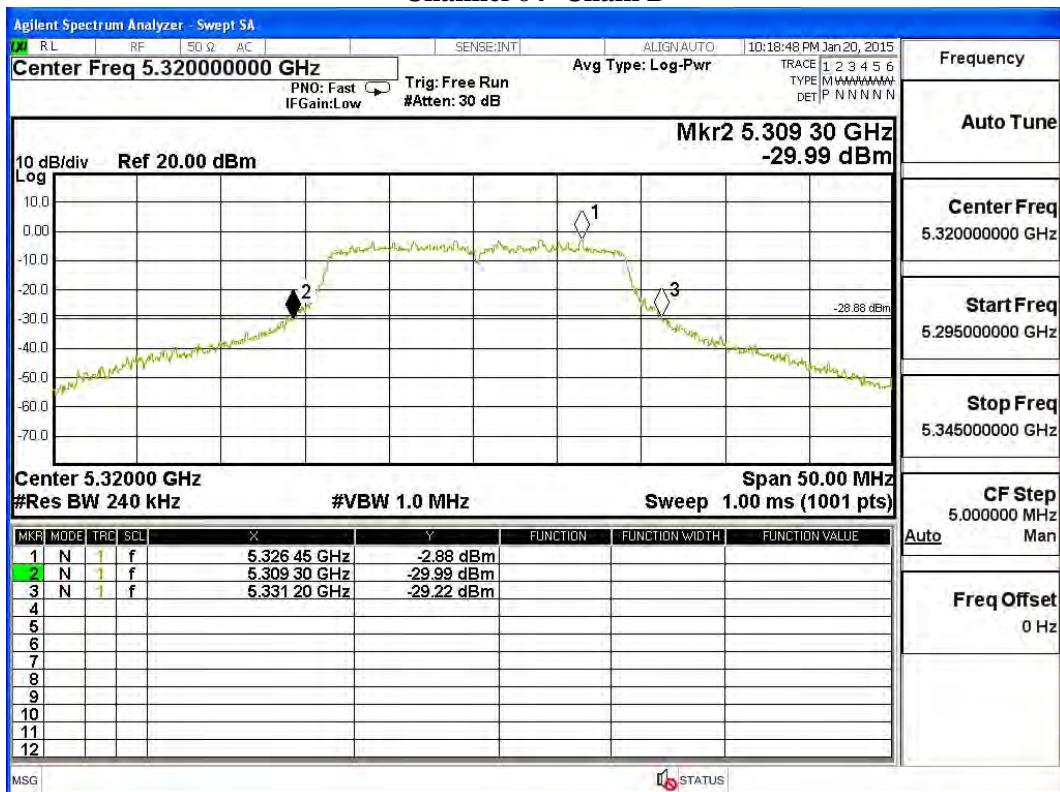
**26dBc Occupied Bandwidth:**  
**Channel 52 -Chain B**



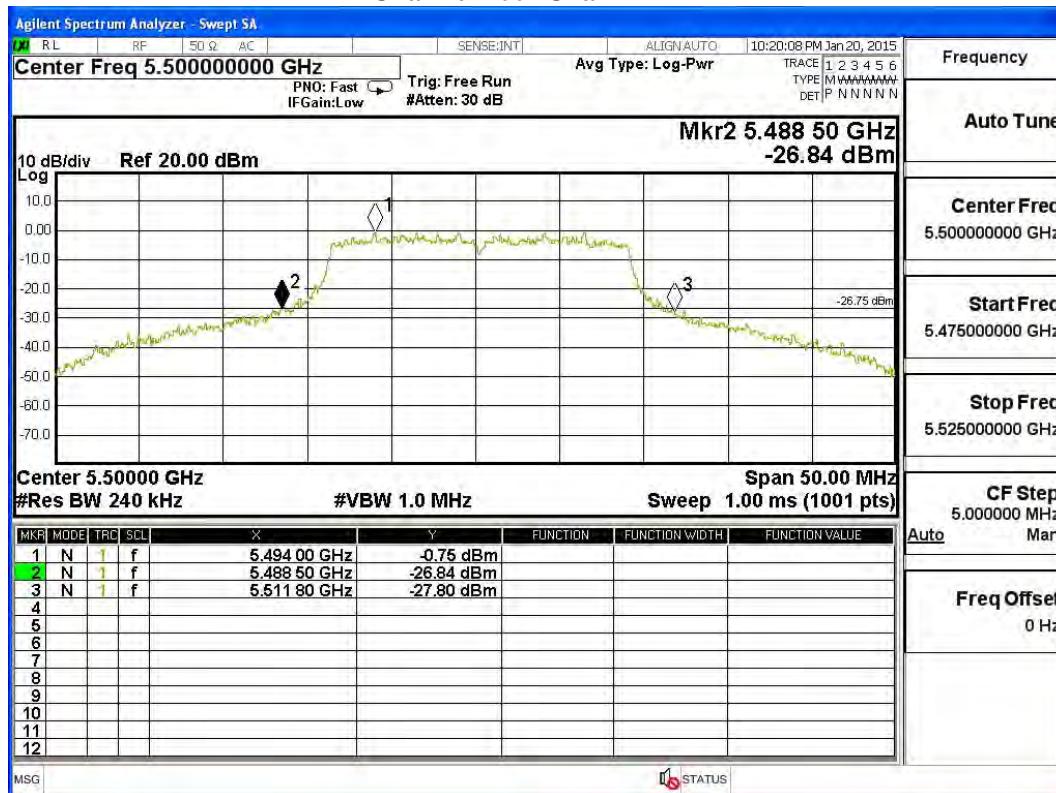
**Channel 60 -Chain B**



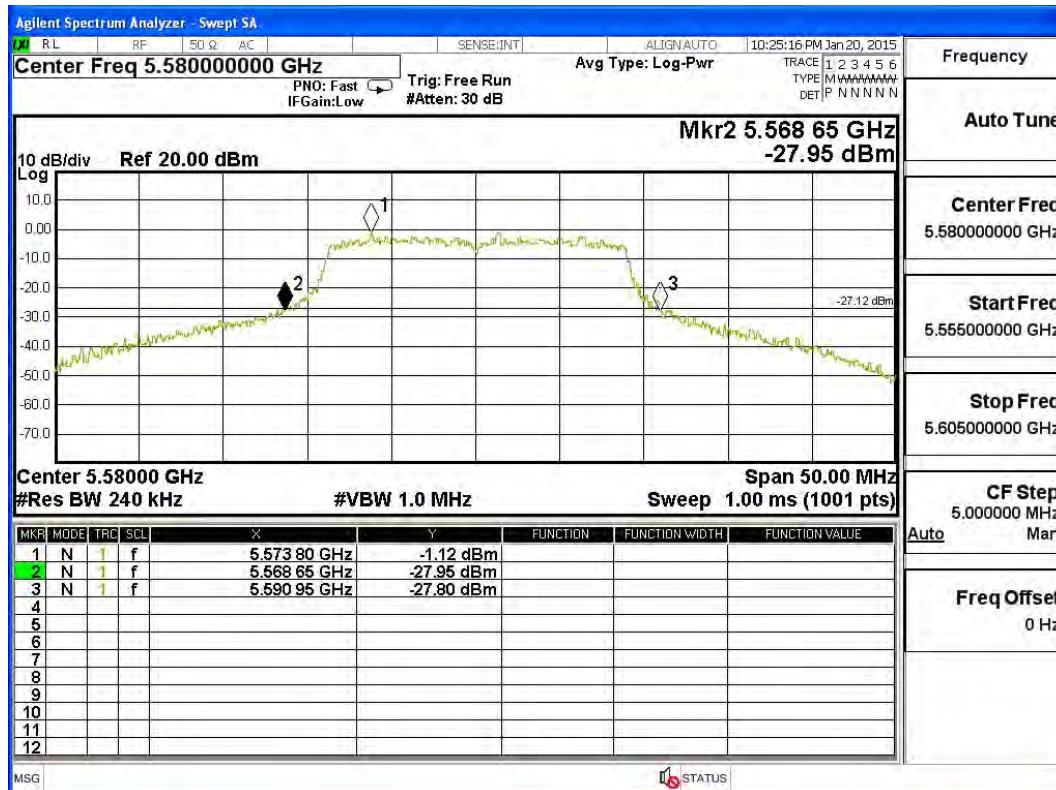
## Channel 64 -Chain B



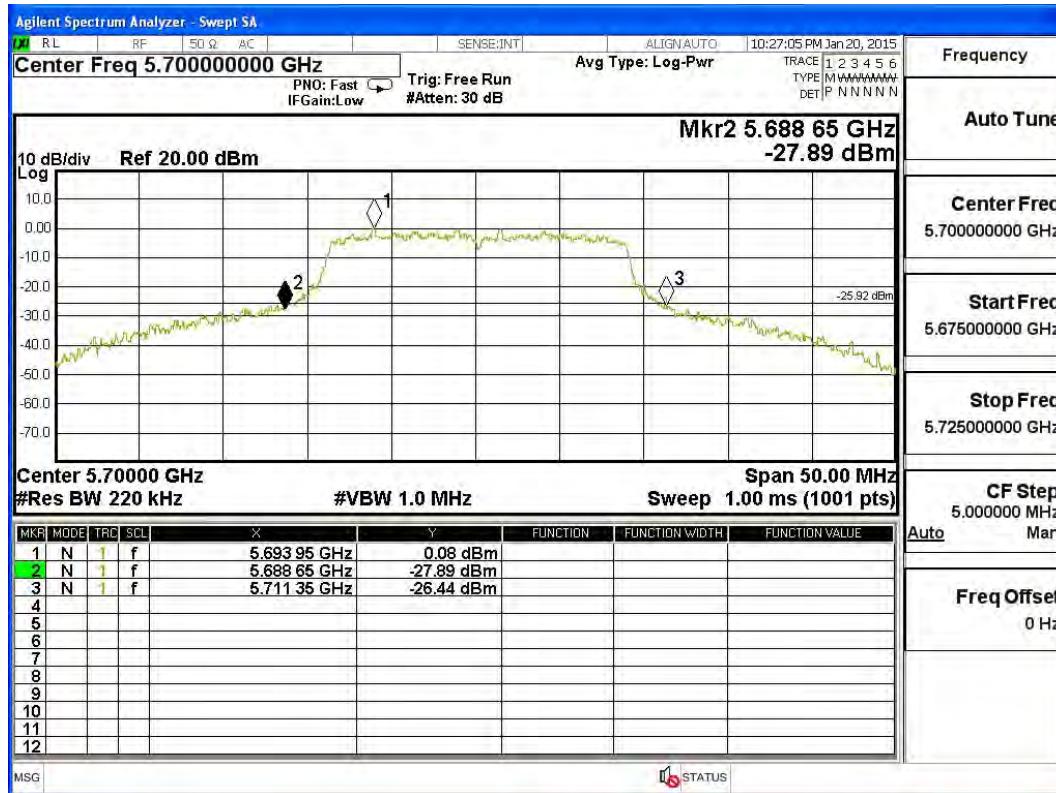
## Channel 100 -Chain B



## Channel 116 -Chain B



## Channel 140 -Chain B



Product : WIFI Module  
 Test Item : Maximum conducted output power  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps)

**CHAIN A**

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
38	5190	14.37	--	--	--	--	--	--	--	<24dBm
46	5230	13.77	13.71	13.63	13.55	13.49	13.41	13.34	13.28	<24dBm
54	5270	14.68	--	--	--	--	--	--	--	<24dBm
62	5310	13.79	13.71	13.62	13.56	13.49	13.42	13.35	13.28	<24dBm
102	5510	13.41	--	--	--	--	--	--	--	<24dBm
110	5550	13.46	13.37	13.29	13.21	13.14	13.05	12.96	12.89	<24dBm
134	5670	14.43	--	--	--	--	--	--	--	<24dBm
151	5755	14.77	--	--	--	--	--	--	--	<30dBm
159	5795	14.31	14.24	14.16	14.08	13.99	13.91	13.82	13.74	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

**CHAIN B**

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
38	5190	14.05	--	--	--	--	--	--	--	<24dBm
46	5230	14.61	14.53	14.46	14.39	14.31	14.23	14.16	14.09	<24dBm
54	5270	12.35	--	--	--	--	--	--	--	<24dBm
62	5310	13.03	12.96	12.87	12.79	12.7	12.62	12.53	12.45	<24dBm
102	5510	14.4	--	--	--	--	--	--	--	<24dBm
110	5550	14.46	14.37	14.29	14.22	14.14	14.06	13.98	13.91	<24dBm
134	5670	13.03	--	--	--	--	--	--	--	<24dBm
151	5755	13.27	--	--	--	--	--	--	--	<30dBm
159	5795	13.26	13.17	13.09	13.01	12.93	12.85	12.76	12.68	<30dBm

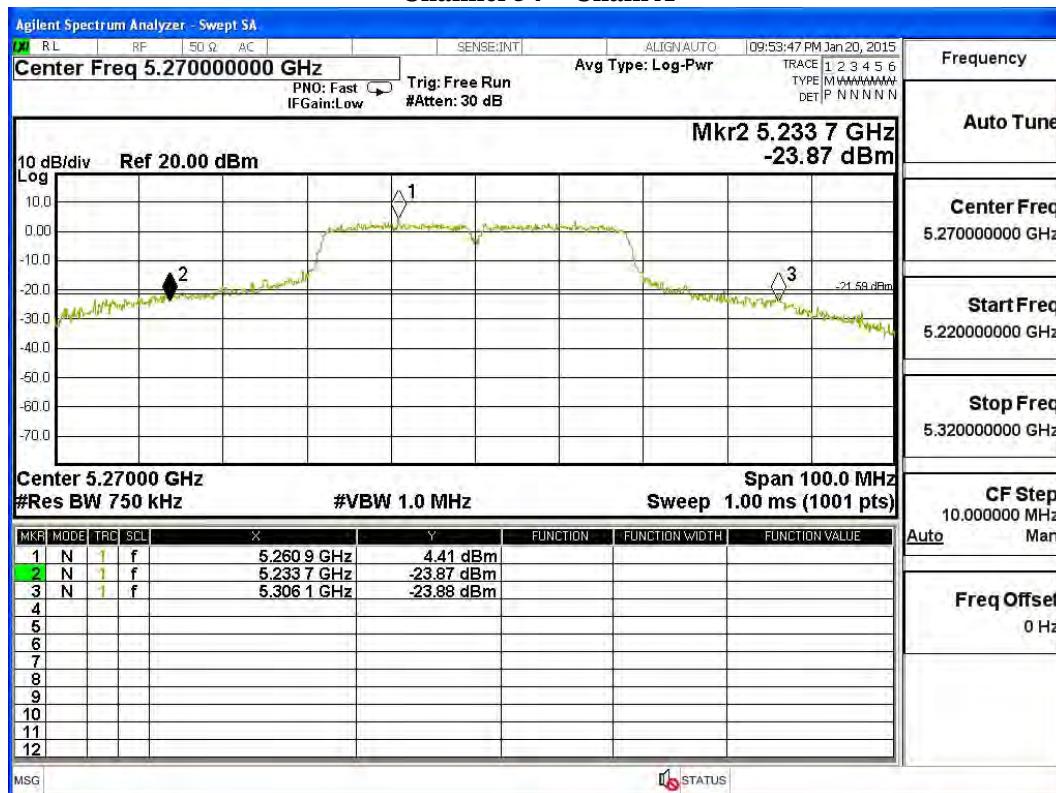
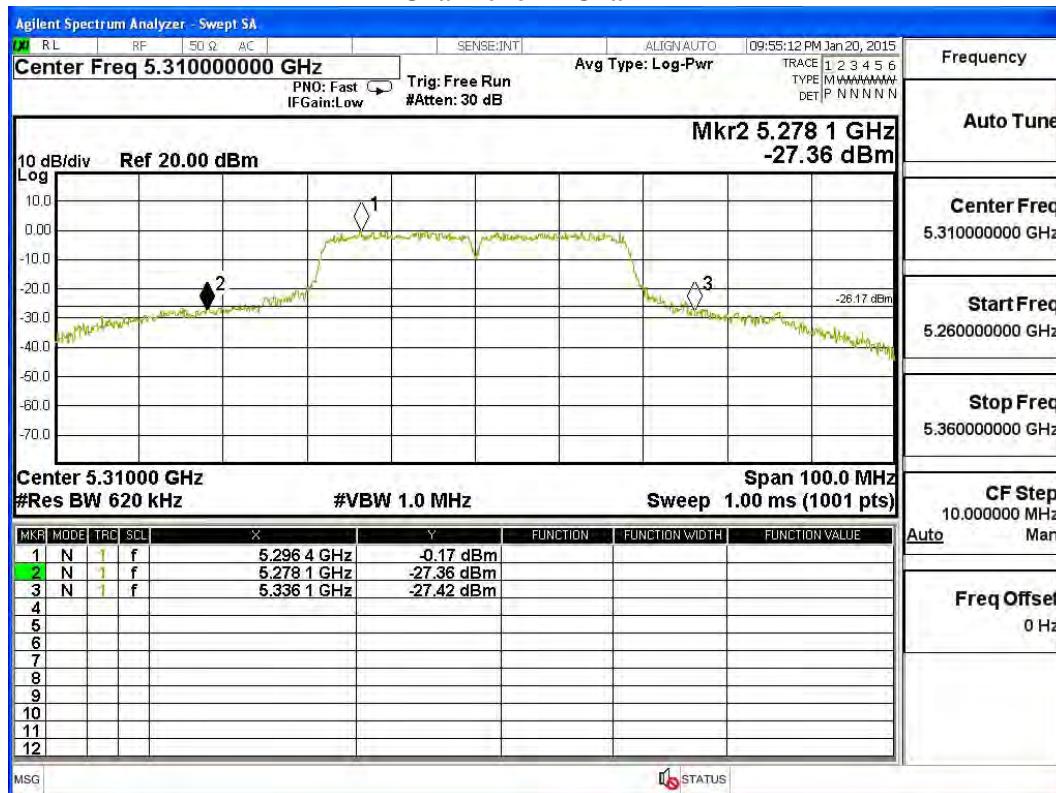
Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

**Maximum conducted output power Measurement:****(CHAIN A+ B)**

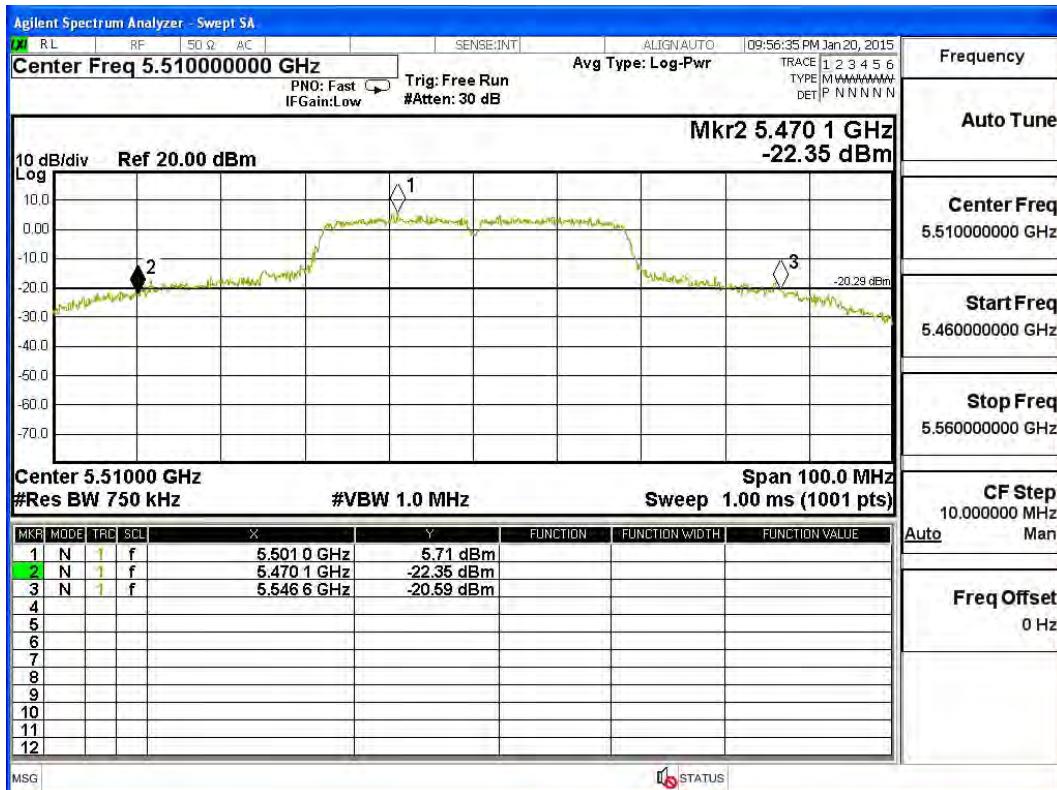
Channel Number	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power	Chain B Power	Output Power	Output Power Limit	
			(dBm)	(dBm)	(dBm)	(dBm)	(dBm+10log(BW))
38	5190	--	14.37	14.05	17.22	24	--
46	5230	--	13.77	14.61	17.22	24	--
54	5270	45.700	14.68	12.35	16.68	24	27.60
62	5310	43.400	13.79	13.03	16.44	24	27.37
102	5510	47.300	13.41	14.40	16.94	24	27.75
110	5550	45.700	13.46	14.46	17.00	24	27.60
134	5670	45.600	14.43	13.03	16.80	24	27.59
151	5755	--	14.77	13.27	17.09	30	--
159	5795	--	14.31	13.26	16.83	30	--

Note:

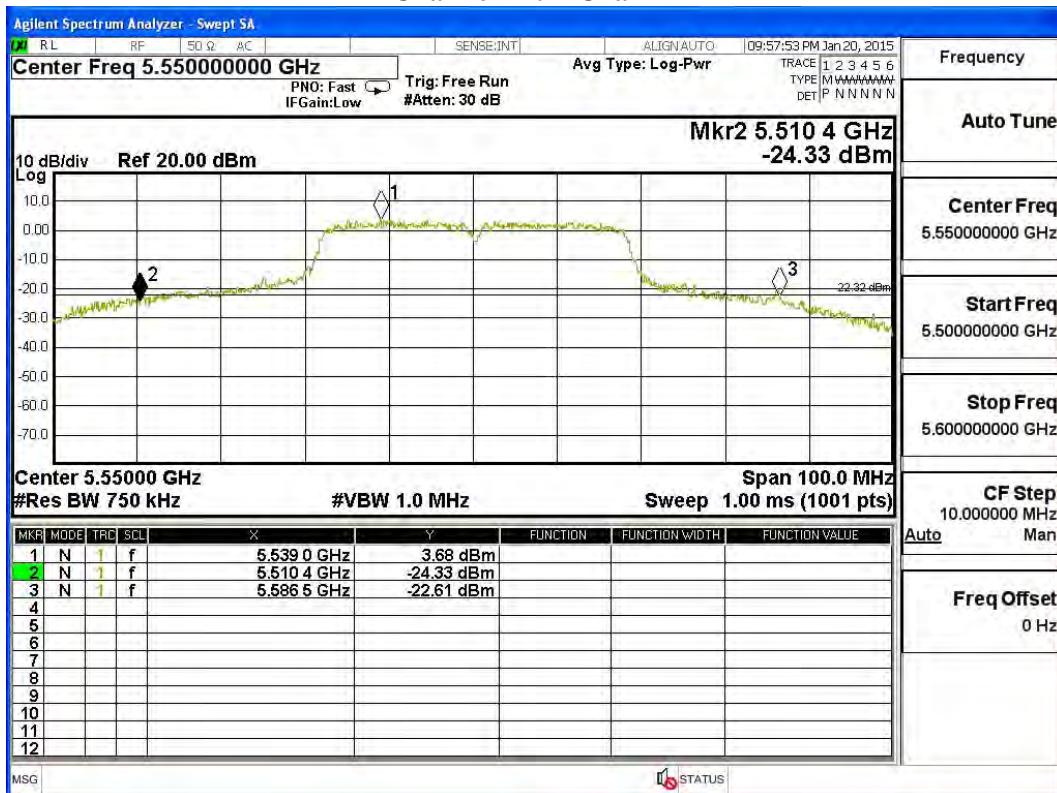
1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) =  $10\log(\text{Chain A Power (mW}) + \text{Chain B Power (mW)})$
3. 26 dB Bandwidth is the bandwidth of chain A or chain B whichever is less bandwidth, output power limitation is more stringent.

**26dBc Occupied Bandwidth:****Channel 54 – Chain A****Channel 62 – Chain A**

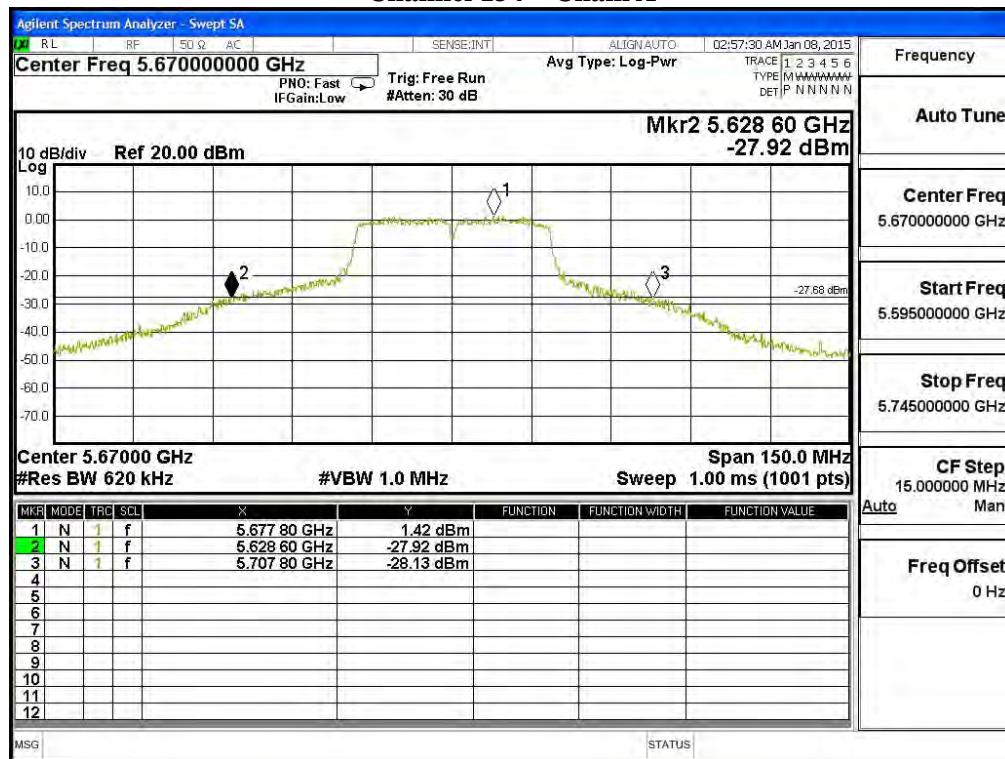
## Channel 102 – Chain A



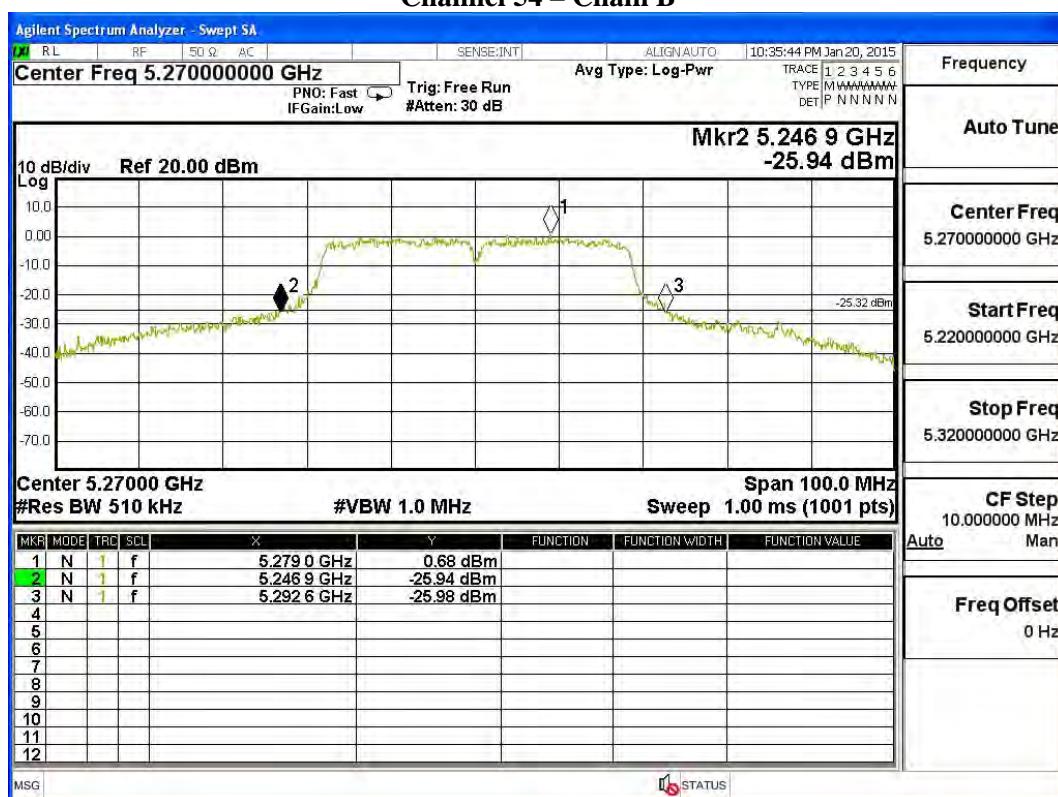
## Channel 110 – Chain A



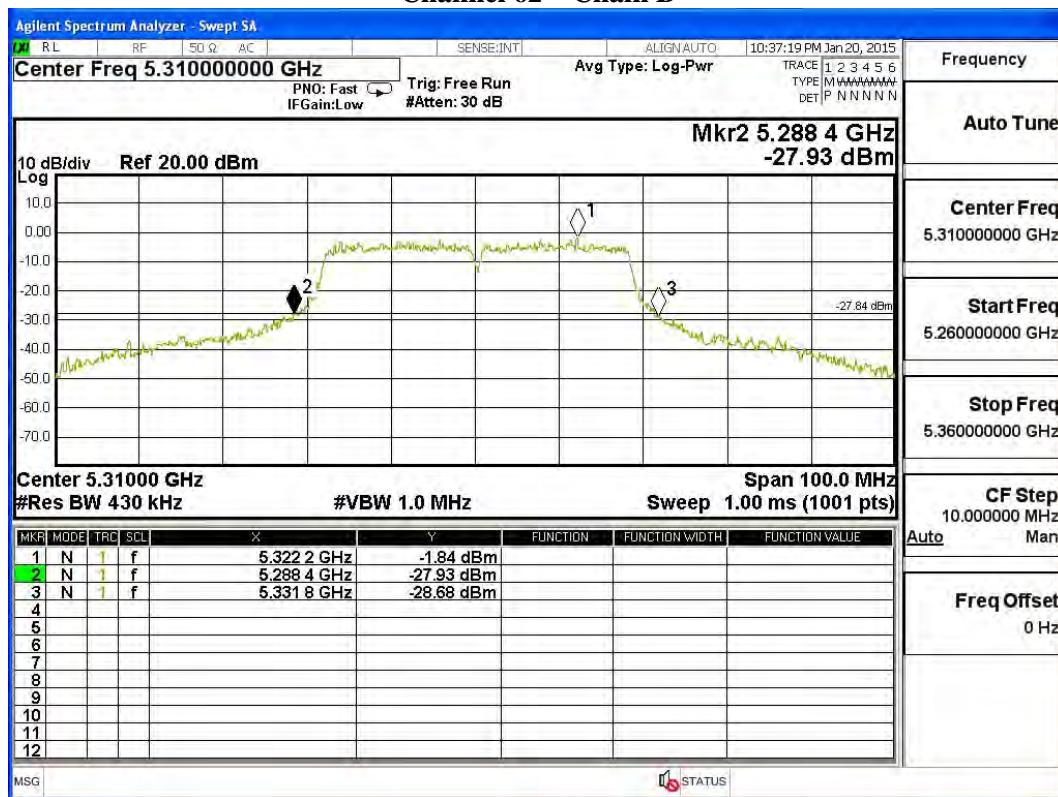
## Channel 134 – Chain A



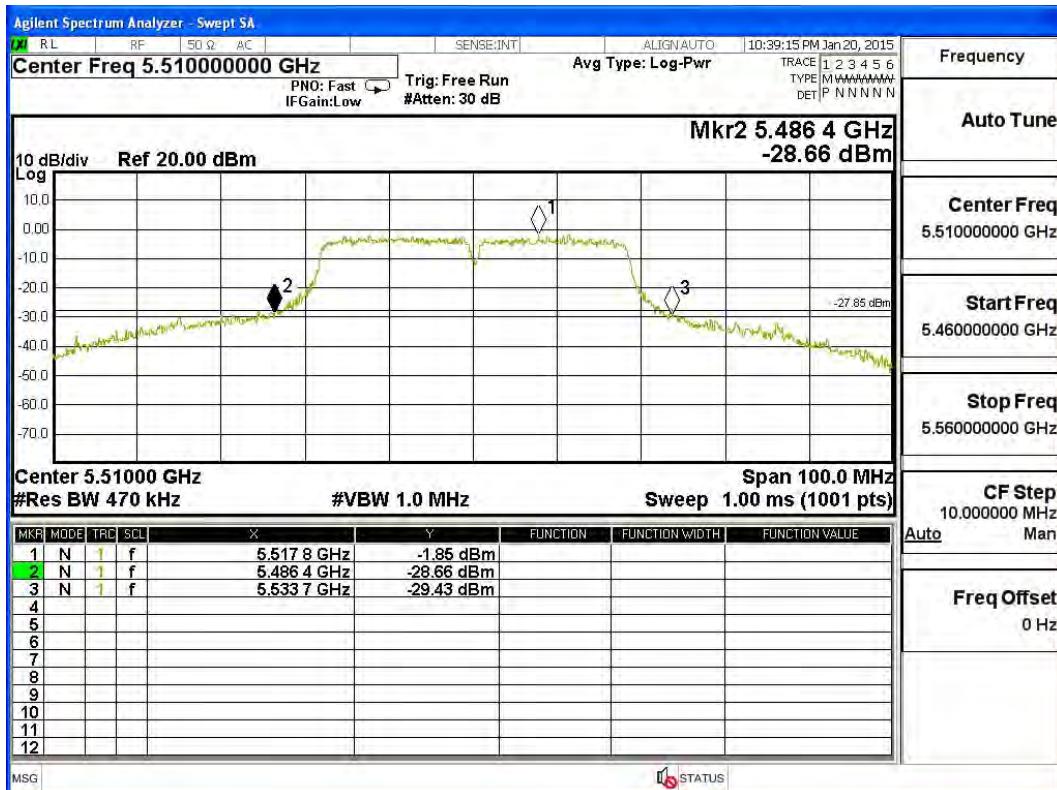
**26dBc Occupied Bandwidth:**  
**Channel 54 – Chain B**



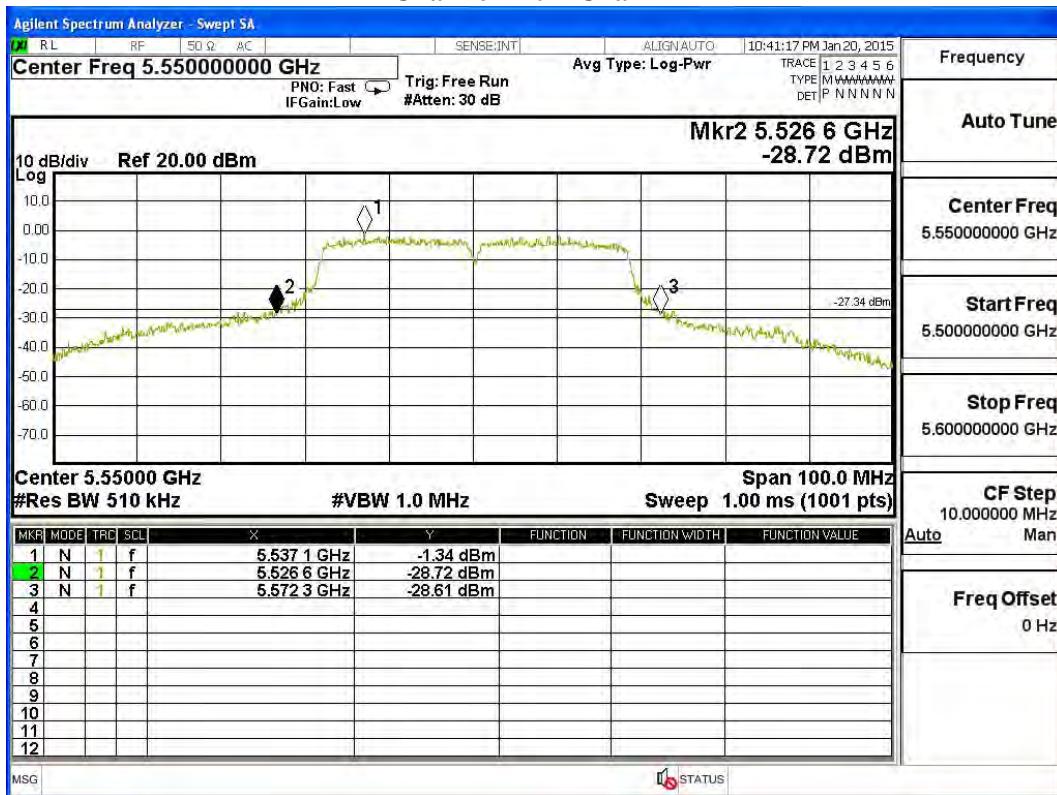
**Channel 62 – Chain B**



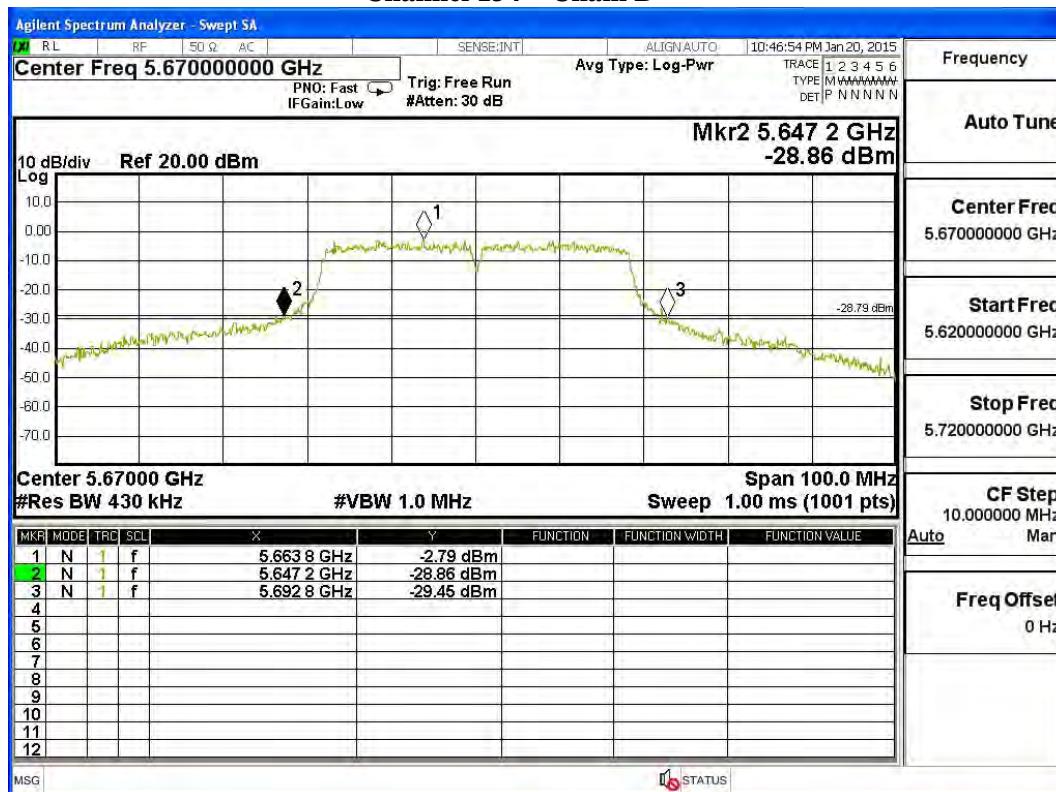
## Channel 102 – Chain B



## Channel 110 – Chain B



## Channel 134 – Chain B



## 4. Peak Power Spectral Density

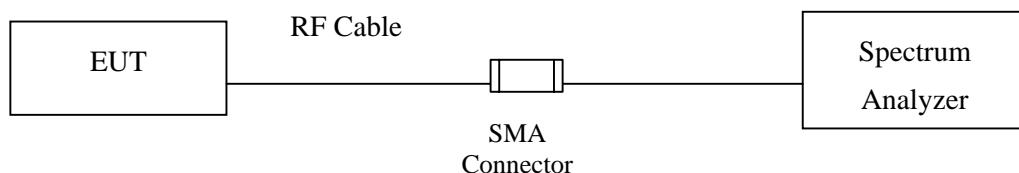
### 4.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2014
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2014
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr, 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

### 4.2. Test Setup



### 4.3. Limits

- (1) For the band 5.15-5.25 GHz,
  - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
  - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
  - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the

equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.+

- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

#### **4.4. Test Procedure**

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, 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.

SA-1 method is selected to run the test.

For the band 5.725-5.85 GHz, Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where BWCF =  $10\log(500 \text{ kHz}/100 \text{ kHz}) = 6.98 \text{ dB}$ .

#### **4.5. Uncertainty**

$\pm 1.27 \text{ dB}$

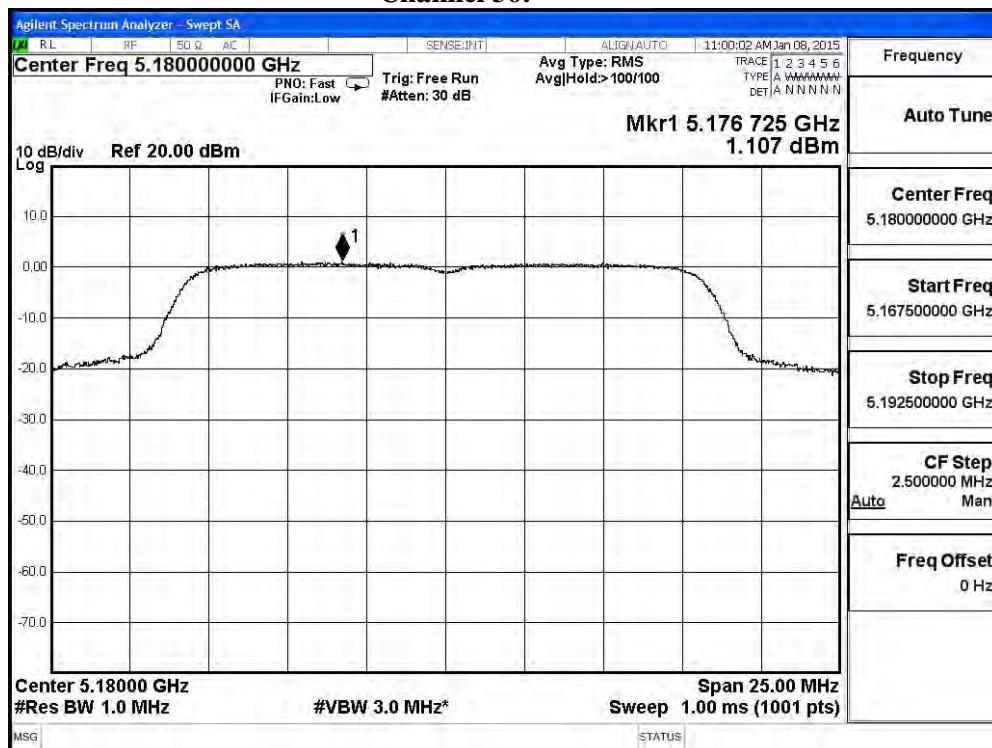
#### 4.6. Test Result of Peak Power Spectral Density

Product : WIFI Module  
Test Item : Peak Power Spectral Density  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

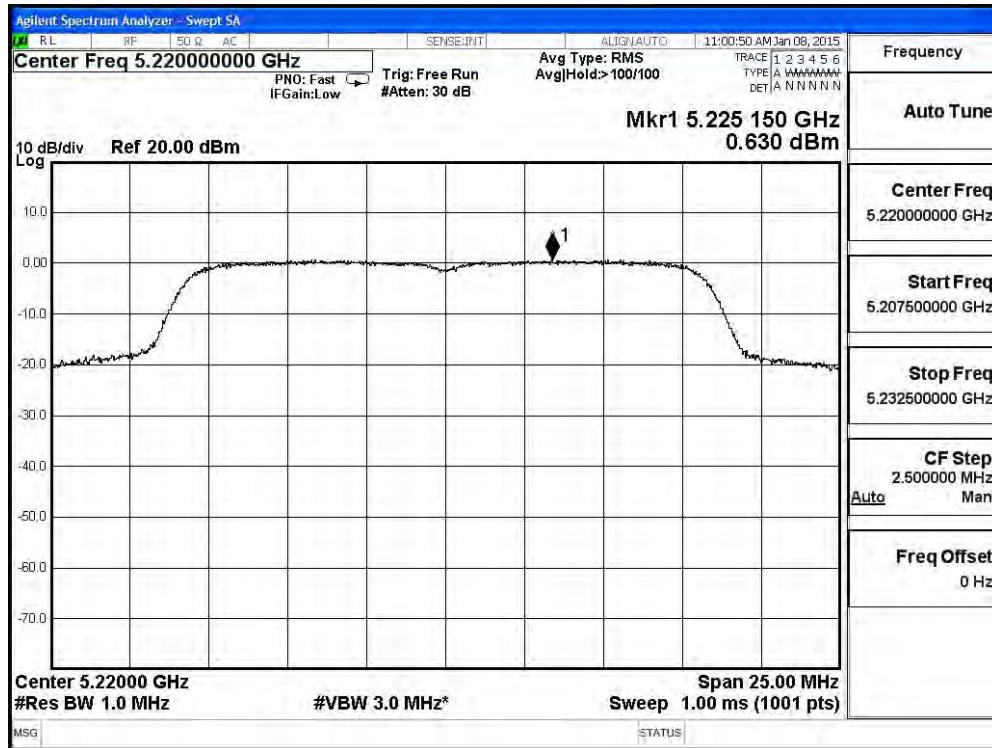
Channel Number	Frequency (MHz)	Data Rate (Mbps)	Measurement Level (dBm)	Required Limit (dBm)	Result
36	5180	6	1.107	11	Pass
44	5220	6	0.630	11	Pass
48	5240	6	0.599	11	Pass
52	5260	6	2.795	11	Pass
60	5300	6	2.838	11	Pass
64	5320	6	2.831	11	Pass
100	5500	6	4.014	11	Pass
116	5580	6	2.669	11	Pass
140	5700	6	2.024	11	Pass

Channel Number	Frequency (MHz)	Data Rate (Mbps)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
149	5745	6	3.740	6.98	13.730	<30	Pass
157	5785	6	3.880	6.98	13.870	<30	Pass
165	5825	6	4.280	6.98	14.270	<30	Pass

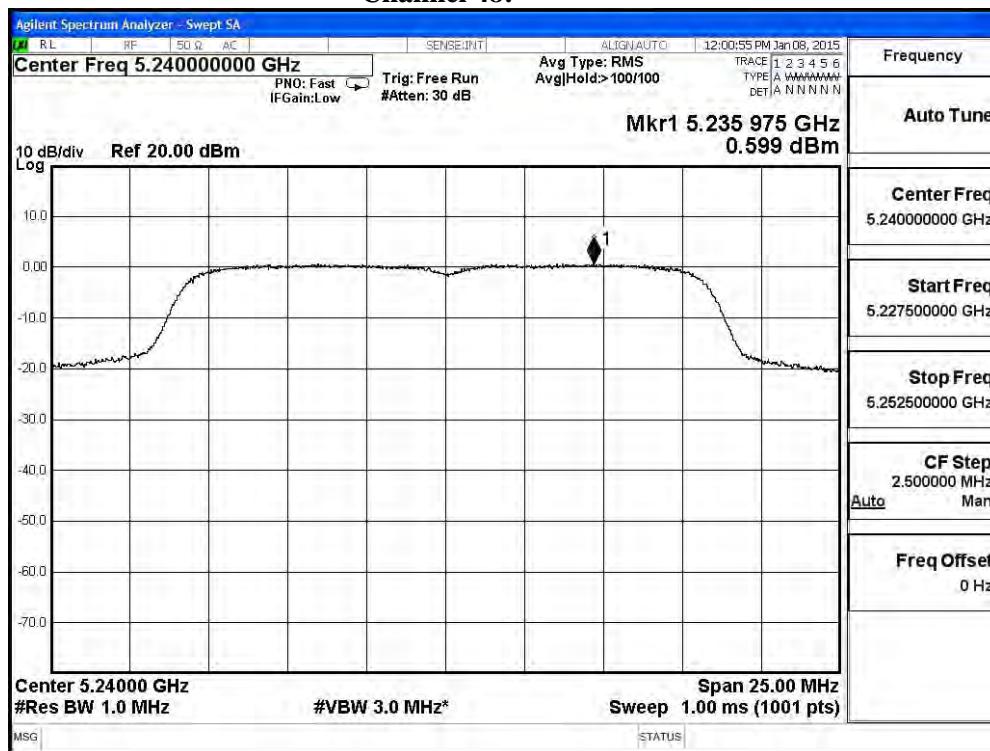
### Channel 36:



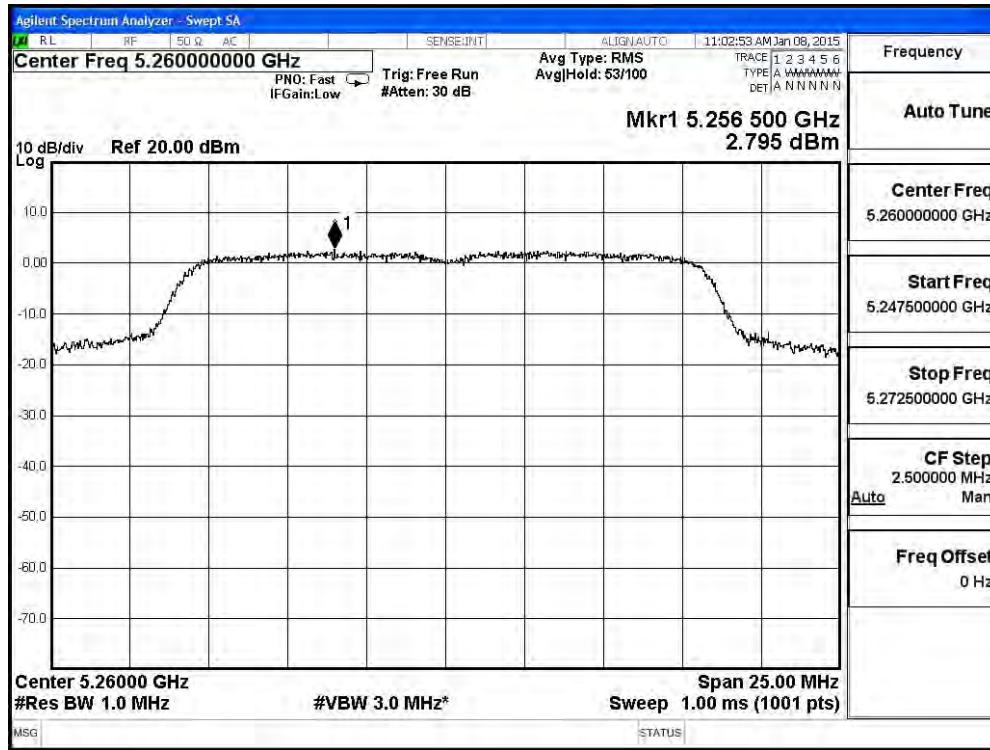
### Channel 44:



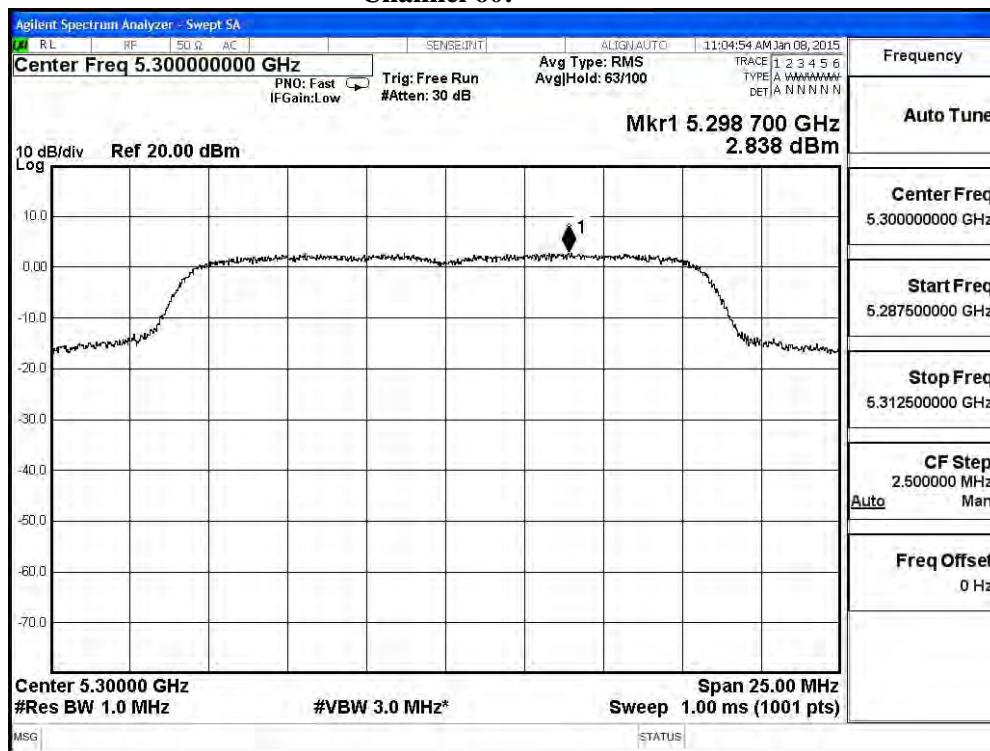
## Channel 48:



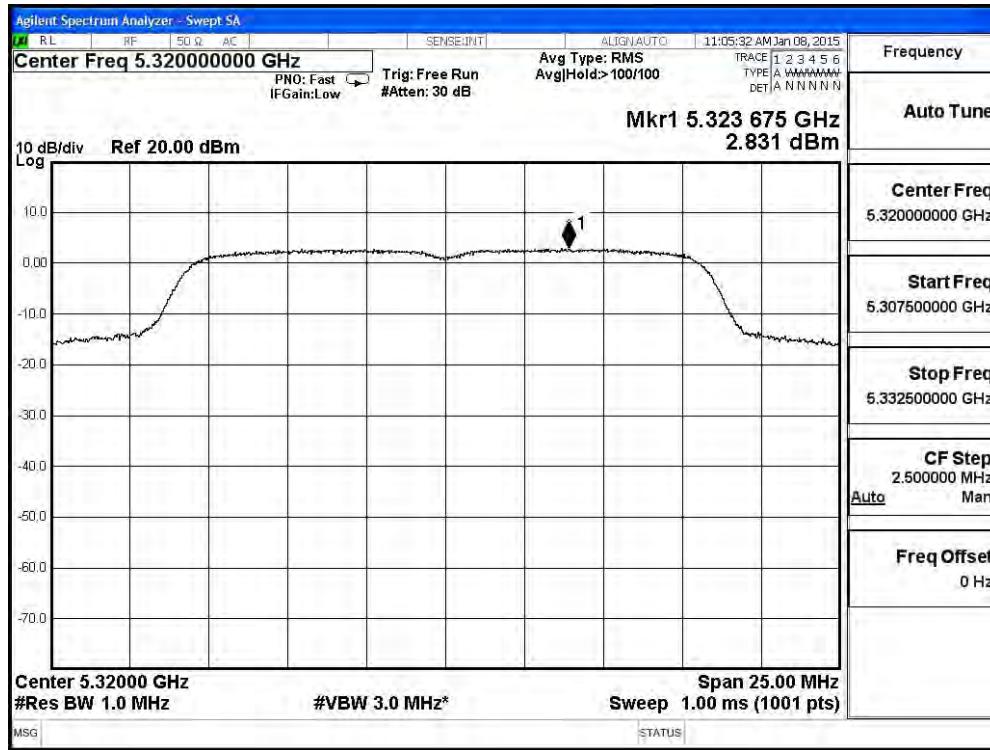
## Channel 52:



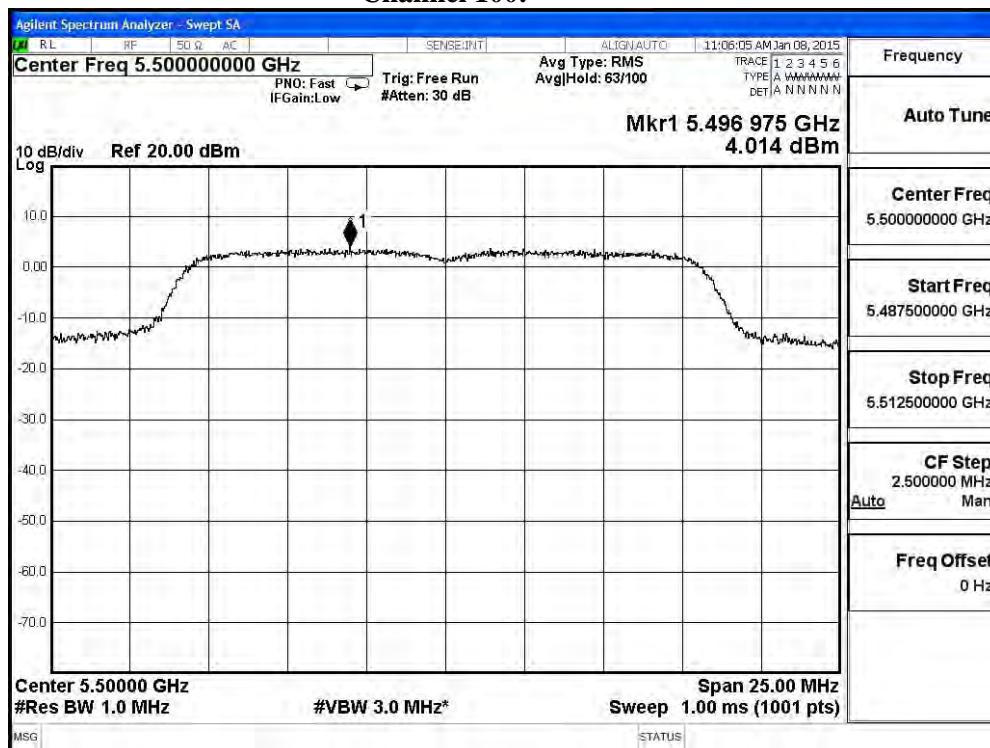
## Channel 60:



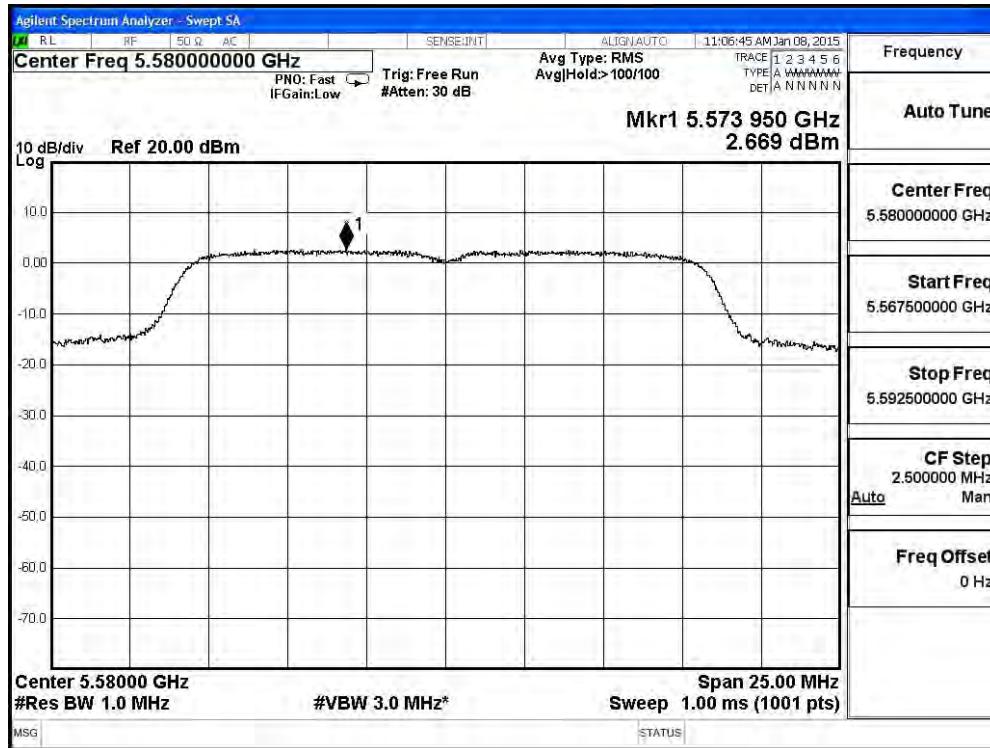
## Channel 64:



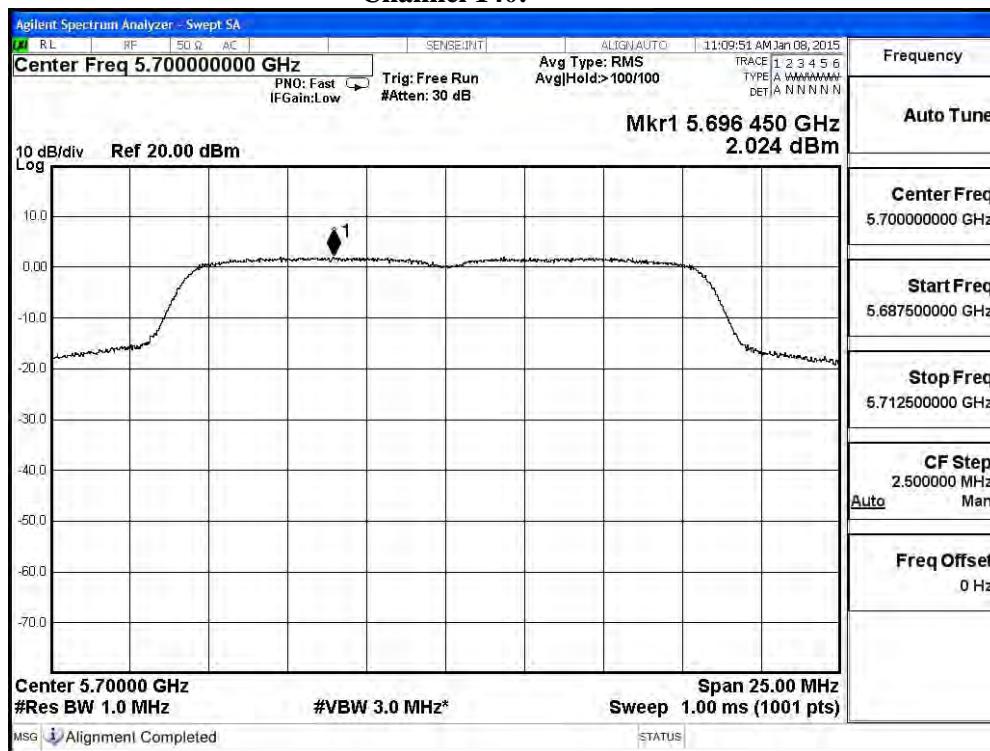
## Channel 100:



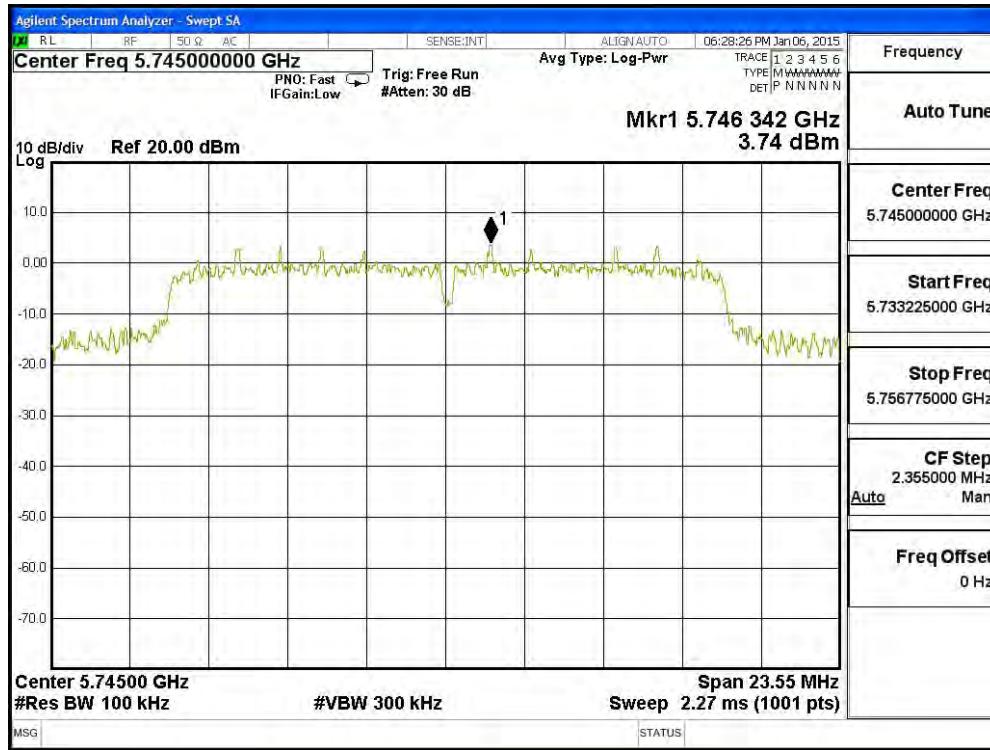
## Channel 116:



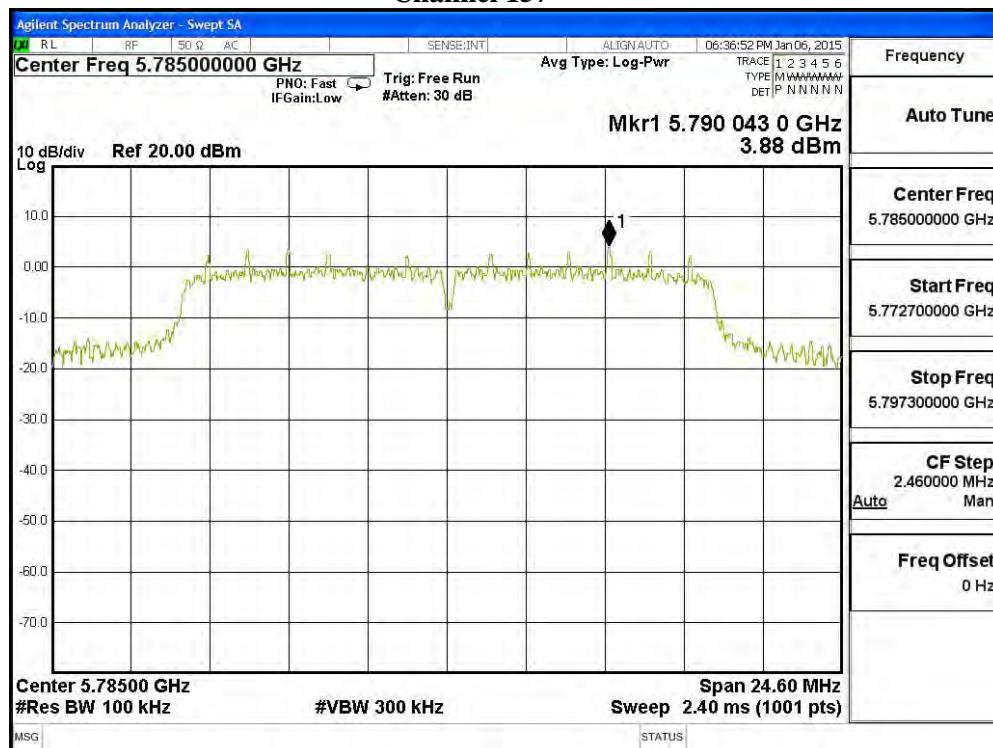
## Channel 140:



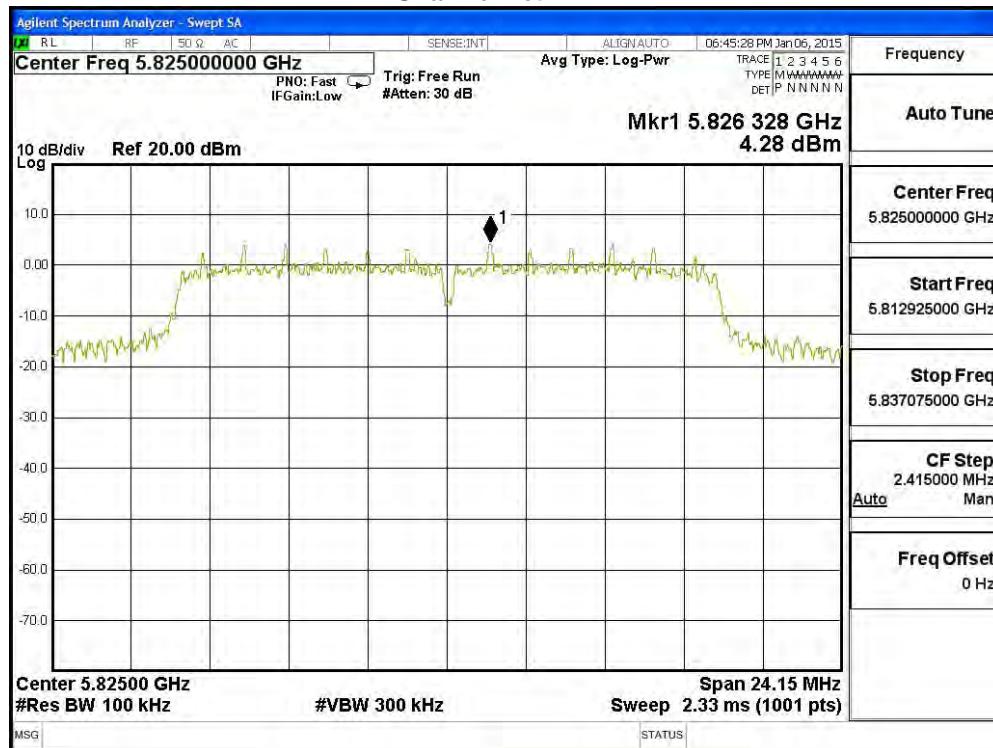
## Channel 149



## Channel 157



## Channel 165



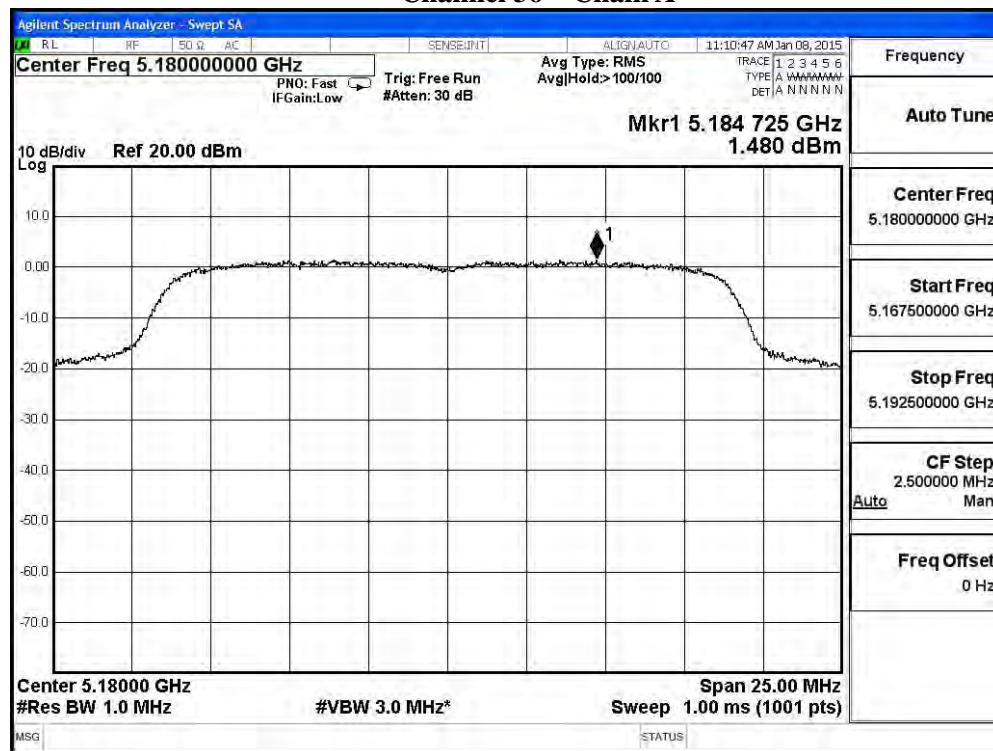
Product : WIFI Module  
 Test Item : Peak Power Spectral Density  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)1	Required Limit (dBm)	Result
36	5180	A	1.480	4.490	11	Pass
		B	-0.679	2.331	11	Pass
44	5220	A	1.339	4.349	11	Pass
		B	-0.716	2.294	11	Pass
48	5240	A	0.451	3.461	11	Pass
		B	-1.282	1.728	11	Pass
52	5260	A	0.746	3.756	11	Pass
		B	-0.245	2.765	11	Pass
60	5300	A	0.920	3.930	11	Pass
		B	0.514	3.524	11	Pass
64	5320	A	-0.590	2.420	11	Pass
		B	-0.720	2.290	11	Pass
100	5500	A	-0.820	2.190	11	Pass
		B	-0.750	2.260	11	Pass
116	5580	A	-0.670	2.340	11	Pass
		B	-0.930	2.080	11	Pass
140	5700	A	-0.660	2.350	11	Pass
		B	-0.780	2.230	11	Pass

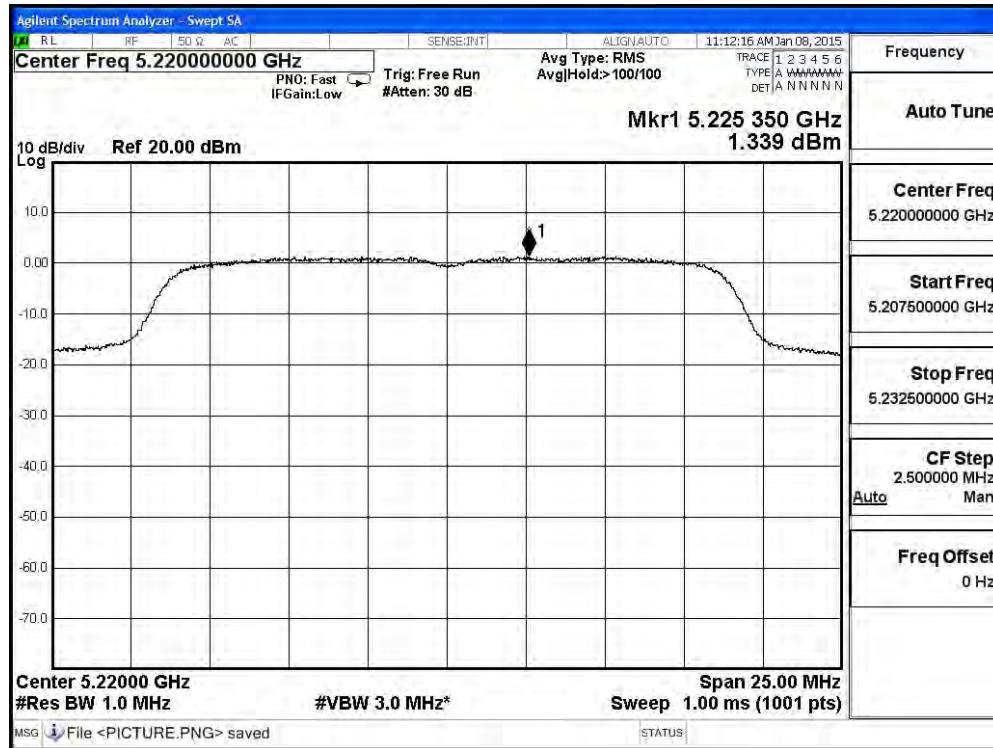
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
149	5745	A	3.190	6.980	13.180	<30	Pass
		B	0.000	6.980	9.990	<30	Pass
157	5785	A	3.020	6.980	13.010	<30	Pass
		B	-0.020	6.980	9.970	<30	Pass
165	5825	A	3.270	6.980	13.260	<30	Pass
		B	0.680	6.980	10.670	<30	Pass

Note 1: The quantity  $10 \log 2$  (two antennas) is added to the spectrum peak value according to document 662911 D01.

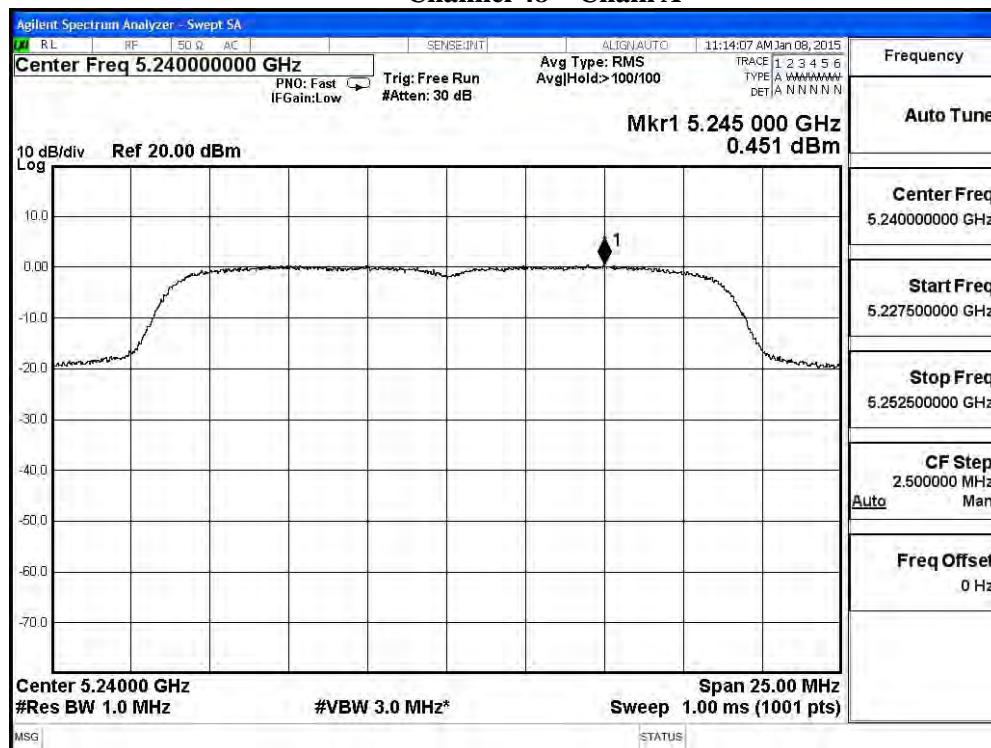
## Channel 36 – Chain A



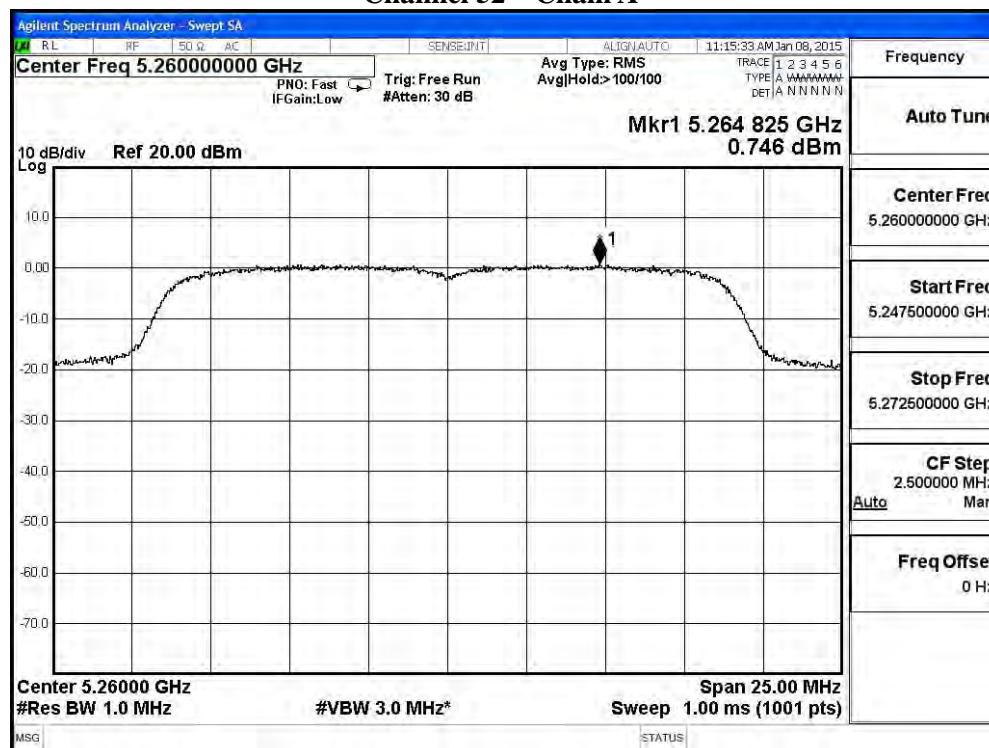
## Channel 44 – Chain A



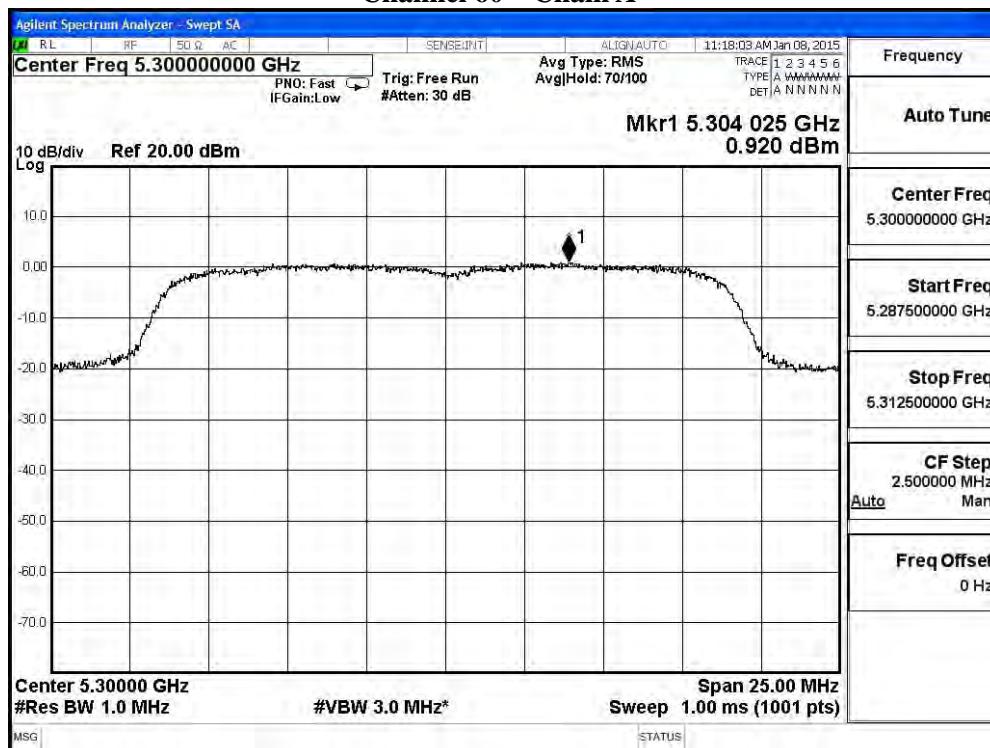
## Channel 48 – Chain A



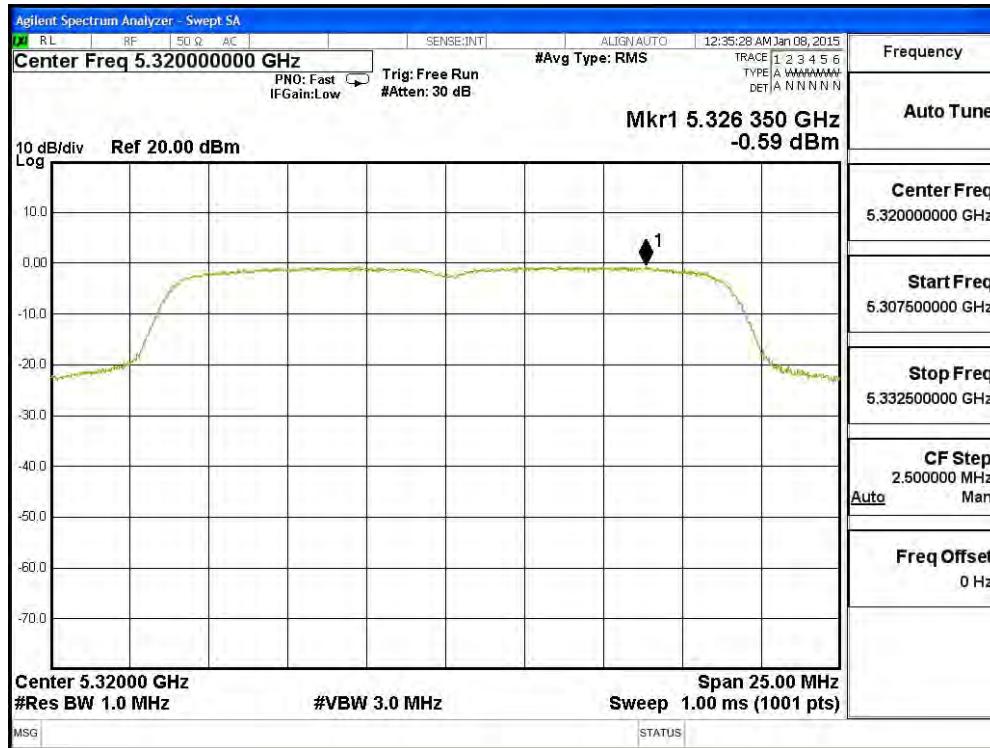
## Channel 52 – Chain A



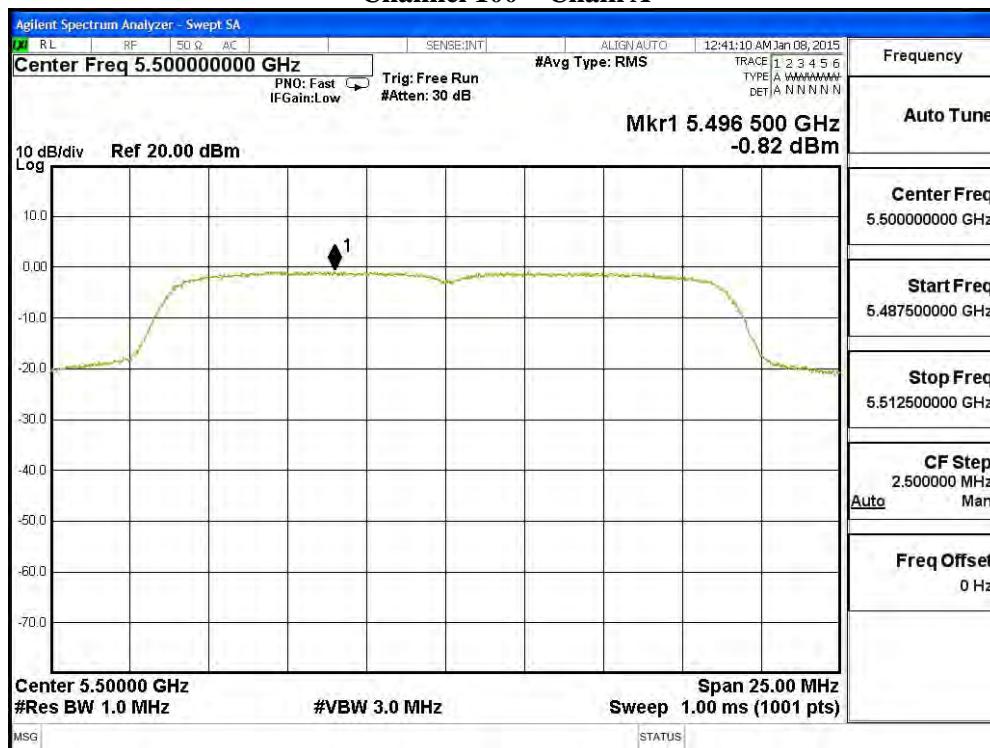
## Channel 60 – Chain A



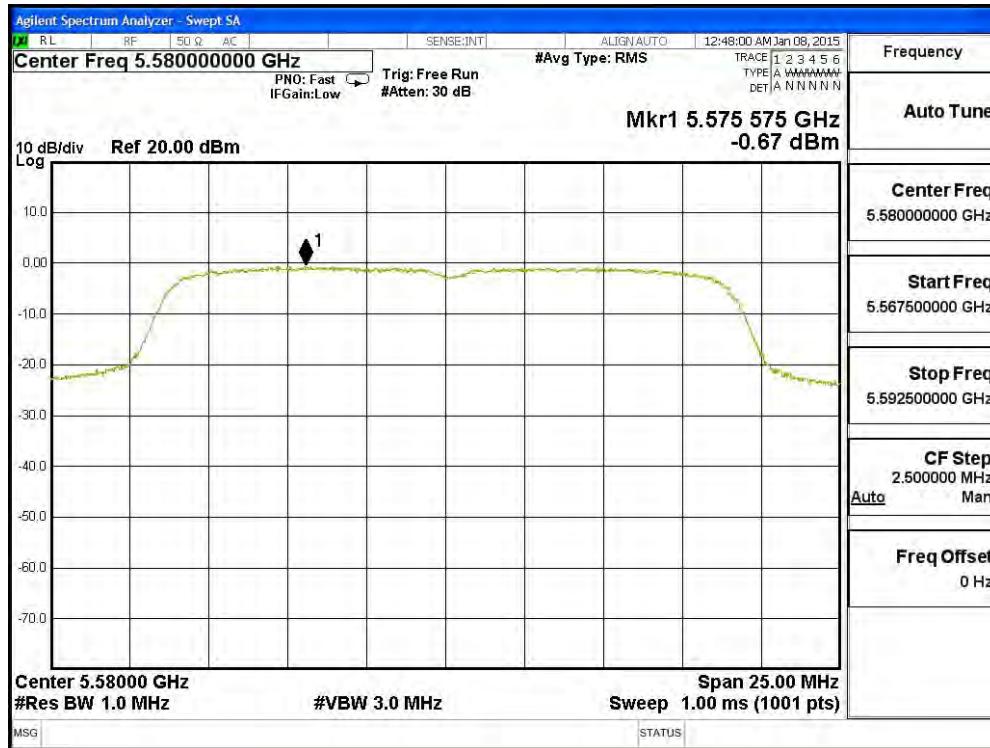
## Channel 64 – Chain A



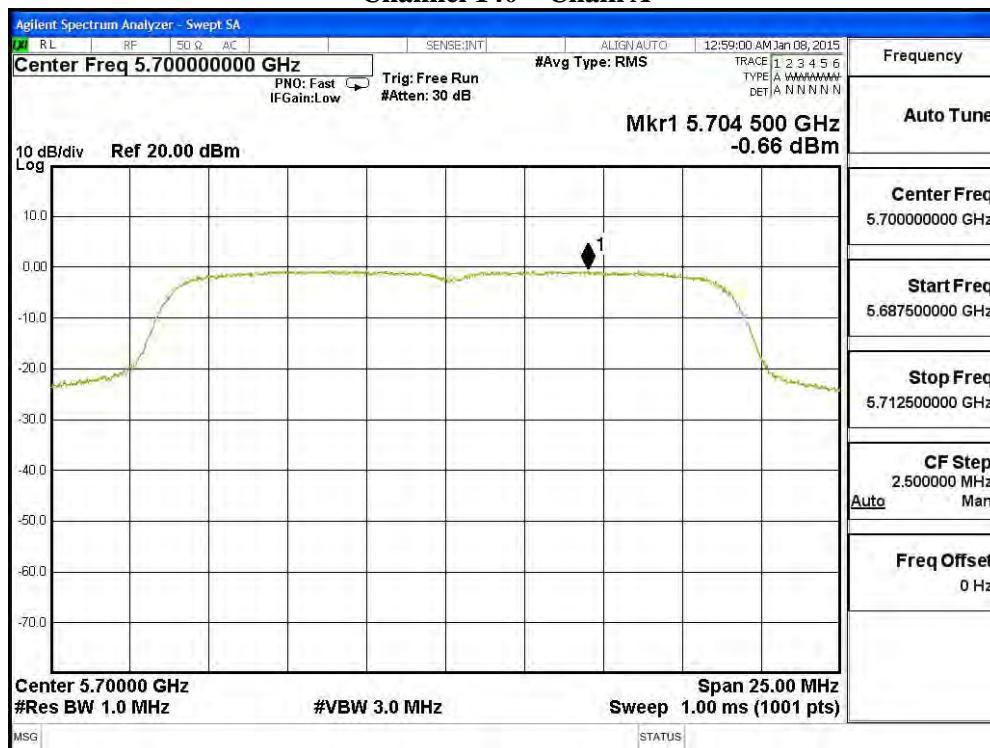
## Channel 100 – Chain A



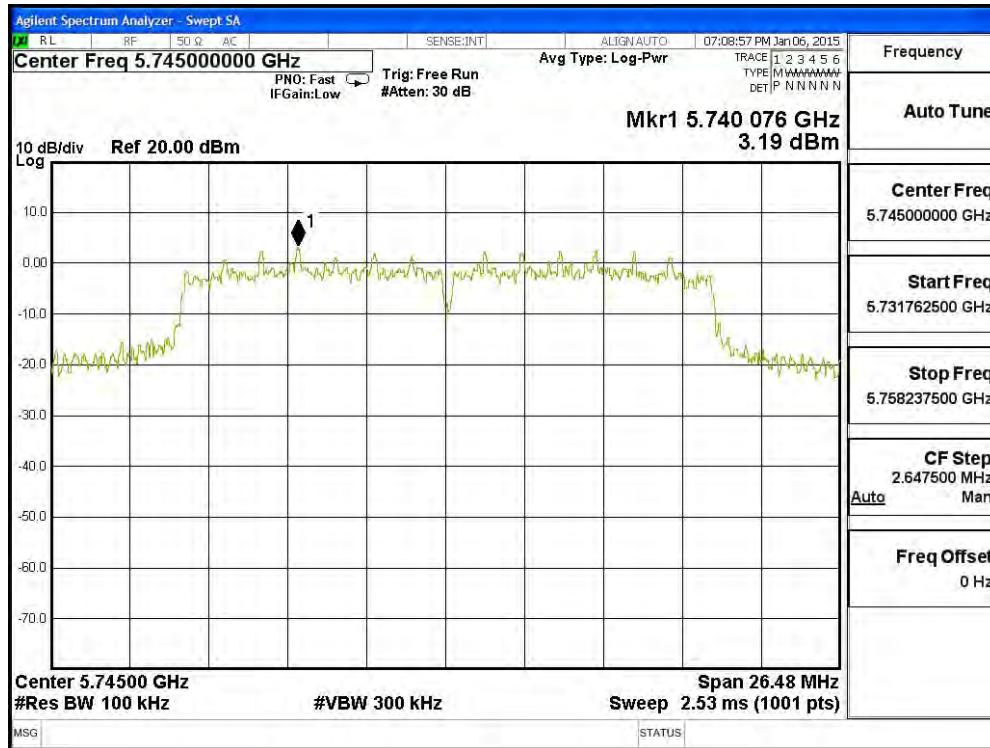
## Channel 116 – Chain A



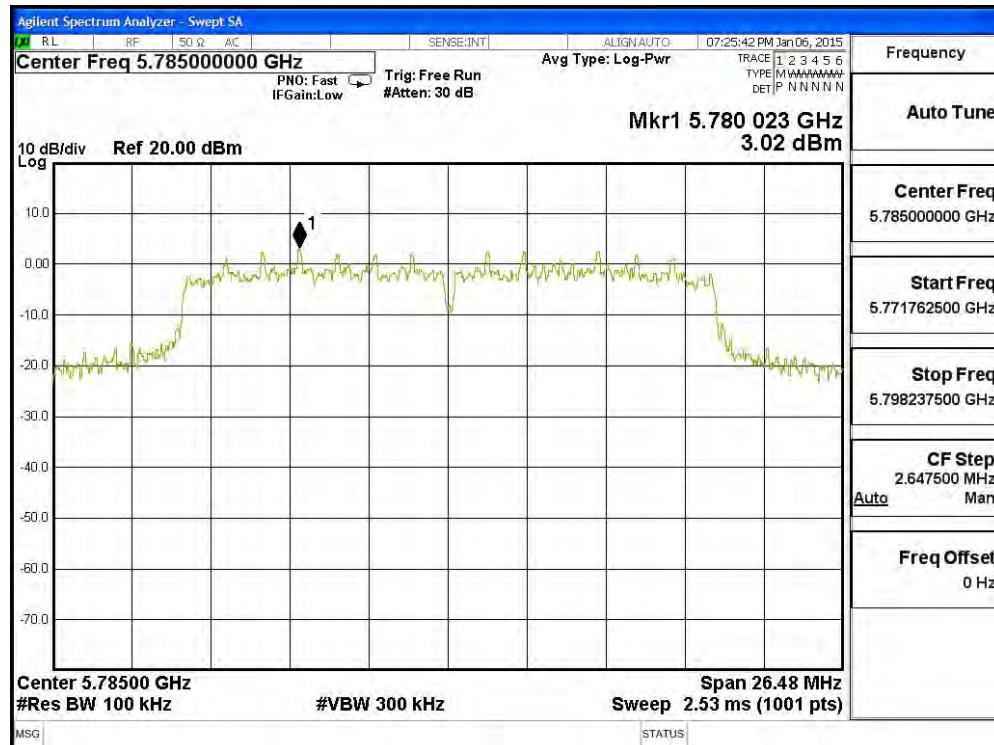
## Channel 140 – Chain A



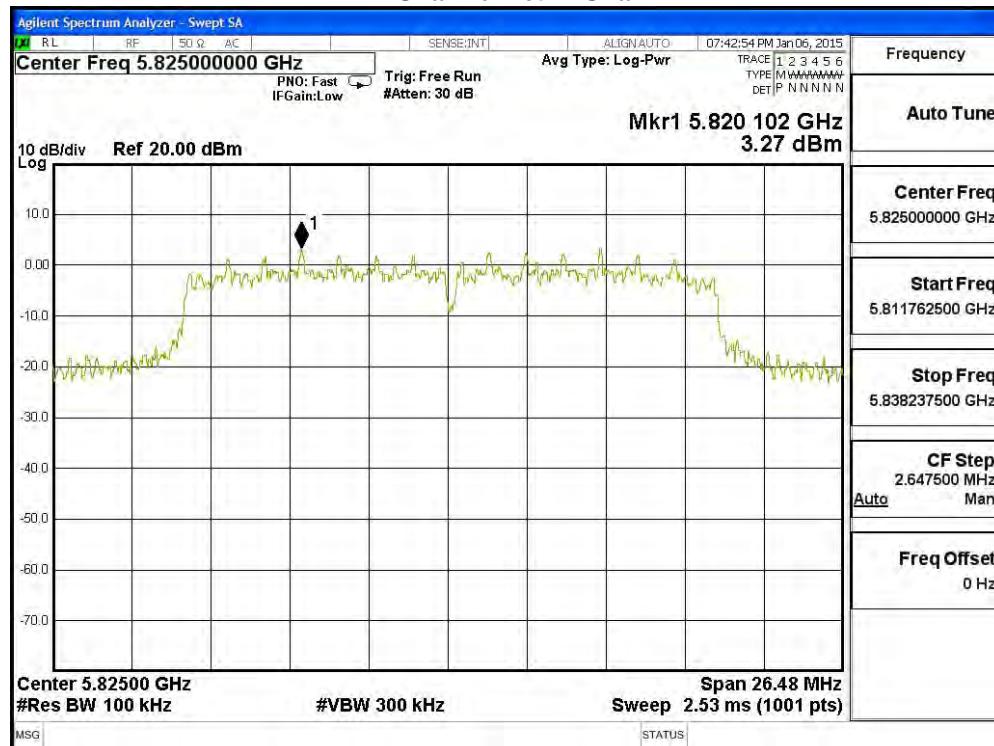
## . Channel 149 – Chain A



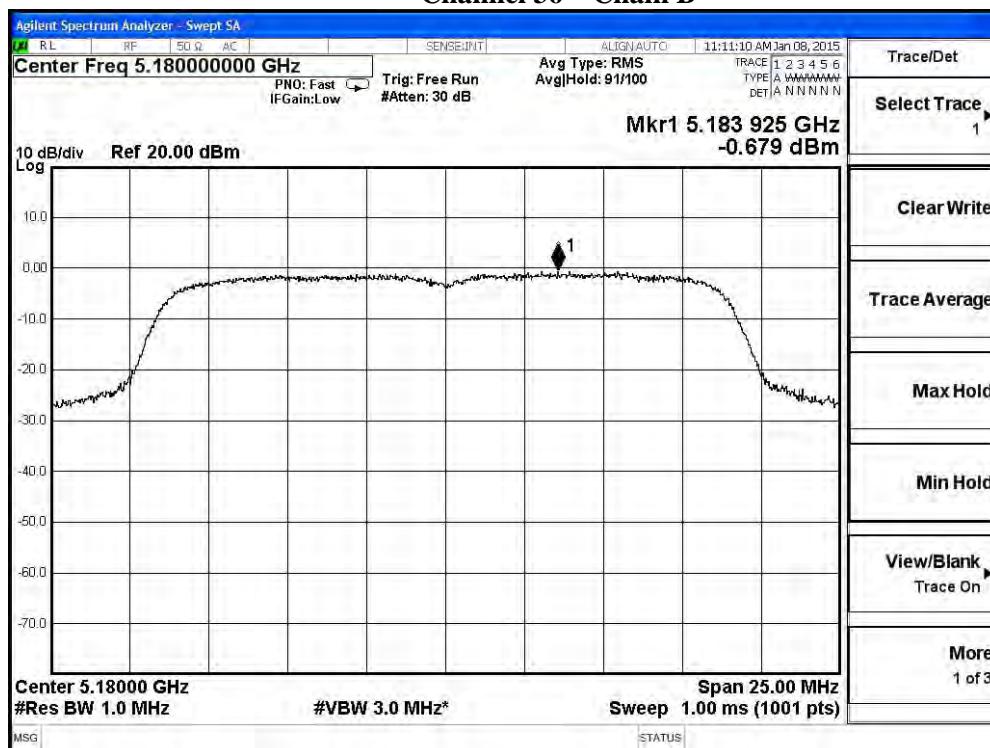
## Channel 157 – Chain A



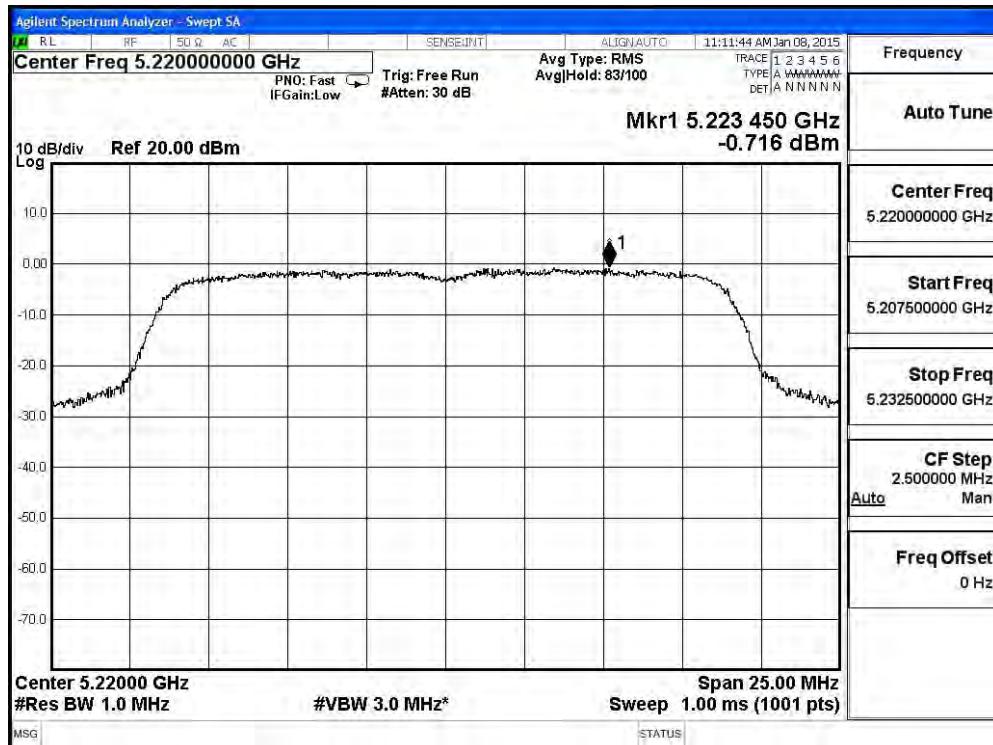
## Channel 165 – Chain A



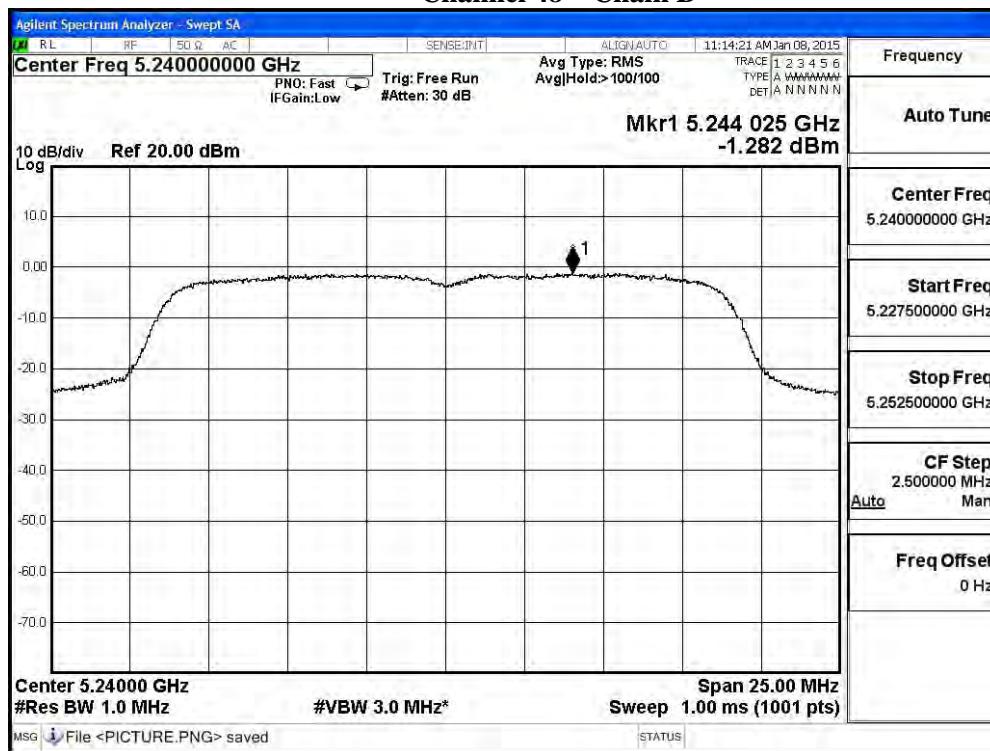
## Channel 36 – Chain B



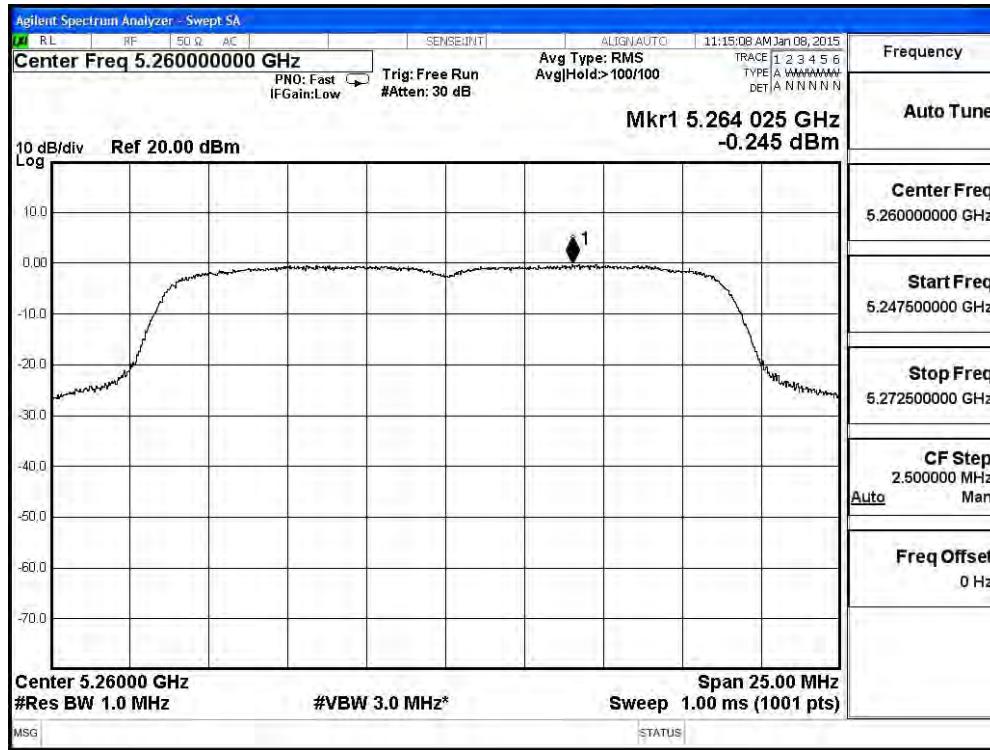
## Channel 44 – Chain B



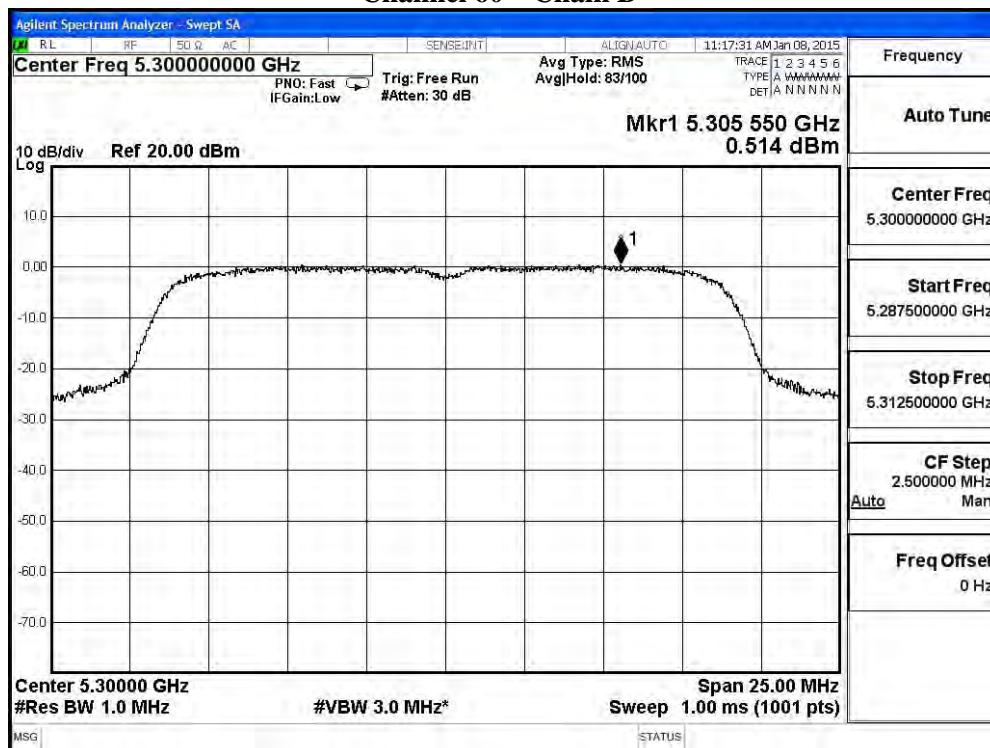
## Channel 48 – Chain B



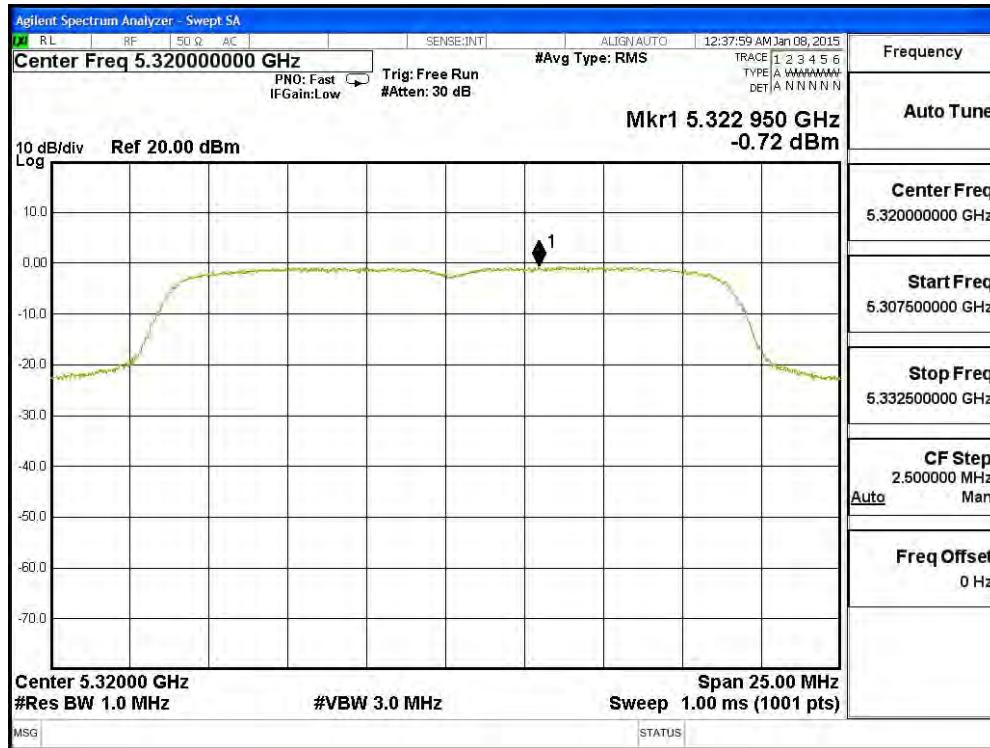
## Channel 52 – Chain B



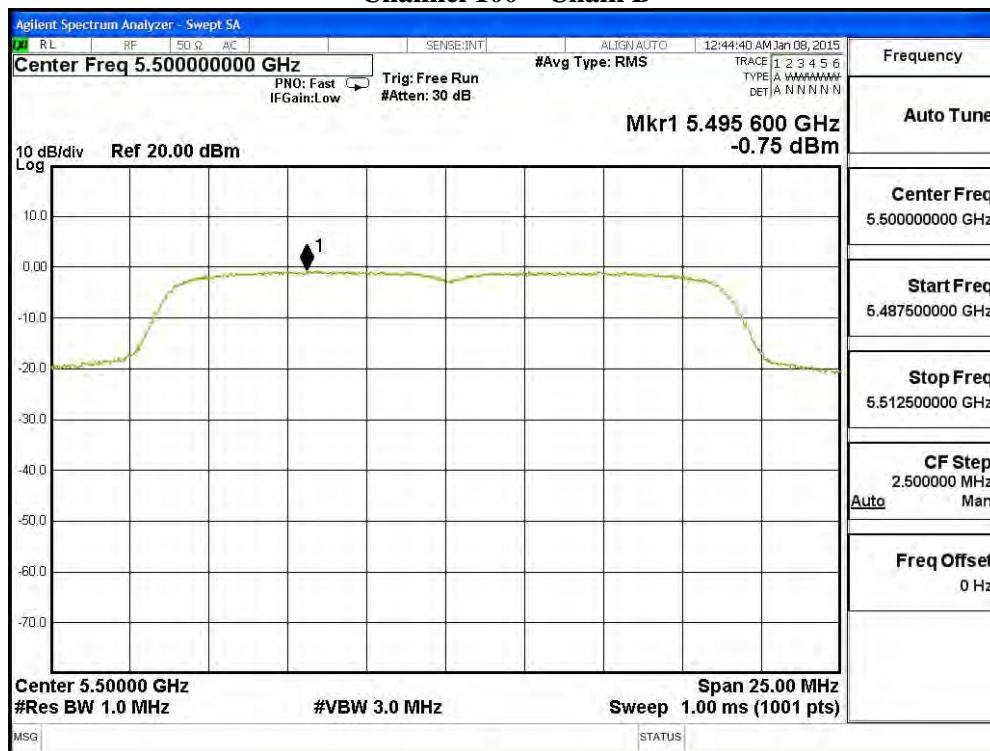
## Channel 60 – Chain B



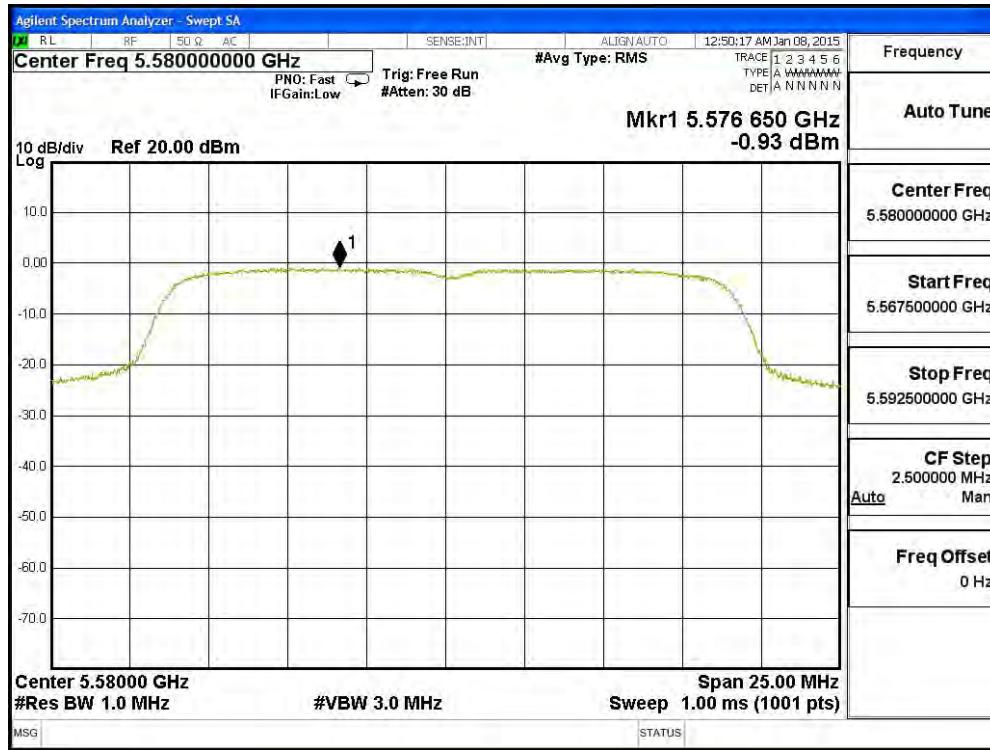
## Channel 64 – Chain B



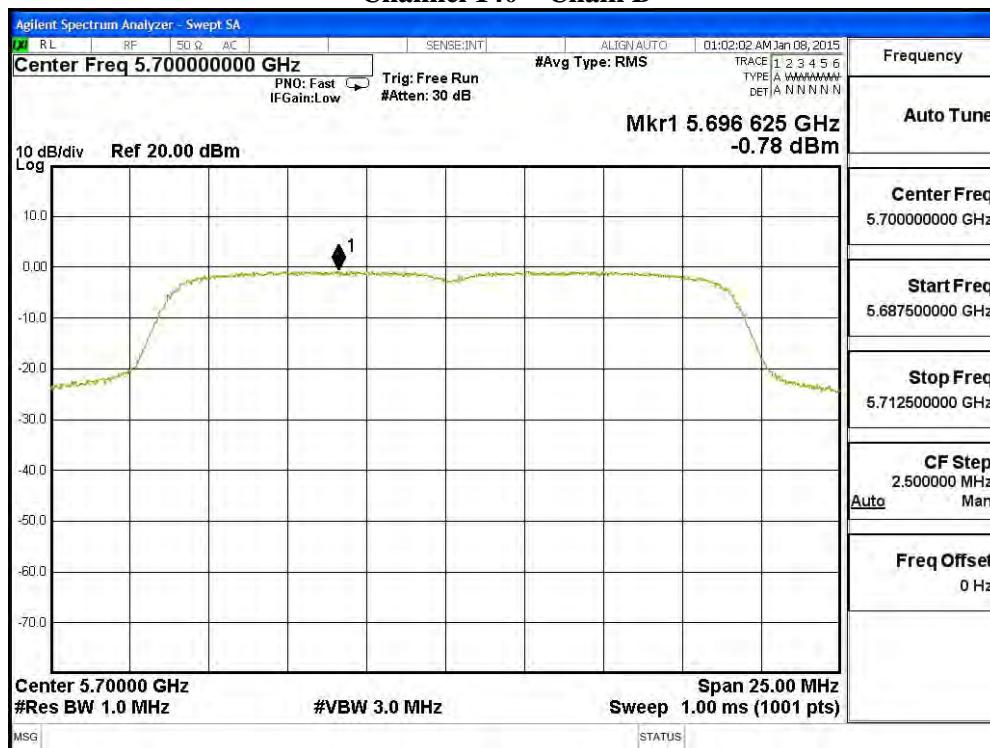
## Channel 100 – Chain B



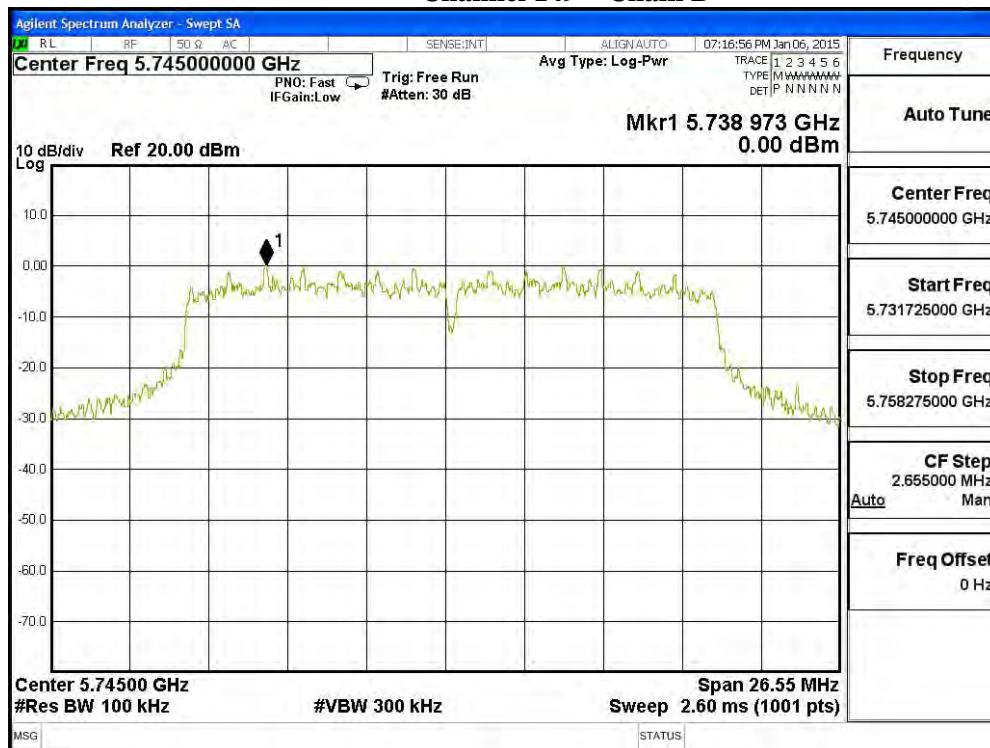
## Channel 116 – Chain B



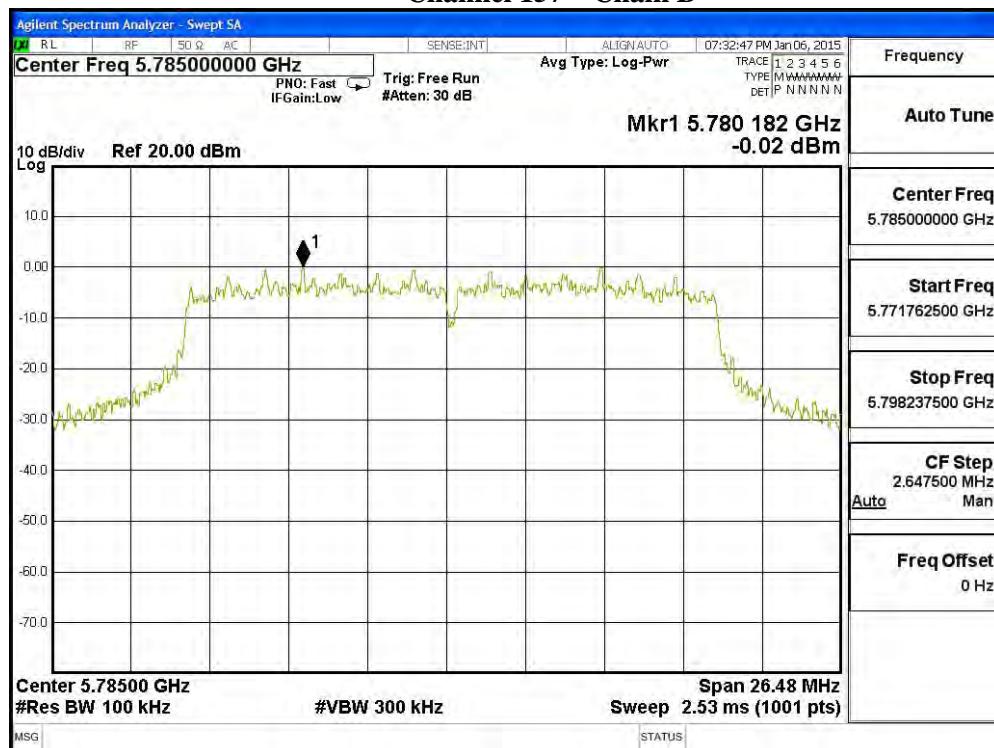
## Channel 140 – Chain B



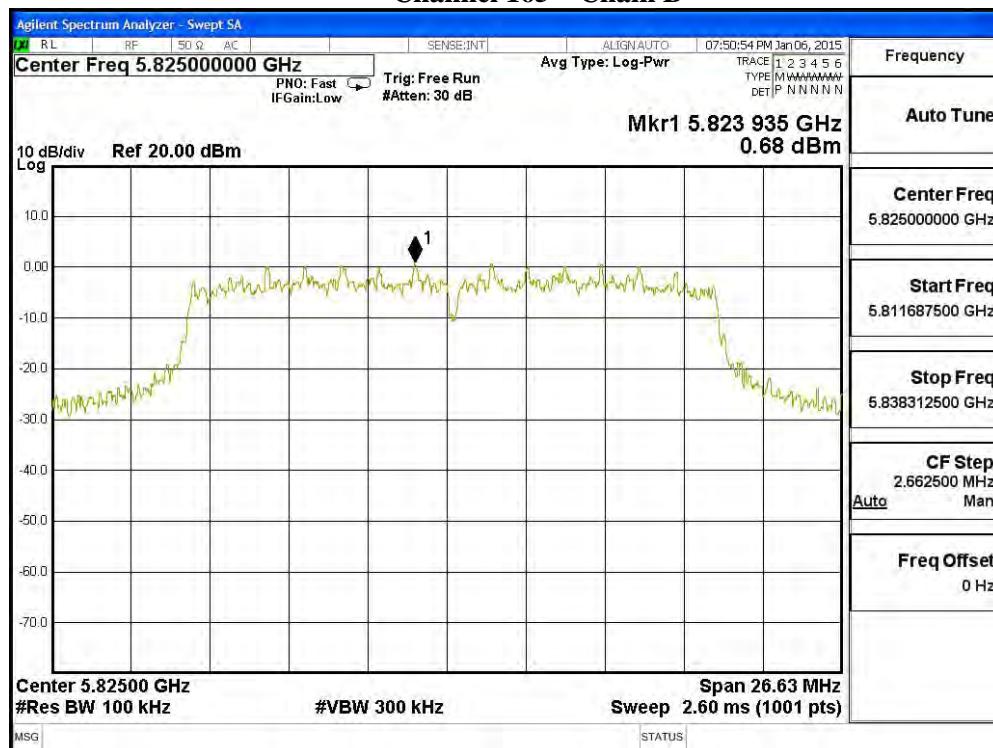
## Channel 149 – Chain B



## Channel 157 – Chain B



## Channel 165 – Chain B



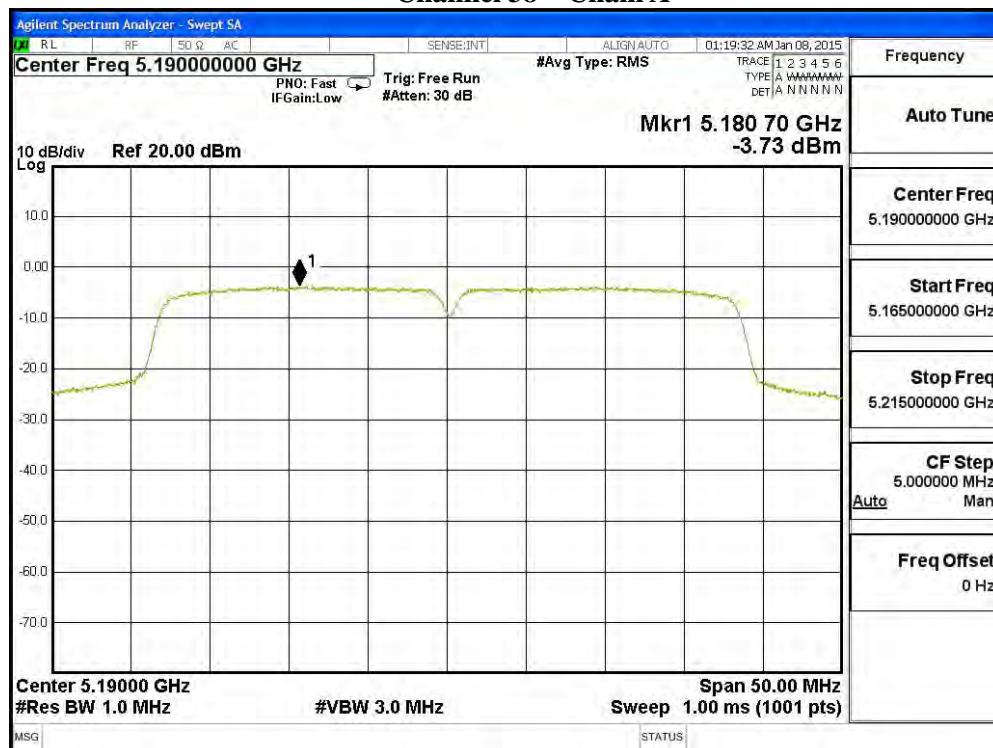
Product : WIFI Module  
Test Item : Peak Power Spectral Density  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm) <sub>1</sub>	Required Limit (dBm)	Result
38	5190	A	-3.730	-0.720	11	Pass
		B	-3.890	-0.880	11	Pass
46	5230	A	-3.640	-0.630	11	Pass
		B	-3.670	-0.660	11	Pass
54	5270	A	-4.680	-1.670	11	Pass
		B	-4.690	-1.680	11	Pass
62	5310	A	-2.950	0.060	11	Pass
		B	-3.290	-0.280	11	Pass
102	5510	A	-3.430	-0.420	11	Pass
		B	-3.550	-0.540	11	Pass
110	5550	A	-4.690	-1.680	11	Pass
		B	-4.690	-1.680	11	Pass
134	5670	A	-5.580	-2.570	11	Pass
		B	-5.510	-2.500	11	Pass

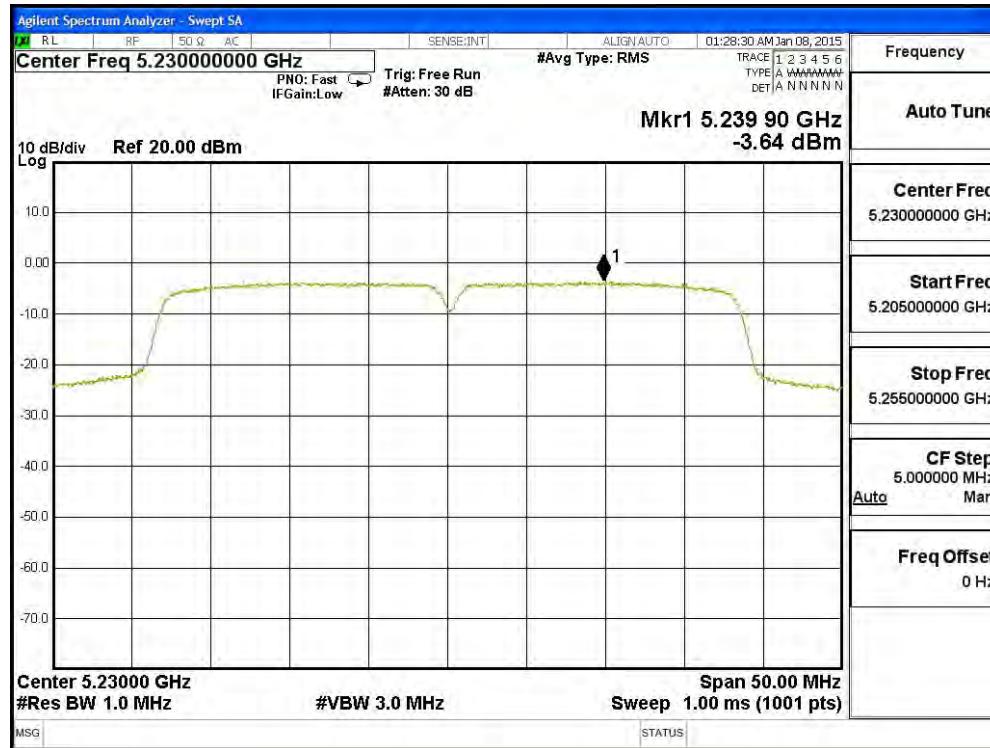
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm) <sub>1</sub>	Required Limit (dBm)	Result
151	5755	A	-0.560	6.980	9.430	<30	Pass
		B	-2.490	6.980	7.500	<30	Pass
159	5795	A	-0.640	6.980	9.350	<30	Pass
		B	-2.230	6.980	7.760	<30	Pass

Note 1: The quantity  $10 \log 2$  (two antennas) is added to the spectrum peak value according to document 662911 D01.

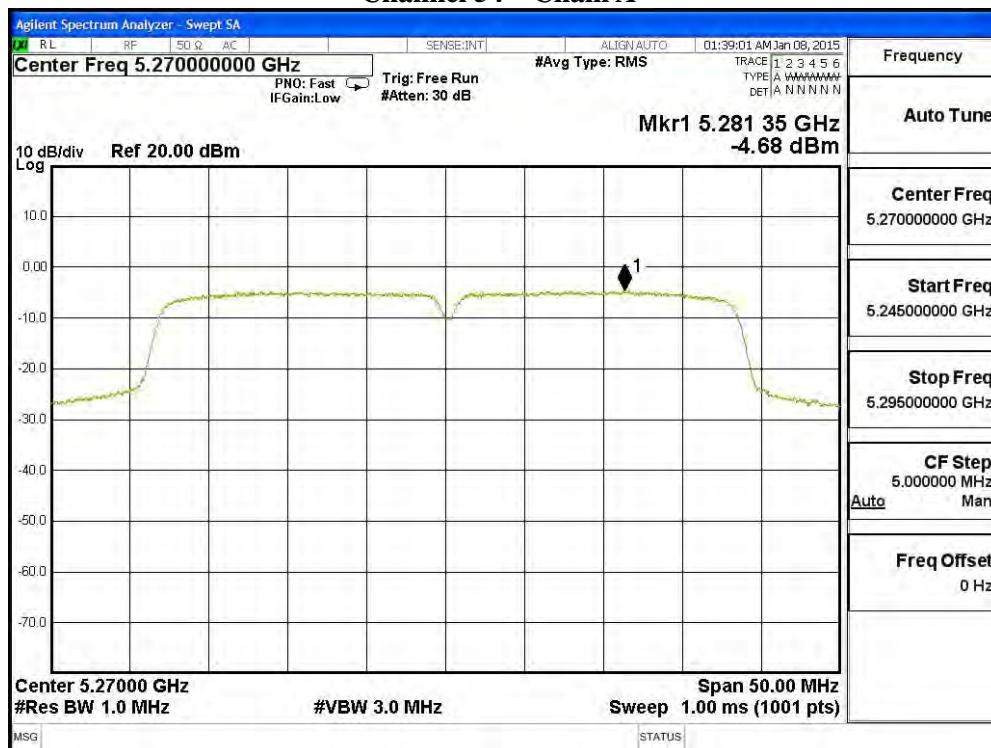
## Channel 38 – Chain A



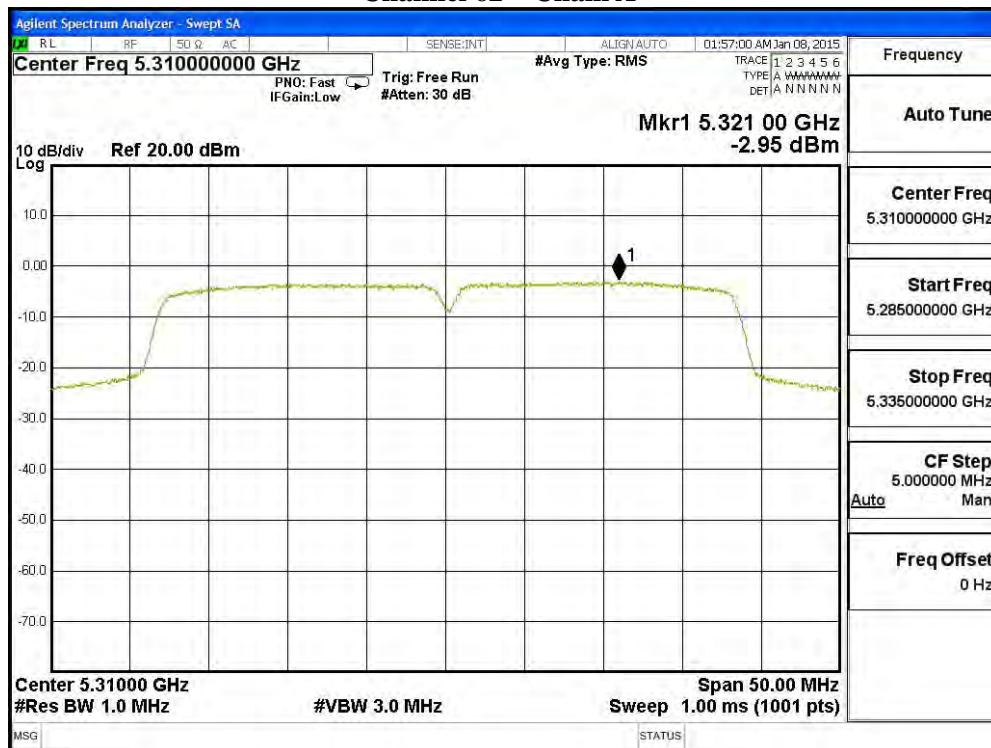
## Channel 46 – Chain A



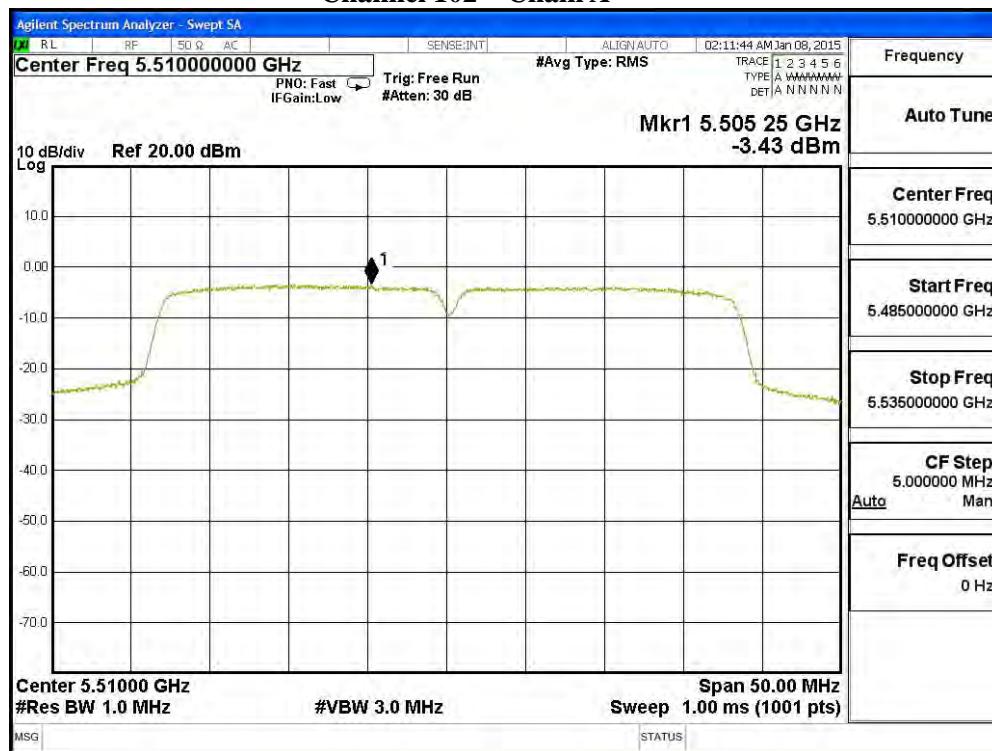
## Channel 54 – Chain A



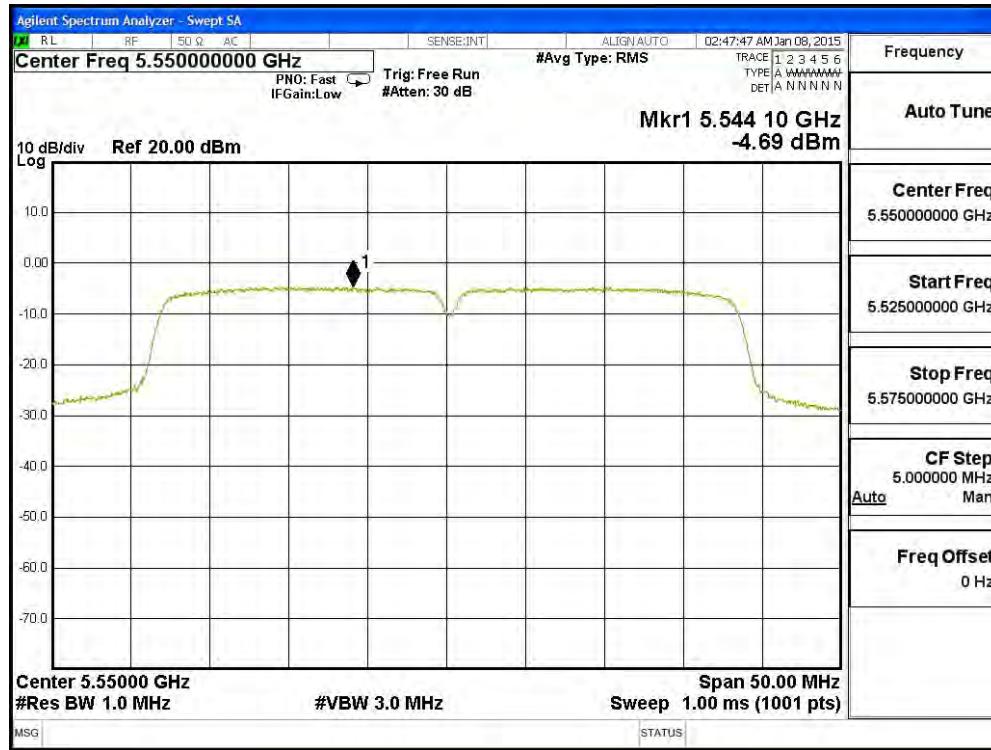
## Channel 62 – Chain A

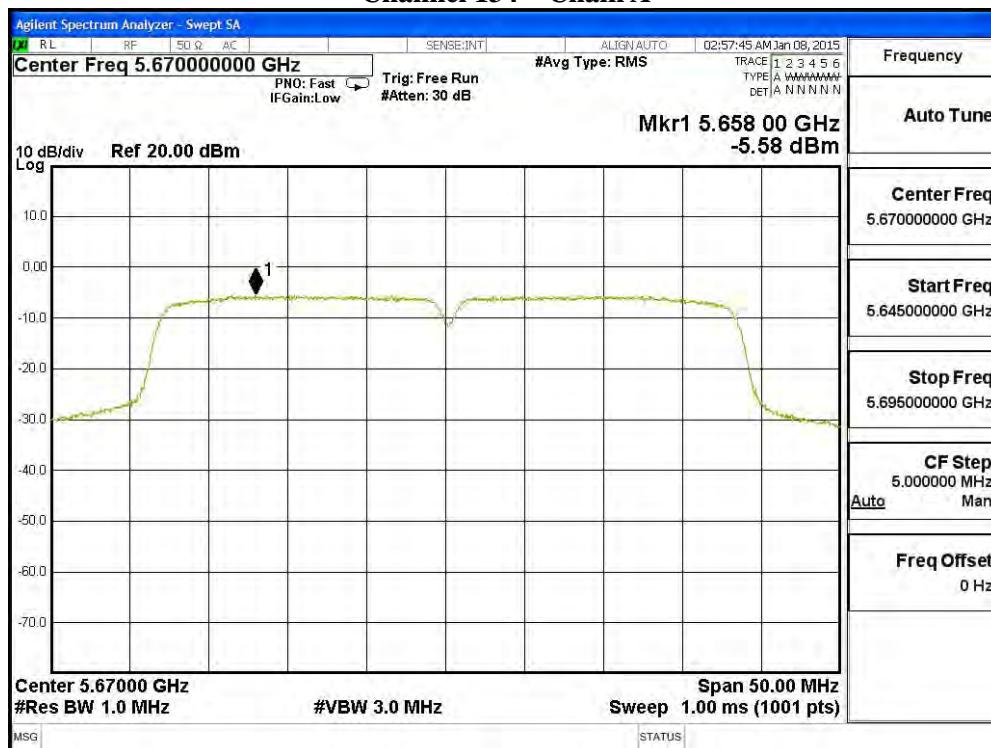
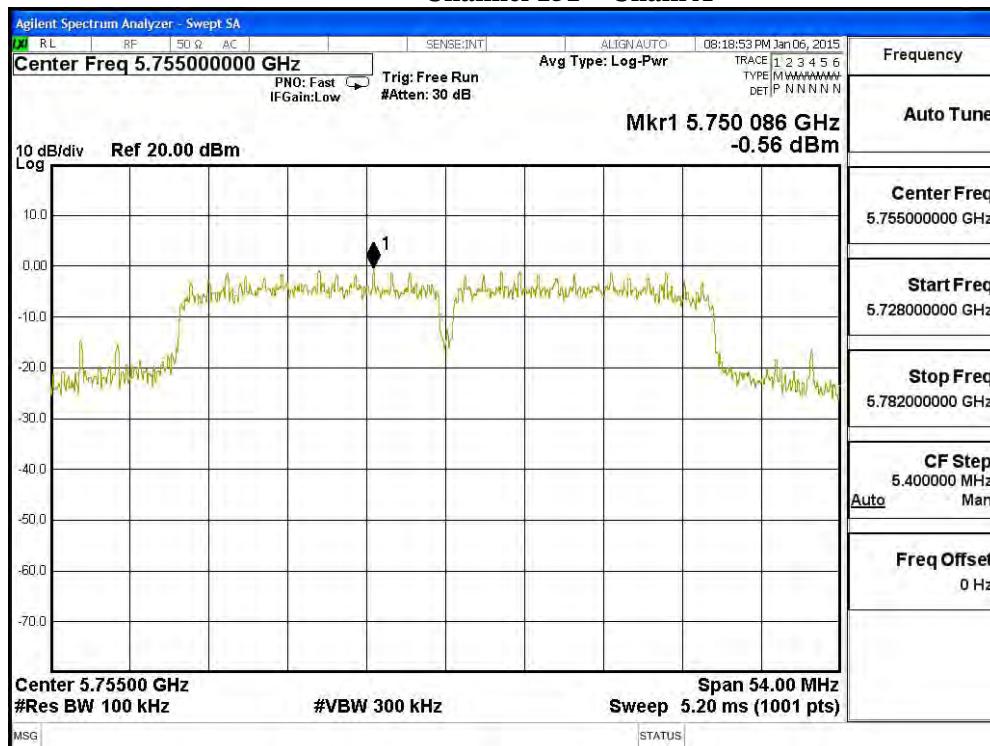


## Channel 102 – Chain A

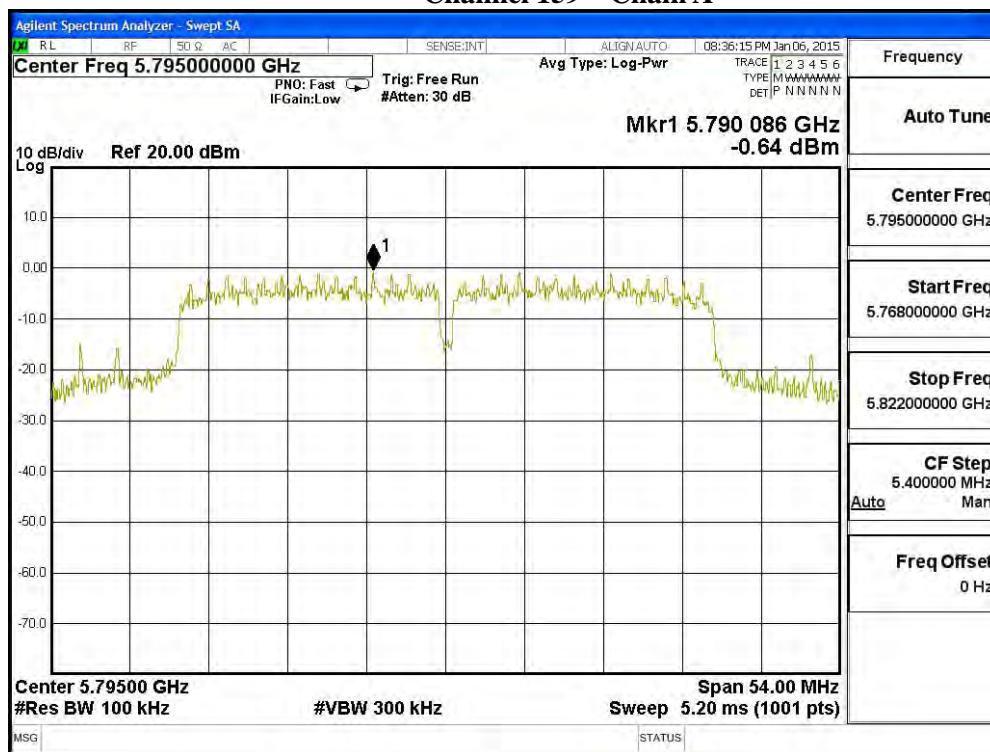


## Channel 110 – Chain A

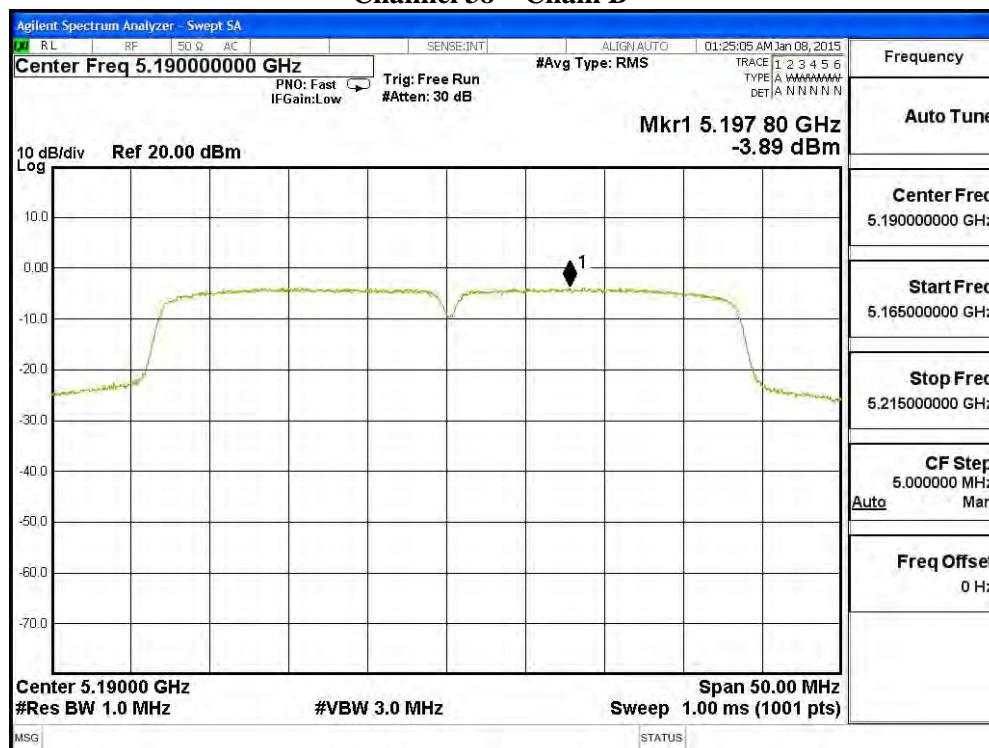


**Channel 134 – Chain A****Channel 151 – Chain A**

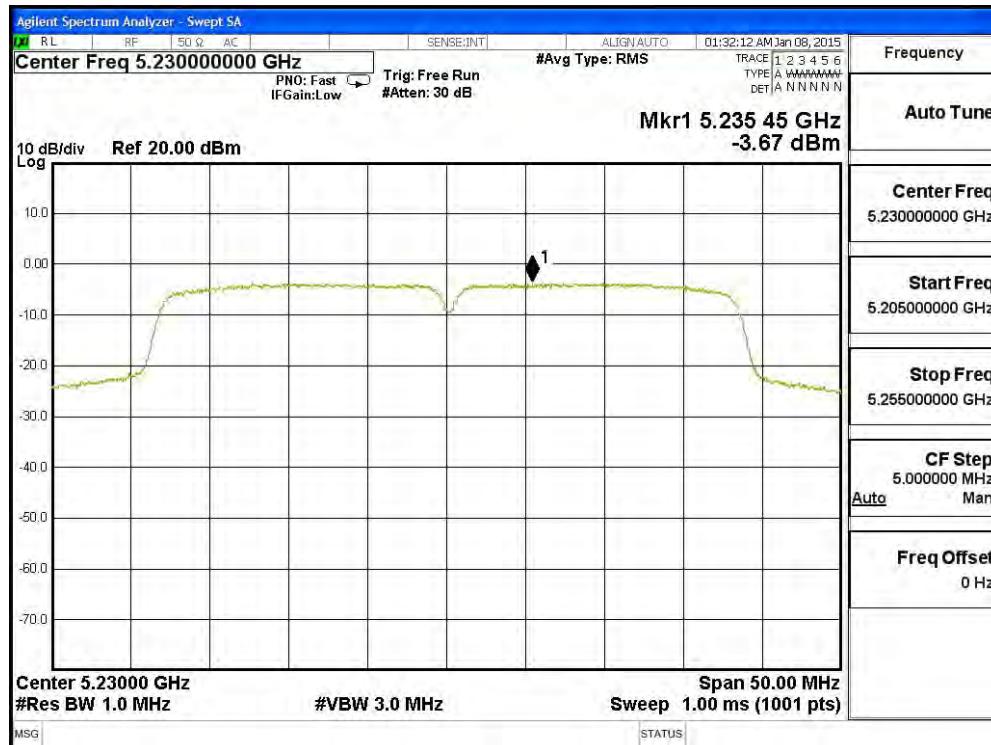
## Channel 159 – Chain A



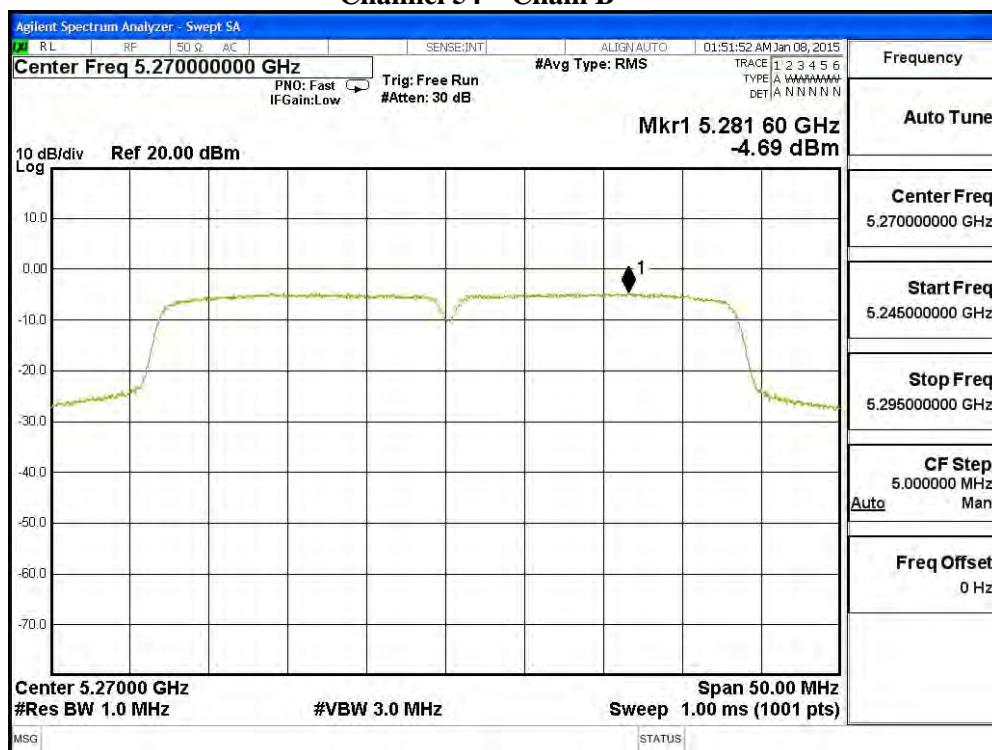
## Channel 38 – Chain B



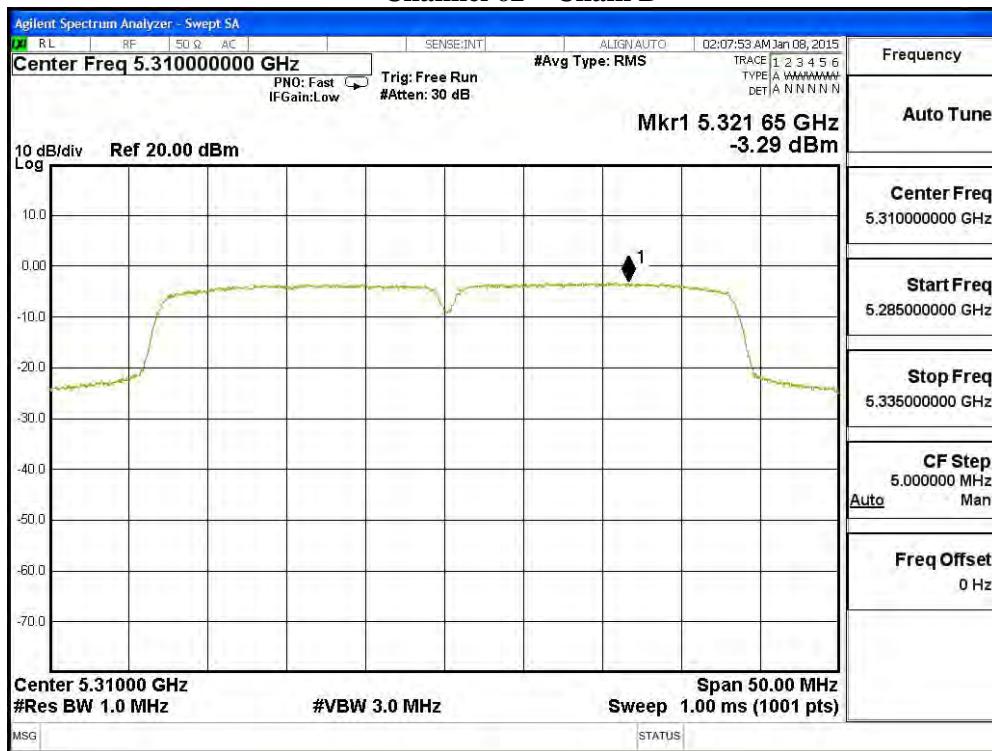
## Channel 46 – Chain B



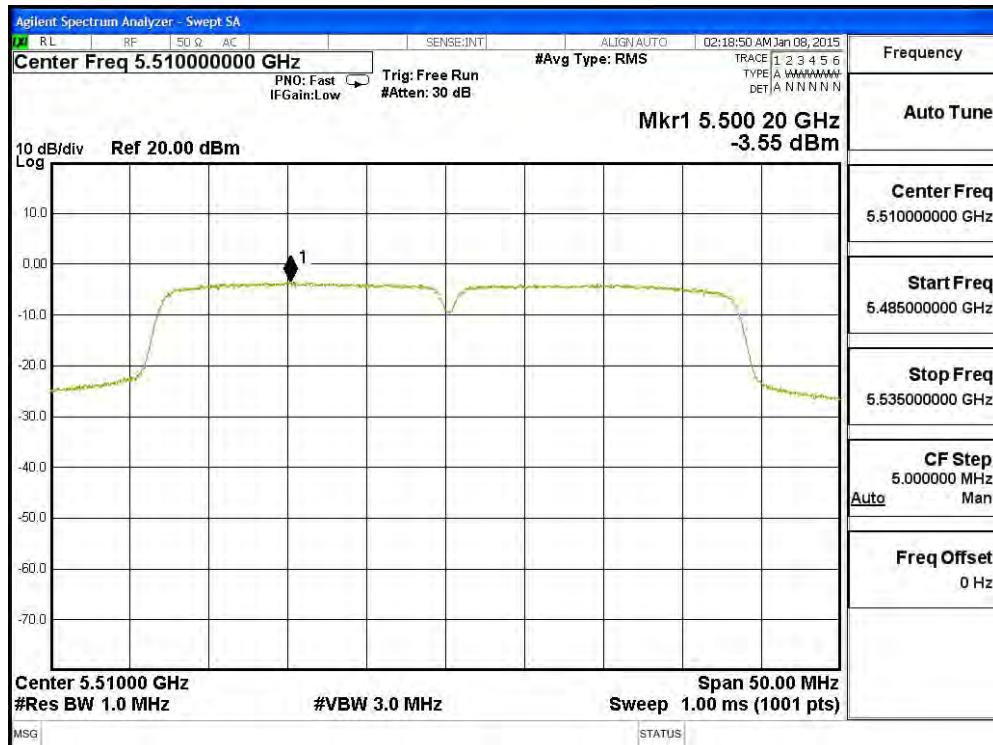
## Channel 54 – Chain B



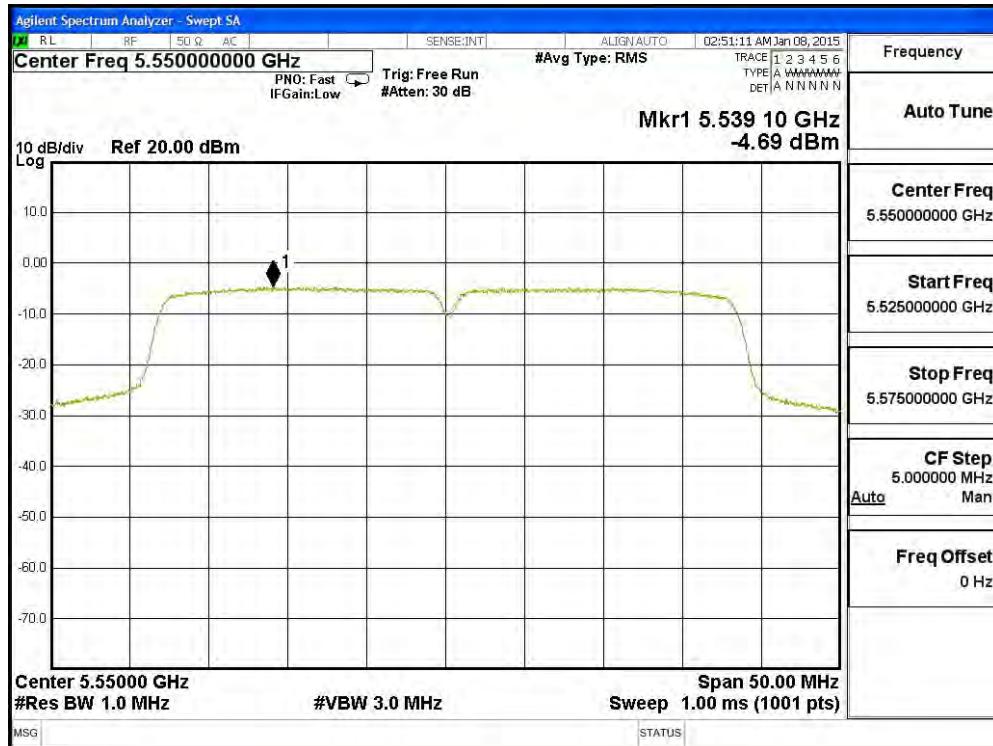
## Channel 62 – Chain B



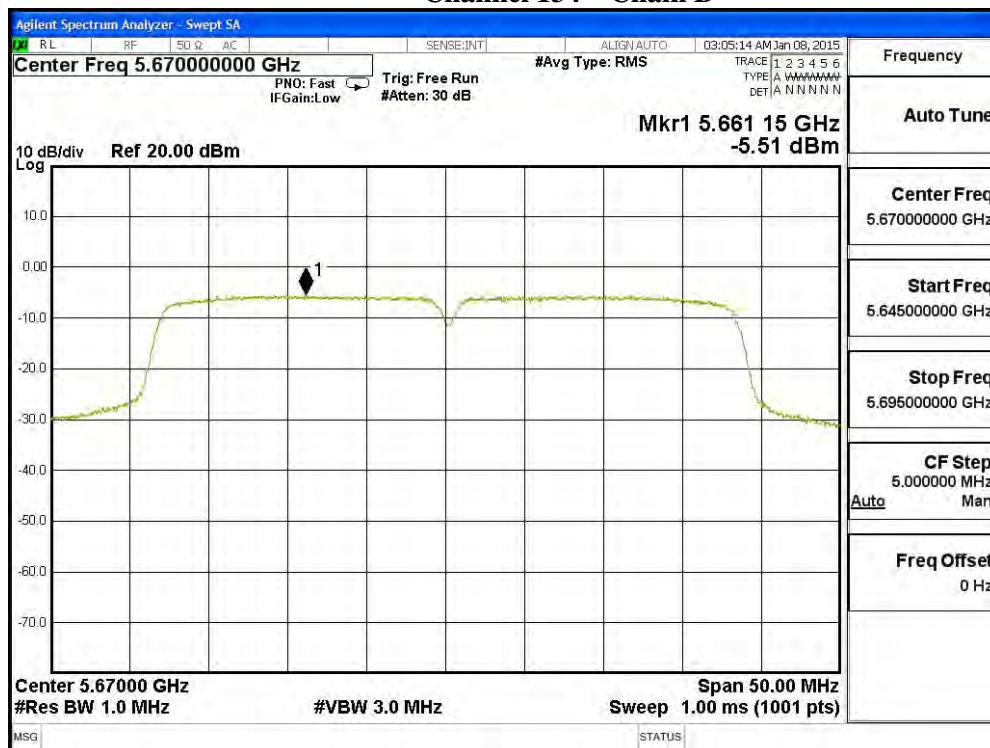
## Channel 102 – Chain B



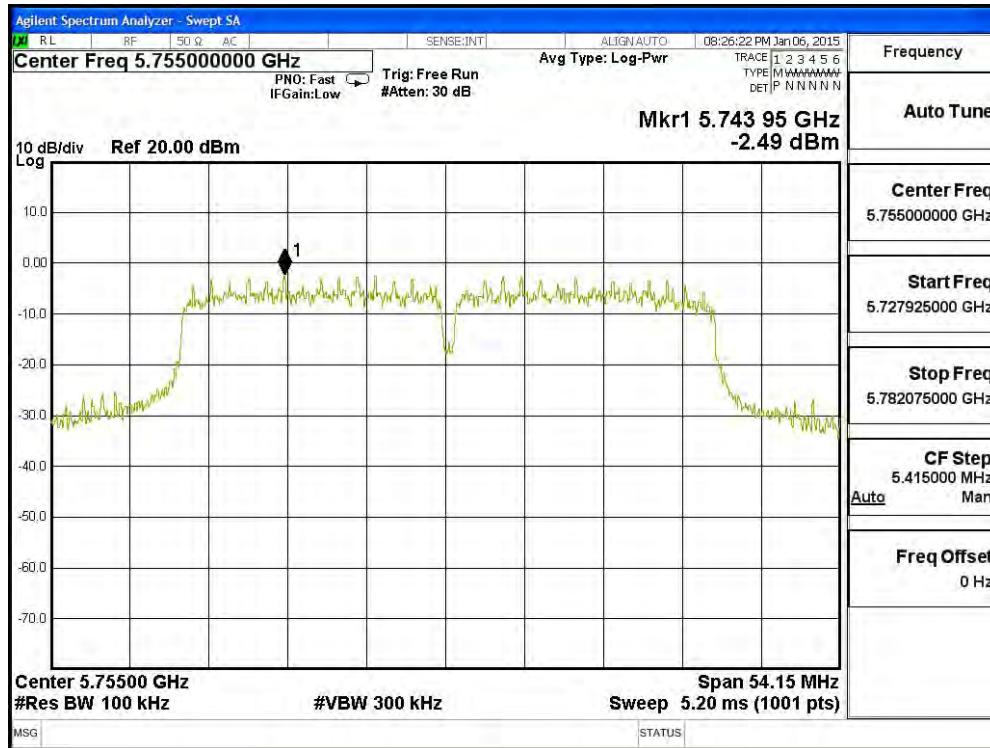
## Channel 110 – Chain B



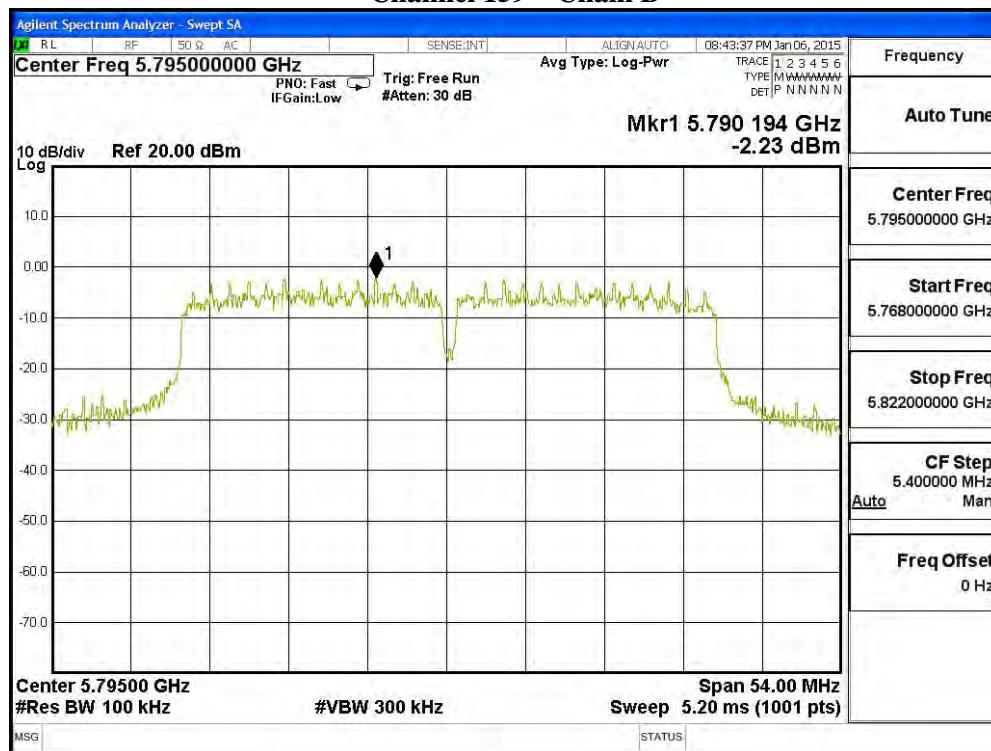
## Channel 134 – Chain B



## Channel 151 – Chain B



## Channel 159 – Chain B



## 5. Radiated Emission

### 5.1. Test Equipment

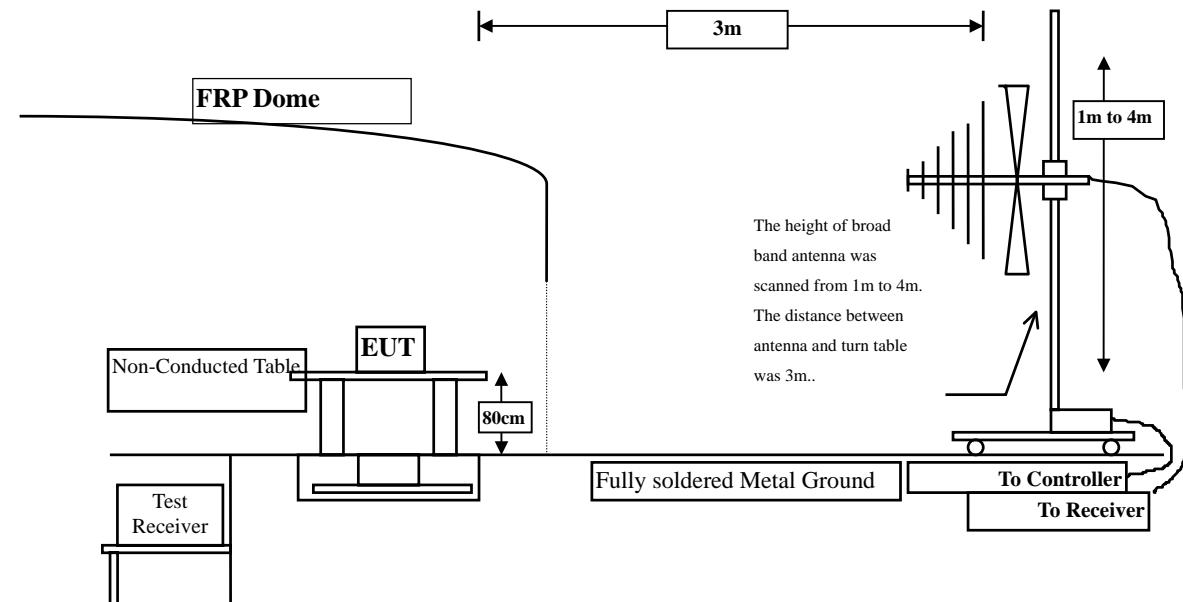
The following test equipments are used during the radiated emission test:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X Loop Antenna		Teseq	HLA6120 / 26739	Jul., 2014
	X Bilog Antenna		Schaffner Chase	CBL6112B/2673	Sep., 2014
	X Horn Antenna		Schwarzbeck	BBHA9120D/D305	Sep., 2014
	X Horn Antenna		Schwarzbeck	BBHA9170/208	Jul., 2014
	X Pre-Amplifier		Agilent	8447D/2944A09549	Sep., 2014
	X Spectrum Analyzer		Agilent	E4407B / US39440758	May, 2014
	X Test Receiver		R & S	ESCS 30/ 825442/018	Sep., 2014
	X Coaxial Cable		QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	X Controller		QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch		Anritsu	MP59B/6200265729	N/A

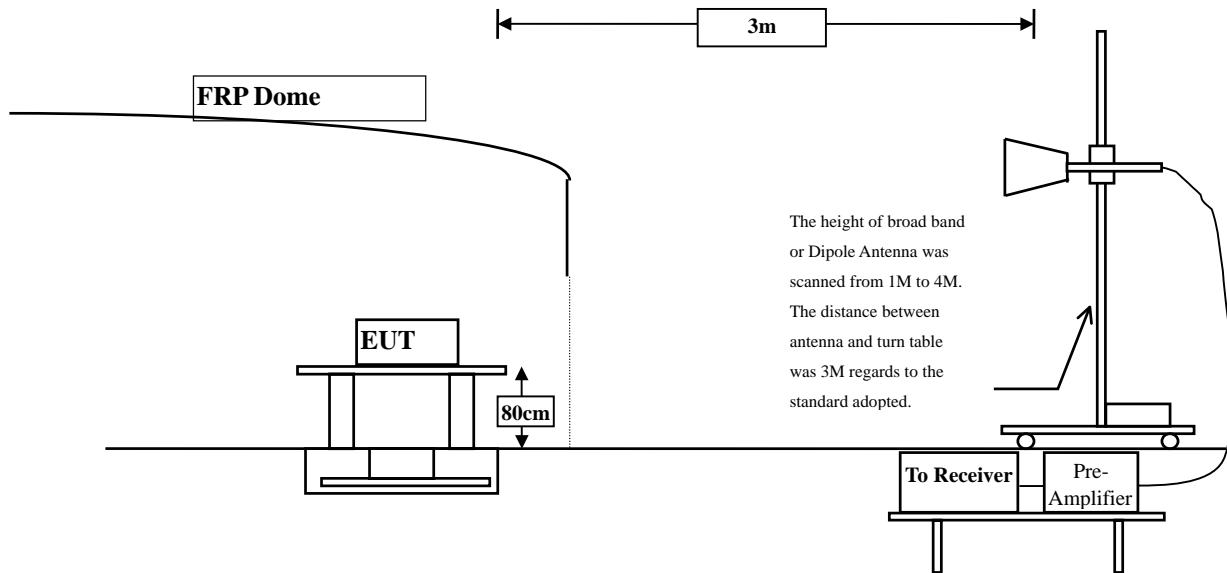
Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
 2. The test instruments marked with "X" are used to measure the final test results.

### 5.2. Test Setup

#### Radiated Emission Below 1GHz



## Radiated Emission Above 1GHz



### 5.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength ( $\text{dB}\mu\text{V}/\text{m}$ ) =  $20 \log E$  field strength ( $\mu\text{V}/\text{m}$ )

#### **5.4. Test Procedure**

The EUT was setup according to ANSI C63.10, 2009 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10, 2009 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9KHz - 10th Harmonic of fundamental was investigated.

#### **5.5. Uncertainty**

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

## 5.6. Test Result of Radiated Emission

Product : WIFI Module  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10360.000	12.930	43.890	56.820	-17.180	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10360.000	12.930	30.760	43.690	-10.310	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10360.000	13.724	48.260	61.984	-12.016	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10360.000	13.724	35.230	48.954	-5.046	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5220MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10440.000	13.322	43.550	56.872	-17.128	74.000
15660.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10440.000	13.322	30.250	43.572	-10.428	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10440.000	14.245	47.590	61.835	-12.165	74.000
15660.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10440.000	14.245	36.220	50.465	-3.535	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5240MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10480.000	13.693	42.950	56.644	-17.356	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
<b>Average</b>					
<b>Detector:</b>					
10480.000	13.693	30.520	44.214	-9.786	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10480.000	14.620	48.220	62.841	-11.159	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
<b>Average</b>					
<b>Detector:</b>					
10480.000	14.620	35.220	49.841	-4.159	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5260MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10520.000	14.015	43.220	57.235	-16.765	74.000
15780.000	*	*	*	*	74.000
21040.000	*	*	*	*	74.000
26300.000	*	*	*	*	74.000
<b>Average</b>					
<b>Detector:</b>					
10520.000	14.015	30.850	44.865	-9.135	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10520.000	14.818	47.220	62.038	-11.962	74.000
15780.000	*	*	*	*	74.000
21040.000	*	*	*	*	74.000
26300.000	*	*	*	*	74.000
<b>Average</b>					
<b>Detector:</b>					
10520.000	14.818	35.330	50.148	-3.852	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5300MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
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**Horizontal****Peak Detector:**

10600.000	14.550	42.260	56.809	-17.191	74.000
15900.000	*	*	*	*	74.000
21200.000	*	*	*	*	74.000
26500.000	*	*	*	*	74.000

**Average  
Detector:**

10600.000	14.550	31.040	45.589	-8.411	54.000
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**Vertical****Peak Detector:**

10600.000	14.881	47.520	62.401	-11.599	74.000
15900.000	*	*	*	*	74.000
21200.000	*	*	*	*	74.000
26500.000	*	*	*	*	74.000

**Average  
Detector:**

10600.000	14.881	35.240	50.121	-3.879	54.000
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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5320MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10640.000	14.690	41.550	56.240	-17.760	74.000
15960.000	*	*	*	*	74.000
21280.000	*	*	*	*	74.000
26600.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10640.000	14.690	31.220	45.910	-8.090	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10640.000	15.083	47.980	63.063	-10.937	74.000
15960.000	*	*	*	*	74.000
21280.000	*	*	*	*	74.000
26600.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10640.000	15.083	35.110	50.193	-3.807	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5500MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11000.000	16.399	43.260	59.659	-14.341	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11000.000	16.399	29.330	45.729	-8.271	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11000.000	17.132	47.250	64.382	-9.618	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11000.000	17.132	31.820	48.952	-5.048	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5580MHz)

Frequency MHz	Correct Factor dB	Reading Level dBµV	Measurement Level dBµV/m	Margin dB	Limit dBµV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11160.000	16.664	44.850	61.515	-12.485	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11160.000	16.664	29.630	46.295	-7.705	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11160.000	17.643	47.590	65.233	-8.767	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11160.000	17.643	31.590	49.233	-4.767	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5700MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11400.000	16.530	43.520	60.051	-13.949	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11400.000	16.530	32.150	48.681	-5.319	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11400.000	17.138	44.590	61.728	-12.272	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11400.000	17.138	31.550	48.688	-5.312	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11490.000	17.106	40.750	57.857	-16.143	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11490.000	17.106	25.620	42.727	-11.273	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11490.000	18.034	44.850	62.885	-11.115	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11490.000	18.034	28.990	47.025	-6.975	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11570.000	16.809	45.750	62.559	-11.441	74.000
17355.000	*	*	*	*	74.000
20800.000	*	*	*	*	74.000
26000.000	*	*	*	*	74.000
31200.000	*	*	*	*	74.000
36400.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11570.000	16.809	29.420	46.229	-7.771	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11570.000	17.698	45.170	62.868	-11.132	74.000
17355.000	*	*	*	*	74.000
20800.000	*	*	*	*	74.000
26000.000	*	*	*	*	74.000
31200.000	*	*	*	*	74.000
36400.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11570.000	17.698	29.950	47.648	-6.352	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5825MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11650.000	16.158	46.590	62.748	-11.252	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11650.000	16.158	29.900	46.058	-7.942	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11650.000	17.274	48.220	65.495	-8.505	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11650.000	17.274	31.480	48.755	-5.245	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5180MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10360.000	12.930	49.020	61.950	-12.050	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10360.000	12.930	34.260	47.190	-6.810	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10360.000	13.724	49.260	62.984	-11.016	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10360.000	13.724	35.930	49.654	-4.346	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5220MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10440.000	13.322	49.060	62.382	-11.618	74.000
15660.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10440.000	13.322	34.580	47.902	-6.098	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10440.000	14.245	49.510	63.755	-10.245	74.000
15660.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10440.000	14.245	35.230	49.475	-4.525	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5240MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10480.000	13.693	49.220	62.914	-11.086	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10480.000	13.693	34.520	48.214	-5.786	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10480.000	14.620	48.140	62.761	-11.239	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10480.000	14.620	35.040	49.661	-4.339	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5260MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10520.000	14.015	48.530	62.545	-11.455	74.000
15780.000	*	*	*	*	74.000
21040.000	*	*	*	*	74.000
26300.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10520.000	14.015	34.520	48.535	-5.465	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10520.000	14.818	48.750	63.568	-10.432	74.000
15780.000	*	*	*	*	74.000
21040.000	*	*	*	*	74.000
26300.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10520.000	14.818	35.850	50.668	-3.332	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5300MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10600.000	14.550	41.530	56.079	-17.921	74.000
15900.000	*	*	*	*	74.000
21200.000	*	*	*	*	74.000
26500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10600.000	14.550	30.560	45.109	-8.891	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10600.000	14.881	45.260	60.141	-13.859	74.000
15900.000	*	*	*	*	74.000
21200.000	*	*	*	*	74.000
26500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10600.000	14.881	34.110	48.991	-5.009	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5320MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10640.000	14.690	47.150	61.840	-12.160	74.000
15960.000	*	*	*	*	74.000
21280.000	*	*	*	*	74.000
26600.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10640.000	14.690	33.550	48.240	-5.760	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10640.000	15.083	48.260	63.343	-10.657	74.000
15960.000	*	*	*	*	74.000
21280.000	*	*	*	*	74.000
26600.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10640.000	15.083	34.850	49.933	-4.067	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5500MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11000.000	16.399	48.520	64.919	-9.081	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11000.000	16.399	33.580	49.979	-4.021	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11000.000	17.132	47.150	64.282	-9.718	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11000.000	17.132	33.310	50.442	-3.558	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5580MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11160.000	16.664	47.110	63.775	-10.225	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11160.000	16.664	32.510	49.175	-4.825	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11160.000	17.643	47.030	64.673	-9.327	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11160.000	17.643	34.020	51.663	-2.337	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5700MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11400.000	16.530	47.030	63.561	-10.439	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11400.000	16.530	34.150	50.681	-3.319	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11400.000	17.138	47.030	64.168	-9.832	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11400.000	17.138	32.560	49.698	-4.302	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5745MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11490.000	17.106	41.530	58.637	-15.363	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11490.000	17.106	25.760	42.867	-11.133	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11490.000	18.034	47.020	65.055	-8.945	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11490.000	18.034	31.910	49.945	-4.055	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5785MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11570.000	16.809	46.720	63.529	-10.471	74.000
17355.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
31320.000	*	*	*	*	74.000
36540.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11570.000	16.809	30.000	46.809	-7.191	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11570.000	17.698	49.770	67.468	-6.532	74.000
17355.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
31320.000	*	*	*	*	74.000
36540.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11570.000	17.698	33.212	50.910	-3.090	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5825MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11650.000	16.158	46.380	62.538	-11.462	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440.000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11650.000	16.158	29.680	45.838	-8.162	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11650.000	17.274	50.380	67.655	-6.345	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440.000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11650.000	17.274	33.560	50.835	-3.165	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10380.000	12.939	48.560	61.499	-12.501	74.000
15570.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10380.000	12.939	33.510	46.449	-7.551	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10380.000	13.796	44.960	58.756	-15.244	74.000
15570.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10380.000	13.796	33.390	47.186	-6.814	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5230MHz)

Frequency MHz	Correct Factor dB	Reading Level dBµV	Measurement Level dBµV/m	Margin dB	Limit dBµV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10460.000	13.508	48.560	62.068	-11.932	74.000
15690.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10460.000	13.508	33.120	46.628	-7.372	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10460.000	14.433	46.840	61.273	-12.727	74.000
15690.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10460.000	14.433	33.610	48.043	-5.957	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5270MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10540.000	14.151	47.510	61.660	-12.340	74.000
15810.000	*	*	*	*	74.000
21080.000	*	*	*	*	74.000
26350.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10540.000	14.151	33.290	47.440	-6.560	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10540.000	14.829	46.380	61.208	-12.792	74.000
15810.000	*	*	*	*	74.000
21080.000	*	*	*	*	74.000
26350.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10540.000	14.829	33.540	48.368	-5.632	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5310MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
10620.000	14.623	41.110	55.733	-18.267	74.000
15930.000	*	*	*	*	74.000
21240.000	*	*	*	*	74.000
26550.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10620.000	14.623	27.030	41.653	-12.347	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
10620.000	14.970	42.160	57.130	-16.870	74.000
15930.000	*	*	*	*	74.000
21240.000	*	*	*	*	74.000
26550.000	*	*	*	*	74.000
<b>Average Detector:</b>					
10620.000	14.970	27.040	42.010	-11.990	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5510MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11020.000	16.474	41.470	57.943	-16.057	74.000
15930.000	*	*	*	*	74.000
21240.000	*	*	*	*	74.000
26550.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11020.000	16.474	26.980	43.453	-10.547	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11020.000	17.224	41.550	58.774	-15.226	74.000
15930.000	*	*	*	*	74.000
21240.000	*	*	*	*	74.000
26550.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11020.000	17.224	27.140	44.364	-9.636	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5550MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11100.000	16.681	40.070	56.751	-17.249	74.000
16770.000	*	*	*	*	74.000
22360.000	*	*	*	*	74.000
27950.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11100.000	16.681	26.390	43.071	-10.929	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11100.000	17.523	41.390	58.913	-15.087	74.000
16770.000	*	*	*	*	74.000
22360.000	*	*	*	*	74.000
27950.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11100.000	17.523	27.420	44.943	-9.057	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : Harmonic Radiated Emission Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5670MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11340.000	16.408	40.360	56.767	-17.233	74.000
17010.000	*	*	*	*	74.000
22680.000	*	*	*	*	74.000
28350.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11340.000	16.408	26.490	42.897	-11.103	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11340.000	17.167	41.530	58.697	-15.303	74.000
17010.000	*	*	*	*	74.000
22680.000	*	*	*	*	74.000
28350.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11340.000	17.167	27.380	44.547	-9.453	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

Frequency MHz	Correct Factor	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11510.000	17.124	36.510	53.634	-20.366	74.000
17265.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
31140.000	*	*	*	*	74.000
36330.000	*	*	*	*	74.000
<b>Average Detector:</b>					
*	*	*	*	*	*
<b>Vertical</b>					
<b>Peak Detector:</b>					
11510.000	18.081	43.270	61.351	-12.649	74.000
17265.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
31140.000	*	*	*	*	74.000
36330.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11510.000	18.081	27.660	45.741	-8.259	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5795MHz)

Frequency MHz	Correct Factor	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11590.000	16.701	36.890	53.590	-20.410	74.000
17385.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
31380.000	*	*	*	*	74.000
36610.000	*	*	*	*	74.000
<b>Average Detector:</b>					
*	*	*	*	*	*
<b>Vertical</b>					
<b>Peak Detector:</b>					
11590.000	17.567	45.640	63.206	-10.794	74.000
17385.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
31380.000	*	*	*	*	74.000
36610.000	*	*	*	*	74.000
<b>Average Detector:</b>					
11590.000	17.567	29.590	47.156	-6.844	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5220MHz)

Frequency MHz	Correct Factor	Reading Level dBµV	Measurement Level dBµV/m	Margin dB	Limit dBµV/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
161.920	-11.626	47.213	35.588	-7.912	43.500
392.780	-2.096	36.327	34.231	-11.769	46.000
483.960	-0.688	36.919	36.232	-9.768	46.000
600.360	3.977	33.950	37.927	-8.073	46.000
712.880	3.569	27.806	31.375	-14.625	46.000
961.200	6.450	43.499	49.949	-4.051	54.000

**Vertical****Peak Detector**

111.480	-0.954	35.740	34.786	-8.714	43.500
181.320	-9.512	44.271	34.759	-8.741	43.500
222.060	-8.789	43.212	34.423	-11.577	46.000
286.080	-8.097	45.106	37.009	-8.991	46.000
365.620	-2.179	34.574	32.395	-13.605	46.000
747.800	2.166	30.672	32.838	-13.162	46.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5300MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
222.060	-10.439	45.017	34.578	-11.422	46.000
505.300	0.308	31.268	31.576	-14.424	46.000
664.380	2.062	29.952	32.014	-13.986	46.000
747.800	3.296	29.620	32.916	-13.084	46.000
858.380	5.972	31.844	37.816	-8.184	46.000
961.200	6.450	43.202	49.652	-4.348	54.000

**Vertical****Peak Detector**

101.780	-0.021	34.656	34.634	-8.866	43.500
171.620	-8.752	41.884	33.132	-10.368	43.500
229.820	-8.512	44.640	36.128	-9.872	46.000
363.680	-2.393	37.978	35.585	-10.415	46.000
480.080	-4.359	32.641	28.282	-17.718	46.000
961.200	7.260	33.483	40.743	-13.257	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5580MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
152.220	-10.135	41.859	31.724	-11.776	43.500
402.480	-2.263	33.788	31.525	-14.475	46.000
513.060	1.550	30.172	31.722	-14.278	46.000
625.580	1.770	28.788	30.558	-15.442	46.000
697.360	3.171	27.379	30.550	-15.450	46.000
961.200	6.450	43.013	49.463	-4.537	54.000
<b>Vertical</b>					
<b>Peak Detector</b>					
134.760	-4.648	37.232	32.584	-10.916	43.500
355.920	-3.488	38.783	35.295	-10.705	46.000
480.080	-4.359	36.246	31.887	-14.113	46.000
600.360	-2.833	29.121	26.288	-19.712	46.000
747.800	2.166	29.746	31.912	-14.088	46.000
961.200	7.260	36.865	44.125	-9.875	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5785MHz)

Frequency MHz	Correct Factor	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
105.660	-7.676	33.563	25.886	-17.614	43.500
225.940	-9.647	40.094	30.447	-15.553	46.000
365.620	0.382	32.804	33.186	-12.814	46.000
522.760	3.176	27.220	30.396	-15.604	46.000
701.240	2.759	27.635	30.394	-15.606	46.000
854.500	7.380	24.879	32.259	-13.741	46.000
<b>Vertical</b>					
<b>Peak Detector</b>					
105.660	-4.576	32.787	28.210	-15.290	43.500
260.860	-4.870	36.198	31.328	-14.672	46.000
373.380	0.043	24.971	25.014	-20.986	46.000
612.000	1.943	24.694	26.636	-19.364	46.000
786.600	2.724	25.111	27.836	-18.164	46.000
930.160	3.830	23.470	27.300	-18.700	46.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5220MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
171.620	-10.242	44.542	34.300	-9.200	43.500
406.360	-2.500	35.772	33.272	-12.728	46.000
559.620	1.664	33.160	34.824	-11.176	46.000
608.120	4.384	29.852	34.236	-11.764	46.000
720.640	3.511	31.804	35.315	-10.685	46.000
961.200	6.450	43.648	50.098	-3.902	54.000

### Vertical

#### Peak Detector

159.980	-6.185	38.478	32.293	-11.207	43.500
288.020	-8.189	44.244	36.055	-9.945	46.000
390.840	-3.099	37.207	34.108	-11.892	46.000
509.180	-0.158	31.207	31.049	-14.951	46.000
687.660	2.444	27.477	29.921	-16.079	46.000
961.200	7.260	36.351	43.611	-10.389	54.000

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5300MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
148.340	-10.254	41.038	30.784	-12.716	43.500
408.300	-2.866	38.357	35.491	-10.509	46.000
474.260	0.024	36.979	37.002	-8.998	46.000
600.360	3.977	34.330	38.307	-7.693	46.000
720.640	3.511	32.508	36.019	-9.981	46.000
961.200	6.450	43.038	49.488	-4.512	54.000

### Vertical

#### Peak Detector

111.480	-0.954	37.405	36.451	-7.049	43.500
235.640	-9.330	48.536	39.206	-6.794	46.000
390.840	-3.099	35.414	32.315	-13.685	46.000
480.080	-4.359	40.738	36.379	-9.621	46.000
666.320	-1.809	32.539	30.731	-15.269	46.000
961.200	7.260	36.131	43.391	-10.609	54.000

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5580MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
159.980	-11.775	43.334	31.559	-11.941	43.500
355.920	-2.528	40.571	38.043	-7.957	46.000
460.680	1.589	34.277	35.866	-10.134	46.000
600.360	3.977	35.394	39.371	-6.629	46.000
720.640	3.511	31.599	35.110	-10.890	46.000
825.400	6.250	24.043	30.293	-15.707	46.000
<b>Vertical</b>					
<b>Peak Detector</b>					
159.980	-6.185	41.531	35.346	-8.154	43.500
288.020	-8.189	43.397	35.208	-10.792	46.000
365.620	-2.179	40.213	38.034	-7.966	46.000
480.080	-4.359	36.693	32.334	-13.666	46.000
681.840	1.484	28.552	30.036	-15.964	46.000
961.200	7.260	36.174	43.434	-10.566	54.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5785MHz)

Frequency MHz	Correct Factor	Reading dBµV	Measurement Level dBµV/m	Margin dB	Limit dBµV/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
105.660	-7.676	33.970	26.293	-17.207	43.500
192.960	-10.095	41.051	30.956	-12.544	43.500
365.620	0.382	35.135	35.517	-10.483	46.000
513.060	3.186	24.344	27.530	-18.470	46.000
676.020	2.841	25.256	28.098	-17.902	46.000
831.220	7.121	23.660	30.781	-15.219	46.000
<b>Vertical</b>					
<b>Peak Detector</b>					
43.580	-10.919	43.045	32.126	-7.874	40.000
159.980	-5.120	30.629	25.508	-17.992	43.500
365.620	0.282	26.938	27.220	-18.780	46.000
538.280	1.996	23.254	25.250	-20.750	46.000
753.620	2.730	23.340	26.070	-19.930	46.000
901.060	1.858	23.634	25.492	-20.508	46.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
101.780	-7.141	42.502	35.361	-8.139	43.500
152.220	-10.135	40.694	30.559	-12.941	43.500
369.500	-1.098	35.487	34.389	-11.611	46.000
468.440	1.195	33.790	34.985	-11.015	46.000
600.360	3.977	36.226	40.203	-5.797	46.000
961.200	6.450	42.479	48.929	-5.071	54.000

**Vertical****Peak Detector**

119.240	-3.541	34.451	30.910	-12.590	43.500
237.580	-8.970	49.206	40.236	-5.764	46.000
357.860	-3.734	40.629	36.895	-9.105	46.000
480.080	-4.359	35.967	31.608	-14.392	46.000
687.660	2.444	28.304	30.748	-15.252	46.000
831.220	2.561	33.565	36.126	-9.874	46.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
 Test Item : General Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5270MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
49.400	-11.018	44.021	33.003	-6.997	40.000
225.940	-9.878	45.873	35.994	-10.006	46.000
398.600	-2.268	36.141	33.873	-12.127	46.000
600.360	3.977	35.177	39.154	-6.846	46.000
747.800	3.296	29.772	33.068	-12.932	46.000
961.200	6.450	42.999	49.449	-4.551	54.000

**Vertical****Peak Detector**

165.800	-7.719	43.118	35.399	-8.101	43.500
276.380	-8.653	45.953	37.300	-8.700	46.000
369.500	-2.868	38.155	35.287	-10.713	46.000
480.080	-4.359	39.388	35.029	-10.971	46.000
664.380	-1.918	34.414	32.496	-13.504	46.000
961.200	7.260	36.736	43.996	-10.004	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5550MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
175.500	-10.017	46.537	36.519	-6.981	43.500
396.660	-2.296	35.982	33.686	-12.314	46.000
476.200	-0.252	39.170	38.918	-7.082	46.000
600.360	3.977	33.844	37.821	-8.179	46.000
666.320	2.031	31.468	33.500	-12.500	46.000
961.200	6.450	43.395	49.845	-4.155	54.000

**Vertical****Peak Detector**

169.680	-8.728	42.051	33.323	-10.177	43.500
299.660	-6.855	42.258	35.403	-10.597	46.000
373.380	-2.373	35.882	33.509	-12.491	46.000
503.360	-0.852	29.721	28.869	-17.131	46.000
637.220	-3.649	31.262	27.613	-18.387	46.000
961.200	7.260	34.913	42.173	-11.827	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : WIFI Module  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

Frequency MHz	Correct Factor	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
119.240	-7.291	33.557	26.267	-17.233	43.500
225.940	-9.647	40.120	30.473	-15.527	46.000
365.620	0.382	34.742	35.124	-10.876	46.000
551.860	3.390	26.610	30.000	-16.000	46.000
800.180	6.417	25.506	31.923	-14.077	46.000
941.800	6.790	24.068	30.858	-15.142	46.000
<b>Vertical</b>					
<b>Peak Detector</b>					
43.580	-10.919	42.686	31.767	-8.233	40.000
173.560	-2.713	27.407	24.694	-18.806	43.500
371.440	-0.310	25.291	24.981	-21.019	46.000
606.180	2.246	23.370	25.616	-20.384	46.000
782.720	2.757	22.928	25.685	-20.315	46.000
930.160	3.830	23.042	26.872	-19.128	46.000

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

## 6. Band Edge

### 6.1. Test Equipment

#### RF Radiated Measurement:

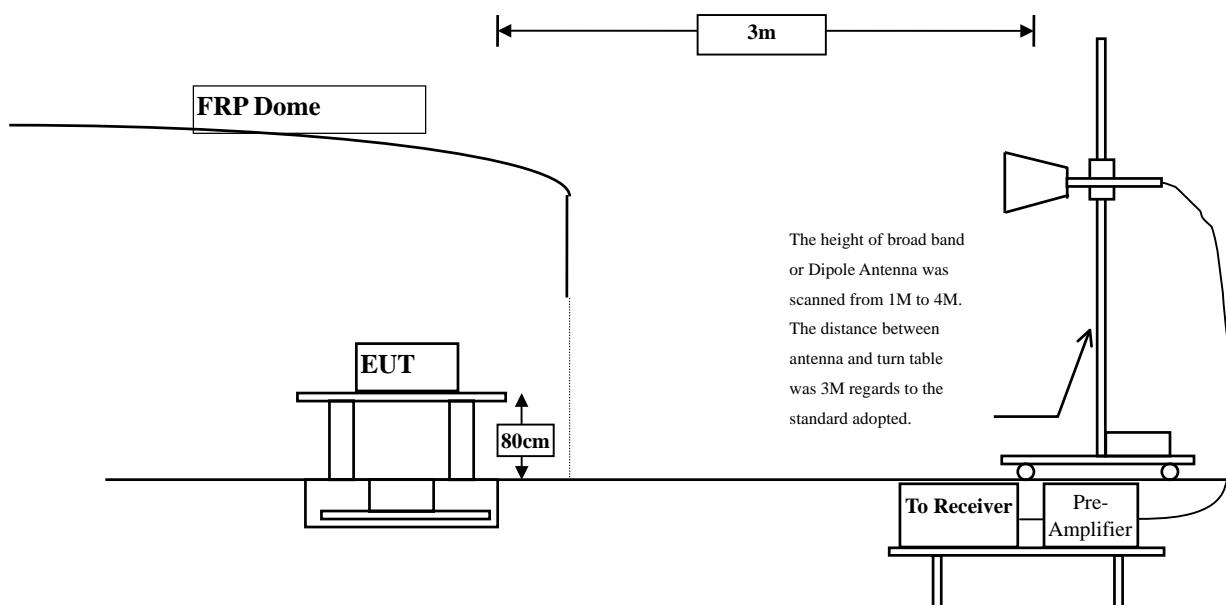
The following test equipments are used during the band edge tests:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2014
	X Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2014
	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2014
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2014
	X Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2014
	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/925975	Mar, 2014
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2014
	X Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	X Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch	Anritsu	MP59B/6200265729	N/A

- Note:
1. All instruments are calibrated every one year.
  2. The test instruments marked by “X” are used to measure the final test results.

### 6.2. Test Setup

#### RF Radiated Measurement:



### 6.3. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

<b>FCC Part 15 Subpart C Paragraph 15.209 Limits</b>		
Frequency MHz	uV/m @3m	dB $\mu$ V/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks :
1. RF Voltage (dB $\mu$ V) = 20 log RF Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 6.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2009 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

### 6.5. Uncertainty

- ± 3.8 dB below 1GHz
- ± 3.9 dB above 1GHz

## 6.6. Test Result of Band Edge

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)-Channel 36

### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
36 (Peak)	5148.400	2.801	64.755	67.557	74.00	54.00	Pass
36 (Peak)	5150.000	2.796	63.955	66.751	74.00	54.00	Pass
36 (Peak)	5185.200	2.679	96.354	99.032	--	--	--
36 (Average)	5150.000	2.796	39.473	42.269	74.00	54.00	Pass
36 (Average)	5176.000	2.710	86.007	88.716	--	--	--

Figure Channel 36:

Horizontal (Peak)

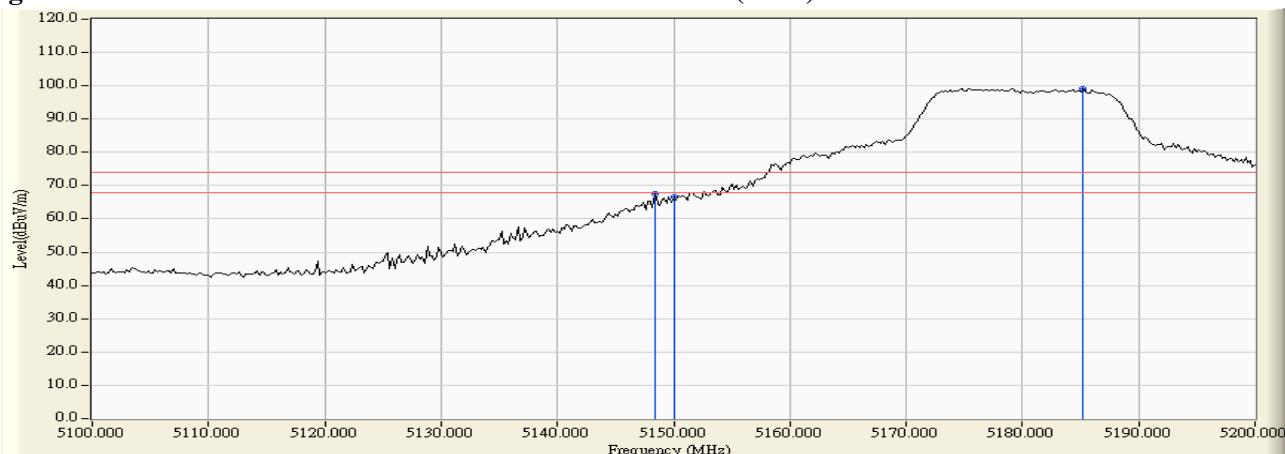
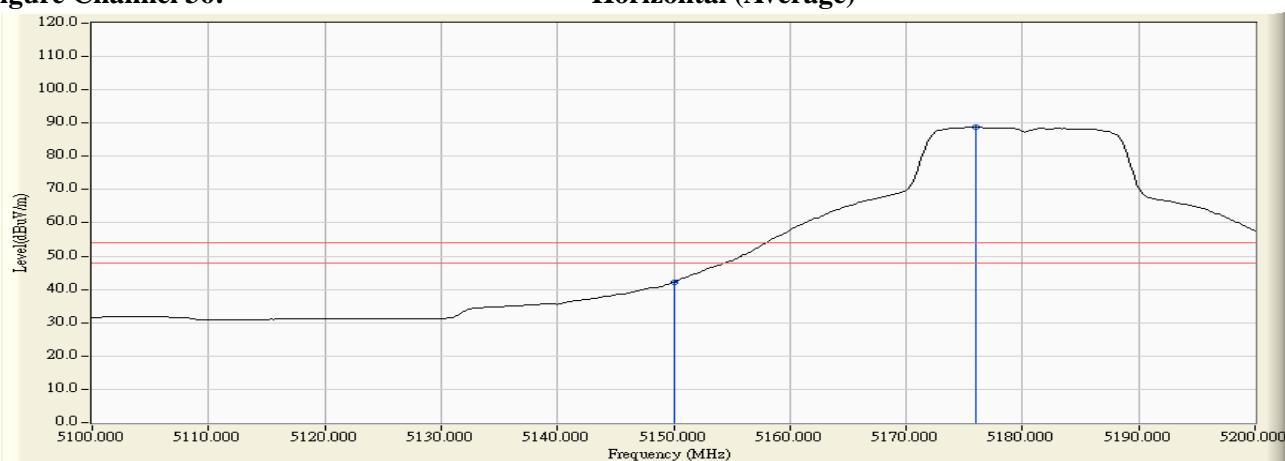


Figure Channel 36:

Horizontal (Average)



- Note:
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
  2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
  3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
  4. “\*”, means this data is the worst emission level.
  5. Measurement Level = Reading Level + Correct Factor.
  6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)-Channel 36

#### RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
36 (Peak)	5150.000	3.331	64.365	67.697	74.00	54.00	Pass
36 (Peak)	5178.600	3.466	96.333	99.799	--	--	--
36 (Average)	5150.000	3.331	39.692	43.024	74.00	54.00	Pass
36 (Average)	5176.200	3.455	86.065	89.520	--	--	--

Figure Channel 36:

Vertical (Peak)

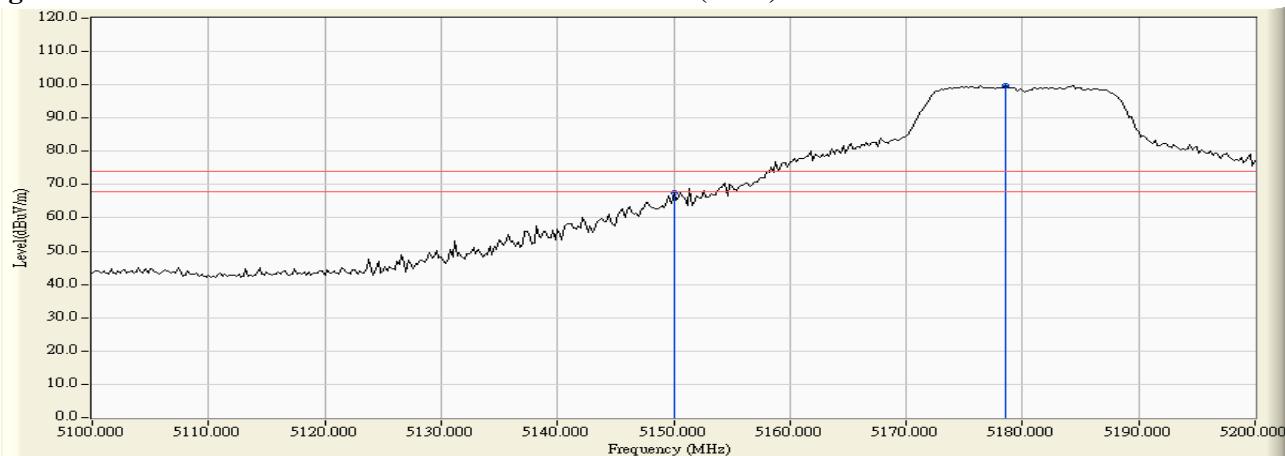
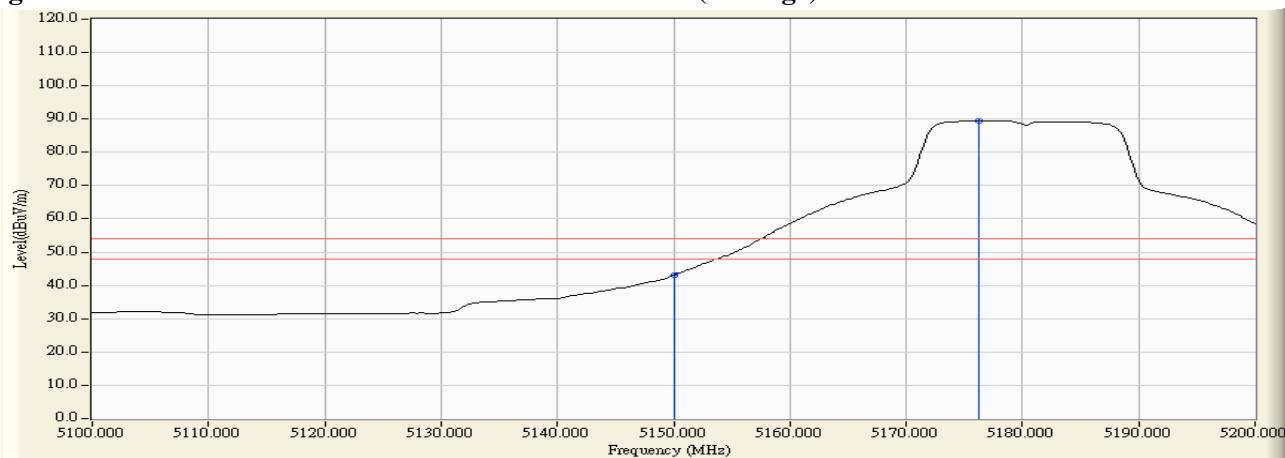


Figure Channel 36:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) -Channel 64

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
64 (Peak)	5323.600	3.636	99.305	102.941	--	--	--
64 (Peak)	5350.000	3.575	62.886	66.461	74.00	54.00	Pass
64 (Average)	5325.000	3.634	88.959	92.592	--	--	--
64 (Average)	5350.000	3.575	41.410	44.985	74.00	54.00	Pass

Figure Channel 64:

Horizontal (Peak)

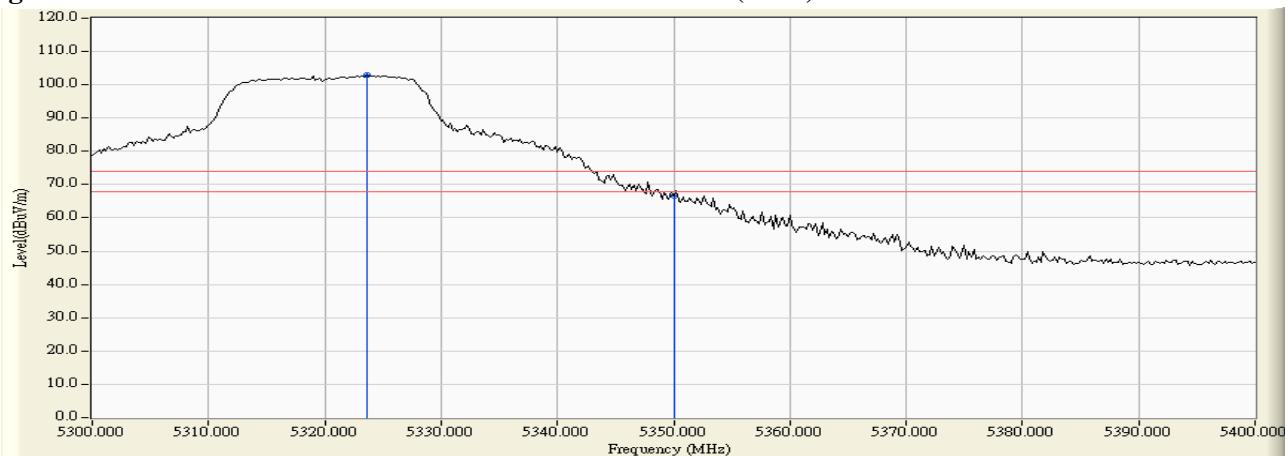
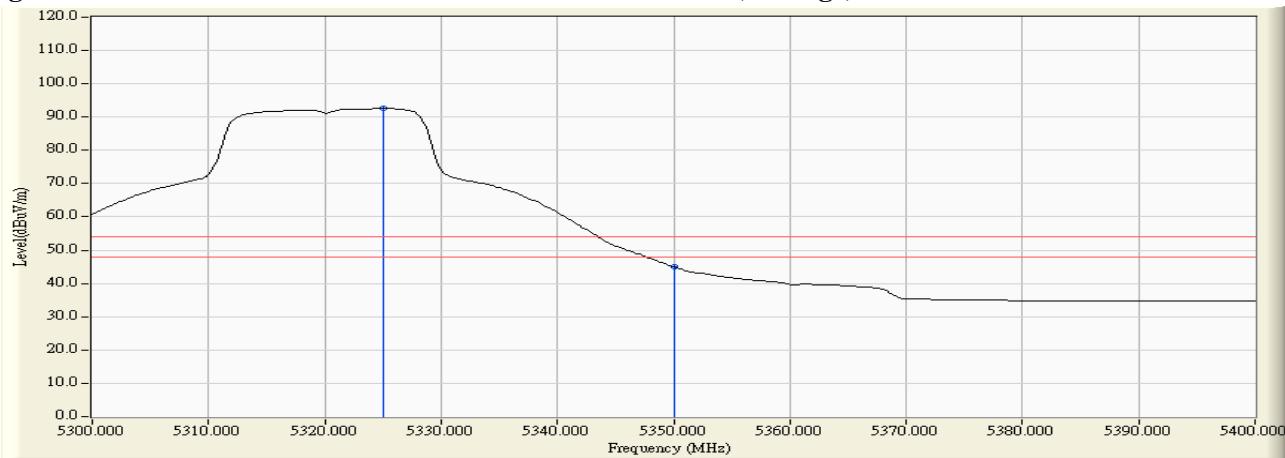


Figure Channel 64:

Horizontal (Average)



#### Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) -Channel 64

#### RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
64 (Peak)	5323.600	3.890	99.380	103.270	--	--	--
64 (Peak)	5350.000	3.900	61.901	65.801	74.00	54.00	Pass
64 (Average)	5325.000	3.891	88.951	92.842	--	--	--
64 (Average)	5350.000	3.900	41.374	45.274	74.00	54.00	Pass

Figure Channel 64:

Vertical (Peak)

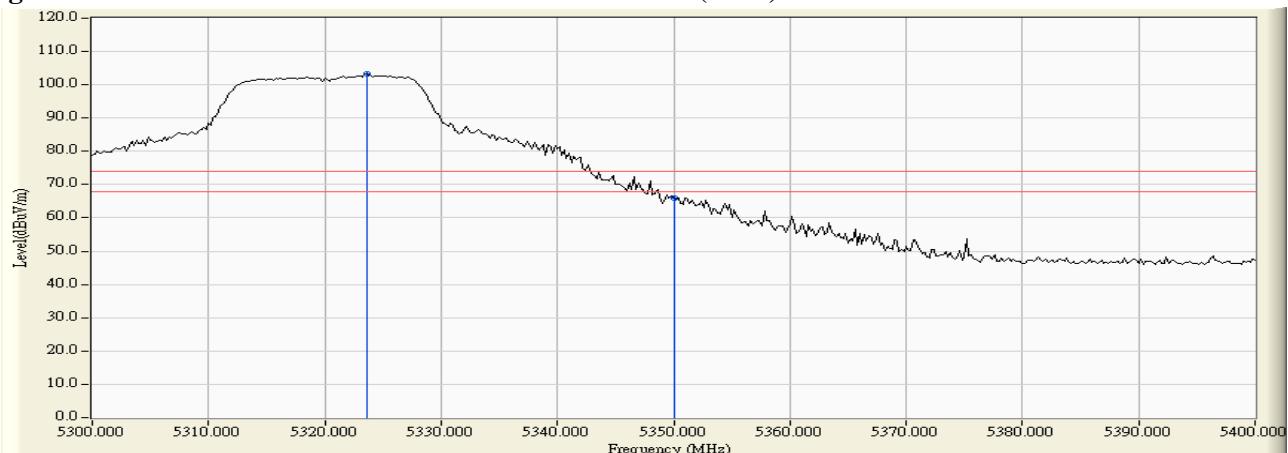
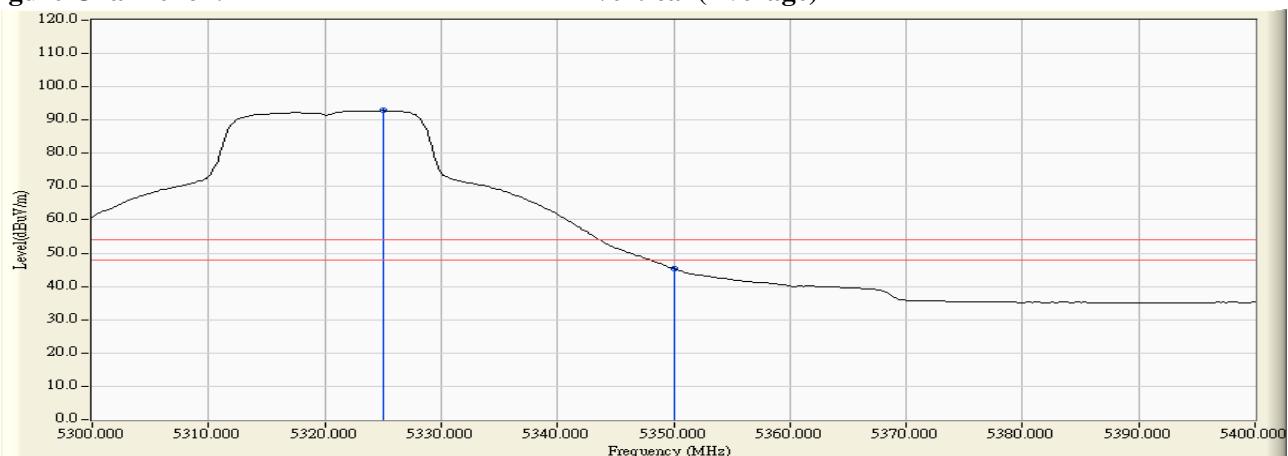


Figure Channel 64:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) -Channel 100

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
100 (Peak)	5460.000	36.521	68.029	71.804	74.00	54.00	Pass
100 (Peak)	5496.800	37.146	102.940	107.375	--	--	--
100 (Average)	5460.000	3.775	46.741	50.516	74.00	54.00	Pass
100 (Average)	5495.800	4.422	92.301	96.723	--	--	--

Figure Channel 100:

Horizontal (Peak)

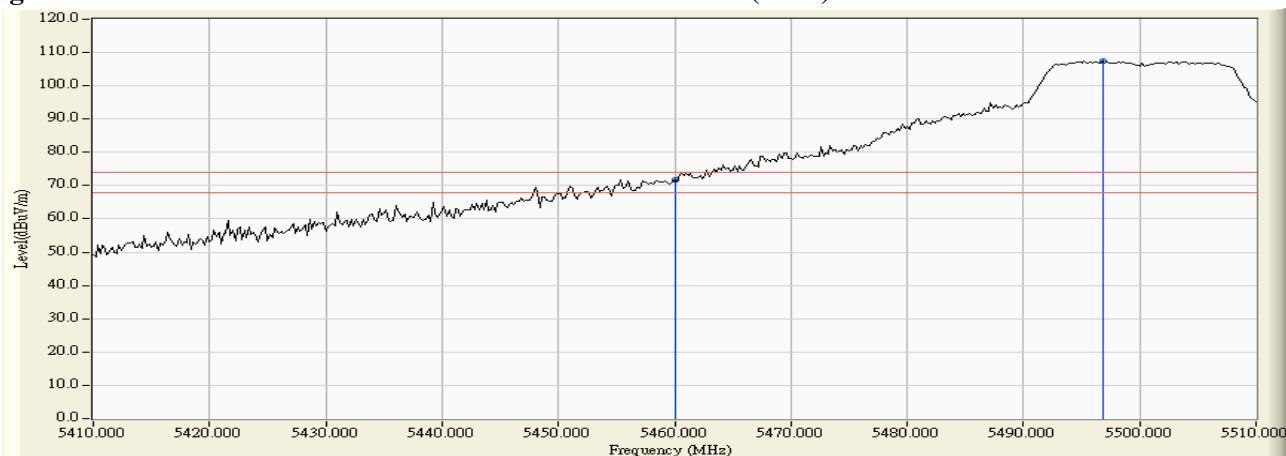
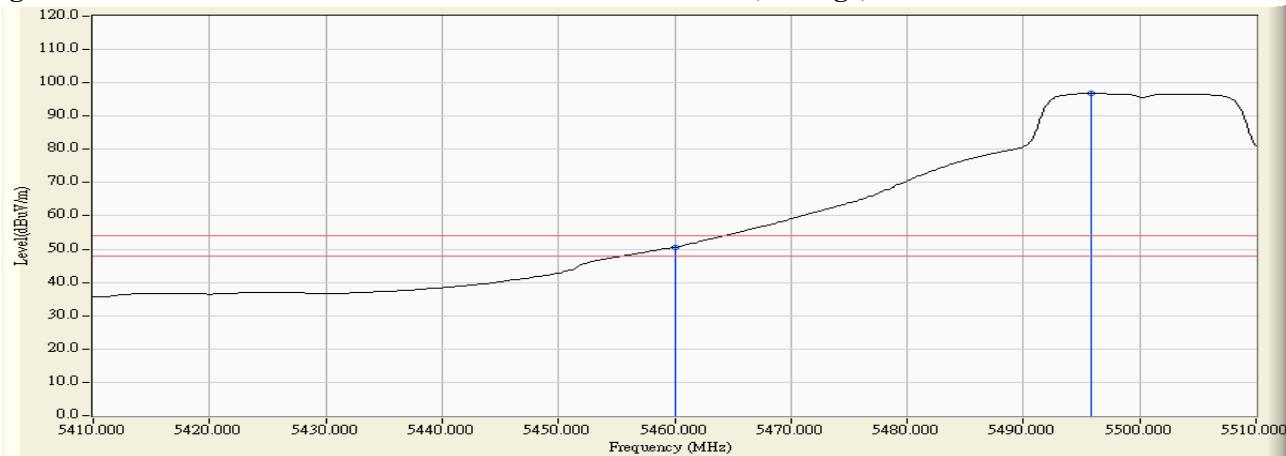


Figure Channel 100:

Horizontal (Average)



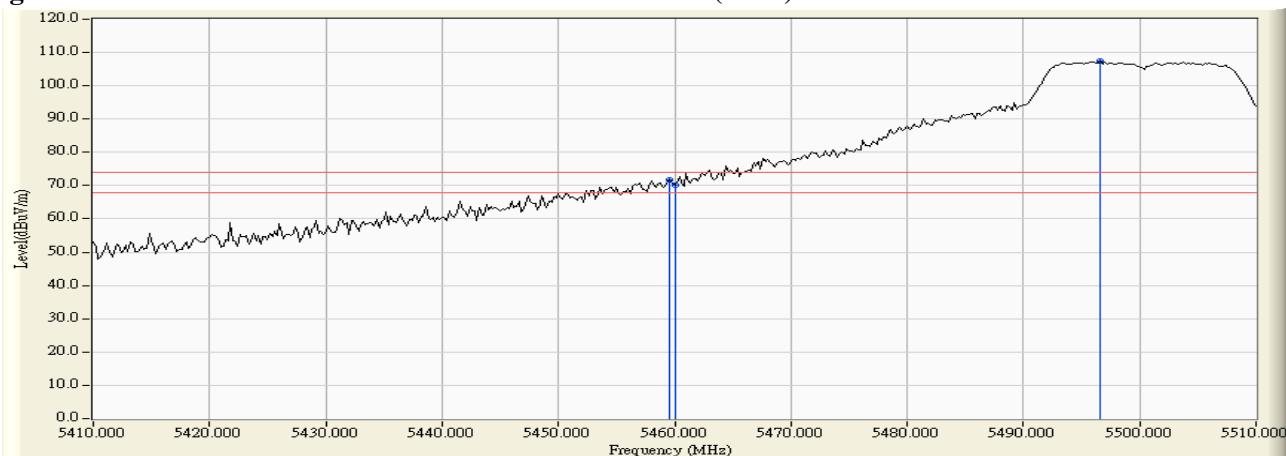
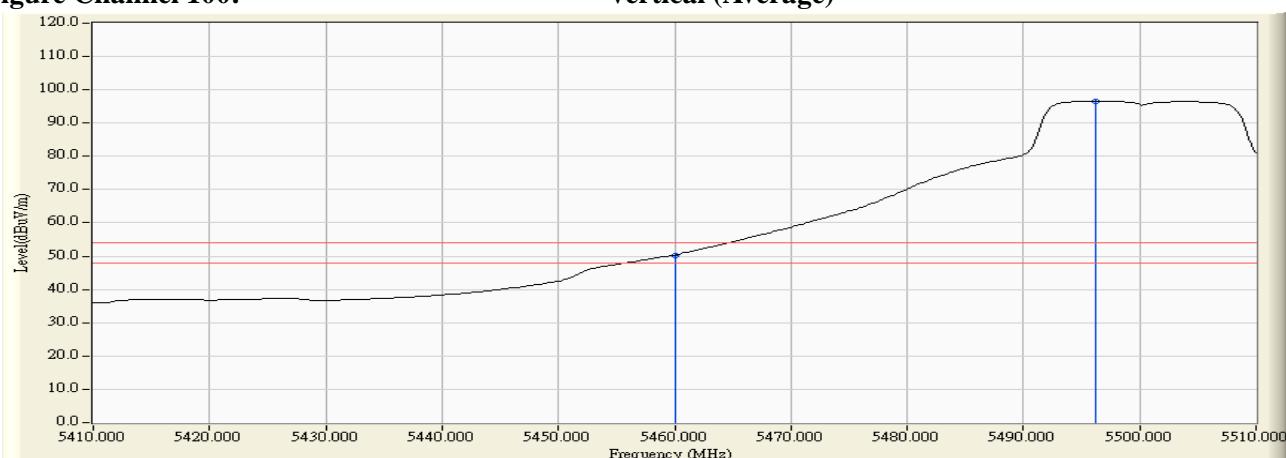
#### Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) -Channel 100

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
100 (Peak)	5459.600	3.930	67.750	71.679	74.00	54.00	Pass
100 (Peak)	5460.000	3.934	66.173	70.108	74.00	54.00	Pass
100 (Peak)	5496.600	4.425	102.898	107.323	--	--	--
100 (Average)	5460.000	3.934	46.229	50.164	74.00	54.00	Pass
100 (Average)	5496.200	4.421	92.149	96.570	--	--	--

**Figure Channel 100:****Vertical (Peak)****Figure Channel 100:****Vertical (Average)**

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) -Channel 100

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5470.000	14.189	-63.110	-48.921	-21.921	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5470.000	13.630	-63.120	-49.490	-22.490	-27.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps) -Channel 140

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5725.000	14.557	-60.310	-45.753	-18.753	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5725.000	14.292	-60.340	-46.048	-19.048	-27.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps)-Channel 149

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5715.000	14.528	-68.130	-53.602	-26.602	-27.000	Pass
Horizontal	5725.000	14.557	-69.640	-55.083	-38.083	-17.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5715.000	14.309	-68.690	-54.381	-27.381	-27.000	Pass
Vertical	5725.000	14.292	-69.170	-54.878	-37.878	-17.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmit (802.11a-6Mbps)-Channel 165

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5850.000	15.181	-73.110	-57.929	-40.929	-17.000	Pass
Horizontal	5860.000	15.264	-72.650	-57.386	-30.386	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5850.000	14.693	-72.610	-57.917	-40.917	-17.000	Pass
Vertical	5860.000	14.799	-71.310	-56.511	-29.511	-27.000	Pass

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 36

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
36 (Peak)	5147.000	2.806	52.261	55.067	74.00	54.00	Pass
36 (Peak)	5150.000	2.796	52.547	55.343	74.00	54.00	Pass
36 (Peak)	5175.400	2.711	97.420	100.131	--	--	--
36 (Average)	5150.000	2.796	34.368	37.164	74.00	54.00	Pass
36 (Average)	5175.400	2.711	84.901	87.612	--	--	--

Figure Channel 36:

Horizontal (Peak)

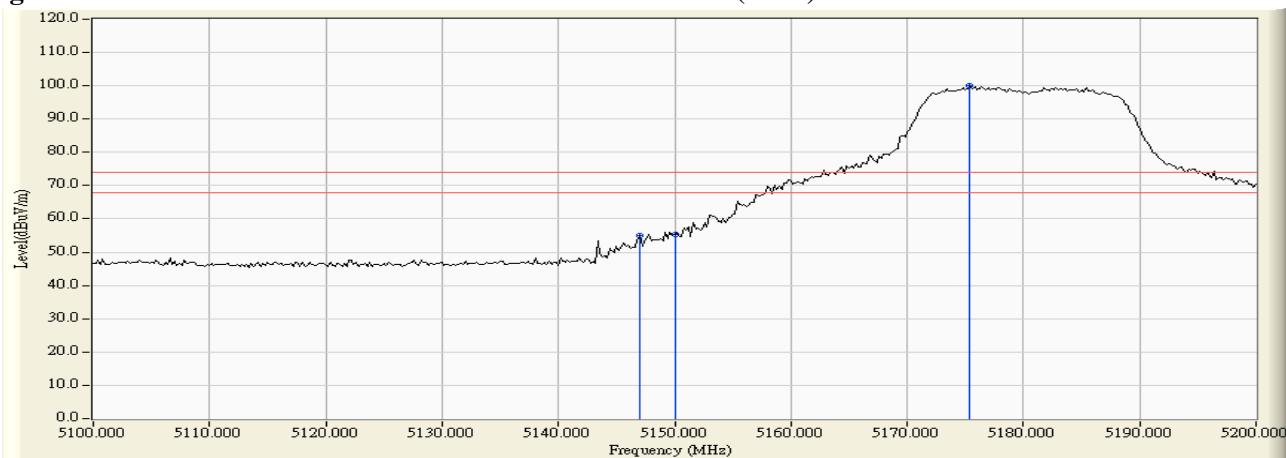
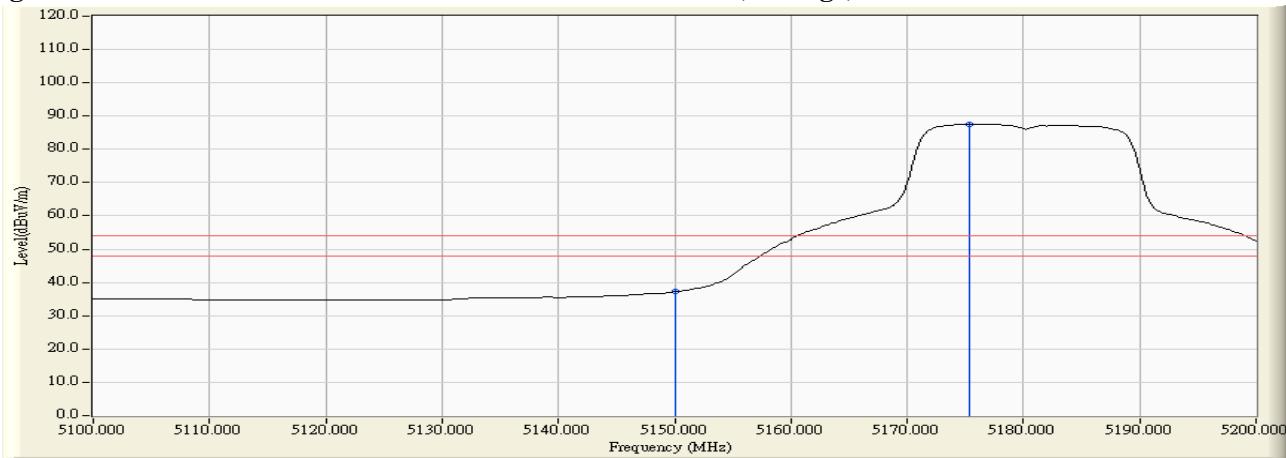


Figure Channel 36:

Horizontal (Average)



#### Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 36

#### RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
36 (Peak)	5150.000	3.331	51.156	54.488	74.00	54.00	Pass
36 (Peak)	5183.200	3.488	95.704	99.192	--	--	--
36 (Average)	5150.000	3.331	33.206	36.538	74.00	54.00	Pass
36 (Average)	5175.800	3.454	84.022	87.475	--	--	--

Figure Channel 36:

Vertical (Peak)

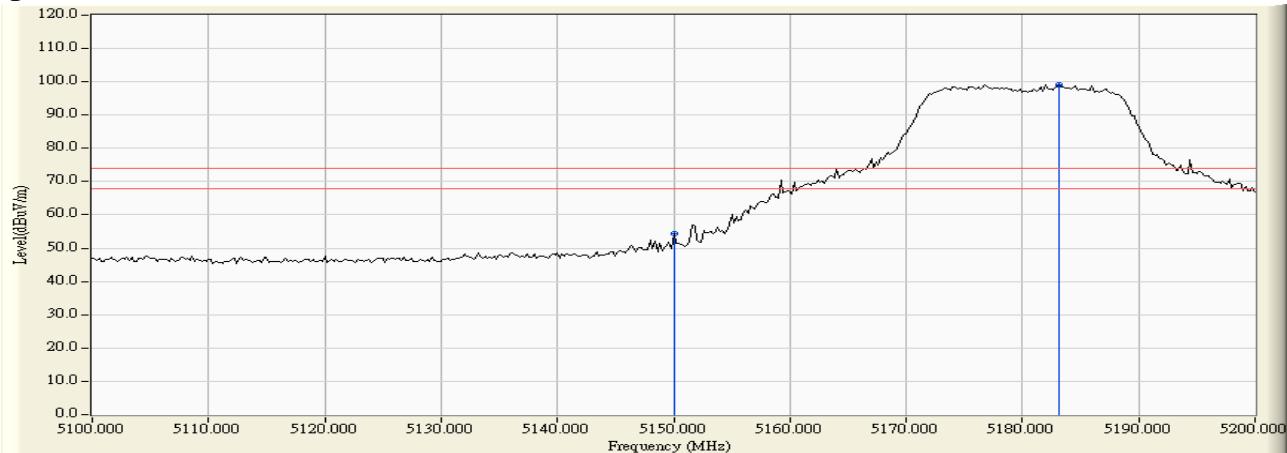
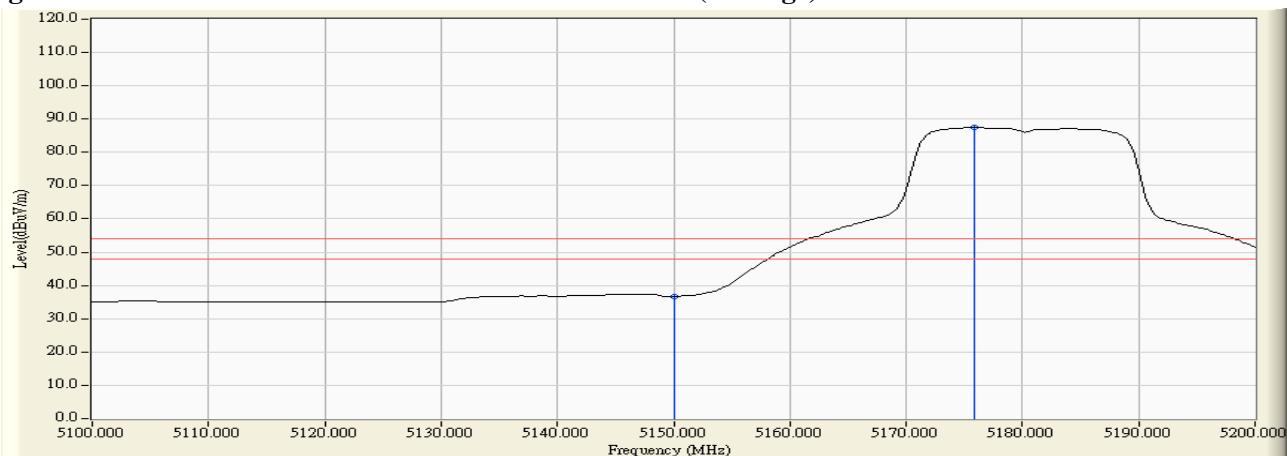


Figure Channel 36:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 64

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
64 (Peak)	5316.200	3.650	101.173	104.823	--	--	--
64 (Peak)	5350.000	3.575	59.323	62.898	74.00	54.00	Pass
64 (Peak)	5351.400	3.572	61.496	65.067	74.00	54.00	Pass
64 (Average)	5323.600	3.636	89.310	92.946	--	--	--
64 (Average)	5350.000	3.575	40.267	43.842	74.00	54.00	Pass

Figure Channel 64:

Horizontal (Peak)

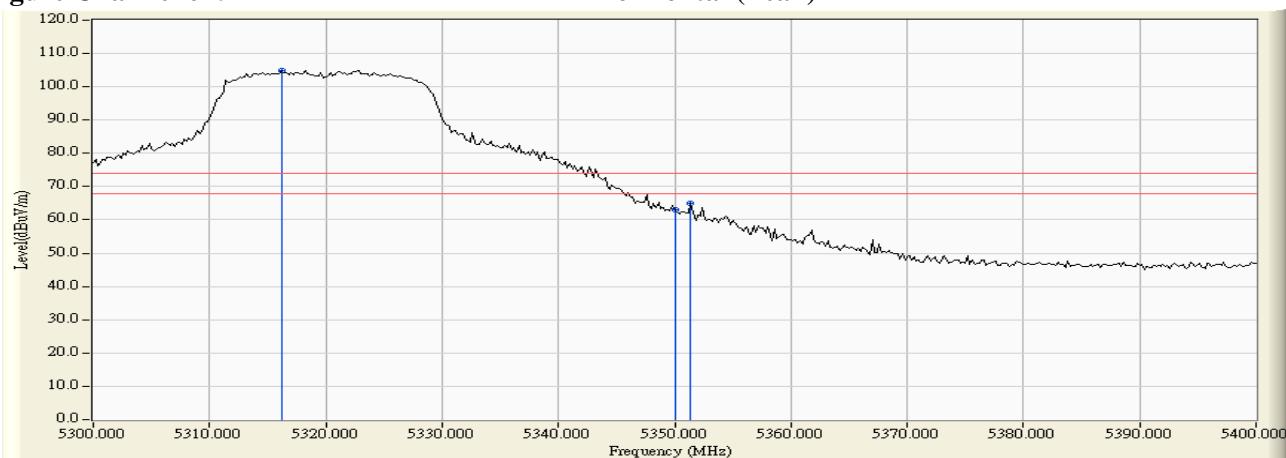
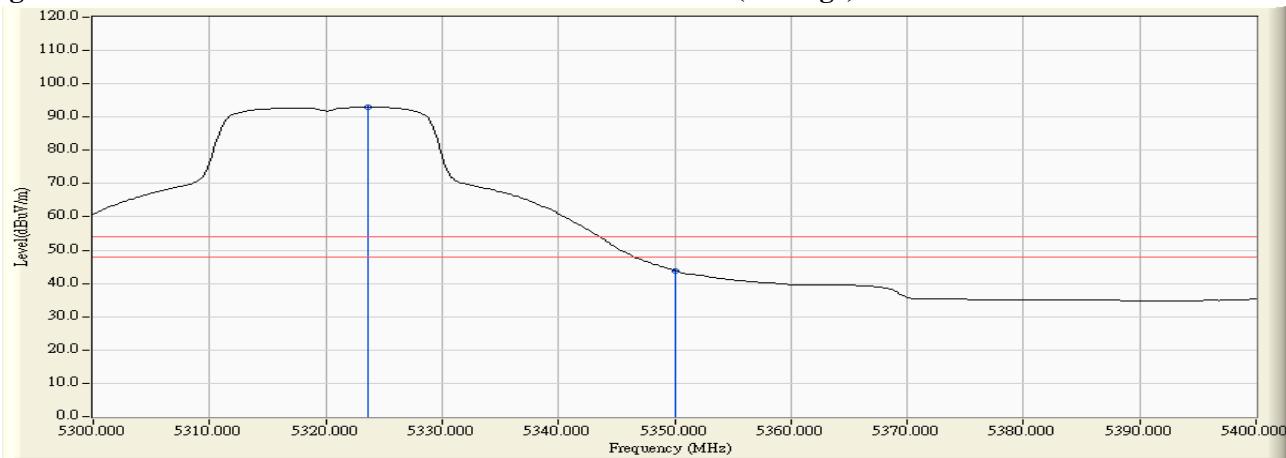


Figure Channel 64:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 64

#### RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
64 (Peak)	5315.400	3.883	101.300	105.183	--	--	--
64 (Peak)	5350.000	3.900	58.729	62.629	74.00	54.00	Pass
64 (Peak)	5352.600	3.897	60.277	64.174	74.00	54.00	Pass
64 (Average)	5323.800	3.889	88.567	92.457	--	--	--
64 (Average)	5350.000	3.900	38.568	42.468	74.00	54.00	Pass

Figure Channel 64:

Vertical (Peak)

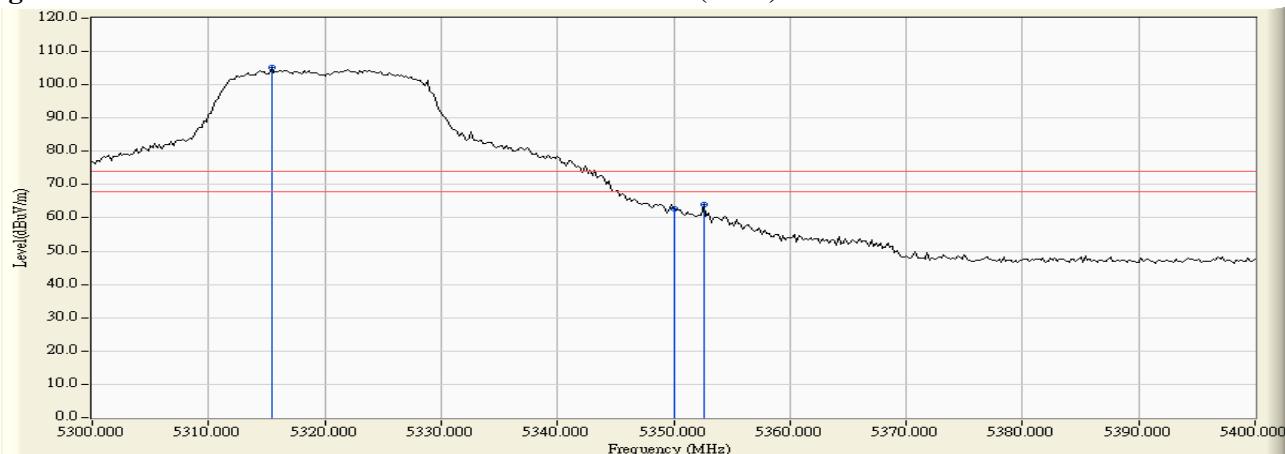
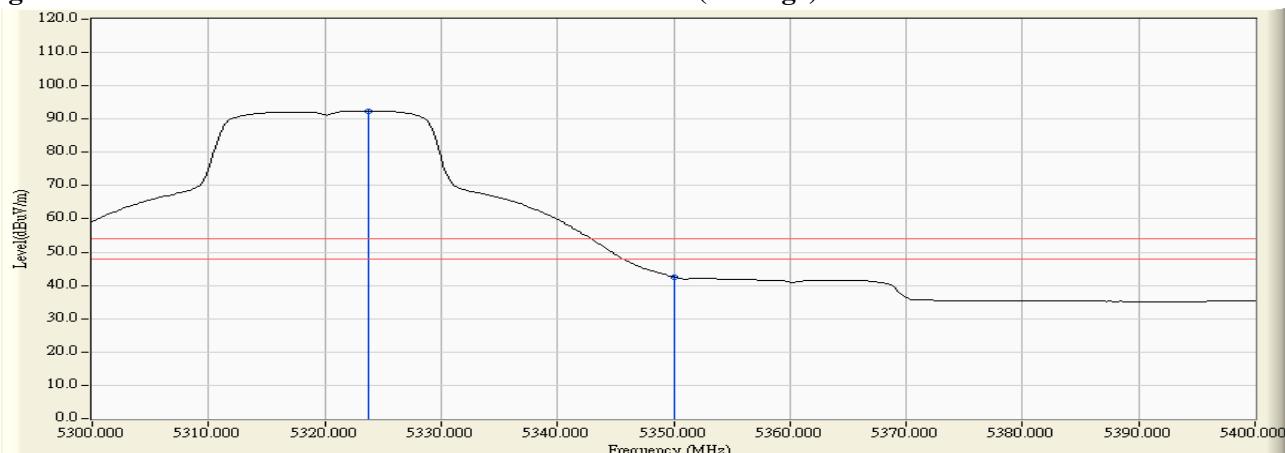


Figure Channel 64:

Vertical (Average)



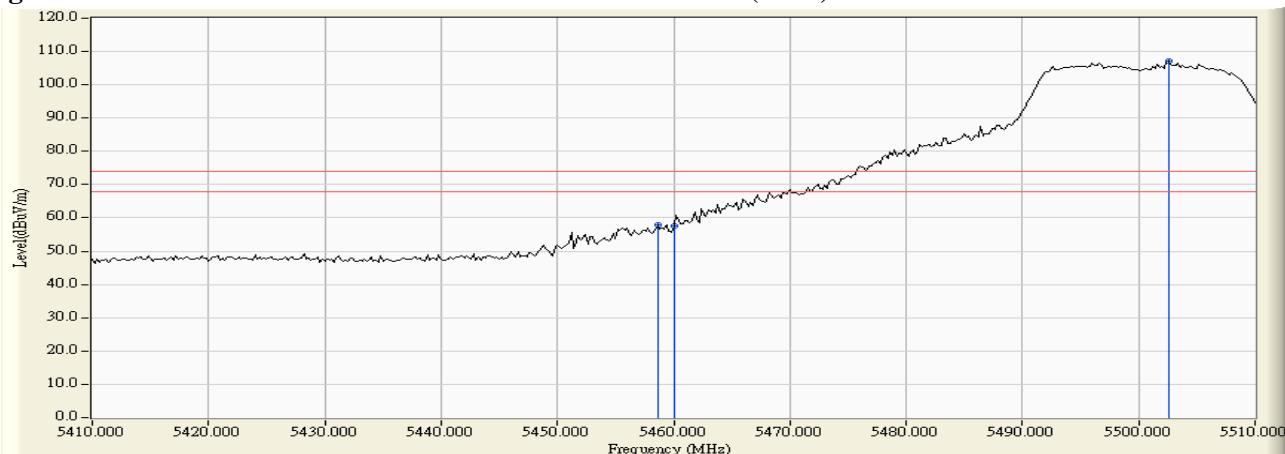
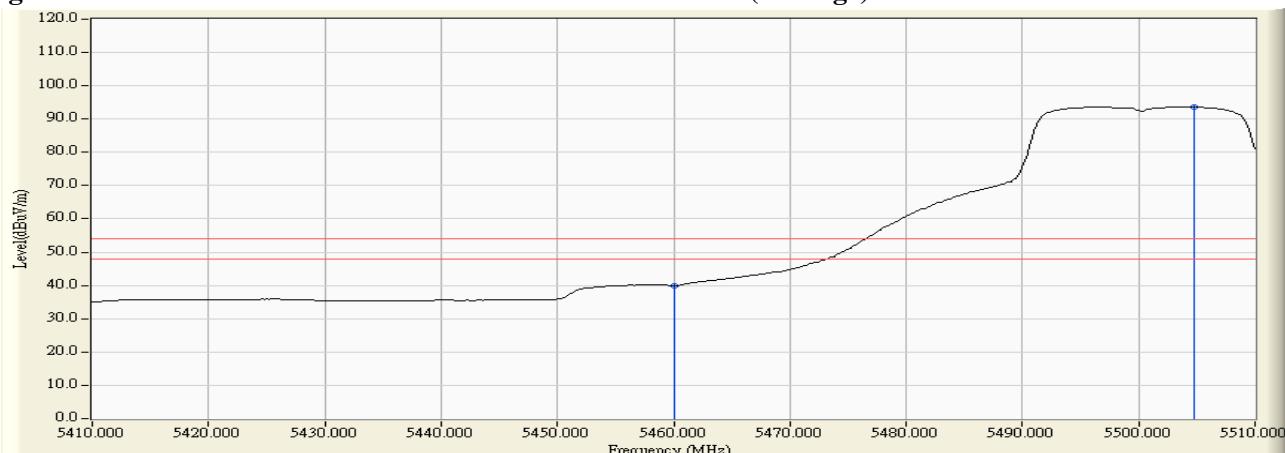
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 100

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
100 (Peak)	5458.600	3.749	54.291	58.039	74.00	54.00	Pass
100 (Peak)	5460.000	3.775	53.924	57.699	74.00	54.00	Pass
100 (Peak)	5502.600	4.513	102.534	107.048	--	--	--
100 (Average)	5460.000	3.775	36.149	39.924	74.00	54.00	Pass
100 (Average)	5504.800	4.543	89.040	93.584	--	--	--

**Figure Channel 100:****Horizontal (Peak)****Figure Channel 100:****Horizontal (Average)**

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 100

#### RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
100 (Peak)	5459.600	3.930	50.848	54.777	74.00	54.00	Pass
100 (Peak)	5460.000	3.934	48.409	52.344	74.00	54.00	Pass
100 (Peak)	5501.400	4.474	101.043	105.517	--	--	--
100 (Average)	5460.000	3.934	37.074	41.009	74.00	54.00	Pass
100 (Average)	5497.000	4.428	88.545	92.974	--	--	--

Figure Channel 100:

Vertical (Peak)

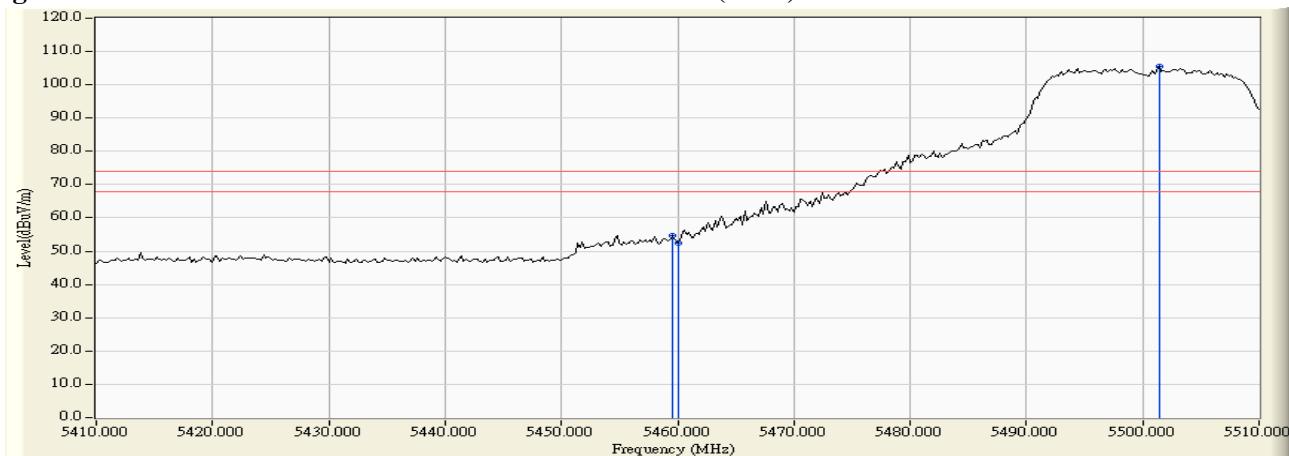
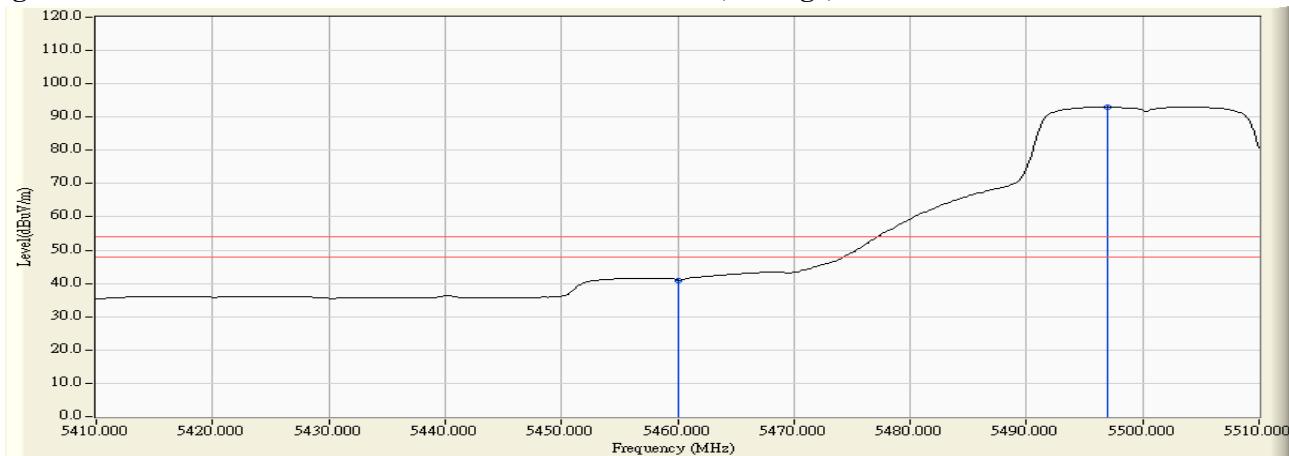


Figure Channel 100:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 100

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5470.000	14.189	-62.170	-47.981	-20.981	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5470.000	13.630	-61.390	-47.760	-20.760	-27.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 140

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5725.000	14.557	-61.220	-46.663	-19.663	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5725.000	14.292	-61.430	-47.138	-20.138	-27.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 149

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5715.000	14.528	-73.210	-58.682	-31.682	-27.000	Pass
Horizontal	5725.000	14.557	-73.320	-58.763	-41.763	-17.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5715.000	14.309	-73.330	-59.021	-32.021	-27.000	Pass
Vertical	5725.000	14.292	-72.430	-58.138	-41.138	-17.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 165

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5850.000	15.181	-73.110	-57.929	-40.929	-17.000	Pass
Horizontal	5860.000	15.264	-73.870	-58.606	-31.606	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5850.000	14.693	-73.410	-58.717	-41.717	-17.000	Pass
Vertical	5860.000	14.799	-73.610	-58.811	-31.811	-27.000	Pass

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 38

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
38 (Peak)	5150.000	2.796	58.033	60.829	74.00	54.00	Pass
38 (Peak)	5182.600	2.687	91.932	94.619	--	--	--
38 (Average)	5150.000	2.796	43.673	46.469	74.00	54.00	Pass
38 (Average)	5198.600	2.635	79.650	82.285	--	--	--

Figure Channel 38:

Horizontal (Peak)

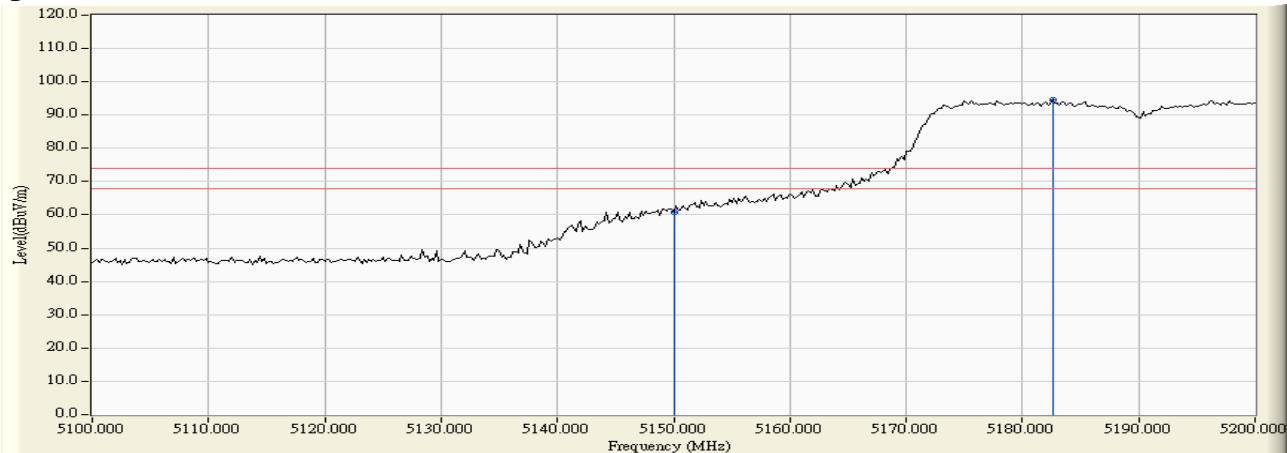
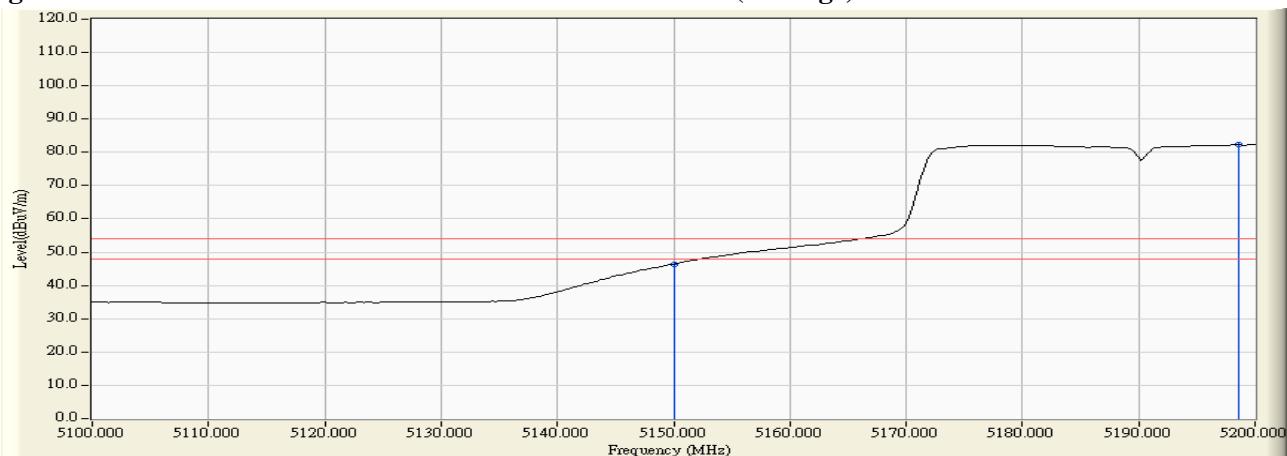


Figure Channel 38:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 38

#### RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
38 (Peak)	5149.600	3.330	58.248	61.578	74.00	54.00	Pass
38 (Peak)	5150.000	3.331	56.755	60.087	74.00	54.00	Pass
38 (Peak)	5197.800	3.559	91.088	94.647	--	--	--
38 (Average)	5150.000	3.331	40.821	44.153	74.00	54.00	Pass
38 (Average)	5199.800	3.567	78.373	81.941	--	--	--

Figure Channel 38:

Vertical (Peak)

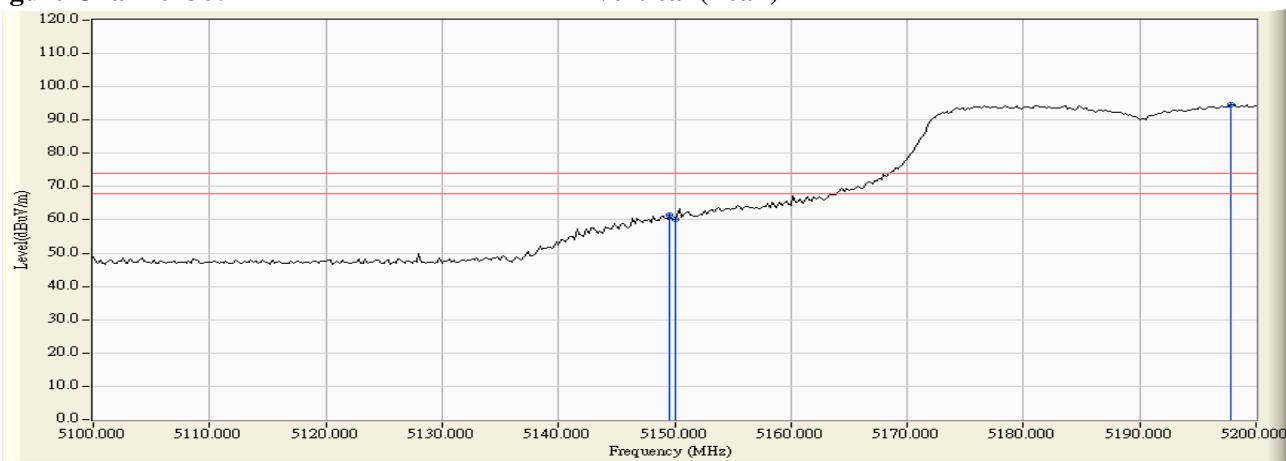
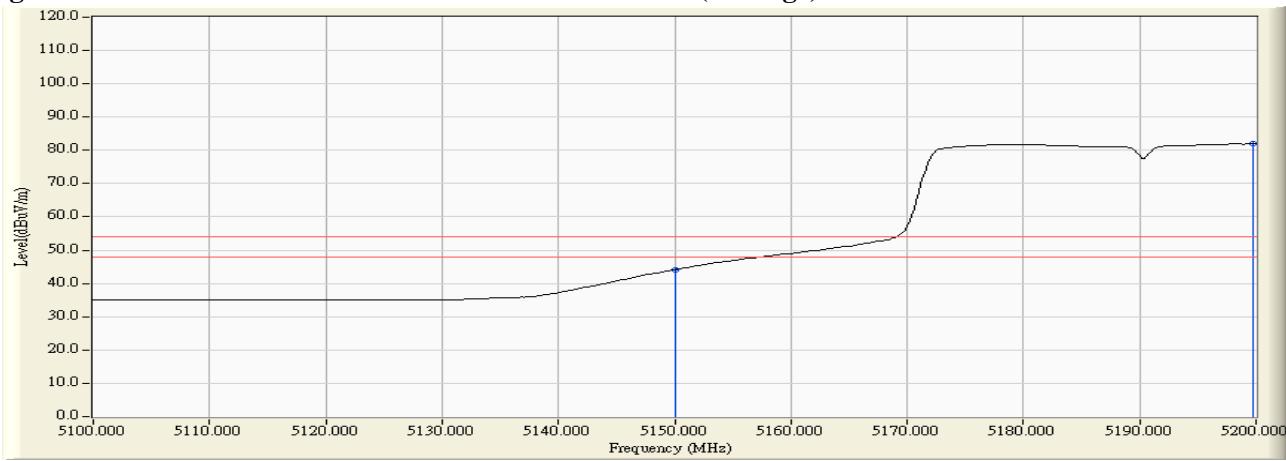


Figure Channel 38:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 62

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
62 (Peak)	5305.200	3.671	95.319	98.990	--	--	--
62 (Peak)	5350.000	3.575	61.938	65.513	74.00	54.00	Pass
62 (Average)	5320.200	3.642	83.150	86.792	--	--	--
62 (Average)	5350.000	3.575	46.035	49.610	74.00	54.00	Pass

Figure Channel 62:

Horizontal (Peak)

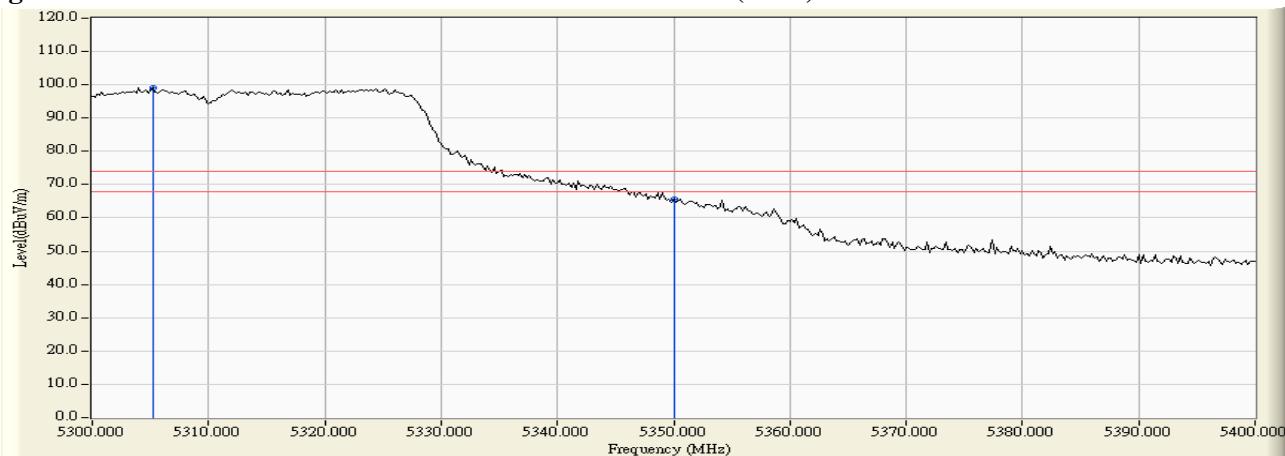
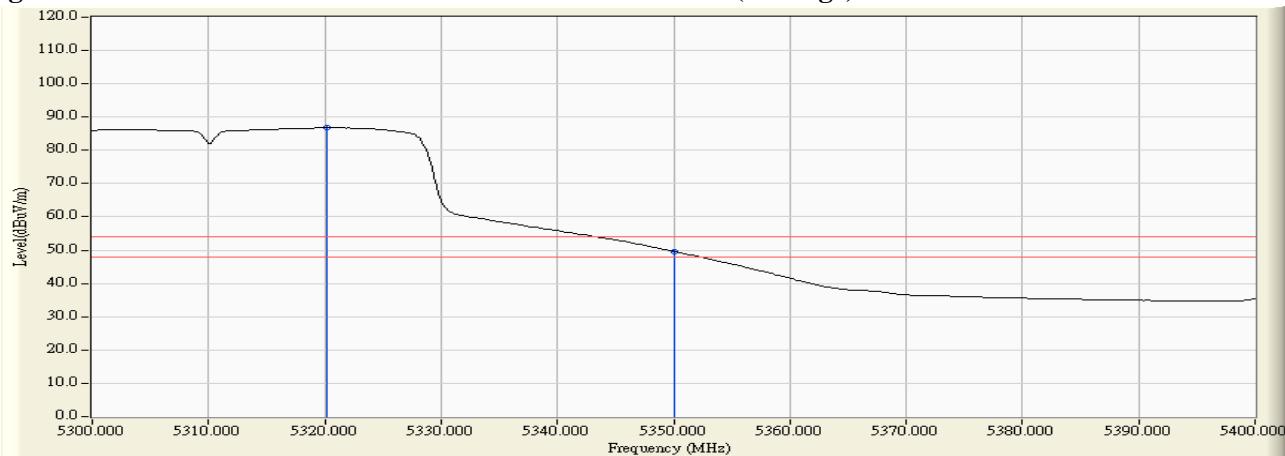


Figure Channel 62:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 62

#### RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
62 (Peak)	5322.200	3.888	94.604	98.493	--	--	--
62 (Peak)	5350.000	3.900	59.380	63.280	74.00	54.00	Pass
62 (Peak)	5351.400	3.901	61.531	65.431	74.00	54.00	Pass
62 (Average)	5320.200	3.886	82.404	86.291	--	--	--
62 (Average)	5350.000	3.900	44.735	48.635	74.00	54.00	Pass

Figure Channel 62:

Vertical (Peak)

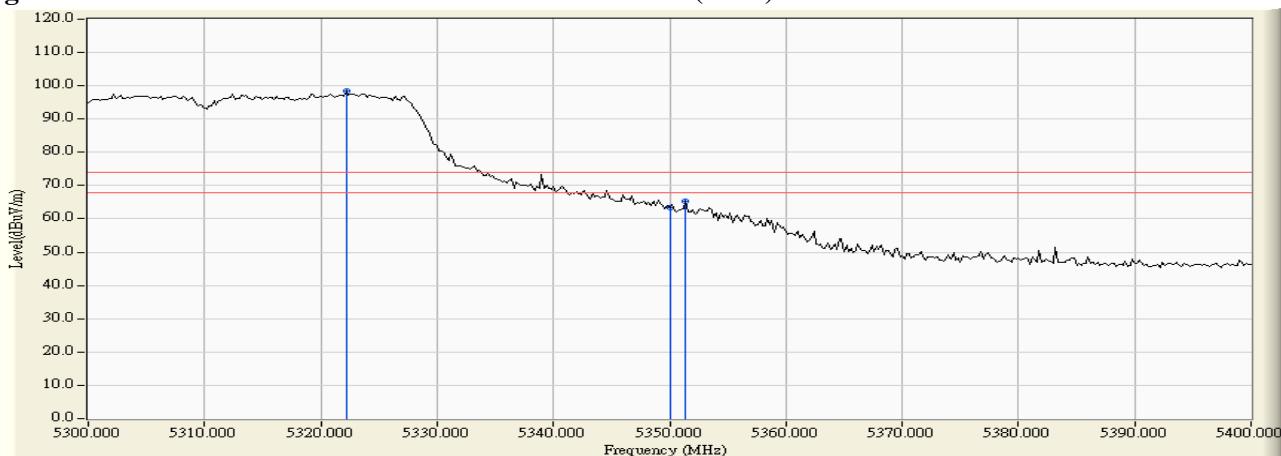
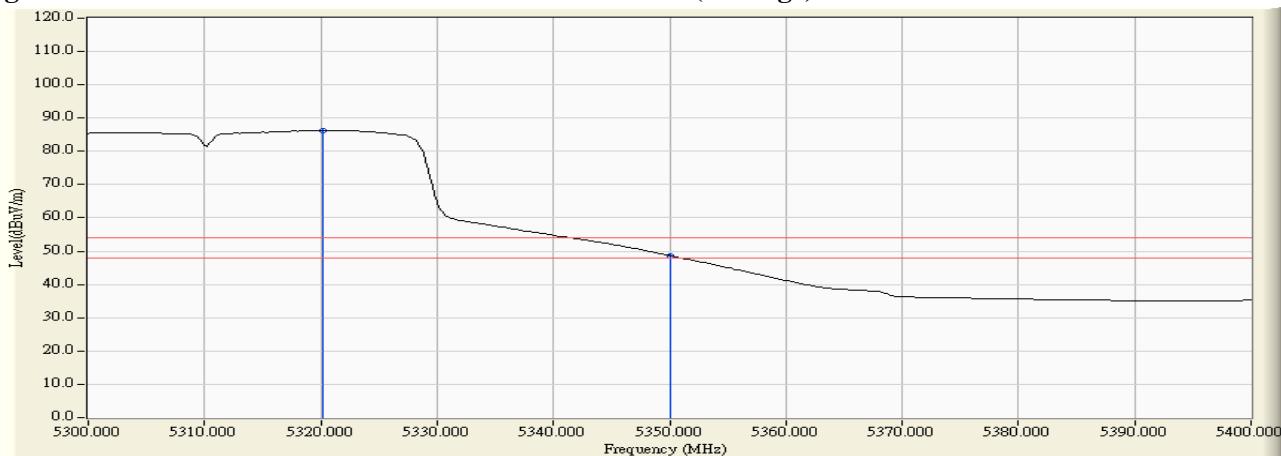


Figure Channel 62:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 102

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
102 (Peak)	5458.600	3.749	66.346	70.094	74.00	54.00	Pass
102 (Peak)	5460.000	3.775	66.038	69.813	74.00	54.00	Pass
102 (Peak)	5503.200	4.522	98.991	103.513	--	--	--
102 (Average)	5460.000	3.775	47.010	50.785	74.00	54.00	Pass
102 (Average)	5500.400	4.483	85.927	90.411	--	--	--

Figure Channel 102:

Horizontal (Peak)

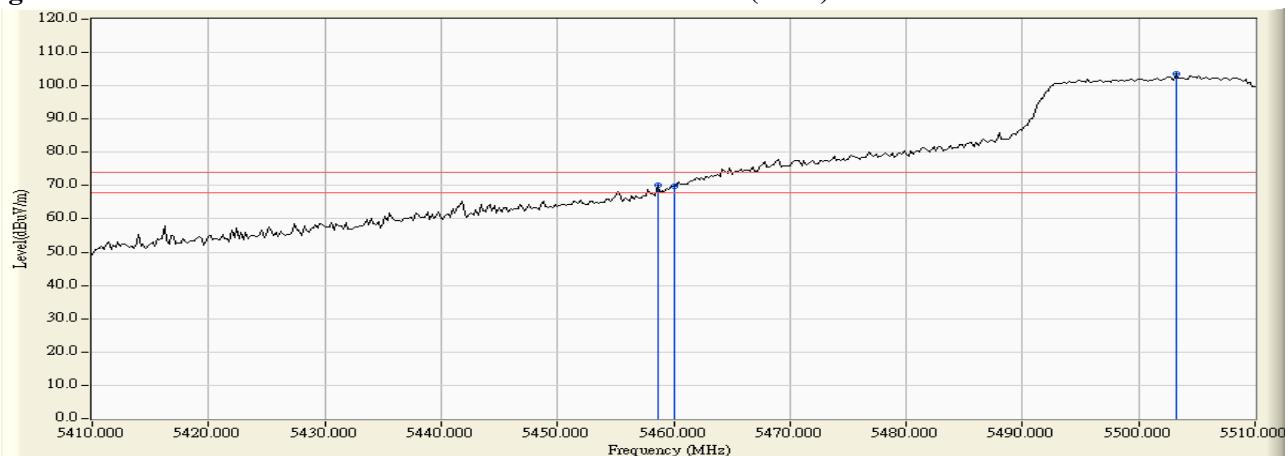
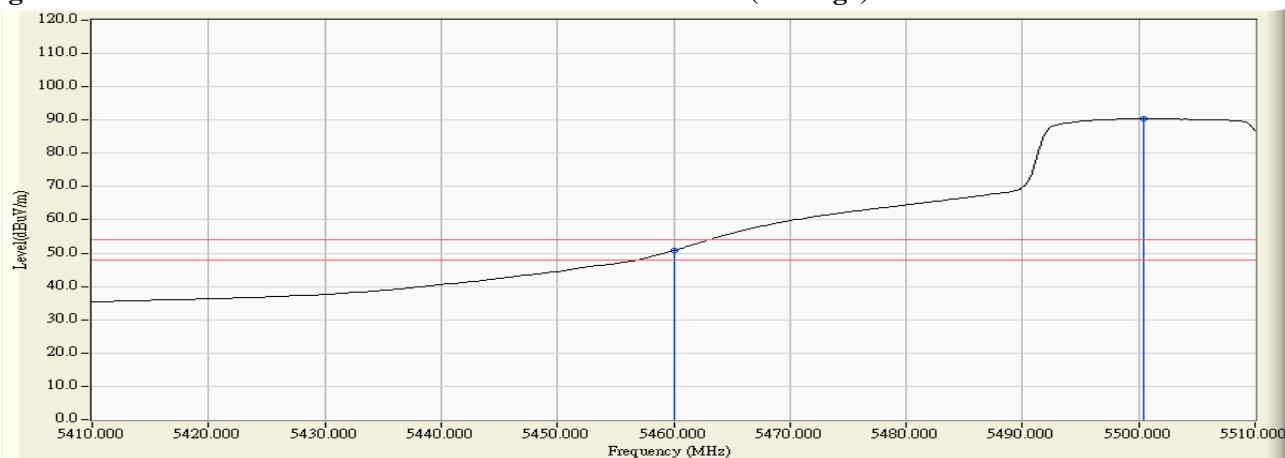


Figure Channel 102:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 102

#### RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
102 (Peak)	5460.000	3.934	62.649	66.584	74.00	54.00	Pass
102 (Peak)	5503.600	4.496	97.356	101.853	--	--	--
102 (Average)	5460.000	3.934	45.553	49.488	74.00	54.00	Pass
102 (Average)	5501.800	4.478	85.297	89.775	--	--	--

Figure Channel 102:

Vertical (Peak)

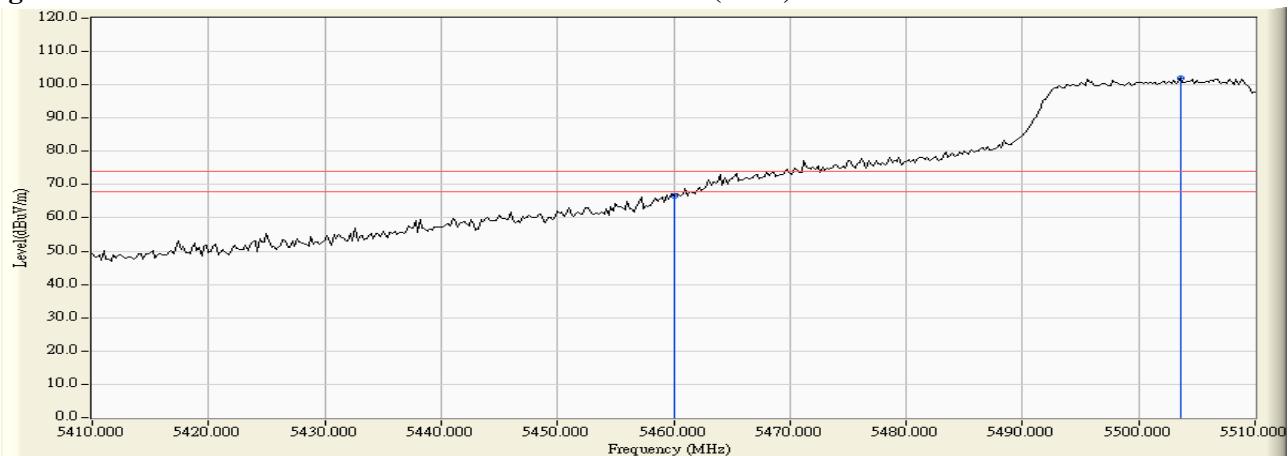
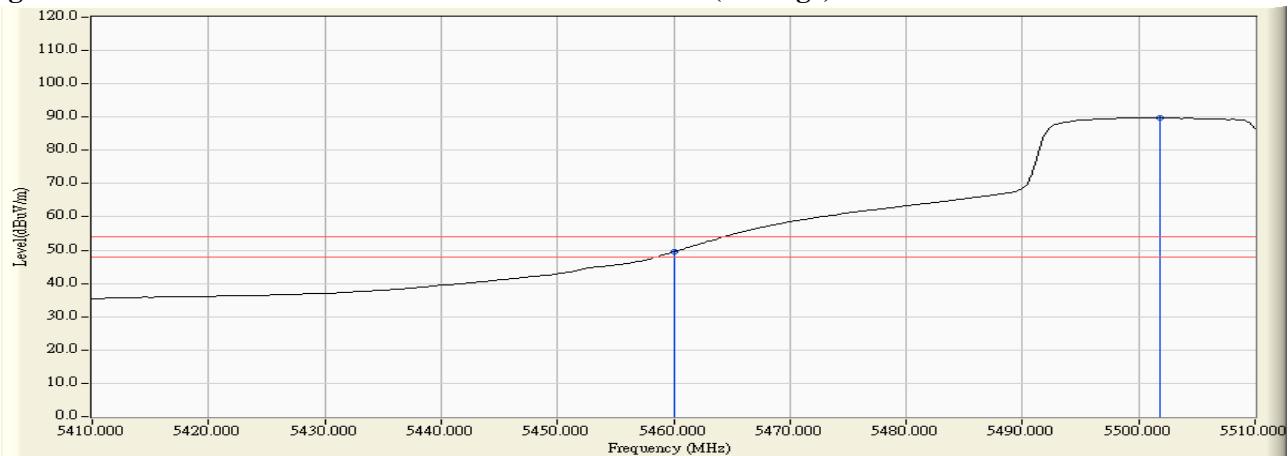


Figure Channel 102:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 102

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5470.000	14.189	-60.890	-46.701	-19.701	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5470.000	13.630	-61.400	-47.770	-20.770	-27.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 134

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5725.000	14.557	-61.390	-46.833	-19.833	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5725.000	14.292	-62.090	-47.798	-20.798	-27.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 151

**RF Radiated Measurement :**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5715.000	14.528	-71.900	-57.372	-30.372	-27.000	Pass
Horizontal	5725.000	14.557	-73.220	-58.663	-41.663	-17.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5715.000	14.309	-72.580	-58.271	-31.271	-27.000	Pass
Vertical	5725.000	14.292	-74.100	-59.808	-42.808	-17.000	Pass

Product : WIFI Module  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 159

**RF Radiated Measurement:**

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Horizontal	5850.000	15.181	-73.410	-58.229	-41.229	-17.000	Pass
Horizontal	5860.000	15.264	-73.910	-58.646	-31.646	-27.000	Pass

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Result
Vertical	5850.000	14.693	-73.590	-58.897	-41.897	-17.000	Pass
Vertical	5860.000	14.799	-74.200	-59.401	-32.401	-27.000	Pass

## 7. Occupied Bandwidth

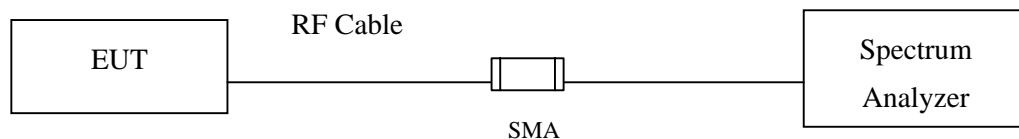
### 7.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2014
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2014
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

### 7.2. Test Setup



### 7.3. Limits

For the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

### 7.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

### 7.5. Uncertainty

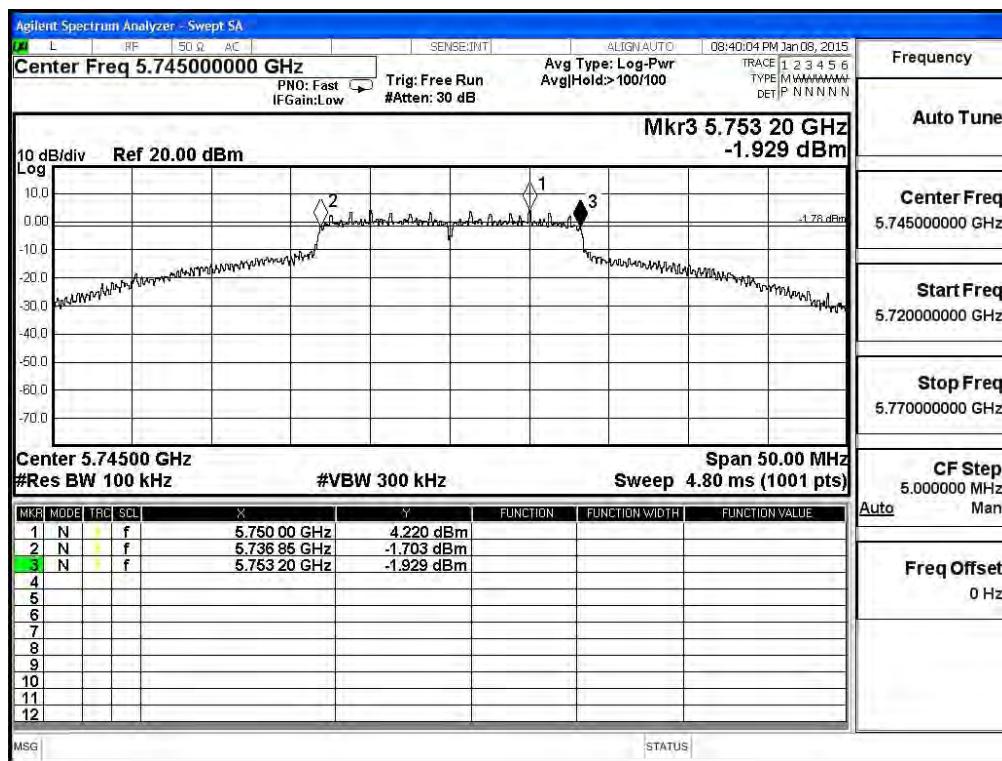
± 150Hz

## 7.6. Test Result of Occupied Bandwidth

Product : WIFI Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	16350	>500	Pass

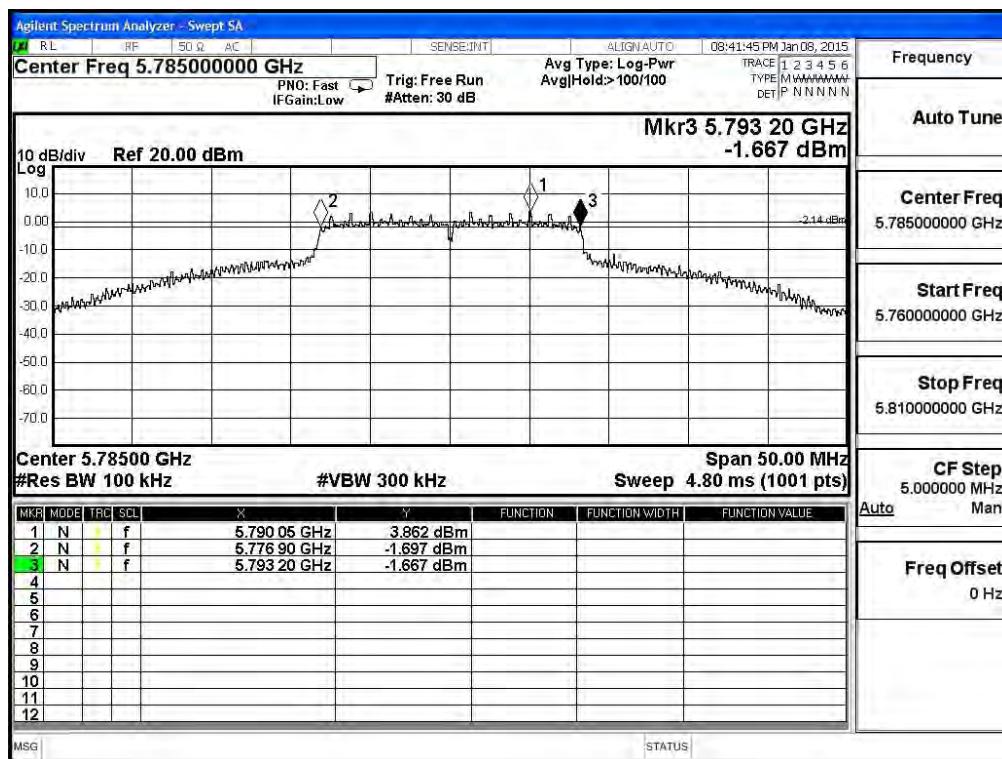
Figure Channel 149:



Product : WIFI Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	16300	>500	Pass

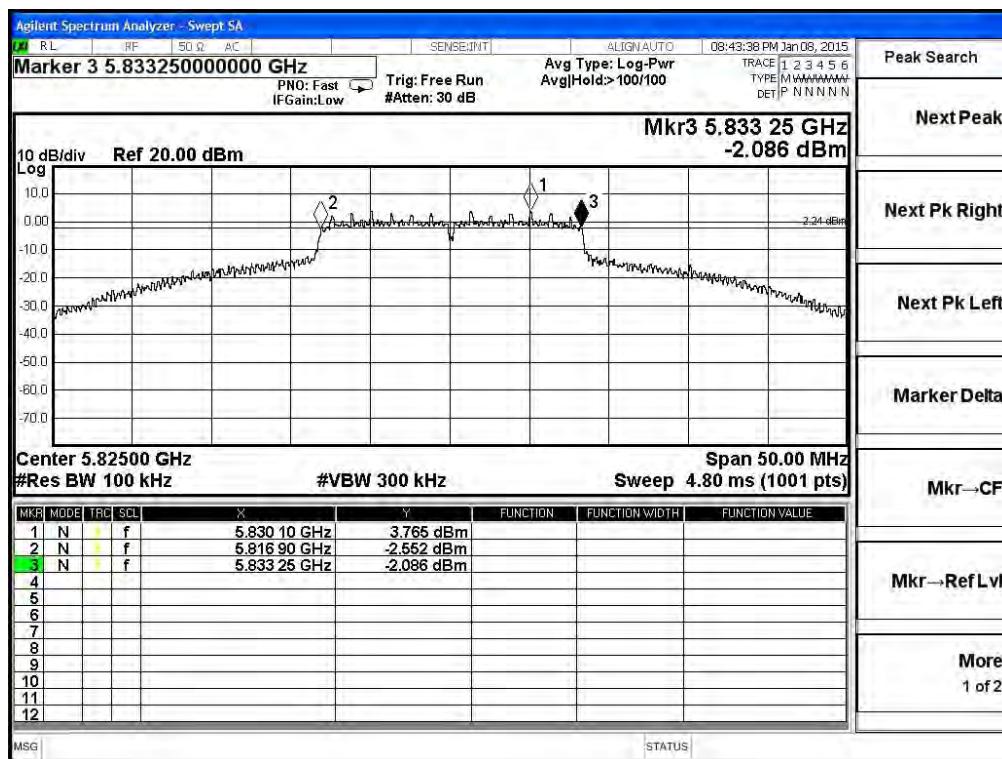
Figure Channel 157:



Product : WIFI Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	16350	>500	Pass

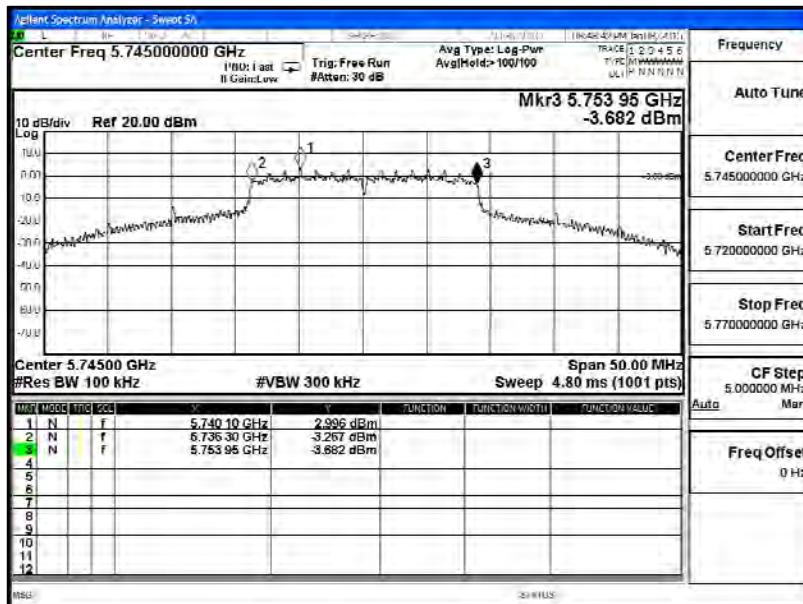
Figure Channel 165:



Product : WIFI Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5745MHz)

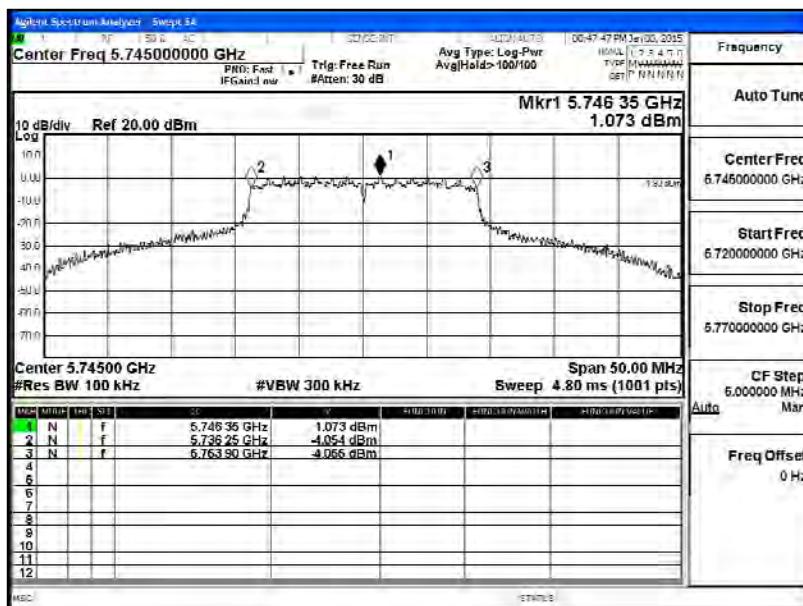
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	17650	>500	Pass

Figure Channel 149: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	17650	>500	Pass

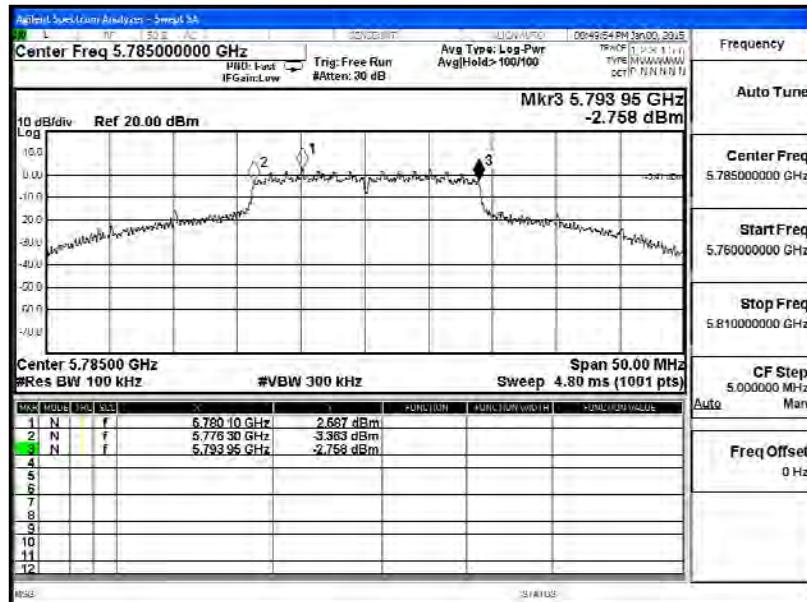
Figure Channel 149: (Chain B)



Product : WIFI Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5785MHz)

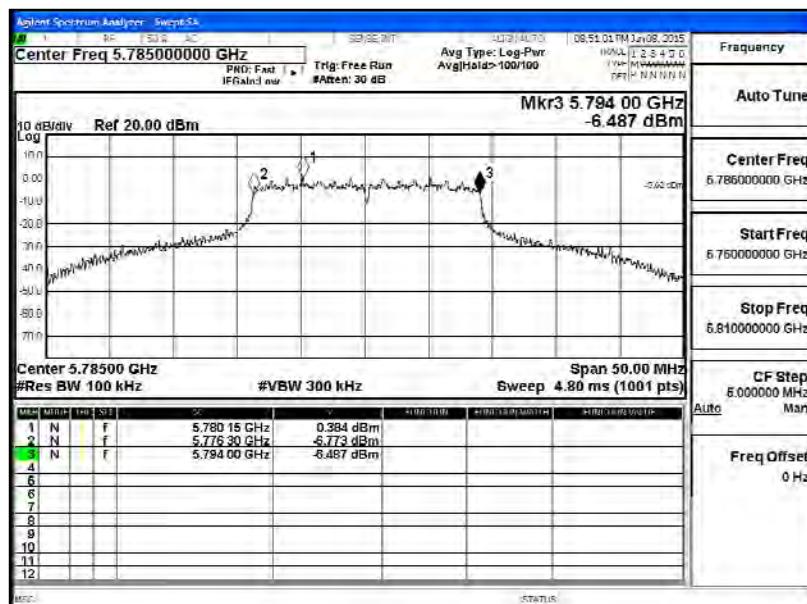
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	17650	>500	Pass

Figure Channel 157: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	17700	>500	Pass

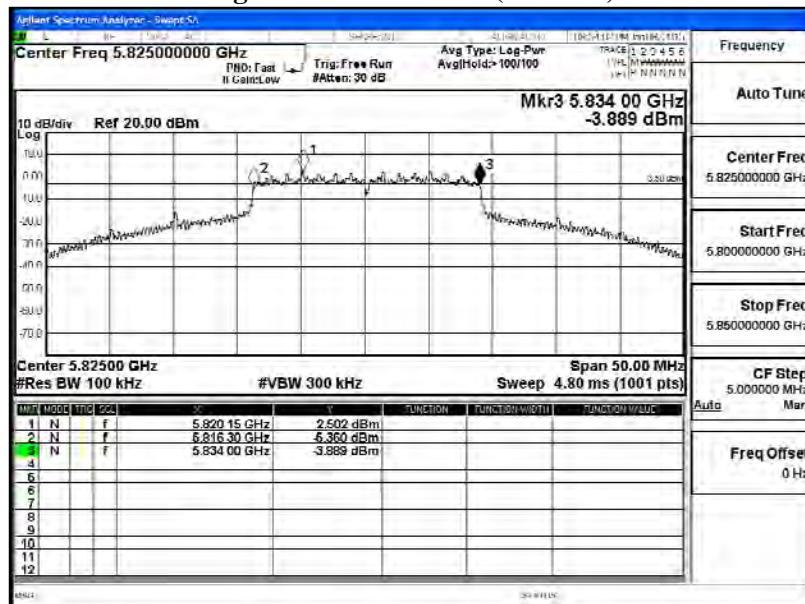
Figure Channel 157: (Chain B)



Product : WIFI Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5825MHz)

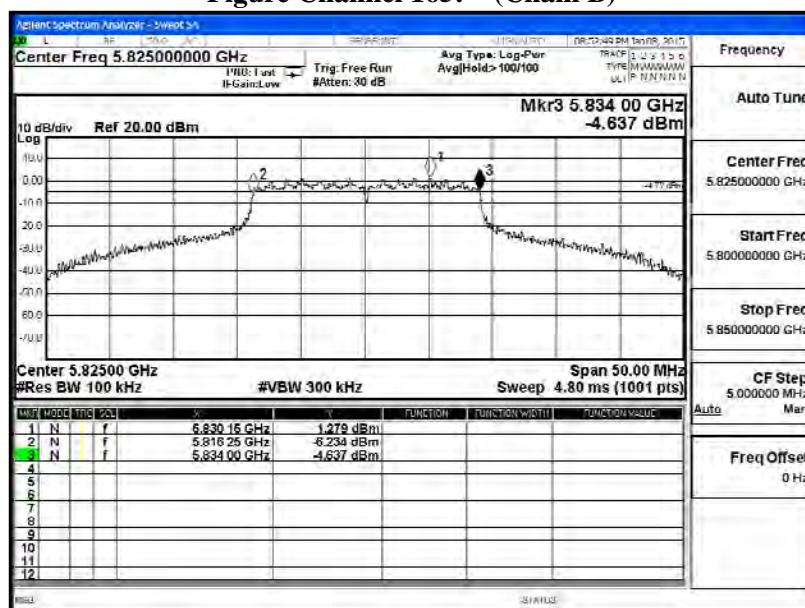
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	17700	>500	Pass

Figure Channel 165: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	17750	>500	Pass

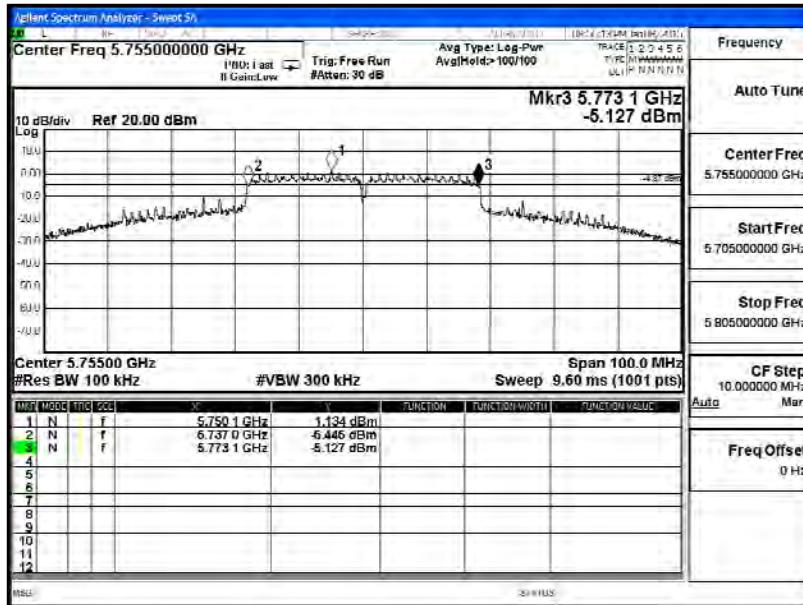
Figure Channel 165: (Chain B)



Product : WIFI Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

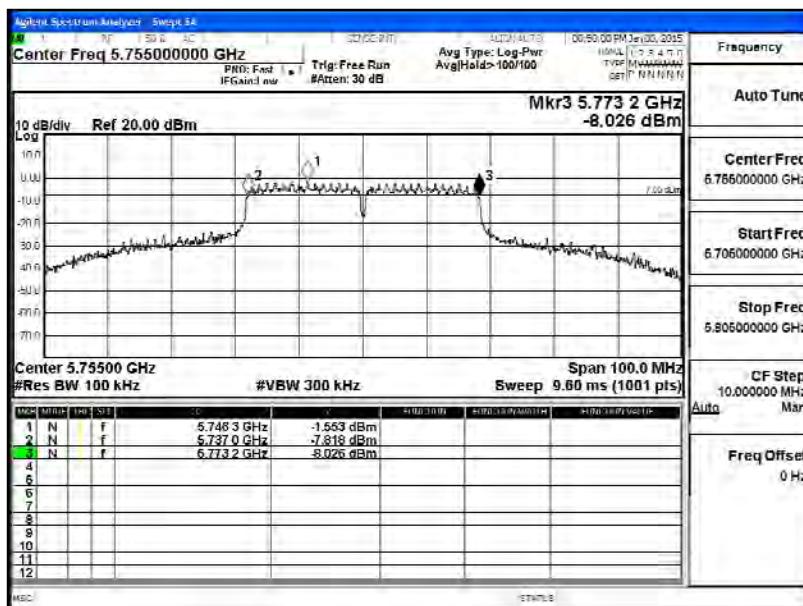
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755.00	36100	>500	Pass

Figure Channel 151: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755.00	36200	>500	Pass

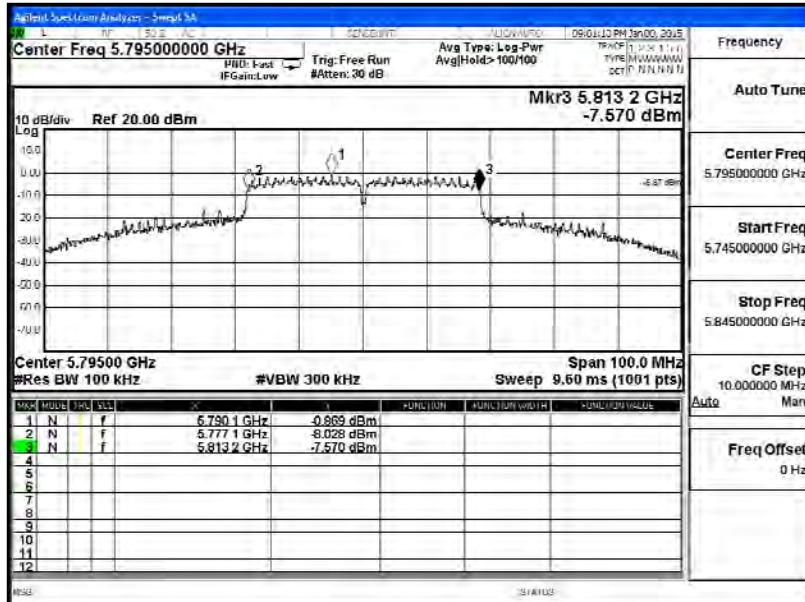
Figure Channel 151: (Chain B)



Product : WIFI Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5795MHz)

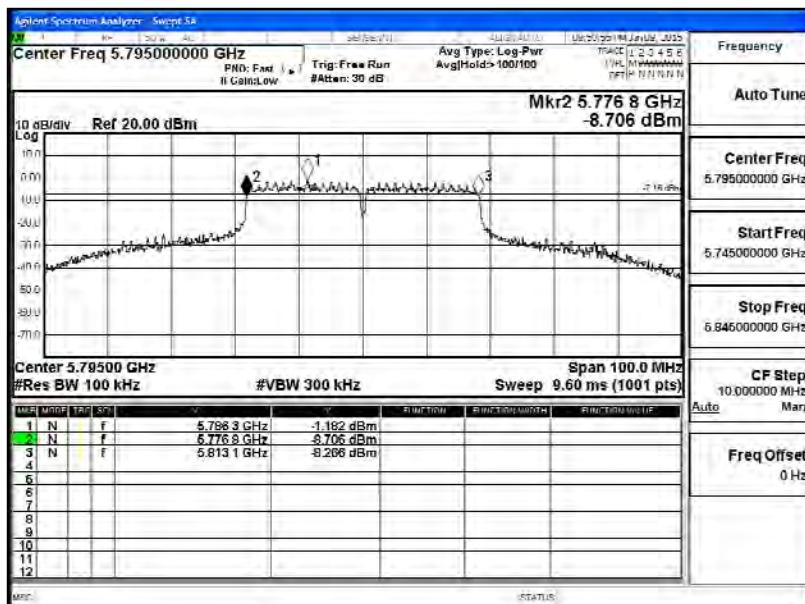
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795.00	36100	>500	Pass

Figure Channel 159: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795.00	36300	>500	Pass

Figure Channel 159: (Chain B)



## 8. Frequency Stability

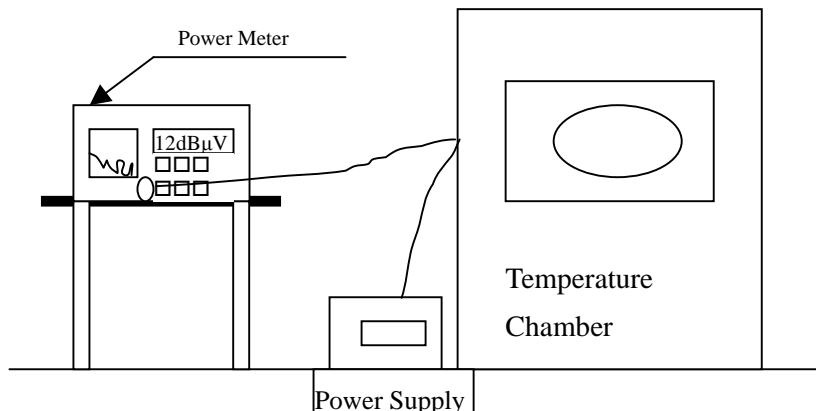
### 8.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2014
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2014
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

### 8.2. Test Setup



### 8.3. Limits

Manufacturers 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

### 8.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to DTS test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

### 8.5. Uncertainty

± 150 Hz

## 8.6. Test Result of Frequency Stability

Product : WIFI Module  
Test Item : Frequency Stability  
Test Site : Temperature Chamber  
Test Mode : Carrier Wave

**Chain A**

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	$\Delta F$ (MHz)
Tnom (20) oC	Vnom (120)V	36	5180.0000	5180.0064	-0.0064
		38	5190.0000	5190.0019	-0.0019
		44	5220.0000	5220.0096	-0.0096
		46	5230.0000	5230.0045	-0.0045
		48	5240.0000	5240.0053	-0.0053
		52	5260.0000	5260.0033	-0.0033
		54	5270.0000	5270.0091	-0.0091
		60	5300.0000	5300.0067	-0.0067
		62	5310.0000	5310.0062	-0.0062
		64	5320.0000	5320.0049	-0.0049
		100	5500.0000	5500.0071	-0.0071
		102	5510.0000	5510.0063	-0.0063
		110	5550.0000	5550.0059	-0.0059
		116	5580.0000	5580.0085	-0.0085
		134	5670.0000	5670.0046	-0.0046
		140	5700.0000	5700.0096	-0.0096
		149	5745.0000	5745.0089	-0.0089
		151	5755.0000	5755.0083	-0.0083
		155	5775.0000	5775.0049	-0.0049
		157	5785.0000	5785.0049	-0.0049
		159	5795.0000	5795.0066	-0.0066
		165	5825.0000	5825.0064	-0.0064

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (50) oC	Vmax (138)V	36	5180.0000	5180.0064	-0.0064
		38	5190.0000	5190.0054	-0.0054
		44	5220.0000	5220.0049	-0.0049
		46	5230.0000	5230.0022	-0.0022
		48	5240.0000	5240.0054	-0.0054
		52	5260.0000	5260.0091	-0.0091
		54	5270.0000	5270.0063	-0.0063
		60	5300.0000	5300.0038	-0.0038
		62	5310.0000	5310.0046	-0.0046
		64	5320.0000	5320.0011	-0.0011
		100	5500.0000	5500.0009	-0.0009
		102	5510.0000	5510.0052	-0.0052
		110	5550.0000	5550.0029	-0.0029
		116	5580.0000	5580.0079	-0.0079
		134	5670.0000	5670.0093	-0.0093
		140	5700.0000	5700.0088	-0.0088
		149	5745.0000	5745.0053	-0.0053
		151	5755.0000	5755.0041	-0.0041
		155	5775.0000	5775.0039	-0.0039
		157	5785.0000	5785.0053	-0.0053
		159	5795.0000	5795.0051	-0.0051
		165	5825.0000	5825.0064	-0.0064

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	$\Delta F$ (MHz)
Tmax (50) °C	Vmin (102)V	36	5180.0000	5180.0044	-0.0044
		38	5190.0000	5190.0074	-0.0074
		44	5220.0000	5220.0051	-0.0051
		46	5230.0000	5230.0071	-0.0071
		48	5240.0000	5240.0051	-0.0051
		52	5260.0000	5260.0073	-0.0073
		54	5270.0000	5270.0059	-0.0059
		60	5300.0000	5300.0052	-0.0052
		62	5310.0000	5310.0063	-0.0063
		64	5320.0000	5320.0043	-0.0043
		100	5500.0000	5500.0025	-0.0025
		102	5510.0000	5510.0035	-0.0035
		110	5550.0000	5550.0056	-0.0056
		116	5580.0000	5580.0036	-0.0036
		134	5670.0000	5670.0036	-0.0036
		140	5700.0000	5700.0026	-0.0026
		149	5745.0000	5745.0036	-0.0036
		151	5755.0000	5755.0014	-0.0014
		155	5775.0000	5775.0032	-0.0032
		157	5785.0000	5785.0056	-0.0056
		159	5795.0000	5795.0063	-0.0063
		165	5825.0000	5825.0044	-0.0044

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
T <sub>nom</sub> (-10) oC	V <sub>nom</sub> (138)V	36	5180.0000	5180.0066	-0.0066
		38	5190.0000	5190.0062	-0.0062
		44	5220.0000	5220.0066	-0.0066
		46	5230.0000	5230.0066	-0.0066
		48	5240.0000	5240.0066	-0.0066
		52	5260.0000	5260.0064	-0.0064
		54	5270.0000	5270.0066	-0.0066
		60	5300.0000	5300.0066	-0.0066
		62	5310.0000	5310.0062	-0.0062
		64	5320.0000	5320.0066	-0.0066
		100	5500.0000	5500.0066	-0.0066
		102	5510.0000	5510.0062	-0.0062
		110	5550.0000	5550.0066	-0.0066
		116	5580.0000	5580.0066	-0.0066
		134	5670.0000	5670.0066	-0.0066
		140	5700.0000	5700.0066	-0.0066
		149	5745.0000	5745.0051	-0.0051
		151	5755.0000	5755.0031	-0.0031
		155	5775.0000	5775.0096	-0.0096
		157	5785.0000	5785.0056	-0.0056
		159	5795.0000	5795.0061	-0.0061
		165	5825.0000	5825.0066	-0.0066

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (0) oC	Vmax (102)V	36	5180.0000	5180.0066	-0.0066
		38	5190.0000	5190.0062	-0.0062
		44	5220.0000	5220.0066	-0.0066
		46	5230.0000	5230.0066	-0.0066
		48	5240.0000	5240.0066	-0.0066
		52	5260.0000	5260.0064	-0.0064
		54	5270.0000	5270.0066	-0.0066
		60	5300.0000	5300.0066	-0.0066
		62	5310.0000	5310.0062	-0.0062
		64	5320.0000	5320.0066	-0.0066
		100	5500.0000	5500.0066	-0.0066
		102	5510.0000	5510.0062	-0.0062
		110	5550.0000	5550.0066	-0.0066
		116	5580.0000	5580.0066	-0.0066
		134	5670.0000	5670.0066	-0.0066
		140	5700.0000	5700.0066	-0.0066
		149	5745.0000	5745.0051	-0.0051
		151	5755.0000	5755.0031	-0.0031
		155	5775.0000	5775.0096	-0.0096
		157	5785.0000	5785.0056	-0.0056
		159	5795.0000	5795.0061	-0.0061
		165	5825.0000	5825.0066	-0.0066

**Chain B**

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	$\Delta F$ (MHz)
T <sub>nom</sub> (20) oC	V <sub>nom</sub> (120)V	36	5180.0000	5180.0059	-0.0059
		38	5190.0000	5190.0018	-0.0018
		44	5220.0000	5220.0086	-0.0086
		46	5230.0000	5230.0047	-0.0047
		48	5240.0000	5240.0066	-0.0066
		52	5260.0000	5260.0036	-0.0036
		54	5270.0000	5270.0094	-0.0094
		60	5300.0000	5300.0061	-0.0061
		62	5310.0000	5310.0057	-0.0057
		64	5320.0000	5320.0059	-0.0059
		100	5500.0000	5500.0062	-0.0062
		102	5510.0000	5510.0071	-0.0071
		110	5550.0000	5550.0065	-0.0065
		116	5580.0000	5580.0089	-0.0089
		134	5670.0000	5670.0039	-0.0039
		140	5700.0000	5700.0092	-0.0092
		149	5745.0000	5745.0083	-0.0083
		151	5755.0000	5755.0059	-0.0059
		155	5775.0000	5775.0053	-0.0053
		157	5785.0000	5785.0054	-0.0054
		159	5795.0000	5795.0078	-0.0078
		165	5825.0000	5825.0059	-0.0059

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (50) oC	Vmax (138)V	36	5180.0000	5180.0068	-0.0068
		38	5190.0000	5190.0051	-0.0051
		44	5220.0000	5220.0044	-0.0044
		46	5230.0000	5230.0026	-0.0026
		48	5240.0000	5240.0049	-0.0049
		52	5260.0000	5260.0095	-0.0095
		54	5270.0000	5270.0061	-0.0061
		60	5300.0000	5300.0049	-0.0049
		62	5310.0000	5310.0059	-0.0059
		64	5320.0000	5320.0001	-0.0001
		100	5500.0000	5500.0003	-0.0003
		102	5510.0000	5510.0047	-0.0047
		110	5550.0000	5550.0031	-0.0031
		116	5580.0000	5580.0075	-0.0075
		134	5670.0000	5670.0095	-0.0095
		140	5700.0000	5700.0087	-0.0087
		149	5745.0000	5745.0059	-0.0059
		151	5755.0000	5755.0057	-0.0057
		155	5775.0000	5775.0024	-0.0024
		157	5785.0000	5785.0062	-0.0062
		159	5795.0000	5795.0053	-0.0053
		165	5825.0000	5825.0068	-0.0068

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (50) °C	Vmin (102)V	36	5180.0000	5180.0051	-0.0051
		38	5190.0000	5190.0063	-0.0063
		44	5220.0000	5220.0041	-0.0041
		46	5230.0000	5230.0083	-0.0083
		48	5240.0000	5240.0059	-0.0059
		52	5260.0000	5260.0071	-0.0071
		54	5270.0000	5270.0069	-0.0069
		60	5300.0000	5300.0041	-0.0041
		62	5310.0000	5310.0054	-0.0054
		64	5320.0000	5320.0034	-0.0034
		100	5500.0000	5500.0024	-0.0024
		102	5510.0000	5510.0032	-0.0032
		110	5550.0000	5550.0066	-0.0066
		116	5580.0000	5580.0025	-0.0025
		134	5670.0000	5670.0032	-0.0032
		140	5700.0000	5700.0024	-0.0024
		149	5745.0000	5745.0063	-0.0063
		151	5755.0000	5755.0016	-0.0016
		155	5775.0000	5775.0035	-0.0035
		157	5785.0000	5785.0065	-0.0065
		159	5795.0000	5795.0066	-0.0066
		165	5825.0000	5825.0051	-0.0051

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tnom (0) oC	Vnom (138)V	36	5180.0000	5180.0066	-0.0066
		38	5190.0000	5190.0066	-0.0066
		44	5220.0000	5220.0064	-0.0064
		46	5230.0000	5230.0066	-0.0066
		48	5240.0000	5240.0066	-0.0066
		52	5260.0000	5260.0066	-0.0066
		54	5270.0000	5270.0066	-0.0066
		60	5300.0000	5300.0062	-0.0062
		62	5310.0000	5310.0066	-0.0066
		64	5320.0000	5320.0066	-0.0066
		100	5500.0000	5500.0066	-0.0066
		102	5510.0000	5510.0066	-0.0066
		110	5550.0000	5550.0066	-0.0066
		116	5580.0000	5580.0066	-0.0066
		134	5670.0000	5670.0066	-0.0066
		140	5700.0000	5700.0066	-0.0066
		149	5745.0000	5745.0053	-0.0053
		151	5755.0000	5755.0043	-0.0043
		155	5775.0000	5775.0091	-0.0091
		157	5785.0000	5785.0059	-0.0059
		159	5795.0000	5795.0057	-0.0057
		165	5825.0000	5825.0066	-0.0066

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (0) oC	Vmax (102)V	36	5180.0000	5180.0066	-0.0066
		38	5190.0000	5190.0066	-0.0066
		44	5220.0000	5220.0064	-0.0064
		46	5230.0000	5230.0066	-0.0066
		48	5240.0000	5240.0062	-0.0062
		52	5260.0000	5260.0066	-0.0066
		54	5270.0000	5270.0062	-0.0062
		60	5300.0000	5300.0066	-0.0066
		62	5310.0000	5310.0066	-0.0066
		64	5320.0000	5320.0064	-0.0064
		100	5500.0000	5500.0066	-0.0066
		102	5510.0000	5510.0062	-0.0062
		110	5550.0000	5550.0066	-0.0066
		116	5580.0000	5580.0066	-0.0066
		134	5670.0000	5670.0064	-0.0064
		140	5700.0000	5700.0066	-0.0066
		149	5745.0000	5745.0063	-0.0063
		151	5755.0000	5755.0066	-0.0066
		155	5775.0000	5775.0057	-0.0057
		157	5785.0000	5785.0056	-0.0056
		159	5795.0000	5795.0053	-0.0053
		165	5825.0000	5825.0066	-0.0066

**9. EMI Reduction Method During Compliance Testing**

No modification was made during testing.