

FCC Test Report for UNII Band3 (Class II Permissive Change)

Product Name	Nexus Player
Model No	TV500I
FCC ID	MSQ-TV500I

Applicant	ASUSTeK COMPUTER INC.
Address	4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt	Apr. 29, 2016
Issued Date	May 18, 2016
Report No.	1650078R-RFUSP40V00
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 of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of QuieTek Corporation.

Test Report

Issued Date: May 18, 2016

Report No.: 1650078R-RFUSP40V00



Product Name	Nexus Player
Applicant	ASUSTeK COMPUTER INC.
Address	4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan
Manufacturer	Digitek (Chongqing) Limited
Model No.	TV500I
FCC ID.	MSQ-TV500I
EUT Rated Voltage	AC 100-240V, 50/60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	nexus; ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2015 ANSI C63.4: 2014, ANSI C63.10: 2013 789033 D02 General UNII Test Procedures New Rules v01r02
Test Result	Complied

Documented By : Rita Huang
(Senior Adm. Specialist / Rita Huang)

Tested By : Eason chen
(Engineer / Eason Chen)

Approved By : [Signature]
(Director / Vincent Lin)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Operational Description	7
1.3. Tested System Details.....	8
1.4. Configuration of tested System	8
1.5. EUT Exercise Software	8
1.6. Test Facility	9
2. Conducted Emission.....	10
2.1. Test Equipment.....	10
2.2. Test Setup	10
2.3. Limits	11
2.4. Test Procedure	11
2.5. Uncertainty	11
2.6. Test Result of Conducted Emission.....	12
3. Maximun conducted output power	14
3.1. Test Equipment.....	14
3.2. Test Setup	14
3.3. Limits	15
3.4. Test Procedur	16
3.5. Uncertainty	16
3.6. Test Result of Maximum conducted output power.....	17
4. Peak Power Spectral Density.....	22
4.1. Test Equipment.....	22
4.2. Test Setup	22
4.3. Limits	22
4.4. Test Procedure	23
4.5. Uncertainty	23
4.6. Test Result of Peak Power Spectral Density	24
5. Radiated Emission	35
5.1. Test Equipment.....	35
5.2. Test Setup	35
5.3. Limits	37
5.4. Test Procedure	38
5.5. Uncertainty	38
5.6. Test Result of Radiated Emission.....	39
6. Band Edge	52
6.1. Test Equipment.....	52
6.2. Test Setup	52
6.3. Limits	53
6.4. Test Procedure	53
6.5. Uncertainty	53
6.6. Test Result of Band Edge	55
7. Occupied Bandwidth	69

7.1.	Test Equipment.....	69
7.2.	Test Setup	69
7.3.	Limits	69
7.4.	.Test Procedure	69
7.5.	Uncertainty	69
7.6.	Test Result of Occupied Bandwidth	70
8.	Frequency Stability.....	79
8.1.	Test Equipment.....	79
8.2.	Test Setup	79
8.3.	Limits	79
8.4.	Test Procedure	79
8.5.	Uncertainty	79
8.6.	Test Result of Frequency Stability.....	80
9.	EMI Reduction Method During Compliance Testing	82
Attachment 1: EUT Test Photographs		
Attachment 2: EUT Detailed Photographs		

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Nexus Player
Trade Name	nexus; ASUS
FCC ID.	MSQ-TV500I
Model No.	TV500I
Frequency Range	802.11a/n-20MHz/ac-20MHz:5745-5825MHz 802.11n-40MHz/ac-40MHz:5755-5795MHz 802.11ac-80MHz: 5775MHz
Number of Channels	802.11a/n-20MHz/ac-20MHz: 5, n-40MHz/ac-40MHz: 2, ac-80MHz: 1
Data Rate	802.11a/g: 6-54Mbps, 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Channel Control	Auto
Type of Modulation	802.11a/n/ac:OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna type	Printed on PCB Antenna
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	MFR: PIE, M/N: AD2036321 Input: 100-240V, 50/60Hz 0.5A Output: 12V $\overline{=}$ 1.5A Cable out: Shielded, 1.8m
Contain Module	Broadcom / BCM4354XKUBG

Antenna List

No.	Manufacturer	Part No.	Antenna type	Peak Gain
1.	Digitek	N/A (Main). N/A (Aux)	Printed on PCB Antenna	2.20 dBi for 5.725~5.85GHz

Note: 1. 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 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 151:	5755 MHz	Channel 159:	5795 MHz

802.11ac-80MHz Center Working Frequency of Each Channel:

Channel	Frequency
Channel 155:	5775 MHz

Note:

1. This device is a Nexus Player including an IEEE 802.11 a/n/ac 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/ac 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, 802.11ac-80BW is 65Mbps)
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. This is to request a **Class II permissive change** for FCC ID: MSQ-TV500I (originally granted on 10/19/2014)

The major change filed under this application is:

Change #1: Frequency band 3 was previously authorized for this device under section 15.247 of the rules, this permissive change demonstrates compliance with new UNII rules for this same frequency band under section 15.407.

This Change is according to KDB 926956 D01 U-NII Transition Plan v01r05.

The minimum test requirements for Class II permissive change is according Answer of Question 16 section c)3) requirements.

Change #2: The Band 1, Band 2a and Band 2c previously authorized under "Old Rules, a Class II permissive change filing to demonstrate compliance with the "New Rules", all others hardware is identical with original granted.

Change #3: Modify WiFi Antenna layout. (The antenna type is the same, the antenna gain is lower than the original application).

Change #4: Update System Power circuit and layout.

Change #5: Update RF circuit and layout.

Change #6: Update system circuit components(USB,HDMI & Power button).

Test Mode	Mode 1: Transmit (802.11a-6Mbps) Mode 2: Transmit (802.11n-20BW-14.4Mbps) Mode 3: Transmit (802.11n-40BW-30Mbps) Mode 4: Transmit (802.11ac-80BW-65Mbps)
-----------	---

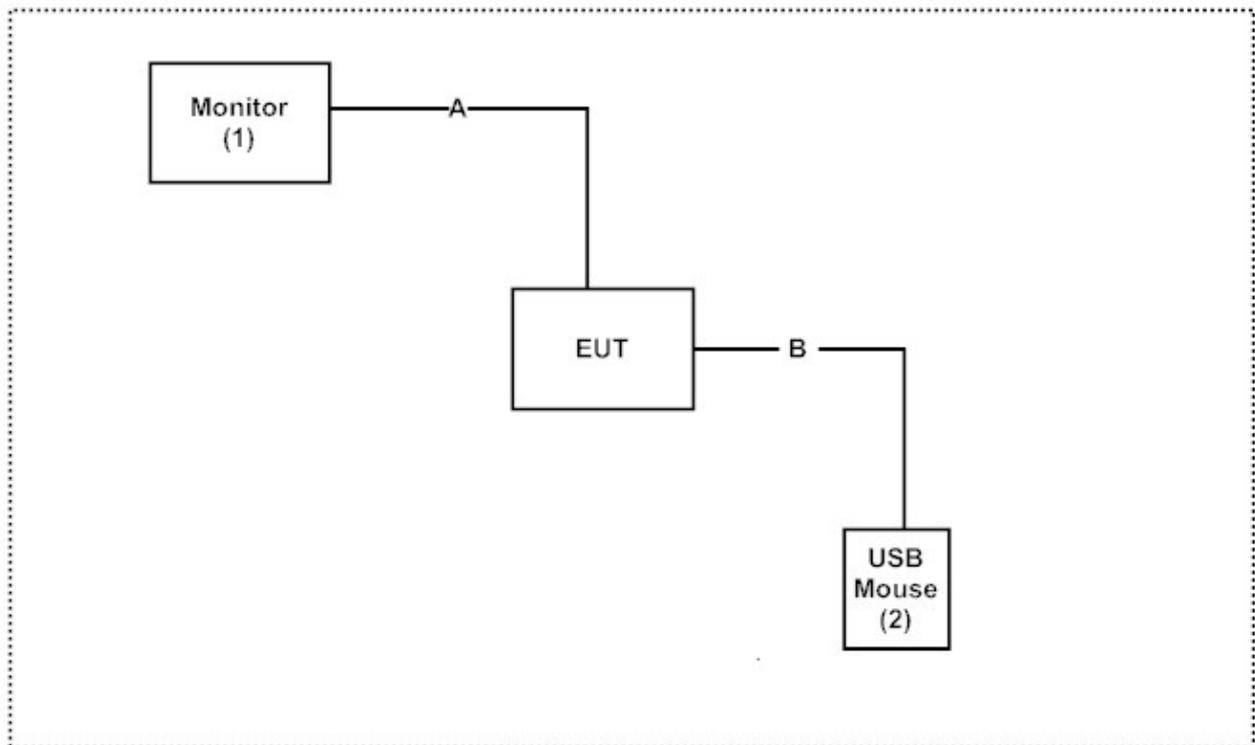
1.3. Tested System Details

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 Monitor	DELL	ST2320LF	N/A	Non-Shielded, 1.8m
2 USB Mouse	Logitech	M-BE58	LZE11405266	N/A

Signal Cable Type	Signal cable Description
A HDMI Cable	Shielded, 1.8m
B Mouse Cable	Shielded, 1.8m

1.4. Configuration of tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown on 1.4
- (2) Execute “WLAN RF Test” program on the EUT.
- (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://www.quietek.com/chinese/about/certificates.aspx?bval=5>

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
 Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
 Lin-Kou Shiang, Taipei,
 Taiwan, R.O.C.
 TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
 E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Conducted Emission

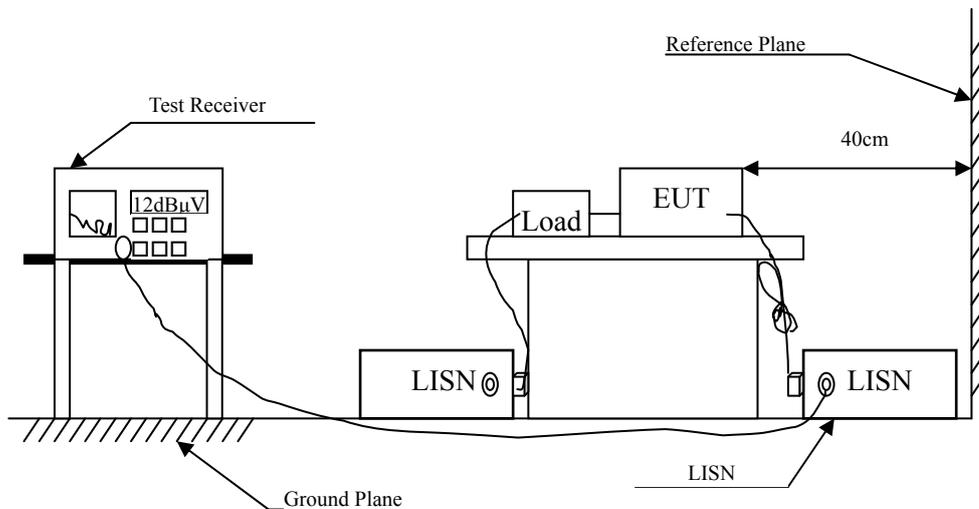
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2015	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2016	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2016	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2016	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2016	
	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

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit		
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: 2013 on conducted measurement.

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

The EUT was setup to ANSI C63.4, 2014; 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 : Nexus Player
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V	Margin dB	Limit dB μ V
LINE 1					
Quasi-Peak					
0.166	9.780	32.420	42.200	-23.343	65.543
0.212	9.776	26.530	36.306	-27.923	64.229
0.244	9.778	22.810	32.588	-30.726	63.314
0.259	9.779	21.870	31.649	-31.237	62.886
0.459	9.785	17.960	27.745	-29.426	57.171
7.439	10.048	10.290	20.338	-39.662	60.000
Average					
0.166	9.780	13.420	23.200	-32.343	55.543
0.212	9.776	8.040	17.816	-36.413	54.229
0.244	9.778	5.620	15.398	-37.916	53.314
0.259	9.779	4.940	14.719	-38.167	52.886
0.459	9.785	11.040	20.825	-26.346	47.171
7.439	10.048	3.400	13.448	-36.552	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 : Nexus Player
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV	Margin dB	Limit dBμV
LINE 2					
Quasi-Peak					
0.162	9.832	32.960	42.792	-22.865	65.657
0.212	9.836	26.490	36.326	-27.903	64.229
0.259	9.839	22.130	31.969	-30.917	62.886
0.459	9.855	21.080	30.935	-26.236	57.171
6.771	10.121	9.020	19.141	-40.859	60.000
22.916	10.388	15.450	25.838	-34.162	60.000
Average					
0.162	9.832	12.870	22.702	-32.955	55.657
0.212	9.836	9.640	19.476	-34.753	54.229
0.259	9.839	7.650	17.489	-35.397	52.886
0.459	9.855	14.350	24.205	-22.966	47.171
6.771	10.121	2.100	12.221	-37.779	50.000
22.916	10.388	8.920	19.308	-30.692	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

3. Maximun conducted output power

3.1. Test Equipment

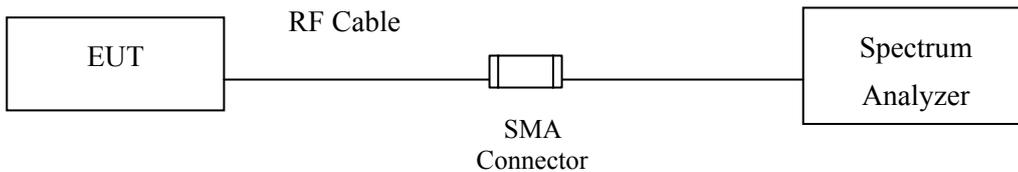
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2016
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2015
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note:

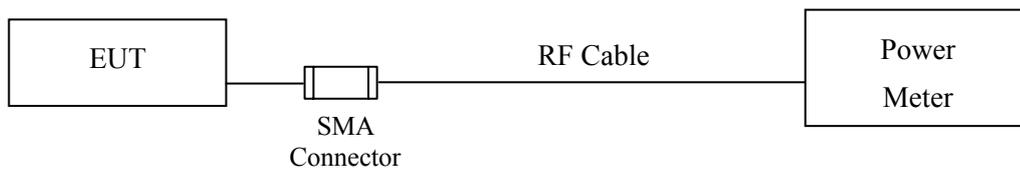
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

3.2. Test Setup

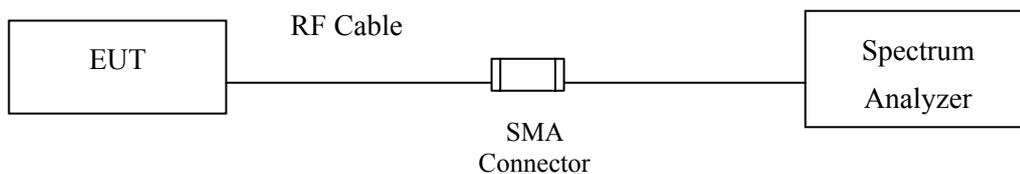
26dBc Occupied Bandwidth



Conduction Power Measurement (for 802.11a)



Conduction Power Measurement (for 802.11ac)



3.3. 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 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-to-point 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.
- (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) 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

± 1.27 dB

3.6. Test Result of Maximum conducted output power

Product : Nexus Player
 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)								
149	5745	12.21	--	--	--	--	--	--	--	<30dBm
157	5785	12.13	12.04	11.91	11.78	11.65	11.57	11.49	11.37	<30dBm
165	5825	12.16	--	--	--	--	--	--	--	<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)								
149	5745	12.49	--	--	--	--	--	--	--	<30dBm
157	5785	12.53	12.47	12.41	12.34	12.26	12.18	12.09	12.01	<30dBm
165	5825	12.50	--	--	--	--	--	--	--	<30dBm

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

Product : Nexus Player
 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)								
149	5745	11.93	--	--	--	--	--	--	--	<30dBm
157	5785	11.95	11.84	11.79	11.66	11.53	11.49	11.34	11.22	<30dBm
165	5825	11.92	--	--	--	--	--	--	--	<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)								
149	5745	11.16	--	--	--	--	--	--	--	<30dBm
157	5785	11.33	11.28	11.16	11.04	10.99	10.84	10.73	10.63	<30dBm
165	5825	11.25	--	--	--	--	--	--	--	<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)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit
					(dBm)
149	5745	11.93	11.16	14.57	30
157	5785	11.95	11.33	14.66	30
165	5825	11.92	11.25	14.61	30

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product : Nexus Player
 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)								
151	5755	11.38	--	--	--	--	--	--	--	<30dBm
159	5795	11.24	11.19	11.04	10.97	10.86	10.73	10.65	10.58	<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)								
151	5755	10.11	--	--	--	--	--	--	--	<30dBm
159	5795	10.31	10.24	10.16	10.09	9.97	9.81	9.78	9.67	<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)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit
					(dBm)
151	5755	11.38	10.11	13.80	30
159	5795	11.24	10.31	13.81	30

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product : Nexus Player
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps)

CHAIN A

Cable loss=1dB		Maximum conducted output power										
Channel No	Frequency (MHz)	Data Rate (Mbps)										Required Limit
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
155	5775	9.68	9.57	9.46	9.38	9.29	9.11	9.06	8.96	8.84	8.77	<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
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
155	5775	9.03	8.98	8.84	8.77	8.68	8.56	8.44	8.32	8.26	8.13	<30dBm

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

Maximum conducted output power Measurement:

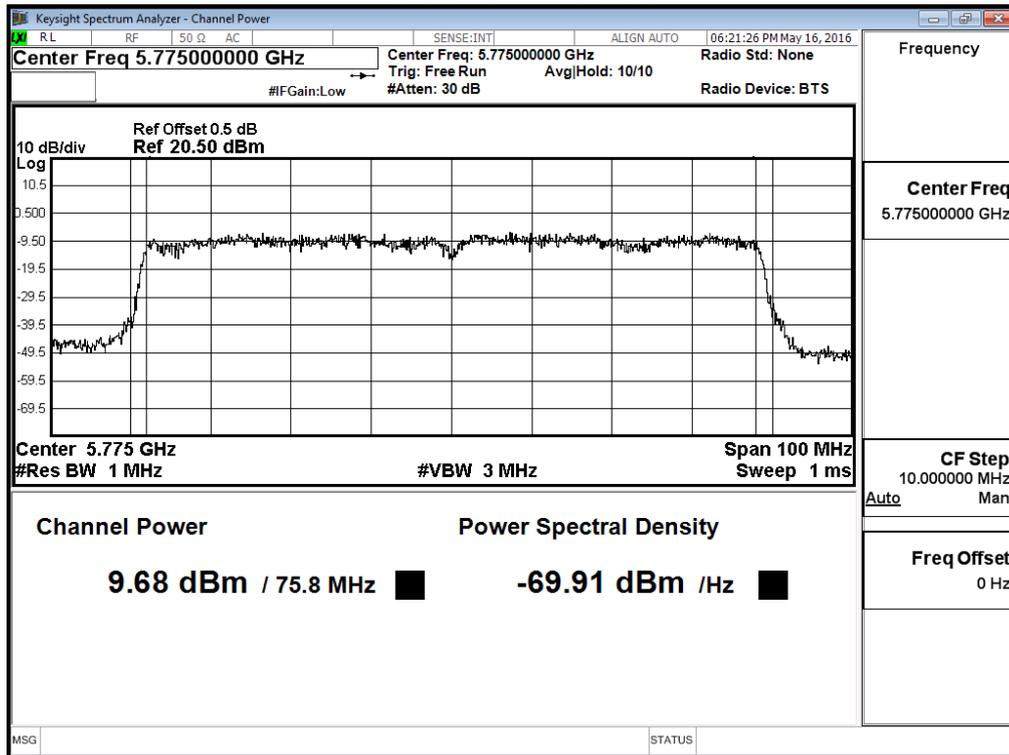
(CHAIN A+ B)

Channel Number	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit
					(dBm)
155	5775	9.68	9.03	12.38	30

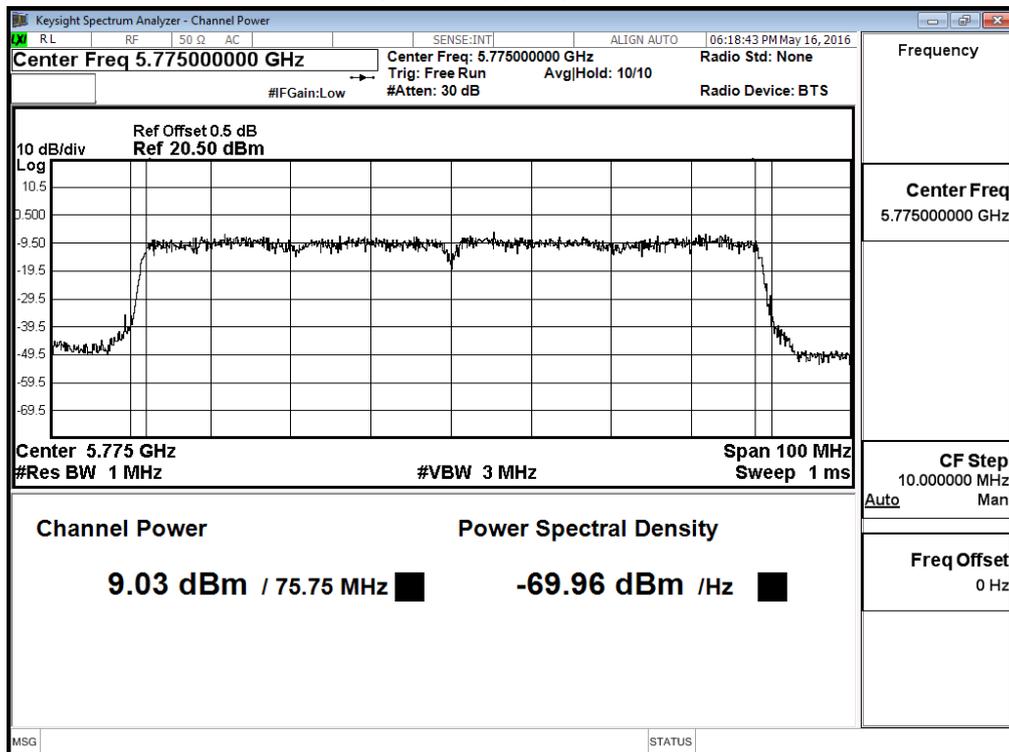
Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

**Maximum conducted output power:
Channel 155– Chain A**



Channel 155– Chain B



4. Peak Power Spectral Density

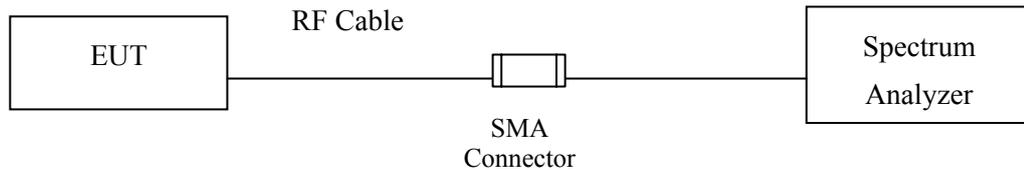
4.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2015
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr, 2016

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-to-point 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: 2013; tested to UNII 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.

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

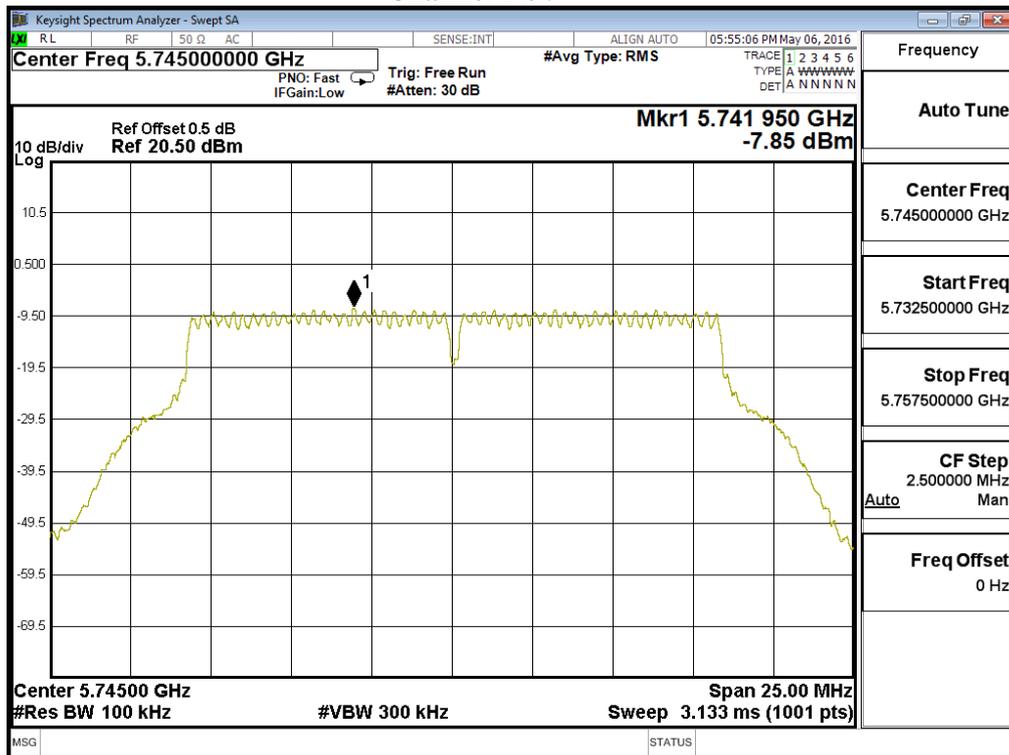
$\pm 1.27\text{ dB}$

4.6. Test Result of Peak Power Spectral Density

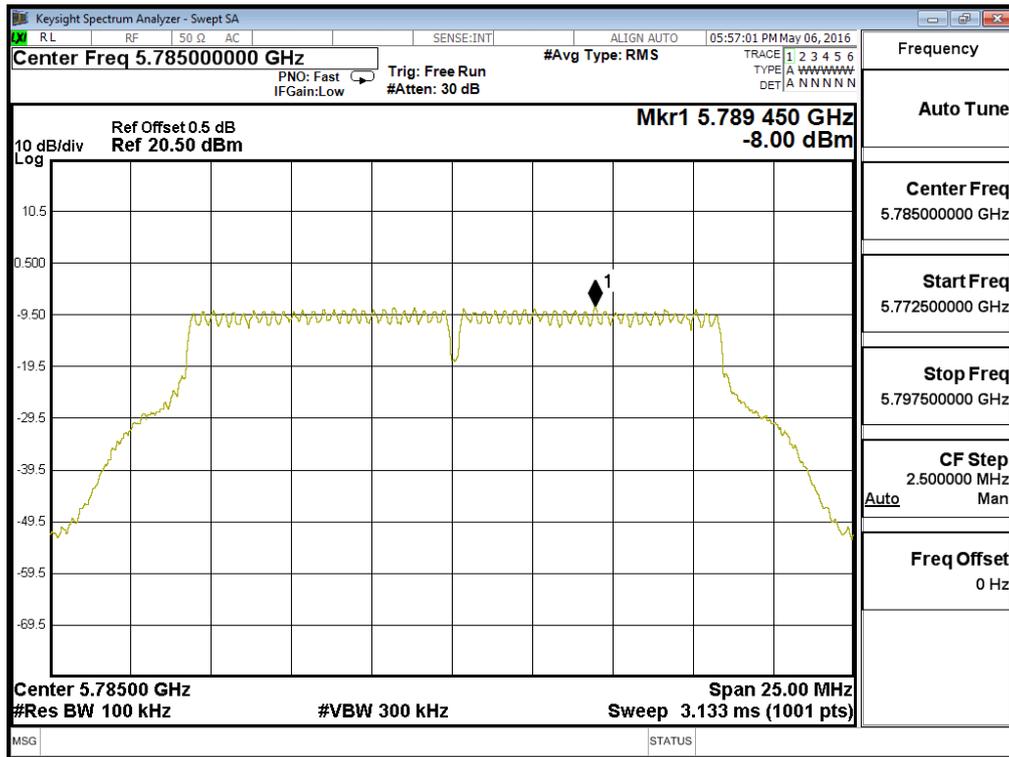
Product : Nexus Player
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)

Channel Number	Frequency (MHz)	Data Rate (Mbps)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
149	5745	6	-7.850	6.980	-0.870	<30	Pass
157	5785	6	-8.000	6.980	-1.020	<30	Pass
165	5825	6	-8.170	6.980	-1.190	<30	Pass

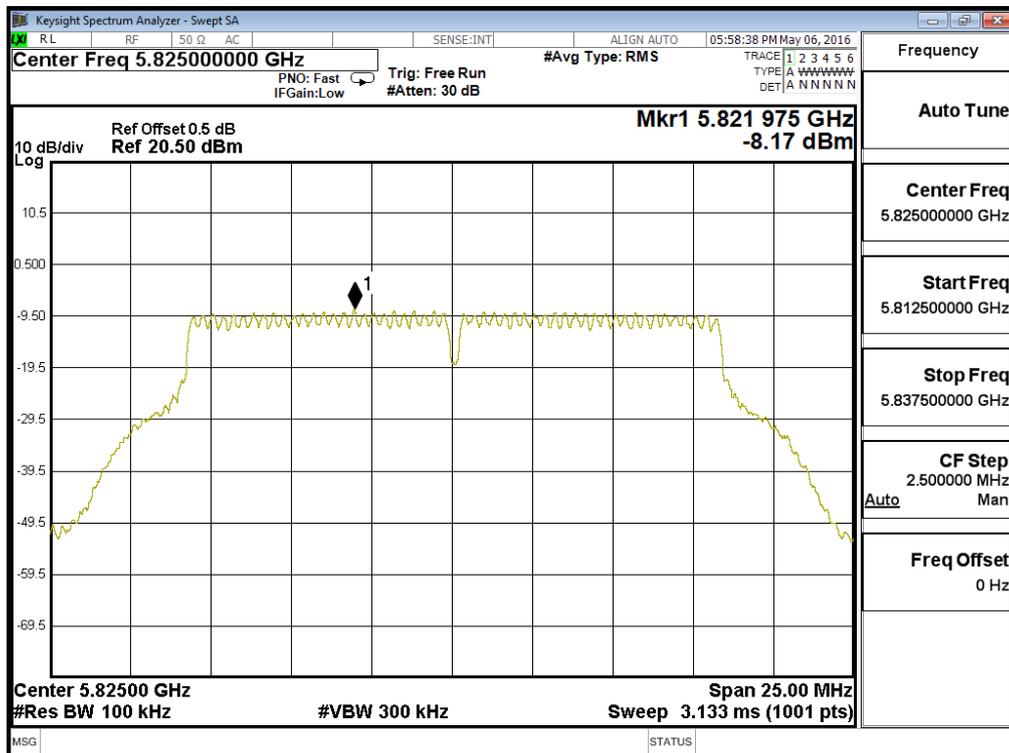
Channel 149:



Channel 157:



Channel 165:

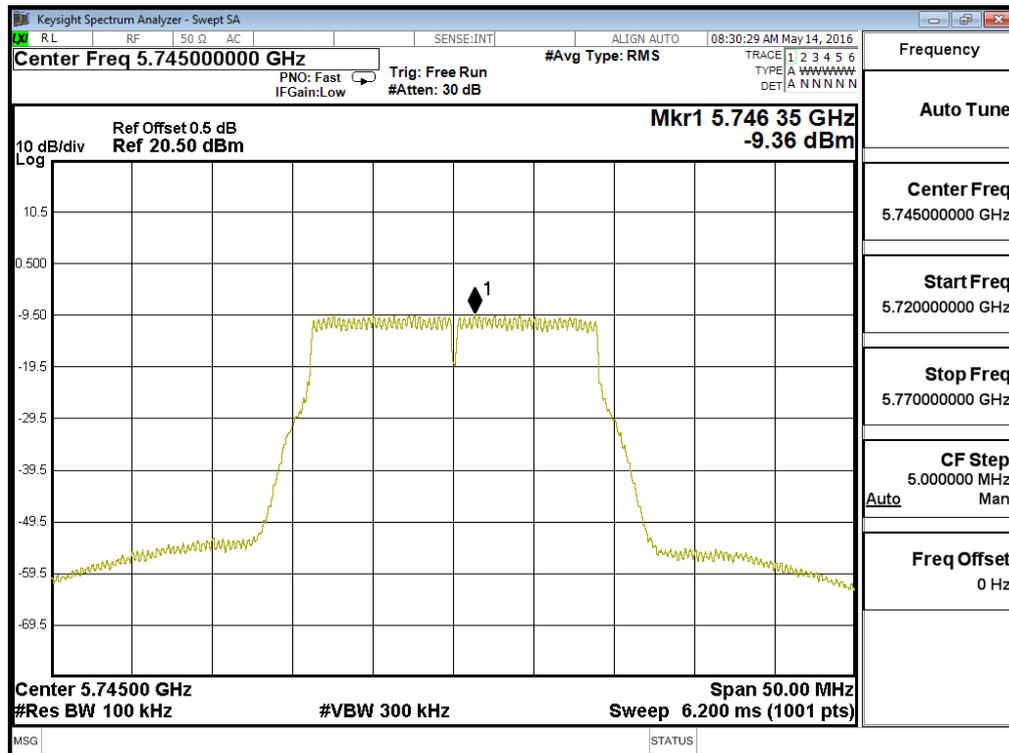


Product : Nexus Player
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps)

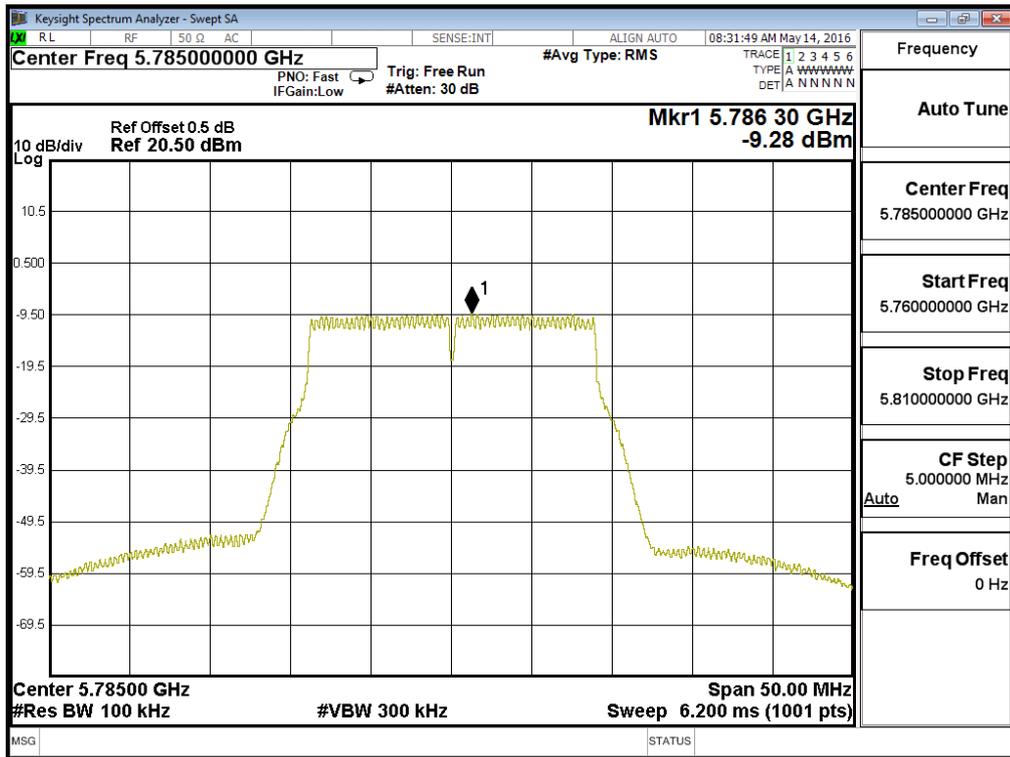
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
149	5745	A	-9.360	6.980	0.630	<30	Pass
		B	-9.590	6.980	0.400	<30	Pass
157	5785	A	-9.280	6.980	0.710	<30	Pass
		B	-9.550	6.980	0.440	<30	Pass
165	5825	A	-9.180	6.980	0.810	<30	Pass
		B	-9.360	6.980	0.630	<30	Pass

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

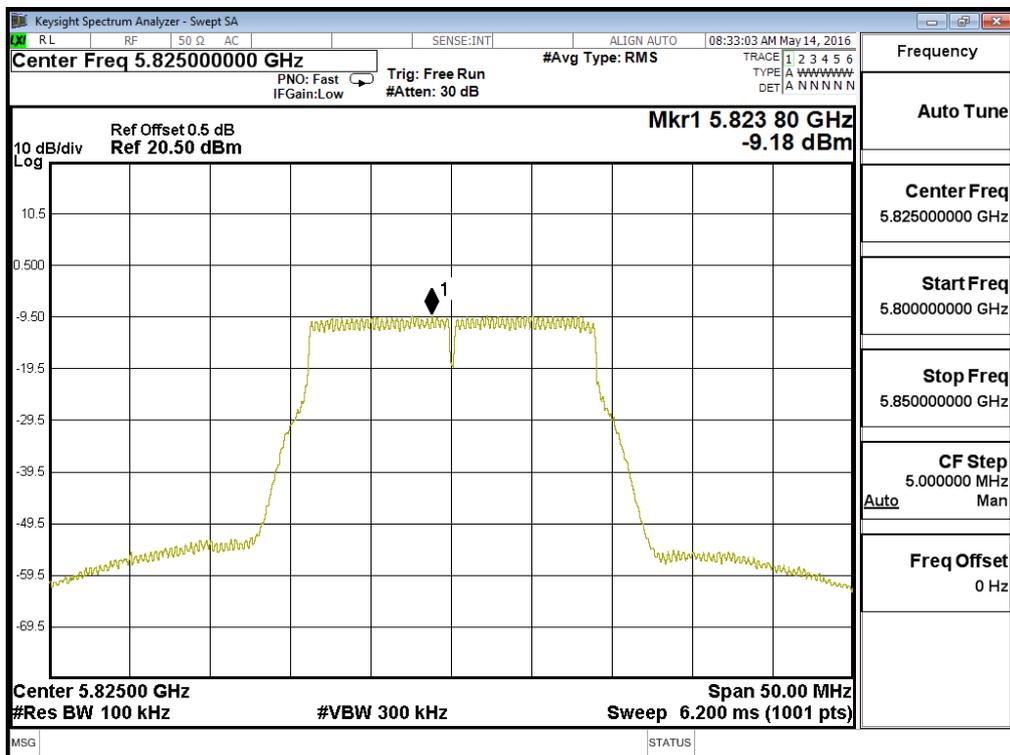
Channel 149 – Chain A



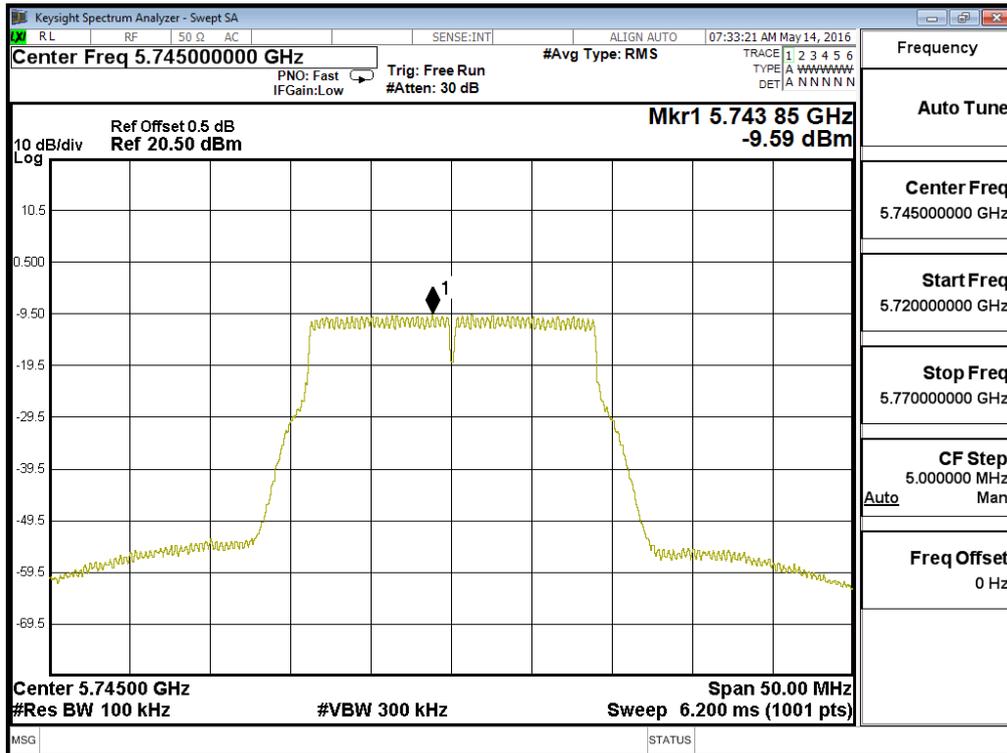
Channel 157 – Chain A



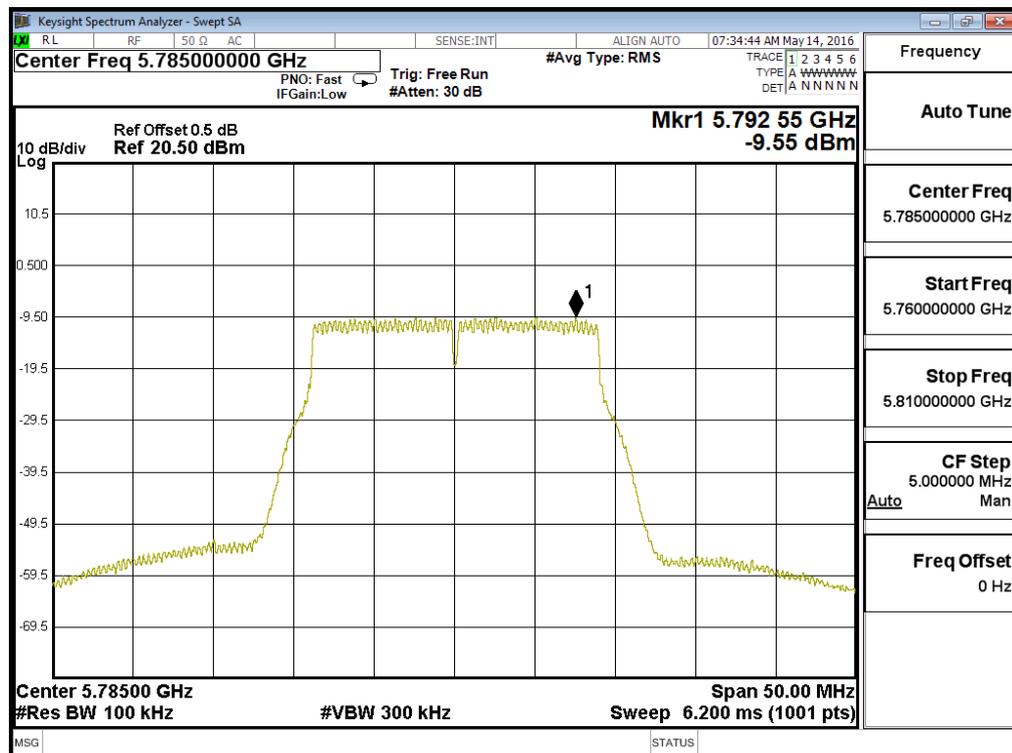
Channel 165 – Chain A



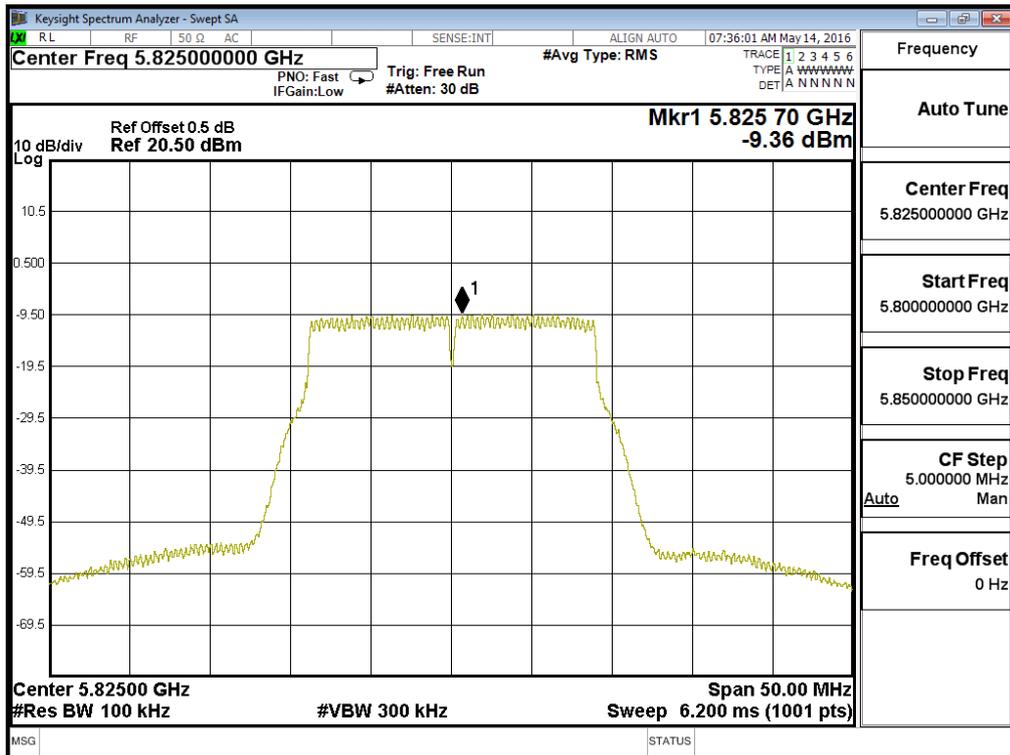
Channel 149 – Chain B



Channel 157 – Chain B



Channel 165 – Chain B

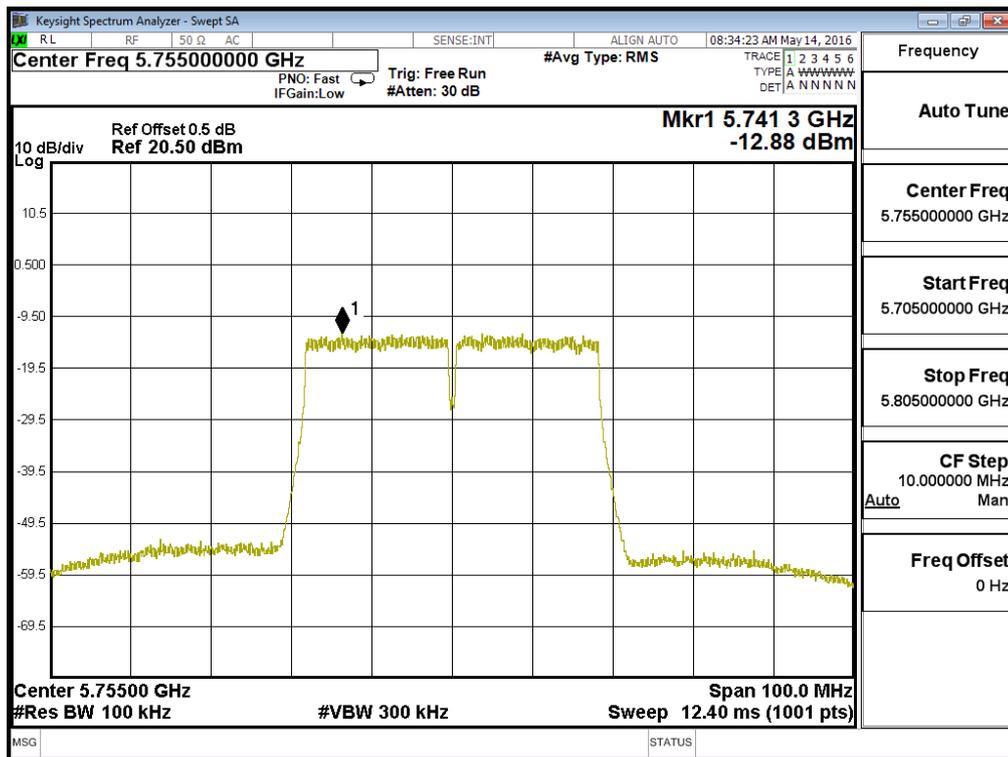


Product : Nexus Player
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps)

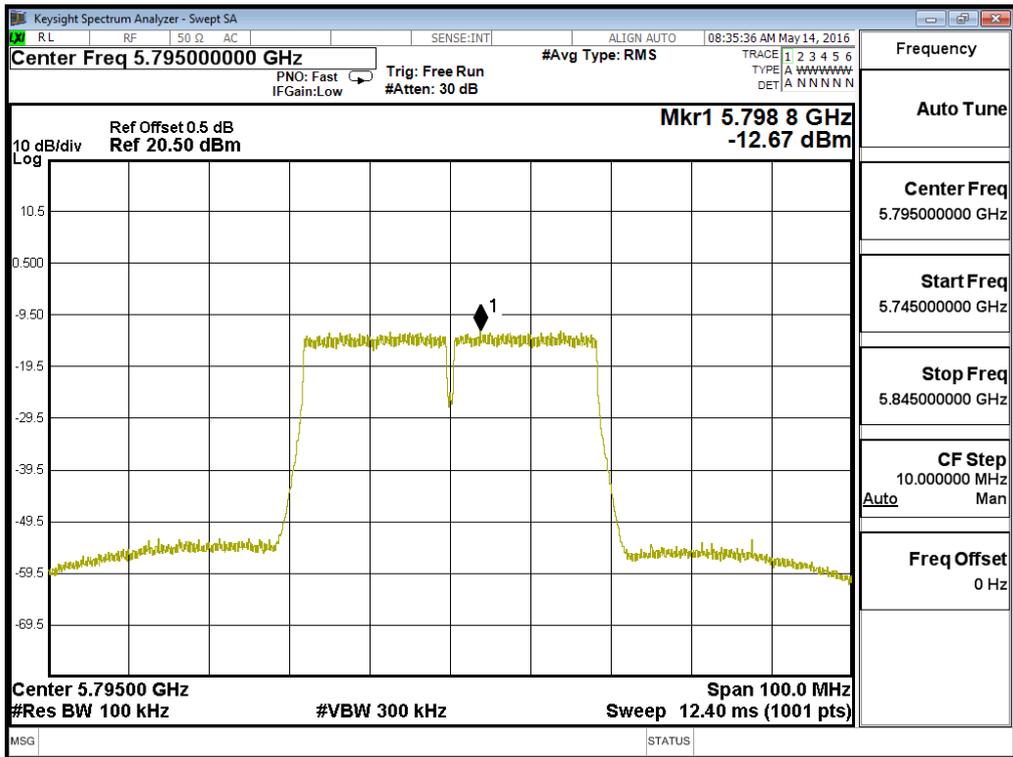
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
151	5755	A	-12.880	6.980	-2.890	<30	Pass
		B	-12.500	6.980	-2.510	<30	Pass
159	5795	A	-12.670	6.980	-2.680	<30	Pass
		B	-12.700	6.980	-2.710	<30	Pass

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

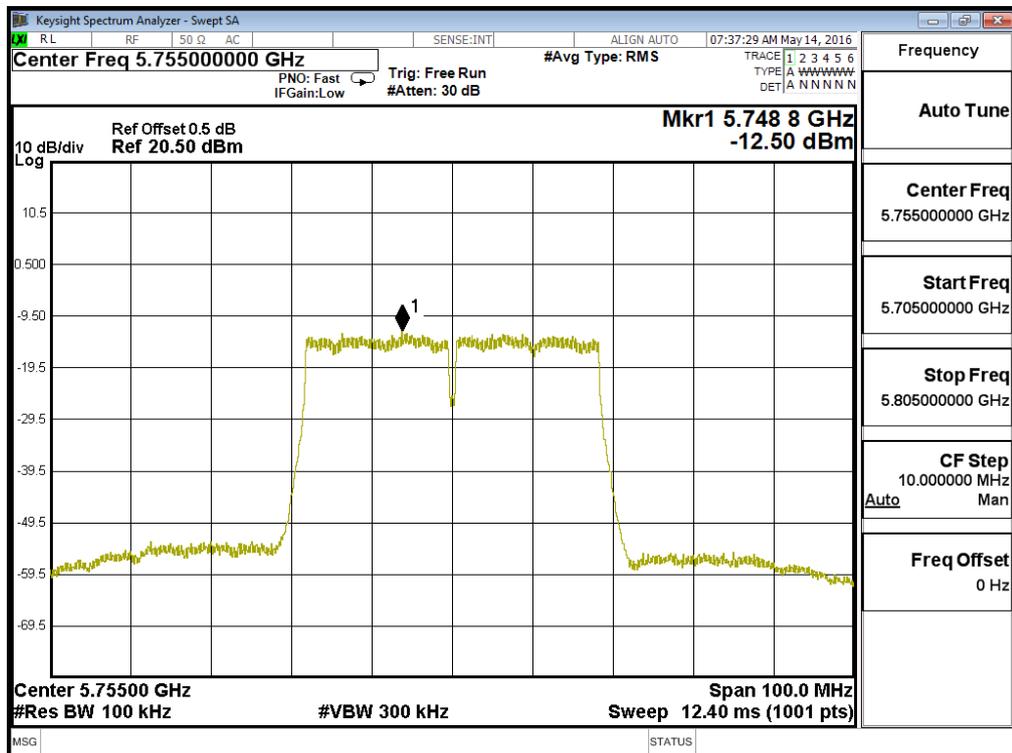
Channel 151 – Chain A



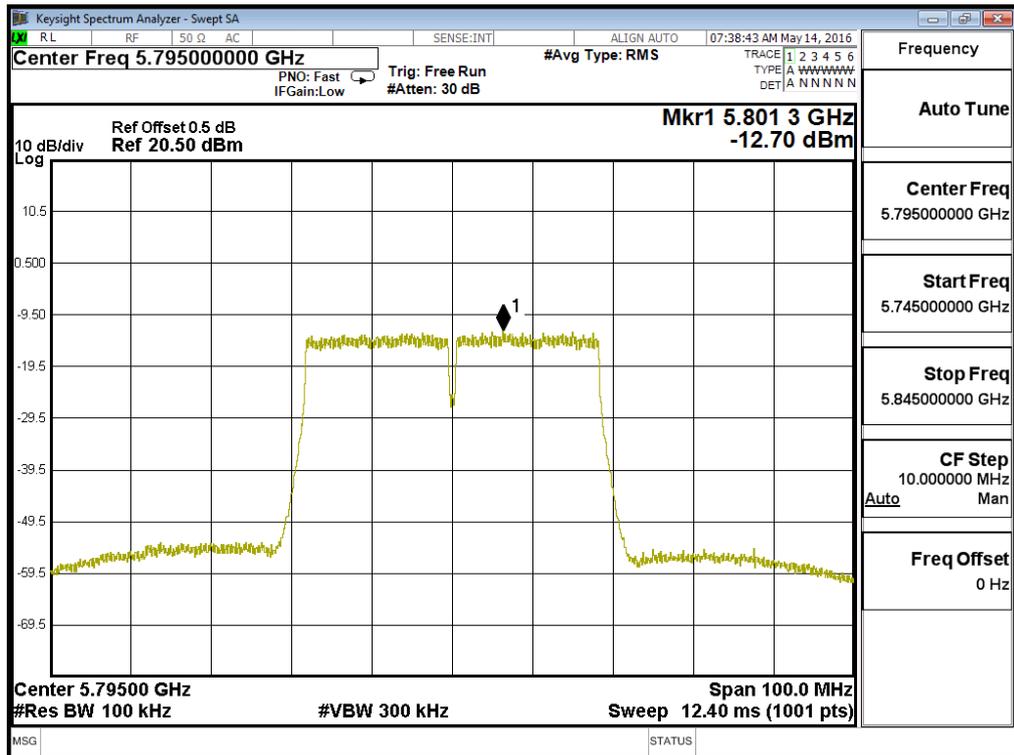
Channel 159 – Chain A



Channel 151 – Chain B



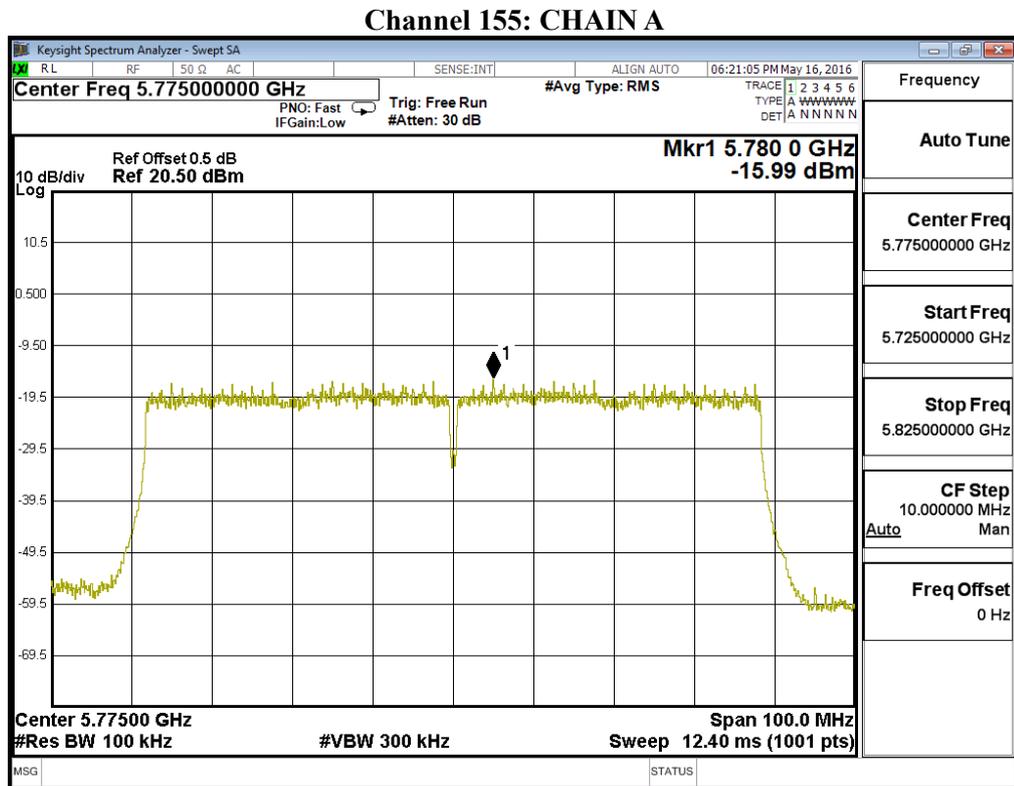
Channel 159 – Chain B



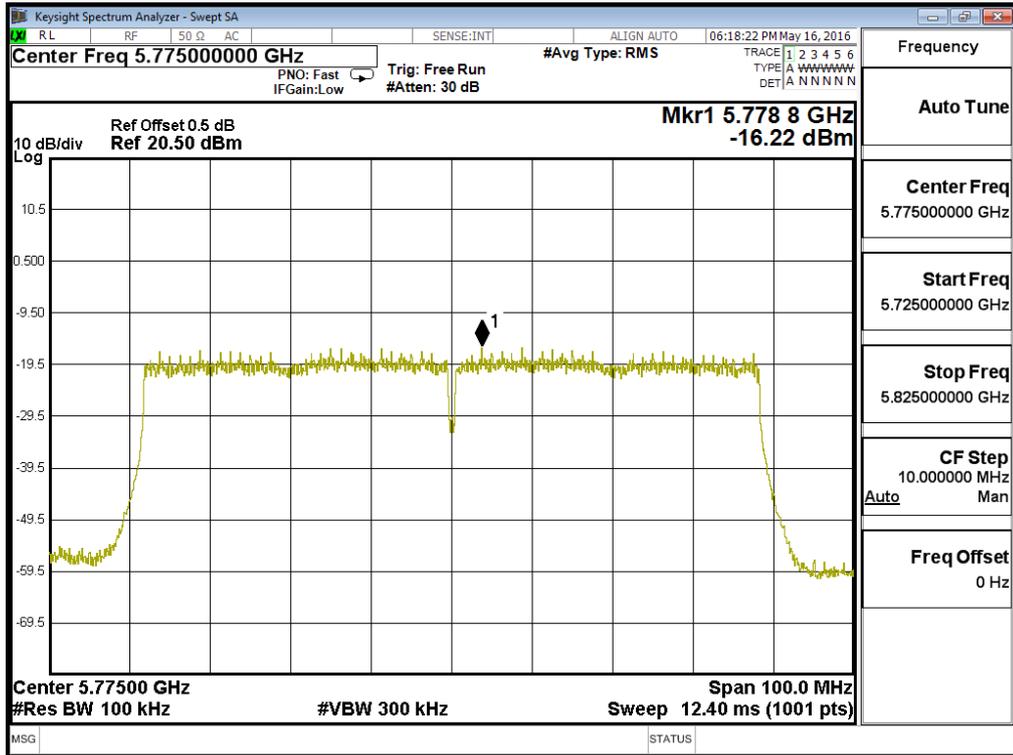
Product : Nexus Player
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
155	5775	A	-15.990	6.98	-6.000	<30	Pass
		B	-16.220	6.98	-6.230	<30	Pass

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



Channel 155: CHAIN B



5. Radiated Emission

5.1. Test Equipment

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

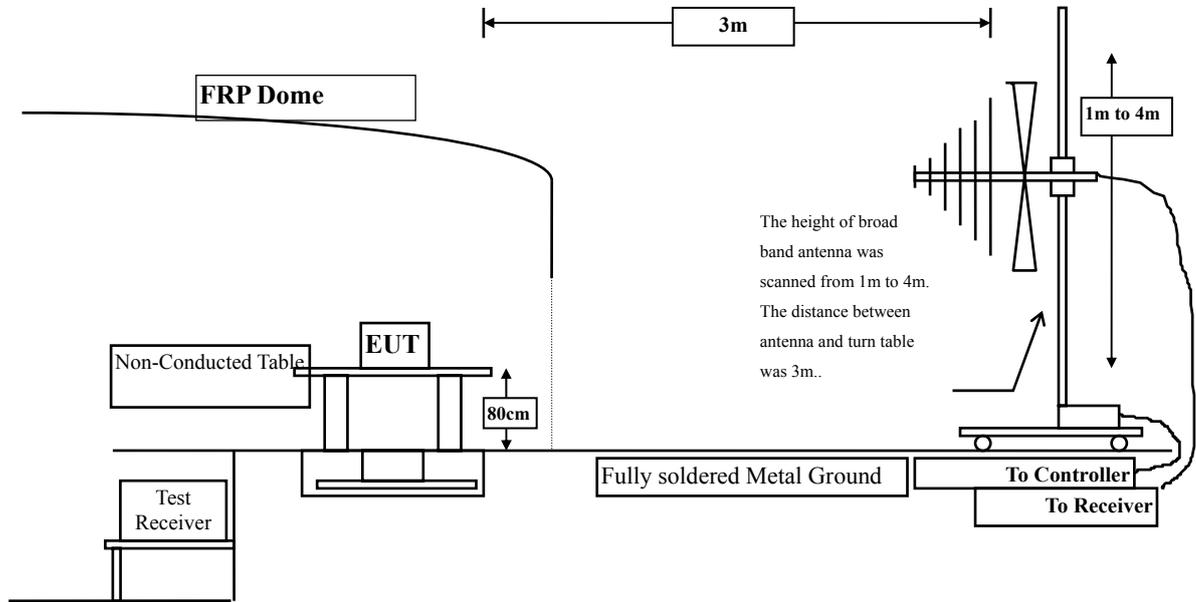
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Magnetic Loop Antenna	Teseq	HLA6121/ 37133	Sep, 2015
	X	Bilog Antenna	Schaffner Chase	CBL6112B/ 2707	Jun, 2015
	X	EMI Test Receiver	R&S	ESCS 30/838251/ 001	Jun, 2015
	X	Coaxial Cable	QTK(Armist)	RG 214/ LC003-RG	Jun, 2015
	X	Coaxial signal switch	Armist	MP59B/ 6200798682	Jun, 2015

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ CB # 8	X	Spectrum Analyzer	R&S	FSP40/ 100339	Oct, 2015
	X	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar, 2016
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan, 2016
	X	Horn Antenna	TRC	AH-0801/95051	Aug, 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan, 2016
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul, 2015
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul, 2015

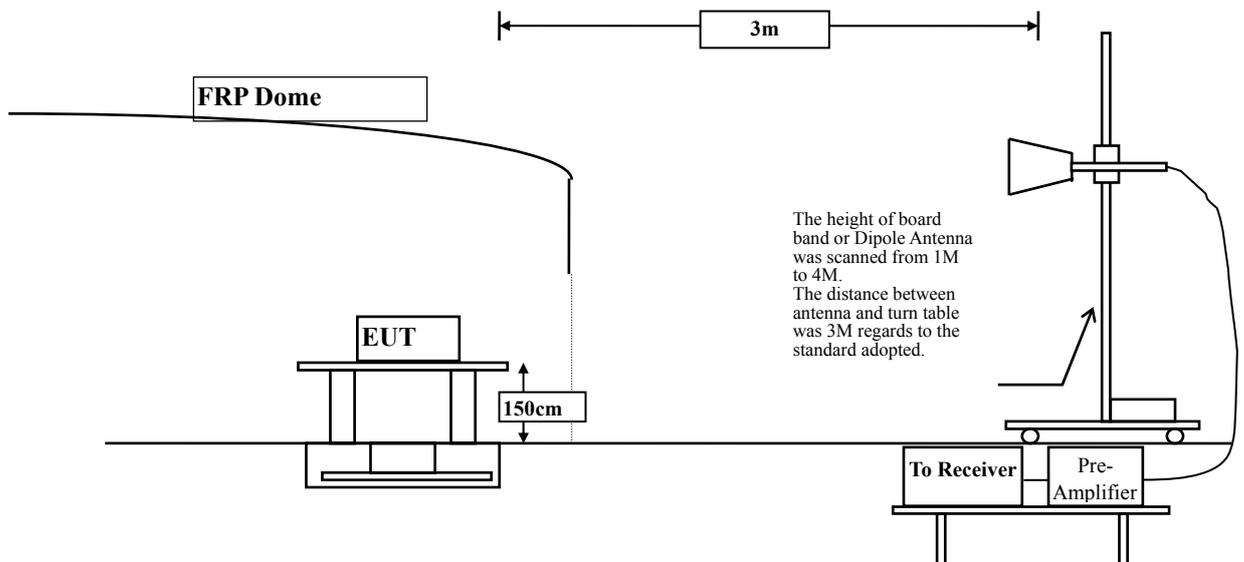
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with "X" are used to measure the final test results.

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 (dBμV/m) = 20 log E field strength (uV/m)

5.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 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 between 1 meter and 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: 2013 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 from 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 : Nexus Player
 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 dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
11490.000	17.106	31.860	48.967	-25.033	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11490.000	18.034	31.590	49.625	-24.375	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 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 dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11570.000	16.809	31.940	48.749	-25.251	74.000
17355.000	*	*	*	*	74.000
20800.000	*	*	*	*	74.000
26000.000	*	*	*	*	74.000
31200.000	*	*	*	*	74.000
36400.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11570.000	17.698	31.890	49.588	-24.412	74.000
17355.000	*	*	*	*	74.000
20800.000	*	*	*	*	74.000
26000.000	*	*	*	*	74.000
31200.000	*	*	*	*	74.000
36400.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 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 dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11650.000	16.158	31.840	47.998	-26.002	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11650.000	17.274	31.930	49.205	-24.795	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 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 dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11490.000	17.106	31.640	48.747	-25.253	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11490.000	18.034	31.840	49.875	-24.125	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 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 dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11570.000	16.809	31.590	48.399	-25.601	74.000
17355.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
31320.000	*	*	*	*	74.000
36540.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11570.000	17.698	31.830	49.528	-24.472	74.000
17355.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
31320.000	*	*	*	*	74.000
36540.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 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 dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11650.000	16.158	31.830	47.988	-26.012	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440.000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11650.000	17.274	31.720	48.995	-25.005	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440.000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 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 dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11510.000	17.124	31.710	48.834	-25.166	74.000
17265.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
31140.000	*	*	*	*	74.000
36330.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11510.000	18.081	31.980	50.061	-23.939	74.000
17265.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
31140.000	*	*	*	*	74.000
36330.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 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 dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11590.000	16.701	31.670	48.370	-25.630	74.000
17385.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
31380.000	*	*	*	*	74.000
36610.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11590.000	17.567	31.610	49.176	-24.824	74.000
17385.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
31380.000	*	*	*	*	74.000
36610.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11550.000	16.914	31.910	48.824	-25.176	74.000
17325.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11550.000	17.826	31.830	49.655	-24.345	74.000
17325.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 : Nexus Player
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
------------------	-------------------------	--------------------------------	--------------------------------------	--------------	-----------------------

Horizontal

Peak Detector

30.000	2.120	32.694	34.814	-5.186	40.000
127.510	-10.036	36.657	26.621	-16.879	43.500
316.291	-4.220	22.658	18.438	-27.562	46.000
419.578	-3.234	22.993	19.759	-26.241	46.000
595.726	3.994	21.192	25.186	-20.814	46.000
805.682	4.977	21.316	26.293	-19.707	46.000

Vertical

Peak Detector

41.891	-1.960	33.556	31.596	-8.404	40.000
224.682	-8.668	39.839	31.172	-14.828	46.000
368.175	-2.664	23.581	20.917	-25.083	46.000
617.293	-2.213	23.841	21.628	-24.372	46.000
728.568	-0.190	22.482	22.291	-23.709	46.000
851.249	0.411	24.658	25.069	-20.931	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 : Nexus Player
 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 dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector					
65.193	-12.339	34.522	22.184	-17.816	40.000
221.548	-10.458	35.174	24.716	-21.284	46.000
383.461	-1.198	21.659	20.461	-25.539	46.000
641.186	1.352	23.045	24.397	-21.603	46.000
763.819	4.288	22.661	26.948	-19.052	46.000
910.247	6.134	18.395	24.529	-21.471	46.000
Vertical					
Peak Detector					
52.719	-6.444	37.543	31.098	-8.902	40.000
240.523	-8.484	27.898	19.413	-26.587	46.000
398.162	-4.602	22.853	18.251	-27.749	46.000
537.834	-0.054	27.103	27.049	-18.951	46.000
726.291	-0.168	24.694	24.527	-21.473	46.000
934.929	5.626	21.189	26.816	-19.184	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 : Nexus Player
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) (5755MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector					
33.716	-2.673	39.941	37.269	-2.731	40.000
176.293	-10.329	25.946	15.617	-27.883	43.500
397.531	-2.284	22.664	20.381	-25.619	46.000
598.638	3.990	20.554	24.543	-21.457	46.000
714.839	3.562	20.630	24.192	-21.808	46.000
897.510	5.223	19.603	24.826	-21.174	46.000
Vertical					
Peak Detector					
69.681	-6.430	35.493	29.063	-10.937	40.000
216.349	-8.333	28.872	20.539	-25.461	46.000
381.816	-1.772	21.466	19.694	-26.306	46.000
628.193	-3.324	26.241	22.917	-23.083	46.000
779.464	2.992	20.186	23.178	-22.822	46.000
904.267	2.731	23.550	26.281	-19.719	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 : Nexus Player
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector					
30.000	2.120	32.173	34.293	-5.707	40.000
71.153	-13.167	37.606	24.439	-15.561	40.000
253.829	-5.263	26.197	20.934	-25.066	46.000
429.615	-2.247	23.433	21.186	-24.814	46.000
594.291	3.906	21.712	25.618	-20.382	46.000
805.482	4.982	19.845	24.827	-21.173	46.000
Vertical					
Peak Detector					
41.762	-1.883	33.463	31.581	-8.419	40.000
223.491	-8.723	39.776	31.053	-14.947	46.000
394.384	-3.944	25.518	21.574	-24.426	46.000
539.253	0.140	20.289	20.429	-25.571	46.000
708.829	0.062	22.556	22.617	-23.383	46.000
853.175	0.469	24.449	24.918	-21.082	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:

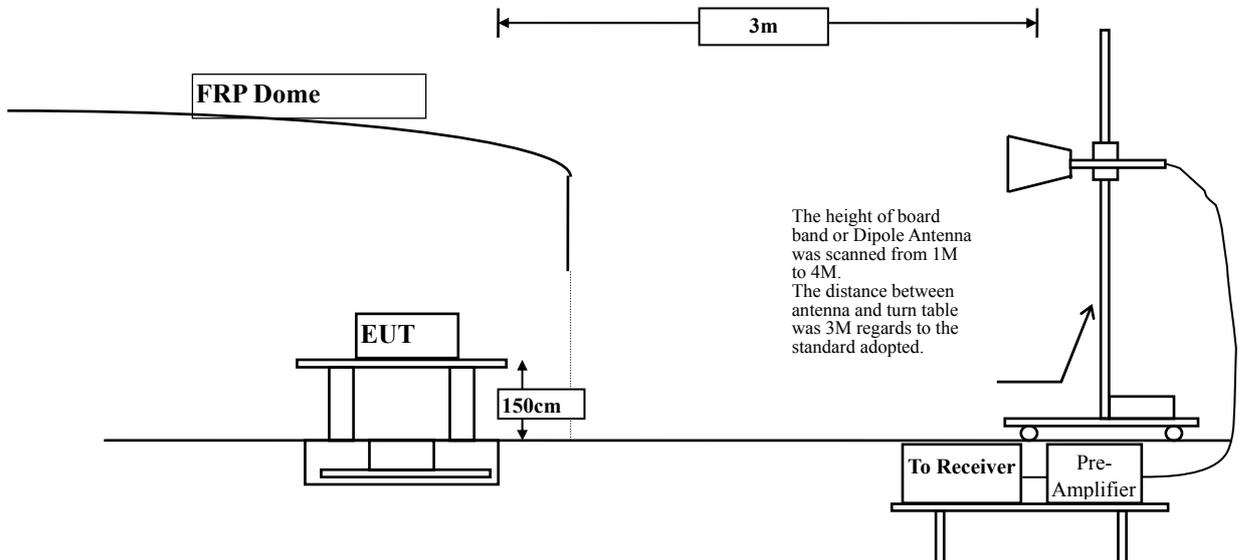
The following test equipments are used during the band edge tests:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ CB # 8	X Spectrum Analyzer	R&S	FSP40/ 100339	Oct, 2015
	X Horn Antenna	ETS-Lindgren	3117/ 35205	Mar, 2016
	X Horn Antenna	Schwarzbeck	BBHA9170/209	Jan, 2016
	X Horn Antenna	TRC	AH-0801/95051	Aug, 2015
	X Pre-Amplifier	EMCI	EMC012630SE/980210	Jan, 2016
	X Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul, 2015
	X Pre-Amplifier	NARDA	DBL-1840N506/013	Jul, 2015

- 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:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBµV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks :
1. RF Voltage (dBµV) = 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.

For transmitters operating in the 5.725-5.85GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

6.4. Test Procedure

The EUT is placed on a turn table which is 1.5 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 C63.10:2013 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, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

6.5. Uncertainty

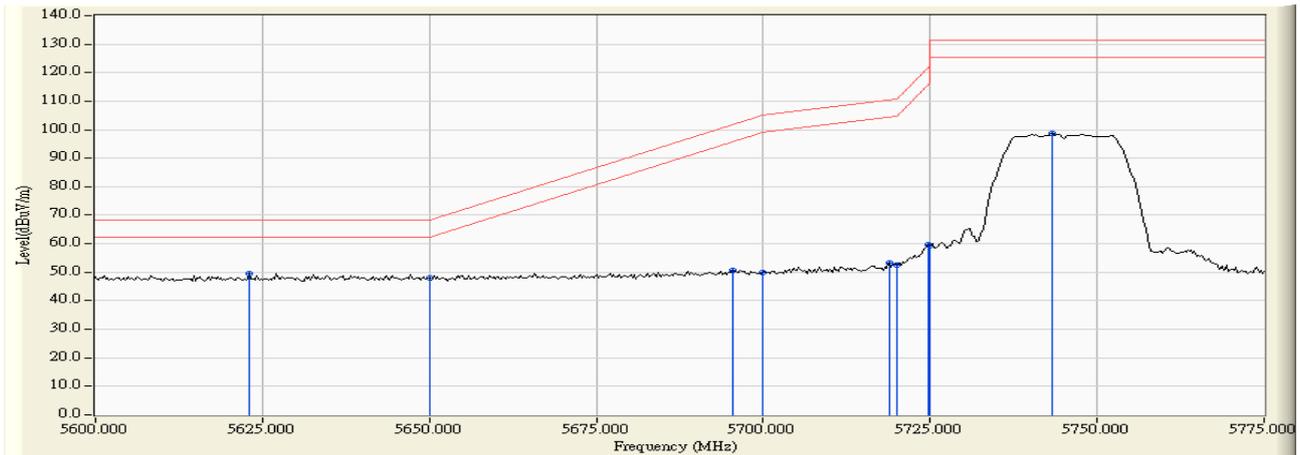
± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

6.6. Test Result of Band Edge

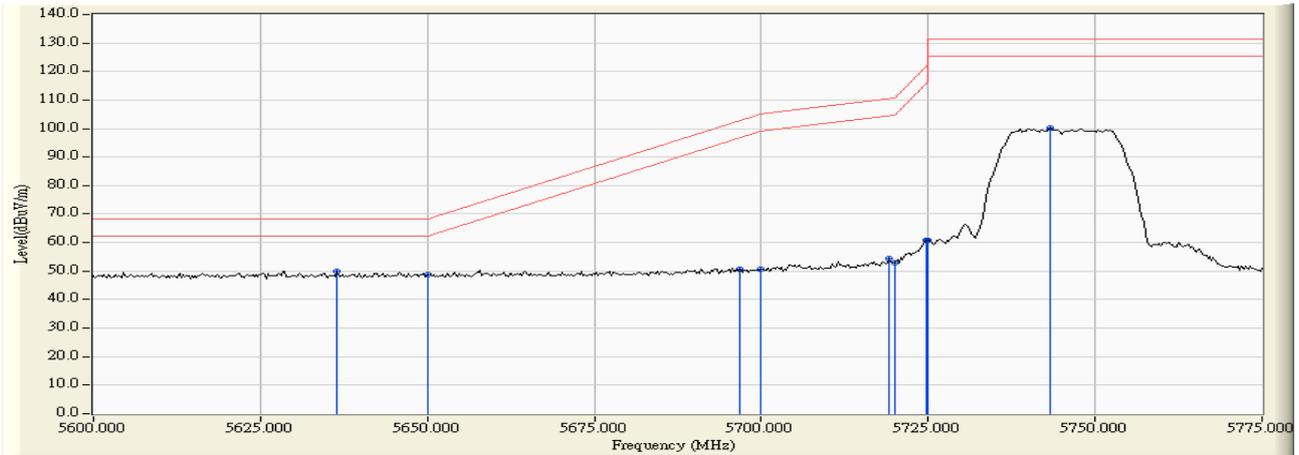
Product : Nexus Player
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)-Channel 149

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5623.080	4.217	45.247	49.464	-18.756	68.220	Pass
Horizontal	5650.000	4.369	43.642	48.012	-20.208	68.220	Pass
Horizontal	5695.362	4.614	45.875	50.490	-51.280	101.770	Pass
Horizontal	5700.000	4.627	45.269	49.896	-55.304	105.200	Pass
Horizontal	5718.949	4.653	48.668	53.321	-57.185	110.506	Pass
Horizontal	5720.000	4.653	48.072	52.725	-58.075	110.800	Pass
Horizontal	5724.783	4.654	55.205	59.859	-61.846	121.705	Pass
Horizontal	5725.000	4.654	54.761	59.415	-62.785	122.200	Pass
Horizontal	5743.297	4.656	94.074	98.730	-32.470	131.200	Pass

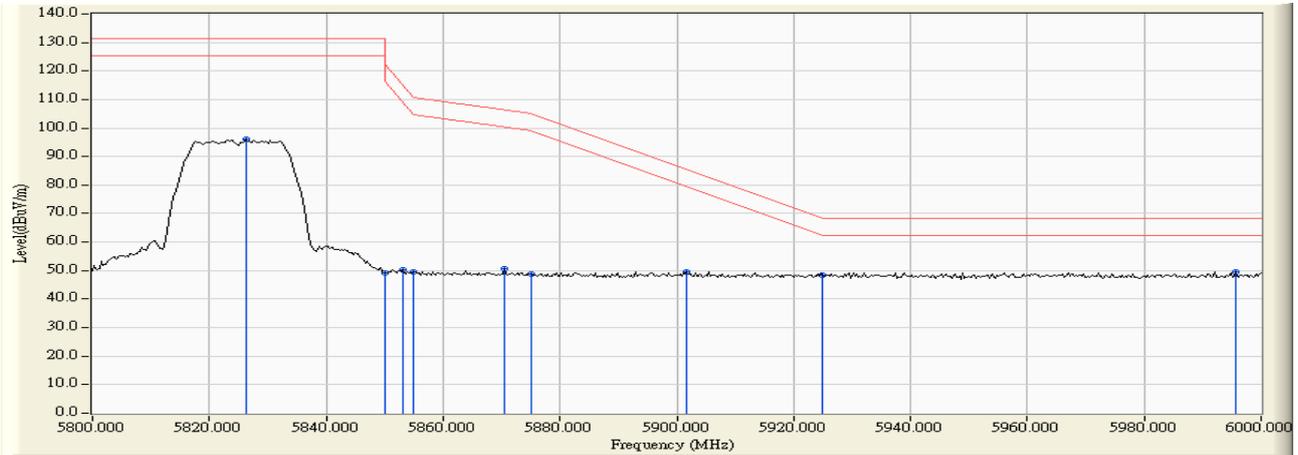
RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5636.522	5.803	44.147	49.950	-18.270	68.220	Pass
Vertical	5650.000	5.844	42.928	48.773	-19.447	68.220	Pass
Vertical	5696.884	5.978	44.879	50.857	-52.038	102.895	Pass
Vertical	5700.000	5.983	44.678	50.660	-54.540	105.200	Pass
Vertical	5719.203	5.994	48.307	54.300	-56.277	110.577	Pass
Vertical	5720.000	5.993	46.958	52.951	-57.849	110.800	Pass
Vertical	5724.783	5.993	54.920	60.913	-60.792	121.705	Pass
Vertical	5725.000	5.992	54.678	60.671	-61.529	122.200	Pass
Vertical	5743.297	5.989	94.219	100.208	-30.992	131.200	Pass

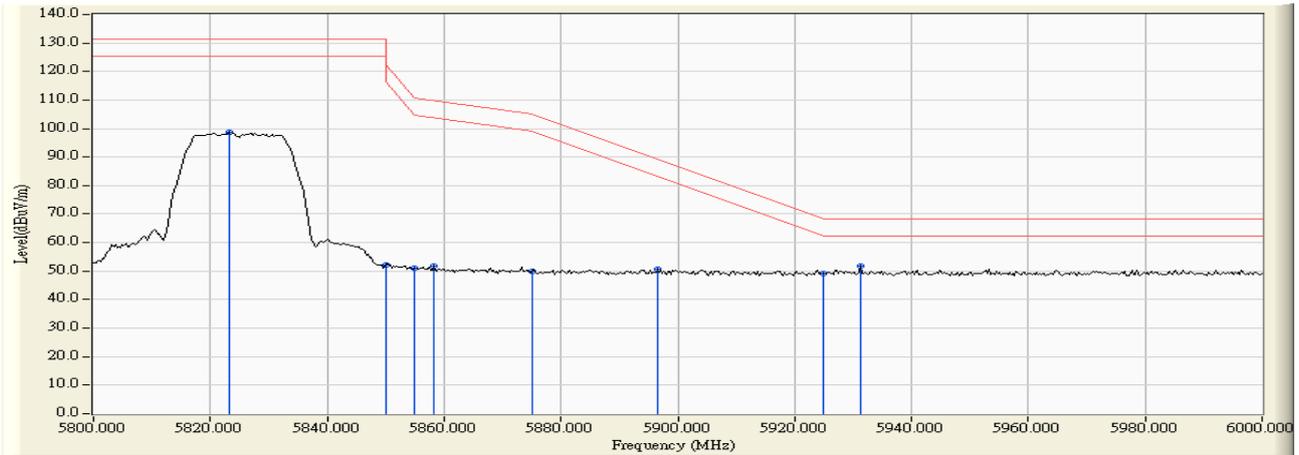
Product : Nexus Player
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)-Channel 165

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5826.377	4.823	91.184	96.006	-35.194	131.200	Pass
Horizontal	5850.000	4.964	44.197	49.161	-73.039	122.200	Pass
Horizontal	5853.043	4.982	45.282	50.264	-64.998	115.262	Pass
Horizontal	5855.000	4.993	44.530	49.523	-61.277	110.800	Pass
Horizontal	5870.435	5.084	45.585	50.669	-55.809	106.478	Pass
Horizontal	5875.000	5.112	43.556	48.668	-56.532	105.200	Pass
Horizontal	5901.739	5.247	44.248	49.495	-35.918	85.413	Pass
Horizontal	5925.000	5.259	43.198	48.458	-19.742	68.200	Pass
Horizontal	5995.652	5.252	44.176	49.428	-18.772	68.200	Pass

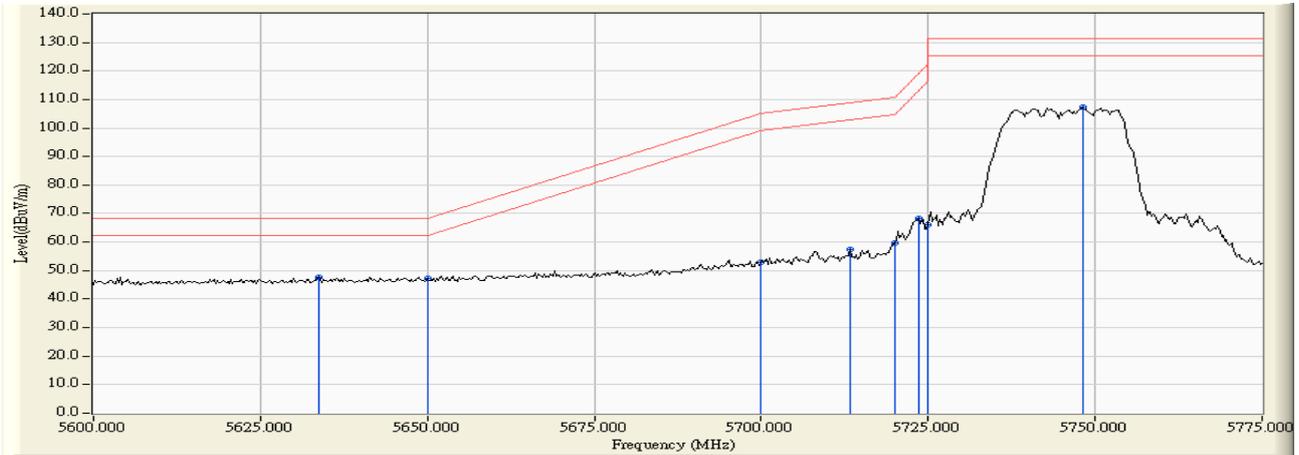
RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5823.188	6.005	92.680	98.685	-32.515	131.200	Pass
Vertical	5850.000	6.037	45.992	52.029	-70.171	122.200	Pass
Vertical	5855.000	6.042	44.972	51.014	-59.786	110.800	Pass
Vertical	5858.261	6.046	45.665	51.710	-58.177	109.887	Pass
Vertical	5875.000	6.064	43.954	50.018	-55.182	105.200	Pass
Vertical	5896.522	6.091	44.457	50.547	-38.727	89.274	Pass
Vertical	5925.000	6.102	43.171	49.273	-18.927	68.200	Pass
Vertical	5931.304	6.105	45.523	51.628	-16.572	68.200	Pass

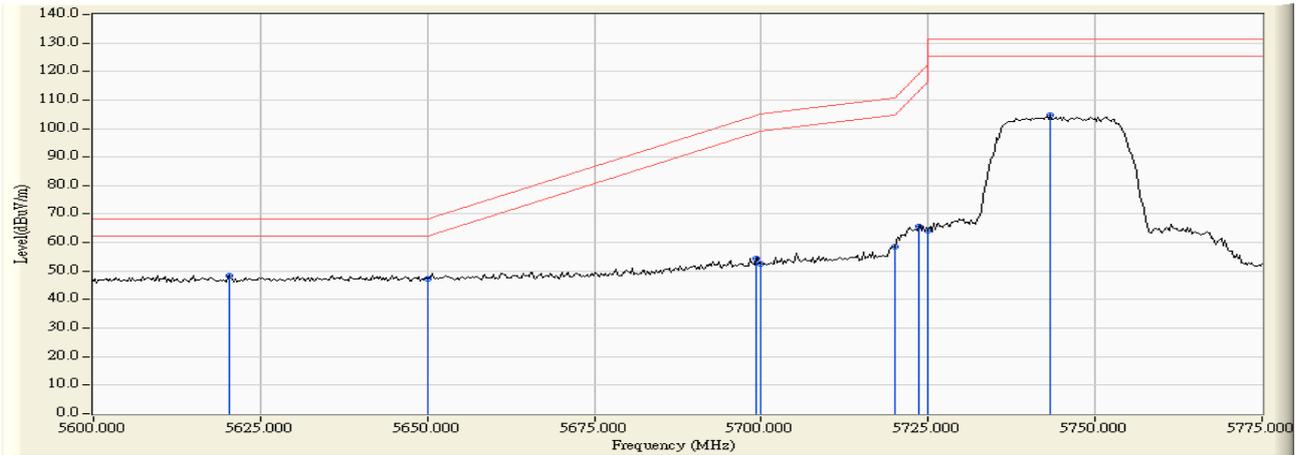
Product : Nexus Player
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) -Channel 149

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5633.732	4.278	43.415	47.692	-20.528	68.220	Pass
Horizontal	5650.000	4.369	42.859	47.229	-20.991	68.220	Pass
Horizontal	5700.000	4.627	48.221	52.848	-52.352	105.200	Pass
Horizontal	5713.370	4.651	52.664	57.316	-51.628	108.944	Pass
Horizontal	5720.000	4.653	55.053	59.706	-51.094	110.800	Pass
Horizontal	5723.515	4.654	63.757	68.411	-50.403	118.814	Pass
Horizontal	5725.000	4.654	61.287	65.941	-56.259	122.200	Pass
Horizontal	5748.116	4.658	102.863	107.520	-23.680	131.200	Pass

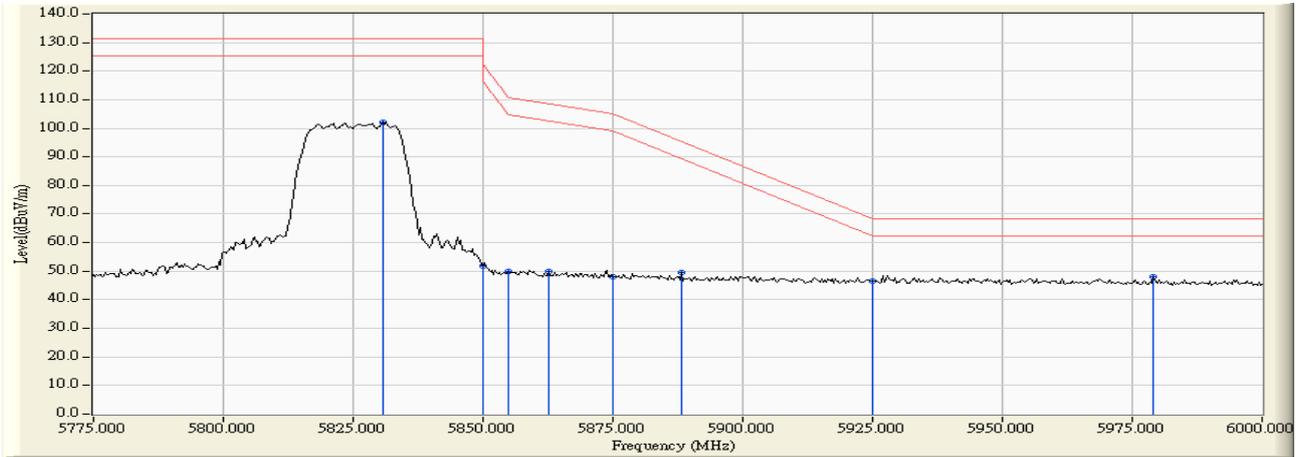
RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5620.290	5.753	42.709	48.462	-19.758	68.220	Pass
Vertical	5650.000	5.844	41.574	47.419	-20.801	68.220	Pass
Vertical	5699.167	5.982	48.298	54.279	-50.305	104.584	Pass
Vertical	5700.000	5.983	46.723	52.705	-52.495	105.200	Pass
Vertical	5720.000	5.993	52.442	58.435	-52.365	110.800	Pass
Vertical	5723.514	5.993	59.876	65.869	-52.943	118.812	Pass
Vertical	5725.000	5.992	58.335	64.328	-57.872	122.200	Pass
Vertical	5743.297	5.989	98.682	104.671	-26.529	131.200	Pass

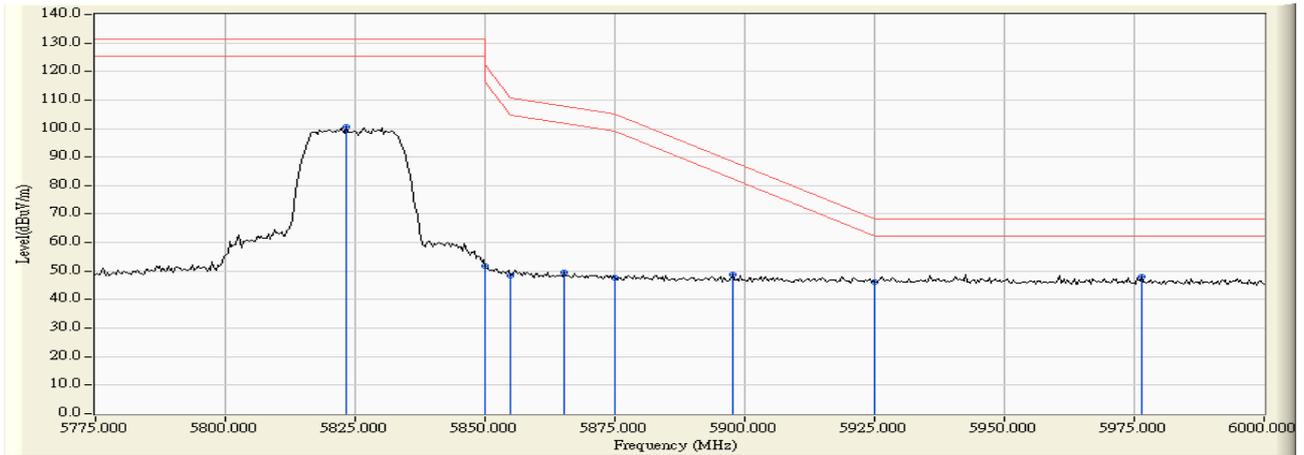
Product : Nexus Player
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) -Channel 165

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5830.761	4.848	97.114	101.962	-29.238	131.200	Pass
Horizontal	5850.000	4.964	46.691	51.655	-70.545	122.200	Pass
Horizontal	5855.000	4.993	44.765	49.758	-61.042	110.800	Pass
Horizontal	5862.717	5.039	44.993	50.032	-58.607	108.639	Pass
Horizontal	5875.000	5.112	42.873	47.985	-57.215	105.200	Pass
Horizontal	5888.152	5.192	44.283	49.475	-45.993	95.468	Pass
Horizontal	5925.000	5.259	41.313	46.573	-21.627	68.200	Pass
Horizontal	5979.130	5.254	42.884	48.138	-20.062	68.200	Pass

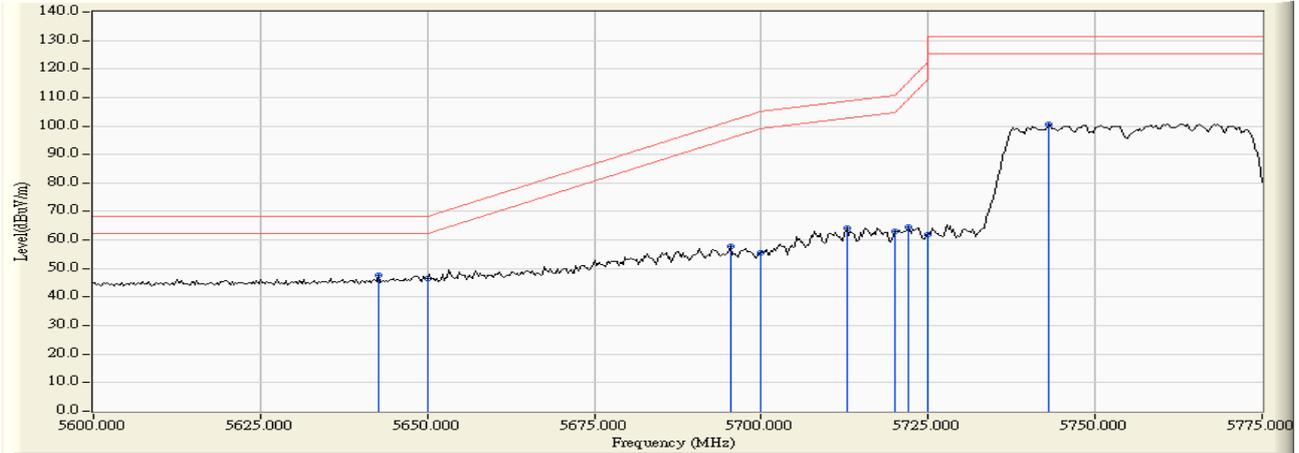
RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5823.261	6.005	94.433	100.438	-30.762	131.200	Pass
Vertical	5850.000	6.037	45.863	51.900	-70.300	122.200	Pass
Vertical	5855.000	6.042	42.404	48.446	-62.354	110.800	Pass
Vertical	5865.326	6.052	43.306	49.359	-58.550	107.909	Pass
Vertical	5875.000	6.064	41.726	47.790	-57.410	105.200	Pass
Vertical	5897.609	6.091	42.864	48.955	-39.514	88.469	Pass
Vertical	5925.000	6.102	39.985	46.087	-22.113	68.200	Pass
Vertical	5976.522	6.123	42.042	48.165	-20.035	68.200	Pass

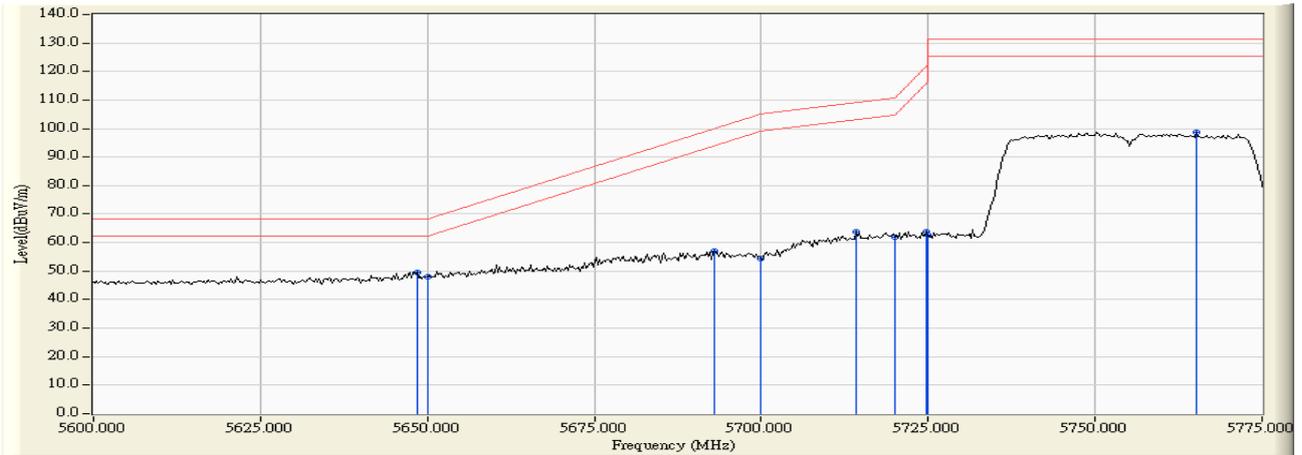
Product : Nexus Player
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) -Channel 151

RF Radiated Measurement :



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5642.609	4.328	43.295	47.623	-20.597	68.220	Pass
Horizontal	5650.000	4.369	42.207	46.577	-21.643	68.220	Pass
Horizontal	5695.362	4.614	53.016	57.631	-44.139	101.770	Pass
Horizontal	5700.000	4.627	51.038	55.665	-49.535	105.200	Pass
Horizontal	5712.862	4.651	59.572	64.223	-44.578	108.801	Pass
Horizontal	5720.000	4.653	58.236	62.889	-47.911	110.800	Pass
Horizontal	5721.993	4.653	59.763	64.417	-50.927	115.344	Pass
Horizontal	5725.000	4.654	57.395	62.049	-60.151	122.200	Pass
Horizontal	5743.043	4.656	95.967	100.623	-30.577	131.200	Pass

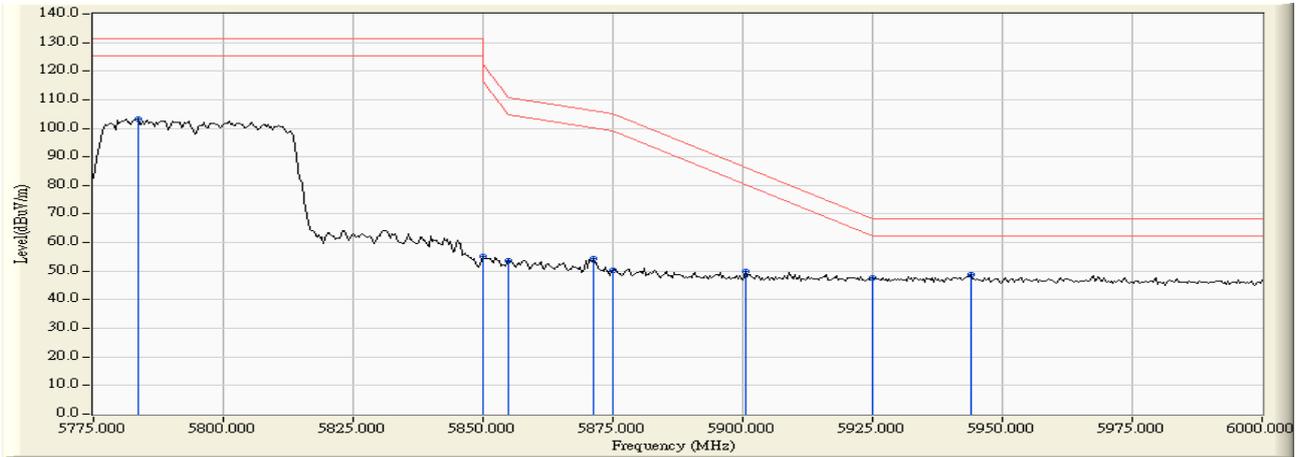
RF Radiated Measurement :



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5648.442	5.841	43.569	49.409	-18.811	68.220	Pass
Vertical	5650.000	5.844	42.243	48.088	-20.132	68.220	Pass
Vertical	5693.080	5.973	51.007	56.980	-43.102	100.082	Pass
Vertical	5700.000	5.983	48.517	54.499	-50.701	105.200	Pass
Vertical	5714.130	5.994	57.728	63.722	-45.434	109.156	Pass
Vertical	5720.000	5.993	55.898	61.891	-48.909	110.800	Pass
Vertical	5724.783	5.993	57.887	63.880	-57.825	121.705	Pass
Vertical	5725.000	5.992	56.505	62.498	-59.702	122.200	Pass
Vertical	5765.109	5.984	92.627	98.611	-32.589	131.200	Pass

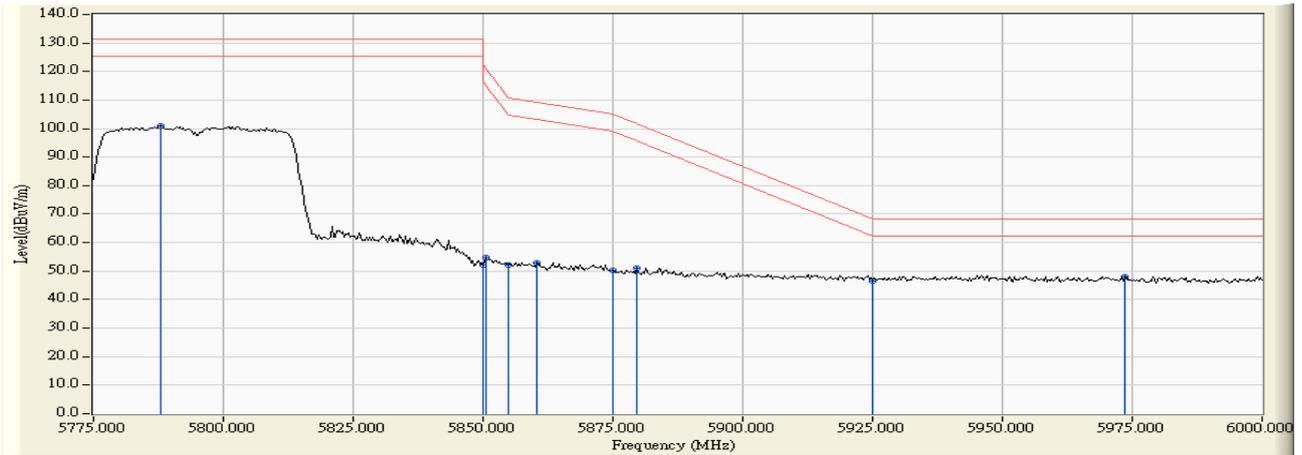
Product : Nexus Player
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) -Channel 159

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5783.478	4.662	98.571	103.233	-27.967	131.200	Pass
Horizontal	5850.000	4.964	50.373	55.337	-66.863	122.200	Pass
Horizontal	5855.000	4.993	48.707	53.700	-57.100	110.800	Pass
Horizontal	5871.196	5.089	49.354	54.443	-51.822	106.265	Pass
Horizontal	5875.000	5.112	45.082	50.194	-55.006	105.200	Pass
Horizontal	5900.543	5.245	44.659	49.905	-36.393	86.298	Pass
Horizontal	5925.000	5.259	42.579	47.839	-20.361	68.200	Pass
Horizontal	5943.913	5.259	43.574	48.833	-19.367	68.200	Pass

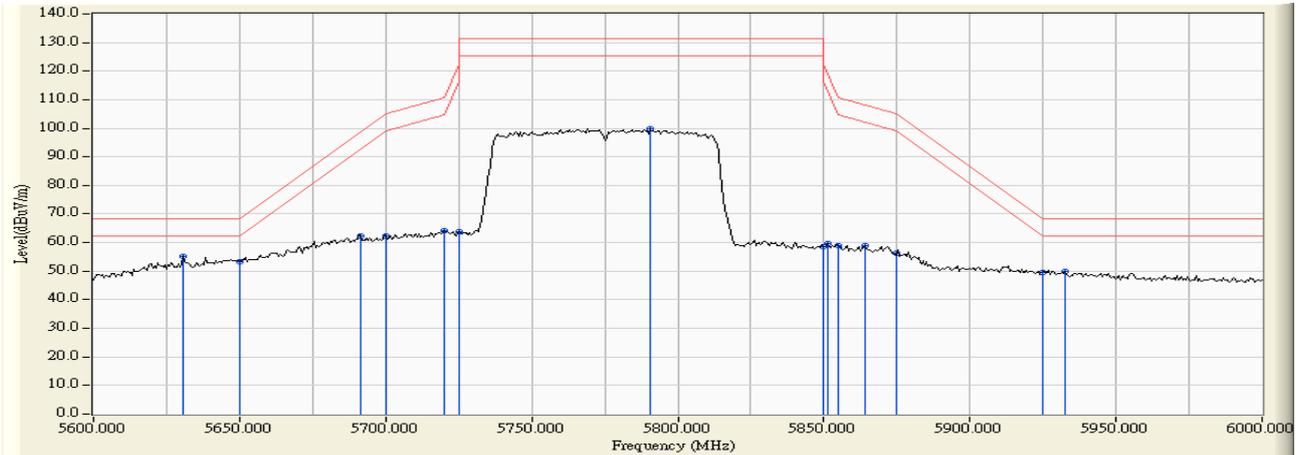
RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5788.043	5.981	95.110	101.090	-30.110	131.200	Pass
Vertical	5850.000	6.037	46.052	52.089	-70.111	122.200	Pass
Vertical	5850.652	6.037	48.801	54.838	-65.875	120.713	Pass
Vertical	5855.000	6.042	46.247	52.289	-58.511	110.800	Pass
Vertical	5860.435	6.048	46.970	53.018	-56.260	109.278	Pass
Vertical	5875.000	6.064	44.173	50.237	-54.963	105.200	Pass
Vertical	5879.674	6.070	45.159	51.229	-50.512	101.741	Pass
Vertical	5925.000	6.102	40.566	46.668	-21.532	68.200	Pass
Vertical	5973.587	6.122	42.098	48.219	-19.981	68.200	Pass

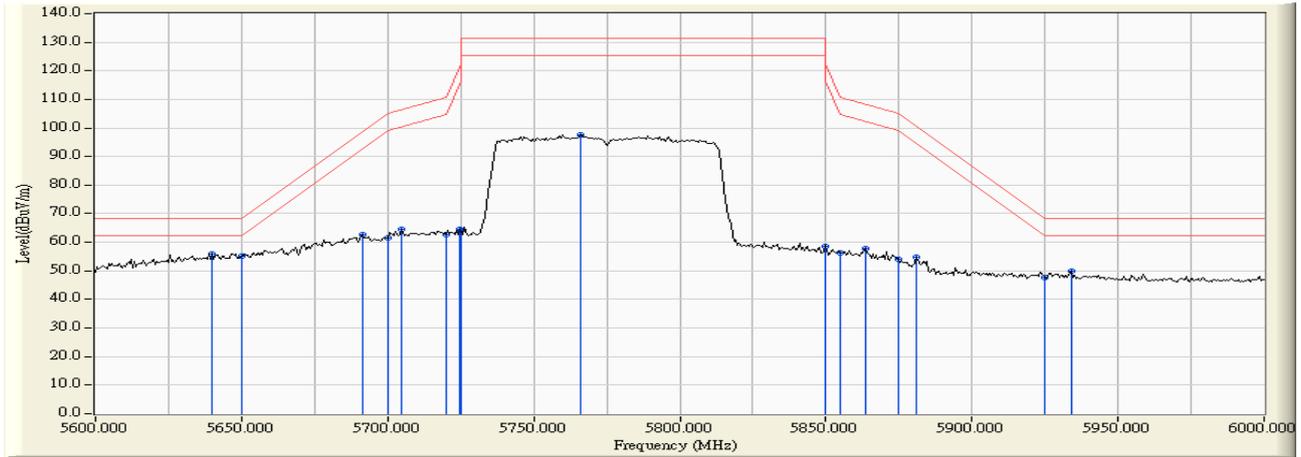
Product : Nexus Player
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps)-Channel 155

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5630.725	4.261	50.741	55.001	-13.219	68.220	Pass
Horizontal	5650.000	4.369	48.966	53.336	-14.884	68.220	Pass
Horizontal	5691.594	4.604	57.736	62.339	-36.644	98.983	Pass
Horizontal	5700.000	4.627	57.857	62.484	-42.716	105.200	Pass
Horizontal	5720.000	4.653	59.399	64.052	-46.748	110.800	Pass
Horizontal	5725.000	4.654	58.975	63.629	-58.571	122.200	Pass
Horizontal	5790.725	4.663	95.181	99.845	-31.355	131.200	Pass
Horizontal	5850.000	4.964	53.659	58.623	-63.577	122.200	Pass
Horizontal	5851.594	4.973	54.581	59.554	-59.012	118.566	Pass
Horizontal	5855.000	4.993	53.829	58.822	-51.978	110.800	Pass
Horizontal	5864.348	5.048	54.018	59.066	-49.117	108.183	Pass
Horizontal	5875.000	5.112	51.214	56.326	-48.874	105.200	Pass
Horizontal	5925.000	5.259	44.423	49.683	-18.517	68.200	Pass
Horizontal	5932.754	5.260	44.694	49.953	-18.247	68.200	Pass

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5640.000	5.814	50.103	55.917	-12.303	68.220	Pass
Vertical	5650.000	5.844	49.349	55.194	-13.026	68.220	Pass
Vertical	5691.594	5.971	56.595	62.565	-36.418	98.983	Pass
Vertical	5700.000	5.983	55.468	61.450	-43.750	105.200	Pass
Vertical	5704.928	5.989	58.741	64.730	-41.850	106.580	Pass
Vertical	5720.000	5.993	56.646	62.639	-48.161	110.800	Pass
Vertical	5724.638	5.993	58.592	64.585	-56.790	121.375	Pass
Vertical	5725.000	5.992	58.114	64.107	-58.093	122.200	Pass
Vertical	5765.797	5.984	91.732	97.716	-33.484	131.200	Pass
Vertical	5850.000	6.037	52.465	58.502	-63.698	122.200	Pass
Vertical	5855.000	6.042	50.433	56.475	-54.325	110.800	Pass
Vertical	5863.768	6.051	51.700	57.751	-50.594	108.345	Pass
Vertical	5875.000	6.064	47.922	53.986	-51.214	105.200	Pass
Vertical	5881.159	6.071	48.908	54.979	-45.663	100.642	Pass
Vertical	5925.000	6.102	41.667	47.769	-20.431	68.200	Pass
Vertical	5933.913	6.106	43.924	50.030	-18.170	68.200	Pass

7. Occupied Bandwidth

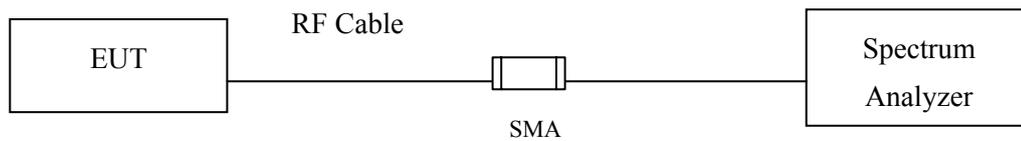
7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2015
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

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, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

7.5. Uncertainty

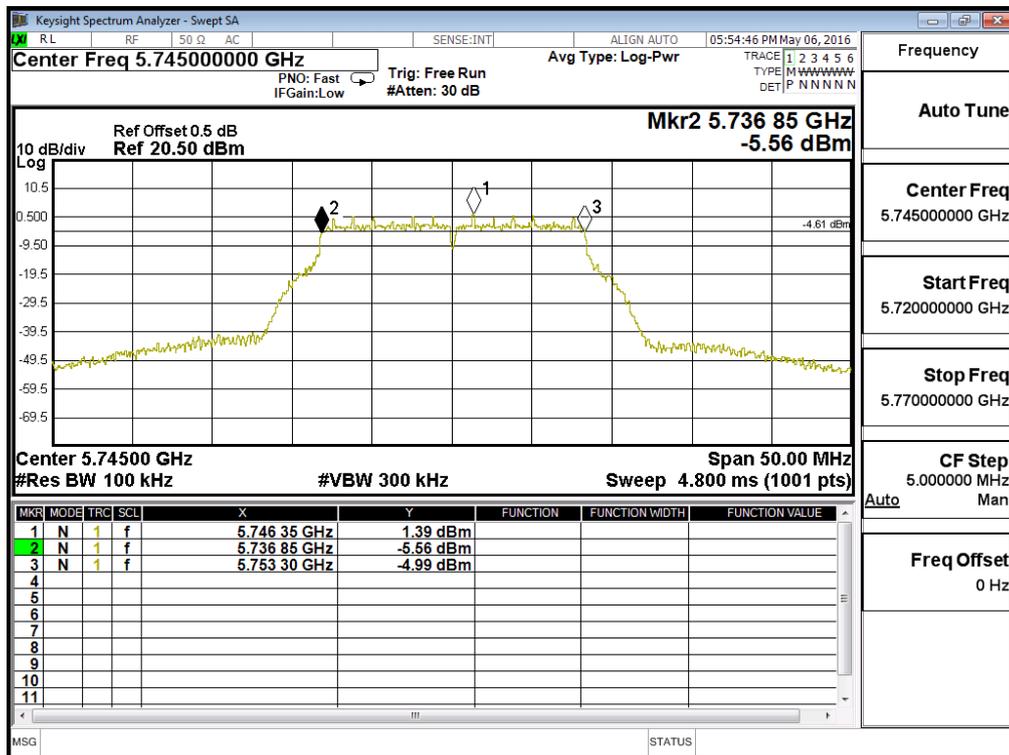
$\pm 150\text{Hz}$

7.6. Test Result of Occupied Bandwidth

Product : Nexus Player
 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	16450	>500	Pass

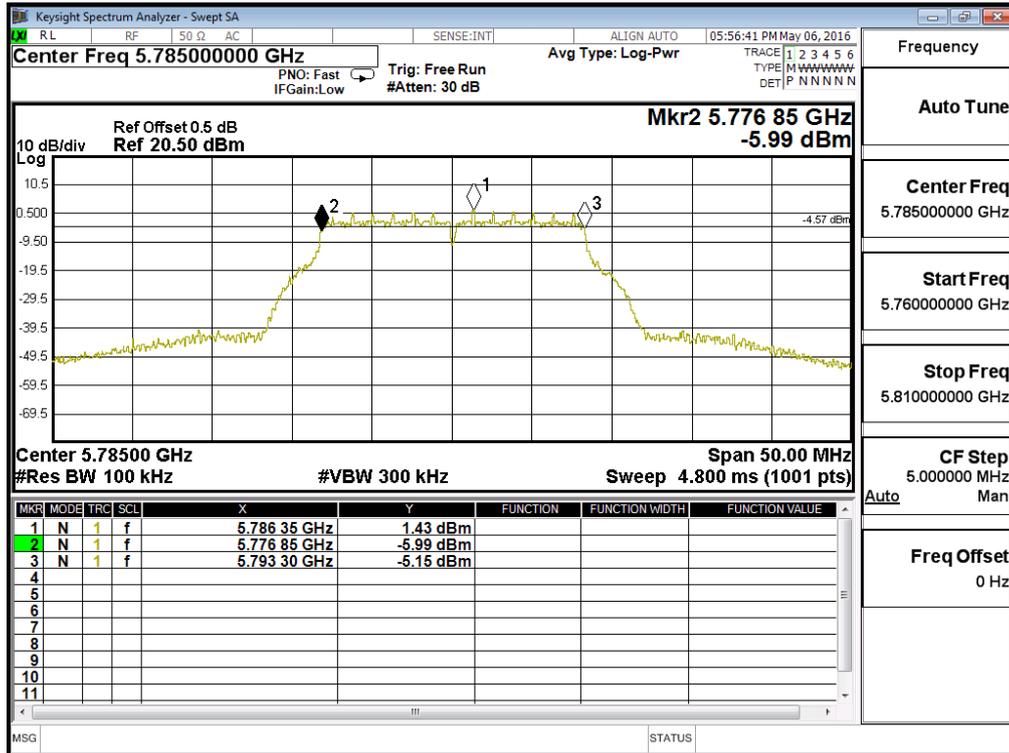
Figure Channel 149:



Product : Nexus Player
 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	16450	>500	Pass

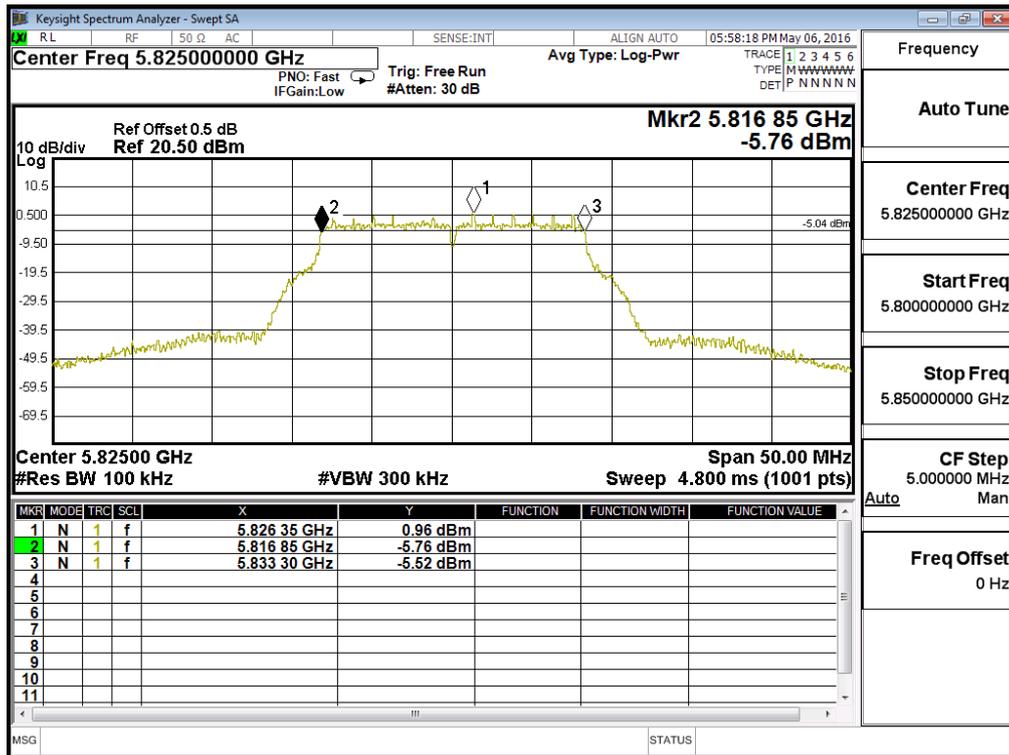
Figure Channel 157:



Product : Nexus Player
 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	16450	>500	Pass

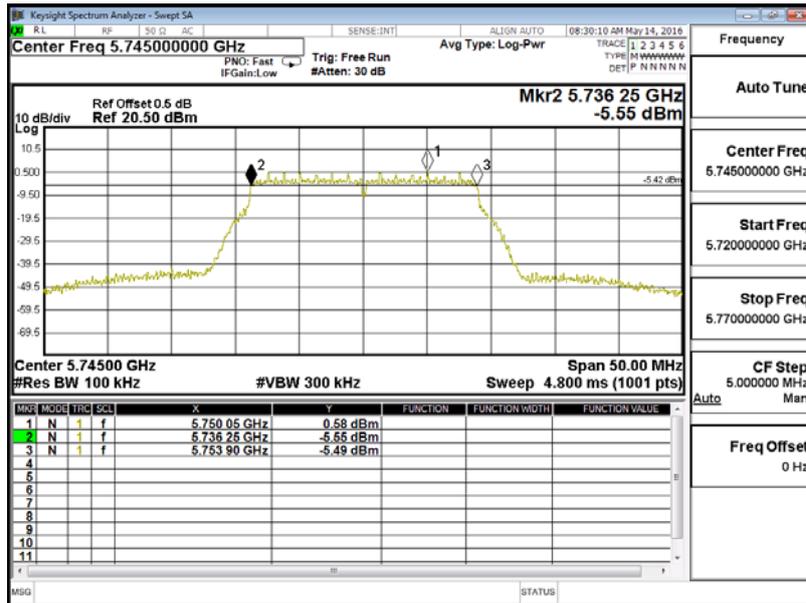
Figure Channel 165:



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

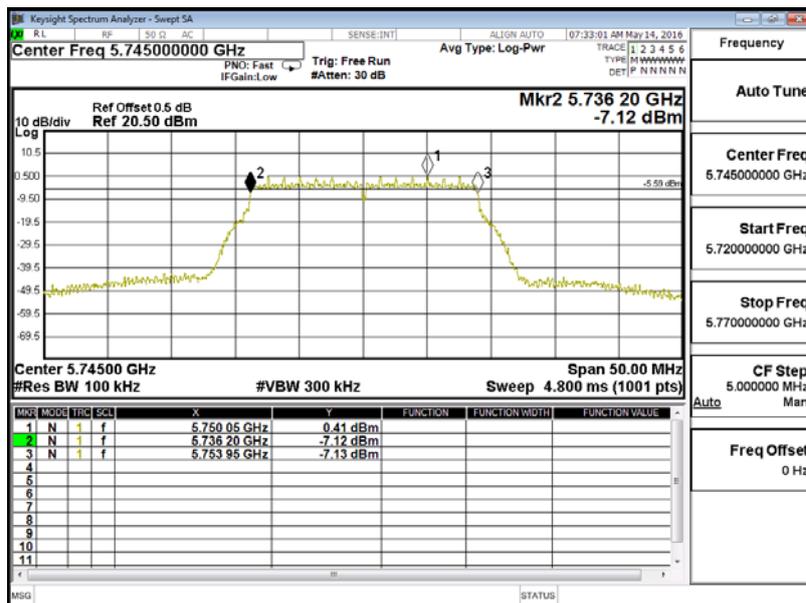
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	17650	>500	Pass

Figure Channel 149: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	17750	>500	Pass

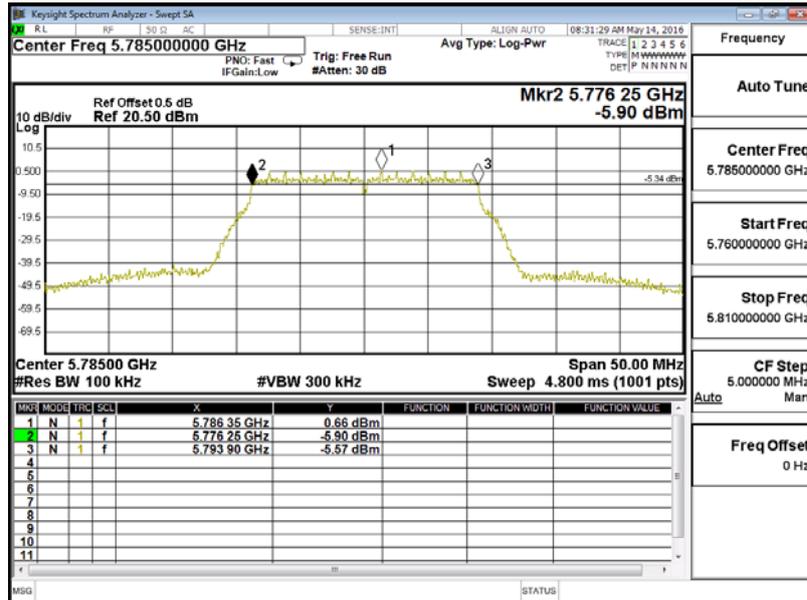
Figure Channel 149: (Chain B)



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

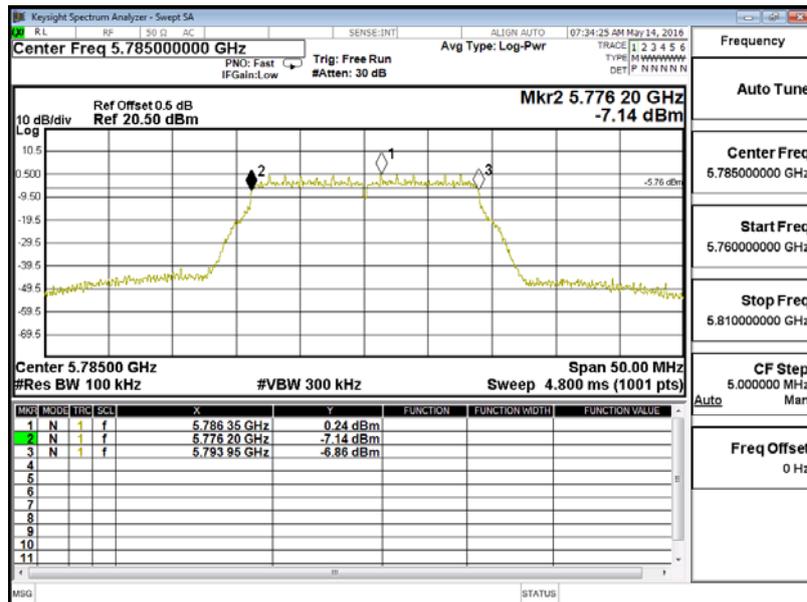
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	17650	>500	Pass

Figure Channel 157: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	17750	>500	Pass

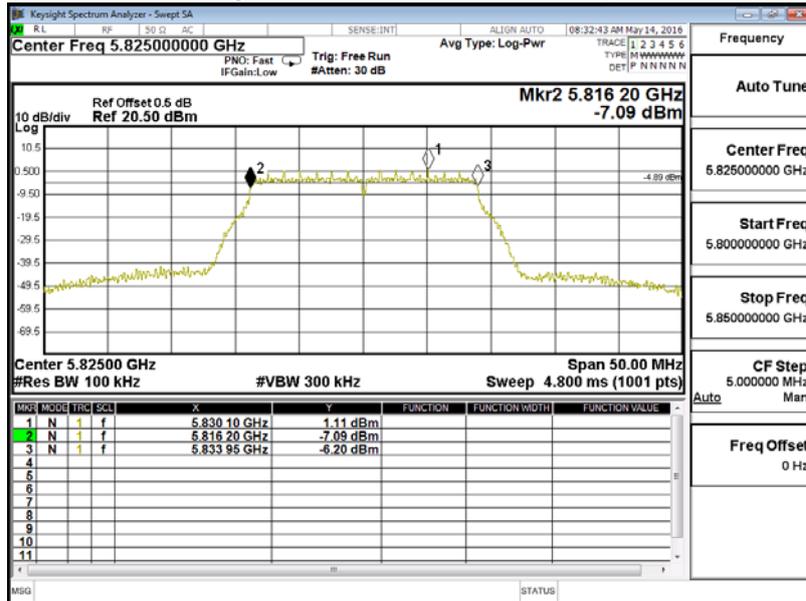
Figure Channel 157: (Chain B)



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

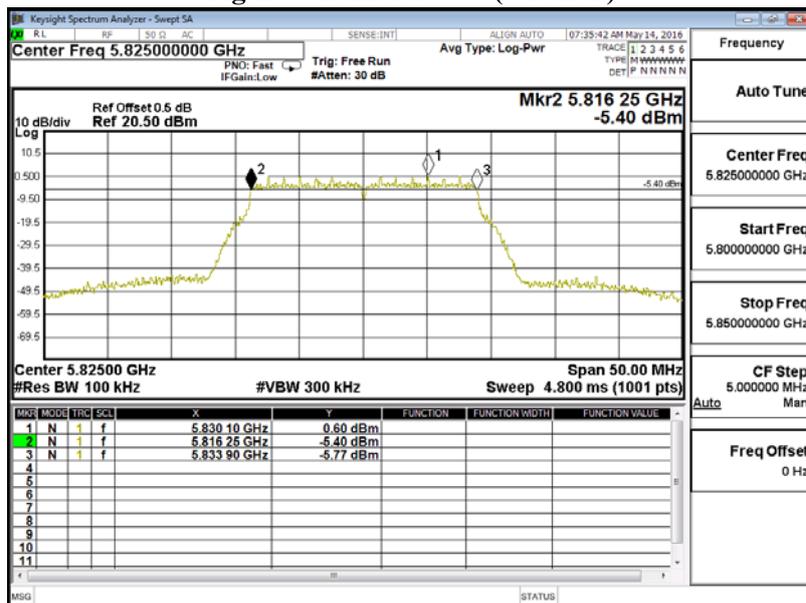
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	17750	>500	Pass

Figure Channel 165: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	17650	>500	Pass

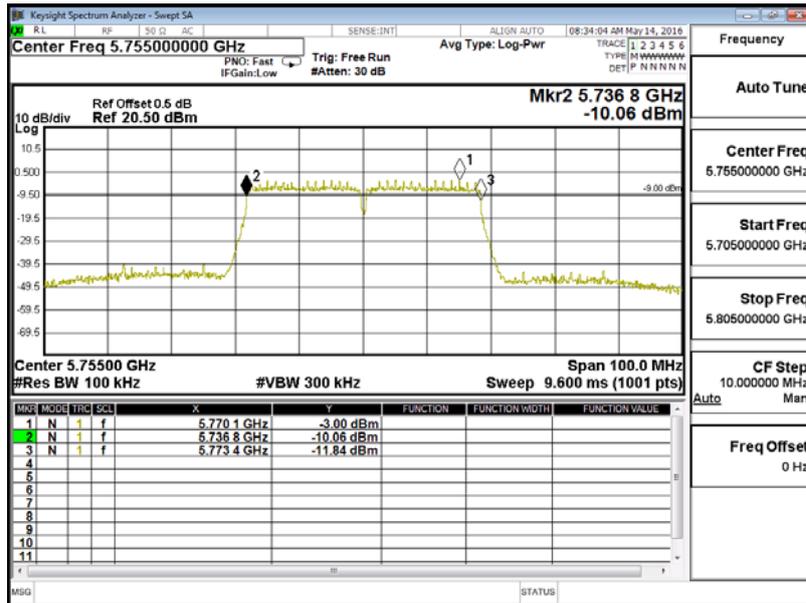
Figure Channel 165: (Chain B)



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

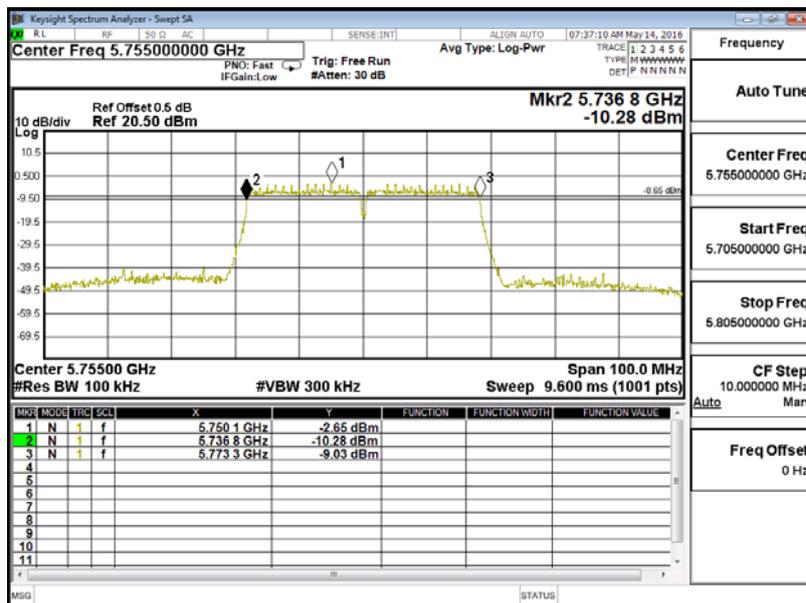
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755.00	36600	>500	Pass

Figure Channel 151: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755.00	36500	>500	Pass

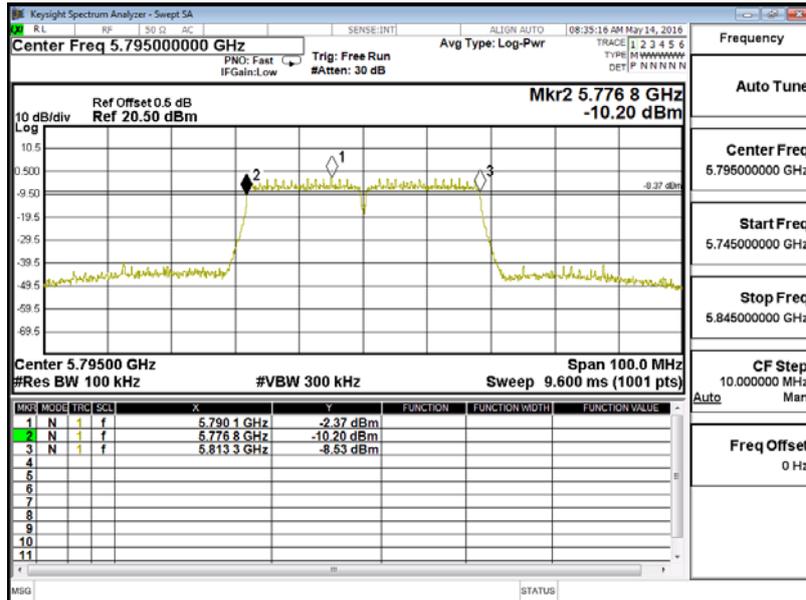
Figure Channel 151: (Chain B)



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

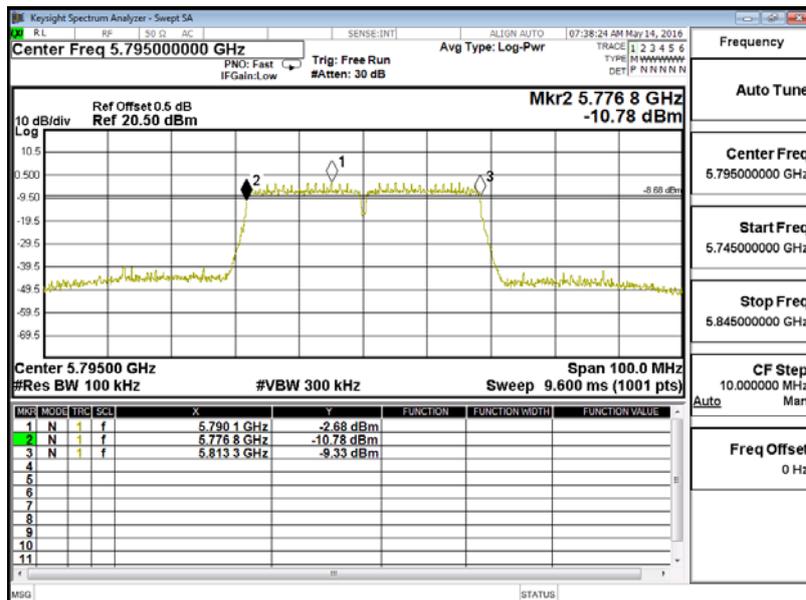
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795.00	36500	>500	Pass

Figure Channel 159: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795.00	36500	>500	Pass

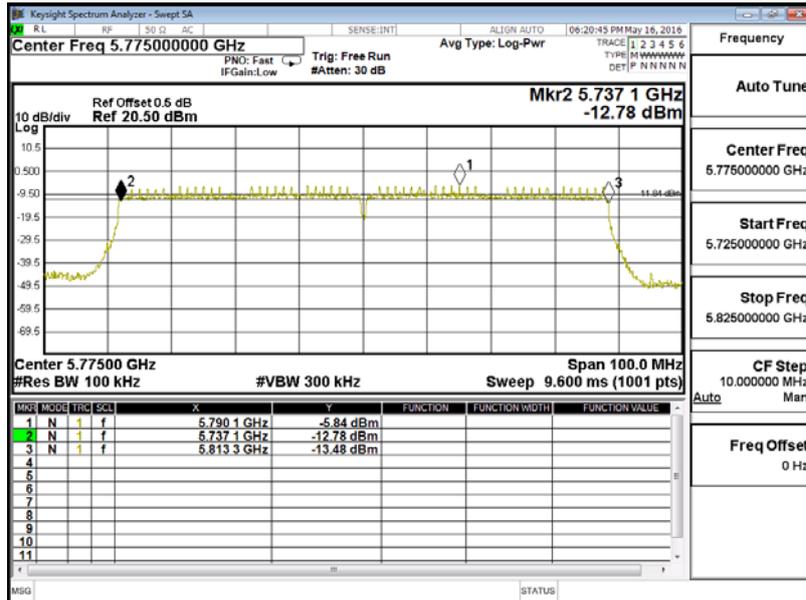
Figure Channel 159: (Chain B)



Product : Nexus Player
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

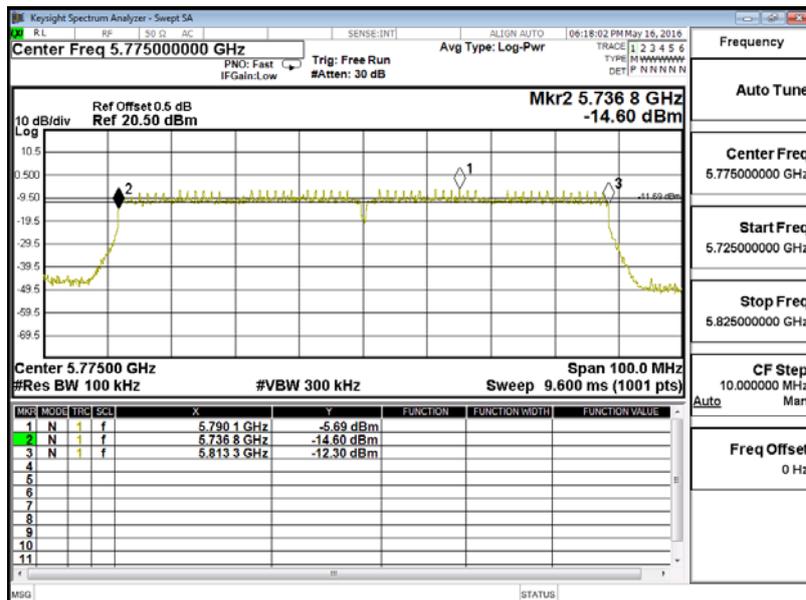
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	5775.00	76200	>500	Pass

Figure Channel 155: (Chain A)



Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	5775.00	76500	>500	Pass

Figure Channel 155: (Chain B)



8. Frequency Stability

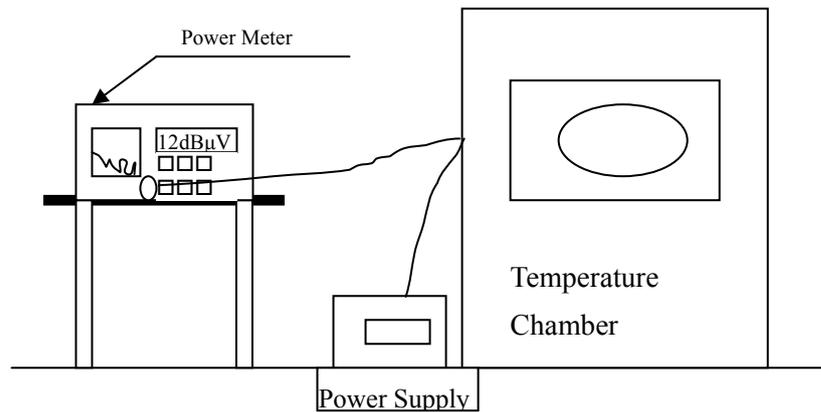
8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2015
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

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

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

8.4. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII 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 : Nexus Player
 Test Item : Frequency Stability
 Test Site : Temperature Chamber
 Test Mode : Carrier Wave

Chain A

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) °C	Vnom (120)V	149	5745.0000	5745.0051	-0.0051
		151	5755.0000	5755.0038	-0.0038
		155	5775.0000	5775.0038	-0.0038
		157	5785.0000	5785.0043	-0.0043
		159	5795.0000	5795.0041	-0.0041
		165	5825.0000	5825.0031	-0.0031
Tmax (50) °C	Vmax (138)V	149	5745.0000	5745.0068	-0.0068
		151	5755.0000	5755.0051	-0.0051
		155	5775.0000	5775.0069	-0.0069
		157	5785.0000	5785.0058	-0.0058
		159	5795.0000	5795.0074	-0.0074
		165	5825.0000	5825.0063	-0.0063
Tmax (50) °C	Vmin (102)V	149	5745.0000	5745.0061	-0.0061
		151	5755.0000	5755.0046	-0.0046
		155	5775.0000	5775.0080	-0.0080
		157	5785.0000	5785.0054	-0.0054
		159	5795.0000	5795.0066	-0.0066
		165	5825.0000	5825.0058	-0.0058
Tmin (-10) °C	Vmax (138)V	149	5745.0000	5745.0043	-0.0043
		151	5755.0000	5755.0031	-0.0031
		155	5775.0000	5775.0089	-0.0089
		157	5785.0000	5785.0051	-0.0051
		159	5795.0000	5795.0063	-0.0063
		165	5825.0000	5825.0049	-0.0049
Tmin (-10) °C	Vmin (102)V	149	5745.0000	5745.0043	-0.0043
		151	5755.0000	5755.0031	-0.0031
		155	5775.0000	5775.0090	-0.0090
		157	5785.0000	5785.0051	-0.0051
		159	5795.0000	5795.0063	-0.0063
		165	5825.0000	5825.0049	-0.0049

Chain B

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) °C	Vnom (120)V	149	5745.0000	5745.0034	-0.0034
		151	5755.0000	5755.0029	-0.0029
		155	5775.0000	5775.0033	-0.0033
		157	5785.0000	5785.0038	-0.0038
		159	5795.0000	5795.0058	-0.0058
		165	5825.0000	5825.0027	-0.0027
Tmax (50) °C	Vmax (138)V	149	5745.0000	5745.0042	-0.0042
		151	5755.0000	5755.0037	-0.0037
		155	5775.0000	5775.0062	-0.0062
		157	5785.0000	5785.0061	-0.0061
		159	5795.0000	5795.0061	-0.0061
		165	5825.0000	5825.0047	-0.0047
Tmax (50) °C	Vmin (102)V	149	5745.0000	5745.0037	-0.0037
		151	5755.0000	5755.0032	-0.0032
		155	5775.0000	5775.0074	-0.0074
		157	5785.0000	5785.0065	-0.0065
		159	5795.0000	5795.0056	-0.0056
		165	5825.0000	5825.0042	-0.0042
Tmin (-10) °C	Vmax (138)V	149	5745.0000	5745.0058	-0.0058
		151	5755.0000	5755.0024	-0.0024
		155	5775.0000	5775.0079	-0.0079
		157	5785.0000	5785.0068	-0.0068
		159	5795.0000	5795.0050	-0.0050
		165	5825.0000	5825.0034	-0.0034
Tmin (-10) °C	Vmin (102)V	149	5745.0000	5745.0051	-0.0051
		151	5755.0000	5755.0029	-0.0029
		155	5775.0000	5775.0102	-0.0102
		157	5785.0000	5785.0063	-0.0063
		159	5795.0000	5795.0046	-0.0046
		165	5825.0000	5825.0039	-0.0039

9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs