

## FCC 47 CFR PART 15 SUBPART E

## **CERTIFICATION C2PC TEST REPORT**

FOR

Multimedia device with BLE/BT, 2.4GHz and 5GHz WLAN

MODEL NUMBER: NC2-6A5

FCC ID: A4RNC2-6A5B

REPORT NUMBER: 15U20917-E2V4

ISSUE DATE: July 30, 2018

Prepared for GOOGLE 1600 AMPHITEATRE PARKWAY MOUNTAIN VIEW, CA 94043, U.S.A.

Prepared by UL VERIFICATION SERVICES INC. 47173 BENICIA STREET FREMONT, CA 94538, U.S.A. TEL: (510) 771-1000 FAX: (510) 661-0888



## **Revision History**

Rev.	lssue Date	Revisions	Revised By
	07/08/15	Initial Issue	F. de Anda
V2	05/10/18	Updated Antenna Gain; Updated Sections 6, 7, 8.3.3, 8.6.3, 9.4 and 9.7	E.Yu
V3	06/15/18	Updated Section 5.2, C2PC description	F. de Anda
V4	07/30/18	Correction to frequency range, Section 5.3	Grace Rincand

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## **1. ATTESTATION OF TEST RESULTS**

COMPANY NAME: GOOGLE 1600 AMPHITEATRE PARKWAY MOUNTAIN VIEW, CA 94043, U.S.A.						
EUT DESCRIPTION:	Multimedia device with BLE/BT, 2.4GHz and 5GHz WLAN radios					
MODEL:	MODEL: NC2-6A5					
SERIAL NUMBER:	SERIAL NUMBER: 5323103ZZAJR (RADIATED) & PROTO 1 (CONDUCTED					
DATE TESTED:						
APPLICABLE STANDARDS						
STANDARD TEST RESULTS						
CFR 47 F	Part 15 Subpart E	Pass				

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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# 2. TEST METHODOLOGY

DATE TESTED: May 6, 2015 – June 24, 2015

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 06-96, FCC KDB 789033, and ANSI C63.10-2009.

## DATE TESTED: April 24 - May 10, 2018

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 14-30, FCC KDB 905462 D02 v02/D03 v01r02/D06 v02, FCC KDB 789033 D02 v02r01, FCC KDB 644545 D03 v01, ANSI C63.10-2013.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
Chamber A	Chamber D
Chamber B	Chamber E
Chamber C	🛛 Chamber F
	Chamber G
	Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through C are covered under ISED company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under ISED company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <u>NVLAP Lab Search</u>.

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

## 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB) 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

## 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

Uncertainty figures are valid to a confidence level of 95%.

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# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

Multimedia device with BLE, 2.4GHz and 5GHz WLAN radios

## 5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The purpose of this C2PC is to upgrade the device described under section 5.1 of this report to update the 5GHz bands antenna gain. The PCB antenna trace changed to include a 0.5mm trim. This increased the gain from 2.1dBi to 4dBi.

Spot checks were performed. Power for channels 36 and 64 was reduced to improve BE margin. Overall power is maintained as Granted. CH36 11HT20 dropped from 13.21dBm to 13.15dBm; CH64 11a dropped from 14.98dBm to 14.26dBm both within measurement tolerance. Original report data is maintained with the exception of Channel 36 and 64 for BE data. Reference FCC ID: A4RNC2-6A5B. See Appendix A for spot check results.

## 5.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)			
5.2GHz Band						
5180 - 5240	802.11a	15.82	38.17			
5180 - 5240	802.11n HT20	15.05	31.99			
5190 - 5230	802.11n HT40	13.82	24.10			
5210	802.11ac VHT80	8.26	6.70			
	5.3GHz	Band				
5260 - 5320	802.11a	15.00	31.62			
5260 - 5320	802.11n HT20	14.94	31.19			
5270 - 5310	802.11n HT40	14.09	25.64			
5290	802.11ac VHT80	8.01	6.33			
	5.6GHz	Band				
5500 - 5700	802.11a	16.43	43.95			
5720	802.118	13.64	23.12			
5500 - 5700	802.11n HT20	16.44	44.06			
5720	802.11111120	12.46	17.62			
5510 - 5670	802.11n HT40	16.36	43.25			
5710	002.11111140	13.04	20.14			
5530 - 5690	802.11ac VHT80	9.69	9.30			
5690	002.11dC V 1100	9.65	9.23			
5.8GHz Band						
5745 - 5825	802.11a	15.10	32.36			
5745 - 5825	802.11n HT20	15.97	39.54			
5755 - 5795	802.11n HT40	14.67	29.31			
5775	802.11ac VHT80	10.08	10.19			

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DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PCB antenna, with a maximum gain of 4 dBi.

## 5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 15.2.7.09

The test utility software used during testing was 2.0.0.71

## 5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

Worst-case data rates as provided by the client were:

802.11a mode: 6 Mbps 802.11n HT20mode: MCS0 802.11n HT40mode: MCS0 802.11n HT40mode: MCS0 802.11ac VHT80 mode: MCS0

Radiated emissions for EUT with antenna was performed and passed; therefore, antenna port spurious was not performed.

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## 5.6. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

Support Equipment List						
Description	Manufacturer	Model	Serial Number	FCC ID		
AC Adapter	Lenovo	ADLX65NCC2A	11545N0263Z1Z5994AH GRO	N/A		
AC Adapter	Google	S005BBU0500100	Proto 1	N/A		
Laptop	Lenovo	E440	PF-074E9W 15/01	N/A		
USB Hub	Belkin	N10117	P11438	N/A		
USB LAN Adapter	HP	538507	001	N/A		

## I/O CABLES

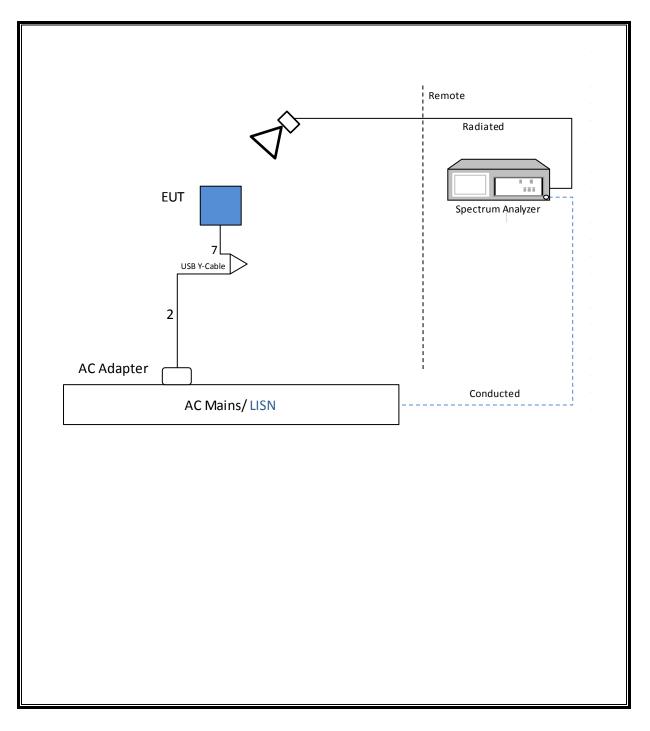
	I/O Cable List							
Cable	Port	# of identical	Connector	Cable Type	Cable	Remarks		
No		ports	Туре		Length (m)			
1	DC	1	Barrel	unshielded	0.8			
2	USB	1	USB	unshielded	1.5	Power cable		
3	USB	1	USB	unshielded	2.5			
4	LAN	1	RJ45	unshielded	2.5			
5	USB	1	USB	unshielded	0.1			
6	USB	1	USB	unshielded	0.2	Data		
7	USB	1	Micro USB	unshielded	0.2	Y-cable		

### TEST SETUP

The EUT is connected to a host laptop via USB HUB and USB-to-LAN Adapter, test software exercises the radio.

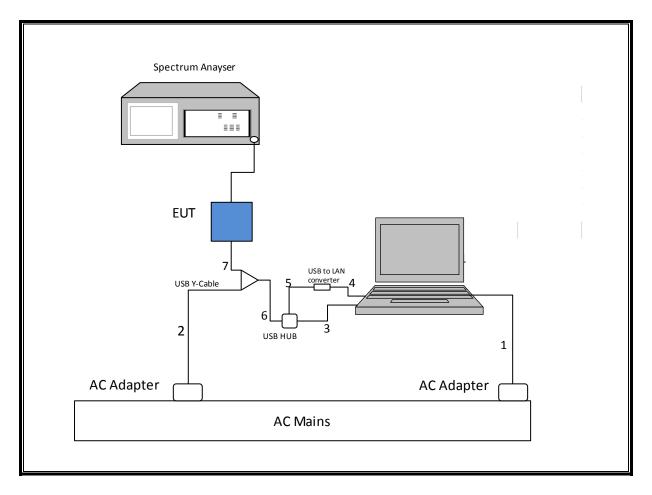
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## SETUP DIAGRAM FOR RADIATED and AC LC TESTS



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## SETUP DIAGRAM FOR CONDUCTED TESTS



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# 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

For testing performed on May 6, 2015 – June 24, 2015:

Test Equipment List						
Description	Manufacturer	Model	T No.	Cal Date	Cal Due	
Radiated Software	UL	UL EMC	V	Ver 9.5, July 22, 2014		
Conducted Software	UL	UL EMC	Ve	r 2.2, March 3	1, 2015	
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	341	2/20/2015	2/20/2016	
Antenna, Horn 1-18GHz	ETS Lindgren	3117	120	3/26/2015	3/26/2016	
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB1	122	2/13/2015	2/13/2016	
Amplifier, 10KHz to 1GHz,	Sonoma	310N	173	6/9/2015	6/9/2016	
		AFS42-	742	1/31/2015	1/31/2016	
Amplifier, 1 - 18GHz	Miteq	00101800 -				
		25-S-42				
Amplifier, 26 - 40GHz	Miteq	NSP4000-SP2	88	4/7/2015	4/7/2016	
Filter, HPF 3.0GHz	Micro-Tronics	HPM17543	427	1/31/2015	1/31/2016	
Filter, LPF 5.0GHz	Micro-Tronics	LPS17541	421	1/31/2015	1/31/2016	
Filter, HPF 6GHz HPF	Micro-Tronics	HPS17542	425	1/31/2015	1/31/2016	
Antenna, Horn 18 to	ARA	MWH-1826	89	12/17/2014	12/17/2015	
26.5GHz	AKA	IVIVVH-1820				
Amplifier, 1 to 26.5GHz,	Agilent	8449B	404	4/13/2015	4/13/2016	
23.5dB Gain minimum	Agnent	04490				
Spectrum Analyzer, 40 GHz	Agilent	8564E	106	8/6/2014	8/6/2015	
LISN, 30MHz	FCC	50/250-25-2	24	1/16/2015	1/16/2016	
Analyzer, PXA, 3Hz to 44GH	Agilent	N9030A	341	2/20/2015	2/20/2016	
Radiated Software	UL	UL EMC		Rev 9.5.03		

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## For testing performed on April 24 - May 10, 2018:

	TEST EQUIPMENT LIST							
Description	Manufacturer	Model	Asset	Cal Due				
Amplifier, 1 - 18GHz	MITEQ	AFS42-00101800- 25-S-42	T931	09/20/2018				
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	06/09/2018				
Power Meter, P-series single channel	Keysight	N1912A	T1245	05/12/2018				
Power Sensor	Keysight	N1921A	T413	06/22/2018				
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/08/2019				
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1113	12/21/2018				
	UL AUTOMATION SOFTWARE							
Radiated Software	UL	UL EMC	Ver 9.5, E	)ec 01, 2016				
Conducted Software	UL	UL EMC	Ver 7.7, D	ec 14, 2017				

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# 7. MEASUREMENT METHODS

For testing performed on May 6, 2015 – June 24, 2015:

26 dB Emission BW: KDB 789033 D02 v01r, Section C.

99% Occupied BW: KDB 789033 D02 v01, Section D.

<u>Conducted Output Power</u>: KDB 789033 D02 v01, Section E.2.b (Method SA-1). <u>Conducted Output Power</u>: KDB 789033 D02 v01, Section E.2.d (Method SA-2).

Power Spectral Density: KDB 789033 D02 v01, Section F.

<u>Unwanted emissions in restricted bands</u>: KDB 789033 D02 v01, Sections G.3, G.4, G.5, and G.6.

<u>Unwanted emissions in non-restricted bands</u>: KDB 789033 D02 v01, Sections G.3, G.4, and G.5.

For testing performed on April 24 - May 10, 2018:

Conducted Output Power: KDB 789033 D02 v02r01, Section E.3.b (Method SA-1).

Power Spectral Density: KDB 789033 D02 v02r01, Section F.

<u>Unwanted emissions in restricted bands</u>: KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, and

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# 8. ANTENNA PORT TEST RESULTS

## 8.1. ON TIME AND DUTY CYCLE

### **LIMITS**

None; for reporting purposes only.

### PROCEDURE

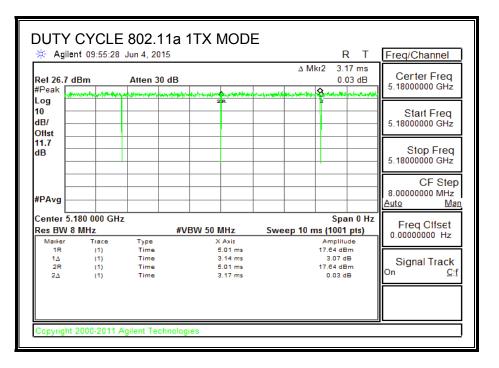
KDB 789033 Zero-Span Spectrum Analyzer Method.

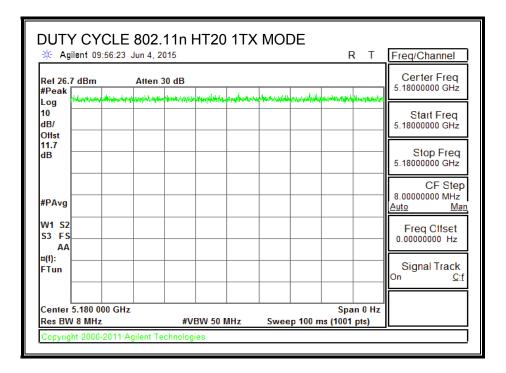
## ON TIME AND DUTY CYCLE RESULTS

Mode	<b>ON</b> Time	Period	<b>Duty Cycle</b>	Duty	Duty Cycle	1/B
	В		x	Cycle	<b>Correction Factor</b>	Minimum VBW
	(msec)	(msec)	(linear)	(%)	(dB)	(kHz)
802.11a 1TX	3.140	3.170	0.991	99.05%	0.00	0.010
802.11n HT20 1TX	100.000	100.000	1.000	100.00%	0.00	0.010
802.11n HT40 1TX	4.770	4.830	0.988	98.76%	0.00	0.010
802.11ac VHT80 1TX	2.2240	2.2630	0.983	98.28%	0.00	0.010

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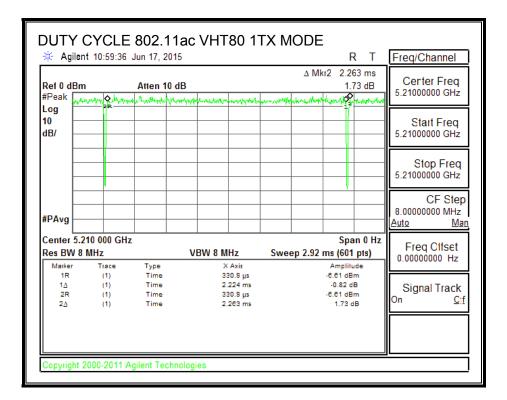
## **DUTY CYCLE PLOTS**





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Ref 26.7	dBm		Atten 3	0 dB				Δ		.83 ms .48 dB	Certer Freq
#Peak				2R			2 Ö		www.w.e.		5.19000000 GHz
∟og 10 - 1B/ - Dffst		Harriera Latria									Start Freq 5.19000000 GHz
11.7 1B											Stop Freq 5.1900000 GHz
ŧPAvg −											CF Step 8.0000000 MHz <u>Auto M</u> a
Center 5		)0 GHz								an 0 Hz	Freg Offset
Res BW	-	ace	-	#V	BW 50 I		S۱	veep 15	ms (100	<u> </u>	0.00000000 Hz
1R		ace 1)	Type Time		~	5.1 ms			Amplit 14.18 d		
1∆		1)	Time		4	1.77 ms			1.65	dB	Signal Track
2R	(	1)	Time			5.1 ms			14.18 d	Bm	
2∆	(	1)	Time		4	4.83 ms			1.48	dB	On <u>C</u> t



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## 8.2. 802.11a MODE IN THE 5.2 GHz BAND

## 8.2.1. 26 dB BANDWIDTH

### **LIMITS**

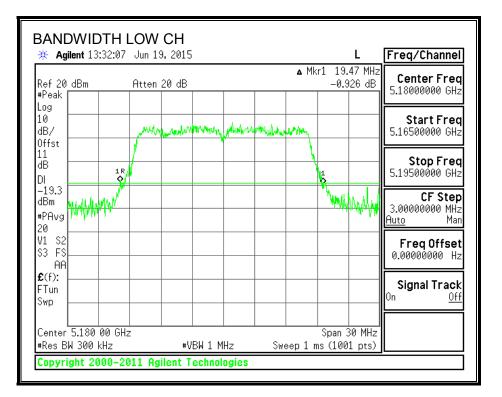
None; for reporting purposes only.

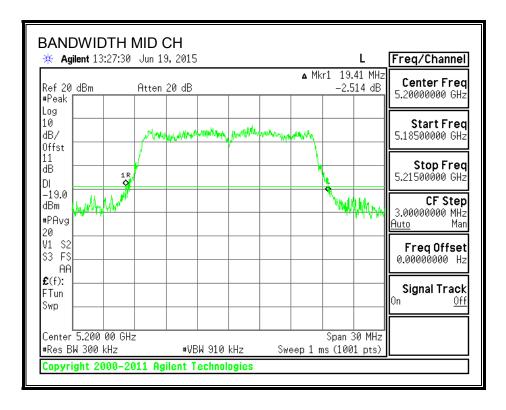
## **RESULTS**

Channel	Frequency	26 dB Bandwidth		
	(MHz)	(MHz)		
Low	5180	19.47		
Mid	5200	19.41		
High	5240	19.71		

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### 26 dB BANDWIDTH





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BANDWIDTH HIGH	-		<b>-</b>
🔆 🄆 🔆 🔆 🔆 🔆 🔆	9,2015	L	Freq/Channel
Ref 20 dBm Atten #Peak	20 dB	▲ Mkr1 19.71 MHz 1.315 dB	Center Freq 5.24000000 GHz
Log 10 dB////////	apart starting polaritations	Mananan	Start Freq 5.22500000 GHz
11 dB DI <u>15</u>			<b>Stop Freq</b> 5.25500000 GHz
-20.1 dBm #PAvg 20		- Winter Marine	<b>CF Step</b> 3.00000000 MHz <u>Auto</u> Man
V1 S2 S3 FS AA			Freq Offset 0.00000000 Hz
£(f): FTun Swp			<b>Signal Track</b> On <u>Off</u>
Center 5.240 00 GHz #Res BW 300 kHz	#VBW 910 kHz	Span 30 MHz Sweep 1 ms (1001 pts)	
Copyright 2000–2011 Ag	ilent Technologies		

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## 8.2.2. 99% BANDWIDTH

#### **LIMITS**

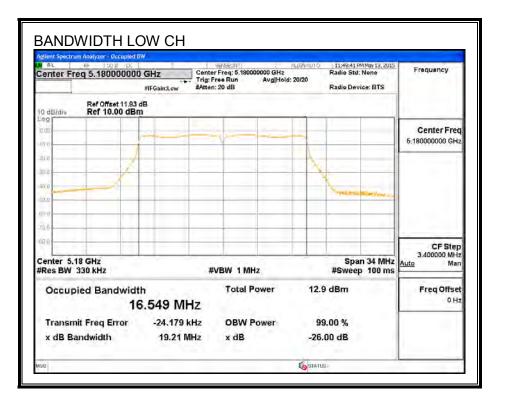
None; for reporting purposes only.

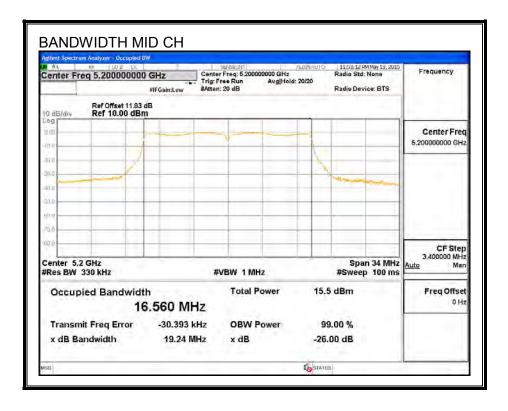
### **RESULTS**

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5180	16.5490
Mid	5200	16.5600
High	5240	16.5660

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### 99% BANDWIDTH





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Aglient Spectru	RF 1.50 D		2.	1 100	NEGINI		ALENAUTO	11-02-04	PM May 13, 2015	
	eq 5.24000				req: 5.2400	00000 GHz AvgHold:		Radio Ste		Frequency
		#IFG		Atten: 2		Avglinois.	20120	Radio De	vice: BTS	
10 dB/div	Ref Offset Ref 10.00		_	_	_			_		
		-		-	-	-			-	Center Freq 5.240000000 GHz
and -				_		-	X			
410								-		
76.0										
60.0										CF Step 3.400000 MHz
Center 5.2 #Res BW				#VE	3W 1 MH	łz		Sp: #Swee	an 34 MHz p 100 ms	<u>Auto</u> Mar
Occup	ied Bandy		66 MH:	z	Total P	ower	15.0	0 dBm		Freq Offset 0.Hz
	nit Freq Erro	or -	28.726 kH		OBW F	ower		9.00 %		
x dB Ba	andwidth		19.37 MH	2	x dB		-26.	00 dB		

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## 8.2.3. OUTPUT POWER AND PSD

## <u>LIMITS</u>

FCC §15.407 (a) (1)

(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. In addition, 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, both the maximum conducted output power and the maximum power spectral density 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, 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, both the maximum conducted output power and 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 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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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### **RESULTS**

#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
Low	5180	4.00	4.00	24.00	11.00
Mid	5200	4.00	4.00	24.00	11.00
High	5240	4.00	4.00	24.00	11.00

0.00

#### Duty Cycle CF (dB)

Included in Calculations of Corr'd Power & PSD

## **Output Power Results**

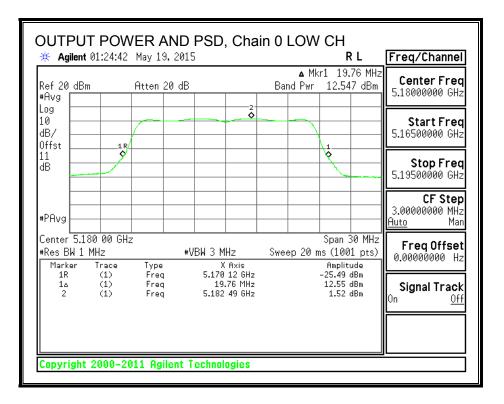
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	12.55	12.55	24.00	-11.45
Mid	5200	15.57	15.57	24.00	-8.43
High	5240	15.82	15.82	24.00	-8.18

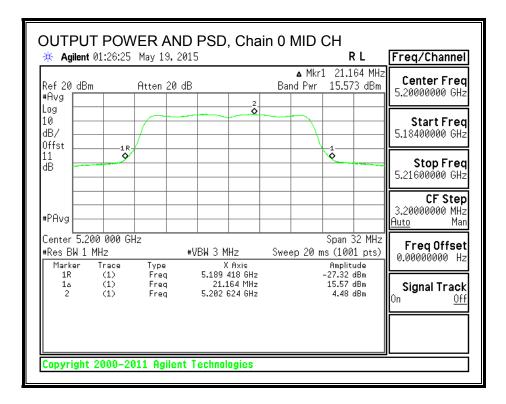
#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	1.52	1.52	11.00	-9.48
Mid	5200	4.48	4.48	11.00	-6.52
High	5240	4.73	4.73	11.00	-6.27

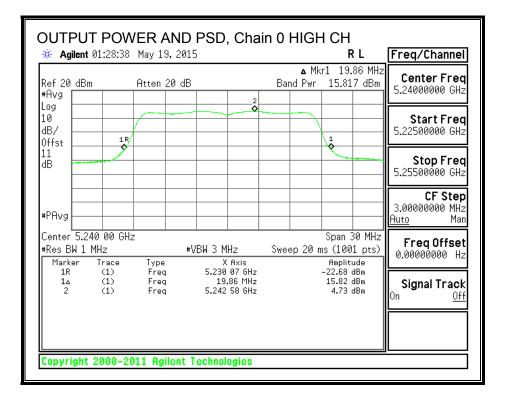
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## OUTPUT POWER AND PSD, Chain 0





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## 8.3. 802.11n HT20 MODE IN THE 5.2 GHz BAND

## 8.3.1. 26 dB BANDWIDTH

### LIMITS

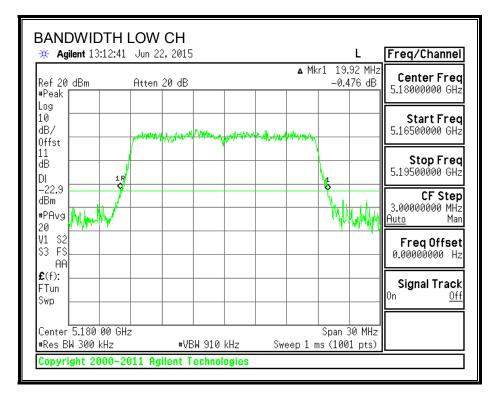
None; for reporting purposes only.

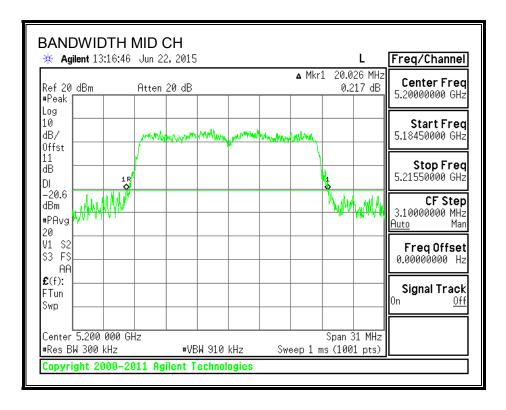
## **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5180	19.92
Mid	5200	20.03
High	5240	20.18

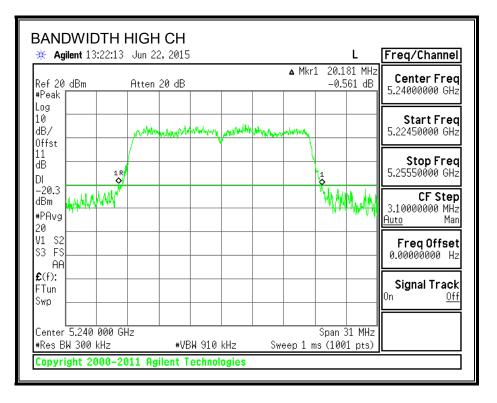
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### 26 dB BANDWIDTH





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## 8.3.2. 99% BANDWIDTH

#### **LIMITS**

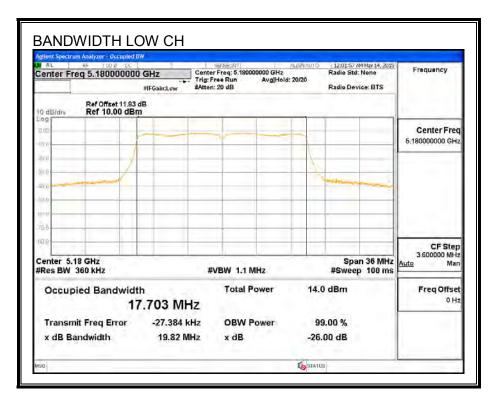
None; for reporting purposes only.

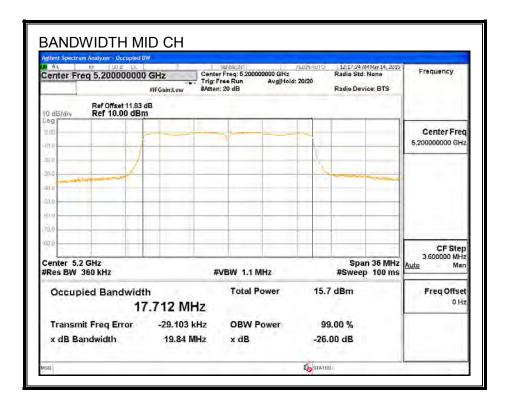
### **RESULTS**

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5180	17.7030
Mid	5200	17.7120
High	5240	17.7060

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### 99% BANDWIDTH





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elient Spectru Rit	RF 150 P D			SENSEINT		ALIEN AUTO	12:22:24	AM May 14, 2015	
Center Freq 5.240000000 GHz #IFGain:Low				Center Freq: 5.240000000 GHz Trig: Free Run Avg[Hold: 20/20 #Atten: 20 dB				1: None	Frequency
								vice: BTS	
0 dB/div	Ref 0ffset 11.83 dB Ref 10.00 dBm								
09				1	-				Center Fred
min			1	Y	-				5.240000000 GH
ne -	_	1	_	-	_	X			
0.0	1			-			and Part of Long and 1		
10			-		-			Daylog and	
1.0		-	-						
ny.				-			-		
10	1				-				
00			-				-		CF Ster 3.600000 MH
Center 5.24 GHz #Res BW 360 kHz				#VBW 1.1 MHz			Span 36 MHz #Sweep 100 ms		Auto Mar
Occupied Bandwidth 17.706 MHz				Total Power 14.			dBm		Freq Offse 0 H:
Transmit Freq Error -34.782 k			kHz	Hz OBW Power 99			.00 %		
x dB Bandwidth 19.80 M			MHz	Hz x dB -26			.00 dB		

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# 8.3.3. OUTPUT POWER AND PSD

### <u>LIMITS</u>

FCC §15.407 (a) (1)

(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. In addition, 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, both the maximum conducted output power and the maximum power spectral density 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, 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, both the maximum conducted output power and 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 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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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### **RESULTS**

#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
Low	5180	4.00	4.00	24.00	11.00
Mid	5200	4.00	4.00	24.00	11.00
High	5240	4.00	4.00	24.00	11.00

0.00

Duty Cycle CF (dB)

Included in Calculations of Corr'd Power & PSD

### **Output Power Results**

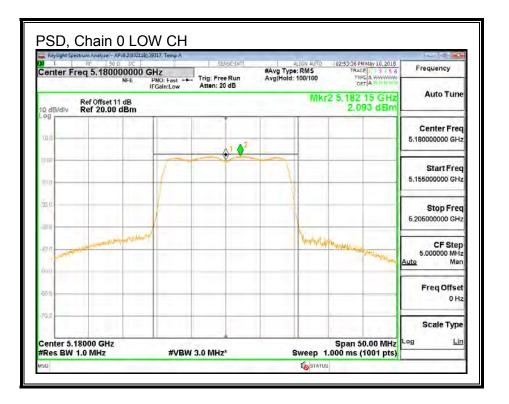
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	13.15	13.15	24.00	-10.85
Mid	5200	15.05	15.05	24.00	-8.95
High	5240	14.98	14.98	24.00	-9.02

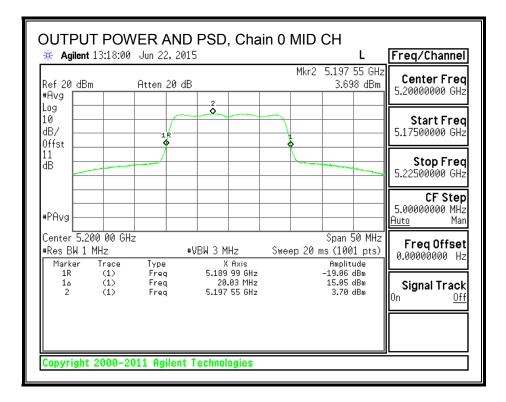
#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	2.09	2.09	11.00	-8.91
Mid	5200	3.70	3.70	11.00	-7.30
High	5240	3.60	3.60	11.00	-7.40

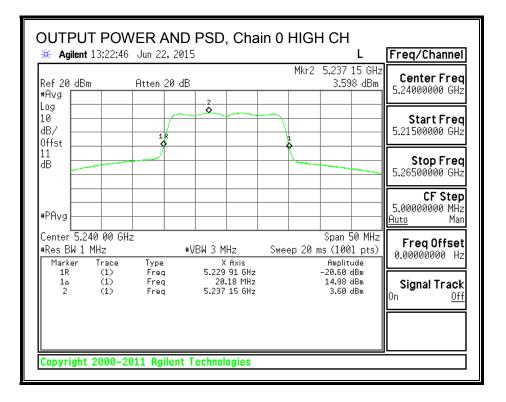
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### OUTPUT POWER AND PSD, Chain 0





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# 8.4. 802.11n HT40 MODE IN THE 5.2 GHz BAND

# 8.4.1. 26 dB BANDWIDTH

#### **LIMITS**

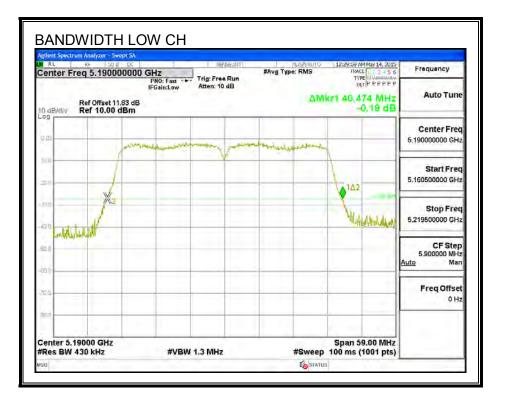
None; for reporting purposes only.

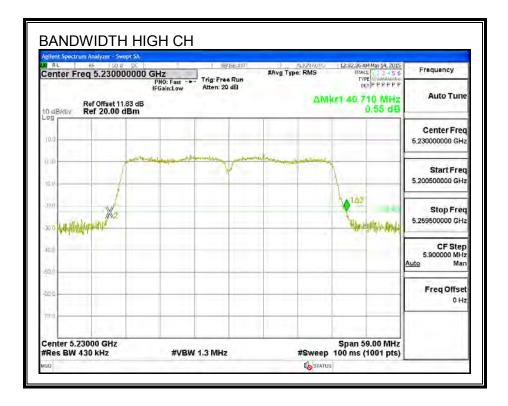
### **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5190	40.47
High	5230	40.71

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#### 26 dB BANDWIDTH





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## 8.4.2. 99% BANDWIDTH

#### **LIMITS**

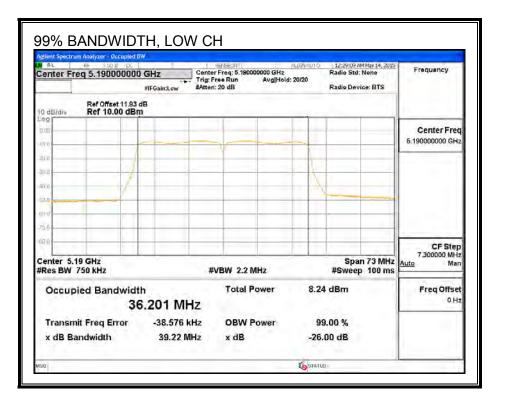
None; for reporting purposes only.

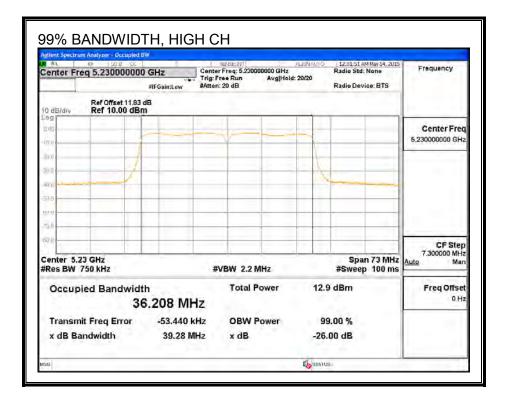
#### **RESULTS**

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5190	36.2010
High	5230	36.2080

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### 99% BANDWIDTH





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# 8.4.3. OUTPUT POWER AND PSD

### <u>LIMITS</u>

FCC §15.407 (a) (1)

(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. In addition, 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, both the maximum conducted output power and the maximum power spectral density 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, 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, both the maximum conducted output power and 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 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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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### **RESULTS**

#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
		(ubi)	(ubi)	(ubiii)	(dBm)
Low	5190	4.00	4.00	24.00	11.00

Duty Cycle CF (dB) 0.00 Included in Calculations of Corr'd Power & PSD

#### **Output Power Results**

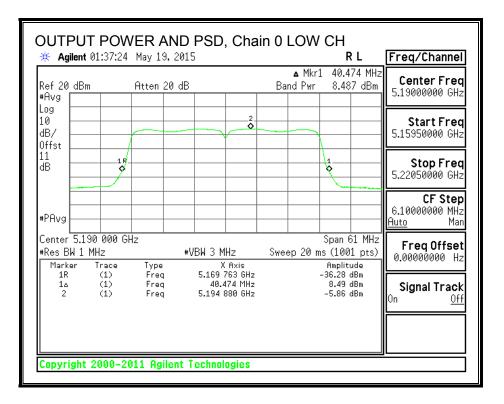
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5190	8.49	8.49	24.00	-15.51
High	5230	13.82	13.82	24.00	-10.18

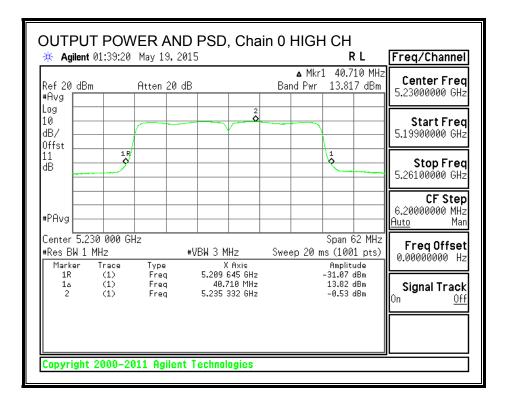
#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	<b>(MHz)</b> 5190	( <b>dBm)</b> -5.86	<b>(dBm)</b> -5.86	(dBm) 11.00	(dB) -16.86

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### OUTPUT POWER AND PSD, Chain 0





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# 8.5. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

# 8.5.1. 26 dB BANDWIDTH

### <u>LIMITS</u>

None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Mid	5210	81.74

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### 26 dB BANDWIDTH

RL av 5 enter Freq 5.210	000000 GH	O: Fast	SENSELENT  Trig: Free Run	ALICH AUTO #Avg Type: RMS	11:20:54 PMJun 15, 2015 TRAGE 1 1 5 TYPE MWWWWW DET P P P P P	Frequency
Ref Offset Ref 20.0	11 dB	ain:Low	Atten: 20 dB	ΔM	kr1 81.740 MHz 0.17 dE	Auto Tune
DD DD						Center Freq 5.210000000 GHz
10)	( artist		and your	u den de man martir og		Start Freq 5.143000000 GHz
55 00	×2				142	Stop Freq 5.277000000 GHz
no hanna an	K				Hillingstrongardings	CF Step 13.400000 MHz Auto Man
0.0						Freq Offset 0 Ha
enter 5.21000 GHz Res BW 910 kHz		#VBW 2	-		Span 134.0 MHz 100.0 ms (1001 pts	

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# 8.5.2. 99% BANDWIDTH

### **LIMITS**

None; for reporting purposes only.

### <u>RESULTS</u>

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5210	76.2370

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### 99% BANDWIDTH

RL	trum Analyze - Occupied BV RF 50 0 DC BQ 5,290000000	GHz Cente	SENSE:DIT    r Freq: 5.290000000 GHz Free Run Avg Hold h: 20 dB	: 20/20 Radio	7:36 PMJun 15, 2015 9 Std: None 9 Device: BTS	Frequency
10 dB/dly	Ref 10.00 dBn	,			1.1	
-0g						Center Freq
10.0				the state of the s		5.29000000 GHz
.i(0						
-30.0						
400	-		-	1		
-50'0				Aller		
-50,0						
-70.0						
-00.00	1				-	
Center 5.29 GHz #Res BW 1.5 MHz			VBW 5 MHz		pan 152 MHz veep 100 ms	CF Step 15.200000 MHz
Occup	led Bandwidt	h	Total Power	8.38 dBm		<u>Auto</u> Man
occup	a fer til der state bet a far bet	.220 MHz	and a second			
	<ul> <li>2.1</li> </ul>					Freq Offset 0 Hz
	it Freq Error	-170.26 kHz	OBW Power	99.00 %		0112
x dB Ba	indwidth	80.78 MHz	x dB	-26.00 di	3	
MSG				STATUS		

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# 8.5.3. OUTPUT POWER AND PSD

### <u>LIMITS</u>

FCC §15.407 (a) (1)

(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. In addition, 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, both the maximum conducted output power and the maximum power spectral density 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, 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, both the maximum conducted output power and 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 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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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# <u>RESULTS</u>

#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
Mid	5210	4.00	4.00	24.00	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
	0.00	included in Calculations of Corr d Power & PS

#### **Output Power Results**

Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5210	8.26	8.26	24.00	-15.74

#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5210	-9.64	-9.64	11.00	-20.64

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#### OUTPUT POWER AND PSD, Chain 0

enter Freq 5.2	50 DC 10000000 GHz PNO: Fe IEGaini		#Avg Type: RMS Avg Hold: 100/100	12:19:07 AM Jun 16, 2015 TRACE 1 5 6 TYPE A MAAAAA	Frequency	
dB/dlv Ref 2	set 11 dB 0.00 dBm			5.210 000 GHz ver 8.259 dBm	Auto Tune	
00 00 00	Q2	<b>0</b> 1			Center Fred 5.210000000 GH:	
00 00 00					Start Fred 5.148500000 GH:	
0.0					Stop Frec 5.271500000 GH:	
enter 5.21000 GHz Span 123.0 MHz Res BW 1.0 MHz #VBW 3.0 MHz <sup>4</sup> Sweep 20.00 ms (1001 pts)						
XR         MODE         TRC         SAL           I         N         I         I           2         N         I         I           3         I         I         I           4         5         I         I           5         I         I         I	X 5,210 000 GH 5,173 592 GH	z -15.297 dBm Ban	schon Function work d Power 81.74 MHz	FUNCTION VALUE 8.259 dB	Auto Mar FreqOffse 0 H:	

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# 8.6. 802.11a MODE IN THE 5.3 GHz BAND

# 8.6.1. 26 dB BANDWIDTH

### <u>LIMITS</u>

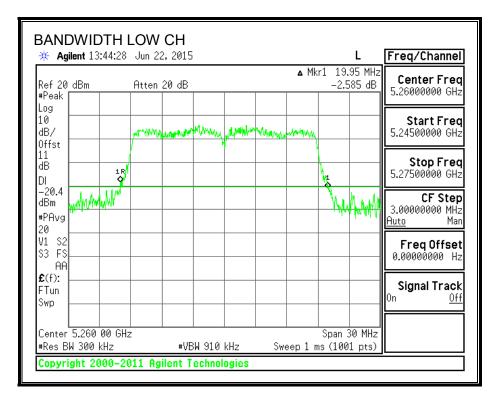
None; for reporting purposes only.

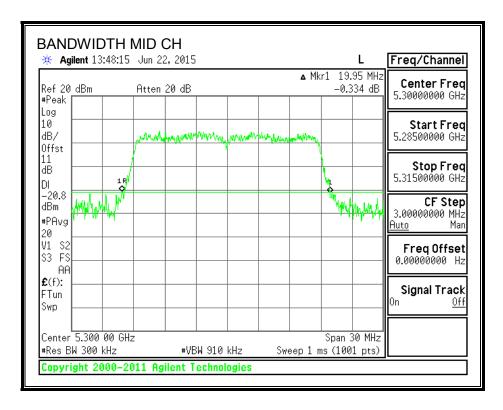
#### **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5260	19.95
Mid	5300	19.95
High	5320	20.27

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#### 26 dB BANDWIDTH





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Agilent 13:53:4	43 Jun 22, 2015	5		L	Freq/Channel
Ref 20 dBm #Peak	Atten 20 dB		▲ Mkr1	20.274 MHz 0.390 dB	Center Frec 5.32000000 GHz
Log 10 dB/	managamagan	american ana	mound		Start Frec 5.30450000 GHz
Offst 11 dB DI	18				Stop Frec 5.33550000 GHz
-20.6 dBm #PAvg 20	7			"Whypurfu	CF Step 3.10000000 MHz <u>Auto</u> Mar
V1 S2 S3 FS AA					Freq Offset 0.00000000 Hz
£(f): FTun Swp					<b>Signal Track</b> On <u>Off</u>
Center 5.320 000 #Res BW 300 kHz		 BW 910 kHz		Span 31 MHz (1001 pts)	

## 8.6.2. 99% BANDWIDTH

### **LIMITS**

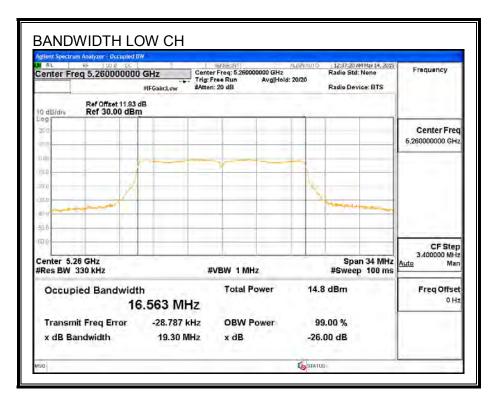
None; for reporting purposes only.

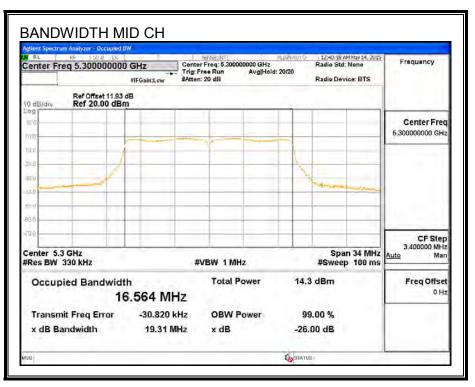
### <u>RESULTS</u>

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5260	16.5630
Mid	5300	16.5640
High	5320	16.5680

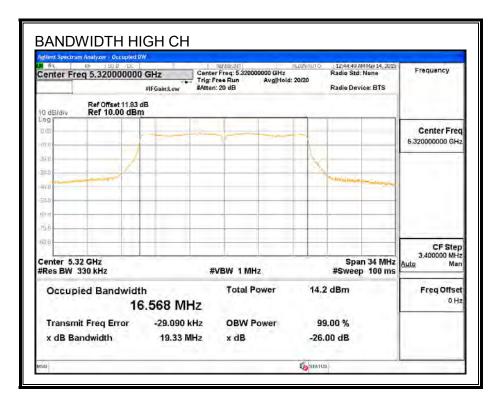
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### 99% BANDWIDTH





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# 8.6.3. OUTPUT POWER AND PSD

### <u>LIMITS</u>

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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#### **RESULTS**

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Power	PSD
		26 dB	Gain	Limit	Limit
		BW			
	(MHz)	(MHz)	(dBi)	(dBm)	(dBm)
Low	5260	19.95	4.00	24.00	11.00
Mid	5300	19.95	4.00	24.00	11.00
High	5320	20.27	4.00	24.00	11.00

#### Duty Cycle CF (dB) 0.00

Included in Calculations of Corr'd Power & PSD

#### **Output Power Results**

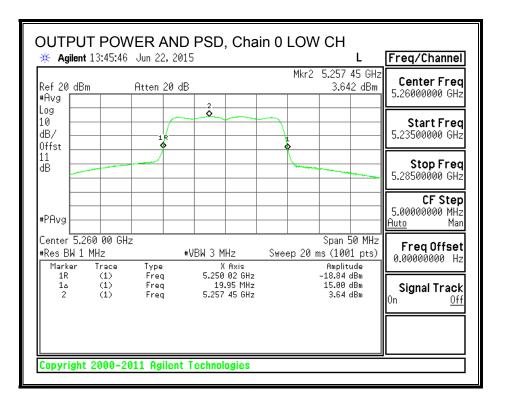
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	15.00	15.00	24.00	-9.00
Mid	5300	14.93	14.93	24.00	-9.07
High	5320	14.26	14.26	24.00	-9.74

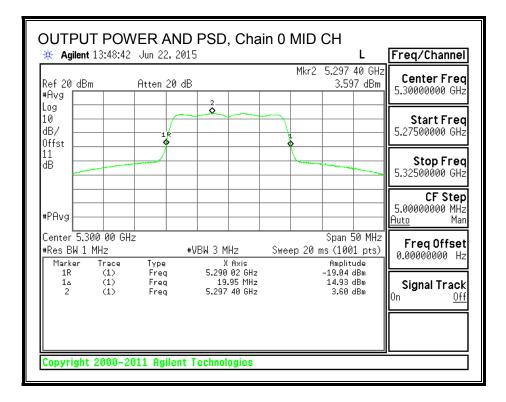
#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	3.64	3.64	11.00	-7.36
Mid	5300	3.60	3.60	11.00	-7.40
High	5320	3.08	3.08	11.00	-7.92

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### OUTPUT POWER AND PSD, Chain 0





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	03:25:03 PM May 07, 2018	ALIGN AUTO		SENSE-IN7	III, Temp A	Pectrum Analyzer - APv8.2(032118)	Reysight Spectr
Frequency	TRACE	Type: RMS old: 100/100		Trig: Free Run Atten: 20 dB	Hz PNO: Fast	Freq 5.320000000 (	Center Fre
Auto Tune	r2 5.322 90 GHz 3.078 dBm	Mkr			Sum.com	Ref Offset 11 dB Ref 20.00 dBm	0 dB/dlv
Center Freq 5.320000000 GHz			2	Å <sup>1</sup> Å <sup>2</sup>			.og
Start Freq 5.295000000 GHz					r		0.0
Stop Freq 5.345000000 GHz							20.0.
CF Step 5.000000 MHz Auto Man	Welder Hay Man State on way want	and the state				and the second sec	40.0
Freq Offset 0 Hz			-				60 M
Scale Type	Span 50.00 MHz					.32000 GHz	70,0

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# 8.7. 802.11n HT20 MODE IN THE 5.3 GHz BAND

# 8.7.1. 26 dB BANDWIDTH

### <u>LIMITS</u>

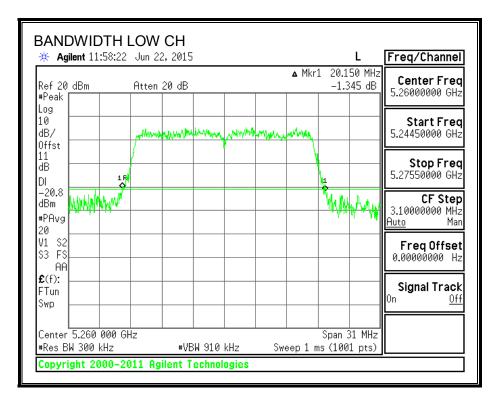
None; for reporting purposes only.

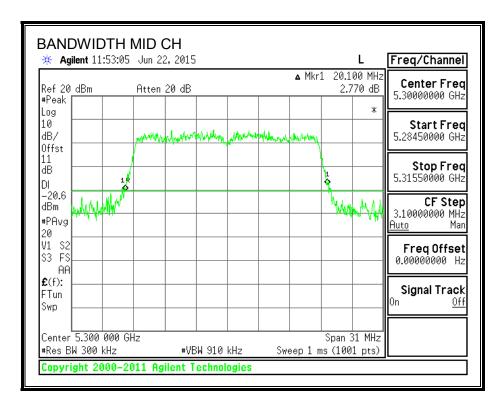
#### **RESULTS**

Channel	Frequency	26 dB Bandwidth		
	(MHz)	(MHz)		
Low	5260	20.15		
Mid	5300	20.10		
High	5320	19.98		

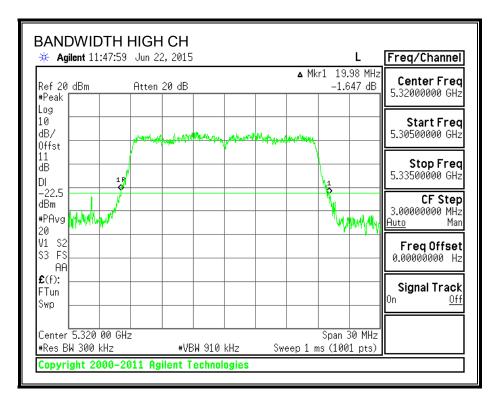
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#### 26 dB BANDWIDTH





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# 8.7.2. 99% BANDWIDTH

### **LIMITS**

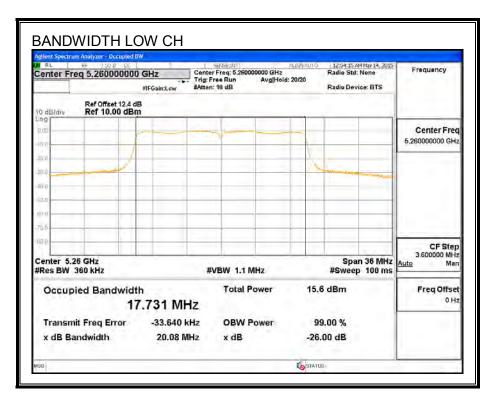
None; for reporting purposes only.

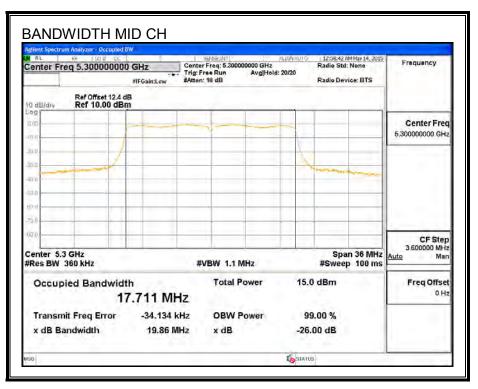
### **RESULTS**

Channel	Frequency	99% Bandwidth		
	(MHz)	(MHz)		
Low	5260	17.7310		
Mid	5300	17.7110		
High	5320	17.7010		

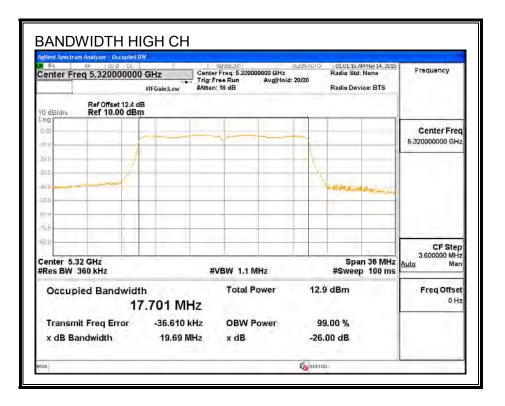
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### 99% BANDWIDTH





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# 8.7.3. OUTPUT POWER AND PSD

### <u>LIMITS</u>

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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### **RESULTS**

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Power	PSD
		26 dB	Gain	Limit	Limit
		BW			
	(MHz)	(MHz)	(dBi)	(dBm)	(dBm)
Low	5260	20.15	4.00	24.00	11.00
Mid	5300	20.10	4.00	24.00	11.00
High	5320	19.98	4.00	24.00	11.00

0.00

Duty Cycle CF (dB)

Included in Calculations of Corr'd Power & PSD

#### **Output Power Results**

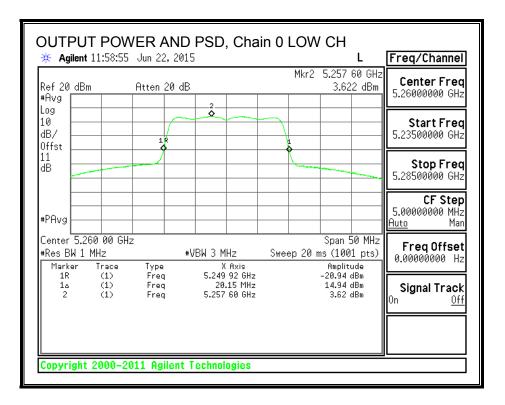
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	14.94	14.94	24.00	-9.06
Mid	5300	14.83	14.83	24.00	-9.17
High	5320	13.17	13.17	24.00	-10.83

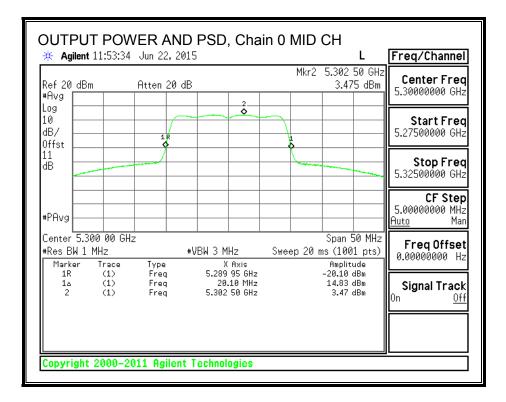
### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	3.62	3.62	11.00	-7.38
Mid	5300	3.47	3.47	11.00	-7.53
High	5320	1.82	1.82	11.00	-9.18

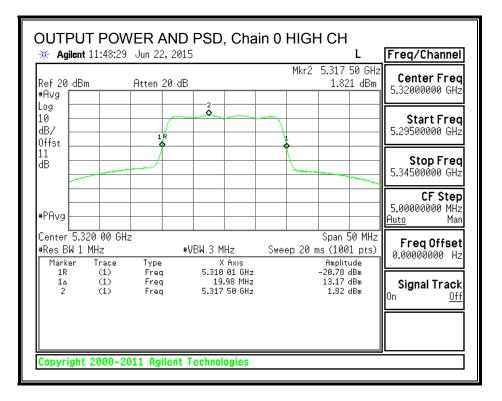
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## OUTPUT POWER AND PSD, Chain 0





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# 8.8. 802.11n HT40 MODE IN THE 5.3 GHz BAND

## 8.8.1. 26 dB BANDWIDTH

## <u>LIMITS</u>

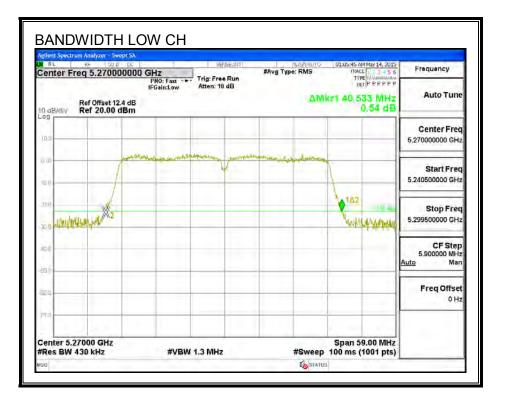
None; for reporting purposes only.

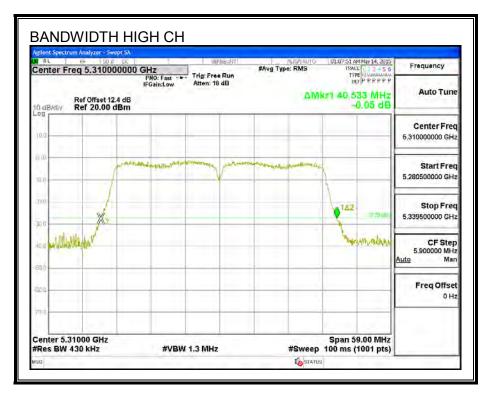
### **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5270	40.53
High	5310	40.53

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#### 26 dB BANDWIDTH





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## 8.8.2. 99% BANDWIDTH

## **LIMITS**

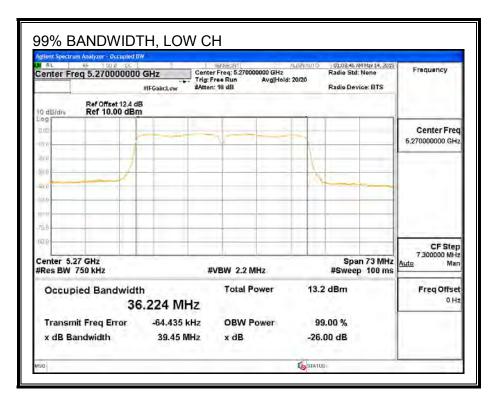
None; for reporting purposes only.

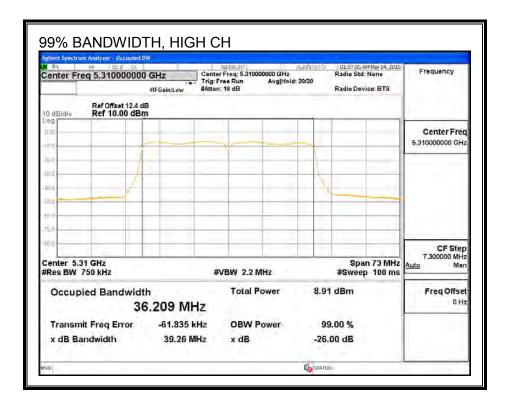
## <u>RESULTS</u>

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5270	36.2240
High	5310	36.2090

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## 99% BANDWIDTH





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## 8.8.3. OUTPUT POWER AND PSD

## LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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## **RESULTS**

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Power	PSD
		26 dB	Gain	Limit	Limit
		BW			
		(8411-)		(al Dura)	
	(MHz)	(MHz)	(dBi)	(dBm)	(dBm)
Low	(MHZ) 5270	40.53	4.00	24.00	( <b>dBm)</b> 11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
--------------------	------	--

#### Output Power Results

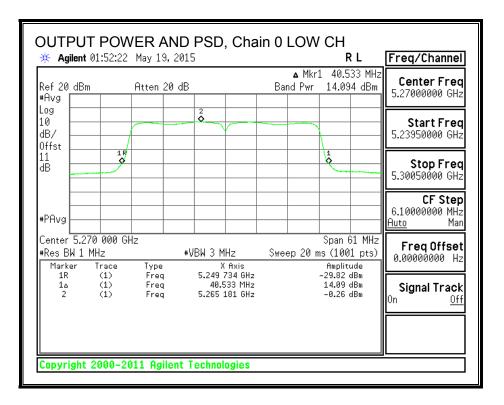
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5270	14.09	14.09	24.00	-9.91
High	5310	9.95	9.95	24.00	-14.05

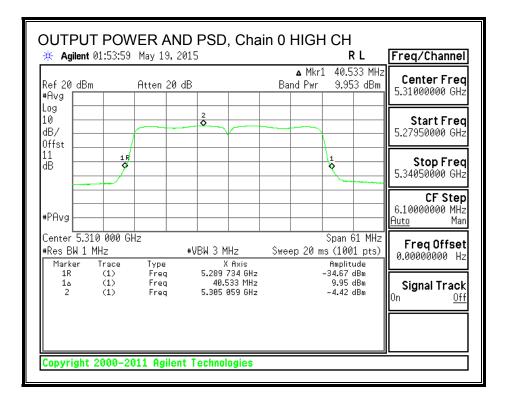
#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	(MHZ) 5270	-0.26	( <b>dBm</b> ) -0.26	( <b>dBm)</b> 11.00	( <b>dB</b> ) -11.26

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## OUTPUT POWER AND PSD, Chain 0





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# 8.9. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

## 8.9.1. 26 dB BANDWIDTH

## <u>LIMITS</u>

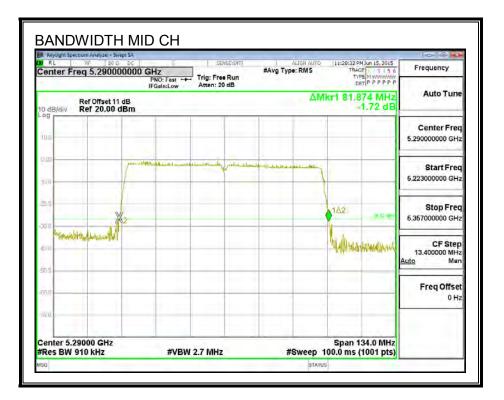
None; for reporting purposes only.

### **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Mid	5290	81.87

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#### 26 dB BANDWIDTH



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## 8.9.2. 99% BANDWIDTH

### **LIMITS**

None; for reporting purposes only.

## **RESULTS**

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5290	76.2200

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## 99% BANDWIDTH

Center Fre	ar seo pc aq 5.290000000	Trig: F	SENSE:UNT r Freq: 5.290000000 GHz Free Run Avg Hol n: 20 dB	Radi d: 20/20	27:38 PMJun 15, 2015 lo Std: None lo Device: BTS	Frequency
10 dB/dlv	Ref 10.00 dBn	n				
10.0 10.0 .πη 						Center Freq 5.29000000 GHz
Center 5.2 #Res BW		#	VBW 5 MHz		Span 152 MHz weep 100 ms	CF Step 15.200000 MHz
Transm	led Bandwidt 76 it Freq Error ndwidth	h 5.220 MHz -170.26 kHz 80.78 MHz	Total Power OBW Power x dB	8.38 dBi 99.00 <sup>d</sup> -26.00 d	m %	<u>Auto</u> Man Freq Offset 0 Hz

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## 8.9.3. OUTPUT POWER AND PSD

#### <u>LIMITS</u>

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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## **RESULTS**

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Power	PSD
		26 dB	Gain	Limit	Limit
		BW			
	(MHz)	(MHz)	(dBi)	(dBm)	(dBm)
Mid	5290	81.87	4.00	24.00	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
--------------------	------	--

### **Output Power Results**

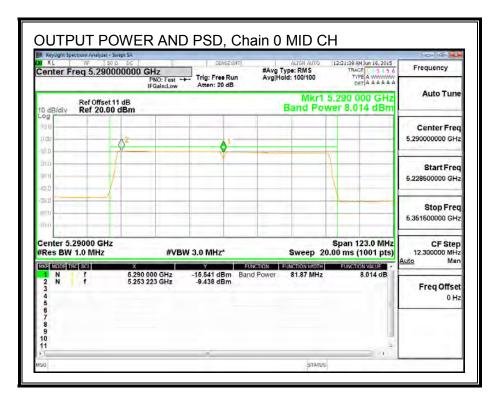
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5290	8.01	8.01	24.00	-15.99

#### **PPSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5290	-9.44	-9.44	11.00	-20.44

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## OUTPUT POWER AND PSD, Chain 0



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# 8.10. 802.11a MODE IN THE 5.6 GHz BAND

## 8.10.1. 26 dB BANDWIDTH

### <u>LIMITS</u>

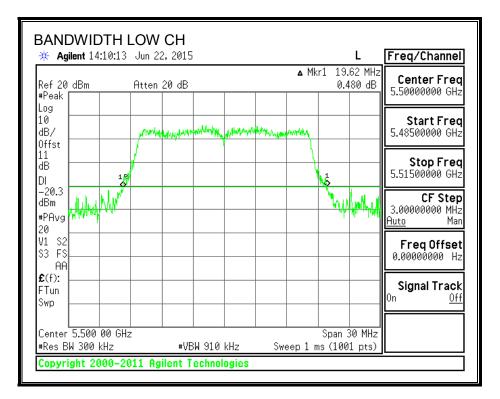
None; for reporting purposes only.

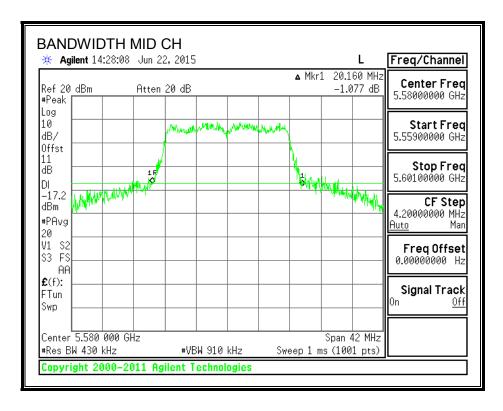
### **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5500	19.62
Mid	5580	20.16
High	5700	19.41
144 5720		20.64

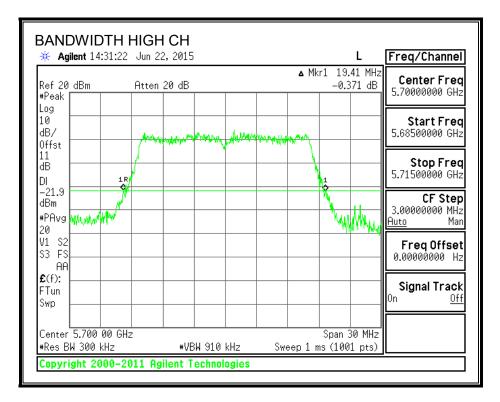
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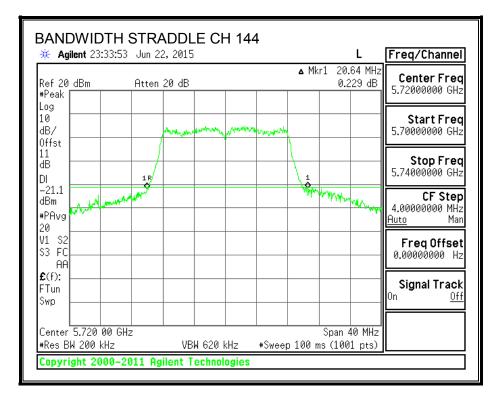
#### 26 dB BANDWIDTH





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## 8.10.2. 99% BANDWIDTH

## **LIMITS**

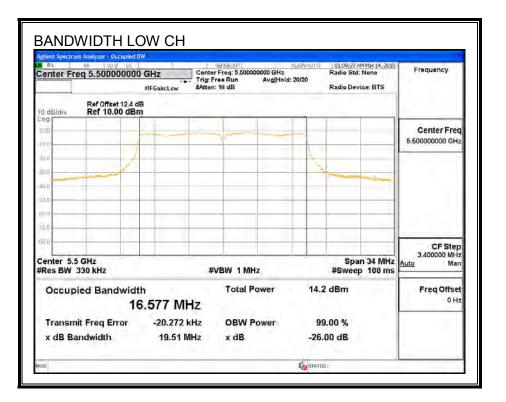
None; for reporting purposes only.

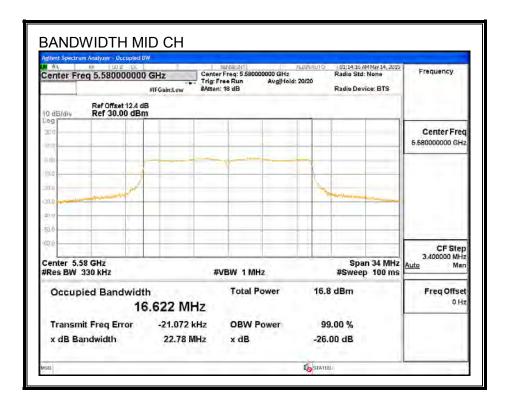
### <u>RESULTS</u>

Channel	Frequency	99% Bandwidth		
	(MHz)	(MHz)		
Low	5500	16.5770		
Mid	5600	16.6220		
High	5700	16.5570		
144	5720	16.7149		

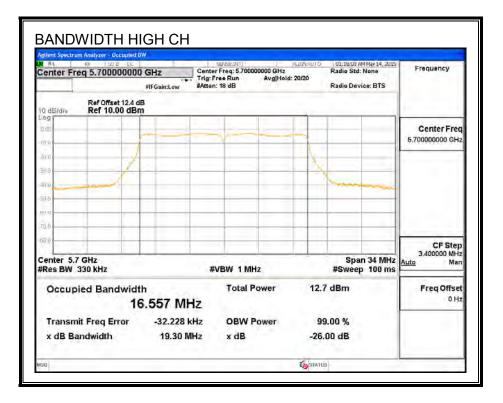
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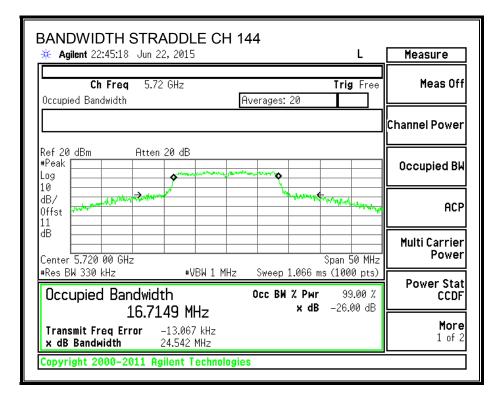
## 99% BANDWIDTH





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# 8.10.3. OUTPUT POWER AND PSD

## LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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## **RESULTS**

Channel	Frequency	Min	Directional	Power	PSD
		26 dB	Gain	Limit	Limit
		BW			
	(MHz)	(MHz)	(dBi)	(dBm)	(dBm)
Low	5500	19.62	4.00	23.93	11.00
Mid	5600	20.16	4.00	24.00	11.00
High	5700	19.41	4.00	23.88	11.00

Included in Calculations of Corr'd Power & PSD

#### Bandwidth, Antenna Gain, and Limits

Duty Cycle CF (dB)

Output Power Results								
Channel	Frequency	Chain 0	Total	Power	Power			
		Meas	Corr'd	Limit	Margin			
		Power	Power					
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)			
Low	5500	14.67	14.67	23.93	-9.26			
Mid	5600	16.43	16.43	24.00	-7.57			
High	5700	12.51	12.51	23.88	-11.37			

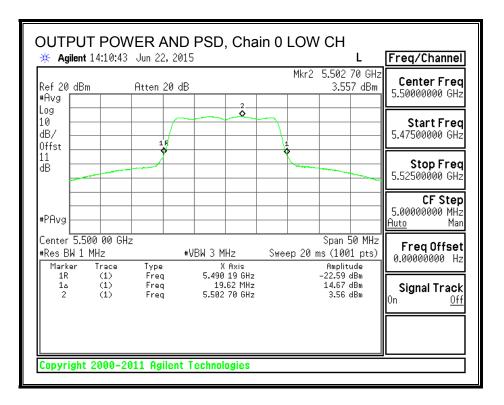
0.00

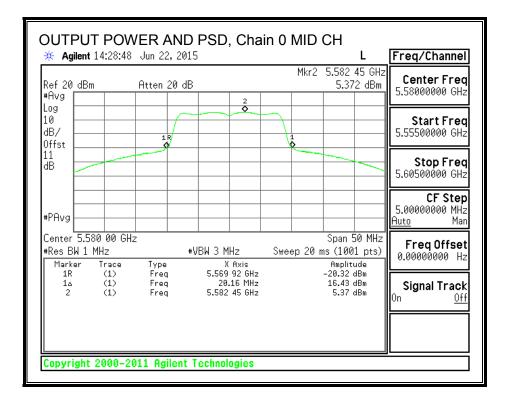
#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5500	3.56	3.56	11.00	-7.44
Mid	5600	5.37	5.37	11.00	-5.63
High	5700	1.43	1.43	11.00	-9.57

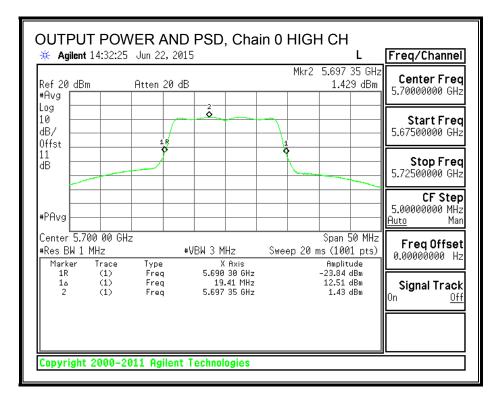
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## OUTPUT POWER AND PSD, Chain 0





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### STRADDLE CHANNEL 144 RESULTS

#### UNII-2C BAND

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Directional	Power	PSD
		26 dB	Gain	Gain	Limit	Limit
		BW	for Power	for PSD		
	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
144	5720	20.64	4.00	4.00	24.00	11.00

Duty Cycle CF (dB) 0.00 Incl	uded in Calculations of Corr'd Power & PSD
------------------------------	--

#### **Output Power Results**

Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	13.64	13.64	24.00	-10.36

#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	3.49	3.49	11.00	-7.51

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OUTPUT PC	OUTPUT POWER AND PSD, Chain 0 CH 144 UNII-2C					
🔆 🄆 Agilent 23:34:	:45 Jun 22, 201	15		L	Freq/Channel	
Ref 20 dBm #Avg	Atten 20 dE	3	Mkr2	5.722 20 GHz 3.494 dBm	Center Freq 5.72000000 GHz	
Log 10 dB/ 0ffst			-		<b>Start Freq</b> 5.69500000 GHz	
11 dB	1R				<b>Stop Freq</b> 5.74500000 GHz	
#PAvg					<b>CF Step</b> 5.0000000 MHz <u>Auto</u> Man	
Start 5.695 00 G #Res BW 1 MHz Marker Trace	4	¥VBW 3 MHz X Axis		5.745 00 GHz ns (1001 pts) Amplitude	FreqOffset 0.00000000 Hz	
1R (1) 1Δ (1) 2 (1)		5.705 23 GHz 19.77 MHz 5.722 20 GHz		-33.53 dBm 13.64 dBm 3.49 dBm	<b>Signal Track</b> On <u>Off</u>	
Copyright 2000	2011 Onilont	Technologies				
Cupyright 2000	-2011 Hgnent	rechnologies				

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## UNII-3 BAND

#### Antenna Gain and Limit

Channel	Frequency	Directional	Power	PSD
		Gain	Limit	Limit
	(MHz)	(dBi)	(dBm)	(dBm)
144	5720	4.00	30.00	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
--------------------	------	--

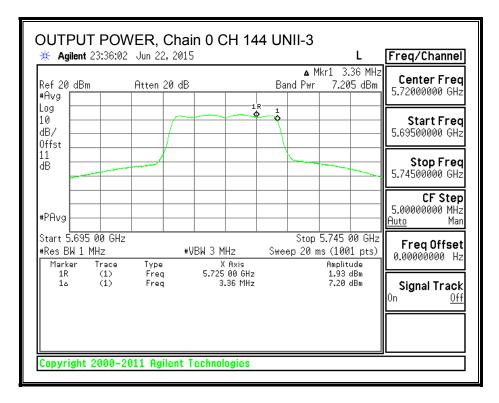
#### **Output Power Results**

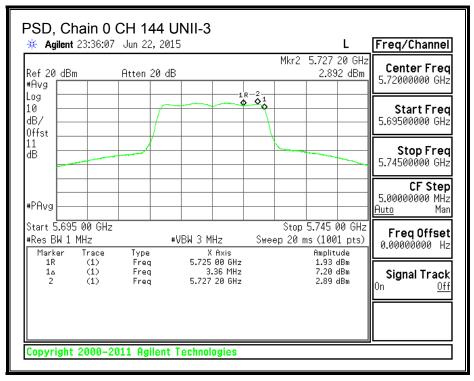
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	7.20	7.20	30.00	-22.80

#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	2.89	2.89	30.00	-27.11

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## 8.10.4. 6 dB BANDWIDTH

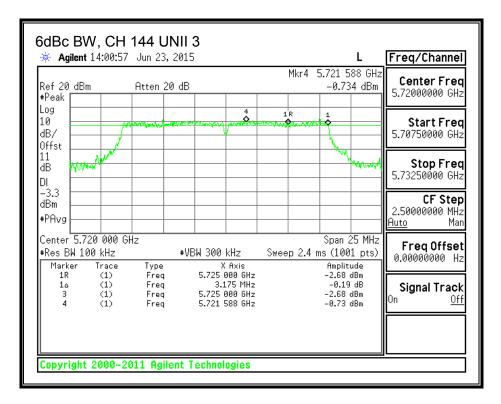
## LIMITS

FCC §15.407 (e)

IC RSS-247 (6.2.4) (1)

The minimum 6 dB bandwidth shall be at least 500 kHz.

## **RESULTS**



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# 8.11. 802.11n HT20 MODE IN THE 5.6 GHz BAND

## 8.11.1. 26 dB BANDWIDTH

## **LIMITS**

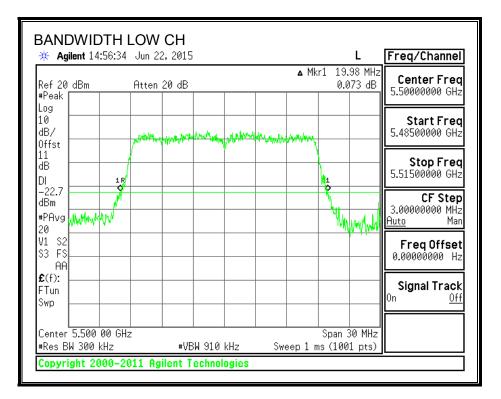
None; for reporting purposes only.

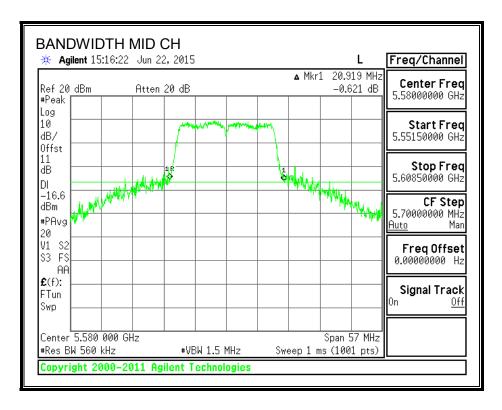
### <u>RESULTS</u>

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5500	19.98
Mid	5600	20.92
High	5700	19.74
144	5720	20.34

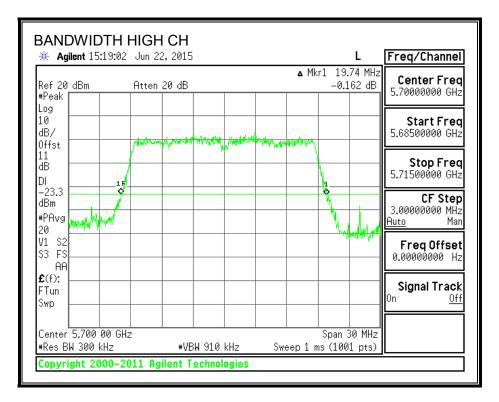
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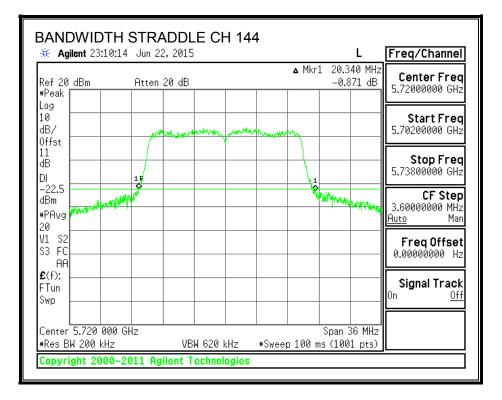
#### 26 dB BANDWIDTH





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## 8.11.2. 99% BANDWIDTH

## **LIMITS**

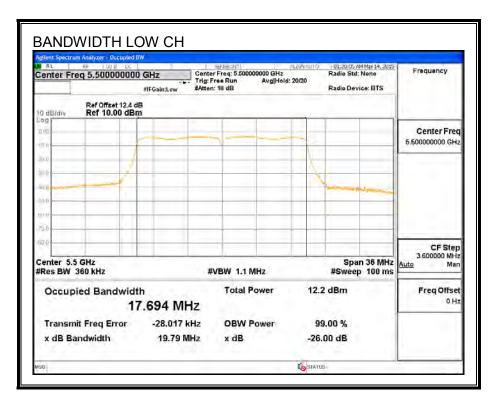
None; for reporting purposes only.

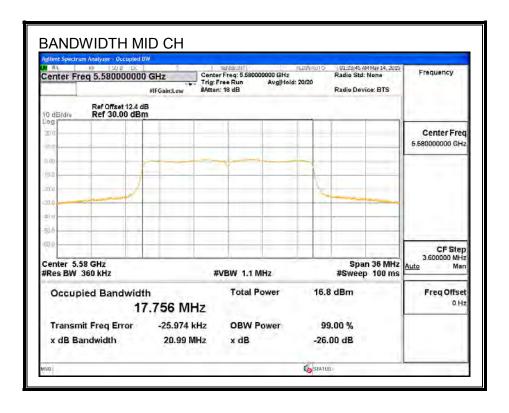
## <u>RESULTS</u>

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5500	17.6940
Mid	5600	17.7560
High	5700	17.7020
144	5720	17.9005

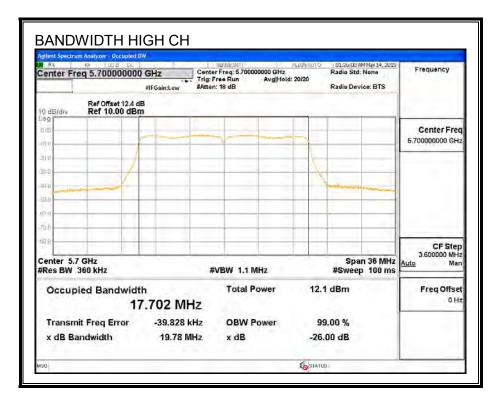
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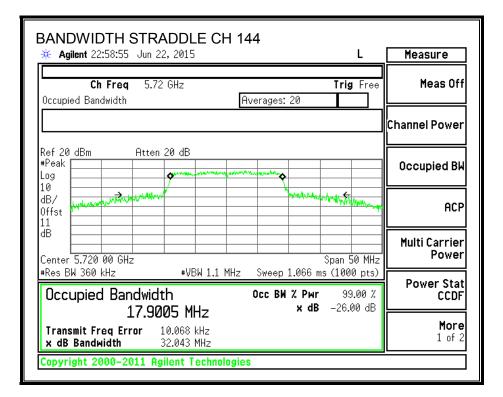
## 99% BANDWIDTH





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# 8.11.3. OUTPUT POWER AND PSD

# LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

# **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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# **RESULTS**

Channel	Frequency	Min	Directional	Power	PSD
		26 dB	Gain	Limit	Limit
		BW			
	(MHz)	(MHz)	(dBi)	(dBm)	(dBm)
Low	5500	19.98	4.00	24.00	11.00
Mid	5600	20.92	4.00	24.00	11.00
High	5700	19.74	4.00	23.95	11.00

Included in Calculations of Corr'd Power & PSD

0.00

#### Bandwidth, Antenna Gain, and Limits

Output Power Results

Duty Cycle CF (dB)

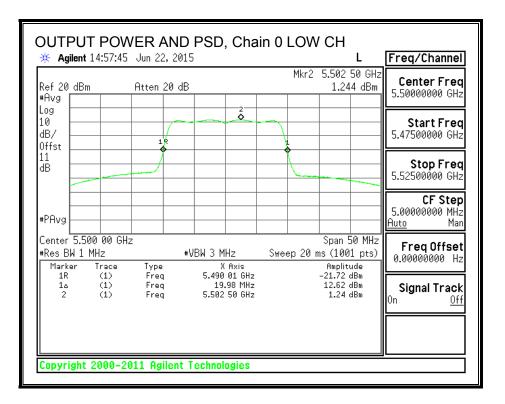
Channel	Frequency	Chain 0	Total	Power	Power	
		Meas	Corr'd	Limit	Margin	
		Power	Power			
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)	
Low	5500	12.62	12.62	24.00	-11.38	
Mid	5600	16.44	16.44	24.00	-7.56	
High	5700	11.40	11.40	23.95	-12.55	

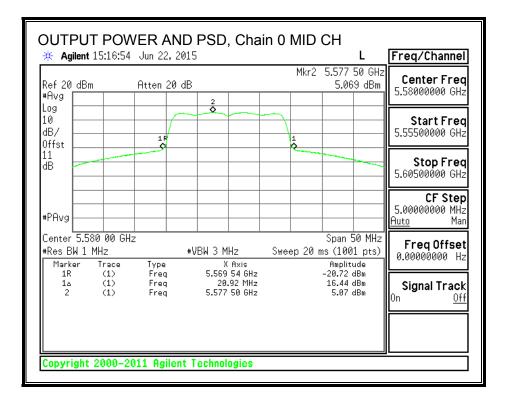
#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5500	1.24	1.24	11.00	-9.76
Mid	5600	5.07	5.07	11.00	-5.93
High	5700	0.03	0.03	11.00	-10.97

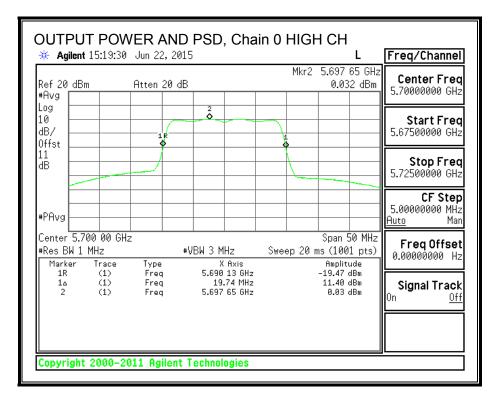
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# OUTPUT POWER AND PSD, Chain 0





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# STRADDLE CHANNEL 144 RESULTS

#### UNII-2C BAND

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Directional	Power	PSD
		26 dB	Gain	Gain	Limit	Limit
		BW	for Power	for PSD		
	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
144	5720	20.34	4.00	4.00	24.00	11.00

Duty Cycle CF (dB) 0.00	Included in Calculations of Corr'd Power & PSD
-------------------------	--

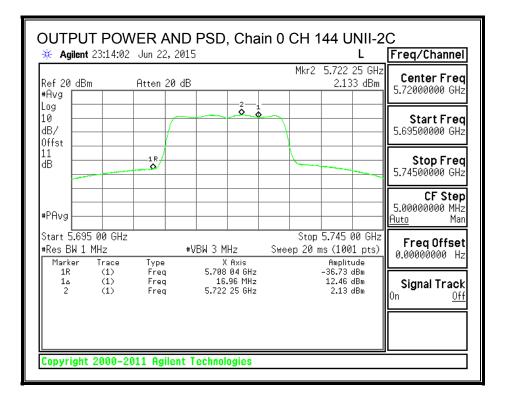
#### **Output Power Results**

Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	12.46	12.46	24.00	-11.54

#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	2.13	2.13	11.00	-8.87

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# UNII-3 BAND

#### Antenna Gain and Limit

Channel	Frequency	Directional	Power	PSD
		Gain	Limit	Limit
	(MHz)	(dBi)	(dBm)	(dBm)
144	5720	4.00	30.00	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
--------------------	------	--

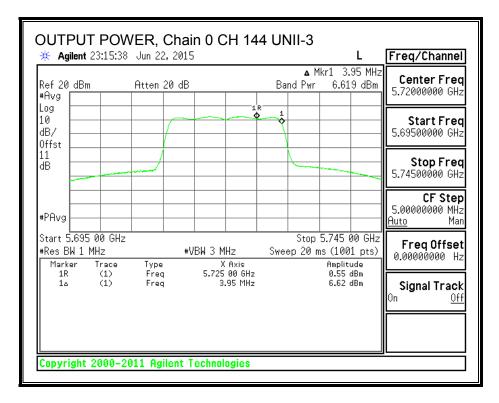
# **Output Power Results**

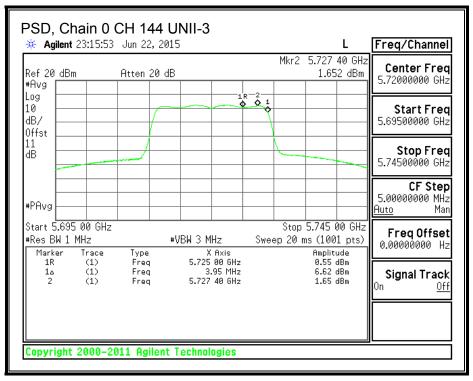
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	6.62	6.62	30.00	-23.38

#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	1.65	1.65	30.00	-28.35

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# 8.11.4. 6 dB BANDWIDTH

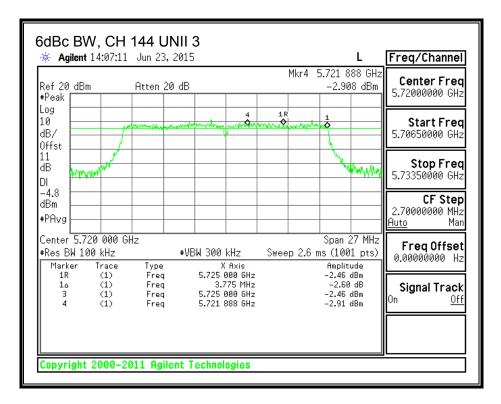
# LIMITS

FCC §15.407 (e)

IC RSS-247 (6.2.4) (1)

The minimum 6 dB bandwidth shall be at least 500 kHz.

# **RESULTS**



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# 8.12. 802.11n HT40 MODE IN THE 5.6 GHz BAND

# 8.12.1. 26 dB BANDWIDTH

# **LIMITS**

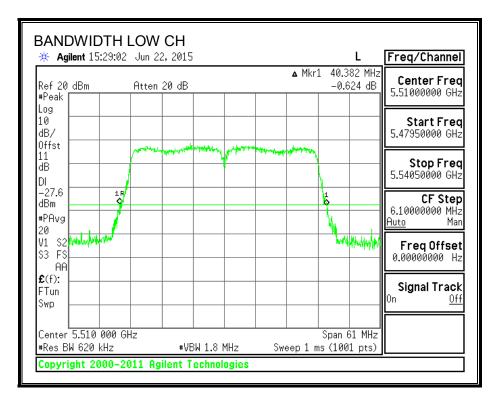
None; for reporting purposes only.

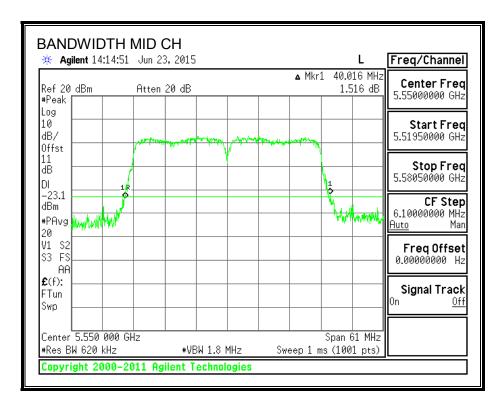
# **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5510	40.38
Mid	5550	40.02
High	5670	40.57
142	5710	41.41

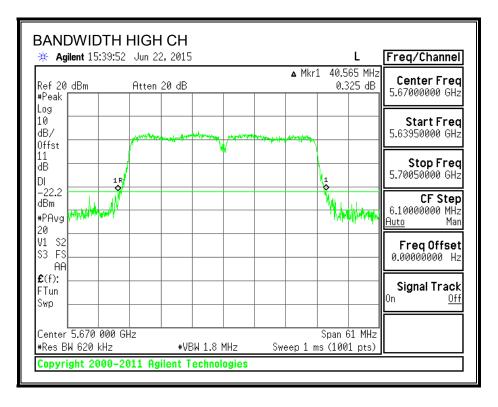
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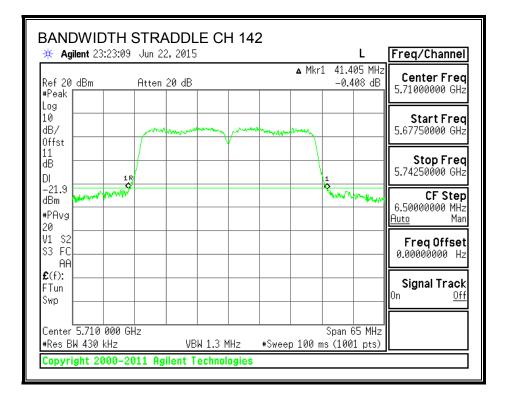
### 26 dB BANDWIDTH





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# 8.12.2. 99% BANDWIDTH

# **LIMITS**

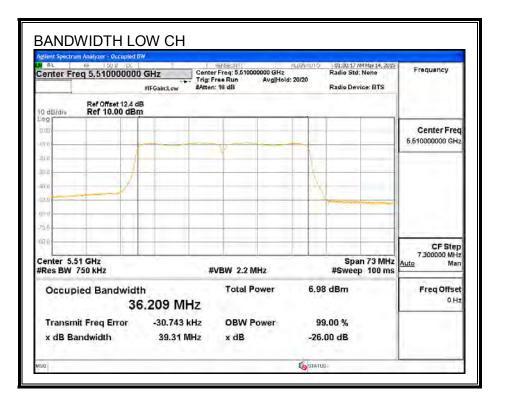
None; for reporting purposes only.

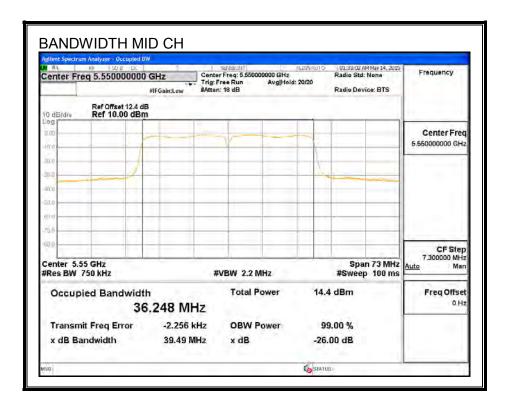
# <u>RESULTS</u>

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5510	36.2090
Mid	5590	36.2480
High	5670	36.2150
142	5710	36.2297

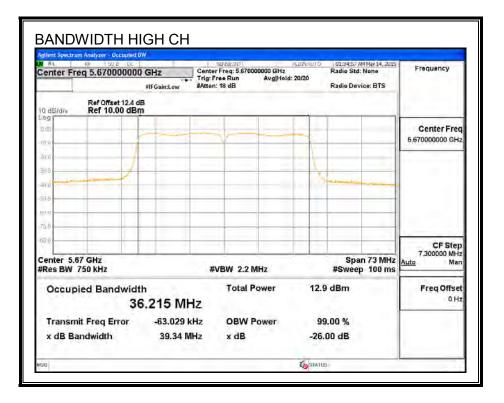
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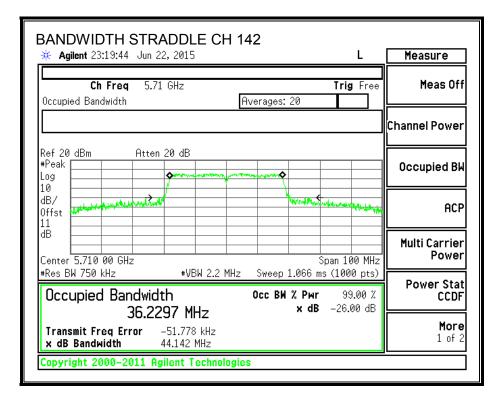
# 99% BANDWIDTH





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# 8.12.3. OUTPUT POWER AND PSD

# LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

# DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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# **RESULTS**

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Power	PSD
		26 dB	Gain	Limit	Limit
		BW			
	(MHz)	(MHz)	(dBi)	(dBm)	(dBm)
Low	5510	40.38	4.00	24.00	11.00
Mid	5550	40.02	4.00	24.00	11.00
High	5670	40.57	4.00	24.00	11.00

# Duty Cycle CF (dB)0.00Included in Calculations of Corr'd Power & PSD

# **Output Power Results**

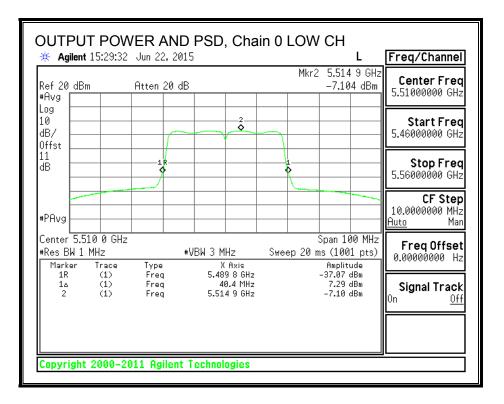
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5510	7.29	7.29	24.00	-16.71
Mid	5550	16.36	16.36	24.00	-7.64
High	5670	12.52	12.52	24.00	-11.48

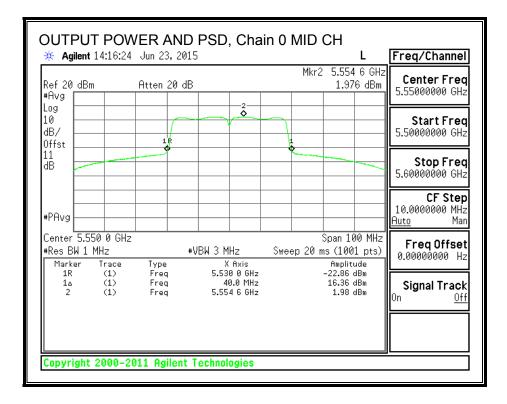
# **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5510	-7.10	-7.10	11.00	-18.10
Mid	5550	1.98	1.98	11.00	-9.02
High	5670	-1.78	-1.78	11.00	-12.78

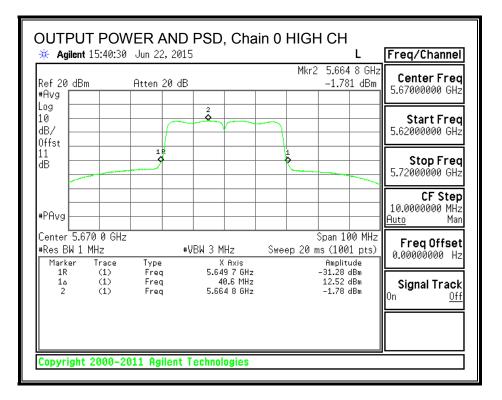
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# OUTPUT POWER AND PSD, Chain 0





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# STRADDLE CH 142 RESULTS

#### UNII-2C BAND

## Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Directional	Power	PSD
		26 dB	Gain	Gain	Limit	Limit
		BW	for Power	for PSD		
	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
142	5710	41.41	4.00	4.00	24.00	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
--------------------	------	--

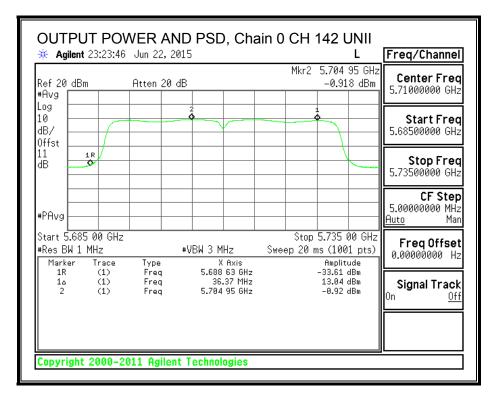
#### **Output Power Results**

Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
142	5710	13.04	13.04	24.00	-10.96

## **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
142	5710	-0.92	-0.92	11.00	-11.92

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# <u>UNII-3 BAND</u>

#### Antenna Gain and Limit

Channel	Frequency	Directional	Power	PSD
		Gain	Limit	Limit
	(MHz)	(dBi)	(dBm)	(dBm)
142	5710	4.00	30.00	30.00

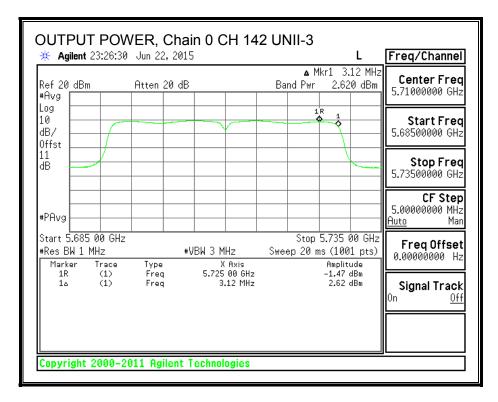
# **Output Power Results**

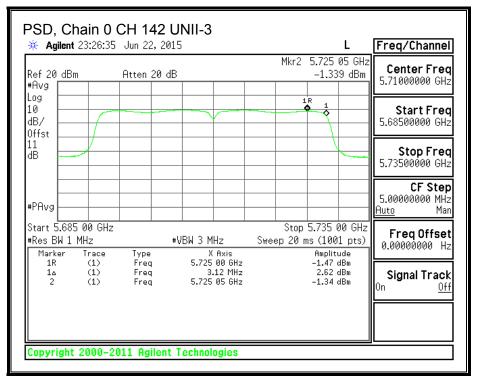
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
142	5710	2.62	2.62	30.00	-27.38

## **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
142	5710	-1.34	-1.34	30.00	-31.34

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# 8.12.4. 6 dB BANDWIDTH

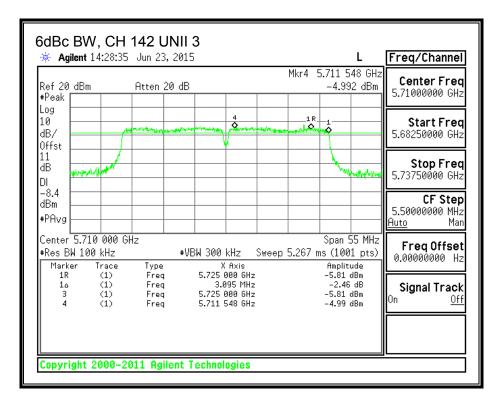
# LIMITS

FCC §15.407 (e)

IC RSS-247 (6.2.4) (1)

The minimum 6 dB bandwidth shall be at least 500 kHz.

# **RESULTS**



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# 8.13. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

# 8.13.1. 26 dB BANDWIDTH

## **LIMITS**

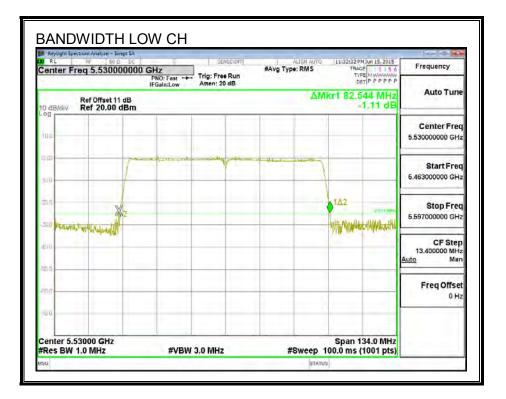
None; for reporting purposes only.

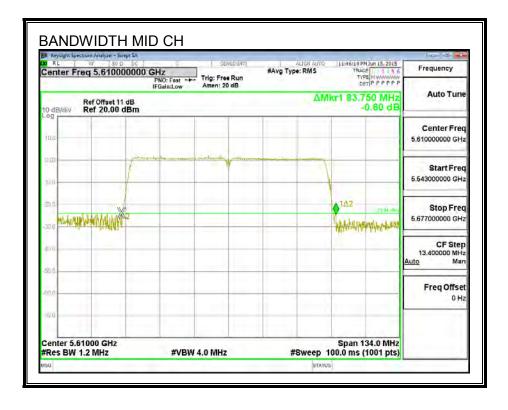
# **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5530	82.54
Mid	5610	83.75
High	5690	81.55

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#### 26 dB BANDWIDTH





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🌾 Agilent 17:19	9:10 Jun 22, 201	.5		L	Freq/Channel
Ref 20 dBm Peak	Atten 20 dE	3	▲ Mkr1	81.549 MHz -0.364 dB	Center Freq 5.69000000 GHz
.og .0 HB/	Ministration in the second sec		HANDRAN KANANA KANANA		Start Frec 5.62850000 GHz
1 IB DI	1				Stop Frec 5.75150000 GHz
-24.2 JBm PAvg				s V///w/WW/W	<b>CF Step</b> 12.3000000 MHz <u>Auto</u> Mar
20 /1 S2 S3 FS				<u> </u>	Freq Offset 0.00000000 Hz
C(f): Tun Swp					<b>Signal Track</b> On <u>Off</u>
Center 5.690 00 Res BW 1.2 MHz		VBW 4 MHz	Sp Sweep 1 ms	an 123 MHz (1001 nts)	

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# 8.13.2. 99% BANDWIDTH

# **LIMITS**

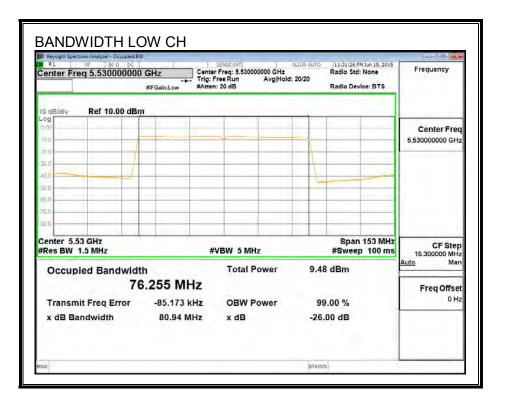
None; for reporting purposes only.

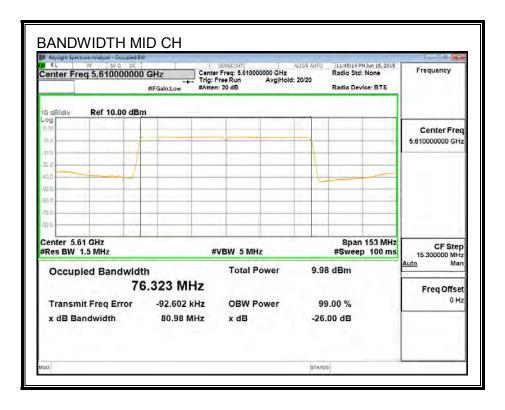
# <u>RESULTS</u>

Channel	Channel Frequency 99% Bandwi					
	(MHz)	(MHz)				
Low	5530	76.2550				
Mid	5610	76.3230				
High	5690	76.5877				

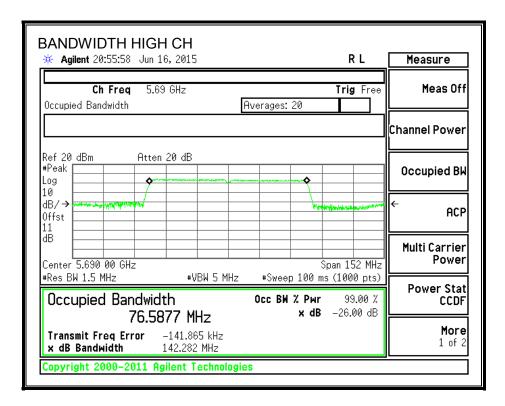
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# 99% BANDWIDTH





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# 8.13.3. OUTPUT POWER AND PSD

# LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

# **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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# RESULTS

Channel	Frequency	Min	Directional	Power	PSD
		26 dB	Gain	Limit	Limit
		BW			
	(MHz)	(MHz)	(dBi)	(dBm)	(dBm)
Low	5530	82.54	4.00	24.00	11.00
Mid	5610	83.75	4.00	24.00	11.00

#### Bandwidth, Antenna Gain, and Limits

Duty Cycle CF (dB) 0.00 Included in Calculations of Corr'd Power & PSD

#### **Output Power Results**

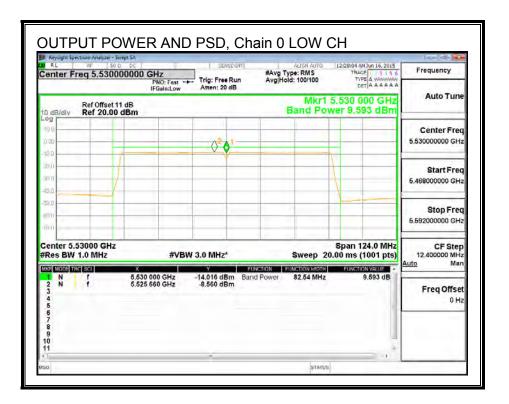
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5530	9.59	9.59	24.00	-14.41
Mid	5610	9.69	9.69	24.00	-14.31

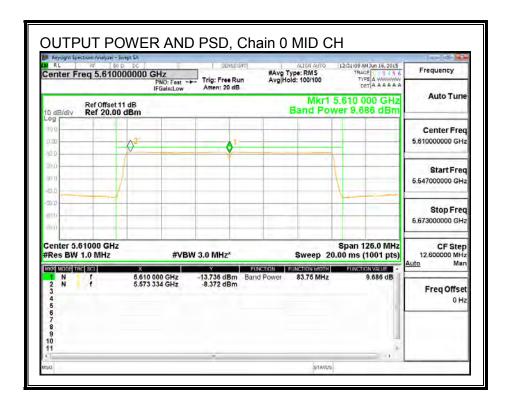
#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	<b>(MHz)</b> 5530	(dBm) -8.56	(dBm) -8.56	(dBm) 11.00	( <b>dB)</b> -19.56

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# OUTPUT POWER AND PSD, Chain 0





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# **STRADDLE CHANNEL 138 RESULTS**

#### UNII-2C BAND

## Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Directional	Power	PSD
		26 dB	Gain	Gain	Limit	Limit
		BW	for Power	for PSD		
	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
138	5690	81.55	4.00	4.00	24.00	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
--------------------	------	--

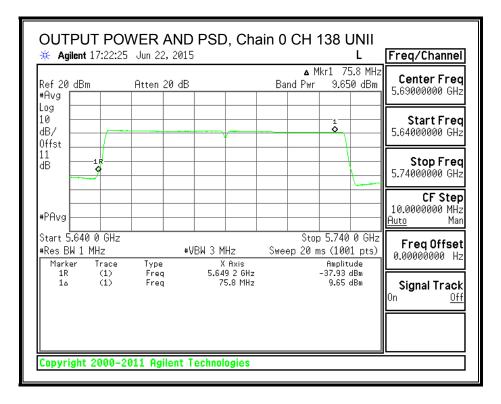
# **Output Power Results**

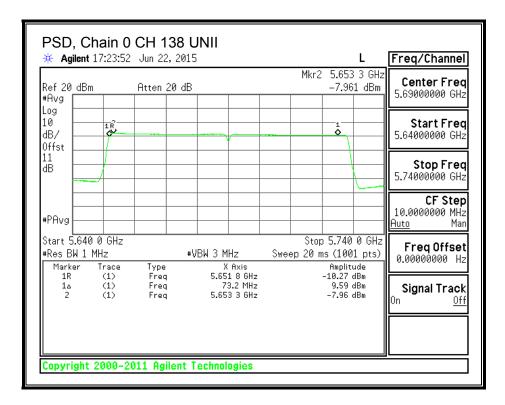
Channel	Frequency	Chain 0	Total	Power	Power
		Meas Corr'd		Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
138	5690	9.65	9.65	24.00	-14.35

# **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
138	5690	-7.96	-7.96	11.00	-18.96

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# UNII-3 BAND

## Antenna Gain and Limit

Channel	Frequency	Directional Gain	Power Limit	PSD Limit
	(MHz)	(dBi)	(dBm)	(dBm)
138	5690	4.00	30.00	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD

## **Output Power Results**

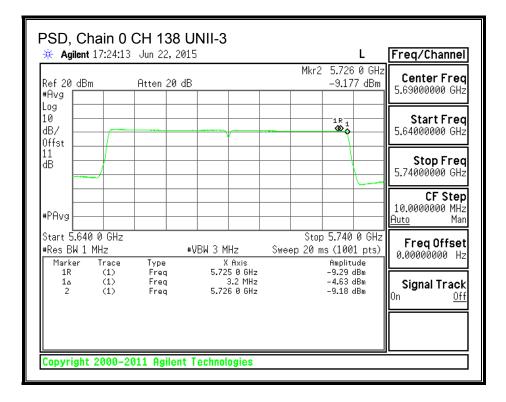
Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
138	5690	-4.63	-4.63	30.00	-34.63

## **PSD Results**

	_				
Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		DOD	DOD		U U
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
138	5690	-9.18	-9.18	30.00	-39.18

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Kef 20 dB		Jun 22, 201		<b>∆</b> Band Pwr		Center Fred
Avg 🗌			,		-4.020 abiii	5.69000000 GH:
.og .0 HB/ )ffst			+			Start Fred 5.64000000 GHz
II IB	_					Stop Fred 5.74000000 GH:
PAvg -						CF Step 10.0000000 MH: <u>Auto</u> Ma
Start 5.64 Res BW 1	MHz		VBW 3 MHz		o 5.740 0 GHz ns (1001 pts)	Freq Offse
	Trace (1) (1)	Type Freq Freq	X Axis 5.725 0 GHz 3.2 MHz		Amplitude -9.29 dBm -4.63 dBm	Signal Tracl



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# 8.13.4. 6 dB BANDWIDTH

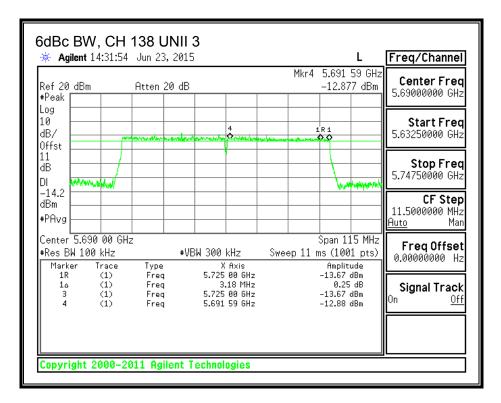
### LIMITS

FCC §15.407 (e)

IC RSS-247 (6.2.4) (1)

The minimum 6 dB bandwidth shall be at least 500 kHz.

### **RESULTS**



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# 8.14. 802.11a MODE IN THE 5.8 GHz BAND

## 8.14.1. 6 dB BANDWIDTH

#### **LIMITS**

FCC §15.407 (e)

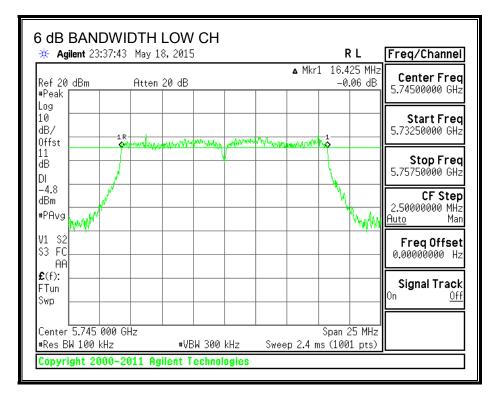
The minimum 6 dB bandwidth shall be at least 500 kHz.

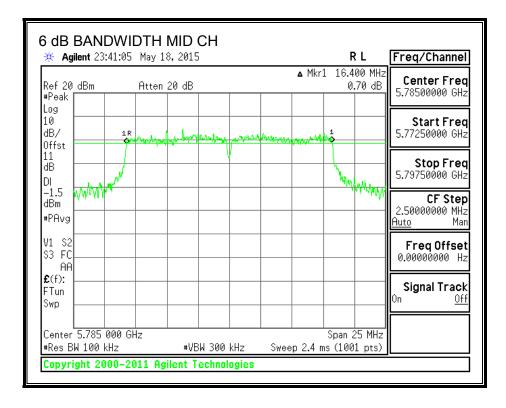
#### **RESULTS**

Channel	Frequency	6 dB Bandwidth	Minimum Limit
	(MHz)	(MHz)	(MHz)
Low	5745	16.4250	0.5
Mid	5785	16.4000	0.5
High	5825	16.4000	0.5

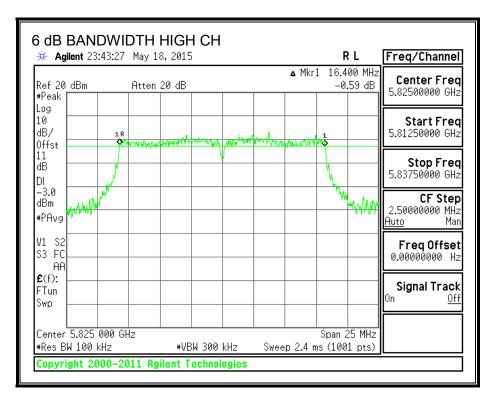
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### 6 dB BANDWIDTH





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# 8.14.2. 26 dB BANDWIDTH

### <u>LIMITS</u>

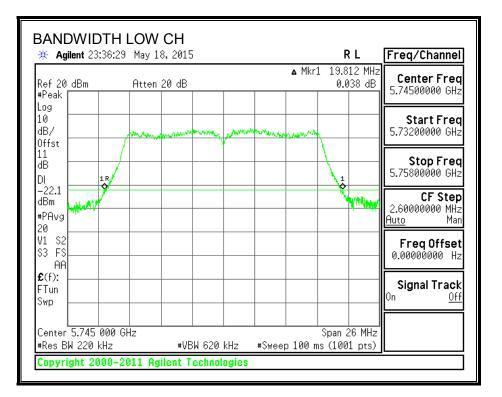
None; for reporting purposes only.

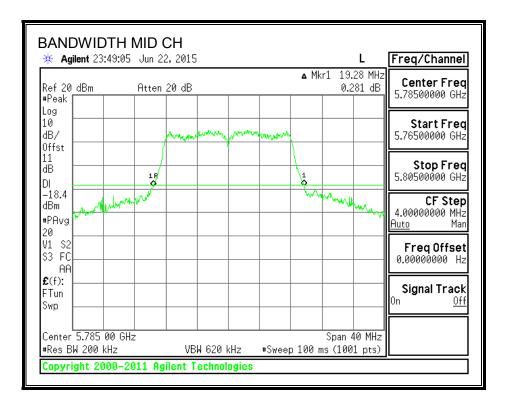
### **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5745	19.81
Mid	5785	19.28
High	5825	20.86

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#### 26 dB BANDWIDTH





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BANDWIDTI	<b>H HIGH CH</b> 27 Jun 22, 201			L	Freq/Channel
Ref 20 dBm #Peak	Atten 20 di	3	▲ Mkr:	1 20.864 MHz 0.241 dB	Center Freq 5.82500000 GHz
_og L0 dB/	1 MANHA ANN	menumum	Manadarian		Start Freq 5.80900000 GHz
	1R.				<b>Stop Freq</b> 5.84100000 GHz
-19.4 JBm ////////////////////////////////////	<b>f<sup>**</sup></b>			"hillin hind and high	<b>CF Step</b> 3.20000000 MHz <u>Auto</u> Man
20 21 S2 33 FS					Freq Offset 0.00000000 Hz
C(f): Tun Swp					<b>Signal Track</b> <sup>On <u>Off</u></sup>
Center 5.825 000 Res BW 330 kHz		VBW 1 MHz	Sweep 1 m	Span 32 MHz 15 (1001 pts)	
Copyright 2000			· · · · · ·	· · ·	

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## 8.14.3. 99% BANDWIDTH

#### **LIMITS**

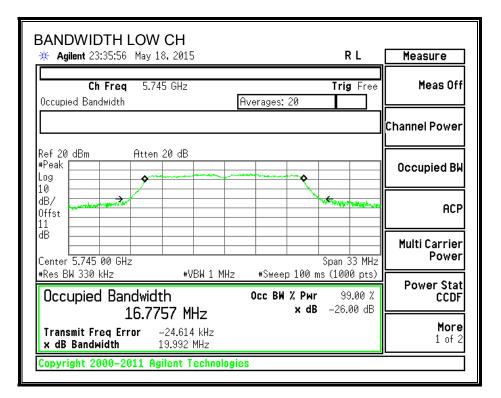
None; for reporting purposes only.

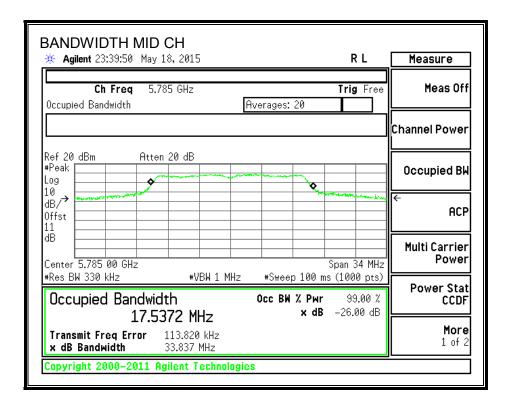
### **RESULTS**

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5745	16.7757
Mid	5785	17.5372
High	5825	16.8741

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### 99% BANDWIDTH





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BANDWIDTH HIGH CH	RL	Measure
Ch Freq 5.825 GHz Occupied Bandwidth Averages: 20	Trig Free	Meas Off
		Channel Power
Ref 20 dBm Atten 20 dB #Peak		Occupied BW
10 dB/ 0ffst 11		ACP
dB	Span 34 MHz	Multi Carrier Power
Occupied Bandwidth Occ BW % P	0 ms (1000 pts) wr 99.00 % dB -26.00 dB	Power Stat CCDF
Image: Log for the second state of		<b>More</b> 1 of 2
Copyright 2000–2011 Agilent Technologies		

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# 8.14.4. OUTPUT POWER

#### LIMITS

FCC §15.407 (a) (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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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### **RESULTS**

#### Antenna Gain and Limit

Channel	Frequency	Directional	Power
		Gain	Limit
		for Power	
	(MHz)	(dBi)	(dBm)
Low	5745	4.00	30.00
Mid	5785	4.00	30.00
High	5825	4.00	30.00

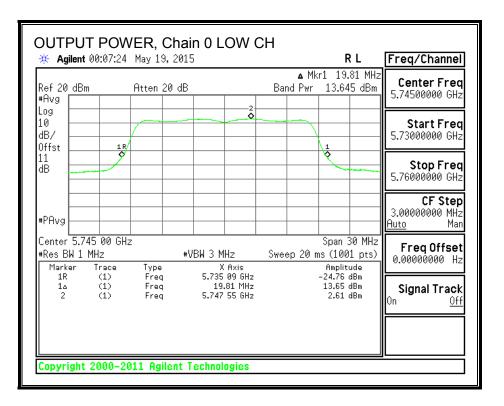
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
--------------------	------	--

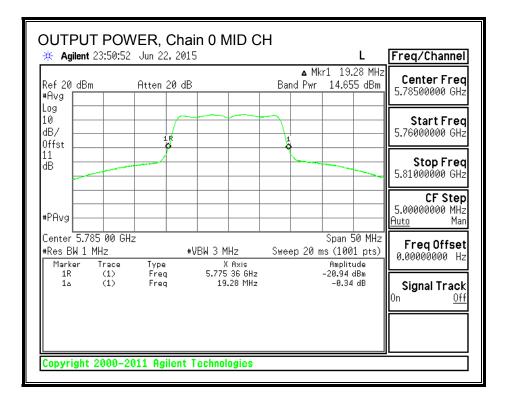
#### **Output Power Results**

Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5745	13.65	13.65	30.00	-16.35
Mid	5785	14.66	14.66	30.00	-15.35
High	5825	15.10	15.10	30.00	-14.90

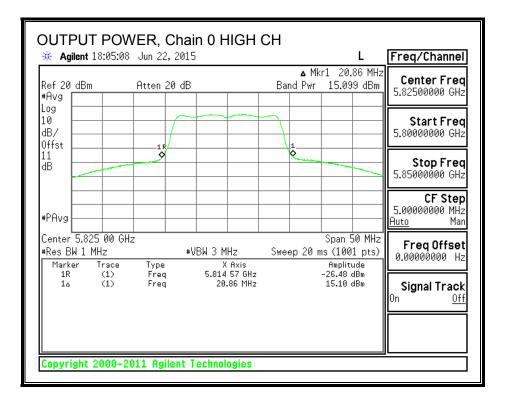
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## OUTPUT POWER, Chain 0





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# 8.14.5. Maximum Power Spectral Density (PSD)

### <u>LIMITS</u>

FCC §15.407 (a) (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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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#### **RESULTS**

#### Antenna Gain and Limits

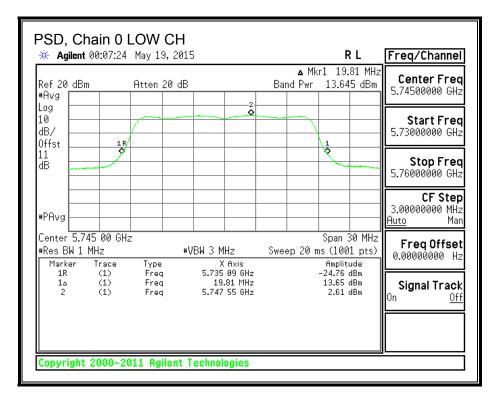
Channel	Frequency	Directional	PSD
		Gain	Limit
	(MHz)	(dBi)	(dBm)
Low	5745	4.00	30.00
Mid	5785	4.00	30.00
High	5825	4.00	30.00

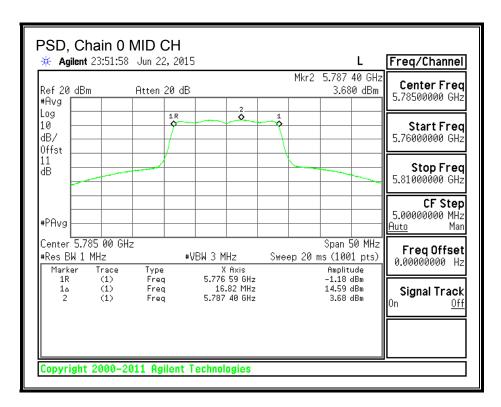
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
--------------------	------	--

#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5745	2.61	2.61	30.00	-27.39
Mid	5785	3.68	3.68	30.00	-26.32
High	5825	4.01	4.01	30.00	-25.99

### PSD, Chain 0





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PSD, Chain 0				L	Freq/Channel
Ref 20 dBm #Avg	Atten 20 dB		Mkr2	5.827 35 GHz 4.006 dBm	Center Freq 5.82500000 GHz
Log 10 dB/ Offst		2 •			<b>Start Freq</b> 5.80000000 GHz
11 dB					<b>Stop Freq</b> 5.85000000 GHz
#PAvg					<b>CF Step</b> 5.00000000 MHz <u>Auto</u> Man
Center 5.825 00 GH #Res BW 1 MHz Marker Trace 1R (1)	#VB Type	W 3 MHz X Axis 5.816 66 GHz	Sweep 20 n	Span 50 MHz ns (1001 pts) Amplitude -0.12 dBm	Freq Offset 0.00000000 Hz
$ \begin{array}{cccc} 1K & (1) \\ 1 & (1) \\ 2 & (1) \end{array} $	Freq	16.68 MHz 5.827 35 GHz		-0.12 dBm 15.02 dBm 4.01 dBm	<b>Signal Track</b> <sup>On <u>Off</u></sup>
Copyright 2000-2	011 Agilent Te	chnologies			

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# 8.15. 802.11n HT20 MODE IN THE 5.8 GHz BAND

## 8.15.1. 6 dB BANDWIDTH

#### **LIMITS**

FCC §15.407 (e)

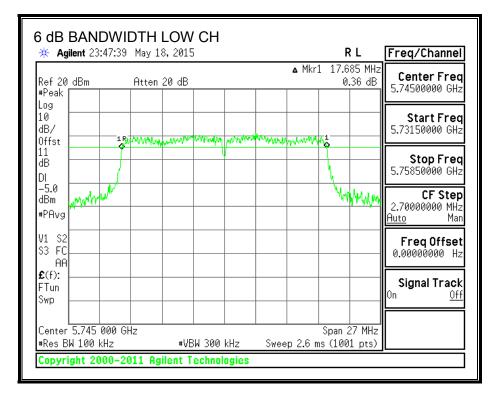
The minimum 6 dB bandwidth shall be at least 500 kHz.

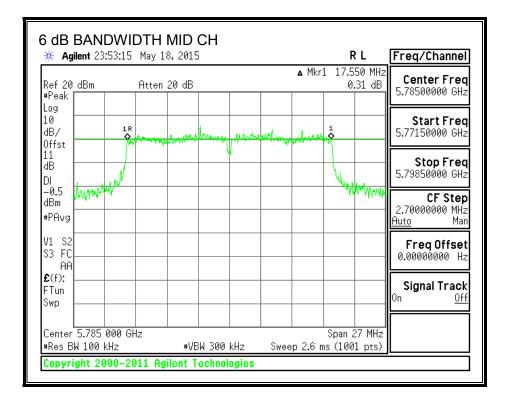
#### **RESULTS**

Channel	Frequency	6 dB Bandwidth	Minimum Limit
	(MHz)	(MHz)	(MHz)
Low	5745	17.6850	0.5
Mid	5785	17.5500	0.5
High	5825	17.6850	0.5

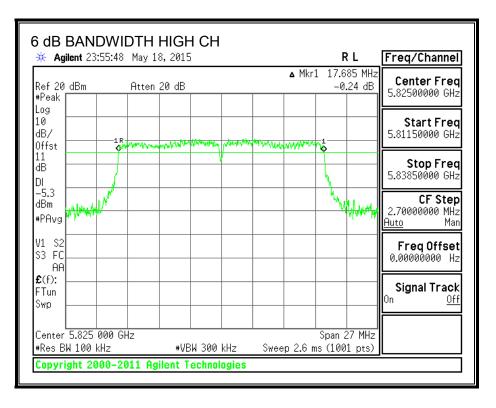
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### 6 dB BANDWIDTH





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# 8.15.2. 26 dB BANDWIDTH

### **LIMITS**

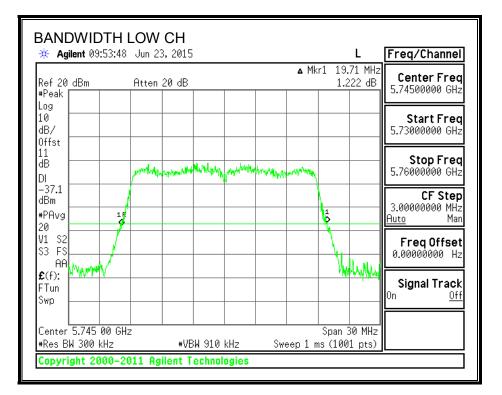
None; for reporting purposes only.

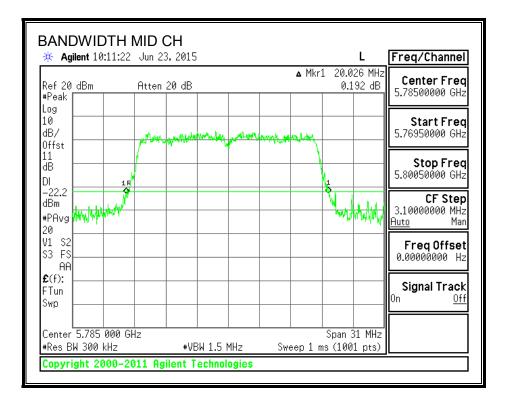
### <u>RESULTS</u>

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5745	19.71
Mid	5785	20.03
High	5825	20.12

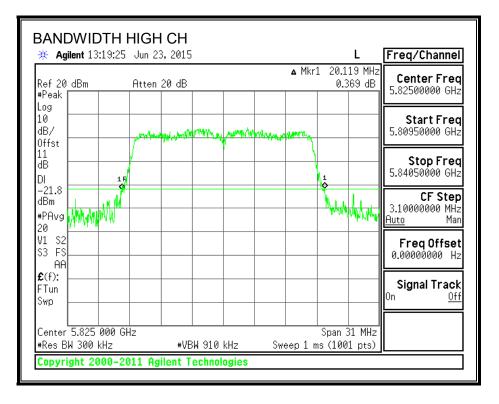
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#### 26 dB BANDWIDTH





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## 8.15.3. 99% BANDWIDTH

### LIMITS

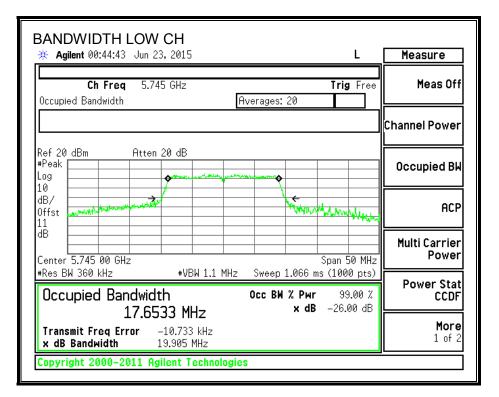
None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5745	17.6533
Mid	5785	18.3014
High	5825	17.8307

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### 99% BANDWIDTH



* Agilent 23:51:49 May 18, 2015	RL	Measure
<b>Ch Freq</b> 5.785 GHz Occupied Bandwidth <b>f</b>	Trig Free Averages: 20	Meas Of
		Channel Powei
Ref 20 dBm Atten 20 dB #Peak Log 10		Occupied Bl
dB/		← ACF
dB	Span 36 MHz	Multi Carriei Powei
*Res BW 360 kHz *VBW 1.1 MHz Occupied Bandwidth 18.3014 MHz	*Sweep 100 ms (1000 pts) Occ BW % Pwr 99.00 % × dB -26.00 dB	Power Sta CCDF
Transmit Freq Error 46.100 kHz x dB Bandwidth 35.152 MHz		More 1 of 2

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BANDWIDTH HIGH CH	RL	Measure
Ch Freq 5.825 GHz Occupied Bandwidth Averages: 20	Trig Free	Meas Off
		Channel Power
Ref 20 dBm Atten 20 dB #Peak Log		Occupied BW
10 dB/ 0ffst 11	**************************************	ACP
dB	Span 36 MHz	Multi Carrier Power
Occupied Bandwidth Occ BW % Pw	ms (1000 pts) r 99.00 % <b>3</b> -26.00 dB	Power Stat CCDF
Transmit Freq Error –8.672 kHz x dB Bandwidth 30.039 MHz		<b>More</b> 1 of 2
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# 8.15.4. OUTPUT POWER

#### LIMITS

FCC §15.407 (a) (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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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#### **RESULTS**

#### Antenna Gain and Limit

Channel	Frequency	Directional	Power
		Gain	Limit
		for Power	
	(MHz)	(dBi)	(dBm)
Low	5745	4.00	30.00
Mid	5785	4.00	30.00
High	5825	4.00	30.00

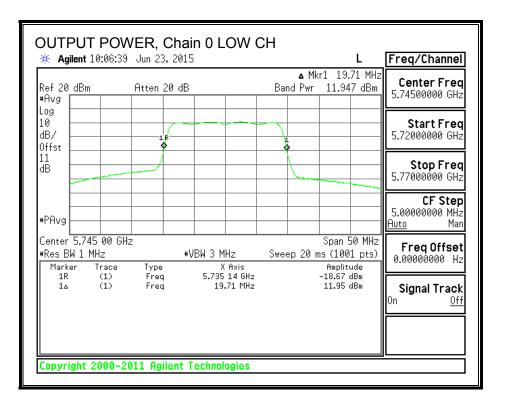
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
--------------------	------	--

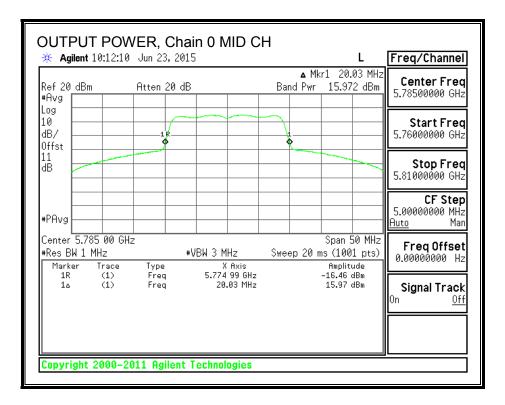
#### Output Power Results

Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5745	11.95	11.95	30.00	-18.05
Mid	5785	15.97	15.97	30.00	-14.03
High	5825	14.98	14.98	30.00	-15.02

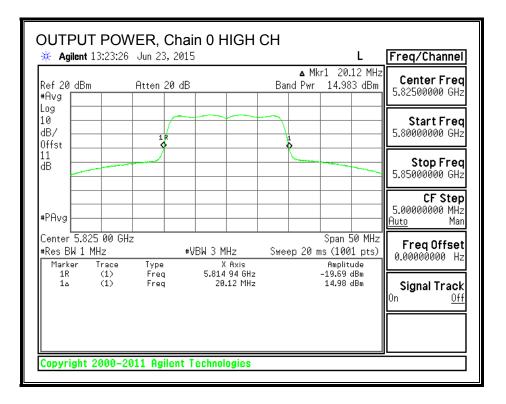
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## OUTPUT POWER, Chain 0





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# 8.15.5. Maximum Power Spectral Density (PSD)

### <u>LIMITS</u>

FCC §15.407 (a) (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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

#### **RESULTS**

#### Antenna Gain and Limits

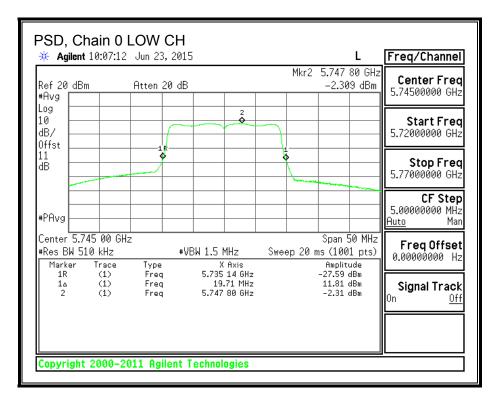
Channel	Frequency	Directional	PSD
		Gain	Limit
	(MHz)	(dBi)	(dBm)
Low	5745	4.00	30.00
Mid	5785	4.00	30.00
High	5825	4.00	30.00

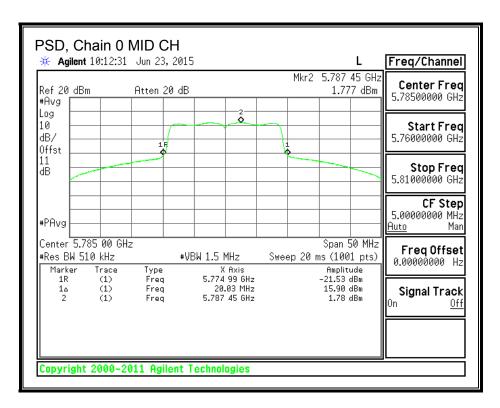
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
--------------------	------	--

#### **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5745	-2.31	-2.31	30.00	-32.31
Mid	5785	1.78	1.78	30.00	-28.22
High	5825	0.81	0.81	30.00	-29.19

### PSD, Chain 0





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🔆 Agilen	13:23:46	Jun 23, 201	5		L	Freq/Channel
Ref 20 dB #Avg	m	Atten 20 dB		Mkr2	5.827 30 GH: 0.811 dBm	II Contor From
Log 10		18	2			Start Freq 5.80000000 GHz
11 dB				×		Stop Freq 5.85000000 GHz
#PAvg						<b>CF Step</b> 5.00000000 MHz <u>Auto</u> Man
Center 5.8 #Res BW 5 Marker			BW 1.5 MHz X Axis	Sweep 20	Span 50 MHz ms (1001 pts) Amplitude	
1R 1 <sub>0</sub> 2	(1) (1) (1)	Freq Freq Freq	5.814 94 GHz 20.12 MHz 5.827 30 GHz		-26.27 dBm 14.96 dBm 0.81 dBm	Signal Track <sup>On <u>Off</u></sup>

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# 8.16. 802.11n HT40 MODE IN THE 5.8 GHz BAND

# 8.16.1. 6 dB BANDWIDTH

#### **LIMITS**

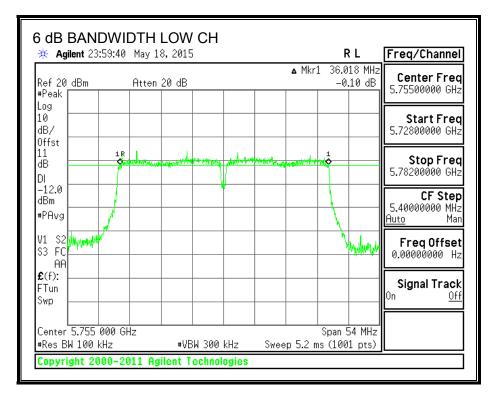
FCC §15.407 (e)

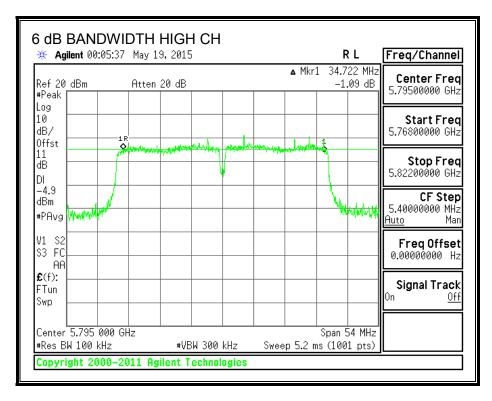
The minimum 6 dB bandwidth shall be at least 500 kHz.

#### **RESULTS**

Channel	Frequency	6 dB Bandwidth	Minimum Limit
	(MHz)	(MHz)	(MHz)
Low	5755	36.0180	0.5
High	5795	34.7220	0.5

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# 8.16.2. 26 dB BANDWIDTH

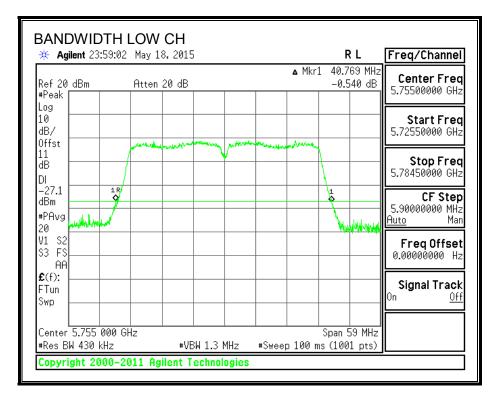
#### **LIMITS**

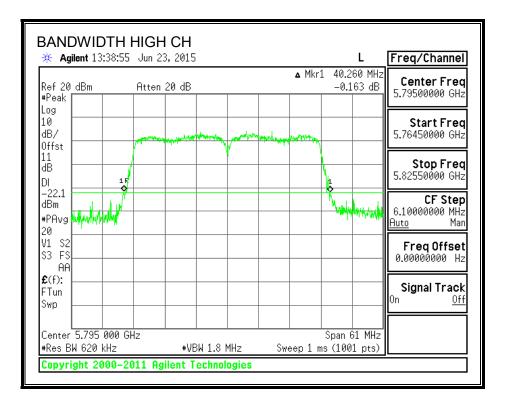
None; for reporting purposes only.

# **RESULTS**

Channel	Frequency	26 dB Bandwidth
	(MHz)	(MHz)
Low	5755	40.77
High	5795	40.26

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# 8.16.3. 99% BANDWIDTH

## LIMITS

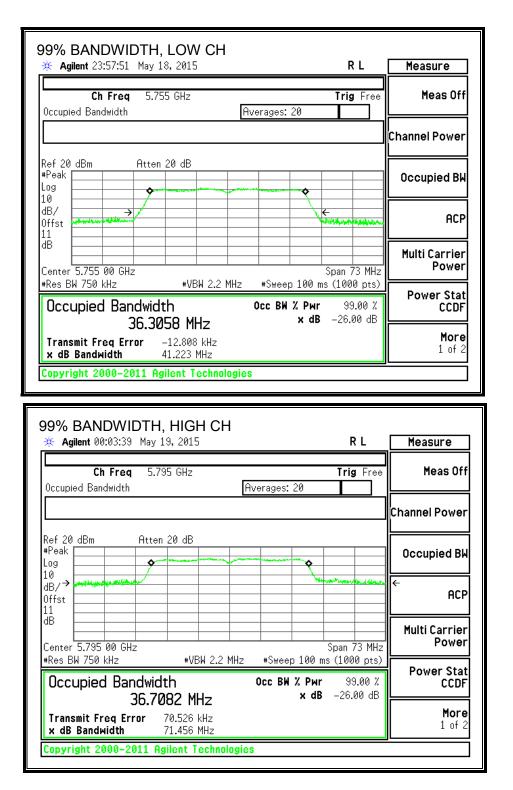
None; for reporting purposes only.

# <u>RESULTS</u>

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5755	36.3058
High	5795	36.7082

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## 99% BANDWIDTH



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# 8.16.4. OUTPUT POWER

# LIMITS

FCC §15.407 (a) (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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

# **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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# <u>RESULTS</u>

### Antenna Gain and Limit

Channel	Frequency	Directional	Power
		Gain	Limit
	(MHz)	(dBi)	(dBm)
Low	5755	4.00	30.00
High	5795	4.00	30.00

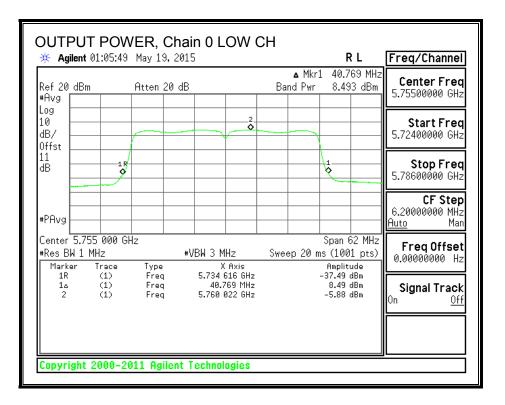
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
--------------------	------	--

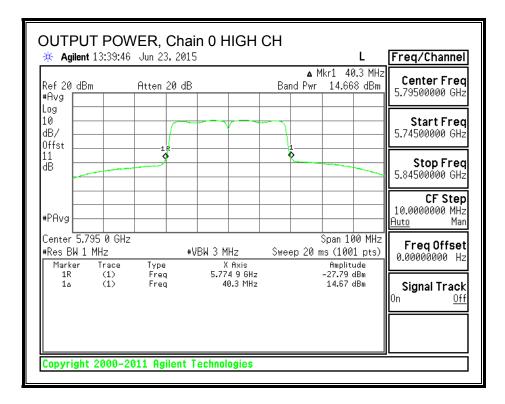
### **Output Power Results**

Channel	Frequency	Chain 0	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	<b>(MHz)</b> 5755	<b>(dBm)</b> 8.49	<b>(dBm)</b> 8.49	(dBm) 30.00	(dB) -21.51

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# OUTPUT POWER, Chain 0





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# 8.16.5. Maximum Power Spectral Density (PSD)

# <u>LIMITS</u>

FCC §15.407 (a) (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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

# **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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#### Antenna Gain and Limits

Channel	Frequency	Directional	PSD
		Gain	Limit
	(MHz)	(dBi)	(dBm)
Low	5755	4.00	30.00
High	5795	4.00	30.00

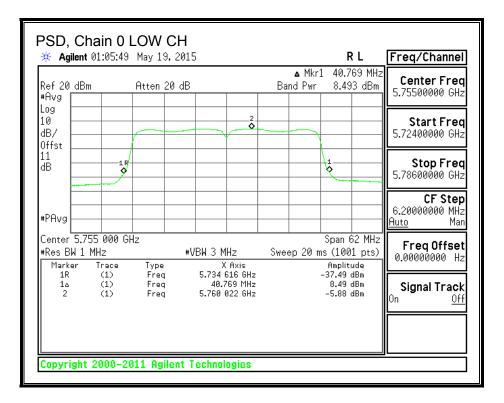
	Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
--	--------------------	------	--

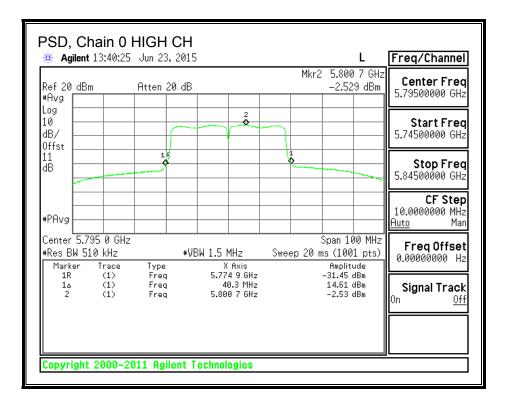
## **PSD Results**

Channel	Frequency	Chain 0	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	<b>(MHz)</b> 5755	<b>(dBm)</b> -5.88	<b>(dBm)</b> -5.88	(dBm) 30.00	( <b>dB</b> ) -35.88

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## PSD, Chain 0





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# 8.17. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

# 8.17.1. 6 dB BANDWIDTH

#### **LIMITS**

FCC §15.407 (e)

The minimum 6 dB bandwidth shall be at least 500 kHz.

## <u>RESULTS</u>

Channel	Frequency	6 dB Bandwidth	Minimum Limit
	(MHz)	(MHz)	(MHz)
Mid	5775	76.3600	0.5

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RL RF 50 D DC Center Freq 5.775000000	GHz PNO: Fast	SENSELUIT	ALIGN AUTO #Avg Type: RMS	11:59:06 PMJun 15, 2 TRACE TYPE MWWW DET P P P P	5.6 Frequency
Ref Offset 11 dB	IFGain:Low	Atten: 20 dB	Δι	Mkr1 76.36 M	Hz Auto Tune
					Center Freq 5.775000000 GHz
10	um under	and the second second	di matanan ana ka sala	142	Start Freq 6.717600000 GHz
					Stop Freq 5.832500000 GHz
In MARINAN AND				havisity	CF Step 11.500000 MHz Auto Man
no					Freq Offset 0 Hz
enter 5.77500 GHz				Span 115.0 M	

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# 8.17.2. 26 dB BANDWIDTH

#### **LIMITS**

None; for reporting purposes only.

# **RESULTS**

Channel	Frequency	26 dB Bandwidth (MHz)		
	(MHz)			
Mid	5775	82.68		

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enter Freq 5.77500000	PNO: Fast -+-	Trig: Free Run	ALIGN AUTO	11:58:11 PMJun 15, 20 TRACE TYPE DET P P P P	Frequency
IFGain.Low         Atten: 20 dB.         DET/P P P P           Ref Offset 11 dB         ΔMkr1 82.678 MHz           10 dB/div         Ref 20.00 dBm         3.19 dB					Auto Tune
nu.					Center Freq 5.775000000 GHz
100	and the day lake	- care production			Start Freq 6.708000000 GHz
no normalitary Market				122	5 842000000 CH
				Maria	CF Step 13.400000 MHz Auto Man
0.0					Freq Offset 0 Hz
enter 5.77500 GHz Res BW 910 kHz		2.7 MHz		Span 134.0 Mł 100.0 ms (1001 pł	

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# 8.17.3. 99% BANDWIDTH

# **LIMITS**

None; for reporting purposes only.

# <u>RESULTS</u>

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5775	76.3170

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# 99% BANDWIDTH

RL	trum Analyze - Occupied BW RF 50 0 DC BQ 5.775000000	Trig: F	SENSE:UNT]   Freq: 5.775000000 GHz Free Run Avg Hold h: 20 dB	ALIGN AUTO	11:57:18 PMJun 15, 2015 Radio Std: None Radio Device: BTS	Frequency
10 dB/dlv	Ref 10.00 dBm					
οg η η η η η η τη η 50 σ 50 0 50 0						Center Freq 5.775000000 GHz
Center 5.7		#	VBW 5 MHz		Span 152 MHz #Sweep 100 ms	CF Step 15.200000 MHz
Occupied Bandwidth 76.317 MHz			Total Power	10.3	3 dBm	Auto Man Freq Offset
Transmit Freq Error x dB Bandwidth		2.832 kHz OBW Power 80.89 MHz x dB		99.00 % -26.00 dB		0 Hz
usg				STATU	5	

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# 8.17.4. OUTPUT POWER

### <u>LIMITS</u>

FCC §15.407 (a) (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, 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, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

# **DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

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