

### FCC 47 CFR PART 15 SUBPART E

### **CERTIFICATION TEST REPORT**

FOR

GSM/WCDMA/LTE Phone with BT, BLE, DTS/UNII a/b/g/n/ac & NFC

FCC ID: PY7-29752M

REPORT NUMBER: 16J23633-E5V3

**ISSUE DATE: 2016-08-18** 

Prepared for SONY MOBILE COMMUNICATIONS, INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA -KU,TOKYO, 140-0002, JAPAN

Prepared by UL LLC 12 LABORATORY DR. RESEARCH TRIANGLE PARK, NC 27709 USA TEL: (919) 549-1400

NVLAP Lab code: 200246-0

#### **Revision History**

Ver.	lssue Date	Revisions	Revised By
V1	2016-08-09	Initial Issue	Richard Jankovics
V2	2016-08-16	Updated maximum output power for duty cycle correction. Corrected channel frequencies in tables. Updated calibration due date for test equipment. Updated test methodology to include ANSI C63.10, RSS-GEN Issue 4, and RSS-247 Issue 1.	Richard Jankovics
V3	2016-08-18	Removed references to Industry (ISED) Canada, added revised straddle channel data.	Richard Jankovics

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### 1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONY MOBILE COMMUNICATIONS, INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA -KU, TOKYO, 140-0002, JAPAN		
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone with BT, BLE, DTS/UNII a/b/g/n/ac & NFC	
SERIAL NUMBER:	CB512AP7WV, CB512AP7TW, CB512AP7VQ, CB512AP84A	
<b>DATE TESTED:</b> 2016-07-14 to 2016-08-08, 2016-08-18		
APPLICABLE STANDARDS		
STANDARD TEST RES		
CFR 47 P	art 15 Subpart E Pass	

UL LLC 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 LLC 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 LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC 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 any government.

Approved & Released For UL LLC By:

Turqueles

Vien Tran Senior Engineer UL – Consumer Technology Division Prepared By:

Richard Jankovies

**Richard Jankovics** WiSE Engineer UL – Consumer Technology Division

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# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Dr., Research Triangle Park, NC 27709, USA and 2800 Suite B, Perimeter Park Drive, Morrisville, NC 27560.

	12 Labora	atory Dr., RTP, NC 27709
Chamber A		Chamber A
Chamber C		

2800 Suite B Perimeter Park Dr.,		
Morrisville, NC 27560		
Chamber NORTH		
🛛 Chamber SOUTH		

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0. The full scope of accreditation can be viewed at http://www.nist.gov/nvlap/

# 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:

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

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### 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, 9KHz to 30 MHz	3.15 dB
Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Radiated Disturbance,18000 to 26000 MHz	4.45 dB
Radiated Disturbance,26000 to 40000 MHz	5.24 dB

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

# 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

This EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC.

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### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range	Mode	Total Output Power	Total Output Power
(MHz)		(dBm)	(mW)
5180 - 5240	802.11a	12.77	18.92
5260 - 5320	802.11a	12.01	15.89
5500 - 5720	802.11a	11.48	14.06
5745 - 5825	802.11a	11.94	15.63
5180 - 5240	802.11n HT20	12.57	18.07
5260 - 5320	802.11n HT20	12.00	15.85
5500 - 5720	802.11n HT20	11.44	13.93
5745 - 5825	802.11n HT20	11.96	15.70
5190 - 5230	802.11n HT40	13.01	20.00
5270 - 5310	802.11n HT40	12.49	17.74
5510 - 5710	802.11n HT40	11.85	15.31
5755 - 5795	802.11n HT40	12.24	16.75
5210	802.11ac VHT80	13.08	20.32
5290	802.11ac VHT80	12.45	17.58
5530 - 5690	802.11ac VHT80	11.94	15.63
5775	802.11ac VHT80	12.20	16.60

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integrated antenna, with a maximum gain as follows:

Frequency (MHz)	Peak Antenna Gain (dBi)	
	Core0(Main)	Core1 (Sub)
5180 - 5320	-3.9	-5.1
5500 - 5700	-2.1	-2.2
5725 - 5850	-2.8	-2.3

### 5.4. SOFTWARE AND FIRMWARE

The firmware/SW installed in the EUT during testing was SONY, s\_atp\_1\_600\_7\_9.

The hardware version was A.

The test utility software used during testing was Tera Term, rev 4.8.9(SVN#6182).

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## 5.5. LIST OF TEST REDUCTION AND MODES

Authorized Frequency Band (Antenna Port & Radiated Testing)				
Frequency	Mode	Covered by		
Range (MHz)				
5180 - 5240	802.11a Legacy 1TX	802.11a CDD 2TX		
5180 - 5240	802.11n HT20 1TX	802.11n HT20 CDD 2TX		
5180 - 5240	802.11n HT20 STBC 2TX	802.11n HT20 CDD 2TX		
5180 - 5240	802.11ac VHT20 1TX	802.11n HT20 CDD 2TX		
5180 - 5240	802.11ac VHT20 STBC 2TX	802.11n HT20 CDD 2TX		
5190 - 5230	802.11n HT40 1TX	802.11n HT40 CDD 2TX		
5190 - 5230	802.11n HT40 STBC 2TX	802.11n HT40 CDD 2TX		
5190 - 5230	802.11ac VHT40 1TX	802.11n HT40 CDD 2TX		
5190 - 5230	802.11ac VHT40 STBC 2TX	802.11n HT40 CDD 2TX		
5210	802.11ac VHT80 1TX	802.11ac VHT80 CDD 2TX		
5210	802.11ac VHT80 STBC 2TX	802.11ac VHT80 CDD 2TX		

Authorized Frequency Band (Antenna Port & Radiated Testing)				
Frequency	Mode	Covered by		
Range (MHz)				
5260 - 5320	802.11a Legacy 1TX	802.11a CDD 2TX		
5260 - 5320	802.11n HT20 1TX	802.11n HT20 CDD 2TX		
5260 - 5320	802.11n HT20 STBC 2TX	802.11n HT20 CDD 2TX		
5260 - 5320	802.11ac VHT20 1TX	802.11n HT20 CDD 2TX		
5260 - 5320	802.11ac VHT20 STBC 2TX	802.11n HT20 CDD 2TX		
5270 - 5310	802.11n HT40 1TX	802.11n HT40 CDD 2TX		
5270 - 5310	802.11n HT40 STBC 2TX	802.11n HT40 CDD 2TX		
5270 - 5310	802.11ac VHT40 1TX	802.11n HT40 CDD 2TX		
5270 - 5310	802.11ac VHT40 STBC 2TX	802.11n HT40 CDD 2TX		
5290	802.11ac VHT80 1TX	802.11ac VHT80 CDD 2TX		
5290	802.11ac VHT80 STBC 2TX	802.11ac VHT80 CDD 2TX		

Authorized Fre	equency Band (Antenna Port & Ra	diated Testing)
Frequency	Mode	Covered by
Range (MHz)		
5500 - 5720	802.11a Legacy 1TX	802.11a CDD 2TX
5500 - 5720	802.11n HT20 1TX	802.11n HT20 CDD 2TX
5500 - 5720	802.11n HT20 STBC 2TX	802.11n HT20 CDD 2TX
5500 - 5720	802.11ac VHT20 1TX	802.11n HT20 CDD 2TX
5500 - 5720	802.11ac VHT20 STBC 2TX	802.11n HT20 CDD 2TX
5510 - 5710	802.11n HT40 1TX	802.11n HT40 CDD 2TX
5510 - 5710	802.11n HT40 STBC 2TX	802.11n HT40 CDD 2TX
5510 - 5710	802.11ac VHT40 1TX	802.11n HT40 CDD 2TX
5510 - 5710	802.11ac VHT40 STBC 2TX	802.11n HT40 CDD 2TX
5530 - 5690	802.11ac VHT80 1TX	802.11ac VHT80 CDD 2TX
5530 - 5690	802.11ac VHT80 STBC 2TX	802.11ac VHT80 CDD 2TX

Authorized Fre	equency Band (Antenna Port & Ra	adiated Testing)
Frequency	Mode	Covered by
Range (MHz)		
5745 - 5825	802.11a Legacy 1TX	802.11a CDD 2TX
5745 - 5825	802.11n HT20 1TX	802.11n HT20 CDD 2TX
5745 - 5825	802.11n HT20 STBC 2TX	802.11n HT20 CDD 2TX
5745 - 5825	802.11ac VHT20 1TX	802.11n HT20 CDD 2TX
5745 - 5825	802.11ac VHT20 STBC 2TX	802.11n HT20 CDD 2TX
5755 - 5795	802.11n HT40 1TX	802.11n HT40 CDD 2TX
5755 - 5795	802.11n HT40 STBC 2TX	802.11n HT40 CDD 2TX
5755 - 5795	802.11ac VHT40 1TX	802.11n HT40 CDD 2TX
5755 - 5795	802.11ac VHT40 STBC 2TX	802.11n HT40 CDD 2TX
5775	802.11ac VHT80 1TX	802.11ac VHT80 CDD 2TX
5775	802.11ac VHT80 STBC 2TX	802.11ac VHT80 CDD 2TX

### 5.6. 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 X-Axis orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X-Axis orientation.

Worst-case data rates as provided by the client were: Based on the baseline scan, the worst-case data rates were:

802.11a mode MMO: 6 Mbps 802.11n HT20 MIMO mode: MCS8 802.11n HT40 MIMO mode: MCS8 802.11ac VHT80 mode MIMO: MCS0

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### 5.7. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

	S	upport Equipment L	ist	
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	T450	PC-0A2UQU	N/A
Laptop AC/DC adapter	Lenovo	ADLX65NLC2A	11S45N0263Z1ZS995256HR	N/A
Earphones	SONY	MH410C	N/A	N/A
AC Adapter	SONY	UCH 20 1295-70821	N/A	N/A

#### I/O CABLES

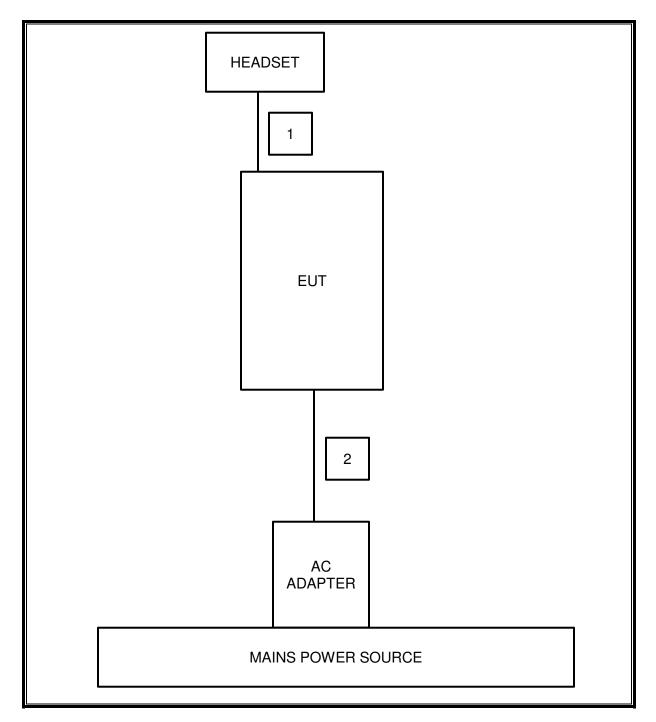
			I/O	Cable List		
Cable	Port	# of identical	Connector	Cable Type	Cable	Remarks
No		ports	Туре		Length (m)	
1	DC Power	1	USB-C	Shielded	1m	N/A
2	Audio	1	Mini-Jack	Un-shielded	1.5m	N/A

#### TEST SETUP

The EUT is a stand-alone unit during the tests. Test software exercised the radio card.

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#### SETUP DIAGRAM FOR TESTS



# 6. TEST AND MEASUREMENT EQUIPMENT

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

Toet Equipment Llead	- Radiatod Disturbanco Emissione	Toot Fauinmont	(Morrievillo - North Chambor)
	- Radiated Disturbance Emissions	I ESI LYUIPINEIII	

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	0.009-30MHz	(Loop Ant.)			
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2015-12-08	2016-12-31
	30-1000 MHz				
AT0074	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2016-06-07	2017-06-30
	1-18 GHz				
AT0069	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2016-03-07	2017-03-31
	18-40 GHz				
AT0076	Horn Antenna, 18- 26.5GHz	ARA	MWH-1826/B	2015-08-27	2016-08-31
AT0077	Horn Antenna, 26-40GHz	ARA	MWH-2640/B	2015-08-27	2016-08-31
	Gain-Loss Chains				
S-SAC01	Gain-loss string: 0.009- 30MHz	Various	Various	2015-10-07	2016-10-31
S-SAC02	Gain-loss string: 30- 1000MHz	Various	Various	2016-06-26	2017-06-30
S-SAC03	Gain-loss string: 1- 18GHz	Various	Various	2015-08-22	2016-08-31
S-SAC04	Gain-loss string: 18- 40GHz	Various	Various	2016-02-29	2017-02-28
	Receiver & Software				
SA0025	Spectrum Analyzer	Agilent	N9030A	2016-03-17	2017-03-31
SA0026 (18- 40GHz RSE)	Spectrum Analyzer	Agilent	N9030A	2016-02-24	2017-02-28
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
	Additional Equipment used				
HI0050	Temp/Humid/Pressure Meter	Cole-Parmer	99760-00	2015-07-01	2016-08-31

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville - South Chamber)

Equip.					.,
ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	0.009-30MHz	(Loop Ant.)			
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2015-12-08	2016-12-31
	30-1000 MHz				
AT0074	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2016-06-07	2017-06-30
	1-18 GHz				
AT0069	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2016-03-07	2017-03-31
	18-40 GHz				
AT0076	Horn Antenna, 18- 26.5GHz	ARA	MWH-1826/B	2015-08-27	2016-08-31
AT0077	Horn Antenna, 26-40GHz	ARA	MWH-2640/B	2015-08-27	2016-08-31
	Gain-Loss Chains				
S-SAC01	Gain-loss string: 0.009- 30MHz	Various	Various	2015-10-07	2016-10-31
S-SAC02	Gain-loss string: 30- 1000MHz	Various	Various	2016-06-26	2017-06-30
S-SAC03	Gain-loss string: 1- 18GHz	Various	Various	2015-08-22	2016-08-31
S-SAC04	Gain-loss string: 18- 40GHz	Various	Various	2016-02-29	2017-02-28
	Receiver & Software				
SA0025	Spectrum Analyzer	Agilent	N9030A	2016-03-17	2017-03-31
SA0026 (18- 40GHz RSE)	Spectrum Analyzer	Agilent	N9030A	2016-02-24	2017-02-28
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
	Additional Equipment used				
HI0078	Temp/Humid/Pressure Meter	Springfield PreciseTemp	HI0078	2016-06-13	2017-06-30

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Conducted Room 1				
72822	Spectrum Analyzer	Agilent Technologies	E4446A	2015-09-02	2016-09-30
PWM004	RF Power Meter	Keysight Technologies	N1911A	2016-06-22	2017-06-22
PWS004	Peak and Avg Power Sensor, 50MHz to 6GHz	Keysight Technologies	E9323A	2016-06-22	2017-06-22
HI0079	Temp/Humid/Pressure Meter	Springfield	PreciseTemp	2015-07-01	2016-08-31
MM0167	True RMS Multimeter	Agilent	U1232A	2015-08-17	2016-08-31
76022	DC Regulated Power Supply	CircuitSpecialist s.Com	CSI3005X5	N/A	N/A

Test Equipment Used - Wireless Conducted Measurement Equipment

Test Equipment Used - Line-Conducted Emissions - Voltage (Morrisville - Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3476-240	2016-06-15	2017-06-30
HI0080	Temp/Humid/Pressure Meter	Springfield Precision	PreciseTemp	2015-07-01	2016-08-31
LISN003	LISN, 50-ohm/50-uH, 2- conductor, 25A	Fischer Custom Com.	FCC-LISN-50-25-2- 01-550V	2015-08-24	2016-08-31
LISN008	LISN, 50-ohm/50-uH, 2- conductor, 25A (For support gear only.)	Solar Electronics	8012-50-R-24-BNC	2015-09-03	2016-09-30
MM0167	Multi-meter	Agilent	U1232A	2015-08-17	2016-08-31
	EMI Test Receiver 9kHz- 7GHz	Rohde & Schwarz	ESCI 7	2015-08-26	2016-08-31
TL001	Transient Limiter, 0.009- 30MHz	Com-Power	LIT-930A	2016-06-09	2017-06-30
PS214	AC Power Source	Elgar	CW2501M (s/n 1523A02396)	NA	NA
PS215	AC Power Source	Elgar	CW2501M (s/n 1523A02397)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
	Miscellaneous (if needed)				
ATA220	ISN for Unshielded Balanced Pairs	Teseq, Inc.	ISN T8	2015-08-24	2016-08-31
TN0129	ISN for Shielded Balanced Pairs	Teseq, Inc.	ISN ST08	2015-08-24	2016-08-31
TN0145	ISN for Cat-6 Unshielded Balanced Pairs	Teseq, Inc.	ISN T8-Cat6	2015-08-25	2016-08-31
CDECABLE001	ANSI C63.4 1m extension cable.	UL	Per Annex B of ANSI C63.4	2016-06-04	2017-06-30

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## 7. MEASUREMENT METHODS

6 dB Emission BW: KDB 789033 D02 v01r02, Section C.

26 dB Emission BW: KDB 789033 D02 v01r02, Section C.

<u>99% Occupied BW</u>: KDB 789033 D02 v01r02, Section D.

Conducted Output Power: KDB 789033 D02 v01r02, Section E.3.a (Method PM) and Section E.2.b (Method SA-1).

Power Spectral Density: KDB 789033 D02 v01r02, Section F (Method SA-2).

<u>Unwanted emissions in restricted bands</u>: KDB 789033 D02 v01r02, Sections G.3, G.4, G.5, and G.6.

<u>Unwanted emissions in non-restricted bands</u>: KDB 789033 D02 v01r02, Sections G.3, G.4, and G.5.

Use of IEEE 802.11 channels that straddle the UNII-2C and UNII-3 bands at 5725 MHz: KDB 789033 D02 v01r02, Section III

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### 8. ANTENNA PORT TEST RESULTS 8.1. ON TIME AND DUTY CYCLE

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

None; for reporting purposes only.

#### PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

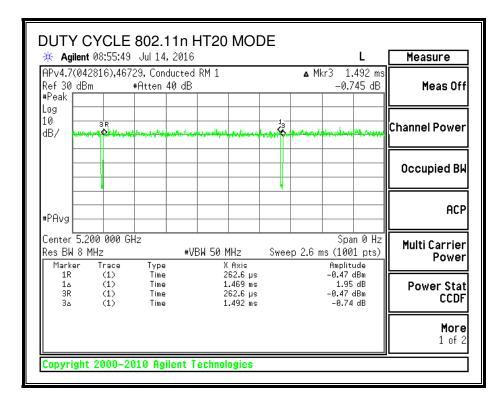
#### ON TIME AND DUTY CYCLE RESULTS

Mode	<b>ON Time</b>	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	3.089	3.136	0.985	98.50%	0.00	0.010
802.11n HT20	1.469	1.492	0.985	98.46%	0.00	0.010
802.11n HT40	0.732	0.753	0.972	97.21%	0.12	1.366
802.11ac VHT80	0.3633	0.3853	0.943	94.29%	0.26	2.753

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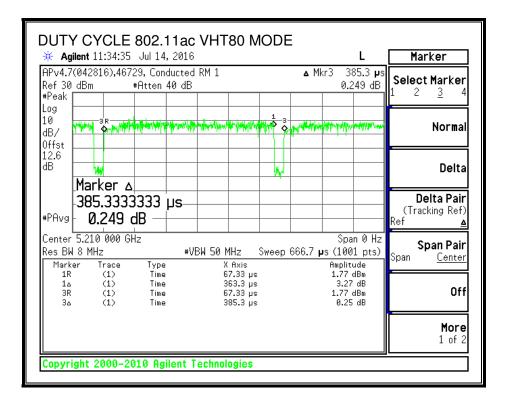
#### **DUTY CYCLE PLOTS**

🌾 Agile	nt 08:54:02	Jul 14, 201	6			L	Measure
APv4.7(0 Ref 30 d ≠Peak ⊑		729, Conducte #Atten 40 df		<u>۵</u>		.136 ms 123 dB	Meas Off
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)ffst  _ .2.6							
iB							Occupied Bk
PAvg							ACF
Ľ							
Res BW 8		#	VBW 50 MHz	Sweep 5.2	2 ms (100		Multi Carrier Power
Marker 1R	Trace (1)	Type Time	Х Ахіз 551.2 µs		Amplit 14.77		
1∆ 3R 3∆	(1) (1) (1)	Time Time Time	3.089 m 551.2 µ 3.136 m	:	-2.63 14.77 0.12		Power Stat CCDF
							More 1 of 2



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			Jul 14,							L	Marker
APv4.7(0 ≷ef 30 d ⊧Peak ⊑			), Conc Atten 4		RM 1			▲ Mł		53.3 µs 009 dB	Select Marker
.og 🖊		*****	Ineview	1-web.W		~	1 1 1 3 -		-	***	
.0  - 187  -											Norma
)ffst  _ .2.6											-
iB –	4						V				Delta
N	1arke	r 🔺									
- [7	753.3	3333		us							<b>Delta Pai</b> (Tracking Ref
•PAvg	753.30 -0.00	3333 )9 dl	B⊣	µs_							<b>Delta Pai</b> (Tracking Ref Ref
PAvg - Center 5	7 <b>53.3</b> - <b>0.00</b> 5.190 00	3333 )9 dl	B⊣		211 50 1	10-	Shoop	1 222 m		n 0 Hz	(Tracking Ref Ref Span Pai
•PAvg	7 <b>53.3</b> - <b>0.00</b> 5.190 00 3 MHz	3333 <b>)9 dl</b> 10 GHz	B⊣		W 50 N X	1Hz Axis	Sweep	1.333 n		1 pts)	(Tracking Ref Ref
+PAvg - Center 5 Res BW 8 Marker 1R	753.33 -0.00 5.190 00 3 MHz Trac (1)	3333 )9 dl 10 GHz	B Type Time		Х	Ахіs 33.3 µs		1.333 n	ns (100 Amplit 11.60	1 pts) ude dBm	(Tracking Ref Ref Span Pair
PAvg - Center 5 Ces BW 8 Marker 1R 1۵ 3R	753.3 -0.00 5.190 00 3 MHz Trac (1) (1) (1)	3333 )9 dl 10 GHz	B Type Time Time Time		X 1 1	Ахіз 33.3 µs 732 µs 33.3 µs		1.333 n	ns (100 Amplit 11.60 3.97 11.60	1 pts) ude dBm 'dB dBm	(Tracking Ref Ref Span Pair
PAvg - Center 5 کوs BW 8 Marker 1R	753.3 -0.00 5.190 00 3 MHz Trac (1) (1)	3333 )9 dl 10 GHz	B Type Time Time		X 1 1	Ахіs 33.3 µs 732 µs		1.333 n	ns (100 Amplit 11.60 3.97	1 pts) ude dBm 'dB dBm	(Tracking Ref Ref <b>Span Pai</b> l Span <u>Cente</u>
PAvg - Center 5 Ces BW 8 Marker 1R 1۵ 3R	753.3 -0.00 5.190 00 3 MHz Trac (1) (1) (1)	3333 )9 dl 10 GHz	B Type Time Time Time		X 1 1	Ахіз 33.3 µs 732 µs 33.3 µs		1.333 n	ns (100 Amplit 11.60 3.97 11.60	1 pts) ude dBm 'dB dBm	(Tracking Ref Ref <b>Span Pai</b> l Span <u>Cente</u>



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

### 8.2.1. 26 dB BANDWIDTH

#### LIMITS

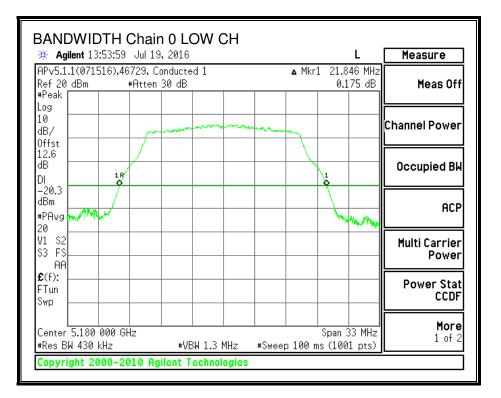
None; for reporting purposes only.

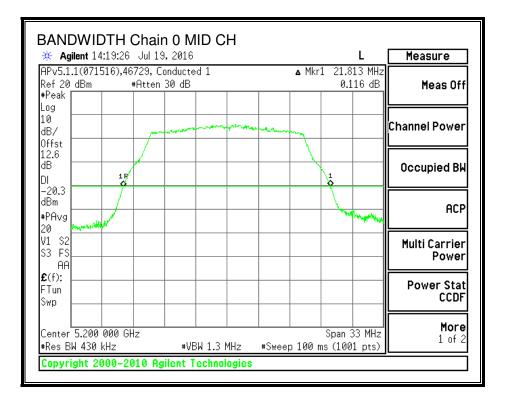
#### **RESULTS**

Channel	hannel Frequency		26 dB BW	
		Chain 0	Chain 1	
	(MHz)	(MHz)	(MHz)	
Low	5180	21.85	21.68	
Mid	5200	21.81	21.71	
High	5240	21.78	21.71	

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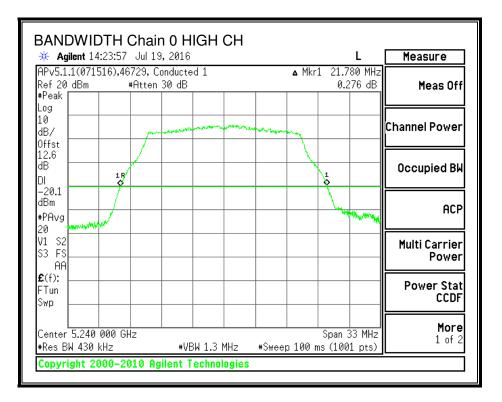
#### 26 dB BANDWIDTH, Chain 0



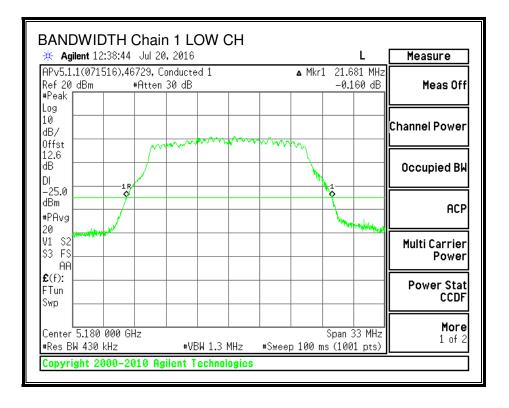


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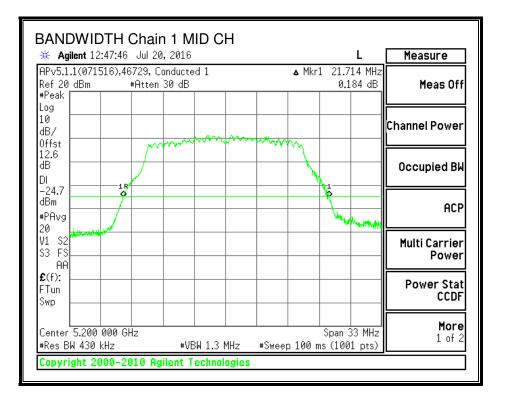
UL LLC FORM NO: 03-EM-F00858 12 Laboratory Dr., RTP, NC 27709 TEL: (919) 549-1400 *This report shall not be reproduced except in full, without the written approval of UL LLC.* 

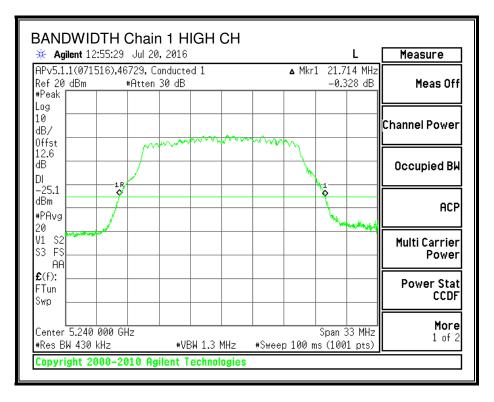


#### 26 dB BANDWIDTH, Chain 1



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### 8.2.2. 99% BANDWIDTH

#### **LIMITS**

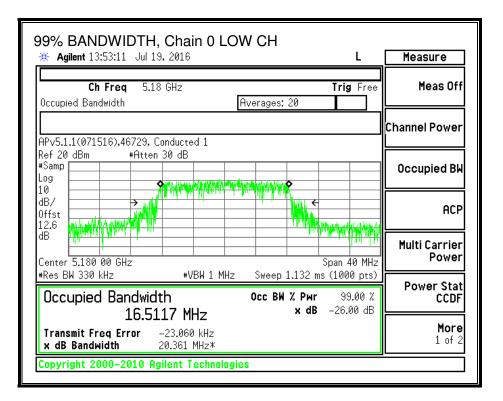
None; for reporting purposes only.

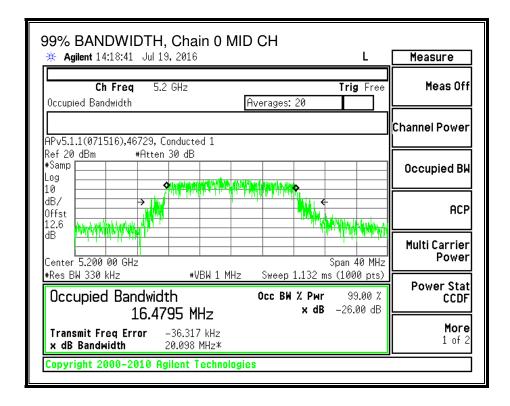
#### **RESULTS**

Channel	Frequency	99% BW	99% BW	
		Chain 0	Chain 1	
	(MHz)	(MHz)	(MHz)	
Low	5180	16.5117	16.4614	
Mid	5200	16.4795	16.4925	
High	5240	16.5030	16.4469	

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#### 99% BANDWIDTH, Chain 0



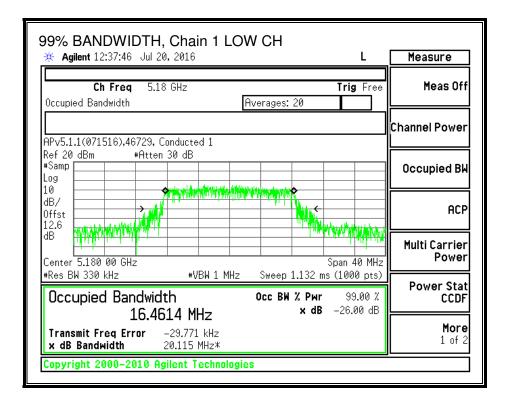


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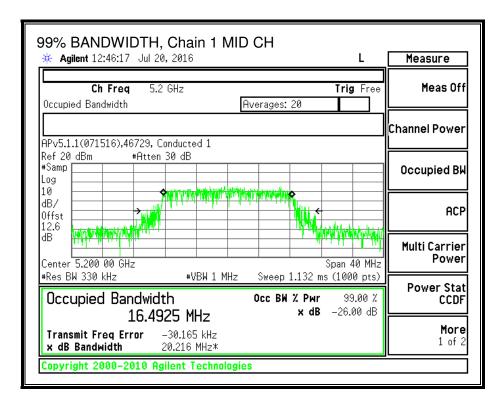
UL LLC FORM NO: 03-EM-F00858 12 Laboratory Dr., RTP, NC 27709 TEL: (919) 549-1400 *This report shall not be reproduced except in full, without the written approval of UL LLC.* 

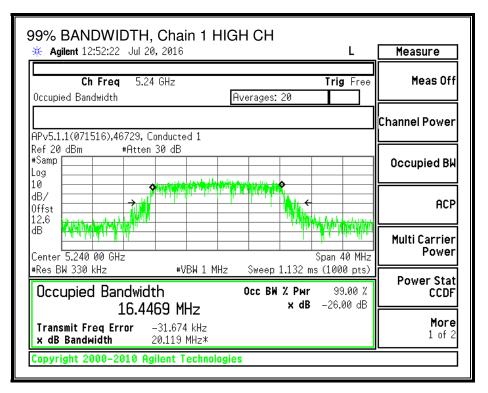
99% BANDWIDTH, C	hain 0 HIG	H CH		
🔆 🔆 Agilent 14:23:09 Jul 19, 2	016		L	Measure
Ch Freq 5.24 GH	-	Averages: 20	Trig Free	Meas Off
APv5.1.1(071516),46729, Cond	ucted 1			Channel Power
Ref 20 dBm #Atten 30 #Samp				Occupied BW
dB/ Offst 12.6 dB				ACP
Center 5.240 00 GHz #Res BW 330 kHz	#VBW 1 MHz	Sweep 1.132 m	Span 40 MHz	Multi Carrier Power
Occupied Bandwidth 16.5030		Occ BW % Pwr		Power Stat CCDF
Transmit Freq Error -28 x dB Bandwidth 20.4	.099 kHz 160 MHz*			More 1 of 2
Copyright 2000-2010 Agile	nt Technologie	S		

#### 99% BANDWIDTH, Chain 1



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### 8.2.3. AVERAGE POWER

#### **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### **Average Power Results**

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5180	11.71	6.13	12.77
Mid	5200	11.42	6.11	12.54
High	5240	11.68	6.08	12.74

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### 8.2.4. OUTPUT POWER AND PSD

#### LIMITS

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-topoint 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.

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#### DIRECTIONAL ANTENNA GAIN

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>	
Antenna	Antenna	Directional	
Gain	Gain	Gain	
(dBi)	(dBi)	(dBi)	
-3.90	-5.10	-4.46	

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-1.47

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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	-4.46	-1.47	24.00	11.00
Mid	5200	-4.46	-1.47	24.00	11.00
High	5240	-4.46	-1.47	24.00	11.00

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

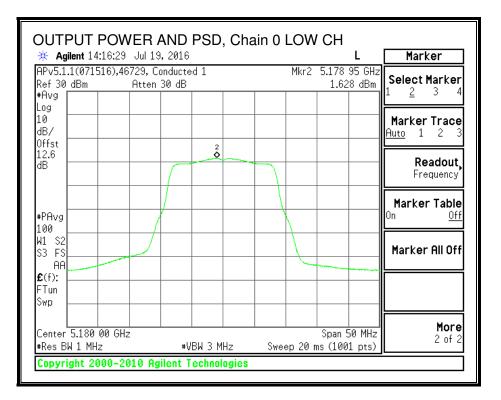
#### **Output Power Results**

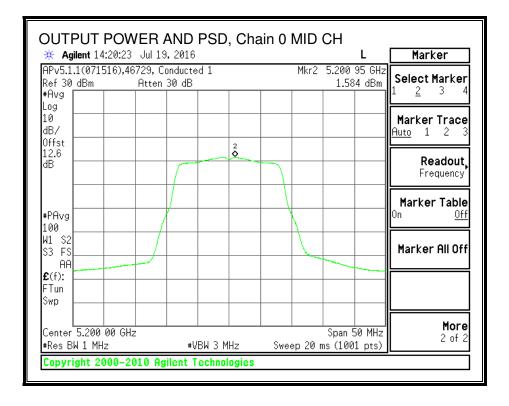
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	11.71	6.13	12.77	24.00	-11.23
Mid	5200	11.42	6.11	12.54	24.00	-11.46
High	5240	11.68	6.08	12.74	24.00	-11.26

#### **PSD Results**

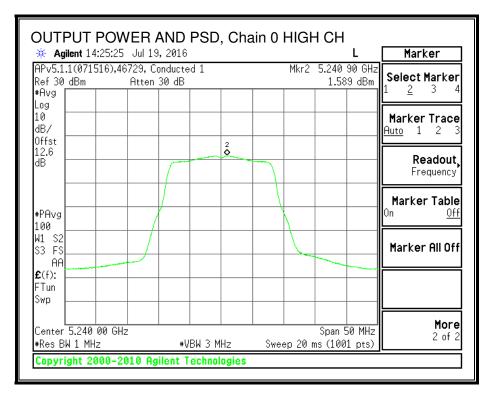
Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	1.63	-4.21	2.64	11.00	-8.36
Mid	5200	1.58	-4.07	2.63	11.00	-8.37
High	5240	1.59	-4.35	2.58	11.00	-8.42

#### OUTPUT POWER AND PSD, Chain 0

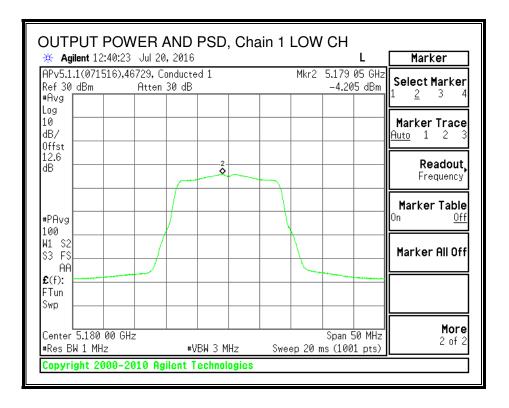




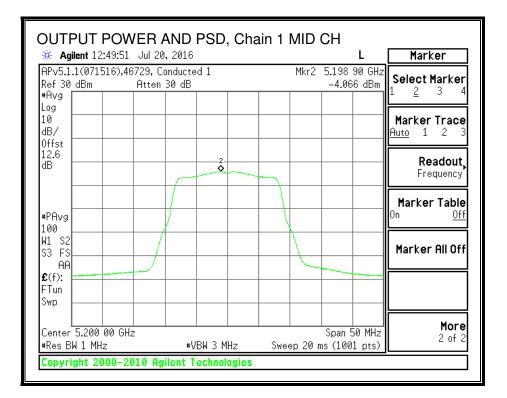
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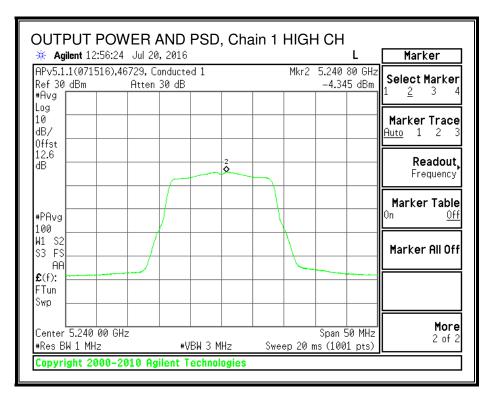


#### OUTPUT POWER AND PSD, Chain 1



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### DATE: 2016-08-18

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

# 8.3.1. 26 dB BANDWIDTH

### <u>LIMITS</u>

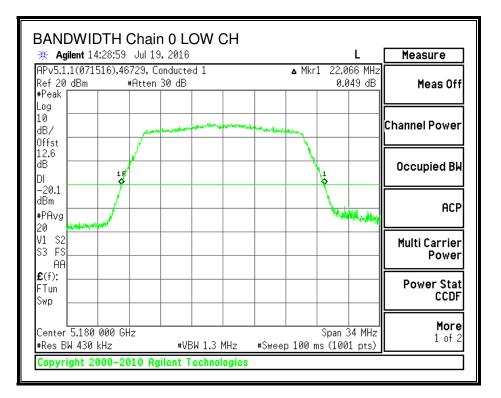
None; for reporting purposes only.

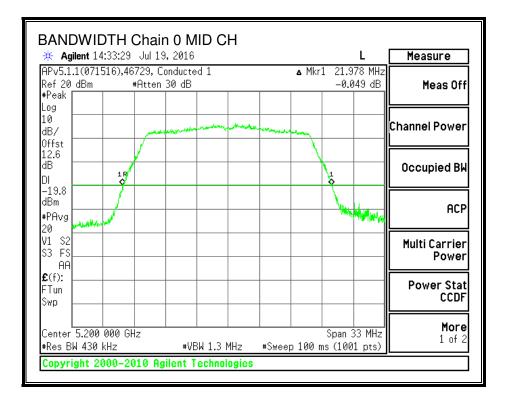
### **RESULTS**

Channel	Frequency	26 dB BW	26 dB BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5180	22.07	21.65
Mid	5200	21.98	21.75
High	5240	21.98	21.58

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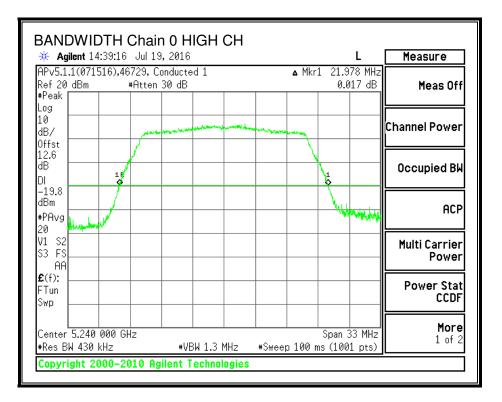
## 26 dB BANDWIDTH, Chain 0



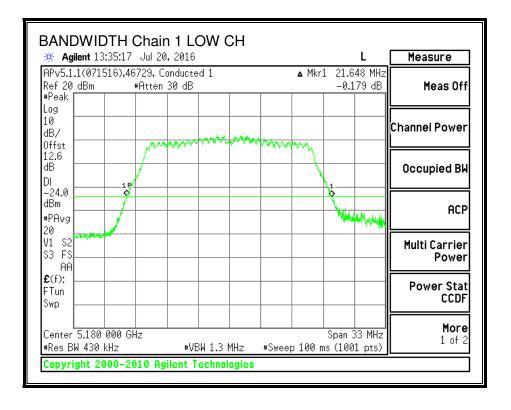


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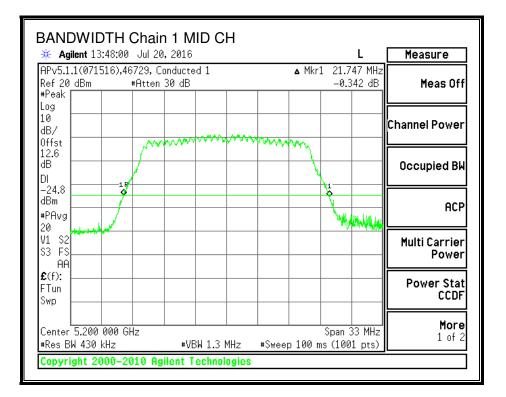
UL LLC FORM NO: 03-EM-F00858 12 Laboratory Dr., RTP, NC 27709 TEL: (919) 549-1400 *This report shall not be reproduced except in full, without the written approval of UL LLC.* 

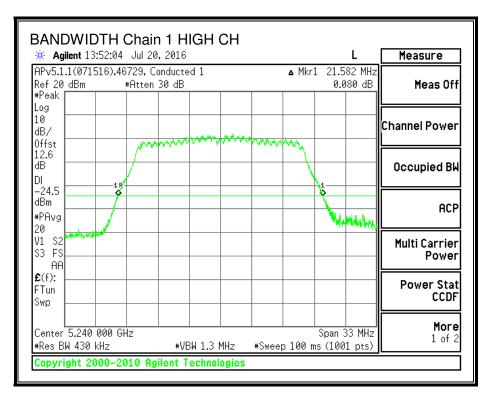


### 26 dB BANDWIDTH, Chain 1



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# 8.3.2. 99% BANDWIDTH

### **LIMITS**

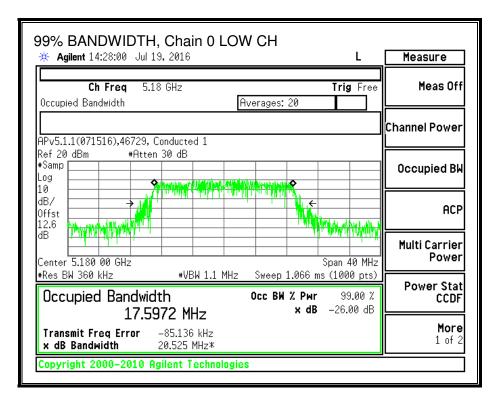
None; for reporting purposes only.

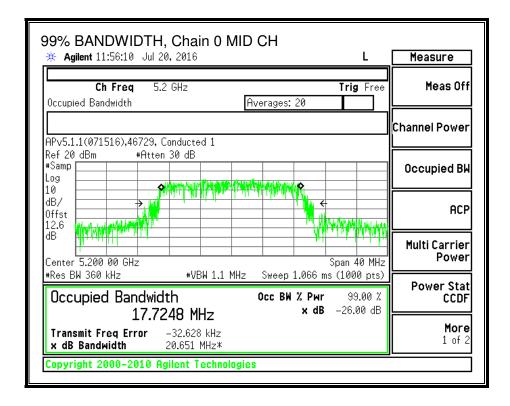
## **RESULTS**

Channel	Frequency	99% BW	99% BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5180	17.5972	17.6725
Mid	5200	17.7248	17.6723
High	5240	17.5684	17.7293

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# 99% BANDWIDTH, Chain 0

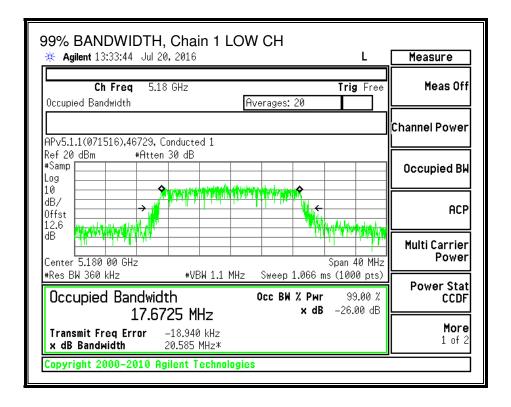




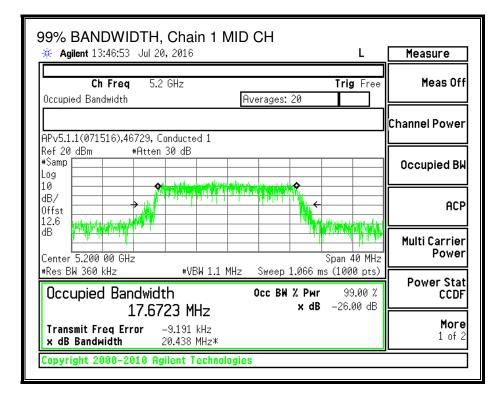
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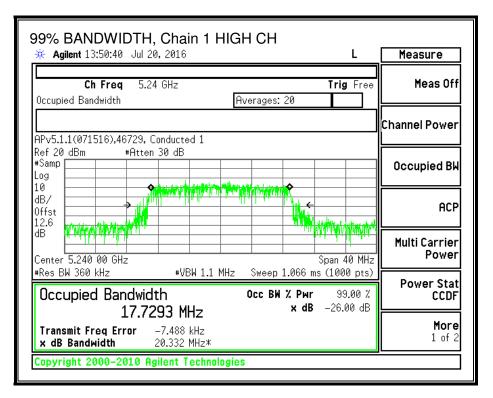
99% BANDWIDTH, Chain 0	HIGH CH	
🔆 Agilent 14:37:20 Jul 19, 2016	L	Measure
Ch Freq 5.24 GHz Occupied Bandwidth	Trig Free Averages: 20	Meas Off
APv5.1.1(071516),46729, Conducted 1		Channel Power
Ref 20 dBm #Atten 30 dB #Samp Log		Occupied BW
dB/ dB/ 0ffst 12.6 dB		ACP
Center 5.240 00 GHz #Res BW 360 kHz #VBW 1.1	Span 40 MHz . MHz Sweep 1.066 ms (1000 pts)	Multi Carrier Power
Occupied Bandwidth 17.5684 MHz	Осс ВИ % Риг 99.00 % х dB -26.00 dB	Power Stat CCDF
Transmit Freq Error -61.689 kHz × dB Bandwidth 20.544 MHz≭		More 1 of 2
Copyright 2000-2010 Agilent Techn	ologies	

## 99% BANDWIDTH, Chain 1



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# 8.3.3. AVERAGE POWER

### **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

## Average Power Results

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5180	11.43	5.97	12.52
Mid	5200	11.52	5.91	12.57
High	5240	11.49	5.79	12.53

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# 8.3.4. OUTPUT POWER AND PSD

## LIMITS

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-topoint 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.

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# DIRECTIONAL ANTENNA GAIN

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-4.46

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-1.47

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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	-4.46	-1.47	24.00	11.00
Mid	5200	-4.46	-1.47	24.00	11.00
High	5240	-4.46	-1.47	24.00	11.00

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

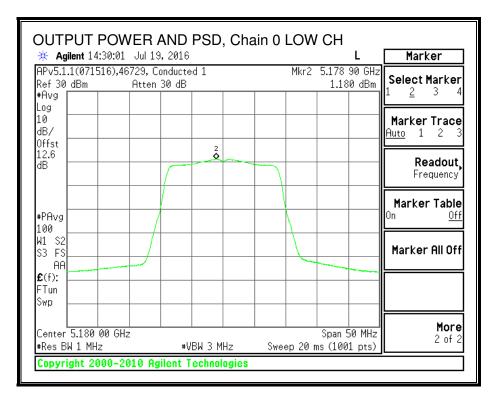
### **Output Power Results**

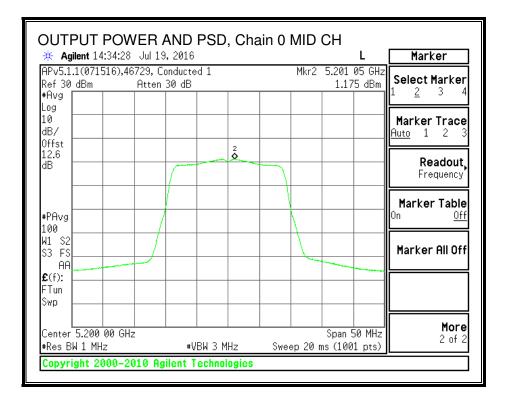
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	11.43	5.97	12.52	24.00	-11.48
Mid	5200	11.52	5.91	12.57	24.00	-11.43
High	5240	11.49	5.79	12.53	24.00	-11.47

## **PSD Results**

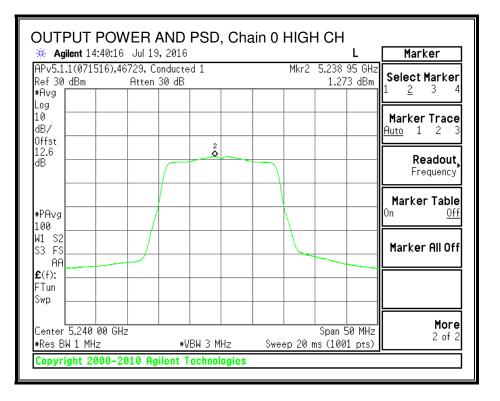
Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	1.18	-4.49	2.22	11.00	-8.78
Mid	5200	1.18	-4.88	2.14	11.00	-8.86
High	5240	1.27	-4.69	2.25	11.00	-8.75

# OUTPUT POWER AND PSD, Chain 0

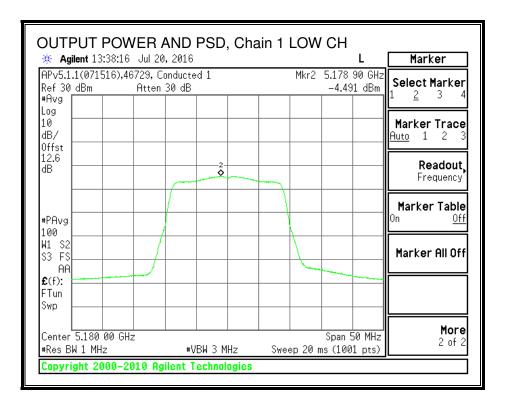




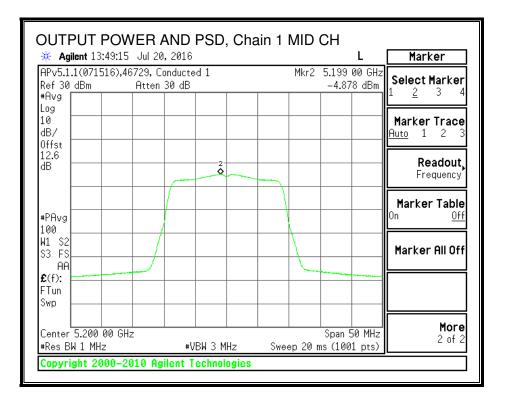
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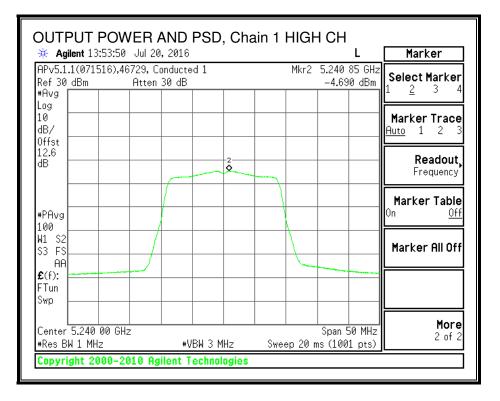


## OUTPUT POWER AND PSD, Chain 1



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### DATE: 2016-08-18

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

# 8.4.1. 26 dB BANDWIDTH

## <u>LIMITS</u>

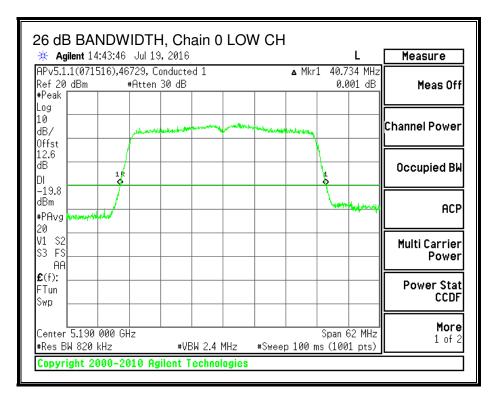
None; for reporting purposes only.

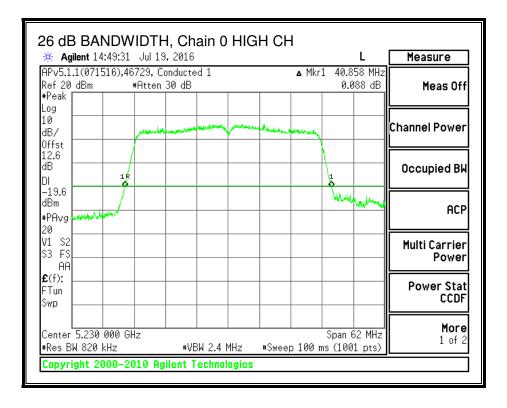
### **RESULTS**

Channel	Frequency	26 dB BW	26 dB BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5190	40.73	40.20
High	5230	40.86	40.38

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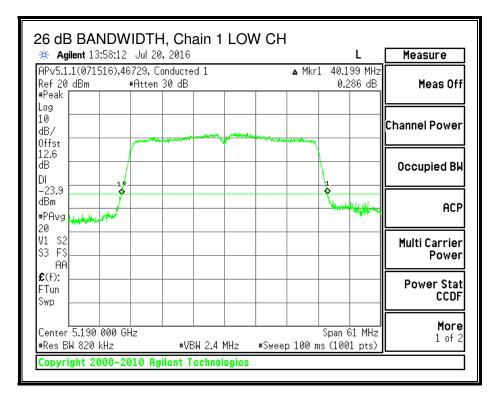
## 26 dB BANDWIDTH, Chain 0

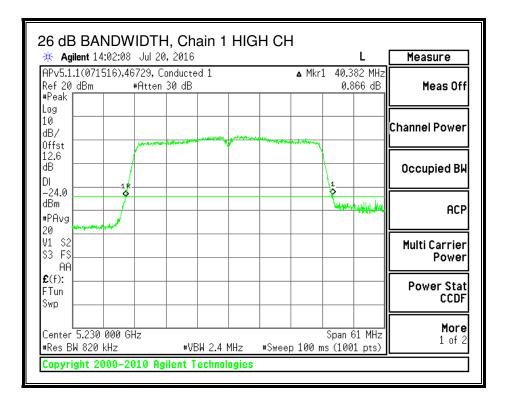




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#### 26 dB BANDWIDTH, Chain 1





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# 8.4.2. 99% BANDWIDTH

## **LIMITS**

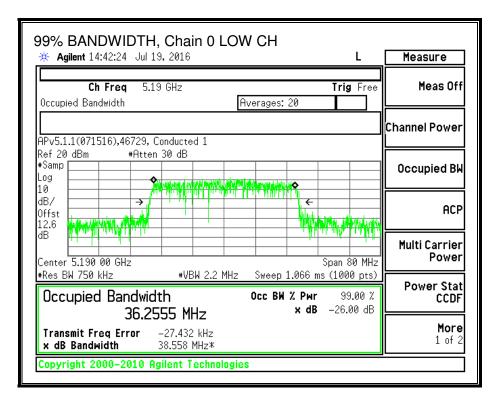
None; for reporting purposes only.

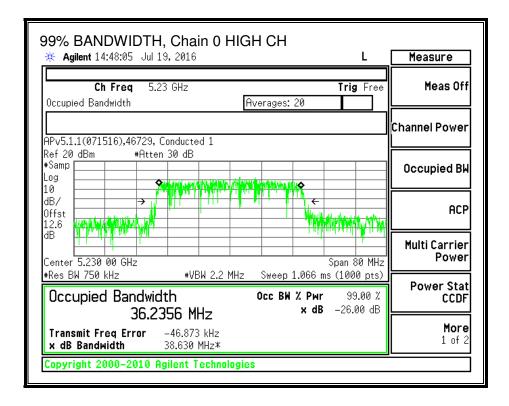
## **RESULTS**

Channel	Frequency	99% BW	99% BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5190	36.2555	36.2560
High	5230	36.2356	36.2656

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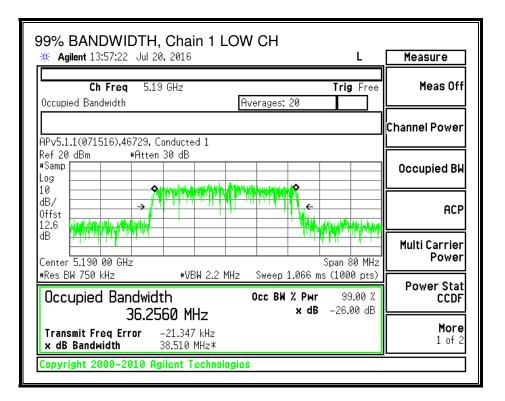
# 99% BANDWIDTH, Chain 0

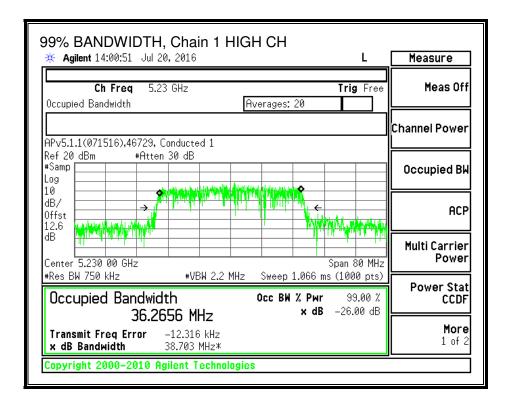




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#### 99% BANDWIDTH, Chain 1





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# 8.4.3. AVERAGE POWER

## **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### Average Power Results

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5190	11.60	6.82	12.85
High	5230	11.67	6.80	12.89

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# 8.4.4. OUTPUT POWER AND PSD

## LIMITS

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-topoint 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.

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# DIRECTIONAL ANTENNA GAIN

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-4.46

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-1.47

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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	5190	-4.46	-1.47	24.00	11.00

 Duty Cycle CF (dB)
 0.12
 Included in Calculations of Corr'd Power & PSD

## **Output Power Results**

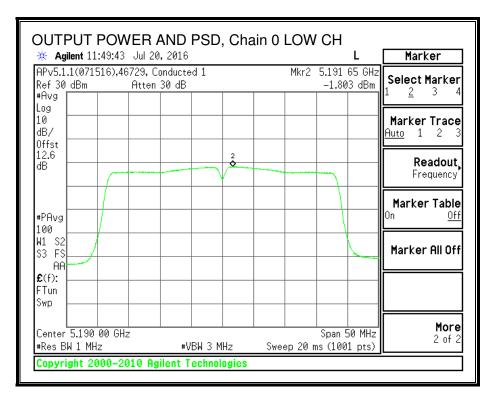
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5190	11.60	6.82	12.97	24.00	-11.03
High	5230	11.67	6.80	13.01	24.00	-10.99

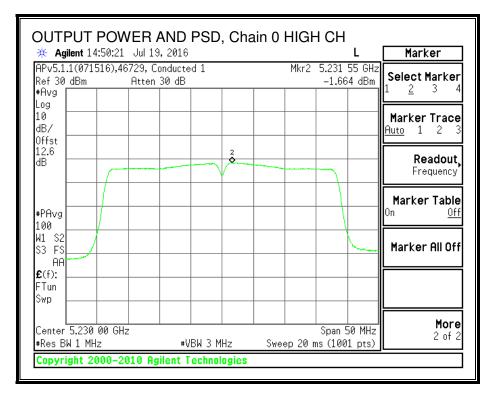
#### PSD Results

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	( <b>1 1 1 1 1 1</b>					
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	(MHz) 5190	( <b>dBm)</b> -1.80	( <b>dBm)</b> -6.91	( <b>dBm)</b> -0.52	(dBm) 11.00	( <b>dB</b> ) -11.52

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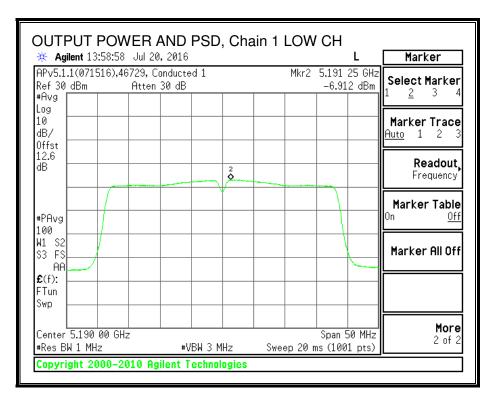
# OUTPUT POWER AND PSD, Chain 0

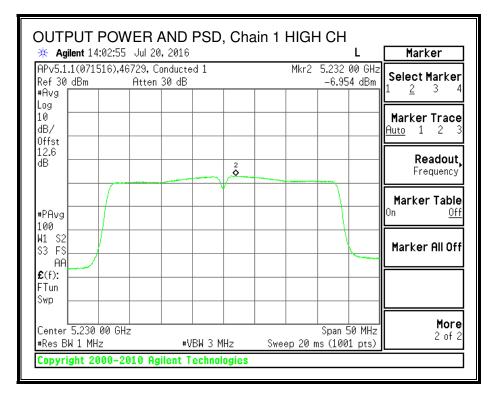




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# OUTPUT POWER AND PSD, Chain 1





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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>

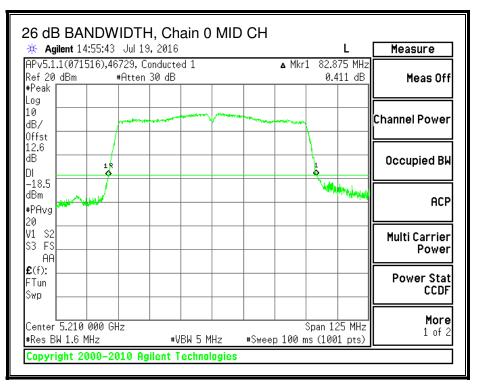
None; for reporting purposes only.

# **RESULTS**

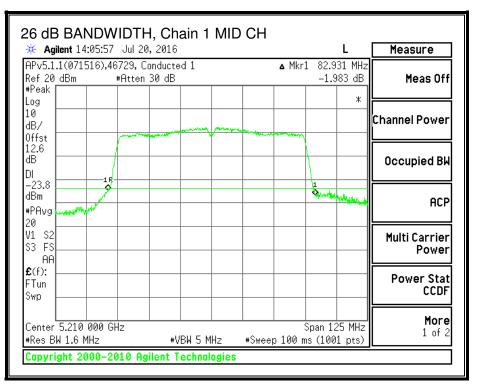
Channel	Frequency	26 dB BW	26 dB BW	
		Chain 0	Chain 1	
	(MHz)	(MHz)	(MHz)	
Mid	5210	82.88	82.93	

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### 26 dB BANDWIDTH, Chain 0



#### 26 dB BANDWIDTH, Chain 1



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# 8.5.2. 99% BANDWIDTH

# **LIMITS**

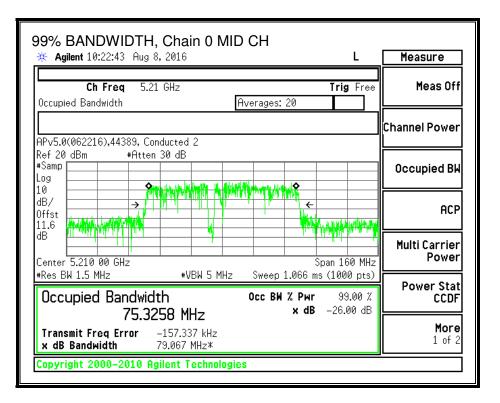
None; for reporting purposes only.

# **RESULTS**

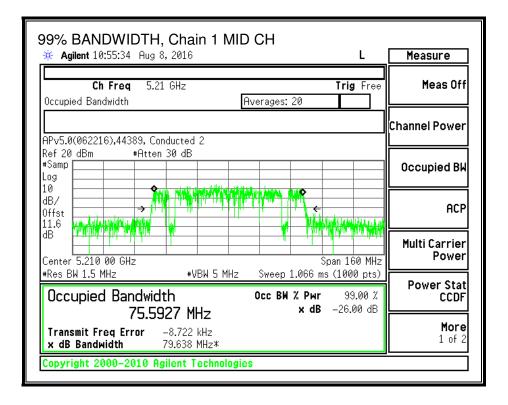
Channel	Frequency	99% BW	99% BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Mid	5210	75.3258	75.5927

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## 99% BANDWIDTH, Chain 0



#### 99% BANDWIDTH, Chain 1



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# 8.5.3. AVERAGE POWER

## **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### **Average Power Results**

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Mid	5210	11.63	6.60	12.82

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# 8.5.4. OUTPUT POWER AND PSD

## LIMITS

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-topoint 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.

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# DIRECTIONAL ANTENNA GAIN

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-4.46

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-1.47

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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)
Mid	5210	-4.46	-1.47	24.00	11.00

Duty Cycle CF (dB) 0.26	Included in Calculations of Corr'd Power & PSD
-------------------------	--

### **Output Power Results**

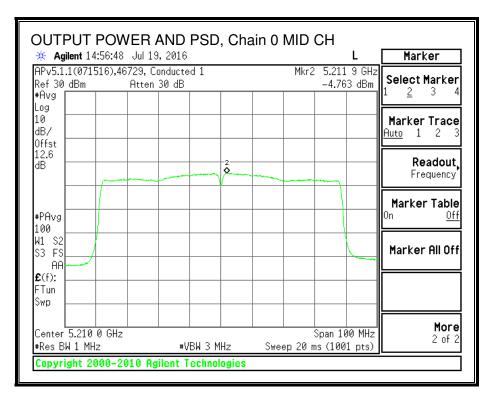
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5210	11.63	6.60	13.08	24.00	-10.92

#### **PSD Results**

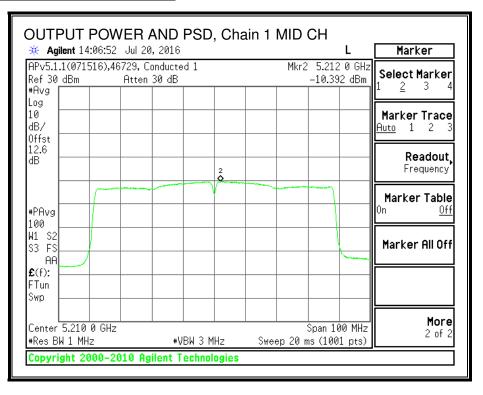
Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5210	-4.76	-10.39	-3.45	11.00	-14.45

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# **OUTPUT POWER AND PSD, Chain 0**



#### **OUTPUT POWER AND PSD, Chain 1**



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# 8.6. 802.11a MODE IN THE 5.3 GHz BAND

# 8.6.1. 26 dB BANDWIDTH

#### **LIMITS**

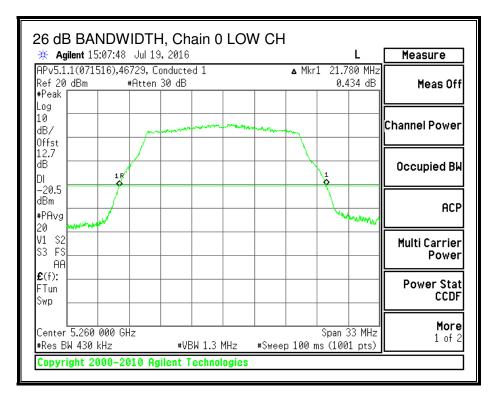
None; for reporting purposes only.

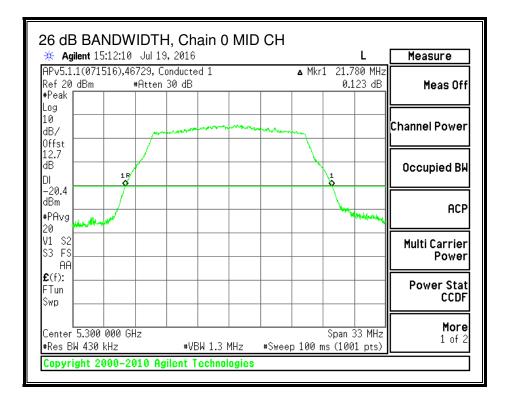
### **RESULTS**

Channel	Frequency	26 dB BW	26 dB BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5260	21.78	21.68
Mid	5300	21.78	21.71
High	5320	21.78	21.78

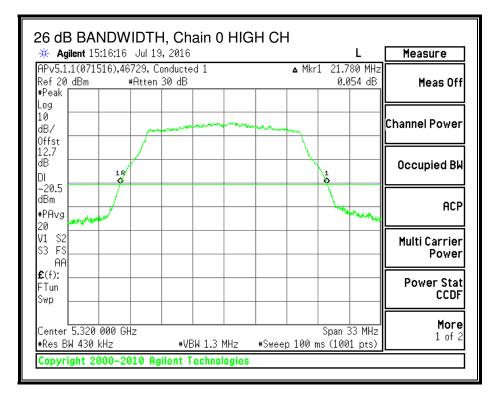
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#### 26 dB BANDWIDTH, Chain 0

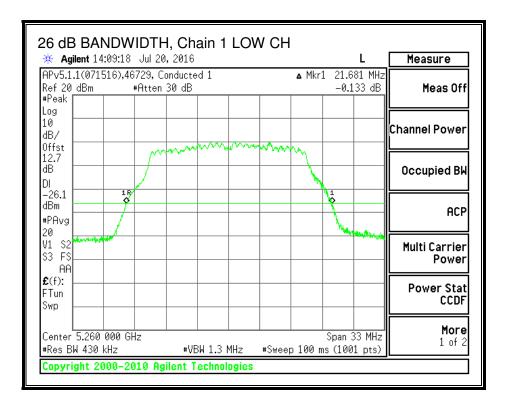




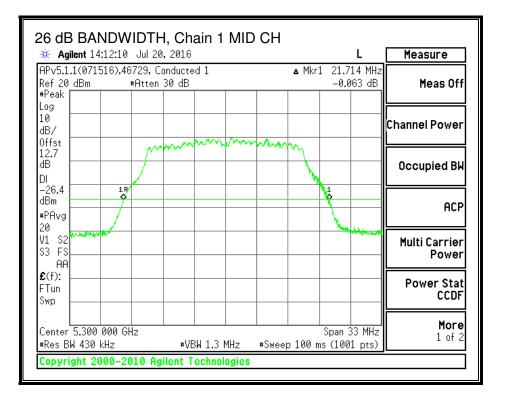
Page 74 of 354 UL LLC FORM NO: 03-EM-F00858 12 Laboratory Dr., RTP, NC 27709 TEL: (919) 549-1400 This report shall not be reproduced except in full, without the written approval of UL LLC.

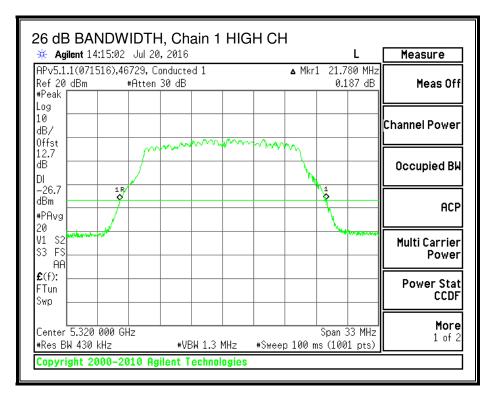


#### 26 dB BANDWIDTH, Chain 1



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# 8.6.2. 99% BANDWIDTH

#### **LIMITS**

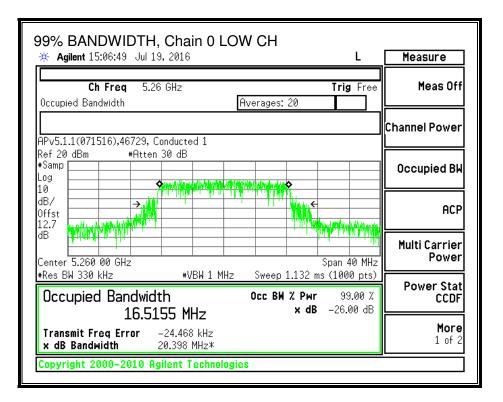
None; for reporting purposes only.

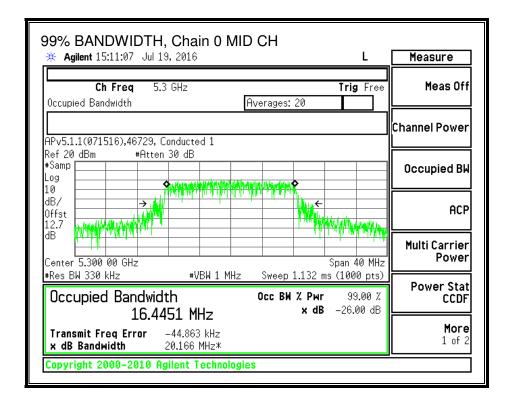
### **RESULTS**

Channel	Frequency	99% BW	99% BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5260	16.5155	16.4853
Mid	5300	16.4451	16.5086
High	5320	16.4728	16.4238

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## 99% BANDWIDTH, Chain 0

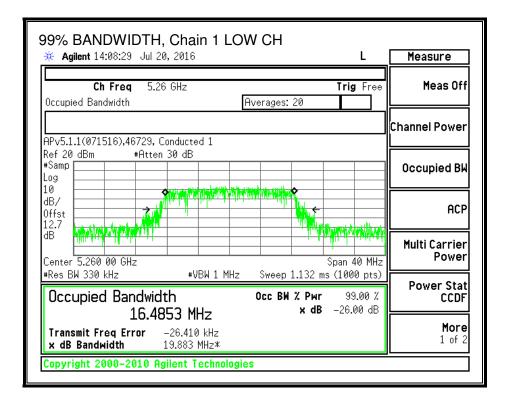




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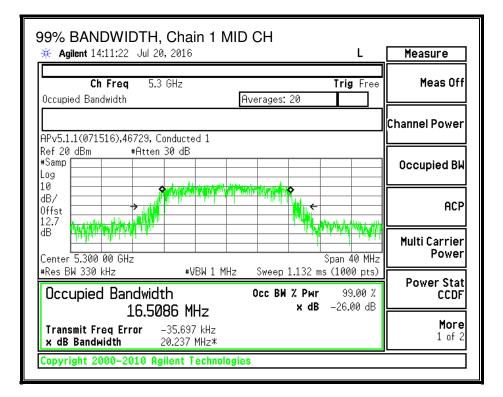
99% BANDWIDTH, Chain 0 HIGH CH	
ዡ Agilent 15:15:28 Jul 19, 2016	Measure
Ch Freq 5.32 GHz Trig Free Occupied Bandwidth Averages: 20	Meas Off
	Channel Power
Ref 20 dBm #Atten 30 dB #Samp	Occupied BW
dB/ dB/ 0ffst 12.7 dB / → // → // → // → // → // → // → //	ACP
Center 5.320 00 GHz Span 40 MHz #Res BW 330 kHz #VBW 1 MHz Sweep 1.132 ms (1000 pts)	Multi Carrier Power
Image: Source bit state         Image: Source	Power Stat CCDF
Transmit Freq Error       -45.689 kHz         x dB Bandwidth       20.549 MHz*	<b>More</b> 1 of 2
Copyright 2000–2010 Agilent Technologies	

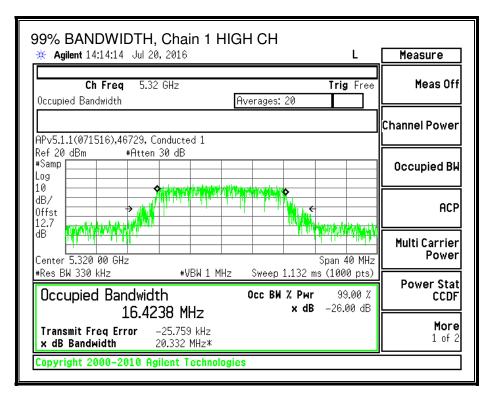
### 99% BANDWIDTH, Chain 1



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## 8.6.3. AVERAGE POWER

#### **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### Average Power Results

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5260	11.05	4.68	11.95
Mid	5300	11.12	4.69	12.01
High	5320	11.14	4.56	12.00

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# 8.6.4. 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**

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-4.46

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-1.47

#### **RESULTS**

#### Bandwidth, Antenna Gain and Limits

0.00

Channel	Frequency	Min	Directional	Directional	Power	PSD
		26 dB	Gain	Gain	Limit	Limit
		BW	for Power	for PSD		
	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
Low	5260	21.68	-4.46	-1.47	24.00	11.00
Mid	5300	21.71	-4.46	-1.47	24.00	11.00
High	5320	21.78	-4.46	-1.47	24.00	11.00

Included in Calculations of Corr'd Power & PSD

# Output Power Results

Duty Cycle CF (dB)

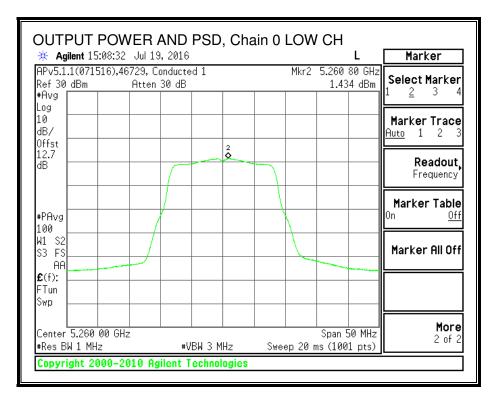
· · ·						
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	11.05	4.68	11.95	24.00	-12.05
Mid	5300	11.12	4.69	12.01	24.00	-11.99
High	5320	11.14	4.56	12.00	24.00	-12.00

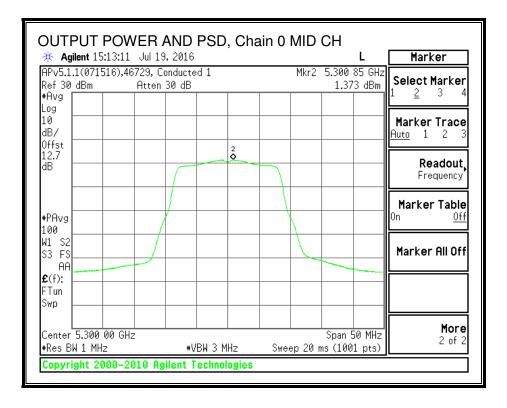
#### **PSD Results**

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	1.43	-5.52	2.23	11.00	-8.77
Mid	5300	1.37	-5.85	2.13	11.00	-8.87
High	5320	1.23	-5.81	2.01	11.00	-8.99

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## OUTPUT POWER AND PSD, Chain 0

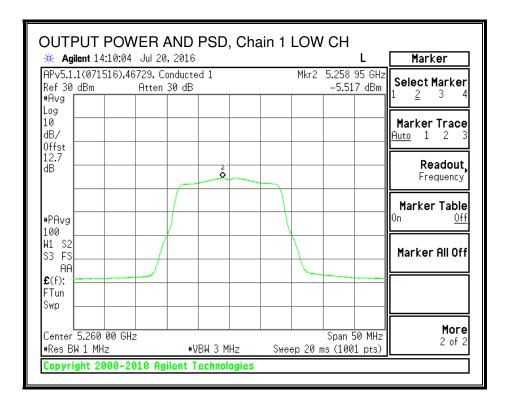




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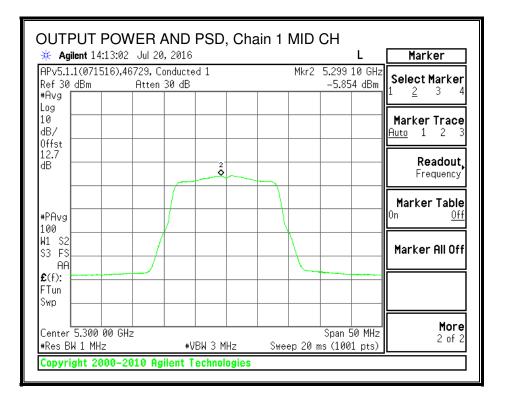
OUTPUT POWER		ain 0 HIGH CH	
🄆 🔆 Agilent 15:17:49 Jul 1		L	Marker
APv5.1.1(071516),46729,0 Ref 30 dBm Atter #Avg Log	Conducted 1 n 30 dB	Mkr2 5.318 95 GHz 1.227 dBm	Select Marker 1 <u>2</u> 3 4
10 dB/ Offst	2		<b>Marker Trace</b> <u>Auto</u> 1 2 3
12.7 dB	Ś.		<b>Readout</b> Frequency
*PAvg 100			Marker Table <sup>On <u>Off</u></sup>
W1 S2 S3 FS AA			Marker All Off
£(f): FTun Swp			
Center 5.320 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 50 MHz Sweep 20 ms (1001 pts)	More 2 of 2
Copyright 2000-2010 A	gilent Technologies		

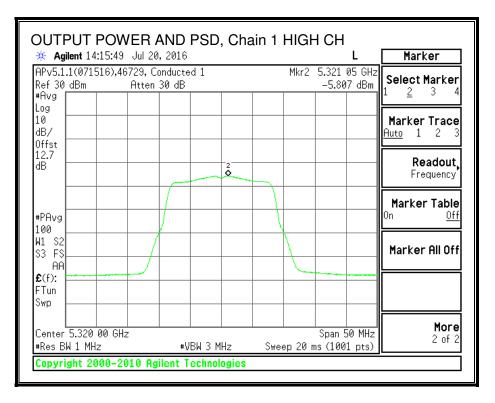
### OUTPUT POWER AND PSD, Chain 1



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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>

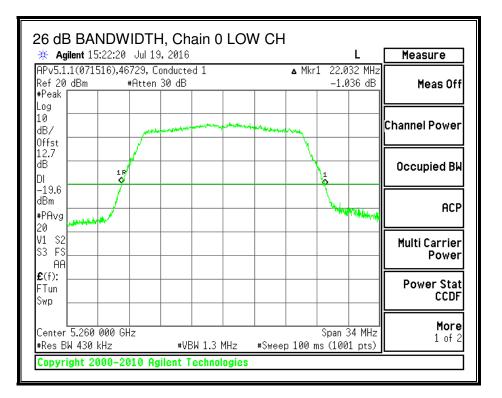
None; for reporting purposes only.

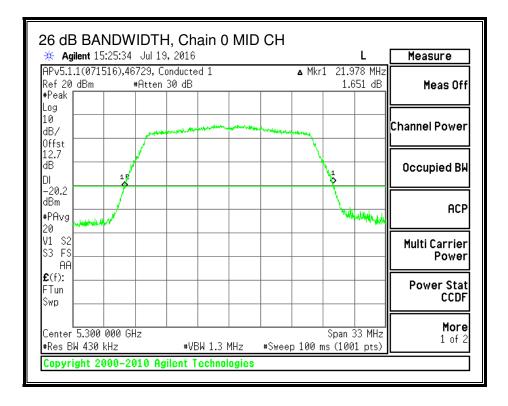
#### **RESULTS**

Channel	Frequency	26 dB BW	26 dB BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5260	22.03	21.65
Mid	5300	21.98	21.65
High	5320	22.07	21.62

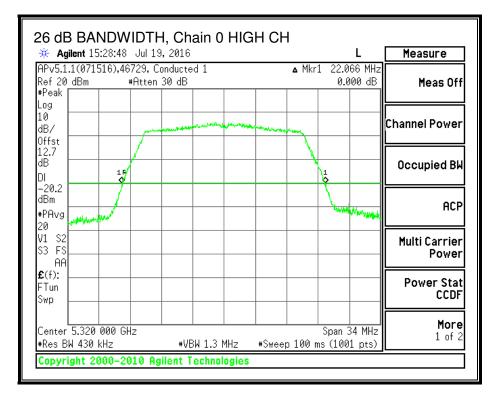
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#### 26 dB BANDWIDTH, Chain 0

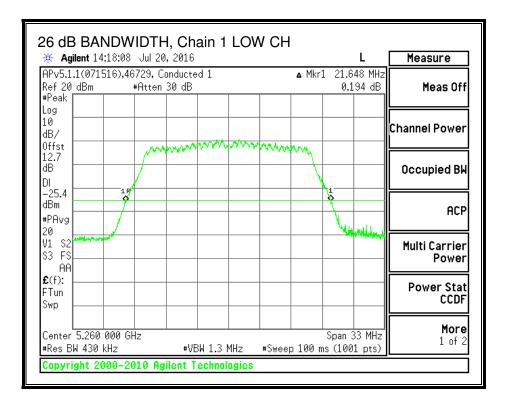




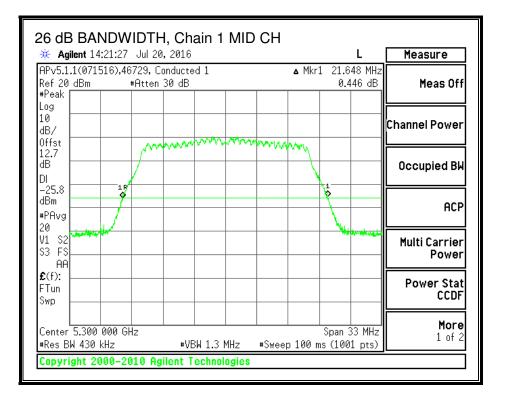
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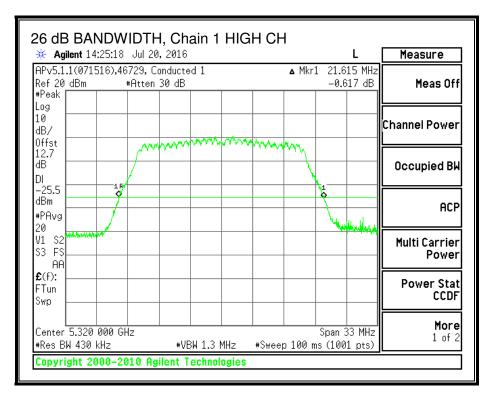


#### 26 dB BANDWIDTH, Chain 1



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# 8.7.2. 99% BANDWIDTH

### **LIMITS**

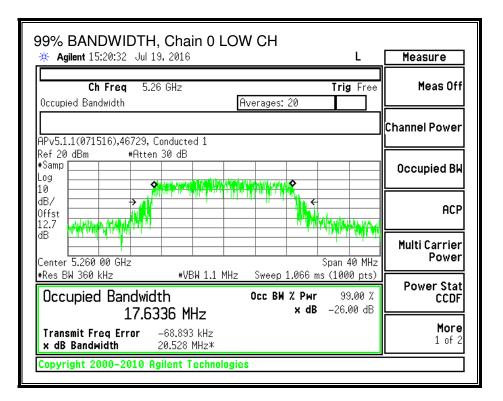
None; for reporting purposes only.

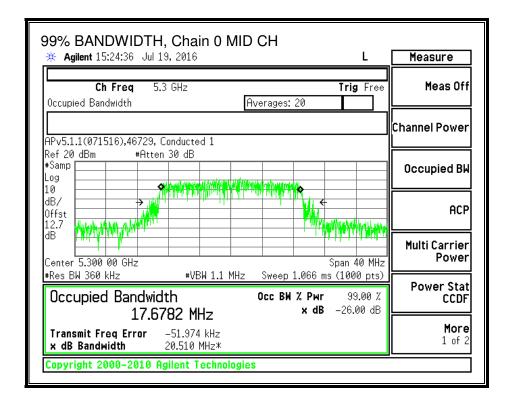
### **RESULTS**

Channel	Frequency	99% BW	99% BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5260	17.6336	17.7038
Mid	5300	17.6781	17.7274
High	5320	17.6792	17.7179

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## 99% BANDWIDTH, Chain 0

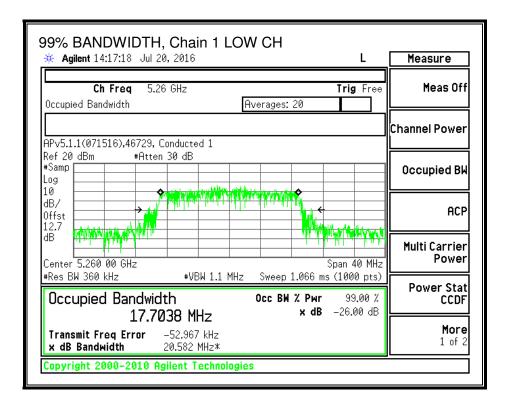




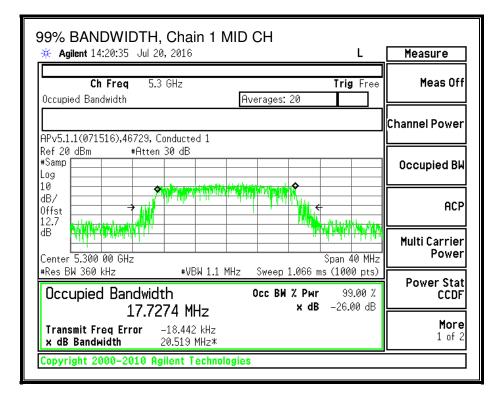
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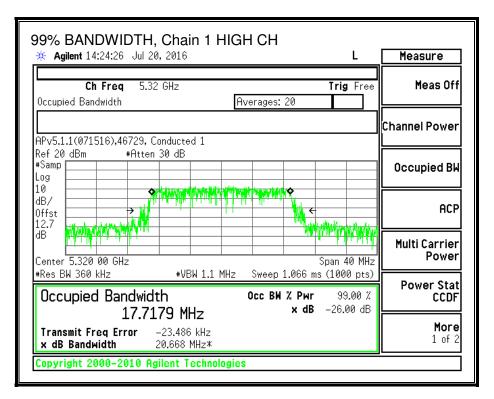
Occupied Bandwidth Averages: 20 Channel Power APv5.1.1(071516),46729, Conducted 1 Ref 20 dBm #Atten 30 dB *Samp Log 10 dB/ dB/ offst 12.7 dB Multi Carrier Device Multi Carrier Device	99% BANDWIDTH, Chain 0 H	IIGH CH	
Occupied Bandwidth     Averages: 20       APv5.1.1(071516),46729, Conducted 1       Ref 20 dBm     #Atten 30 dB       *Samp     Image: Conducted 1       Log     Image: Conducted 1       10     Image: Conducted 1       dB/     Image: Conducted	<b>Agilent</b> 15:28:02 Jul 19, 2016	L	Measure
APv5.1.1(071516),46729, Conducted 1         Ref 20 dBm       *Atten 30 dB         *Samp       Occupied BW         Log       Occupied BW         10       Offst         12.7       Offst         dB       Offst         12.7       Offst         dB       Offst         12.7       Offst         0       Offst         12.7       Offst         0B       Offst         12.7       Offst         0B       Offst         12.7       Offst         0B       Offst         12.7       Span 40 MHz         Power       Span 40 MHz         Power       Span 40 MHz         Power Stat       CCDF         17.6792 MHz       x dB         20.577 MHz*       Occ BW % PW 99.00 % <th>-</th> <th></th> <th>Meas Off</th>	-		Meas Off
Ref 20 dBm       #Atten 30 dB         *Samp Log 10 dB/ Offst 12.7 dB       Image: Context Size of the second	ODuE 1 1(071516) 46729. Conducted 1		Channel Power
*Samp Log 10 dB/ Offst 12.7 dB Center 5.320 00 GHz *Res Bk 360 kHz *VBW 1.1 MHz Cecupied Bandwidth Cecupied Bandwid			
ACP         AB/         Offst         12.7         dB         Center 5.320 00 GHz         *Res BW 360 kHz         *VBW 1.1 MHz         Sweep 1.066 ms (1000 pts)         Power Stat         CCCupied Bandwidth         Occ BW % Pwr       99.00 %         17.6792 MHz       × dB         Transmit Freq Error       -46.693 kHz         × dB Bandwidth       20.577 MHz*	#Samp Log		Occupied BW
Center 5.320 00 GHz     Span 40 MHz       #Res BM 360 kHz     #VBW 1.1 MHz     Sweep 1.066 ms (1000 pts)       Occupied Bandwidth     Occ BW % Pwr     99.00 %       17.6792 MHz     × dB     -26.00 dB       Transmit Freq Error     -46.693 kHz     More       x dB Bandwidth     20.577 MHz*     More	dB/ dB/ 0ffst 12.7 white sum that yet a		ACP
Occupied BandwidthOcc BW % Pwr99.00 %Power Stat17.6792 MHz× dB-26.00 dBMoreTransmit Freq Error-46.693 kHz1 of 2× dB Bandwidth20.577 MHz*1 of 2	Center 5.320 00 GHz		Power
Occupied Bandwidth         Occ BW % Pwr         99.00 %         CCDF           17.6792 MHz         × dB         -26.00 dB         More           Transmit Freq Error         -46.693 kHz         1 of 2           x dB Bandwidth         20.577 MHz*         1 of 2	#Res BW 360 kHz #VBW 1.1 M	Hz – Sweep 1.066 ms (1000 pts)	
Transmit Freq Error x dB Bandwidth-46.693 kHz 20.577 MHz*More 1 of 2			CCDF
Copyright 2000-2010 Agilent Technologies	Transmit Freq Error -46.693 kHz		
	Copyright 2000-2010 Agilent Technolo	gies	

#### 99% BANDWIDTH, Chain 1



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# 8.7.3. AVERAGE POWER

#### **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### **Average Power Results**

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5260	11.06	4.85	11.99
Mid	5300	11.10	4.72	12.00
High	5320	11.09	4.73	11.99

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# 8.7.4. 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**

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-4.46

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-1.47

#### **RESULTS**

#### Bandwidth, Antenna Gain and Limits

0.00

Channel	Frequency	Min	Directional	Directional	Power	PSD
		26 dB	Gain	Gain	Limit	Limit
		BW	for Power	for PSD		
	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
Low	5260	21.65	-4.46	-1.47	24.00	11.00
Mid	5300	21.65	-4.46	-1.47	24.00	11.00
High	5320	21.62	-4.46	-1.47	24.00	11.00

Included in Calculations of Corr'd Power & PSD

# Output Power Results

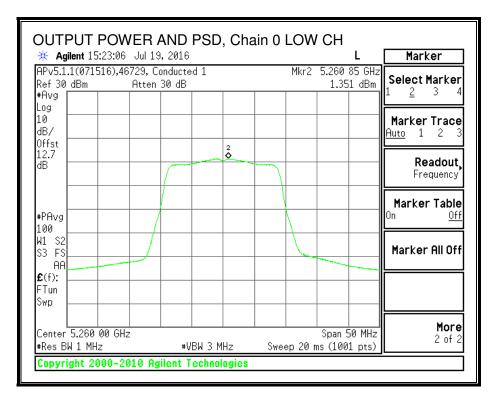
Duty Cycle CF (dB)

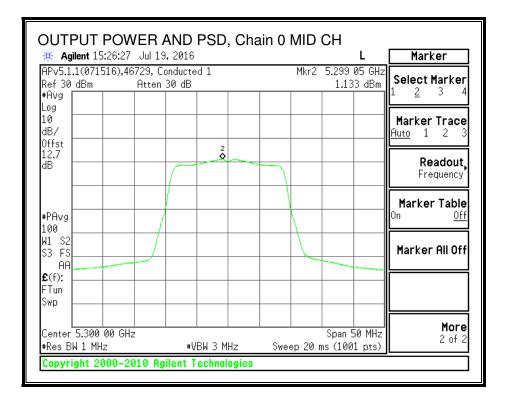
Output I						
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	11.06	4.85	11.99	24.00	-12.01
Mid	5300	11.10	4.72	12.00	24.00	-12.00
High	5320	11.09	4.73	11.99	24.00	-12.01

#### **PSD Results**

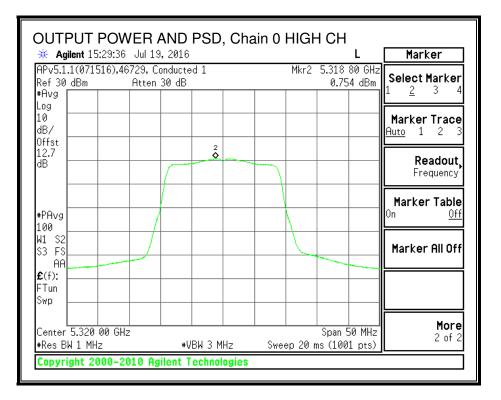
Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	1.35	-5.88	2.10	11.00	-8.90
Mid	5300	1.13	-6.24	1.86	11.00	-9.14
High	5320	0.75	-6.10	1.57	11.00	-9.43

## OUTPUT POWER AND PSD, Chain 0

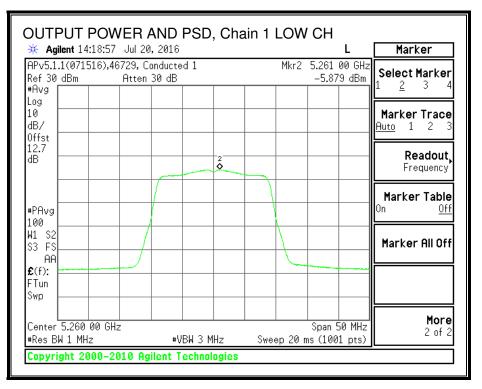




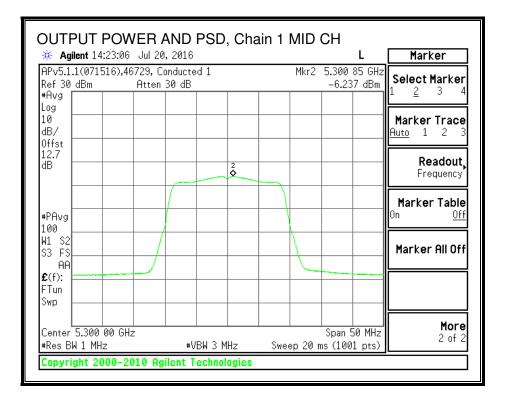
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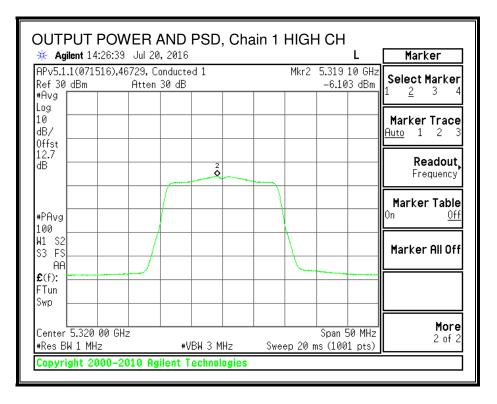


### OUTPUT POWER AND PSD, Chain 1



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#### DATE: 2016-08-18

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

## 8.8.1. 26 dB BANDWIDTH

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

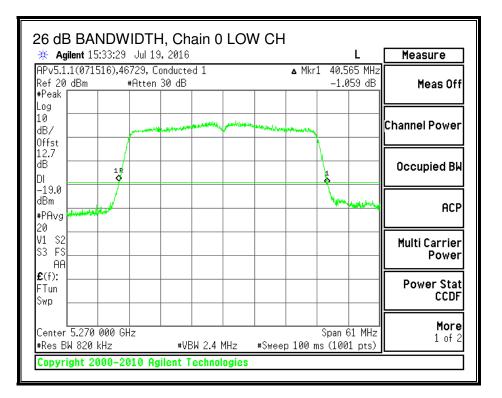
None; for reporting purposes only.

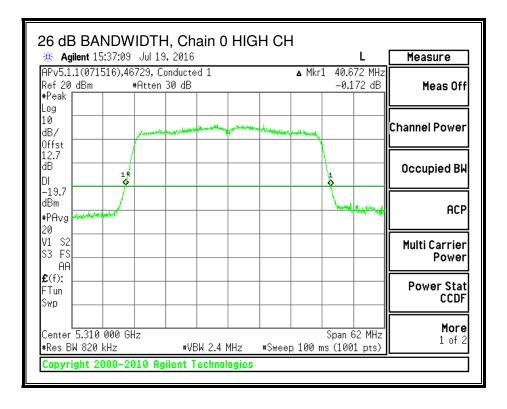
#### **RESULTS**

Channel	Frequency 26 dB BW		26 dB BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5270	40.57	40.26
High	5310	40.67	40.38

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#### 26 dB BANDWIDTH, Chain 0

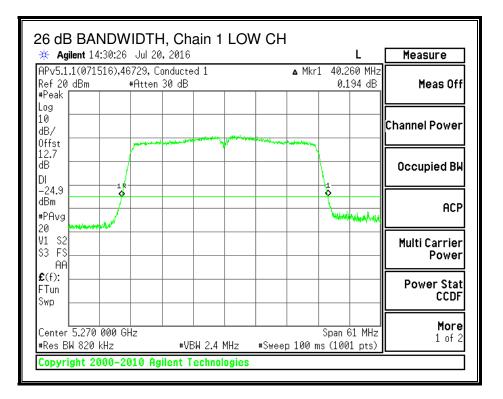


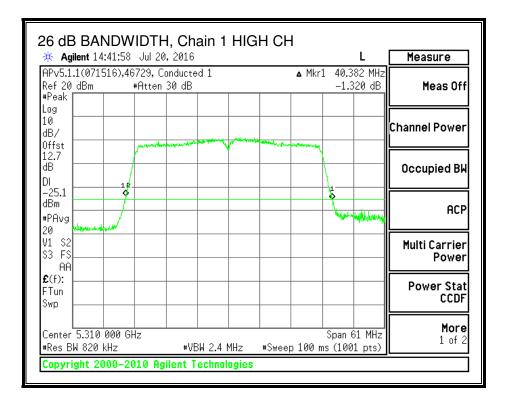


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#### 26 dB BANDWIDTH, Chain 1





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## 8.8.2. 99% BANDWIDTH

#### **LIMITS**

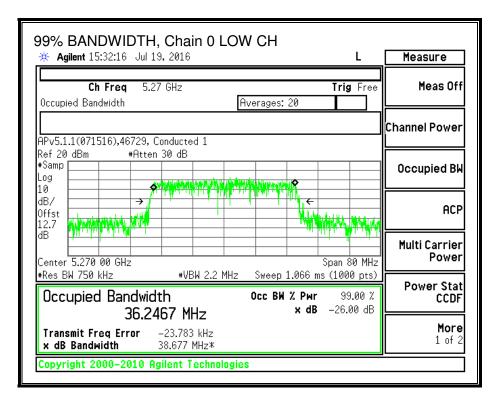
None; for reporting purposes only.

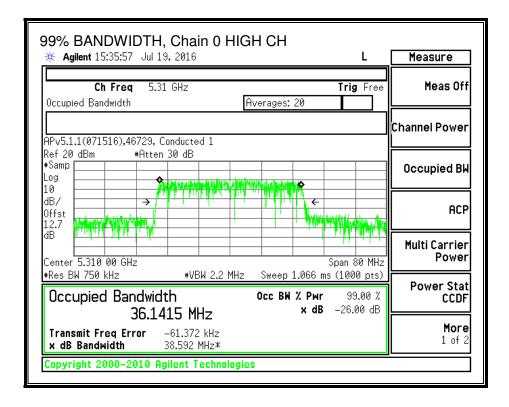
#### **RESULTS**

Channel	Frequency	99% BW	99% BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5270	36.2467	36.1660
High	5310	36.1415	36.1905

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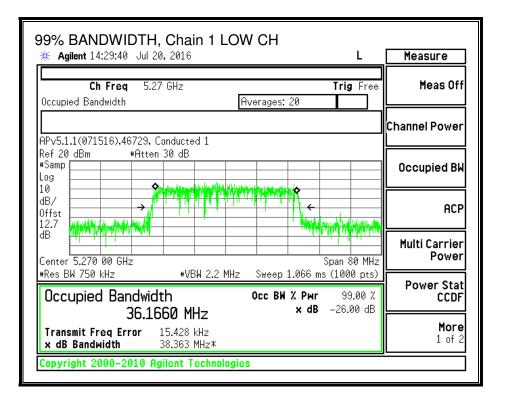
### 99% BANDWIDTH, Chain 0

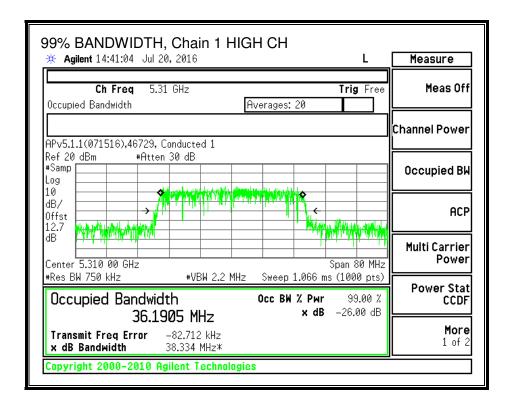




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#### 99% BANDWIDTH, Chain 1





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# 8.8.3. AVERAGE POWER

#### **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### Average Power Results

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5270	11.39	5.42	12.37
High	5310	11.36	5.43	12.35

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# 8.8.4. OUTPUT POWER AND PSD

### **LIMITS**

UL LLC

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**

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-4.46

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-1.47

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#### **RESULTS**

#### 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)
Low	5270	40.26	-4.46	-1.47	24.00	11.00
High	5310	40.38	-4.46	-1.47	24.00	11.00

 Duty Cycle CF (dB)
 0.12
 Included in Calculations of Corr'd Power & PSD

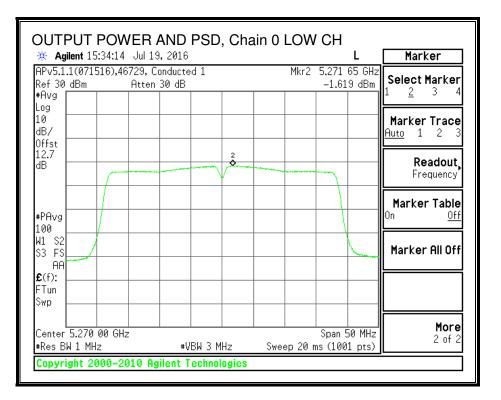
#### **Output Power Results**

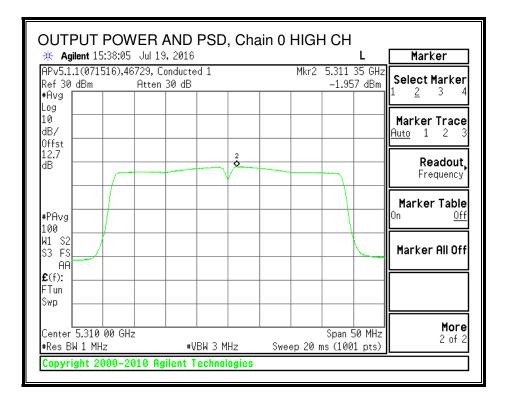
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5270	11.39	5.42	12.49	24.00	-11.51
High	5310	11.36	5.43	12.47	24.00	-11.53

#### **PSD Results**

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5270	-1.62	-7.87	-0.57	11.00	-11.57
High	5310	-1.96	-8.10	-0.89	11.00	-11.89

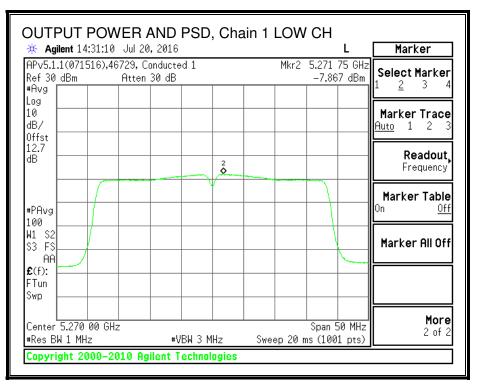
#### OUTPUT POWER AND PSD, Chain 0

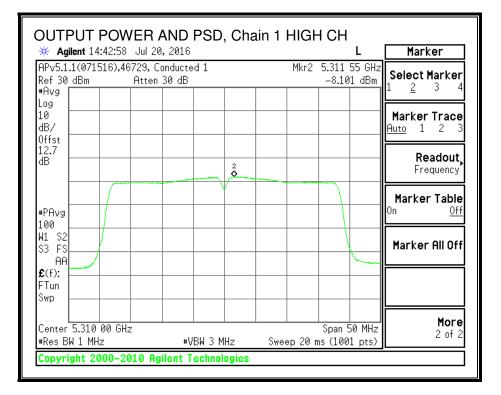




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#### **OUTPUT POWER AND PSD, Chain 1**





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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>

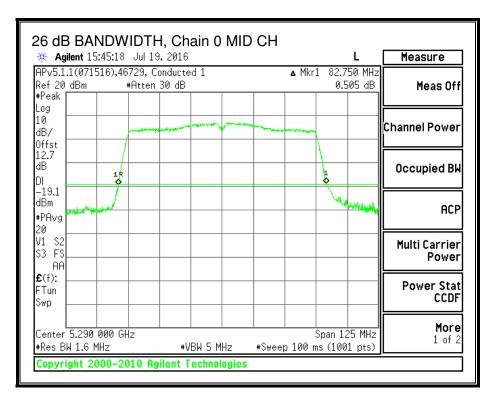
None; for reporting purposes only.

#### **RESULTS**

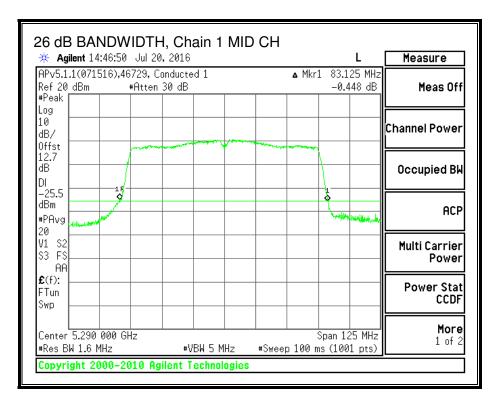
Channel	Frequency	26 dB BW	26 dB BW	
		Chain 0	Chain 1	
	(MHz)	(MHz)	(MHz)	
Mid	5290	82.75	83.13	

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#### 26 dB BANDWIDTH, Chain 0



#### 26 dB BANDWIDTH, Chain 1



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## 8.9.2. 99% BANDWIDTH

#### **LIMITS**

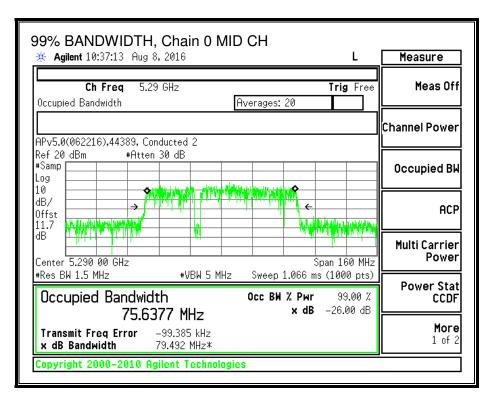
None; for reporting purposes only.

#### **RESULTS**

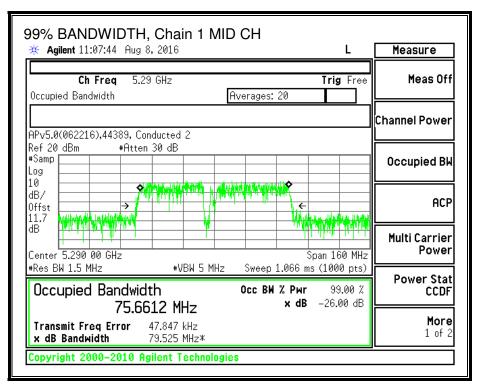
Channel	Frequency	99% BW	99% BW	
		Chain 0	Chain 1	
	(MHz)	(MHz)	(MHz)	
Mid	5290	75.6377	75.6612	

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#### 99% BANDWIDTH, Chain 0



#### 99% BANDWIDTH, Chain 1



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## 8.9.3. AVERAGE POWER

#### **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### Average Power Results

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
		(ubiii)	(ubiii)	(ubiii)

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## 8.9.4. 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**

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.90	-5.10	-4.46

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>	
Antenna	Antenna	Directional	
Gain	Gain	Gain	
(dBi)	(dBi)	(dBi)	
-3.90	-5.10	-1.47	

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#### **RESULTS**

#### 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)
Mid	5290	82.75	-4.46	-1.47	24.00	11.00

	Duty Cycle CF (dB)	0.26	Included in Calculations of Corr'd Power & PSD
--	--------------------	------	--

#### **Output Power Results**

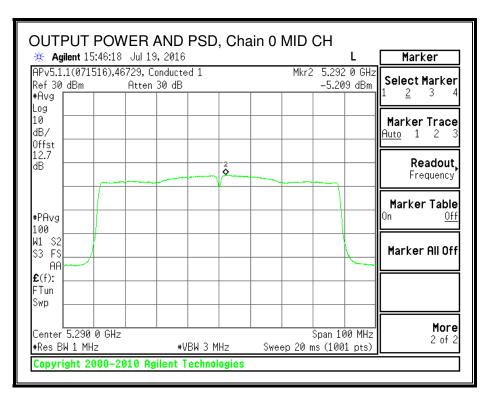
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5290	11.25	5.08	12.45	24.00	-11.55

#### **PSD Results**

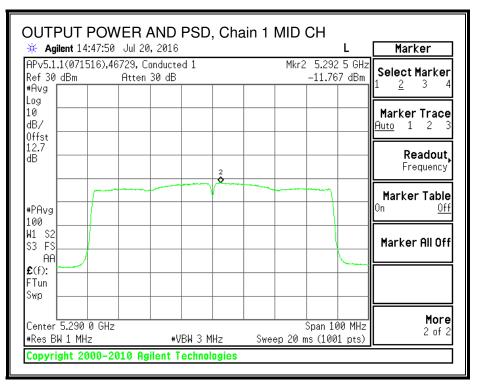
Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5290	-5.21	-11.77	-4.08	11.00	-15.08

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### OUTPUT POWER AND PSD, Chain 0



#### OUTPUT POWER AND PSD, Chain 1



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# 8.10. 802.11a MODE IN THE 5.6 GHz BAND

## 8.10.1. 26 dB BANDWIDTH

#### **LIMITS**

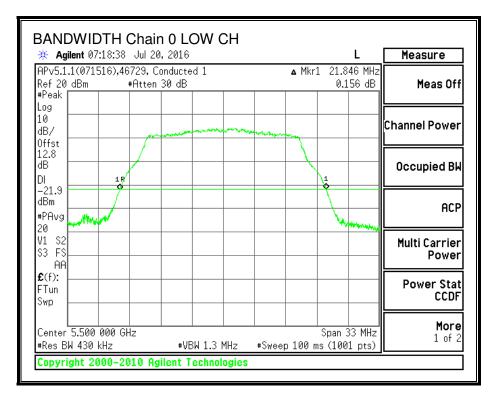
None; for reporting purposes only.

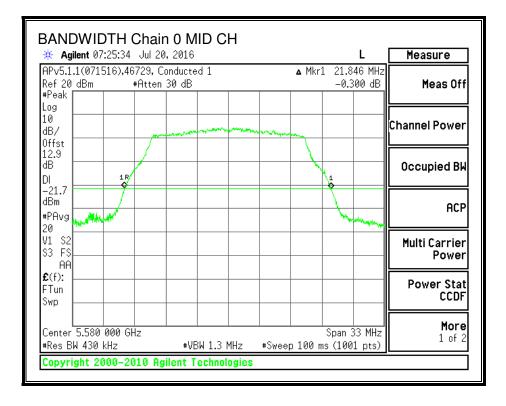
#### **RESULTS**

Channel	Frequency	26 dB BW	26 dB BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5500	21.85	21.62
Mid	5580	21.85	21.75
High	5700	21.85	21.71
144	5720	21.81	21.71

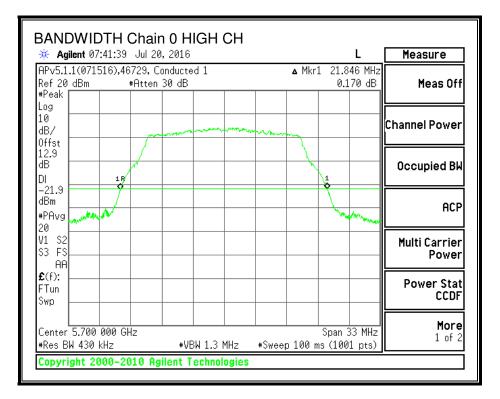
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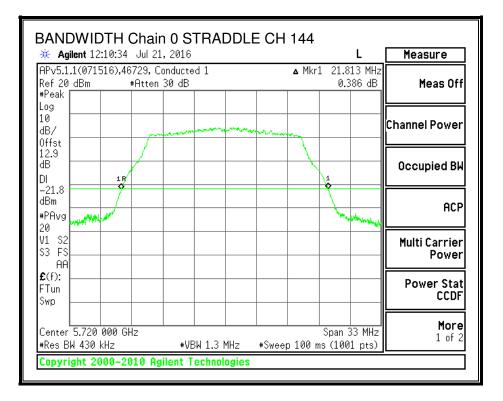
#### 26 dB BANDWIDTH, Chain 0





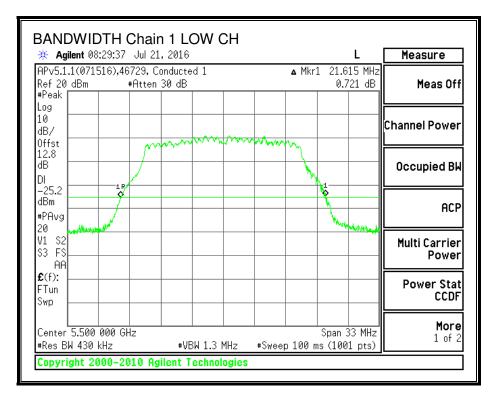
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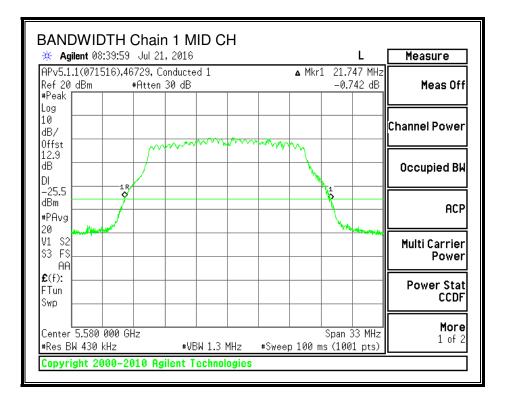




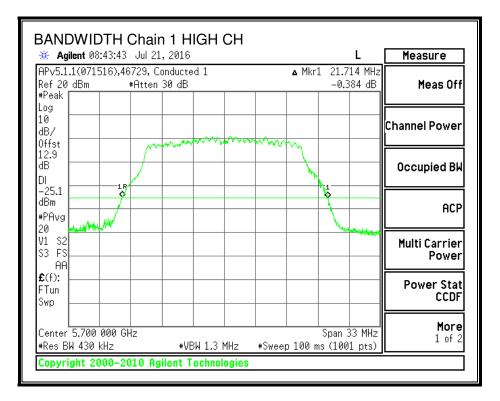
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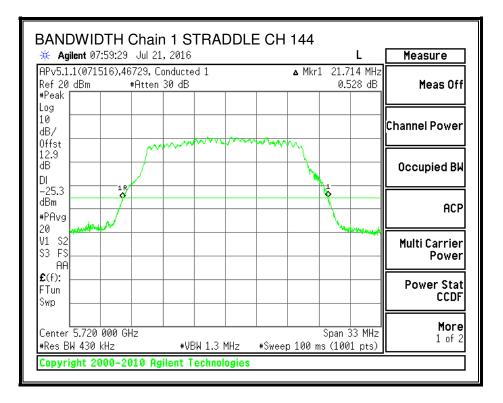
#### 26 dB BANDWIDTH, Chain 1





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## 8.10.2. 99% **BANDWIDTH**

#### **LIMITS**

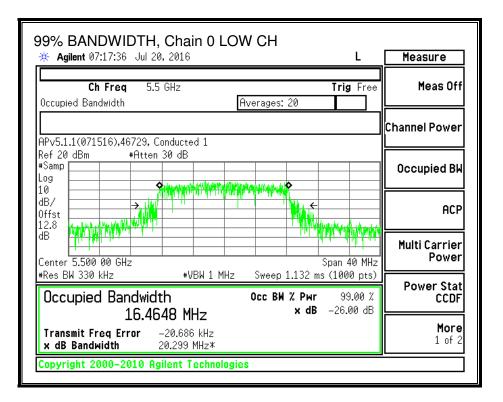
None; for reporting purposes only.

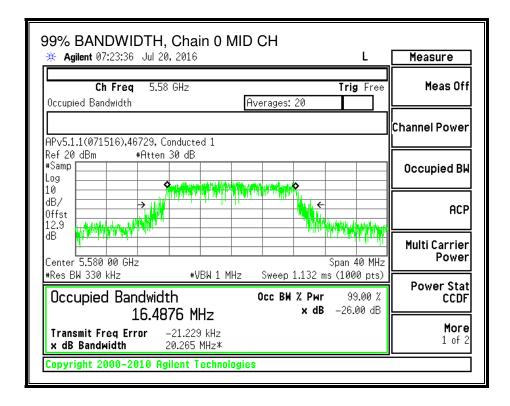
#### **RESULTS**

Channel	Frequency	99% BW	99% BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5500	16.4648	16.4577
Mid	5580	16.4876	16.4820
High	5700	16.4683	16.5041
144	5720	16.4666	16.4816

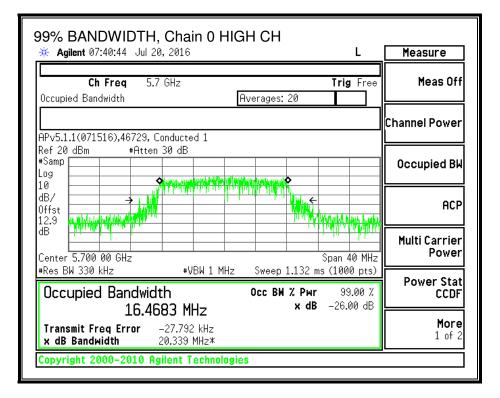
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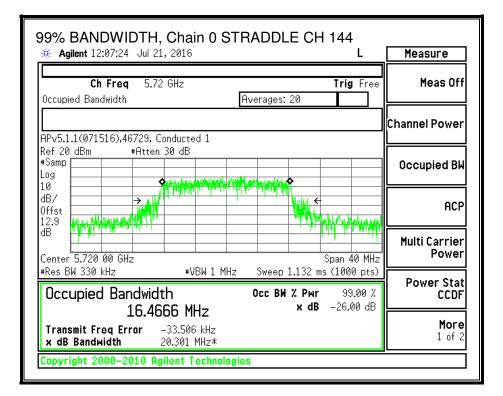
#### 99% BANDWIDTH, Chain 0





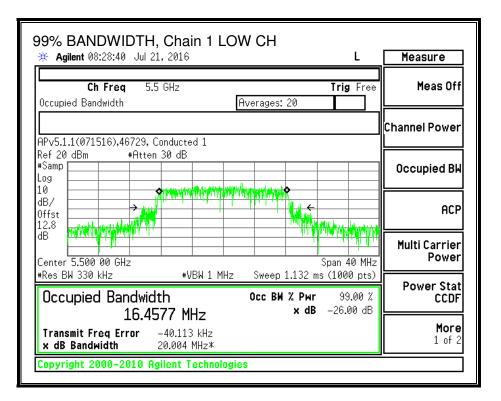
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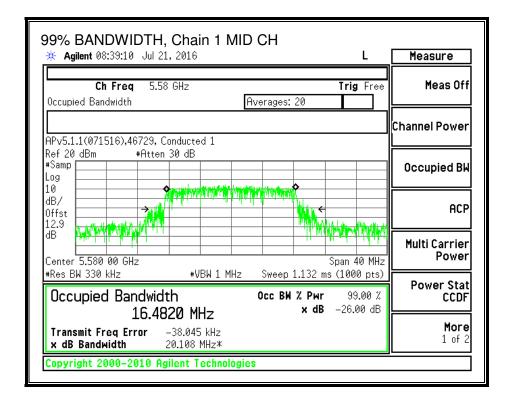




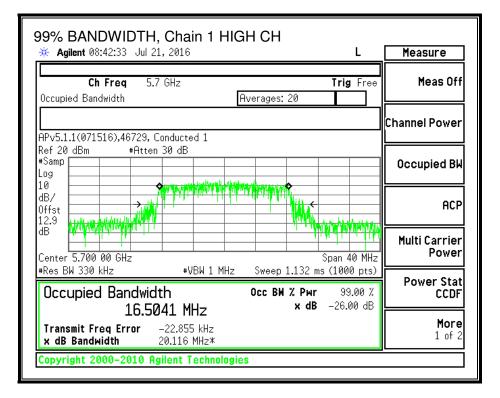
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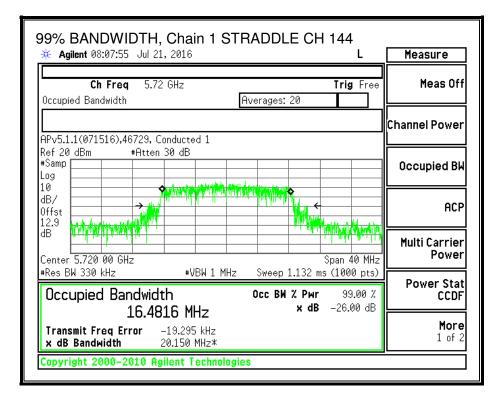
#### 99% BANDWIDTH, Chain 1





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## 8.10.3. AVERAGE POWER

#### **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### **Average Power Results**

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5500	9.65	5.84	11.16
Mid	5580	10.20	5.56	11.48
High	5700	10.14	5.53	11.43

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#### 8.10.4. 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**

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.10	-2.20	-2.15

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.10	-2.20	0.86

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#### **RESULTS**

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional		Power	PSD
		26 dB BW	Gain for Power	Gain for PSD	Limit	Limit
		DW				
	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
Low	5500	21.62	-2.15	0.86	24.00	11.00
Mid	5580	21.75	-2.15	0.86	24.00	11.00
High	5700	21.71	-2.15	0.86	24.00	11.00

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

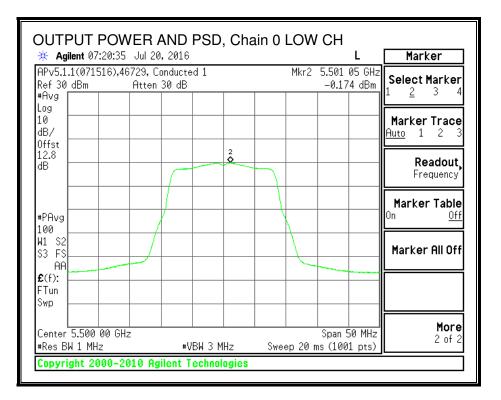
#### **Output Power Results**

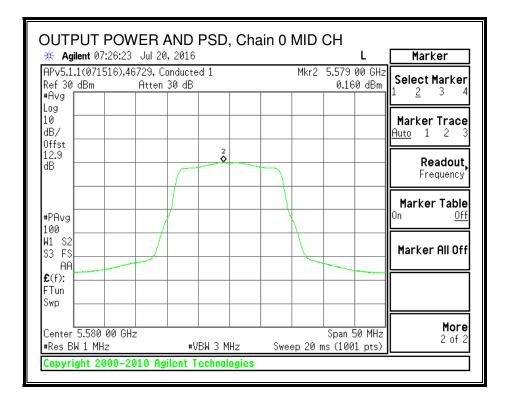
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5500	9.65	5.84	11.16	24.00	-12.84
Mid	5580	10.20	5.56	11.48	24.00	-12.52
High	5700	10.14	5.53	11.43	24.00	-12.57

#### **PSD Results**

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5500	-0.17	-4.42	1.21	11.00	-9.79
Mid	5580	0.16	-4.65	1.40	11.00	-9.60
High	5700	0.04	-4.51	1.35	11.00	-9.65

#### OUTPUT POWER AND PSD, Chain 0



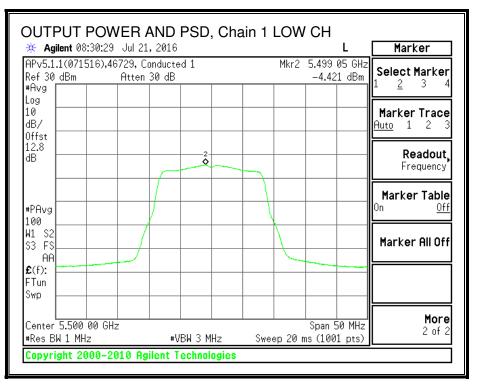


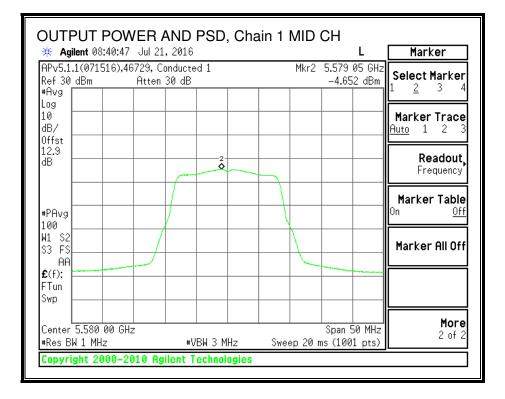
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	•	in 0 HIGH	СН	Maukau
Image: Agilent 07:42:57         Jul 20,           APv5.1.1(071516),46729, Co         Ref 30 dBm         Atten 3           #Avg         Image: Atten 3         Image: Atten 3	nducted 1	Mkr2 5.	L .701 05 GHz 0.041 dBm	Marker Select Marker 1 <u>2</u> 3 4
Log 10 dB/ Offst				<b>Marker Trace</b> <u>Auto</u> 1 2 3
12.9 dB				<b>Readout,</b> Frequency
#PAvg				Marker Table <sup>On <u>Off</u></sup>
W1 S2 S3 FS AA £(f):				Marker All Off
FTun Swp				
Center 5.700 00 GHz #Res BW 1 MHz Copyright 2000-2010 Agi	#VBW 3 MHz		pan 50 MHz (1001 pts)	<b>More</b> 2 of 2
Copyright 2000-2010 Hgi	ient recinologies			

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#### **OUTPUT POWER AND PSD, Chain 1**





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OUTPUT POWER / * Agilent 08:44:33 Jul 21		ain 1 HIGH CH	L	Marker
APv5.1.1(071516),46729, C Ref 30 dBm Atten #Avg	onducted 1	Mkr2 5.699 0 -4.507		<b>Select Marker</b> 1 <u>2</u> 3 4
Log 10 dB/ Offst				<b>Marker Trace</b> <u>Auto</u> 1 2 3
12.9 dB	2			<b>Readout</b> Frequency
#PAvg				Marker Table <sup>On <u>Off</u></sup>
W1 S2 S3 FS AA				Marker All Off
£(f): FTun Swp				
Center 5.700 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 5 Sweep 20 ms (1001		<b>More</b> 2 of 2
Copyright 2000-2010 Ag	ilent Technologies			

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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	21.71	-2.15	0.86	24.00	11.00

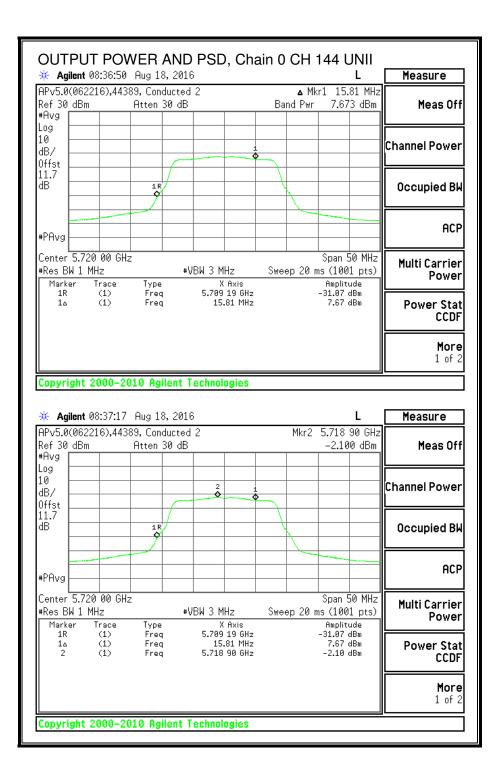
Duty Cycle CF (dB) 0.	.00	Included in Calculations of Corr'd Power & PSD
-----------------------	-----	--

#### **Output Power Results**

Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	7.67	3.90	9.19	24.00	-14.81

#### **PSD Results**

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	-2.10	-5.98	-0.61	11.00	-11.61



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UL LLC

_		) Aug 18, 2			L	Measure
ef 30 Avg	(062216),443 dBm	389, Conduct Atten 30 (		▲ Mkr1 Band Pwr	L 15.77 MHz 3.897 dBm	Meas Of
og 0 3/ ffst						Channel Powe
1.7 B		18				Occupied Bl
PAvg						ACI
	5.720 00 GH W 1 MHz er Trace	łz Type	#VBW 3 MHz X Axis	Sweep 20 ms	Amplitude	Multi Carrie Powe
1R 1۵		Freq Freq	5.709 23 GHz 15.77 MHz	-3	33.61 dBm 3.90 dBm	Power Sta CCDI
						More 1 of 1
opyri	ight 2000-2	010 Agilen	t Technologies			
						Maaauna
e Ag	ilent 09:23:11	. Aug 18, 2	016	Mkr2 5	<b>L</b> 5.721_05_GHz	Measure
<b>Ag</b> Pv5.0 ef 30		. Aug 18, 2	016 ed 2		<b>L</b> 5.721 05 GHz -5.982 dBm	
€ Ag Pv5.0 ef 30 Avg	ilent 09:23:11 (062216),443	. Aug 18, 2 389, Conduct	016 ed 2		5.721 05 GHz	
<b>Ag</b> Pv5.0 ≥f 30 Pvg Pvg 0 3/ S/ ffst	ilent 09:23:11 (062216),443	. Aug 18, 2 389, Conduct	016 ed 2		5.721 05 GHz	
<b>Ag</b> Pv5.0 ef 30 Pvg Pvg 0 B/ B/ ffst 1.7	ilent 09:23:11 (062216),443	. Aug 18, 2 389, Conduct	016 ed 2 JB		5.721 05 GHz	Meas Of Channel Powe
<b>Ag</b> Pv5.0 ≥f 30 Pvg 0 3/ S ffst 1.7 3	ilent 09:23:11 (062216),443	. Aug 18, 2 389, Conduct Atten 30 d	016 ed 2 JB		5.721 05 GHz	Meas Of
★ Ag Pv5.0 ef 30 Pvg 0 3/ ffst 1.7 8	ilent 09:23:11 (062216),443	Aug 18, 2 389, Conduct Atten 30 d	016 ed 2 JB	Sweep 20 ms	5.721 05 GHz -5.982 dBm	Meas Of Channel Powe Occupied Bl ACI
★ Ag Pv5.0 ef 30 Pvg 0 3/ ffst 1.7 8	ilent 09:23:11 (062216),44( dBm 5.720 00 GH W 1 MHz er Trace (1)	Aug 18, 2 389, Conduct Atten 30 o 18 18	016 ed 2 JB	Sweep 20 ms	5.721 05 GHz -5.982 dBm	Meas Of Channel Powe Occupied Bl ACI Multi Carrie

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UL LLC

#### UNII-3 BAND

#### Antenna Gain and Limit

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
144	5720	-2.15	0.86	30.00	30.00

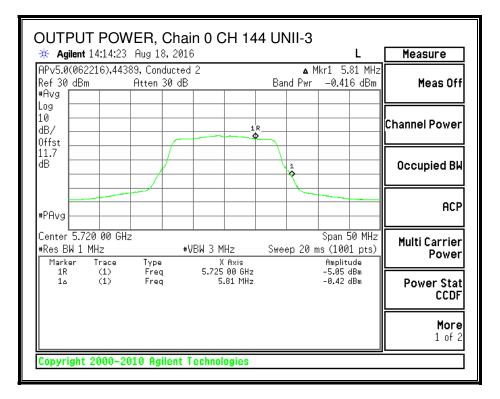
#### **Output Power Results**

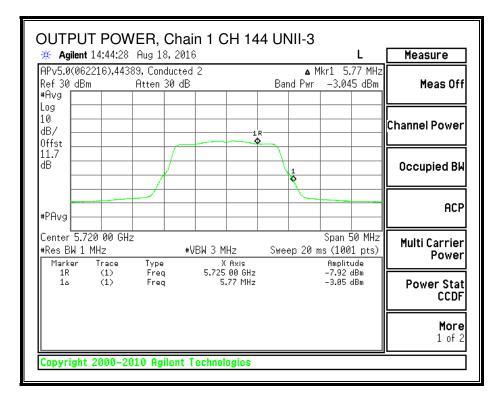
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	-0.42	-3.05	1.48	30.00	-28.52

#### **PSD Results**

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	-7.89	-10.93	-6.14	30.00	-36.14

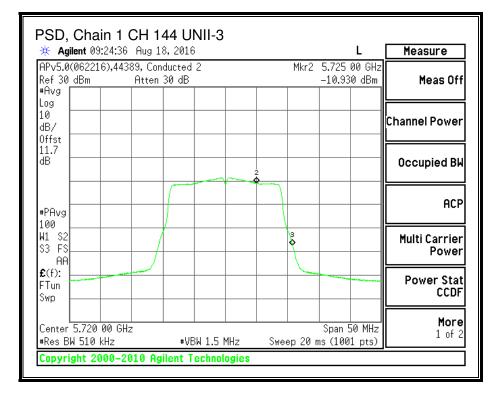
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🔆 Agilent 08:38:32 Aug			[	Measure
Avg 🛛 👘	Conducted 2 en 30 dB	Mkr2 5.72 -7.	5 05 GHz 886 dBm	Meas Off
.og .0 IB/ Dffst				Channel Power
1.7 IB		2		Occupied BW
PAvg 00			[	ACP
1 \$2 3 FS AA		3		Multi Carrier Power
t(f): Tun Wp				Power Stat CCDF
enter 5.720 00 GHz Res BW 510 kHz	#VBW 1.5 MHz		n 50 MHz 001 pts)	<b>More</b> 1 of 2



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

## 8.11.1. 26 dB BANDWIDTH

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

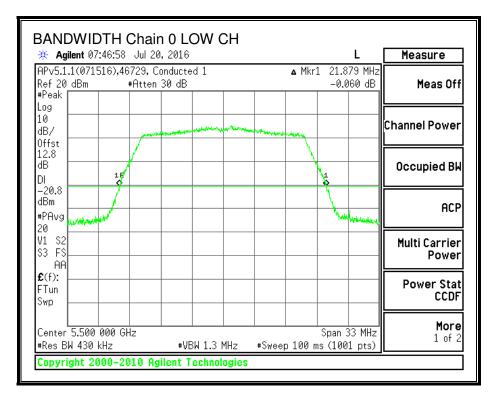
None; for reporting purposes only.

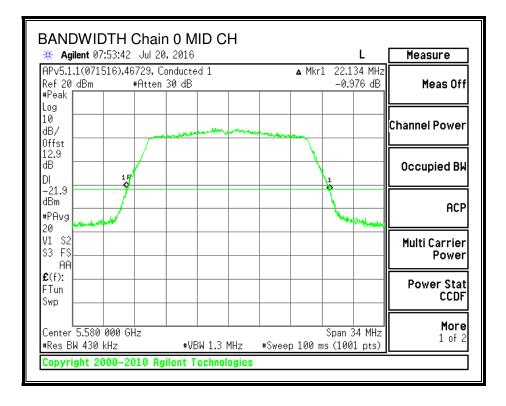
#### **RESULTS**

Channel	Frequency	26 dB BW	26 dB BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5500	21.88	21.65
Mid	5580	22.13	21.75
High	5700	22.03	21.68
144	5720	21.98	21.62

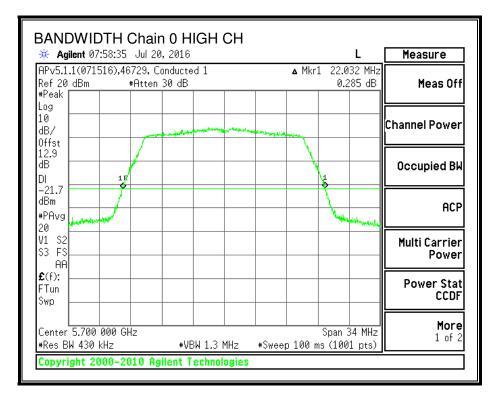
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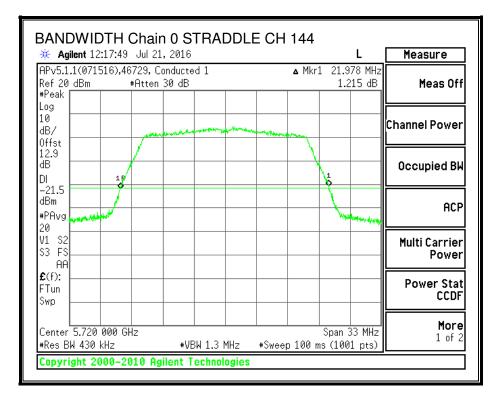
#### 26 dB BANDWIDTH, Chain 0





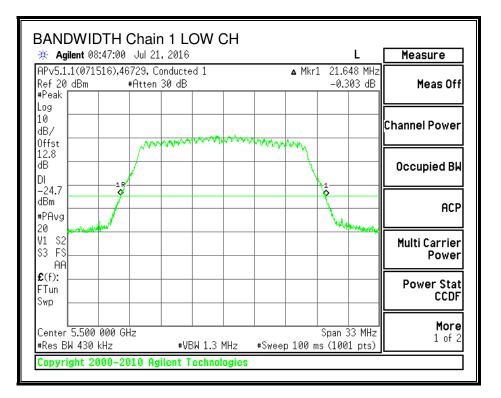
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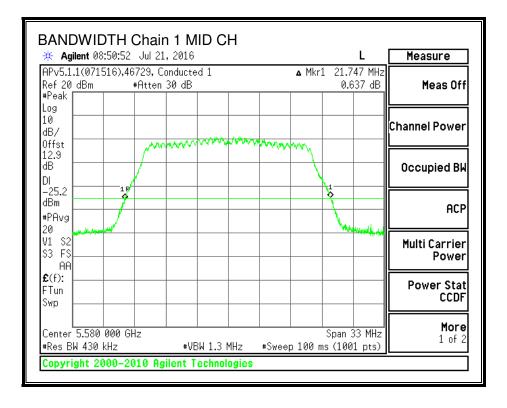




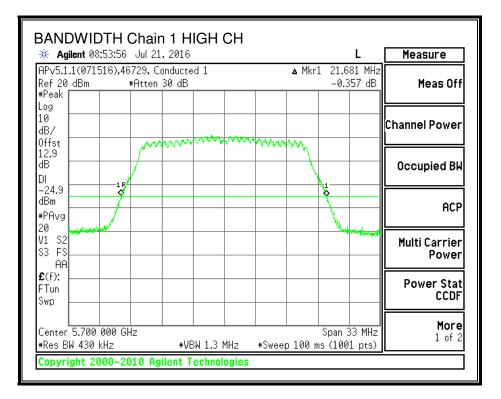
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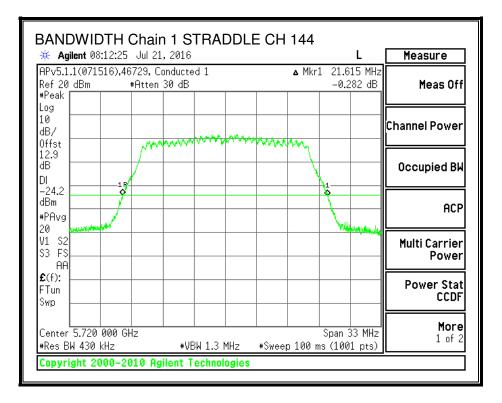
### 26 dB BANDWIDTH, Chain 1





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# 8.11.2. 99% **BANDWIDTH**

## **LIMITS**

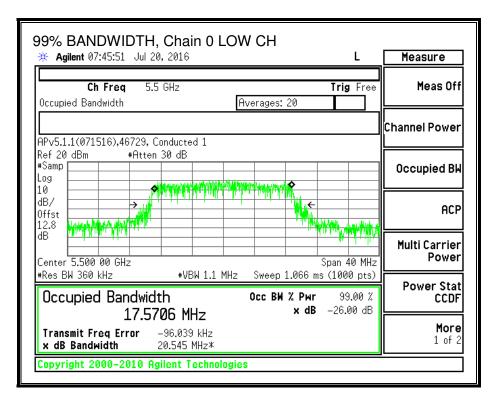
None; for reporting purposes only.

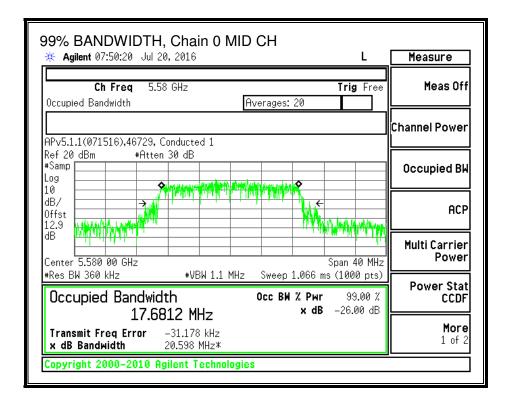
## **RESULTS**

Channel	Frequency	99% BW	99% BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5500	17.5706	17.5614
Mid	5580	17.6812	17.5640
High	5700	17.6088	17.6453
144	5720	17.6766	17.6657

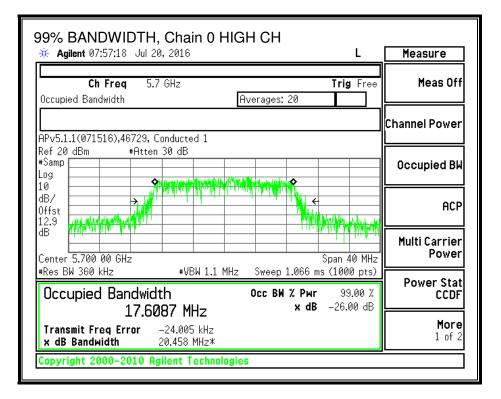
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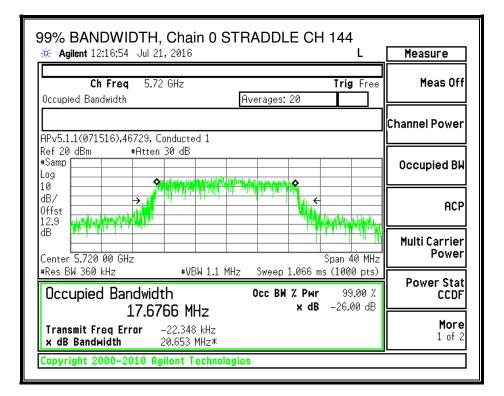
## 99% BANDWIDTH, Chain 0





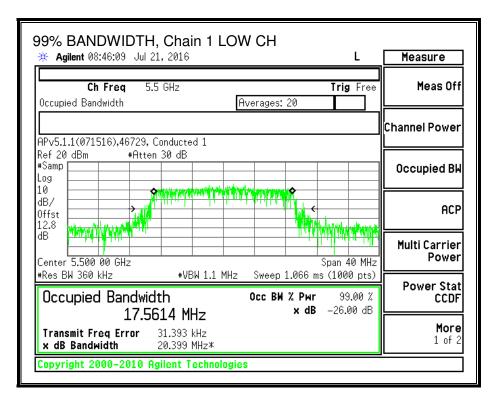
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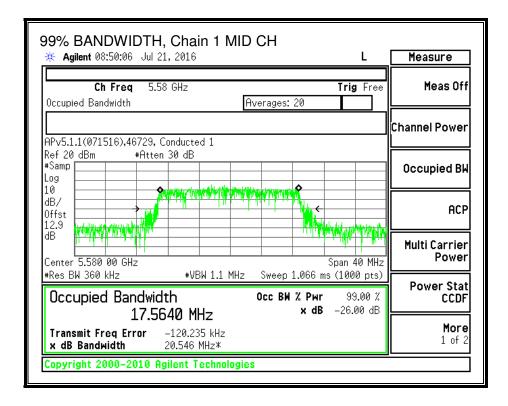




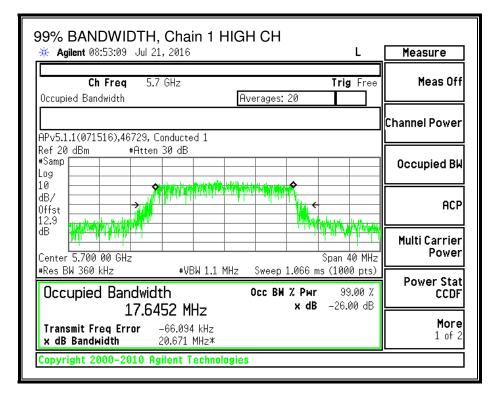
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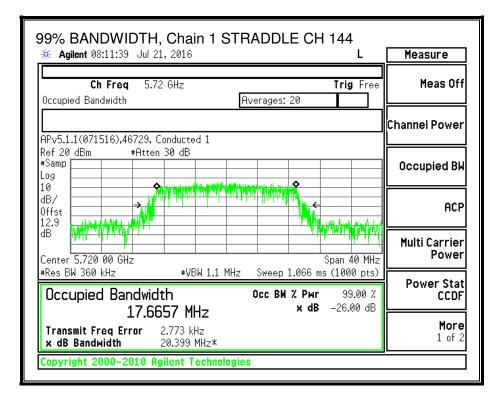
## 99% BANDWIDTH, Chain 1





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# 8.11.3. AVERAGE POWER

## **LIMITS**

None; for reporting purposes only.

#### **RESULTS**

#### Average Power Results

Channel	Frequency	Chain 0	Chain 1	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5500	10.14	5.56	11.44
Mid	5580	10.08	5.44	11.36
High	5700	9.93	5.41	11.24

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# 8.11.4. 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**

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.10	-2.20	-2.15

For PSD, the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0	Chain 1	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.10	-2.20	0.86

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## **RESULTS**

## Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Directional	Directional	Power	PSD
		26 dB	Gain	Gain	Limit	Limit
		BW	for Power	for PSD		
					(dPm)	(dBm)
	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
Low	5500	21.65	-2.15	0.86	24.00	11.00
Mid	5580	21.75	-2.15	0.86	24.00	11.00
High	5700	21.68	-2.15	0.86	24.00	11.00

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

#### **Output Power Results**

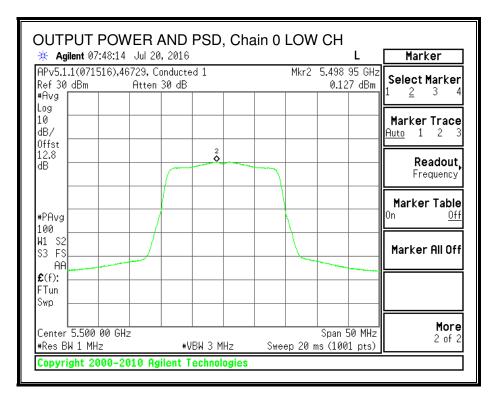
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5500	10.14	5.56	11.44	24.00	-12.56
Mid	5580	10.08	5.44	11.36	24.00	-12.64
High	5700	9.93	5.41	11.24	24.00	-12.76

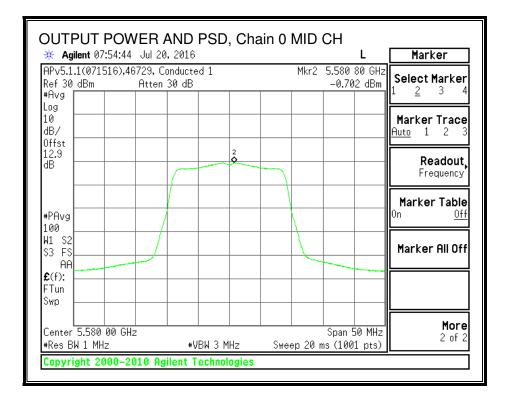
## **PSD Results**

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5500	0.13	-5.02	1.29	11.00	-9.71
Mid	5580	-0.70	-5.15	0.63	11.00	-10.37
High	5700	-0.36	-5.28	0.85	11.00	-10.15

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## OUTPUT POWER AND PSD, Chain 0

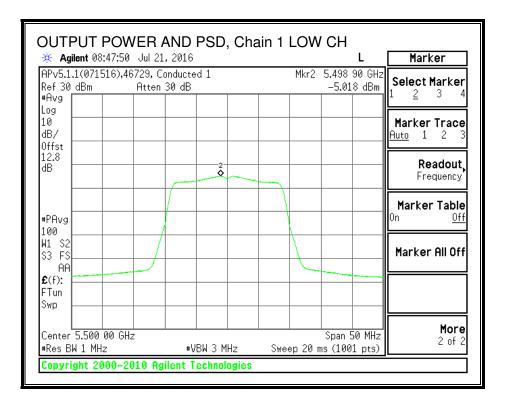




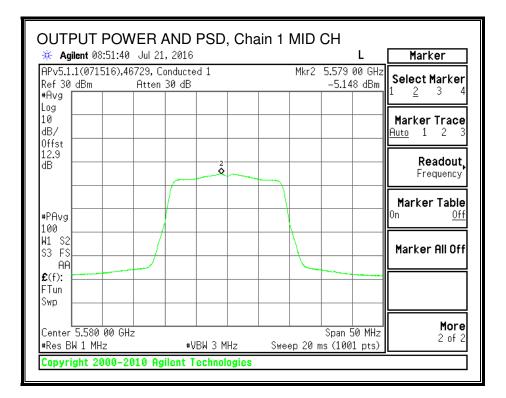
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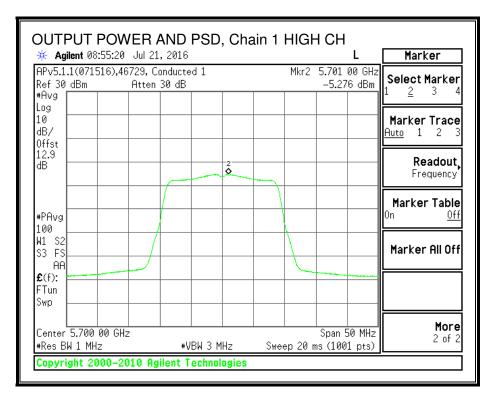
OUTPUT POWER Agilent 07:59:50 Jul 2		ain 0 HIGH CH L	Marker
#Avg	Conducted 1 n 30 dB	Mkr2 5.700 95 GHz -0.364 dBm	<b>Select Marker</b> 1 <u>2</u> 3 4
Log 10 dB/ 0ffst			<b>Marker Trace</b> <u>Auto</u> 1 2 3
12.9 dB	2		Readout, Frequency
#PAvg			Marker Table <sup>On <u>Off</u></sup>
W1 S2 S3 FS АА			Marker All Off
£(f): FTun Swp			
Center 5.700 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 50 MHz Sweep 20 ms (1001 pts)	More 2 of 2
Copyright 2000–2010 A	gilent Technologies		

## **OUTPUT POWER AND PSD, Chain 1**



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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	21.62	-2.15	0.86	24.00	11.00

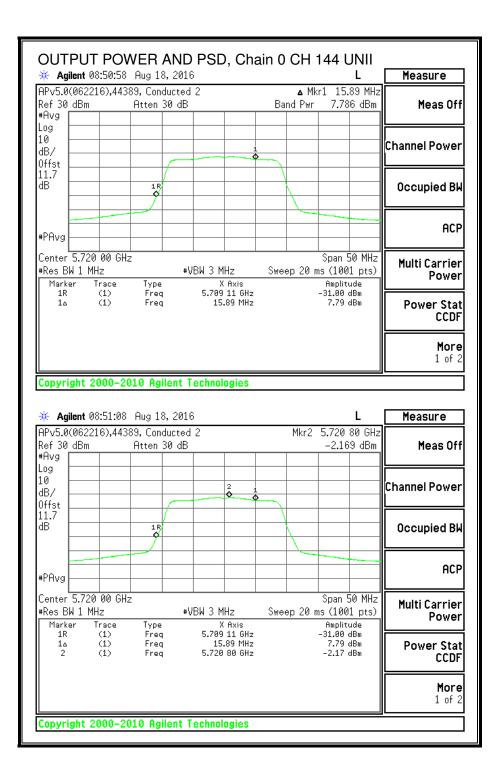
Duty Cycle CF (dB) 0.	00	Included in Calculations of Corr'd Power & PSD
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#### **Output Power Results**

Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	7.79	3.03	9.04	24.00	-14.96

#### **PSD Results**

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	-2.17	-6.85	-0.90	11.00	-11.90



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-	ent 09:09:58				L	Measure
ef30 d Avg <mark> </mark>		89, Conducte Atten 30 d		▲ Mkr: Band Pwr	1 15.81 MHz 3.027 dBm	Meas Of
og   0   B/   ffst						Channel Power
1.7   B		1R				Occupied B
PAvg -						ACF
Res BW Marker	r Trace	Туре	#VBW 3 MHz X Axis	Sweep 20 ms	Amplitude	Multi Carriei Powei
1R 1∆	(1) (1)	Freq Freq	5.709 19 GHz 15.81 MHz	-	34.92 dBm 3.03 dBm	Power Sta CCDF
						More 1 of 2
opyrig	ht 2000-2	010 Agilent	Technologies			
						Measure
e Agile	ent 09:10:12 062216),443	010 Agilent Aug 18, 20 89, Conducte Atten 30 d	16 ed 2		L 5.719 15 GHz -6.853 dBm	
Agile           Pv5.0(0           ef 30 c           Avg           Dg           0           3/	ent 09:10:12 062216),443	Aug 18, 20	16 ed 2		5.719 15 GHz	
★ Agile Pv5.0(0 ef 30 c og 0 B/ ffst 1.7	ent 09:10:12 062216),443	Aug 18, 20	116 ed 2 B		5.719 15 GHz	Meas Of
€ <b>Agile</b> Pv5.0(0 ef 30_c	ent 09:10:12 062216),443	Aug 18, 20 889, Conducte Atten 30 d	116 ed 2 B		5.719 15 GHz	Meas Of Channel Power
★ Agile Pv5.0(€ ef 30 c Pvg pg 0 8 ffst 1.7 B PAvg enter 5 Res BW Marker	ent 09:10:12 062216),443 JBm 	Aug 18, 20 889, Conducte Atten 30 d 1R 1R Z Type	116 ed 2 B 2 2 1 2 2 1 2 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Sweep 20 ms	5.719 15 GHz -6.853 dBm Span 50 MHz (1001 pts) Amplitude	Meas Of Channel Power Occupied Bl ACF
★ Agile Pv5.0(0) ef 30 c Pvg Pvg Pvg B/ B/ ffst 1.7 B PAvg enter 5 Res BW	ent 09:10:12 062216),443 JBm 	Aug 18, 20 Records a conducted of the second secon	#VBW 3 MHz	Sweep 20 ms	5.719 15 GHz -6.853 dBm Span 50 MHz (1001 pts)	Meas Of Channel Power Occupied Bl ACF Multi Carrier

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## UNII-3 BAND

#### Antenna Gain and Limit

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm)
144	5720	-2.15	0.86	30.00	30.00

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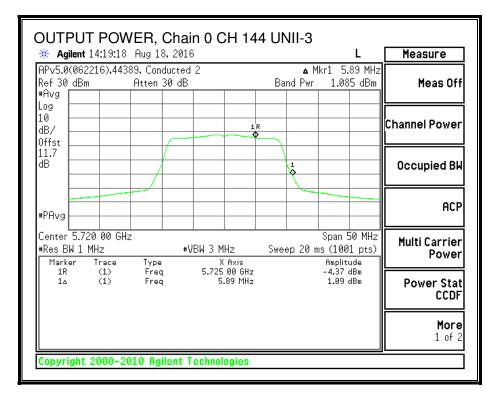
## **Output Power Results**

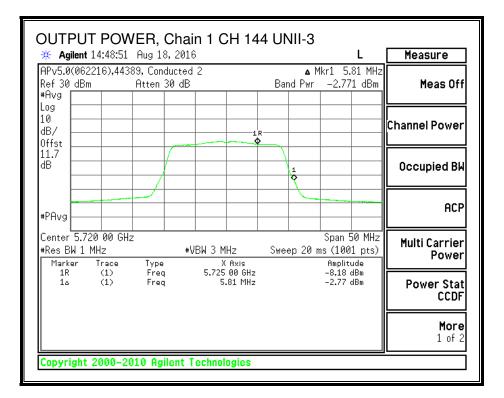
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	1.09	-2.77	2.58	30.00	-27.42

## **PSD Results**

Channel	Frequency	Chain 0	Chain 1	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
144	5720	-7.16	-10.83	-5.61	30.00	-35.61

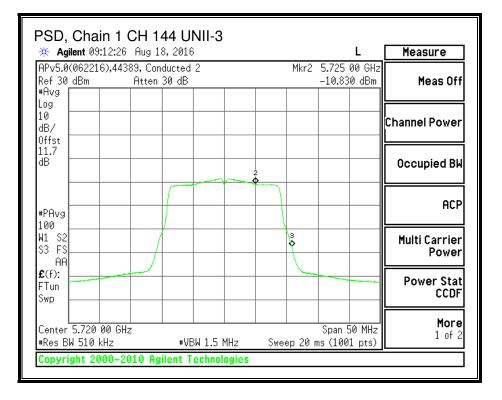
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🔆 Agilent 08:53:56 Aug			[	Measure
#Avg	nducted 2 n 30 dB	Mkr2 5.72 -7.1	5 00 GHz 156 dBm	Meas Off
Log 10 dB/ 0ffst				Channel Power
dB		2		Occupied BW
#PAvg		$\left  \begin{array}{c} \\ \\ \end{array} \right $	[	ACP
иї s2 s3 Fs АА		3		Multi Carrier Power
E(f): Tun Swp				Power Stat CCDF
Center 5.720 00 GHz Res BW 510 kHz	#VBW 1.5 MHz		50 MHz 01 pts)	More 1 of 2



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

## 8.12.1. 26 dB BANDWIDTH

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

None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	26 dB BW	26 dB BW
		Chain 0	Chain 1
	(MHz)	(MHz)	(MHz)
Low	5510	40.63	40.38
Mid	5550	40.86	40.26
High	5670	40.67	40.20
142	5710	41.11	40.50

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