

# **CERTIFICATION TEST REPORT**

# **Report Number. :** 11792114-E4V2

- Applicant : APPLE, INC. 1 INFINITE LOOP CUPERTINO, CA 95014, U.S.A.
  - Model : A1865, A1903
  - FCC ID : BCG-E3161A
- EUT Description : SMARTPHONE
- Test Standard(s) : FCC 47 CFR PART 15 SUBPART E

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### Prepared by:

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NVLAP LAB CODE 200065-0

### **Revision History**

Rev.	lssue Date	Revisions	Revised By
V1	8/23/2017	Initial Review	Tri Pham
V2	8/28/2017	Initial Review	Chin Pang

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# **1. ATTESTATION OF TEST RESULTS**

COMPANY NAME:	APPLE, INC. 1 INFINITE LOOP CUPERTINO, CA 95014, U.S.A.	
EUT DESCRIPTION:	SMARTPHONE	
MODEL:	A1865, A1903	
SERIAL NUMBER: C39TX02KJ8PT; C39TN01VJ56Y (DFS)		)
<b>DATE TESTED:</b> MAY 18, 2017 – AUGUST 09, 2017		
	APPLICABLE STANDARDS	
STANDARD TEST RESUL		TEST RESULTS
CFR 47 P	art 15 Subpart E	Pass

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

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

Approved & Released For UL Verification Services Inc. By:

Mengistu Mekuria Senior Engineer UL VERIFICATION SERVICES INC. Prepared By:

Tri Pham Test Engineer UL VERIFICATION SERVICES INC.

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# 2. TEST METHODOLOGY

FCC: The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 14-30, FCC KDB 662911 D01 v02r01, FCC KDB 905462 D02 v02/D03 v01r02/D04 v01/D06 v02/ D07v02, FCC KDB 789033 D02 v01r04, FCC KDB 644545 D03 v01, ANSI C63.10-2013.

# 3. FACILITIES AND ACCREDITATION

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

47173 Benicia Street	47266 Benicia Street
Chamber A (IC:2324B-1)	Chamber D (IC: 22541-1)
Chamber B (IC:2324B-2)	Chamber E (IC: 22541-2)
Chamber C (IC:2324B-3)	Chamber F (IC: 22541-3)
	Chamber G (IC: 22541-4)
	Chamber H (IC: 22541-5)

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <u>http://ts.nist.gov/standards/scopes/2000650.htm</u>.

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# 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

# 4.3. MEASUREMENT UNCERTAINTY

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

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

Parameter	Uncertainty
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB
Occupied Channel Bandwidth	±0.39 %

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

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# 5. EQUIPMENT UNDER TEST

# 5.1. DESCRIPTION OF EUT

The Equipment under Test is a mobile phone with GSM, GPRS, EGPRS, UMTS, LTE, TD-SCDMA and CDMA technologies. It also supports IEEE 802.11a/b/g/n/ac, Bluetooth®, GPS and NFC. The device has a built-in inductive charging receiver which is not user accessible. The rechargeable battery is not user accessible.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

NOTE: Covered modes are test reduction modes. The output powers on the "covered modes are equal to or less than the mode referenced and use the same modulation.

5.2GHz Band **Frequency Range** Mode **Output Power Output Power** (MHz) (dBm) (mW) Covered by 802.11n HT20 SISO 802.11a 802.11n HT20 SISO 20.86 121.90 802.11n VHT20 1TX Covered by 802.11n HT20 SISO 5180 - 5240 802.11n HT20 CDD 2TX 20.91 123.31 802.11n HT20 STBC/SDM 2TX, 802.11ac Covered by 802.11n HT20 2TX CDD VHT20 STBC/SDM 2TX 802.11n HT40 SISO 19.46 88.31 802.11n VHT40 1TX Covered by 802.11n HT40 SISO 802.11n HT40 CDD 2TX 22.41 174.18 5190 - 5230 802.11n HT40 STBC/SDM 2TX, 802.11ac Covered by 802.11n HT40 2TX CDD VHT40 STBC/SDM 2TX 802.11ac VHT80 SISO 17.46 55.72 802.11ac VHT80 CDD 2TX 19.41 87.30 5210 802.11ac VHT80 STBC/SDM 2TX Covered by 802.11ac VHT80 2TX CDD

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#### 5.3GHz Band

Frequency Range	Mode	Output Power	Output Power
(MHz)		(dBm)	(mW)
	802.11a	Covered by 8	302.11n HT20 SISO
	802.11n HT20 SISO	20.95	124.45
5260 5220	802.11n VHT20 1TX	Covered by 8	302.11n HT20 SISO
5260 - 5320	802.11n HT20 CDD 2TX	20.92	123.59
	802.11n HT20 STBC/SDM 2TX, 802.11ac VHT20 STBC/SDM 2TX	Covered by 802.11n HT20 2TX CDD	
	802.11n HT40 SISO	19.45	88.10
	802.11n VHT40 1TX	Covered by 802.11n HT40 SISO	
5270 - 5310	802.11n HT40 CDD 2TX	22.43	174.98
	802.11n HT40 STBC/SDM 2TX, 802.11ac VHT40 STBC/SDM 2TX	Covered by 802.11n HT40 2TX CDD	
	802.11ac VHT80 SISO	17.42	55.21
E200	802.11ac VHT80 CDD 2TX	19.42	87.50
5290	802.11ac VHT80 STBC/SDM 2TX	Covered by 802.11ac HT80 2TX CDE	

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#### REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

roduoncy Pango		0	
Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5500 - 5700	802.11a	Covered by 802.11n HT20 SISO	
	802.11n HT20 SISO	20.82 120.7	
5500 - 5700	802.11n VHT20 1TX	Covered by	802.11n HT20 SISO
5720	802.11ac VHT20 SISO (based on UNII-2C band output power)	20.32	107.65
	802.11n HT20 CDD 2TX	20.92	123.59
5500 - 5700	802.11n HT20 STBC/SDM 2TX, 802.11ac VHT20 STBC/SDM 2TX	Covered by 80	2.11n HT20 CDD 2TX
5720	802.11ac VHT20 CDD 2TX (based on UNII-2C band output power)	20.00	100.00
5720	802.11ac VHT20 STBC SISO/2TX (based on UNII-2C band output power)	Covered by 802.11n HT20 2TX CDD	
	802.11n HT40 SISO	19.42	87.50
5510 - 5670	802.11n HT40 1TX	Covered by 802.11n HT40 SISO	
5710	802.11ac VHT40 SISO (based on UNII-2C band output power)	18.92	77.98
	802.11n HT40 CDD 2TX	22.43	174.98
5510 - 5670	802.11n HT40 STBC/SDM 2TX, 802.11ac VHT40 STBC/SDM 2TX	Covered by 802.11n HT40 CDD 2TX	
5740	802.11ac VHT40 CDD 2TX (based on UNII-2C band output power)	d 22.20 165.96	
5710	802.11ac VHT40 STBC/SDM 2TX	Covered by 802.11ac VHT40 CDD 2T	
5530-5610	802.11ac VHT80 SISO	19.35	86.10
5690	802.11ac VHT80 SISO (based on UNII-2C band output power)	18.92	77.98
	802.11ac VHT80 CDD 2TX	22.43	174.98
5530-5610	802.11ac VHT80 STBC/SDM 2TX	Covered by 802.11ac VHT80 CDD 21	
	802.11ac VHT80 CDD 2TX (based on UNII-2C band output power)	21.65	146.22
5690	802.11ac VHT80 STBC/SDM 2TX	Covered by 802.11ac VHT80 CDD 2TX	

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Frequency Range	Mode	Output Power	Output Power
(MHz)		(dBm)	(mW)
	802.11a	Covered by 80	2.11n HT20 SISO
5745 - 5825	802.11n HT20 SISO	21.43	139.00
	802.11n VHT20 1TX	Covered by 80	2.11n HT20 SISO
	802.11n HT20 CDD 2TX	24.48	280.54
	802.11n HT20 STBC/SDM 2TX, 802.11ac VHT20 STBC/SDM 2TX	Covered by 802.11n HT20 CDD 2T>	
	802.11n HT40 SISO	19.43	87.70
	802.11n VHT40 1TX	Covered by 802.11n HT40 SISO	
5755 - 5795	802.11n HT40 CDD 2TX	22.45	175.79
	802.11n HT40 STBC/SDM 2TX, 802.11ac VHT40 STBC/SDM 2TX	Covered by 802.11n HT40 CDD 2	
	802.11ac VHT80 SISO	19.44	87.90
5775	802.11ac VHT80 CDD 2TX	22.42	174.58
	802.11ac VHT80 STBC/SDM 2TX	Covered by 802.1	1ac VHT80 CDD 2TX

# 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band	Antenna Gain (dBi)			
(GHz)	UAT 2	LAT 3		
5.2	-2.72	-7.51		
5.3	-3.27	-6.98		
5.5	-2.77	-6.89		
5.8	-3.57	-6.31		

# 5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was version 13.10.452.12

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# 5.5. WORST-CASE CONFIGURATION AND MODE

For radiated harmonics spurious below 1GHz, 1-18GHz L/M/H channels, 18-40GHz, and power line conducted emissions were performed with the EUT set at the CDD mode among the CDD/STBC/SDM modes with power setting equal or higher than SISO modes as worst-case scenario.

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT set to transmit at highest power on Low/Middle/High channels.

Radiated emissions below 30MHz, below 1GHz, above 18GHz and power line conducted emissions were performed with the EUT transmits at the channel with the highest output power as worst-case scenario.

For SISO modes, there are two transmission antennas. The antenna used in any given time can be either UAT 2 or LAT 3. Both antenna ports have the same power; output power and PSD measurement for SISO modes on both antennas are reported. For MIMO modes, both UAT 2 and LAT 3 used at the same time.

The fundamental of the EUT was investigated in three orthogonal orientations X (Flatbed), Y (Landscape), Z (Portrait), on both UAT 2 and LAT 3 antennas. In addition, the EUT was also investigated with and without AC/DC charger, headphones & laptop, It was determined that (see table below) was worst-case orientation for both antennas without AC/DC charger, headphones, or laptop; therefore, all final radiated testing was performed with EUT only in (see table below) orientation for 1 - 18GHz and 18 – 40GHz. EUT was tested with AC/DC charger for 30MHz – 1000MHz testing.

	Frequency Band (GHz)	Mode	Antenna Port	Worst-case Orientation
ſ	5.2-5.8	2-5.8 1TX SISO	UAT 2	Y-Landscape
			LAT 3	Y-Landscape
		2TX MIMO	UAT 2 + LAT 3	Y-Landscape

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

802.11a mode: 6 Mbps 802.11n HT20 mode: MCS0 802.11n HT40 mode: MCS0 802.11ac VHT20 mode: MCS0 802.11ac VHT40 mode: MCS0 802.11ac VHT80 mode: MCS0

802.11ac VHT20 and VHT40 mode are different from 802.11nHT20 and HT40 only in control messages and have the same power settings.

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There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Baseline testing was performed on the two variants to determine the worst case on all conducted power and radiated emissions.

For simultaneous transmission of multiple channels from the same antenna in the 2.4GHz BT/BLE and 5GHz bands, tests were conducted for various configurations having the highest power. No noticeable new emission was found.

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# 5.6. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

Support Equipment List								
Description Manufacturer Model Serial Number FCC ID								
Laptop AC/DC adapter	Apple	A1344	T1580	NA				
Laptop	Apple	A1278	C02HJ0A7DTY4	NA				
DC power supply	Lambda	GEN 60-25	SCPV56329	NA				

#### I/O CABLES (CONDUCTED TEST)

	I/O Cable List								
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks			
1	Antenna	1	SMA	Shielded	1	N/A			
2	USB	1	USB	Shielded	1	Laptop to EUT			
3	AC	1	AC	Un-shielded	3	N/A			
4	Aligator clip	1	minigrabber	Un-Shielded	1	DC power supply to EUT			

#### I/O CABLES (RADIATED ABOVE 1 GHZ)

I/O Cable List							
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks	
NA							

#### I/O CABLES (AC POWER CONDUCTED TEST AND BELOW 1 GHZ)

I/O Cable List							
Cable	Cable         Port         # of identical         Connector         Cable Type         Cable         Remarks						
No		ports	Туре		Length (m)		
1	AC	1	AC	Un-shielded	3	N/A	

#### I/O CABLES (AC LINE CONDUCTED: LAPTOP CONFIGUARTION)

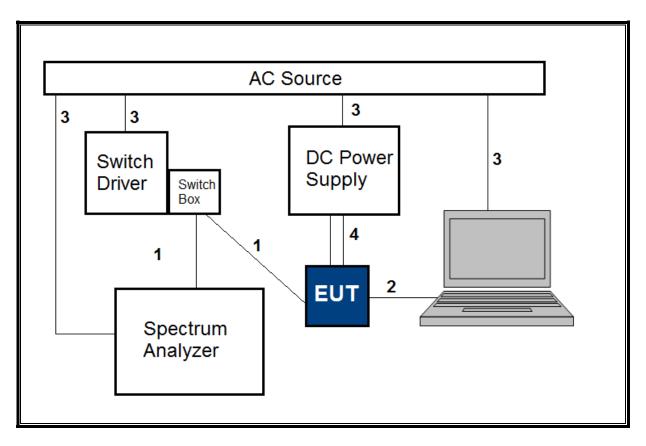
	I/O Cable List								
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks			
1	AC	1	AC	Un-shielded	3	N/A			
2	USB	1	USB	Shielded	1	N/A			

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#### TEST SETUP

The EUT was tested connected to a host Laptop via USB cable adapter and SMA cable connected to antenna port. Test software exercised the EUT.

#### SETUP DIAGRAM

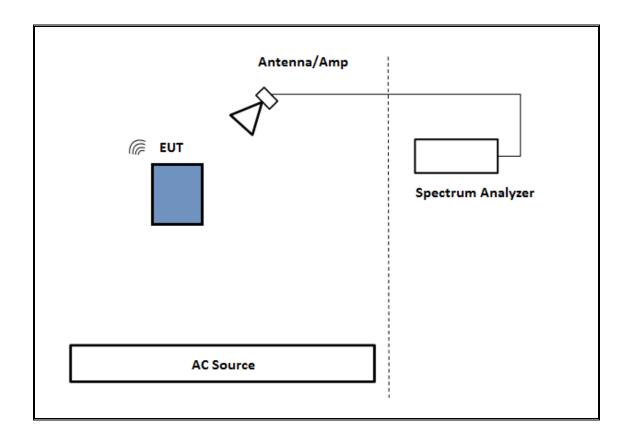


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#### TEST SETUP- RADIATED-ABOVE 1 GHZ

The EUT was powered by battery. Test software exercised the EUT.

#### SETUP DIAGRAM

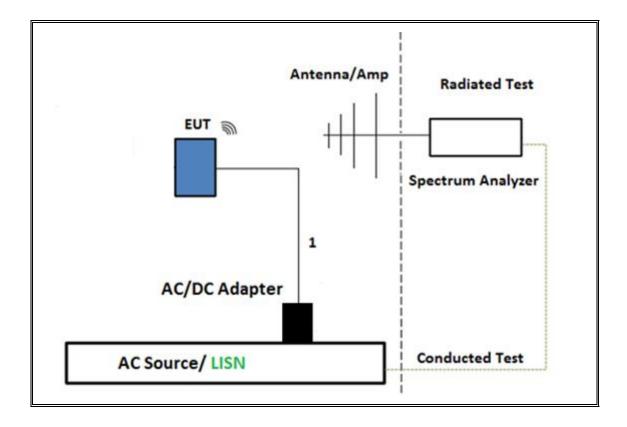


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#### **TEST SETUP- BELOW 1GHZ & AC LINE CONDUCTED TESTS**

The EUT was powered by AC/DC adapter. Test software exercised the EUT.

#### SETUP DIAGRAM

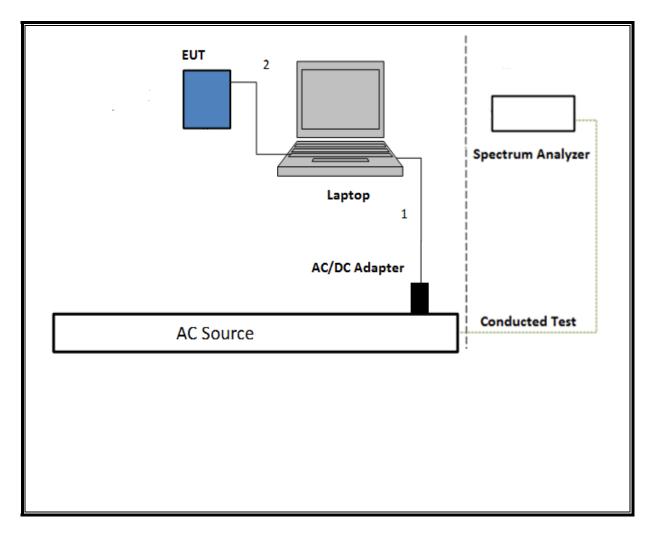


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#### TEST SETUP- AC LINE CONDUCTED TEST (LAPTOP CONFIGURATION)

The EUT was tested connected to a host Laptop via USB cable. Test software exercised the EUT.

#### SETUP DIAGRAM



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# 6. TEST AND MEASUREMENT EQUIPMENT

	TEST EQUIP	MENT LIST		
Description	Manufacturer	Model	Asset	Cal Due
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T711	1/30/2018
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800- 25-S-42	T740	11/29/17
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T340	12/14/2017
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T863	6/9/2018
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800- 25-S-42	T741	11/29/2017
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T119	3/28/2018
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800- 25-S-42	T742	11/29/2017
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800- 25-S-42	T742	11/29/2017
Spectrum Analyzer, PSA, 3Hz to 44GHz	Agilent (Keysight) Technologies	E4446A	T177	03/20/2018
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T344	4/20/2018
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB1	T185	3/30/2018
Amplifier, 1 to 18GHz, 35dB	Amplical	AMP1G18-35	T1569	9/15/2017
*Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T835	6/18/2017
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1613	12/2/2017
Spectrum Analyzer, 40GHz	Agilent	8564E	T106	9/7/2017
*Antenna, Horn 26.5GHz to 40GHz	ARA	MWH-2640/B	T446	6/12/2017
Amplifier, 26.5GHz to 40GHz	Miteq	NSP 4000 SP2	T88	4/29/2018
Horn Antenna, 40GHz	ARA	MWH-2640/B	1029	8/19/2017
*Pre-Amp 18-26GHz	Agilent Technology	8449B	T404	7/5/2017
Power Meter, P-series single channel	Keysight	N1912A	T1245	1/05/2018
Power Sensor	Keysight	N1921A	T1224	1/31/2018
	AC Line Co	onducted		
EMI Test Receiver 9Khz-7GHz	Rohde & Schwarz	ESCI7	T1436	01/06/2018
*LISN for Conducted Emissions CISPR-16	Fischer	50/250-25-2-01	T1310	06/08/2017
Power Cable, Line Conducted Emissions	UL	PG1	T861	9/1/2017
	UL AUTOMATIC	N SOFTWARE		
Radiated Software	UL	UL EMC	Ver 9.5, Ap	
Conducted Software	UL	UL EMC	Ver 5.4, Octo	ber 13, 2016
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Ma	ay 26, 2015

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

NOTE: \*testing is completed before equipment calibration expiration date.

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# 7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

# 7.1. ON TIME AND DUTY CYCLE

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

None; for reporting purposes only.

#### PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

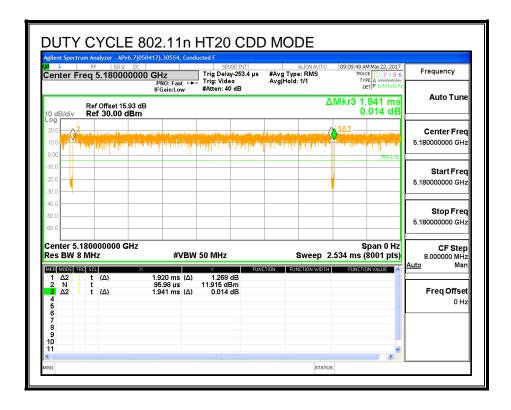
#### **RESULTS**

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)
802.11n HT20 1TX	1.920	1.941	0.989	98.92%	0.00	0.010
802.11n HT20 CDD 2TX	1.920	1.941	0.989	98.92%	0.00	0.010
802.11n HT40 1TX	0.944	0.966	0.978	97.79%	0.10	1.059
802.11n HT40 CDD 2TX	0.944	0.965	0.978	97.83%	0.10	1.059
802.11ac VHT80 1TX	0.460	0.481	0.957	95.66%	0.19	2.173
802.11ac VHT80 CDD 2TX	0.460	0.481	0.957	95.65%	0.19	2.174

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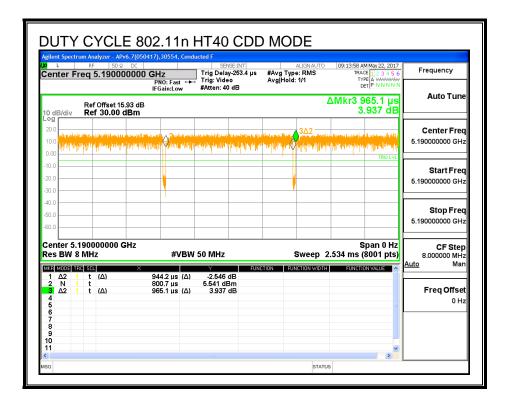
#### **DUTY CYCLE PLOTS**

L B		50417),30554, Cond	SENSE:INT	ALIGNAUTO	09:08:18 AM May 22, 2017	
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0.0						
1.0						Stop Free
0.0						5.180000000 GH;
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TRIMODE TRC SO 1 $\Delta 2$ 1 t	ι <u>×</u> (Δ)	1.920 ms (Δ)	Y 1.061 dB	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 t 3 ∆2 1 t 4 5 6		293.6 μs 1.941 ms (Δ)	12.019 dBm 4.366 dB			Freq Offse 0 Ha
7 8 9 0						



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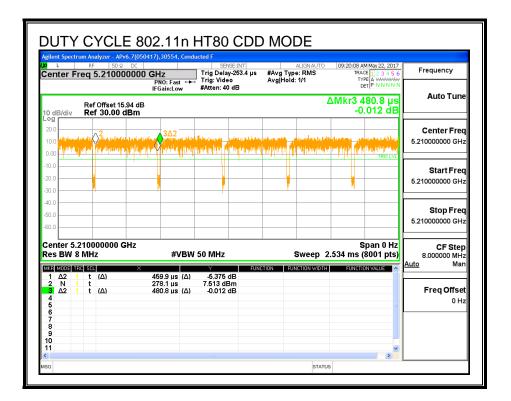
gilent Spect		Pv6.7(050417),3055	4, Condi	sense:INT		ALIGNAUTO	09:12:32 AM May 22, 2017	
enter F		00000 GHz	ast ⊶⊷ .ow	Trig Delay-253.4		RMS	TRACE 1 2 3 4 5 6 TYPE A WWWW DET P N N N N N	Frequency
0 dB/div	Ref Offset 1 Ref 30.00					4	∆Mkr3 965.5 µs 11.219 dB	Auto Tune
<sup>og</sup>								
uit,m.	Religion International	a data data da baran	العادر ال	المراجعاتها والمتعاقر والمعامرة	بالرجعة والطعام وأصالته	342	and the the state of the state	Center Fred 5.19000000 GHz
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0.0								Stop Fred
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enter 5. es BW :	.190000000 8 MHz		≠vвw	50 MHz	5	weep 2	Span 0 Hz .534 ms (8001 pts)	CF Step 8.000000 MH
KR MODE 1	RC SCL	×		Y	FUNCTION FUN	CTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
1Δ2 2N	1 t (Δ) 1 t	944.2 µ 902.7 µ		11.378 dB -1.488 dBm				
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6 7								
8 9								
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L	RF 50 Ω	5.7(050417),30554, DC		SENSE:INT		ALIGN AUTO	09:18:37 AM N	May 22, 2017	_
enter Fr	eq 5.210000		st ⊶ Tri	rig Delay-253.4 rig: Video Atten: 40 dB	µs #Avg Typ Avg Hold		TRACE	123456 A WWWWW P N N N N N	Frequency
0 dB/div	Ref Offset 15.9 Ref 30.00 dE	94 dB	·				ΔMkr3 48 5.9	31.1 μs 932 dB	Auto Tune
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0.0								—— F	Stop Fred
i0.0 i0.0					_				5.210000000 GHz
enter 5.2 es BW 8	210000000 GH MHz		VBW 50	MHz		Sweep 2	Sp 2.534 ms (80	oan 0 Hz 001 pts)	CF Step 8.000000 MH2
KR MODE TR	C SCL	X		Y		UNCTION WIDTH	· ·	A	Auto Mar
1 Δ2 1 2 N 1 <mark>3</mark> Δ2 1	t (Δ) t t (Δ)	460.2 μs 102.0 μs 481.1 μs	1.	4.229 dB I.438 dBm 5.932 dB					Freq Offset
4 5 6									0 Hz
7 8									
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# 7.2. MEASUREMENT METHODS

6 dB Emission BW: KDB 789033 D02 v01r04, Section C.

26 dB Emission BW: KDB 789033 D02 v01r04, Section C.

<u>99% Occupied BW</u>: KDB 789033 D02 v01r04, Section D.

Conducted Output Power: KDB 789033 D02 v01r04, Section E.3.b (Method PM-G).

Power Spectral Density: KDB 789033 D02 v01r04, Section F (Method SA-2).

Unwanted emissions in restricted bands: KDB 789033 D02 v01r04, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v01r04, Sections G.3, G.4, and G.5.

AC Power line conducted emissions: C63.10, Clause 6.2

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# 8. ANTENNA PORT TEST RESULTS

### 8.1. 11n HT20 UAT 2 SISO MODE IN THE 5.2GHz BAND

### 8.1.1. 26 dB BANDWIDTH

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

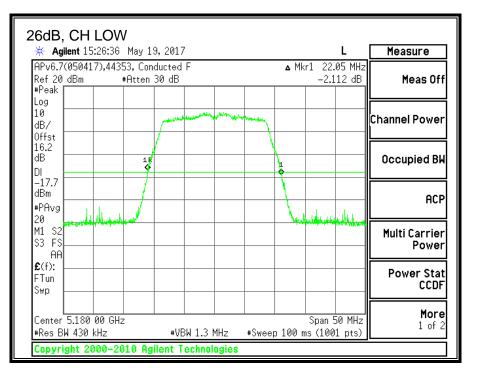
None; for reporting purposes only.

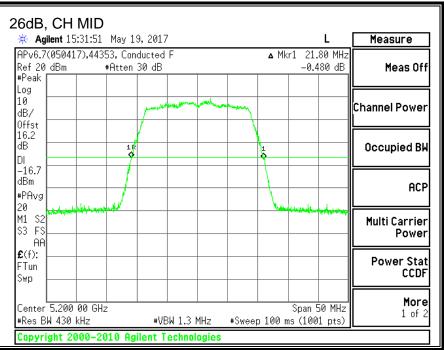
#### **RESULTS**

Channel	Frequency	26 dB BW UAT 2 (MHz)		
Low	5180	22.05		
Mid	5200	21.80		
High	5240	22.00		

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						HIGI		
Measure	L			017	May 19, 201	5:37:08	<b>lent</b> 15	🔆 Ag
	Mkr1 22.00 MHz -0.097 dB	▲ Mk	/6.7(050417),44353, Conducted F 20 dBm #Atten 30 dB ak					
Channel Power		7	-					Log 10 dB/ Offst
Occupied BW		10			18			16.2 dB DI
ACP	med way the land					atter and a		-17.3 dBm #PAvg 20
Multi Carrier Power							990096-99999	M1 S2 S3 FS AA
Power Stat CCDF								<b>£</b> (f): FTun Swp
	Span 50 MHz ) ms (1001 pts)	 eep 10 <u>0 r</u>	MHz	•VBW 1.3		00 GHz kHz		Center #Res B
			ogies	Technol	010 Agilent	000-20	ght 20	Copyri

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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

### 8.1.2. 99% BANDWIDTH

#### DATE: AUGUST 28, 2017 FCC ID: BCG-E3161A

#### LIMITS

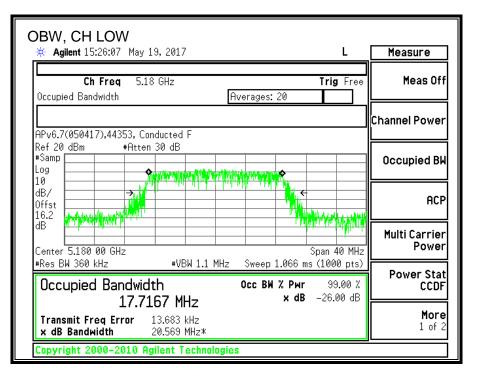
None; for reporting purposes only.

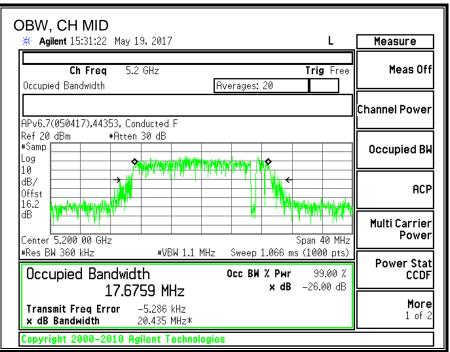
#### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)
Low	5180	17.7167
Mid	5200	17.6759
High	5240	17.7306

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DBW, CH HIGH	
★ Agilent 15:36:39 May 19, 2017	Measure
Ch Freq 5.24 GHz Trig Free Occupied Bandwidth Averages: 20	Meas Off
APv6.7(050417),44353, Conducted F	Channel Power
Ref 20 dBm #Atten 30 dB #Samp	Occupied BW
Log 10 dB/ 0ffst 16.2 dB/ dB/ 16.2	ACP
Center 5.240 00 GHz Span 40 MHz	Multi Carrier Power
*Res BW 360 kHz         *VBW 1.1 MHz         Sweep 1.066 ms (1000 pts)           Occupied Bandwidth         Occ BW % Рыг         99.00 %           17.7306 MHz         × dB         -26.00 dB	Power Stat CCDF
<b>17.7300 ГПZ</b> Transmit Freq Error –11.901 Hz х dB Bandwidth 20.743 MHz*	More 1 of 2
Copyright 2000–2010 Agilent Technologies	_

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# 8.1.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

# <u>LIMITS</u>

None; for reporting purposes only.

## TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

### <u>RESULTS</u>

Channel	Frequency	Power UAT 2 (dBm)
Low	5180	18.98
Mid	5200	20.78
High	5240	20.83

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# 8.1.4. OUTPUT POWER AND PPSD

# <u>LIMITS</u>

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

### **DIRECTIONAL ANTENNA GAIN**

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

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### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Low	5180	-2.54	-2.72	24.00	11.00
Mid	5200	-2.54	-2.72	24.00	11.00
High	5240	-2.54	-2.72	24.00	11.00

0.00

Duty Cycle CF (dB)

Included in Calculations of Corr'd PSD

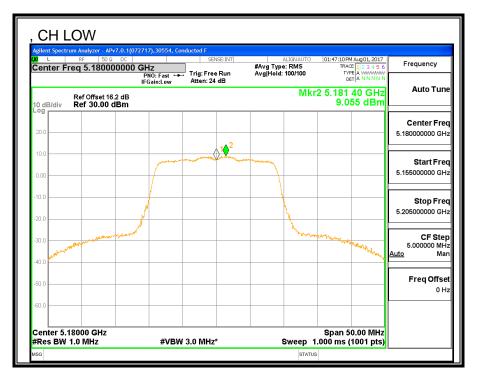
# **Output Power Results**

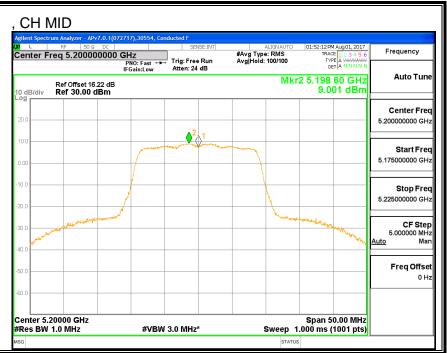
Channel	Frequency	UAT 2	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	18.98	18.98	24.00	-5.02
Mid	5200	20.78	20.78	24.00	-3.22
High	5240	20.83	20.83	24.00	-3.17

### **PSD** Results

Channel	Frequency	UAT 2	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5180	9.06	9.06	11.00	-1.95
Mid	5200	9.00	9.00	11.00	-2.00
High	5240	9.85	9.85	11.00	-1.15

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# 8.2. 11n HT20 LAT 3 SISO MODE IN THE 5.2GHz BAND

# 8.2.1. 26 dB BANDWIDTH

# <u>LIMITS</u>

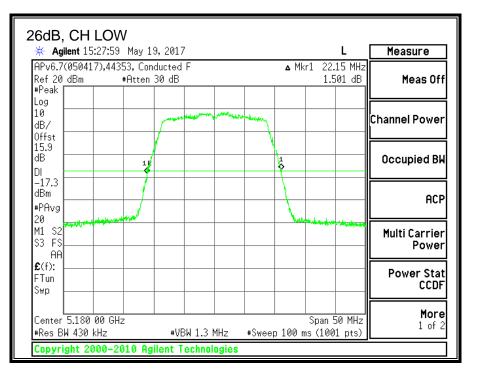
None; for reporting purposes only.

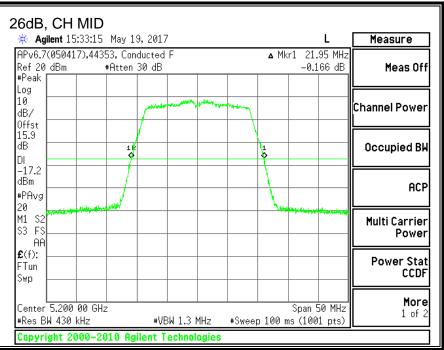
# **RESULTS**

Channel	Frequency	26 dB BW LAT 3 (MHz)
Low	5180	22.15
Mid	5200	21.95
High	5240	22.00

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Measure	L				17	4ay 19, 201	HIGH		
z	r1 22.00 MHz 0.056 dB	<b>∆</b> Mkr			əd F	, Conducte Itten 30 dE	7),44353	(05041	
Channel Power			many	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Log 10 dB/ Offst
Occupied BW		4				1			15.9 dB DI -17.3
ACP									dBm #PAvg
Multi Carrier Power	and a second						an a	₩,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	M1 S2 S3 FS AA
Power Stat CCDF									<b>£</b> (f): FTun Swp
	Span 50 MHz s (1001 pts)	p 100 m	#Swee	MHz	VBW 1.3		00 GHz (Hz		Center #Res B
				logies	Techno	0 Agilent	00-201	ght 20	Copyri

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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

# 8.2.2. 99% BANDWIDTH

### LIMITS

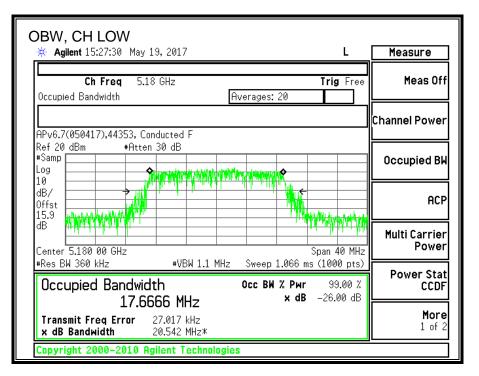
None; for reporting purposes only.

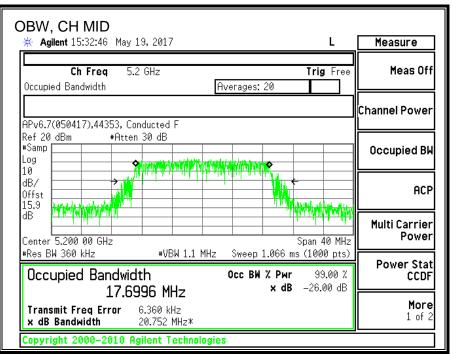
### **RESULTS**

Channel	Frequency	99% BW LAT 3 (MHz)
Low	5180	17.6666
Mid	5200	17.6996
High	5240	17.7296

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DBW, CH HIGH	Measure
Ch Freq 5.24 GHz Trig Free	
Occupied Bandwidth Averages: 20	Channel Power
APv6.7(050417),44353, Conducted F Ref 20 dBm	Occupied BW
10	ACP
15.9 dB Center 5.240 00 GHz Span 40 MHz	Multi Carrier Power
*Res BW 360 kHz         *VBW 1.1 MHz         Sweep 1.066 ms (1000 pts)           Occupied Bandwidth         Occ BW % Pwr         99.00 %	Power Stat CCDF
17.7296 MHz         × dB         -26.00 dB           Transmit Freq Error         21.429 kHz         20.630 MHz*	More 1 of 2
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# 8.2.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

# <u>LIMITS</u>

None; for reporting purposes only.

## TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

### **RESULTS**

Channel	Frequency	Power LAT 3 (dBm)
Low	5180	18.96
Mid	5200	20.79
High	5240	20.86

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# 8.2.4. OUTPUT POWER AND PPSD

## 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-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

### **DIRECTIONAL ANTENNA GAIN**

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

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### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Low	5180	-7.51	-7.51	24.00	11.00
Mid	5200	-7.51	-7.51	24.00	11.00
High	5240	-7.51	-7.51	24.00	11.00

0.00

Duty Cycle CF (dB)

Included in Calculations of Corr'd PSD

# **Output Power Results**

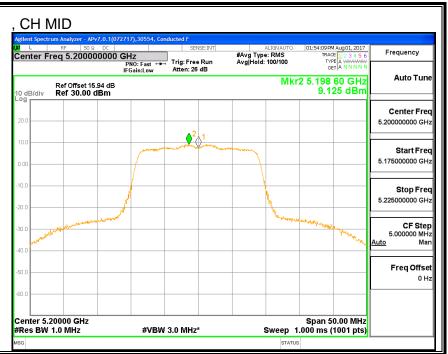
Channel	Frequency	LAT 3	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	18.96	18.96	24.00	-5.04
Mid	5200	20.79	20.79	24.00	-3.21
High	5240	20.86	20.86	24.00	-3.14

### **PSD Results**

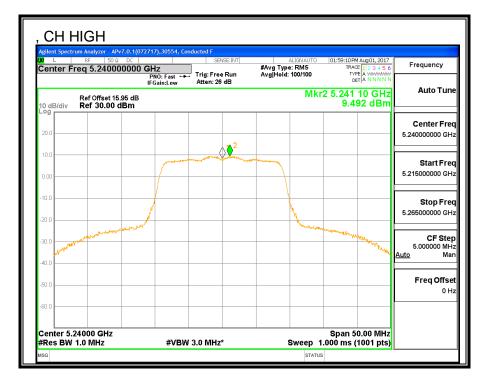
Channel	Frequency	LAT 3	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5180	8.85	8.85	11.00	-2.15
Mid	5200	9.13	9.13	11.00	-1.88
High	5240	9.49	9.49	11.00	-1.51

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# 8.3. 11n HT20 2TX CDD MIMO MODE IN THE 5.2GHz BAND

# 8.3.1. 26 dB BANDWIDTH

### <u>LIMITS</u>

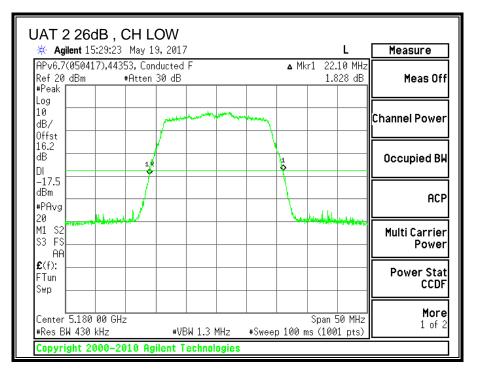
None; for reporting purposes only.

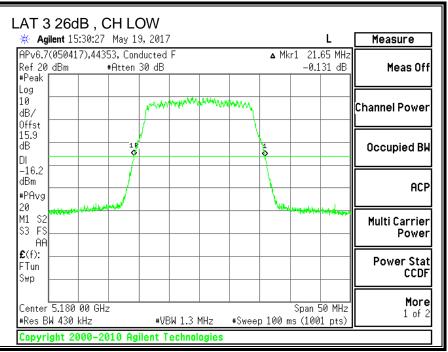
# **RESULTS**

Channel	Frequency		26 dB BW LAT 3 (MHz)
Low	5180	22.10	21.65
Mid	5200	22.00	21.55
High	5240	22.10	21.70

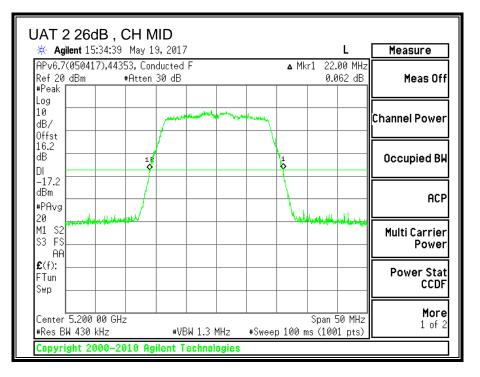
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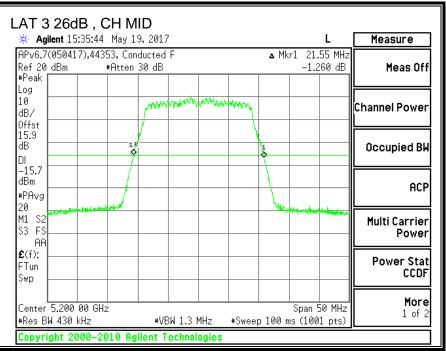
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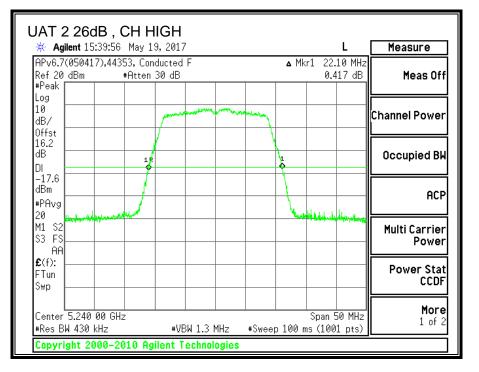


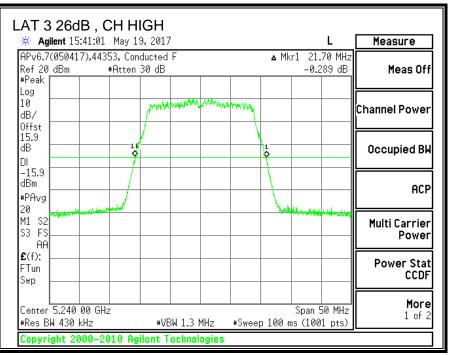
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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

# 8.3.2. 99% BANDWIDTH

### <u>LIMITS</u>

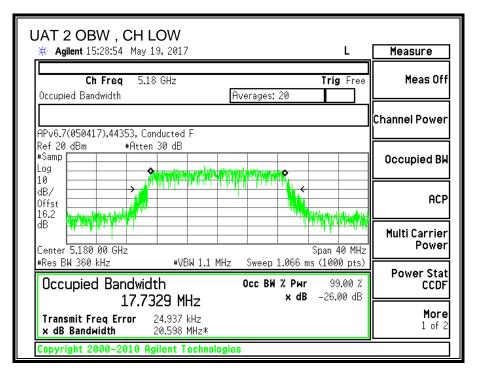
None; for reporting purposes only.

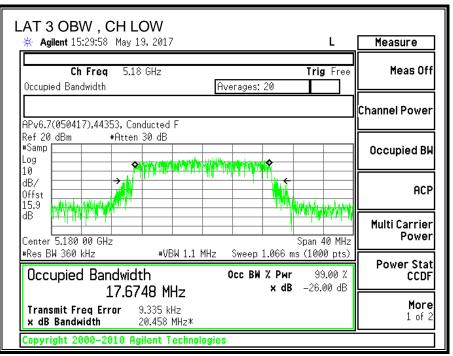
### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)	99% BW LAT 3 (MHz)
Low	5180	17.7329	17.6748
Mid	5200	17.6841	17.7245
High	5240	17.7241	17.7054

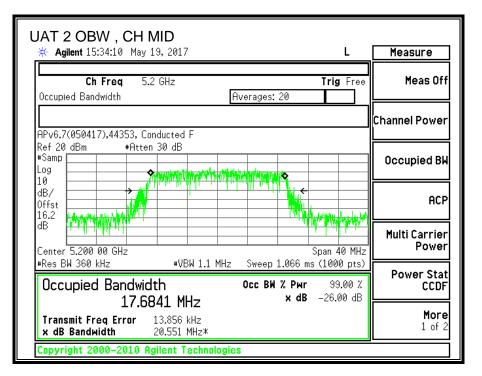
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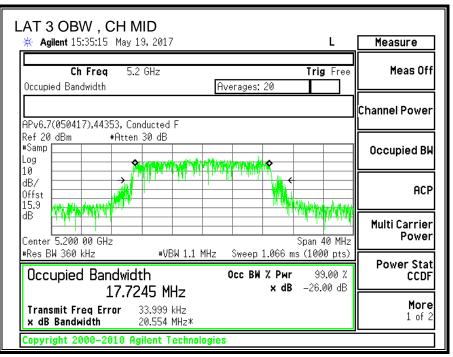
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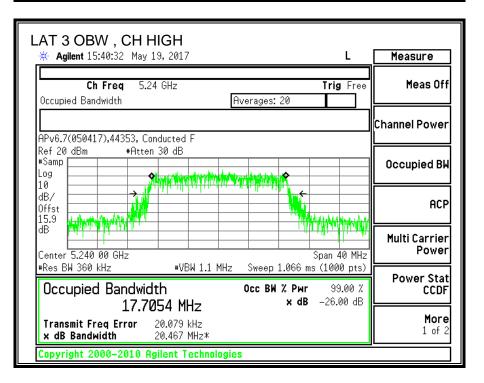
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JAT 2 OBW , CH HIGH * Agilent 15:39:27 May 19, 2017	1	Measure
Ch Freq 5.24 GHz	Trig Free	Meas Off
Occupied Bandwidth Average	əs: 20	Channel Power
APv6.7(050417),44353, Conducted F Ref 20 dBm #Atten 30 dB #Samp		Occupied BW
Log 10 dB/	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
dB d		ACP
Center 5.240 00 GHz	Span 40 MHz	Multi Carrier Power
Occupied Bandwidth Occ	ep 1.066 ms (1000 pts) BM % Pwr 99.00 % × dB -26.00 dB	Power Stat CCDF
17.7241 MHz Transmit Freg Error 17.272 kHz × dB Bandwidth 20.667 MHz*	א עם –∠ס.⊍ט מם	More 1 of 2
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# 8.3.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

## <u>LIMITS</u>

None; for reporting purposes only.

## TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

# <u>RESULTS</u>

Channel	Frequency	UAT 2	LAT 3	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5180	17.78	17.82	20.81
Mid	5200	17.83	17.89	20.87
High	5240	17.89	17.91	20.91

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# 8.3.4. OUTPUT POWER AND PPSD

# 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-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum 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.

# **TEST PROCEDURE**

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

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### DIRECTIONAL ANTENNA GAIN

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

UAT 2	LAT 3	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.72	-7.51	-4.49

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

UAT 2	LAT 3	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.72	-7.51	-1.78

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### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Low	5180	-4.49	-1.78	24.00	11.00
Mid	5200	-4.49	-1.78	24.00	11.00
High	5240	-4.49	-1.78	24.00	11.00

0.00

Duty Cycle CF (dB)

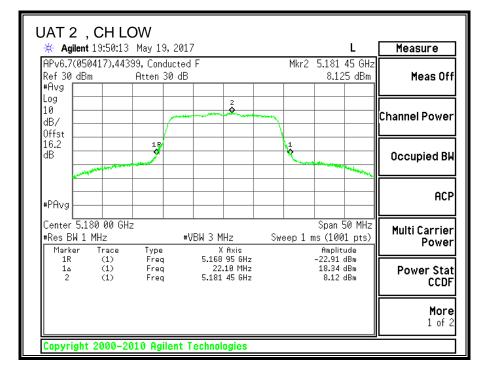
Included in Calculations of Corr'd PSD

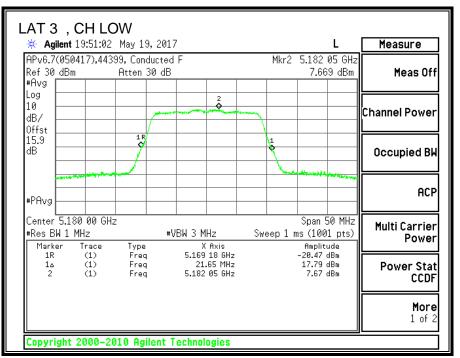
### **Output Power Results**

Channel	Frequency	UAT 2	LAT 3	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	17.78	17.82	20.81	24.00	-3.19
Mid	5200	17.83	17.89	20.87	24.00	-3.13
High	5240	17.89	17.91	20.91	24.00	-3.09

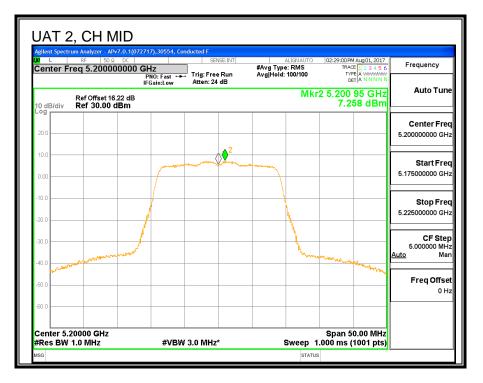
### **PSD Results**

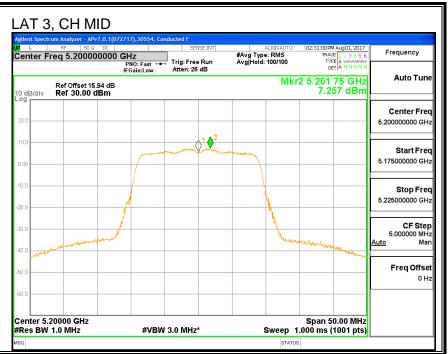
Channel	Frequency	UAT 2	LAT 3	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5180	8.13	7.67	10.91	11.00	-0.09
Mid	5200	7.26	7.26	10.27	11.00	-0.73
High	5240	8.02	7.66	10.86	11.00	-0.14

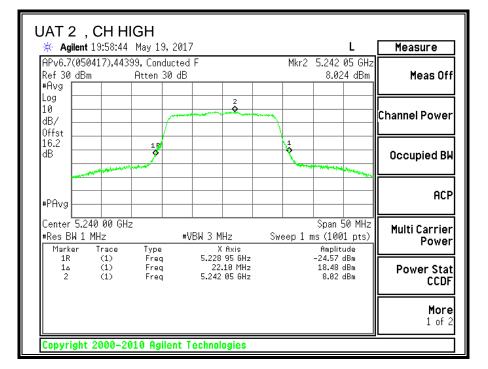


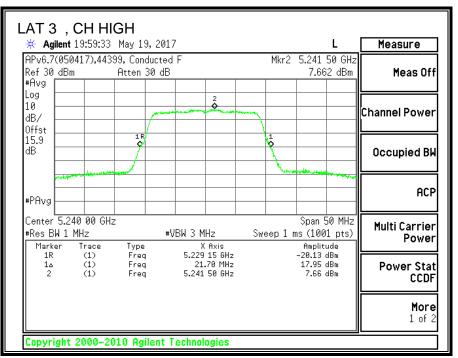


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# 8.4. 11n HT40 UAT 2 SISO MODE IN THE 5.2GHz BAND

# 8.4.1. 26 dB BANDWIDTH

## <u>LIMITS</u>

None; for reporting purposes only.

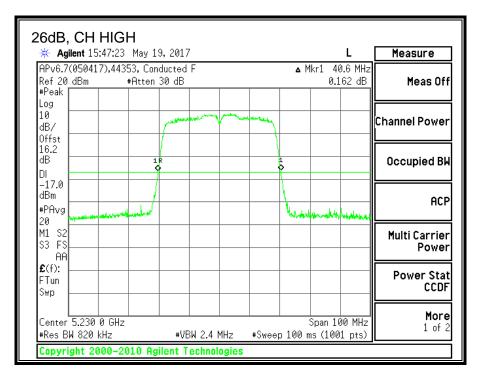
# **RESULTS**

Channel	Frequency	26 dB BW UAT 2 (MHz)
Low	5190	40.6
High	5230	40.6

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					_					26dB,
Measure	L				7	9,2017	May 1	5:42:25	lent 15	🔆 Ag
Meas Off	kr1 40.6 MHz 0.994 dB	⊿ M			F		53, Con #Atten			APv6.7 Ref 20 #Peak
Channel Power			anner	Verner	a server and					Log 10 dB/ Offst
Occupied BW		1								16.2 dB DI
ACP	a any the state like in such	Langer Langer					م. بعلام	الالاربان	strainer.	-17.1 dBm #PAvg 20
Multi Carrier Power										M1 S2 S3 FS AA
Power Stat CCDF										€(f): FTun Swp
More 1 of 2	Span 100 MHz 15 (1001 pts)		#Swee	 MHz	 3W 2.4	 #VE				Center #Res B
				ogies	echnol	ilent T	010 Ag	000-2	ght 2	Copyri



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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

# 8.4.2. 99% BANDWIDTH

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

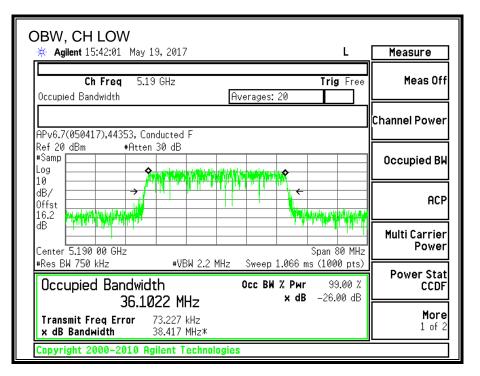
None; for reporting purposes only.

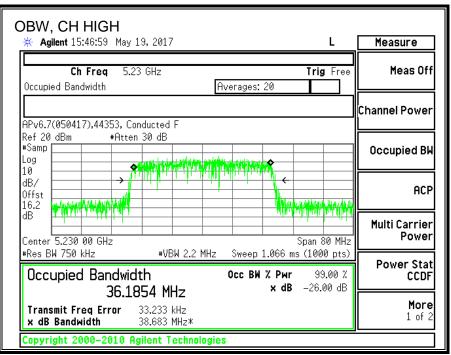
### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)
Low	5190	36.1022
High	5230	36.1854

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### 8.4.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

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

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### <u>RESULTS</u>

Channel	Frequency	Power UAT 2 (dBm)
Low	5190	17.86
High	5230	19.41

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### 8.4.4. OUTPUT POWER AND PPSD

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

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

#### **DIRECTIONAL ANTENNA GAIN**

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

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#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Low	5190	-2.72	-2.72	24.00	11.00
High	5230	-2.72	-2.72	24.00	11.00

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'PSD
--------------------	------	--------------------------------------

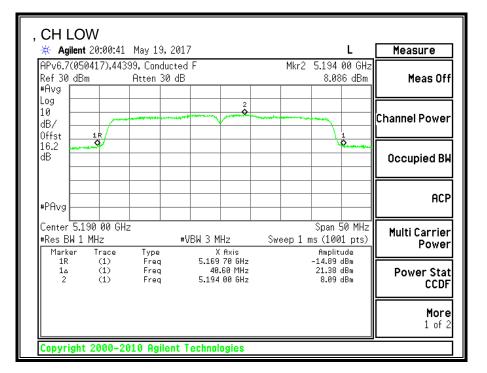
#### **Output Power Results**

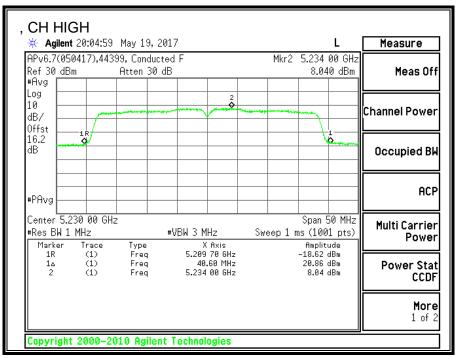
Channel	Frequency	UAT 2	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5190	17.86	17.86	24.00	-6.14
High	5230	19.41	19.41	24.00	-4.59

#### **PSD Results**

Channel	Frequency	UAT 2	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5190	8.09	8.19	11.00	-2.81
High	5230	8.04	8.14	11.00	-2.86

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# 8.5. 11n HT40 LAT 3 SISO MODE IN THE 5.2GHz BAND

### 8.5.1. 26 dB BANDWIDTH

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

None; for reporting purposes only.

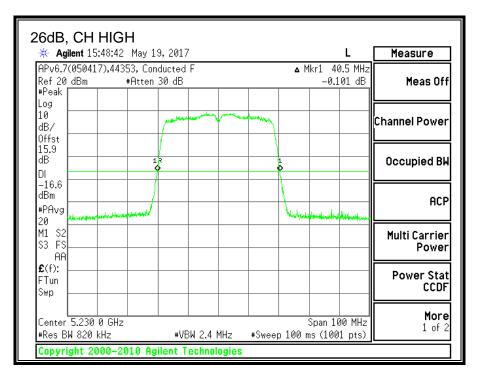
#### **RESULTS**

Channel	Frequency	26 dB BW LAT 3 (MHz)
Low	5190	40.6
High	5230	40.5

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					_					26dB,
Measure	L				/	9,201	May 1	:43:43	lent 15	🔆 Ag
Meas Off	kr1 40.6 MHz -0.192 dB	▲ M			I F	nducted 30 dB	53, Cor #Atten			Ref 20 #Peak
Channel Power			· ·							Log 10 dB/ Offst
Occupied BW		\$					1			15.9 dB DI -16.9
ACP	how and a second and a second as a	hunder					men		an frankter	dBm
Multi Carrier Power										M1 S2 S3 FS AA
Power Stat CCDF										<b>£</b> (f): FTun Swp
More 1 of 2	) opan 100 MHz s (1001 pts)		#Swee	MHz	 BW 2. <u>4</u>	+VI				Center #Res B
_			s	logies	(echno	gilent 1	010 Ag	000-20	ght 2	Copyri



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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

## 8.5.2. 99% BANDWIDTH

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

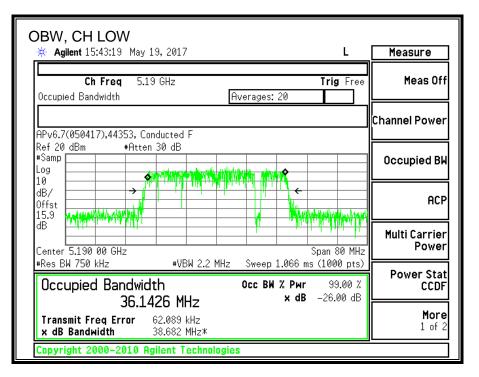
None; for reporting purposes only.

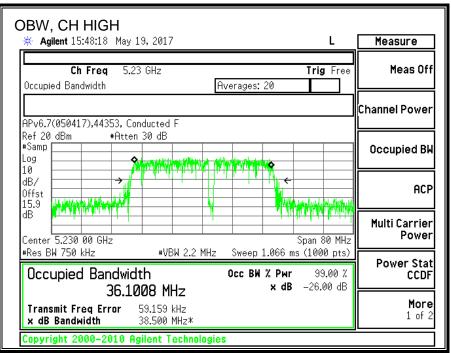
#### **RESULTS**

Channel	Frequency	99% BW LAT 3 (MHz)
Low	5190	36.1426
High	5230	36.1008

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### 8.5.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

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

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### <u>RESULTS</u>

Channel	Frequency	Power LAT 3 (dBm)
Low	5190	17.84
High	5230	19.46

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### 8.5.4. OUTPUT POWER AND PPSD

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

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

#### **DIRECTIONAL ANTENNA GAIN**

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

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#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Low	5190	-7.51	-7.51	24.00	11.00
High	5230	-7.51	-7.51	24.00	11.00

Duty Cycle CF (dB) 0.10 Included in Calculations of Corr'PSD

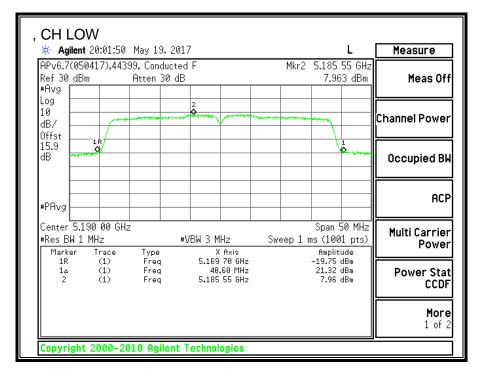
#### **Output Power Results**

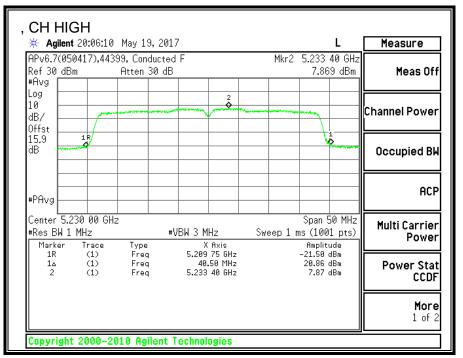
Channel	Frequency	LAT 3	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5190	17.84	17.84	24.00	-6.16
High	5230	19.46	19.46	24.00	-4.54

#### **PSD Results**

Channel	Frequency	LAT 3	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5190	7.96	8.06	11.00	-2.94
High	5230	7.87	7.97	11.00	-3.03

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# 8.6. 11n HT40 2TX CDD MIMO MODE IN THE 5.2GHz BAND

### 8.6.1. 26 dB BANDWIDTH

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

None; for reporting purposes only.

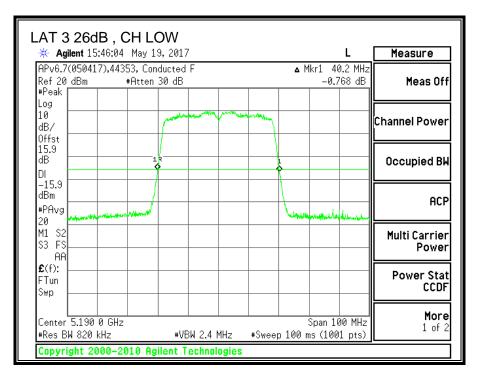
#### **RESULTS**

Channel	Frequency	26 dB BW UAT 2 (MHz)	26 dB BW LAT 3 (MHz)
Low	5190	40.4	40.2
High	5230	40.7	40.1

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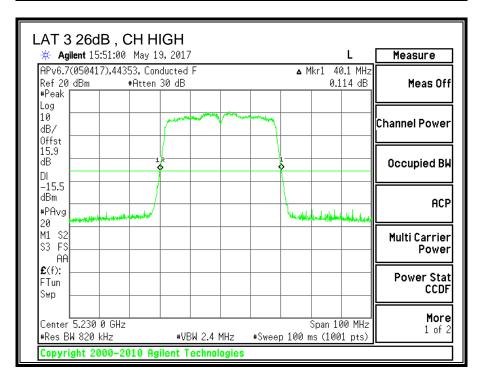
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				_					JAT 2
Measure	L			,	9,2017	May 1	:45:05	lent 15	🔆 Ag
Meas Off	kr1 40.4 MHz 0.103 dB	▲ M		F		53, Con #Atten			APv6.7 Ref20 #Peak
Channel Power			- And	when	menne				Log 10 dB/ Offst
Occupied BW		1 <b>\$</b>			\$	1			16.2 dB DI
ACP	- ++++++++++++++++++++++++++++++++++++	Littere				ellusi	weathers	destand for	-17.1 dBm #PAvg 20
Multi Carrier Power									M1 S2 S3 FS AA
Power Stat CCDF									<b>£</b> (f): FTun Swp
More 1 of 2	Span 100 MHz s (1001 pts)		z #Swe	3W 2.4 M	 #VE				Center #Res B
			es	echnol	ilent T	010 Ag	000-20	ght 20	Copyri



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* Agilent 15:50:01	-			L	Measure
APv6.7(050417),443 Ref 20 dBm #Peak	53, Conducted #Atten 30 dB	F	^ ∧	4kr1 40.7 MH: 0.557 dB	
Log 10 dB/ Offst	- man	-	and		Channel Power
16.2 dB DI -17.0	1 R				Occupied BW
-17.0 dBm #PAvg 20	handpile		Mudan	al when the second	ACP
M1 S2 S3 FS AA					Multi Carrier Power
€(f): =Tun Swp					Power Stat CCDF
Center 5.230 0 GHz +Res BW 820 kHz	<u> </u>	 3W 2.4 MHz	#Sweep 100 r	 Span 100 MHz ms (1001 pts)	



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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

#### DATE: AUGUST 28, 2017 FCC ID: BCG-E3161A

### 8.6.2. 99% BANDWIDTH

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

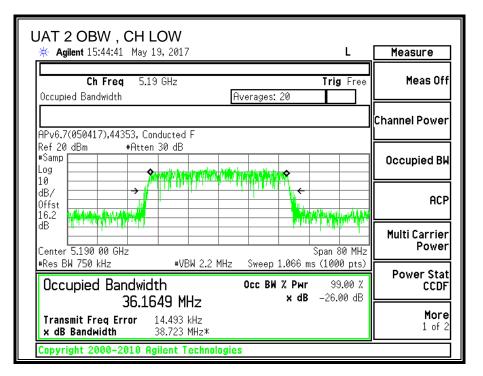
None; for reporting purposes only.

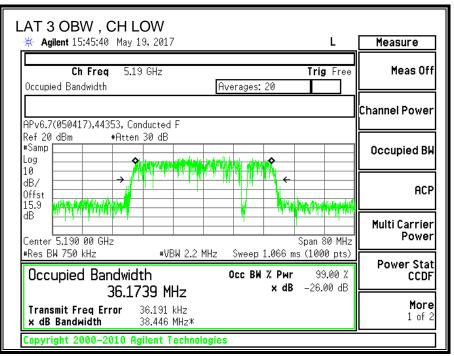
#### **RESULTS**

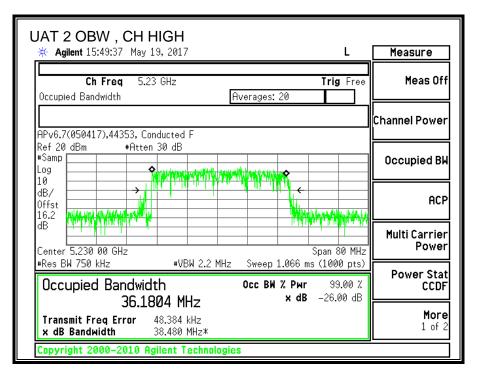
Channel	Frequency	99% BW UAT 2 (MHz)	99% BW LAT 3 (MHz)
Low	5190	36.1649	36.1739
High	5230	36.1804	36.1125

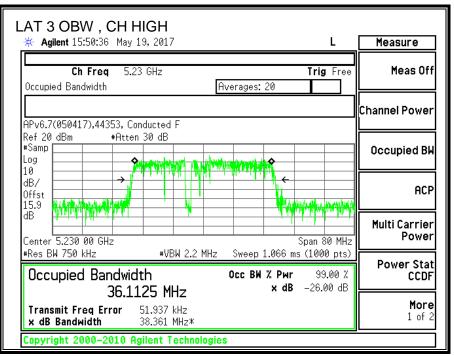
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### 8.6.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

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

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### **RESULTS**

Channel	Frequency	UAT 2	LAT 3	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5190	16.82	16.88	19.86
High	5230	19.43	19.37	22.41

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### 8.6.4. OUTPUT POWER AND PPSD

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

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

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#### DIRECTIONAL ANTENNA GAIN

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

UAT 2	LAT 3	Uncorrelated Chains
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.72	-7.51	-4.49

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

UAT 2	LAT 3	Correlated Chains
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.72	-7.51	-1.78

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#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
	E100	4.40	1 70	24.00	11.00
Low	5190	-4.49	-1.78	24.00	11.00

Duty Cycle CF (dB) 0.10 Included in (

Included in Calculations of Corr'd PSD

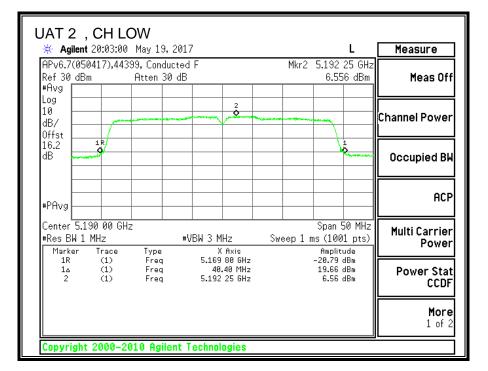
### **Output Power Results**

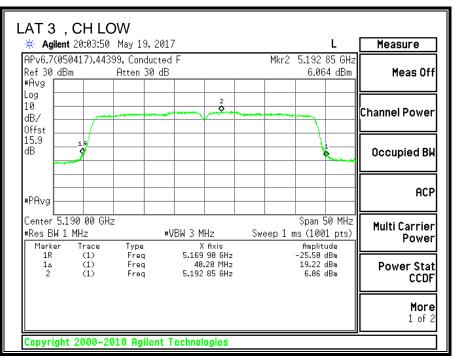
Channel	Frequency	UAT 2	LAT 3	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5190	16.82	16.88	19.86	24.00	-4.14
High	5230	19.43	19.37	22.41	24.00	-1.59

#### **PSD Results**

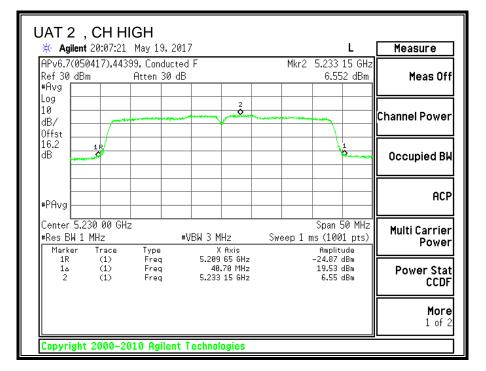
Channel	Frequency	UAT 2	LAT 3	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5190	6.56	6.06	9.43	11.00	-1.57
High	5230	6.55	6.06	9.42	11.00	-1.58

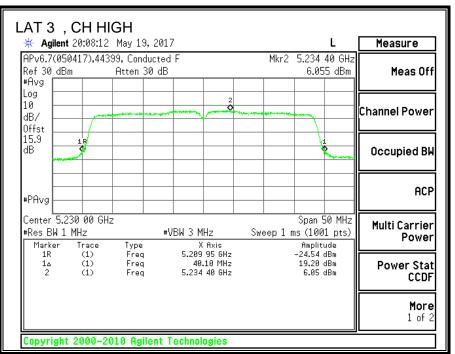
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# 8.7. 11ac HT80 UAT 2 SISO MODE IN THE 5.2GHz BAND

### 8.7.1. 26 dB BANDWIDTH

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

None; for reporting purposes only.

#### RESULTS

Channel	Frequency	26 dB BW UAT 2 (MHz)
Mid	5210	82.4

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Masaura	1			7	10 - 201			6dB
Measure	L			/	ny 19, 2011	:52:19 Ma	lient 10	🔆 Ag
Meas Off	▲ Mkr1 82.4 MHz 0.927 dB	1 4			Conducted ten 30 dB			APv6.7 Ref 20 #Peak
Channel Power		~	,					Log 10 dB/ Offst
Occupied BW		-1						16.2 dB DI
ACP	ns. 41. and 10 million in the strength	hunest				kelan diration	(navisal nije	-15.2 dBm #PAvg 20
Multi Carrier Power								M1 S2 S3 FS AA
Power Stat CCDF								€(f): FTun Swp
More 1 of 2	Span 200 MHz 00 ms (1001 pts)		Hz	VBW 5 M				Center #Res B
_			ogies	Technol	Agilent 1	00-2010	ight 20	Copyri

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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

# 8.7.2. 99% BANDWIDTH

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

None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)
Mid	5210	75.3548

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OBW, CH MID * Agilent 15:51:55 May	19,2017		L	Measure	
Ch Freq 5.	21 GHz		Trig Free	Meas Off	
Occupied Bandwidth		Averages: 20		Channel Power	
APv6.7(050417),44353, C Ref 20 dBm #Atte #Samp	onducted F n 30 dB			Occupied BW	
Log 10 dB/					
Offst 16.2 dB				ACP	
Center 5.210 00 GHz #Res BW 1.5 MHz	#VBW 5 MHz		pan 160 MHz s (1000 nts)	Multi Carrier Power	
Occupied Bandwidth     Occ BH % Pwr     99.00 %     CCDF       75.3548 MHz     × dB     -26.00 dB					
75.3 Transmit Freq Error x dB Bandwidth			20000 40	More 1 of 2	
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### 8.7.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

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

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### **RESULTS**

Channel	Frequency	Power UAT 2 (dBm)
Mid	5210	17.46

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### 8.7.4. OUTPUT POWER AND PPSD

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

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

#### **DIRECTIONAL ANTENNA GAIN**

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

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#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Mid	5210	-2.72	-2.72	24.00	11.00

Duty Cycle CF (dB)	0.19	Included in Calculations of Corr'd PSD
--------------------	------	--

#### **Output Power Results**

Channel	Frequency	UAT 2	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5210	17.46	17.46	24.00	-6.54

#### **PSD Results**

Channel	Frequency	UAT 2	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Mid	5210	5.23	5.42	11.00	-5.58

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					СН М
Measure	L	17	May 19, 201	ent 20:09:21	🔆 Agile
	Mkr2 5.220 8 GHz 5.229 dBm		99, Conducted Atten 30 dB		Ref 30 d #Avg
Channel Power					Log 10 dB/ — Offst
Occupied BW	ġ				16.2 dB
ACP					#PAvg —
	Span 100 MHz Sweep 1 ms (1001 pts) Amplitude	#VBW 3 MHz X Axis	Туре	· Trace	#Res BW Marker
Power Stat CCDF	-19.17 dBm 21.13 dBm 5.23 dBm	5.168 8 GHz 82.4 MHz 5.220 8 GHz	Freq Freq Freq	(1) (1) (1)	1R 14 2
More 1 of 2					
		Technologies	010 Agilent	ht 2000-20	Copyrig

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#### 11ac HT80 LAT 3 SISO MODE IN THE 5.2GHz BAND 8.8.

### 8.8.1. 26 dB BANDWIDTH

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

None; for reporting purposes only.

#### RESULTS

Channel	Frequency	26 dB BW LAT 3 (MHz)
Mid	5210	82.4

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<u> </u>				×4 7			
Measure	L			917	May 19, 20.	ent 15:53:37	🔆 Ag
Meas Off	kr1 82.4 MHz -0.297 dB	▲ M			53, Conducte #Atten 30 dE	050417),443 dBm	APv6.7 Ref20 #Peak
Channel Power							Log 10 dB/ Offst
Occupied BW		-1 Ø			1R		15.9 dB DI
ACP	elleyaras delanir - analogi verya	hours			an de de ser de la companya de la co	marine plantant	-15.1 dBm #PAvg 20
Multi Carrier Power							M1 S2 S3 FS AA
Power Stat CCDF							€(f): FTun Swp
More 1 of 2	Span 200 MHz s (1001 pts)			#VBW 5 M		5.210 0 GHz 1.6 MHz	
_			igies	: Technol	)10 Agilent	jht 2000-20	Copyri

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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

## 8.8.2. 99% BANDWIDTH

#### LIMITS

None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	99% BW LAT 3 (MHz)
N 41 1	5040	
Mid	5210	74.9809

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DBW, CH MID * Agilent 15:53:13 May 19, 2017 L	Measure				
Ch Freq 5.21 GHz Trig Free	Meas Off				
Occupied Bandwidth Averages: 20 APv6.7(050417),44353, Conducted F	Channel Power				
Ref 20 dBm #Atten 30 dB #Samp	Occupied BW				
10 Provide the second s	ACP				
dB Center 5.210 00 GHz Span 160 MHz	Multi Carrier Power				
IRes BW 1.5 MHz         WBW 5 MHz         Sweep 1.066 ms (1000 pts)           Occupied Bandwidth         Occ BW % Pwr         99.00 %         CCDF           74.9809 MHz         × dB         -26.00 dB					
Transmit Freq Error     -115.766 kHz       x dB Bandwidth     79.169 MHz*	More 1 of 2				
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## 8.8.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

## <u>LIMITS</u>

None; for reporting purposes only.

## TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### **RESULTS**

Channel	Frequency	Power LAT 3 (dBm)
Mid	5210	17.42

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## 8.8.4. OUTPUT POWER AND PPSD

## <u>LIMITS</u>

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

#### **DIRECTIONAL ANTENNA GAIN**

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

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#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Mid	5210	-7.51	-7.51	24.00	11.00

Duty Cycle CF (dB) 0.19 Included in Calculations of Corr'd
--

#### **Output Power Results**

Channel	Frequency	LAT 3	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5210	17.42	17.42	24.00	-6.58

#### **PSD Results**

Channel	Frequency	LAT 3	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
		5.20	5.39	11.00	-5.62

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				lid	СН М
Measure	L		May 19, 201	ent 20:10:29	🔆 Agile
	Mkr2 5.219 5 GHz 5.195 dBm		99, Conducted Atten 30 dB		Ref 30 d #Avg
Channel Power	<u> </u>	2			Log   10  - dB/  - Offst  -
0ccupied BW				18	15.9 dB
ACP					#PAvg —
	Span 100 MHz Sweep 1 ms (1001 pts) Amplitude	W 3 MHz X Axis	Type	· Trace	#Res BW Marker
Power Stat CCDF	-20.56 dBm 21.19 dBm 5.20 dBm	5.168 8 GHz 82.4 MHz 5.219 5 GHz	Freq Freq Freq	(1) (1) (1)	1R 14 2
More 1 of 2					
		chnologies	010 Agilent 1	ht 2000-20	Copyrig

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# 8.9. 11ac HT80 2TX CDD MIMO MODE IN THE 5.2GHz BAND

## 8.9.1. 26 dB BANDWIDTH

### <u>LIMITS</u>

None; for reporting purposes only.

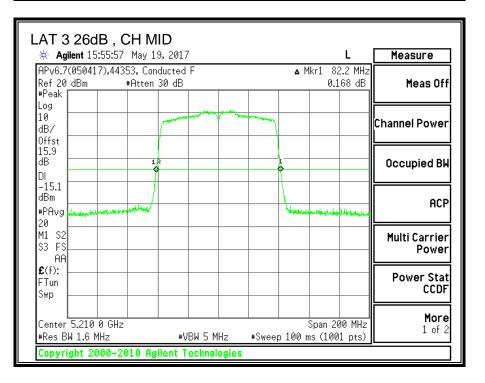
### **RESULTS**

Channel	Frequency	26 dB BW UAT 2	26 dB BW LAT 3
		(MHz)	(MHz)
Mid	5210	82.4	82.2

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	4:56 May 19, 2017			L	Measure
APv6.7(050417), Ref 20 dBm #Peak	,44353, Conducted F #Atten 30 dB		▲ Mkr1 8 -0.	2.4 MHz 090 dB	Meas Off
Log 10 dB/ 0ffst		-	η		Channel Power
16.2 dB DI -15.0	1R				Occupied BW
dBm #PAvg بالبريمية المالية 20				+ hiperphisere	ACP
M1 S2 S3 FS AA					Multi Carrier Power
<b>£</b> (f): FTun Swp					Power Stat CCDF
Center 5.210 0 #Res BW 1.6 MHz			Span 2 ep 100 ms (100	00 MHz	<b>More</b> 1 of 2



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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

#### DATE: AUGUST 28, 2017 FCC ID: BCG-E3161A

## 8.9.2. 99% BANDWIDTH

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

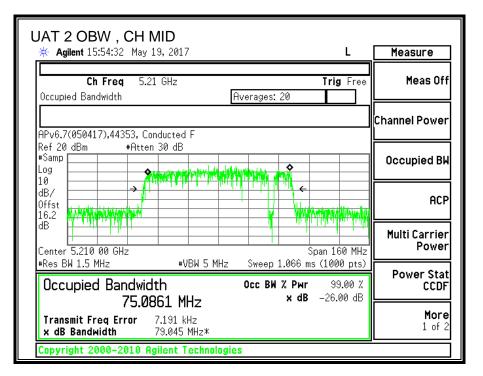
None; for reporting purposes only.

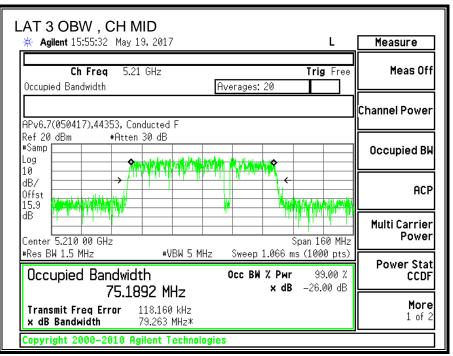
#### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)	99% BW LAT 3 (MHz)

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## 8.9.3. AVERAGE POWER

**ID:** 30554 **Date:** 7/28/2017

## <u>LIMITS</u>

None; for reporting purposes only.

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

### <u>RESULTS</u>

Channel	Frequency	UAT 2	LAT 3	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Mid	5210	16.42	16.37	19.41

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## 8.9.4. OUTPUT POWER AND PPSD

## <u>LIMITS</u>

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

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#### DIRECTIONAL ANTENNA GAIN

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

UAT 2	LAT 3	Uncorrelated Chains
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.72	-7.51	-4.49

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

UAT 2	LAT 3	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-2.72	-7.51	-1.78

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#### Antenna Gain and Limits

Channel	Frequency	Directional	Directional	Power	PSD
		Gain	Gain	Limit	Limit
		for Power	for PSD		
	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Mid	5210	-4.49	-1.78	24.00	11.00

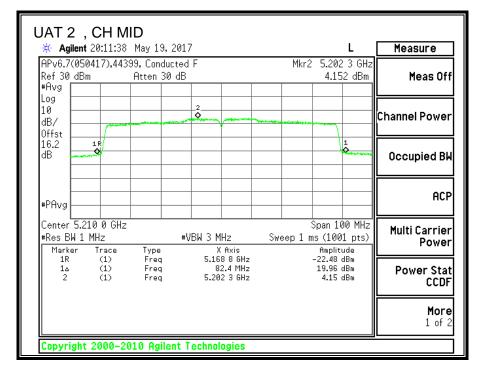
Duty Cycle CF (dB)	0.19	Included in Calculations of Corr'd PSD
--------------------	------	--

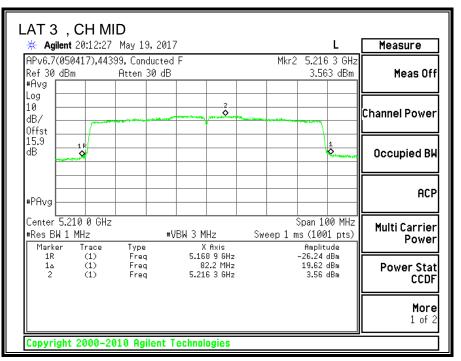
#### **Output Power Results**

Channel	Frequency	UAT 2	LAT 3	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5210	16.42	16.37	19.41	24.00	-4.59

#### **PSD Results**

Channel	Frequency	UAT 2	LAT 3	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Mid	5210	4.15	3.56	7.07	11.00	-3.93





# 8.10. 11n HT20 UAT 2 SISO MODE IN THE 5.3GHz BAND

## 8.10.1. 26 dB BANDWIDTH

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

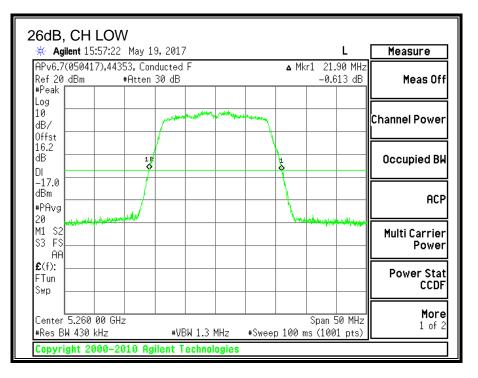
None; for reporting purposes only.

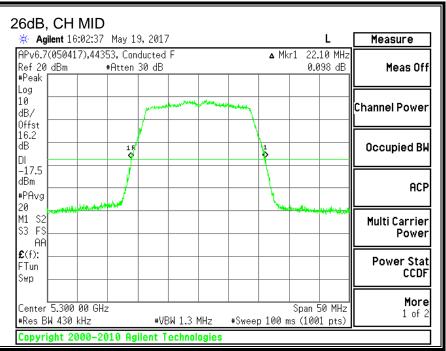
#### **RESULTS**

Channel	Frequency	26 dB BW UAT 2 (MHz)
Low	5260	21.9
Mid	5300	22.1
High	5320	21.9

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🔆 Agilent 16:07:53 May 19, 2017	L	Measure
APv6.7(050417),44353, Conducted F Ref 20 dBm #Atten 30 dB #Peak	▲ Mkr1 21.90 MHz -0.702 dB	Meas Off
Log 10 dB/ 0ffst	and the second s	Channel Power
16.2 / / / / / / / / / / / / / / / / / / /		Occupied BW
-17.4 dBm #PAvg 20		ACP
AA		Multi Carrier Power
£(f):		Power Stat CCDF
Center 5.320 00 GHz #Res BW 430 kHz #VBW 1.3 MHz	Span 50 MHz #Sweep 100 ms (1001 pts)	More 1 of 2

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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

## 8.10.2. 99% BANDWIDTH

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

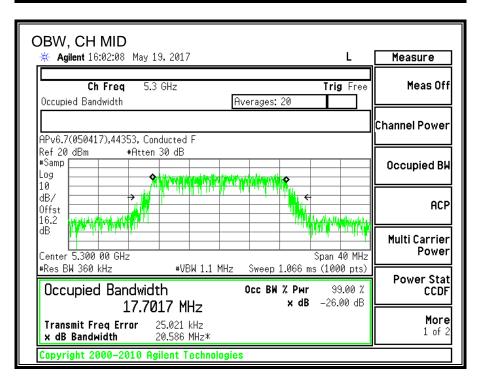
None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)
Low	5260	17.7032
Mid	5300	17.7017
High	5320	17.7083

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DBW, CH LOW	
★ Agilent 15:56:52 May 19, 2017	Measure
Ch Freq 5.26 GHz Trig Free Occupied Bandwidth Averages: 20	Meas Off
APv6.7(050417).44353, Conducted F	Channel Power
Ref 20 dBm #Atten 30 dB #Samp	Occupied BW
Log 10 dB/ 0ffst 16.2 Add_attributed at the second se	ACP
dB Center 5.260 00 GHz Span 40 MHz	Multi Carrier Power
#Res BW 360 kHz         #VBW 1.1 MHz         Sweep 1.066 ms (1000 pts)           Occupied Bandwidth         осс ВW % Рыг         99.00 %           17.7032 MHz         × dB         -26.00 dB	Power Stat CCDF
L7.7032 MHZ     Has 2000 a       Transmit Freq Error     9.849 kHz       x dB Bandwidth     20.496 MHz*	More 1 of 2
Copyright 2000–2010 Agilent Technologies	



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OBW, CH HIGH ∦ Agilent 16:07:25 May 19, 2017	L	Measure
Ch Freq 5.32 GHz Trig Occupied Bandwidth Averages: 20	Free	Meas Off
APv6.7(050417).44353, Conducted F		Channel Power
Ref 20 dBm #Atten 30 dB #Samp Log <b>Attended at the set of the set </b>		Occupied BW
		ACP
Center 5.320 00 GHz Span 4	40 MHz	Multi Carrier Power
*Res BW 360 kHz         *VBW 1.1 MHz         Sweep 1.066 ms (100           Occupied Bandwidth         Осс ВW % Рыг         35           17.7083 MHz         × dB         -26.1	9.00 %	Power Stat CCDF
Transmit Freq Error     6.690 kHz       x dB Bandwidth     20.803 MHz*		<b>More</b> 1 of 2
Copyright 2000–2010 Agilent Technologies		

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## 8.10.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

## <u>LIMITS</u>

None; for reporting purposes only.

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### **RESULTS**

Channel	Frequency	Power UAT 2 (dBm)
Low	5260	20.95
Mid	5300	20.87
High	5320	18.85

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## 8.10.4. OUTPUT POWER AND PPSD

## <u>LIMITS</u>

FCC §15.407 (a) (2)

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

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

#### **DIRECTIONAL ANTENNA GAIN**

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

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#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Min	Directional	Power	PSD
		26 dB	99%	Gain	Limit	Limit
		BW	BW			
	(MHz)	(MHz)	(MHz)	(dBi)	(dBm)	(dBm/1MHz)
Low	5260	21.900	17.703	-3.27	23.48	11.00
Mid	5300	22.100	17.702	-3.27	23.48	11.00
High	5320	21.900	17.708	-3.27	23.48	11.00

Duty Cycle CF (dB) 0.00

Included in Calculations of Corr'd PSD

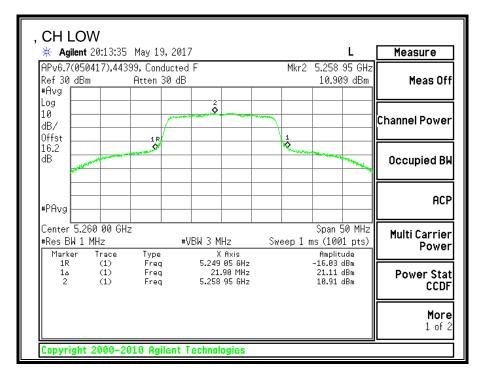
#### **Output Power Results**

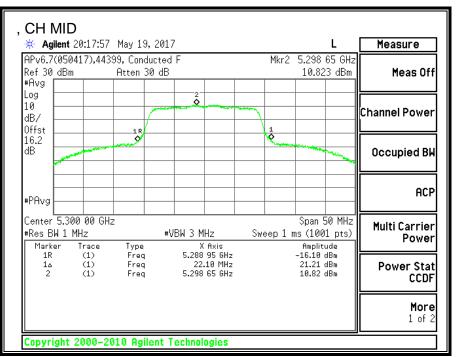
Channel	Frequency	UAT 2	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	20.95	20.95	23.48	-2.53
Mid	5300	20.87	20.87	23.48	-2.61
High	5320	18.85	18.85	23.48	-4.63

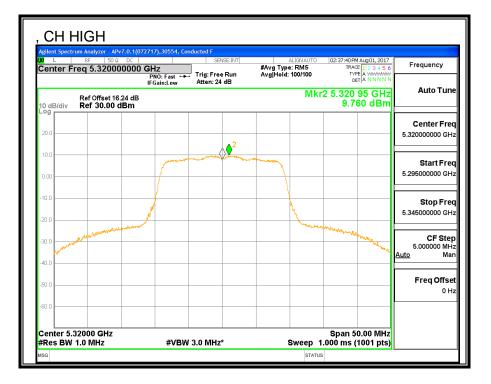
## **PSD Results**

Channel	Frequency	UAT 2	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5260	10.91	10.91	11.00	-0.09
Mid	5300	10.82	10.82	11.00	-0.18
High	5320	9.76	9.76	11.00	-1.24

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# 8.11. 11n HT20 LAT 3 SISO MODE IN THE 5.3GHz BAND

## 8.11.1. 26 dB BANDWIDTH

### <u>LIMITS</u>

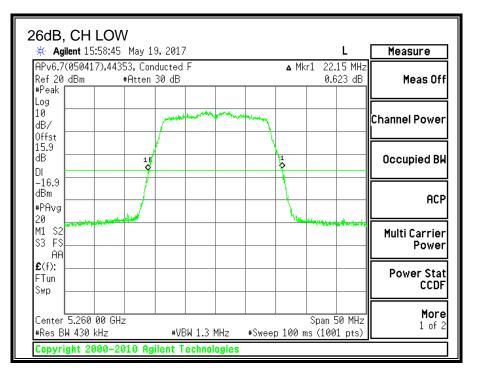
None; for reporting purposes only.

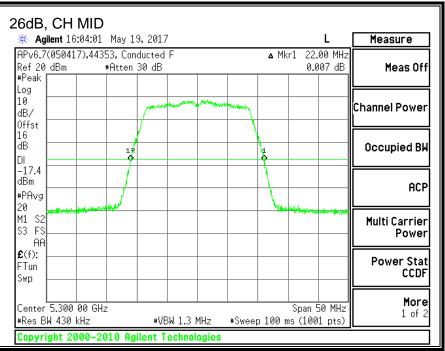
## **RESULTS**

Channel	Frequency	26 dB BW LAT 3 (MHz)
Low	5260	22.15
Mid	5300	22.00
High	5320	22.10

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						_					26dB,
Measure	L					/	9,201/	May 1	:09:17	<b>lent</b> 16	🔆 Agi
	10 MHz 81 dB		▲ Mk			F		53, Con #Atten			Ref 20 #Peak
Channel Power				hinter	roman	-	f marent				Log 10 dB/ Offst
Occupied BW			ч Ф					1 1			16 dB DI
ACP											-17.4 dBm #PAvg 20
Multi Carrier Power	And the constant	tikenis likenses								<b></b>	M1 S2 S3 FS AA
Power Stat CCDF											€(f): FTun Swp
		Span 5 s (100	p 100 m	#Swee	 MHz	 3W 1.3	 #VE	z			Center #Res B
					ogies	echnol	ilent T	010 Ag	000-20	ght 20	Copyri

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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

## 8.11.2. 99% BANDWIDTH

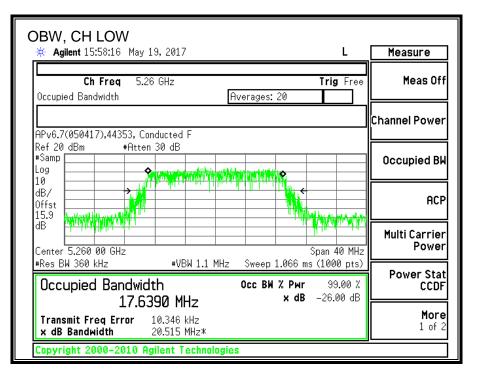
#### <u>LIMITS</u>

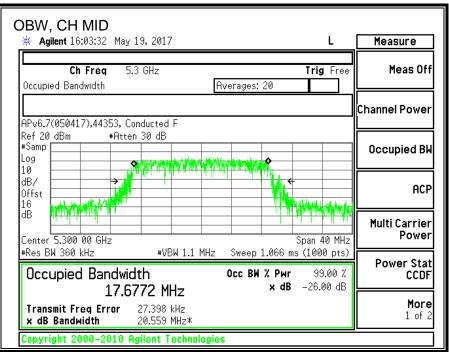
None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	99% BW LAT 3 (MHz)
Low	5260	17.6390
Mid	5300	17.6772
High	5320	17.6931

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DBW, CH HIGH	
🔆 Agilent 16:08:48 May 19, 2017 🛛 🛛 🖌 🗌	Measure
Ch Freq 5.32 GHz Trig Free Occupied Bandwidth Averages: 20	Meas Off
APv6.7(050417),44353, Conducted F	Channel Power
Ref 20 dBm #Atten 30 dB	
#Samp	Occupied BW
Log 10 dB/ Offst 16 dB/ 16 dB/ dB/ dB/ dB/ dB/ dB/ dB/ dB/	ACP
Center 5.320 00 GHz Span 40 MHz	Multi Carrier Power
#Res BW 360 kHz	D
Оссирied Bandwidth Осс ВМ % Рыг 99.00 %	Power Stat CCDF
17.6931 MHz × dB -26.00 dB	
Transmit Freq Error 5.953 kHz x dB Bandwidth 20.538 MHz*	<b>More</b> 1 of 2

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## 8.11.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

## <u>LIMITS</u>

None; for reporting purposes only.

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### **RESULTS**

Channel	Frequency	Power LAT 3 (dBm)
Low	5260	20.91
Mid	5300	20.81
High	5320	18.79

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## 8.11.4. OUTPUT POWER AND PPSD

## <u>LIMITS</u>

FCC §15.407 (a) (2)

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

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

### **DIRECTIONAL ANTENNA GAIN**

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

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#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Min	Directional	Power	PSD
		26 dB	99%	Gain	Limit	Limit
		BW	BW			
	(MHz)	(MHz)	(MHz)	(dBi)	(dBm)	(dBm/1MHz)
Low	5260	22.150	17.639	-6.98	23.46	11.00
Mid	5300	22.000	17.677	-6.98	23.47	11.00
High	5320	22.100	17.693	-6.98	23.48	11.00

Duty Cycle CF (dB) 0.00 Inclu

Included in Calculations of Corr'd PSD

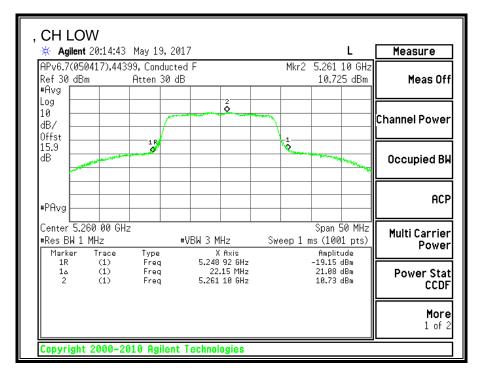
#### **Output Power Results**

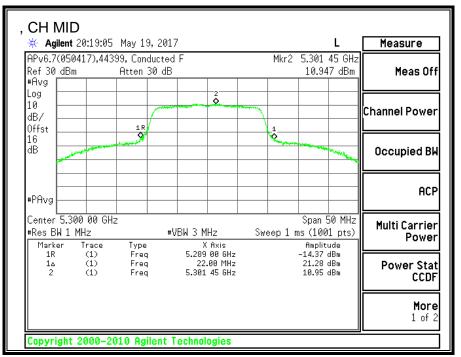
Channel	Frequency	LAT 3	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	20.91	20.91	23.46	-2.55
Mid	5300	20.81	20.81	23.47	-2.66
High	5320	18.79	18.79	23.48	-4.69

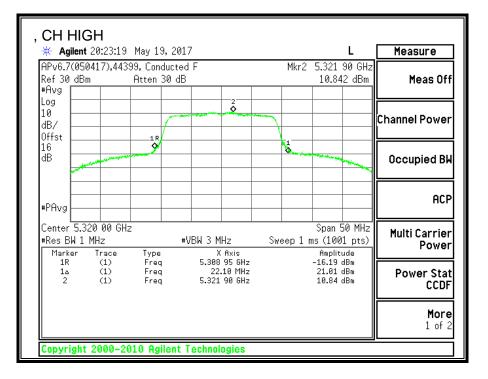
#### **PSD Results**

Channel	Frequency	LAT 3	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5260	10.73	10.73	11.00	-0.28
Mid	5300	10.95	10.95	11.00	-0.05
High	5320	10.84	10.84	11.00	-0.16

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# 8.12. 11n HT20 2TX CDD MIMO MODE IN THE 5.3GHz BAND

## 8.12.1. 26 dB BANDWIDTH

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

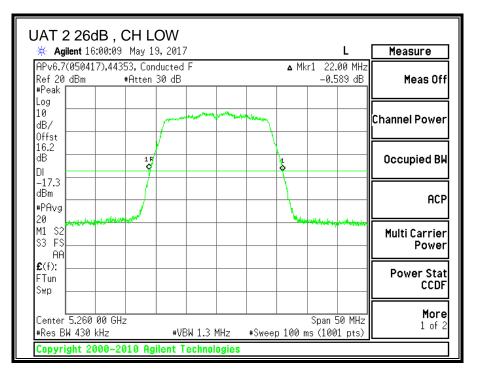
None; for reporting purposes only.

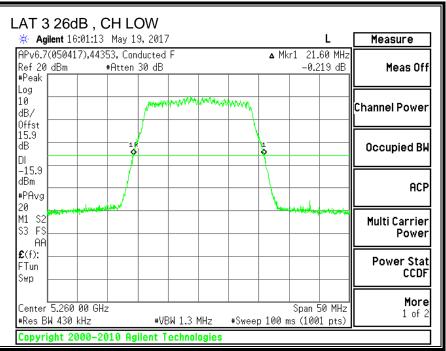
#### **RESULTS**

Channel	Frequency		26 dB BW LAT 3 (MHz)
Low	5260	22.00	21.60
Mid	5300	21.95	21.55
High	5320	22.00	21.75

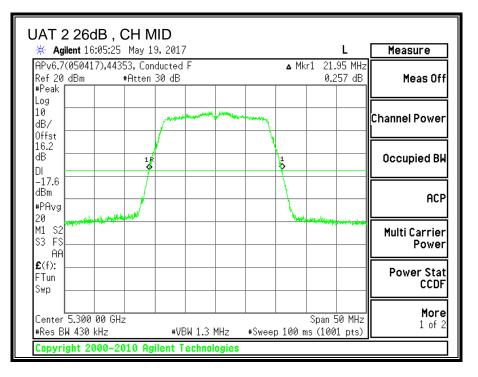
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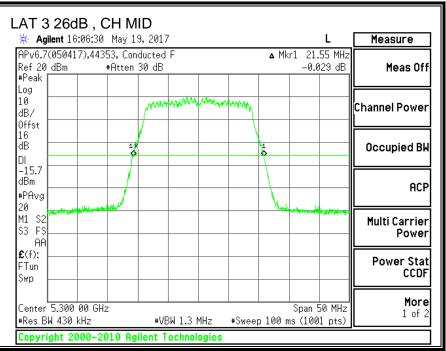
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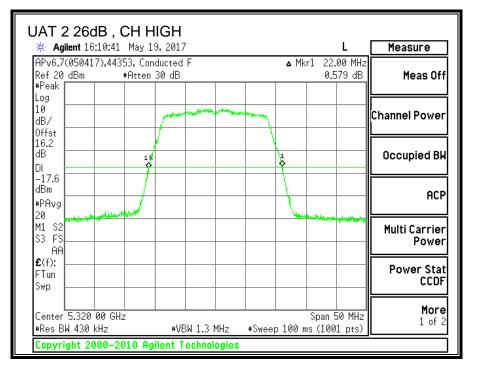


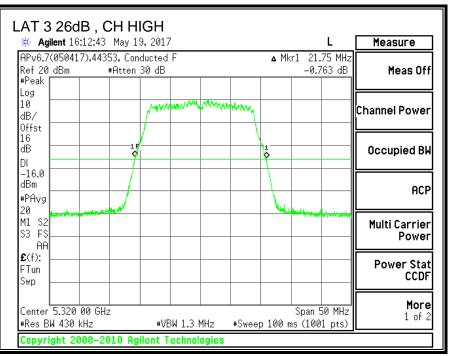
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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

#### DATE: AUGUST 28, 2017 FCC ID: BCG-E3161A

# 8.12.2. 99% BANDWIDTH

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

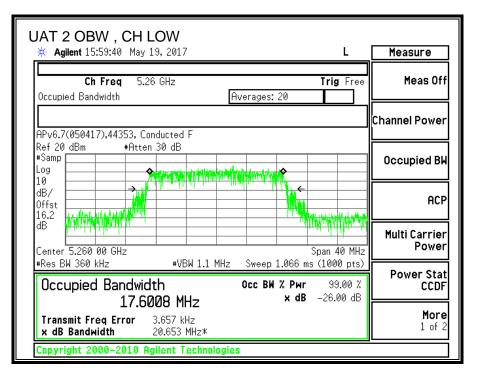
None; for reporting purposes only.

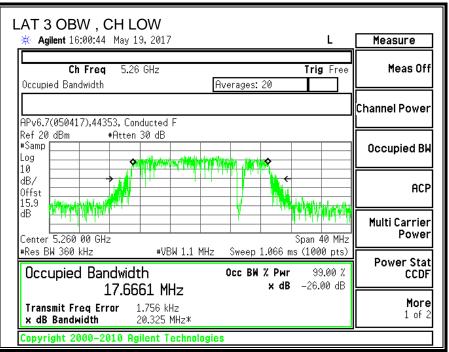
#### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)	99% BW LAT 3 (MHz)
Low	5260	17.6008	17.6661
Mid	5300	17.6812	17.6197
High	5320	17.7047	17.7016

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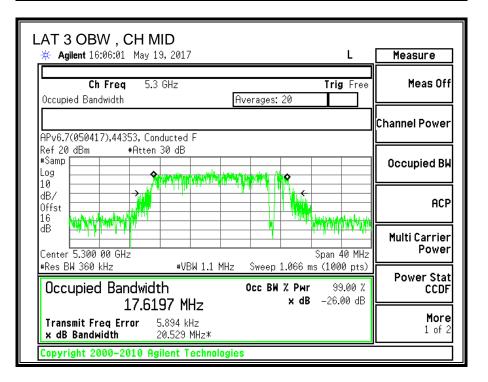
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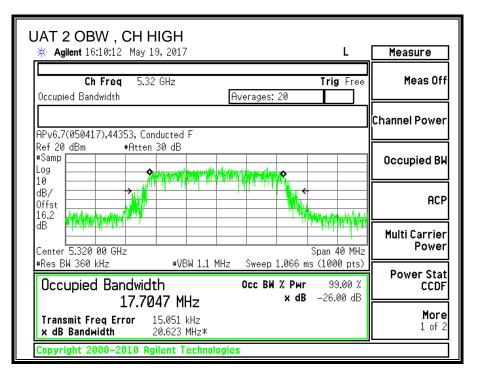


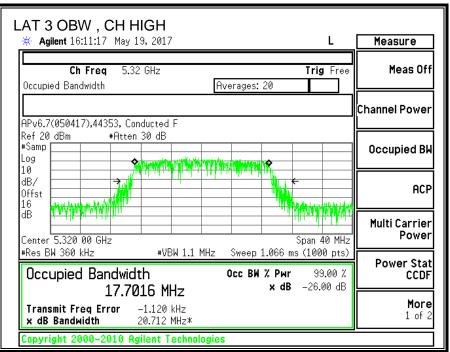
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JAT 2 OBW , CH MID	L	Measure
<b>Ch Freq</b> 5.3 GHz Occupied Bandwidth	Trig Free Averages: 20	Meas Off
APv6.7(050417),44353, Conducted F		Channel Power
Ref 20 dBm #Atten 30 dB #Samp		Occupied BW
10 dB/ Offst 16.2 American the		ACP
dBCenter 5.300 00 GHz	Span 40 MHz	Multi Carrier Power
*Res BW 360 kHz *VBW 1.1 Occupied Bandwidth 17.6812 MHz	MHz         Sweep 1.066 ms (1000 pts)           Occ BW % Pwr         99.00 %           x dB         -26.00 dB	Power Stat CCDF
L7.0012 MHZ Transmit Freq Error 39.334 kHz x dB Bandwidth 20.728 MHz*		More 1 of 2
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## 8.12.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

### <u>LIMITS</u>

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

### <u>RESULTS</u>

Channel	Frequency	UAT 2	LAT 3	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5260	17.86	17.79	20.84
Mid	5300	17.93	17.85	20.90
High	5320	17.89	17.92	20.92

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# 8.12.4. OUTPUT POWER AND PPSD

### <u>LIMITS</u>

FCC §15.407 (a) (2)

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

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

### **DIRECTIONAL ANTENNA GAIN**

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

UAT 2	LAT 3	<b>Uncorrelated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.27	-6.98	-4.74

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

UAT 2	LAT 3	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.27	-6.98	-1.92

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#### Bandwidth, Antenna Gain and Limits

0.00

Channel	Frequency	Min	Min	Directional	Directional	Power	PSD
		26 dB	99%	Gain	Gain	Limit	Limit
		BW	BW	for Power	for PSD		
	(MHz)	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz
Low	5260	21.60	17.601	-4.74	-1.92	23.46	11.00
Mid	5300	21.55	17.620	-4.74	-1.92	23.46	11.00
High	5320	21.75	17.702	-4.74	-1.92	23.48	11.00

Duty Cycle CF (dB)

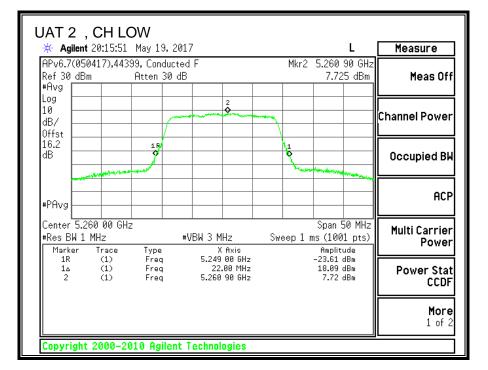
Included in Calculations of Corr'd PSD

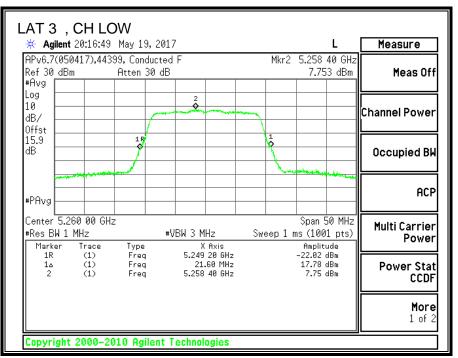
#### **Output Power Results**

Channel	Frequency	UAT 2	LAT 3	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5260	17.86	17.79	20.84	23.46	-2.62
Mid	5300	17.93	17.85	20.90	23.46	-2.56
High	5320	17.89	17.92	20.92	23.48	-2.56

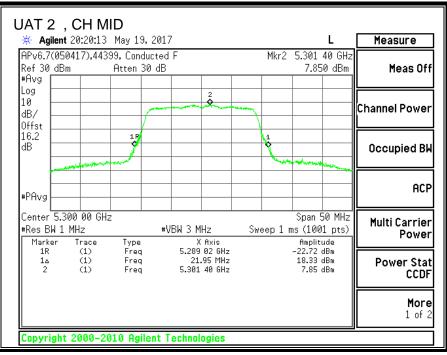
### **PSD Results**

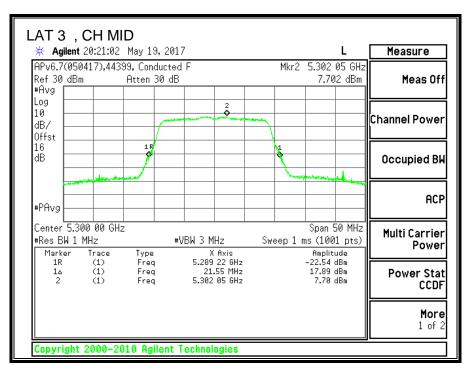
Channel	Frequency	UAT 2	LAT 3	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5260	7.73	7.75	10.75	11.00	-0.25
Mid	5300	7.85	7.70	10.79	11.00	-0.21
High	5320	7.85	7.68	10.78	11.00	-0.22

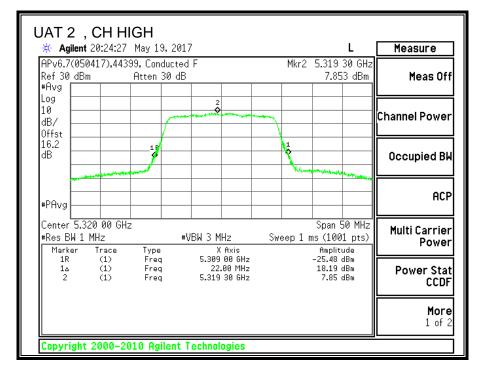


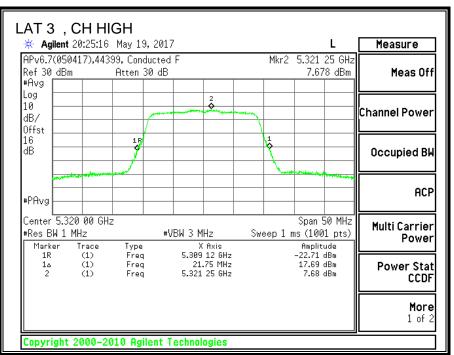


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# 8.13. 11n HT40 UAT 2 SISO MODE IN THE 5.3GHz BAND

## 8.13.1. 26 dB BANDWIDTH

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

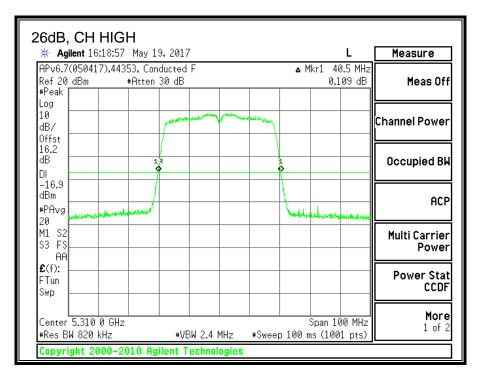
None; for reporting purposes only.

### **RESULTS**

Channel	Frequency	26 dB BW UAT 2 (MHz)
Low	5270	40.6
High	5310	40.5

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				_					26dB,
Measure	L			7	.9,2017	May 1	:14:02	lent 16	🔆 Agi
Meas Off	kr1 40.6 MHz -0.223 dB	∧ M		F	nducted 30 dB	53, Con #Atten			APv6.7 Ref20 #Peak
Channel Power			- when have	a subblance	man				Log 10 dB/ Offst
Occupied BW		1			LR O	1			16.2 dB DI -16.5
ACP	where and the state of the stat	Handha				mand		ly leader of a state of the	dBm
Multi Carrier Power									M1 S2 S3 FS AA
Power Stat CCDF									<b>£</b> (f): FTun Swp
More 1 of 2	Span 100 MHz is (1001 pts)		z #Swee	 3W 2.4 M	 #VE				Center #Res B
			ies	echnol	gilent T	010 Ag	000-20	ght 20	Copyri



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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

# 8.13.2. 99% BANDWIDTH

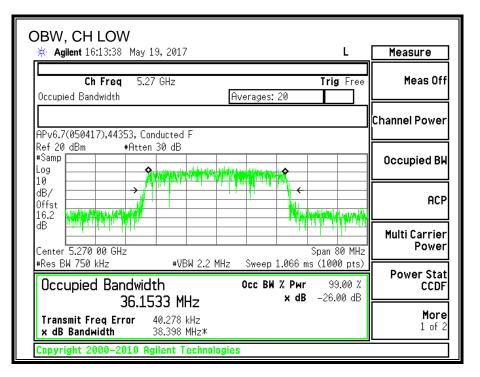
#### <u>LIMITS</u>

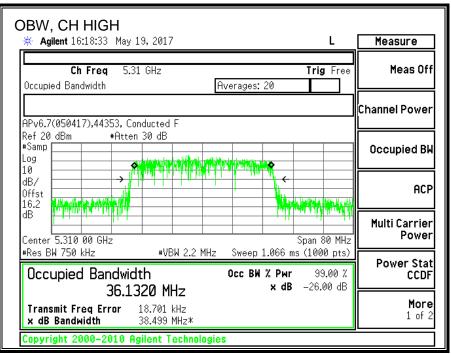
None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)
Low	5270	36.1533
High	5310	36.1320

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# 8.13.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

### <u>LIMITS</u>

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### <u>RESULTS</u>

Channel	Frequency	Power UAT 2 (dBm)
Low	5270	19.45
High	5310	17.85

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## 8.13.4. OUTPUT POWER AND PPSD

### <u>LIMITS</u>

FCC §15.407 (a) (2)

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

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

#### **DIRECTIONAL ANTENNA GAIN**

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

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#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Min	Directional	Power	PSD
		26 dB	99%	Gain	Limit	Limit
		BW	BW			
	(MHz)	(MHz)	(MHz)	(dBi)	(dBm)	(dBm/1MHz)
Low	5270	40.60	36.15	-3.27	24.00	11.00
High	5310	40.50	36.13	-3.27	24.00	11.00

Duty Cycle CF (dB) 0.10

Included in Calculations of Corr'd PSD

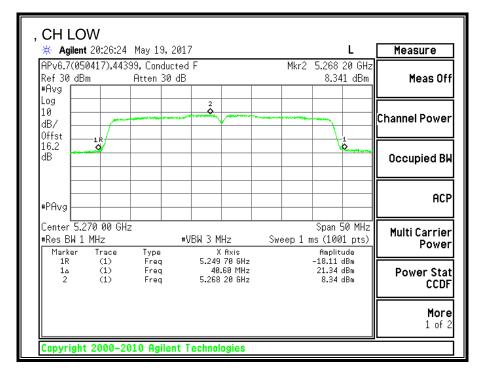
### **Output Power Results**

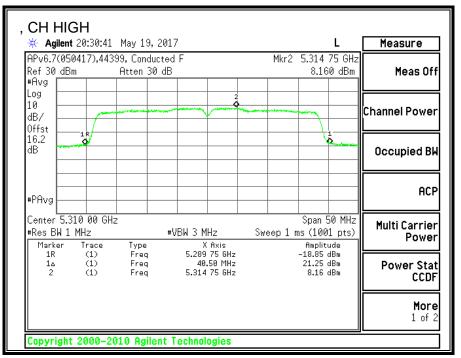
Channel	Frequency	UAT 2	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5270	19.45	19.45	24.00	-4.55

### **PSD Results**

Channel	Frequency	UAT 2	Total	PSD	PSD	
		Meas	Meas Corr'd		Margin	
		PSD	PSD			
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)	
Low	5270	8.341	8.441	11.00	-2.56	
High	5310	8.160	8.260	11.00	-2.74	

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# 8.14. 11n HT40 LAT 3 SISO MODE IN THE 5.3GHz BAND

# 8.14.1. 26 dB BANDWIDTH

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

None; for reporting purposes only.

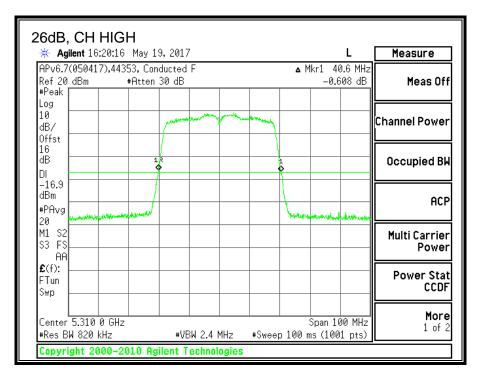
### **RESULTS**

Channel	Frequency	26 dB BW LAT 3 (MHz)
Low	5270	40.6
High	5310	40.6

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									26dB,
Measure	L				9,2017	May 19	:15:20	<b>lent</b> 16	🔆 Agi
Meas Off	kr1 40.6 MHz -0.221 dB	⊿ M			ducted F 30 dB	53, Con #Atten			APv6.7 Ref20 #Peak
Channel Power									Log 10 dB/ Offst
Occupied BW		1			2	1			15.9 dB DI -16.7
ACP	www.atteldtate.ym.es.kateding	Law				لمعلقه		sone get the set	dBm "DOwn
Multi Carrier Power									M1 S2 S3 FS AA
Power Stat CCDF									<b>£</b> (f): FTun Swp
More 1 of 2	Span 100 MHz 15 (1001 pts)		#Swee	.4 MHz	#VBW 2				Center #Res B
				nologie	lent Tech	010 Agi	000-20	ght 20	Copyri



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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

# 8.14.2. 99% BANDWIDTH

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

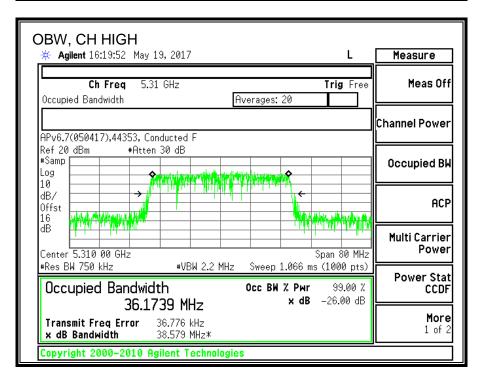
None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	99% BW LAT 3 (MHz)
Low	5270	36.1856
High	5310	36.1739

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DBW, CH LOW	
★ Agilent 16:14:56 May 19, 2017	Measure
Ch Freq 5.27 GHz Trig Free Occupied Bandwidth Averages: 20	Meas Off
APv6.7(050417),44353, Conducted F	Channel Power
Ref 20 dBm #Atten 30 dB #Samp Log to to constitute the state of the st	Occupied BW
dB/ Offst 15.9 between the second se	ACP
Center 5.270 00 GHz Span 80 MHz	Multi Carrier Power
#Res BW 750 kHz	Power Stat
Оссирied Bandwidth Осс ВМ % Рыг 99.00 % 36.1856 MHz × dB -26.00 dB	CCDF
Transmit Freq Error 17.159 kHz x dB Bandwidth 38.521 MHz*	<b>More</b> 1 of 2
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# 8.14.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

### <u>LIMITS</u>

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### **RESULTS**

Channel	Frequency	Power LAT 3 (dBm)
Low	5270	19.42
High	5310	17.78

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## 8.14.4. OUTPUT POWER AND PPSD

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

FCC §15.407 (a) (2)

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

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

#### **DIRECTIONAL ANTENNA GAIN**

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

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#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Min	Directional	Power	PSD
		26 dB	99%	Gain	Limit	Limit
		BW	BW			
	(MHz)	(MHz)	(MHz)	(dBi)	(dBm)	(dBm/1MHz)
Low	5270	40.60	36.19	-6.98	24.00	11.00
High	5310	40.60	36.17	-6.98	24.00	11.00

Duty Cycle CF (dB)

Included in Calculations of Corr'd PSD

### **Output Power Results**

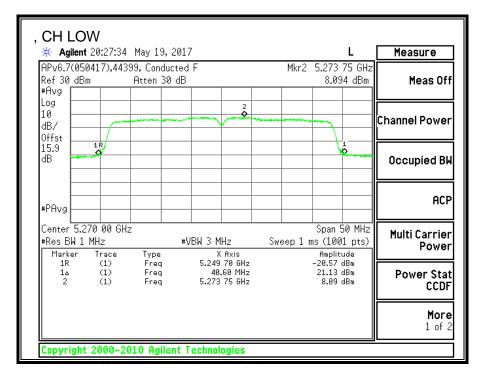
Channel	Frequency	LAT 3	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	5270	19.42	19.42	24.00	-4.58

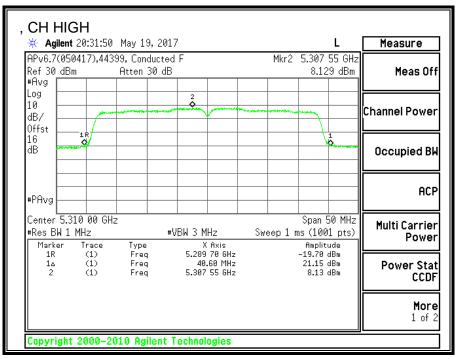
0.10

### **PSD Results**

Channel	Frequency	LAT 3	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5270	8.09	8.19	11.00	-2.81
High	5310	8.13	8.23	11.00	-2.77

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# 8.15. 11n HT40 2TX CDD MIMO MODE IN THE 5.3GHz BAND

## 8.15.1. 26 dB BANDWIDTH

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

None; for reporting purposes only.

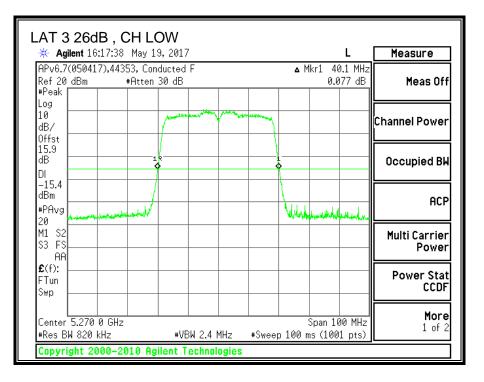
### **RESULTS**

Channel	Frequency	26 dB BW UAT 2 (MHz)	26 dB BW LAT 3 (MHz)
Low	5270	40.6	40.1
High	5310	40.7	40.2

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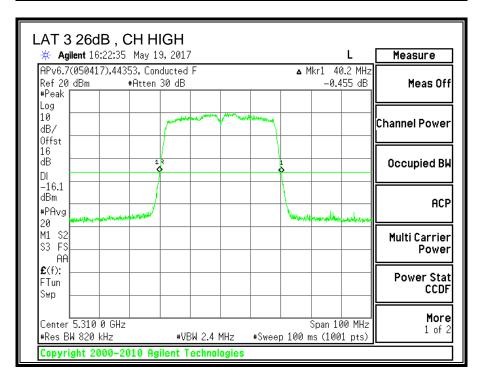
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						H LOW			
Measure	L				17	May 19, 201	5:16:39	<b>lent</b> 16	🔆 Ag
Meas Off	r1 40.6 MHz 0.160 dB	▲ M				3, Conducte Atten 30 dE			APv6.7 Ref20 #Peak
Channel Power			marine	-	audodesha da tana				Log 10 dB/ Offst
Occupied BW		1				1.R			16.2 dB DI
ACP	. Jan Hillstonia for the second	Marthum						المعالية فسللم	-16.9 dBm #PAvg 20
Multi Carrier Power									M1 S2 S3 FS AA
Power Stat CCDF									<b>£</b> (f): FTun Swp
More 1 of 2	pan 100 MHz s (1001 pts)		#Swee	MHz	VBW 2.4	#			Center #Res B
				logies	Techno	10 Agilent	000-20	ght 20	Copyri



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🔆 Agilent 16	-				L	Measure
APv6.7(05041 Ref 20 dBm #Peak				▲ Mkr:	1 40.7 MHz -1.395 dB	Meas Off
Log 10 dB/ Offst			ny manana	~		Channel Power
16.2 dB DI -17.5	1	R		1		Occupied BW
dBm	an section and				naker-allunkeren	АСР
M1 S2 S3 FS AA						Multi Carrier Power
<b>£</b> (f): FTun Swp						Power Stat CCDF
Center 5.310 #Res BW 820		#VBW 2.	/ MH-7 #Su	Sp; veep 100 ms	an 100 MHz (1001 pts)	More 1 of 2



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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

#### DATE: AUGUST 28, 2017 FCC ID: BCG-E3161A

# 8.15.2. 99% BANDWIDTH

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

None; for reporting purposes only.

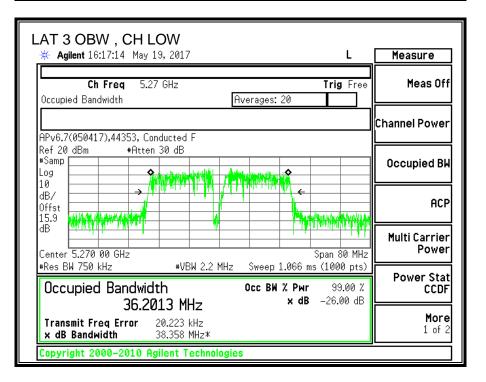
#### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)	99% BW LAT 3 (MHz)
Low	5270	36.1664	36.2013
High	5310	36.2009	36.1394

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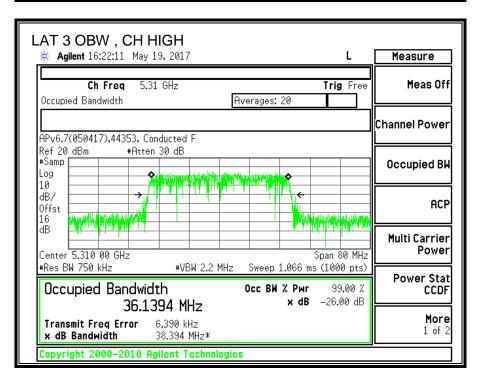
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JAT 2 OBW , CH LOW * Agilent 16:16:15 May 19, 2017 L	Macaura
The Agric 10:10:15 May 19, 2017	Measure
Ch Freq 5.27 GHz Trig Free Occupied Bandwidth Averages: 20	Meas Off
	Channel Power
APv6.7(050417),44353, Conducted F	
Ref 20 dBm #Atten 30 dB #Samp	Occupied BW
Log 10 dB/ Offst 16.2 Manual Annual Ann	ACP
dB (1997)	Multi Carrier Power
#Res BW 750 kHz	
Оссиріеd Bandwidth Осс ви % Рыг 99.00 % 36.1664 MHz × dB -26.00 dB	Power Stat CCDF
Transmit Freq Error 33.877 kHz x dB Bandwidth 38.449 MHz*	More 1 of 2
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JAT 2 OBW , CH HIGH	Measure
<b>K Agirent</b> 10.21.11 May 13, 2017	neasure
Ch Freq 5.31 GHz Trig Free Occupied Bandwidth Averages: 20	Meas Off
	Channel Power
APv6.7(050417),44353, Conducted F	
Ref 20 dBm #Atten 30 dB #Samp	Occupied BW
Log 10 dB/ 0ffst 16.2 Log 10 10 10 10 10 10 10 10 10 10	ACP
dB product pro	Multi Carrier Power
#Res BW 750 kHz	Davis and Chick
Occupied Bandwidth         Осс ВМ % Риг         99.00 %           36.2009 MHz         × dB         -26.00 dB	Power Stat CCDF
Transmit Freq Error 21.076 kHz х dB Bandwidth 38.454 MHz*	More 1 of 2
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## 8.15.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

## <u>LIMITS</u>

None; for reporting purposes only.

## TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

## **RESULTS**

Channel	Frequency	UAT 2	LAT 3	Total
		Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)
Low	5270	19.42	19.41	22.43
High	5310	16.96	16.94	19.96

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## 8.15.4. OUTPUT POWER AND PPSD

## <u>LIMITS</u>

FCC §15.407 (a) (2)

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

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

### **DIRECTIONAL ANTENNA GAIN**

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

UAT 2	LAT 3	Uncorrelated Chains
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.27	-6.98	-4.74

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

UAT 2	LAT 3	<b>Correlated Chains</b>
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-3.27	-6.98	-1.92

#### Bandwidth, Antenna Gain and Limits

0.10

Channel	Frequency	Min	Min	Directional	Directional	Power	PSD
		26 dB	99%	Gain	Gain	Limit	Limit
		BW	BW	for Power	for PSD		
	(MHz)	(MHz)	(MHz)	(dBi)	(dBi)	(dBm)	(dBm/1MHz)
Low	5270	40.1	36.166	-4.74	-1.92	24.00	11.00
High	5310	40.2	36.201	-4.74	-1.92	24.00	11.00

Duty Cycle CF (dB)

Included in Calculations of Corr'd PSD

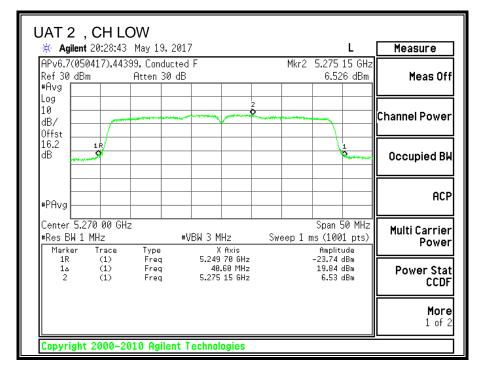
## **Output Power Results**

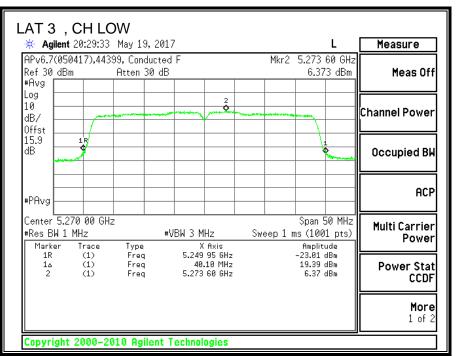
Channel	Frequency	UAT 2	LAT 3	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5270	19.42	19.41	22.43	24.00	-1.57
High	5310	16.96	16.94	19.96	24.00	-4.04

## **PSD Results**

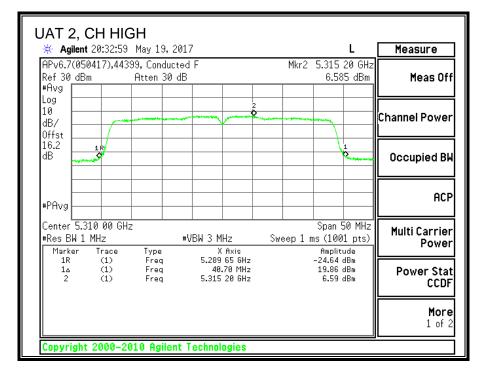
Channel	Frequency	UAT 2	LAT 3	Total	PSD	PSD
		Meas	Meas	Corr'd	Limit	Margin
		PSD	PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Low	5270	6.53	6.37	9.56	11.00	-1.44
High	5310	6.59	6.26	9.53	11.00	-1.47

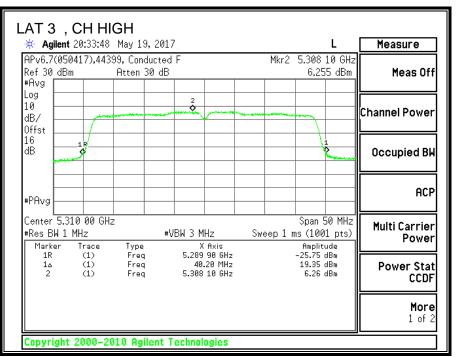
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# 8.16. 11ac HT80 UAT 2 SISO MODE IN THE 5.3GHz BAND

## 8.16.1. 26 dB BANDWIDTH

## <u>LIMITS</u>

None; for reporting purposes only.

## **RESULTS**

Channel	Frequency	26 dB BW UAT 2 (MHz)
Mid	5290	82.4

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Agilent 16:23:54 May 19, 2017 L Measu	re
v6.7(050417),44353, Conducted F ▲ Mkr1 82.4 MHz f 20 dBm #Atten 30 dB -0.113 dB Mea eak	as Off
Channel P	ower
	ed BW
S.I. /	ACP
S2 Multi Ca	rrier ower
f): Power	<sup>-</sup> Stat CCDF
	<b>More</b> 1 of 2
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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

## 8.16.2. 99% BANDWIDTH

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

None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	99% BW UAT 2 (MHz)

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DBW, CH MID * Agilent 16:23:30 May 19, 2017 L	Measure
Ch Freq 5.29 GHz Trig Free Occupied Bandwidth Averages: 20	Meas Off
APv6.7(050417).44353, Conducted F	Channel Power
Ref 20 dBm #Atten 30 dB #Samp	Occupied BW
10 dB/ Offst 16.2	ACP
dB Center 5.290 00 GHz Span 160 MHz	
*Res BW 1.5 MHz         *VBW 5 MHz         Sweep 1.066 ms (1000 pts)           Occupied Bandwidth         Осс ВИ % Рыг         99.00 %           75.2716 MHz         × dB         -26.00 dB	Power Stat CCDF
Transmit Freq Error 106.548 kHz x dB Bandwidth 79.378 MHz*	More 1 of 2
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## 8.16.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

## <u>LIMITS</u>

None; for reporting purposes only.

## TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

### **RESULTS**

Channel	Frequency	Power UAT 2 (dBm)
Mid	5290	17.42

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## 8.16.4. OUTPUT POWER AND PPSD

## <u>LIMITS</u>

FCC §15.407 (a) (2)

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

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

### **DIRECTIONAL ANTENNA GAIN**

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

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#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Min	Directional	Power	PSD
		26 dB	99%	Gain	Limit	Limit
		BW	BW			
	(MHz)	(MHz)	(MHz)	(dBi)	(dBm)	(dBm/1MHz)
Mid	5290	82.40	75.27	-3.27	24.00	11.00

Duty Cycle CF (dB)	0.19	Included in Calculations of Corr'd PSD

#### **Output Power Results**

Channel	Frequency	UAT 2	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5290	17.42	17.42	24.00	-6.58

#### **PPSD** Results

Channel	Frequency	UAT 2	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm)	(dBm/1MHz)	(dBm/1MHz)	(dB)
Mid	5290	5.60	5.79	11.00	-5.21

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					СН М
Measure	L	17	May 19, 20:	nt 20:34:57	🔆 Agile
	Mkr2 5.279 0 GHz 5.598 dBm		99, Conducte Atten 30 dE		Ref 30 d #Avg
Channel Power		2		-	Log  - 10  - dB/  - 0ffst  -
Occupied BW				1 R 0	16.2 dB
ACP					#PAvg —
	Span 100 MHz Sweep 1 ms (1001 pts) Amplitude	+VBW 3 MHz X Axis	f Type	Trace	#Res BW Marker
Power Stat CCDF	-20.85 dBm 21.29 dBm 5.60 dBm	5.248 8 GHz 82.4 MHz 5.279 0 GHz	Freq Freq Freq	(1) (1) (1)	1R 14 2
More 1 of 2					
		Technologies	010 Agilent	nt 2000-20	Copyrig

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# 8.17. 11ac HT80 LAT 3 SISO MODE IN THE 5.3GHz BAND

## 8.17.1. 26 dB BANDWIDTH

## <u>LIMITS</u>

None; for reporting purposes only.

## **RESULTS**

Channel	Frequency	26 dB BW LAT 3 (MHz)
Mid	5290	82.4

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26dB, CH MID		
🔆 Agilent 16:25:12 May 19, 2017	L	Measure
APv6.7(050417),44353, Conducted F Ref 20 dBm #Atten 30 dB #Peak	▲ Mkr1 82.4 MHz -0.772 dB	Meas Off
Log 10 dB/ 0ffst		Channel Power
15.9 dB DI		Occupied BW
-13.0 dBm / / / / / / / / / / / / / / / / / / /	hand a some particular some	ACP
М1 S2 S3 FS АА		Multi Carrier Power
£(f): FTun Swp		Power Stat CCDF
Center 5.290 0 GHz #Res BW 1.6 MHz #VBW 5 MHz	Span 200 MHz #Sweep 100 ms (1001 pts)	More 1 of 2
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REPORT NO: 11792114-E4V2 EUT MODEL: 579C-E3161A

## 8.17.2. 99% BANDWIDTH

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

None; for reporting purposes only.

#### **RESULTS**

Channel	Frequency	
		(MHz)
Mid	5290	75.2509

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DBW, CH MID * Agilent 16:24:48 May 19, 2017 L	Measure
Ch Freq 5.29 GHz Trig Fre	
Occupied Bandwidth Averages: 20 APv6.7(050417),44353, Conducted F	Channel Power
HPV0.7(050417),44555, Cunducted F Ref 20 dBm #Atten 30 dB #Samp	Occupied BW
10 Superior Constant of the second se	ACP
dB	
*Res BW 1.5 MHz         *VBW 5 MHz         Sweep 1.066 ms (1000 pts           Occupied Bandwidth         Occ BW % Pwr         99.00 %           75.2509 MHz         × dB         -26.00 dB	Power Stat CCDF
Transmit Freq Error     77.748 kHz       x dB Bandwidth     79.222 MHz*	<b>More</b> 1 of 2
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## 8.17.3. AVERAGE POWER

ID: 30554 Date: 7/28/2017

## <u>LIMITS</u>

None; for reporting purposes only.

## TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

### **RESULTS**

Channel	Frequency	Power LAT 3 (dBm)
Mid	5290	17.42

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## 8.17.4. OUTPUT POWER AND PPSD

## <u>LIMITS</u>

FCC §15.407 (a) (2)

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

### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

PSD test procedure: KDB 789033 D02 v01r04 Section F (SA-2 method)

### **DIRECTIONAL ANTENNA GAIN**

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

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#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency	Min	Min	Directional	Power	PSD
		26 dB	99%	Gain	Limit	Limit
		BW	BW			
	(MHz)	(MHz)	(MHz)	(dBi)	(dBm)	(dBm/1MHz)
Mid	5290	82.40	75.25	-6.98	24.00	11.00

## Duty Cycle CF (dB) 0.19 Included in Calculations of Corr'd PSD

#### **Output Power Results**

Channel	Frequency	LAT 3	Total	Power	Power
		Meas	Corr'd	Limit	Margin
		Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Mid	5290	17.42	17.42	24.00	-6.58

#### **PPSD** Results

Channel	Frequency	LAT 3	Total	PSD	PSD
		Meas	Corr'd	Limit	Margin
		PSD	PSD		
	(MHz)	(dBm/1MHz)	(dBm/1MHz)	(dBm/1MHz)	(dB)