

XMit 2019.05.15

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	15-Feb-18	15-Feb-21
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	30-Nov-18	30-Nov-19

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequencies and data rates listed in the datasheet were measured in each band utilized by the radio. The transmit power was set to its default maximum.

Per ANSI C63.10, the spectrum analyzer settings were as follows:

- -RBW = Approx. 1% of the emission bandwidth (B).
- -VBW = > RBW
- -Detector = Peak
- -Trace mode = max hold

The spectrum analyzer occupied bandwidth measurement function was then used to measure 26 dB emission bandwidth.

There is no required limit to be met in the rule part for this test. The purpose of the test is to both report the results as required and to utilize the emission bandwidth for setting the channel power integration bandwidth during conducted output power testing.



EUT: MWMII Work Order: MASI0553 Serial Number: ENG-1 Date: 16-Jul-19 Customer: Masimo Corporation Temperature Humidity: 47.2% RH
Barometric Pres.: 1015 mbar Attendees: Anami Joshi & Nghi Nguyen Project: None Tested by: Nolan De Ramos, Luis Flores, and Mark Baytan TEST SPECIFICATIONS Power: 3.6VD0 Job Site: OC13 FCC 15.407:2019 Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26.3dB Total Offset (5.2 GHz - 5.35 GHz) Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26dB Total Offset (5.35 GHz - 5.8 GHz) DEVIATIONS FROM TEST STANDARD None 146+ Configuration # Value Limit (26 dB) Result (>) 20 MHz 802.11(a) 6 Mbps Pass Ch 36, Low Channel 5180 MHz Ch 40, Mid Channel 5200 MHz 20.95 MHz 500 kHz 21.168 MHz 500 kHz Pass Ch 48, High Channel 5240 MHz Ch 52, Low Channel 5260 MHz 21.216 MHz 500 kHz Pass 21.12 MHz 500 kHz Pass Ch 60, Mid Channel 5300 MHz Ch 64, High Channel 5320 MHz 21.167 MHz 21.057 MHz 500 kHz 500 kHz Pass Pass Ch 100, Low Channel 5500 MHz Ch 116, Mid Channel 5580 MHz 21.137 MHz 500 kHz Pass 21.148 MHz 500 kHz Pass Ch 140, High Channel 5700 MHz 20.952 MHz 500 kHz 802.11(a) 36 Mbps Ch 36, Low Channel 5180 MHz Pass Ch 40 Mid Channel 5200 MHz 20 804 MHz 500 kHz Pass Ch 48, High Channel 5240 MHz 20.999 MHz 500 kHz Pass Ch 52. Low Channel 5260 MHz 20 907 MHz 500 kHz Pass Ch 60, Mid Channel 5300 MHz 21.114 MHz 500 kHz Pass Ch 64, High Channel 5320 MHz 21.124 MHz 500 kHz Pass Ch 100. Low Channel 5500 MHz 20.544 MHz 500 kHz Pass Ch 116, Mid Channel 5580 MHz 20.728 MHz 500 kHz Ch 140, High Channel 5700 MHz 21.173 MHz 500 kHz Pass 802.11(a) 54 Mbps 21.031 MHz 500 kHz Ch 36, Low Channel 5180 MHz Pass Ch 40, Mid Channel 5200 MHz 20.961 MHz 500 kHz Pass Ch 48, High Channel 5240 MHz Ch 52, Low Channel 5260 MHz 20.759 MHz 500 kHz Pass 21.109 MHz 500 kHz Pass Ch 60, Mid Channel 5300 MHz 21.038 MHz 500 kHz Pass 20.854 MHz Ch 64, High Channel 5320 MHz 500 kHz Pass Ch 100, Low Channel 5500 MHz Ch 116, Mid Channel 5580 MHz 20.94 MHz 500 kHz Pass 20.702 MHz 500 kHz Pass Ch 140, High Channel 5700 MHz 20.814 MHz 500 kHz Pass 802.11(n) MCS0 Ch 36, Low Channel 5180 MHz 21.241 MHz 500 kHz Pass Ch 40. Mid Channel 5200 MHz 21.19 MHz 500 kHz Pass Ch 48, High Channel 5240 MHz 21.248 MHz 500 kHz Pass Ch 52 Low Channel 5260 MHz 21 227 MHz 500 kHz Pass Ch 60, Mid Channel 5300 MHz 21.424 MHz 500 kHz Pass Ch 64, High Channel 5320 MHz Ch 100, Low Channel 5500 MHz 21 282 MHz 500 kHz Pass 21.398 MHz 500 kHz Pass Ch 116, Mid Channel 5580 MHz 21.187 MHz 500 kHz Pass Ch 140, High Channel 5700 MHz 21,432 MHz 500 kHz Pass 802.11(n) MCS7 Ch 36. Low Channel 5180 MHz 21.223 MHz 500 kHz Pass Ch 40, Mid Channel 5200 MHz 21.508 MHz 500 kHz Pass Ch 48, High Channel 5240 MHz Ch 52, Low Channel 5260 MHz 20 797 MHz 500 kHz Pass 21.035 MHz Pass Ch 60, Mid Channel 5300 MHz 21.208 MHz 500 kHz Pass Ch 64, High Channel 5320 MHz 21.288 MHz 500 kHz Pass Ch 100, Low Channel 5500 MHz Ch 116, Mid Channel 5580 MHz 21.2 MHz 500 kHz Pass 20.616 MHz 500 kHz Pass Ch 140, High Channel 5700 MHz 21.062 MHz 500 kHz Pass 40 MHz 802.11(n) MCS0 Ch 36/40. Low Channel 5190 MHz 40.259 MHz 500 kHz Pass Ch 44/48, High Channel 5230 MHz 40.588 MHz 500 kHz Pass Ch 52/56, Low Channel 5270 MHz 40.483 MHz 500 kHz Pass Ch 60/64, High Channel 5310 MHz 500 kHz 40.358 MHz Pass Ch 100/104, Low Channel 5510 MHz Ch 116/120, Mid Channel 5590 MHz 40.099 MHz 500 kHz Pass 40.136 MHz 500 kHz Pass Ch 132/136, High Channel 5670 MHz 40 294 MHz 500 kHz Pass 802.11(n) MCS7 Ch 36/40, Low Channel 5190 MHz Ch 44/48, High Channel 5230 MHz 40.305 MHz 500 kHz Pass 39.928 MHz 500 kHz Pass Ch 52/56, Low Channel 5270 MHz 40.144 MHz 500 kHz Pass Ch 60/64, High Channel 5310 MHz 40.066 MHz 500 kHz Pass Ch 100/104, Low Channel 5510 MHz 40.055 MHz 500 kHz Ch 116/120. Mid Channel 5590 MHz 40.34 MHz 500 kHz Pass Ch 132/136, High Channel 5670 MHz 39.994 MHz Pass



20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz

Value

(26 dB)

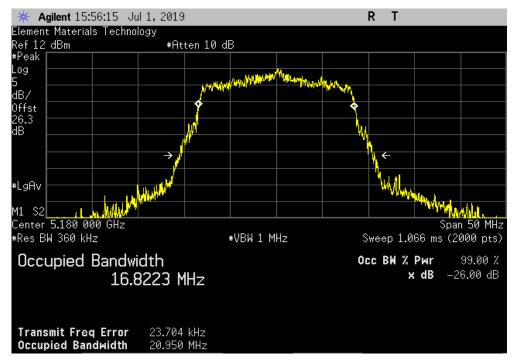
(20 Hz)

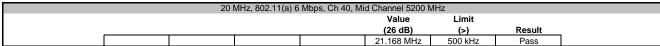
Value

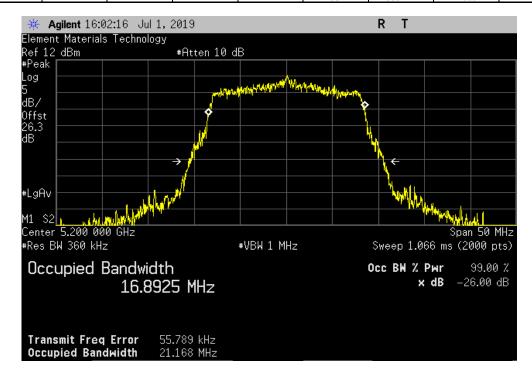
(20 dB)

(20 95 MHz

Value





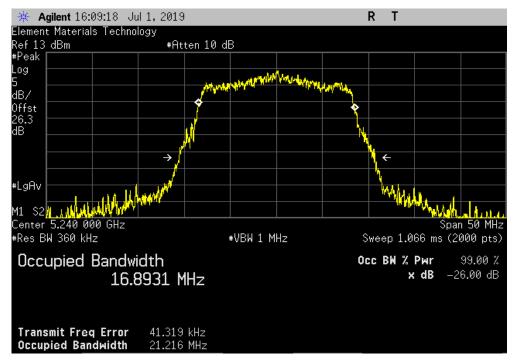




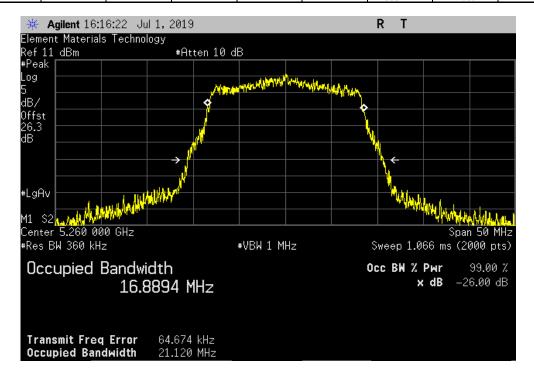
20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz

Value Limit
(26 dB) (>) Result

21.216 MHz 500 kHz Pass



20 MHz, 802.11(a) 6 Mbps, Ch 52, Low Channel 5260 MHz										
				Value	Limit					
				(26 dB)	(>)	Result				
				21.12 MHz	500 kHz	Pass				

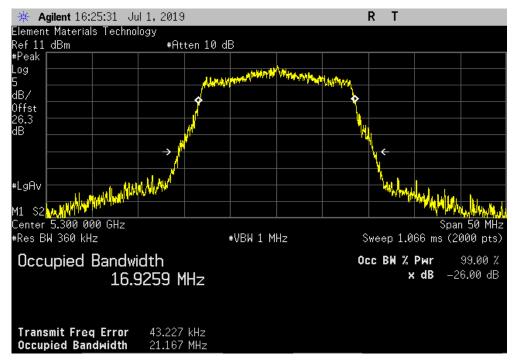


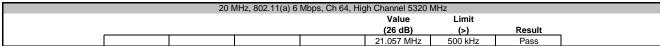


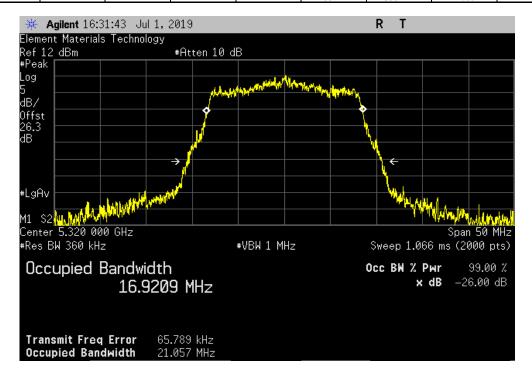
20 MHz, 802.11(a) 6 Mbps, Ch 60, Mid Channel 5300 MHz

Value Limit
(26 dB) (>) Result

21.167 MHz 500 kHz Pass





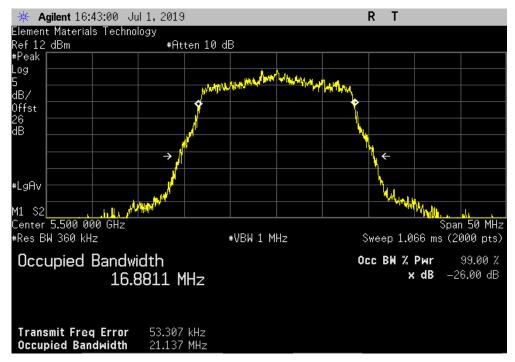


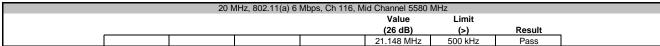


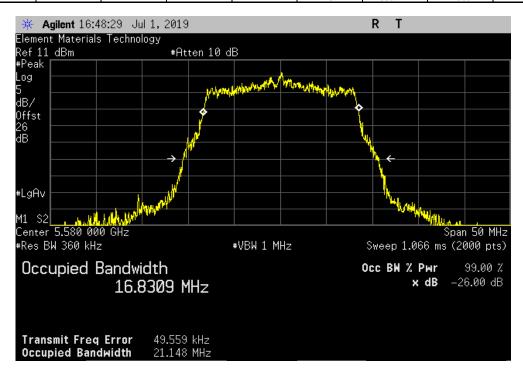
20 MHz, 802.11(a) 6 Mbps, Ch 100, Low Channel 5500 MHz

Value Limit
(26 dB) (>) Result

21.137 MHz 500 kHz Pass









20 MHz, 802.11(a) 6 Mbps, Ch 140, High Channel 5700 MHz

Value

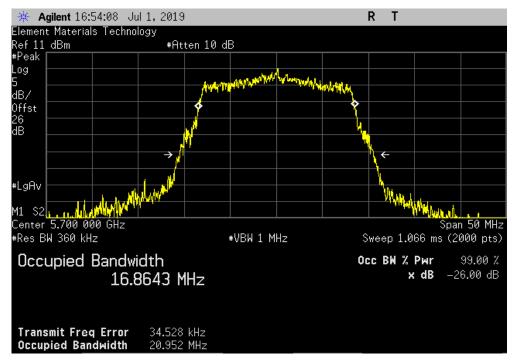
(26 dB)

(20 MHz, 802.11(a) 6 Mbps, Ch 140, High Channel 5700 MHz

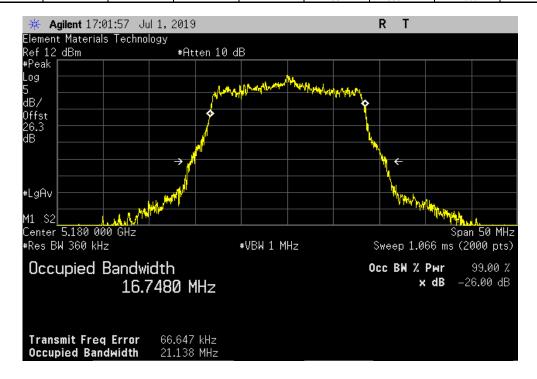
Value

(26 dB)

(20 MHz Pass



20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz										
				Value	Limit					
				(26 dB)	(>)	Result				
				21.138 MHz	500 kHz	Pass				

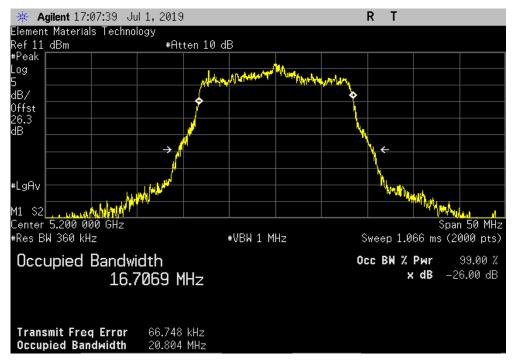


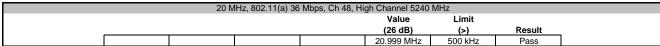


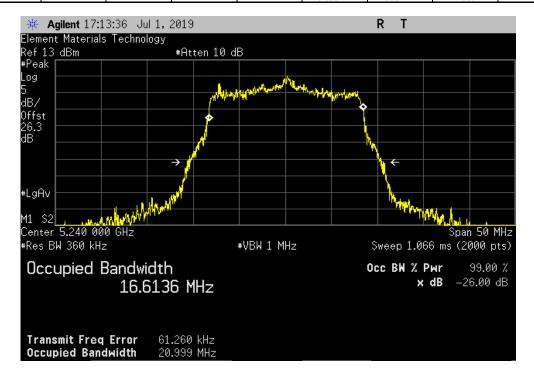
20 MHz, 802.11(a) 36 Mbps, Ch 40, Mid Channel 5200 MHz

Value
Limit
(26 dB) (>) Result

20.804 MHz 500 kHz Pass









20 MHz, 802.11(a) 36 Mbps, Ch 52, Low Channel 5260 MHz

Value

(26 dB)

(20 kHz

Value

Limit

(20 dB)

(20 097 MHz

Value

20.907 MHz

Value

Comparison

South

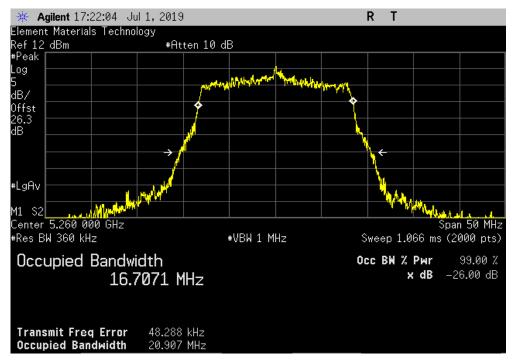
South

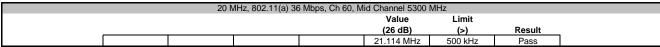
South

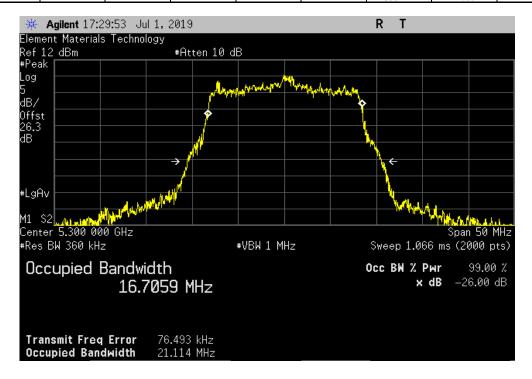
Comparison

South

Sout





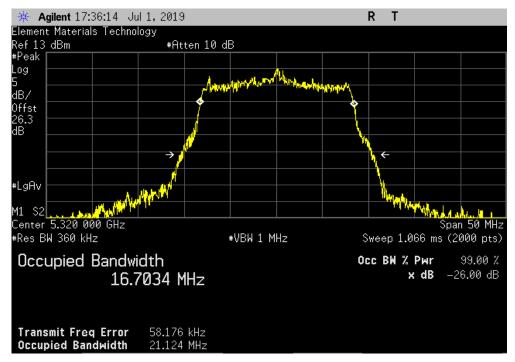


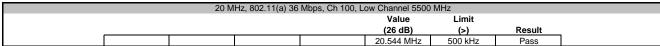


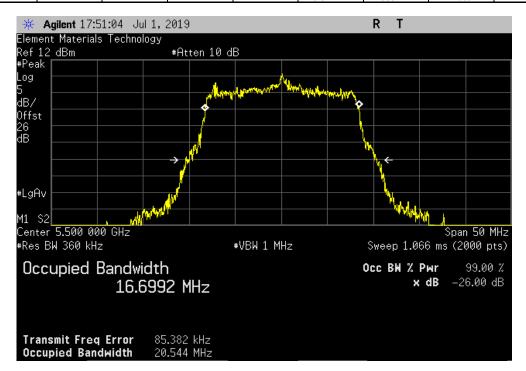
20 MHz, 802.11(a) 36 Mbps, Ch 64, High Channel 5320 MHz

Value Limit
(26 dB) (>) Result

21.124 MHz 500 kHz Pass





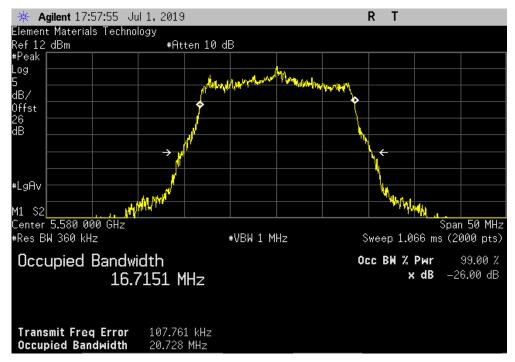


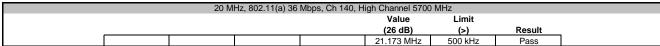


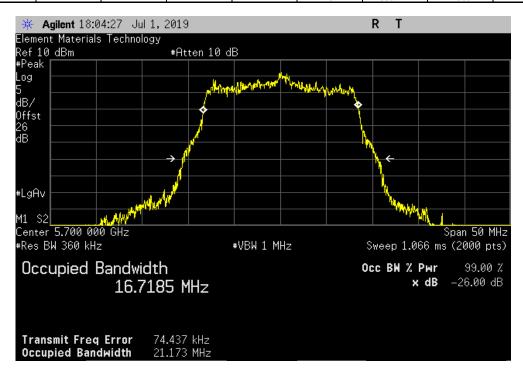
20 MHz, 802.11(a) 36 Mbps, Ch 116, Mid Channel 5580 MHz

Value Limit
(26 dB) (>) Result

20.728 MHz 500 kHz Pass





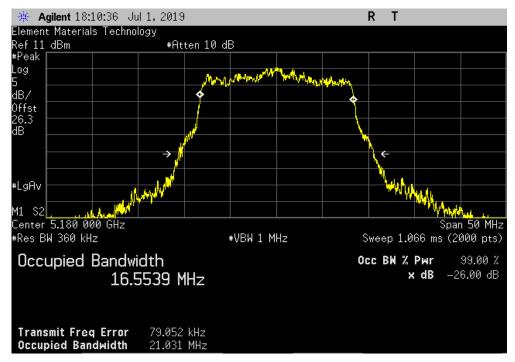


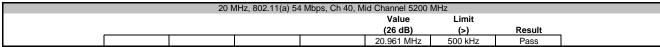


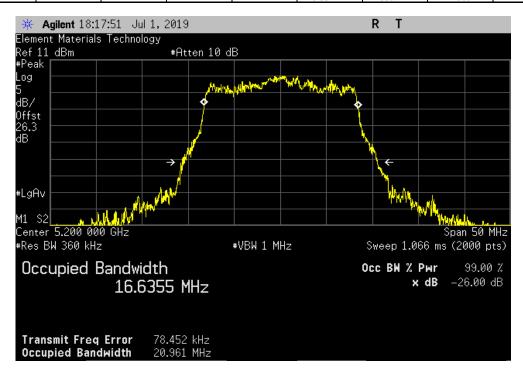
20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz

Value Limit
(26 dB) (>) Result

21.031 MHz 500 kHz Pass





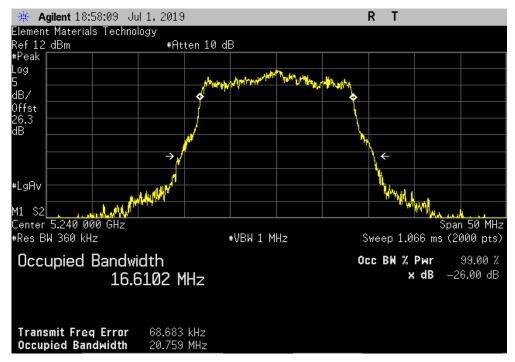


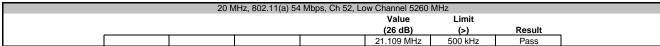


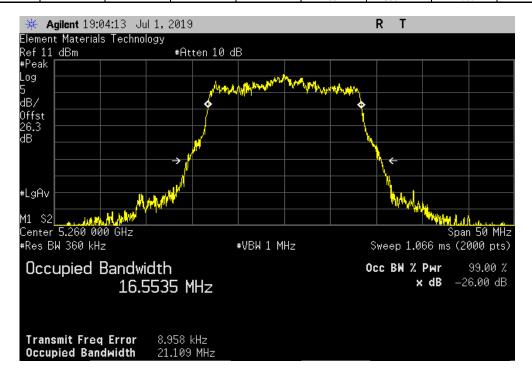
20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz

Value Limit
(26 dB) (>) Result

20.759 MHz 500 kHz Pass





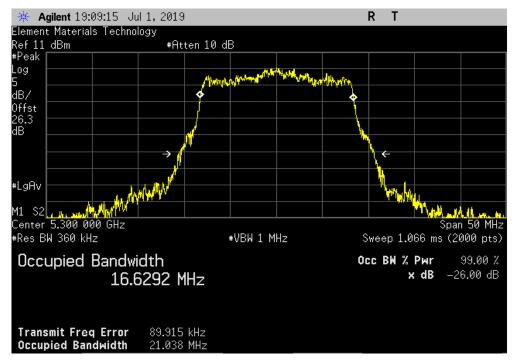


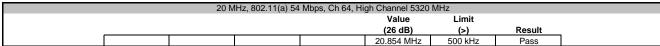


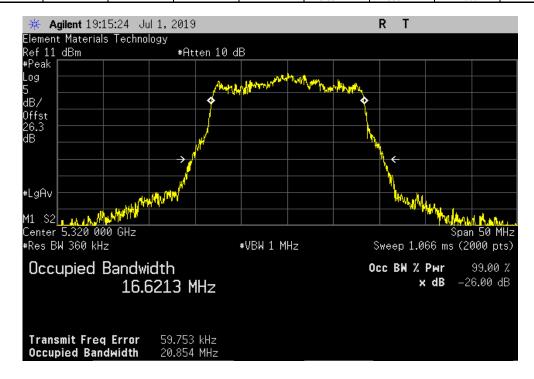
20 MHz, 802.11(a) 54 Mbps, Ch 60, Mid Channel 5300 MHz

Value Limit
(26 dB) (>) Result

21.038 MHz 500 kHz Pass









20 MHz, 802.11(a) 54 Mbps, Ch 100, Low Channel 5500 MHz

Value

(26 dB)

(20 kHz

Value

Limit

(26 dB)

(20 4 MHz

Value

20.94 MHz

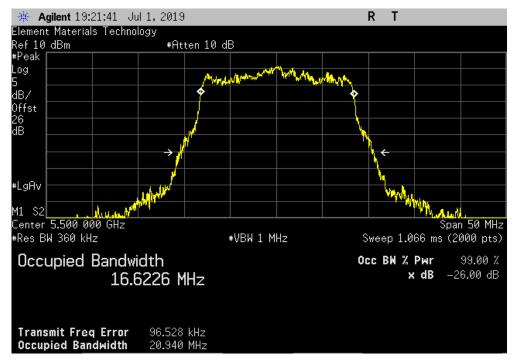
Value

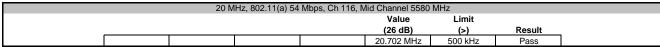
SookHz

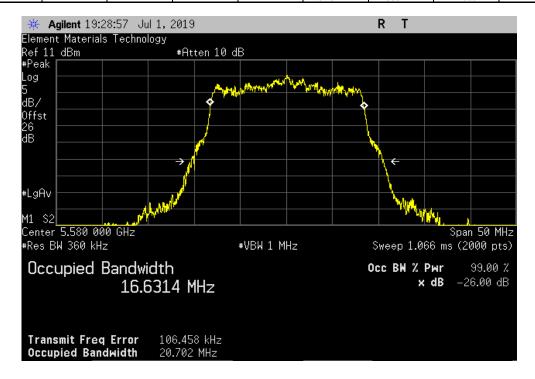
Value

Result

Pass





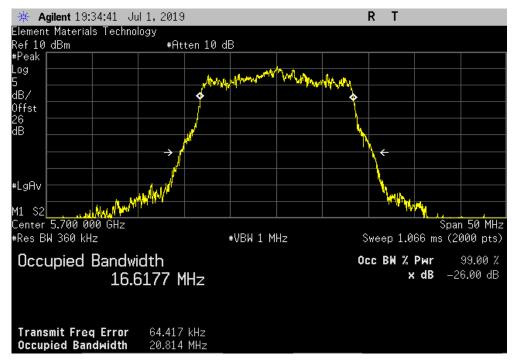


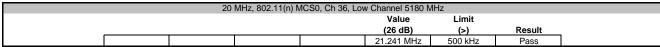


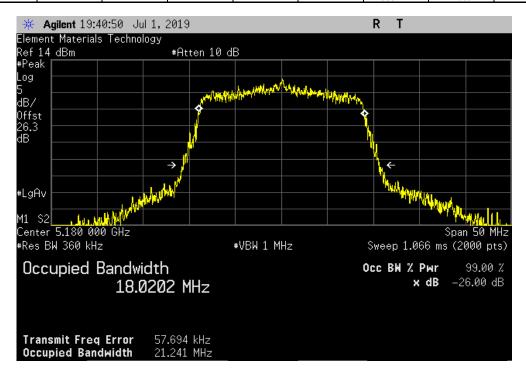
20 MHz, 802.11(a) 54 Mbps, Ch 140, High Channel 5700 MHz

Value Limit
(26 dB) (>) Result

20.814 MHz 500 kHz Pass





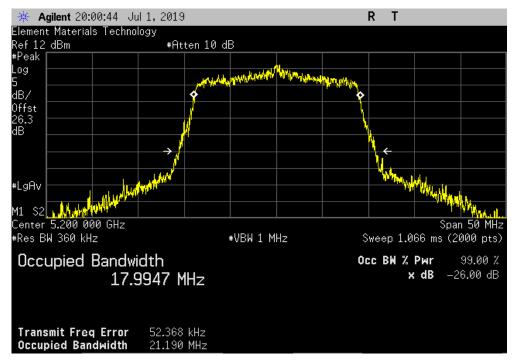


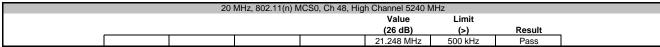


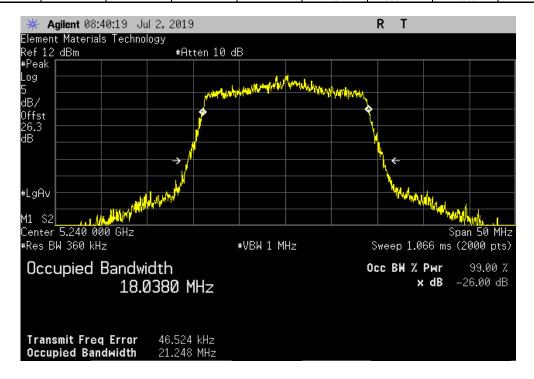
20 MHz, 802.11(n) MCS0, Ch 40, Mid Channel 5200 MHz

Value
Limit
(26 dB) (>) Result

21.19 MHz 500 kHz Pass





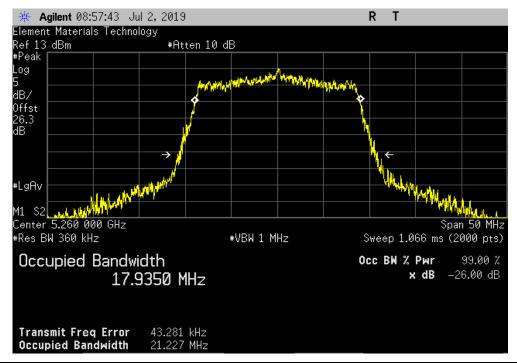


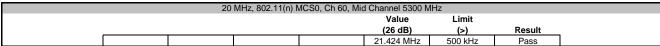


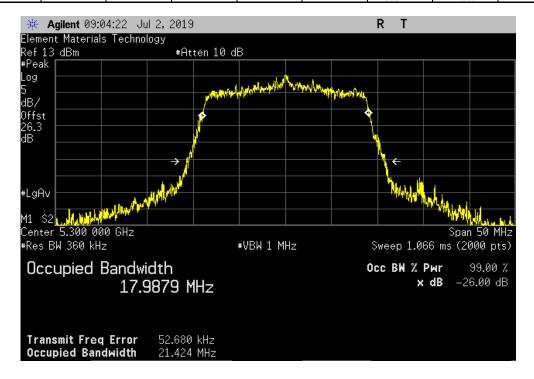
20 MHz, 802.11(n) MCS0, Ch 52, Low Channel 5260 MHz

Value Limit
(26 dB) (>) Result

21.227 MHz 500 kHz Pass





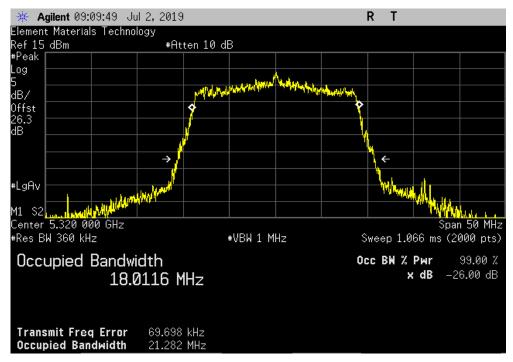




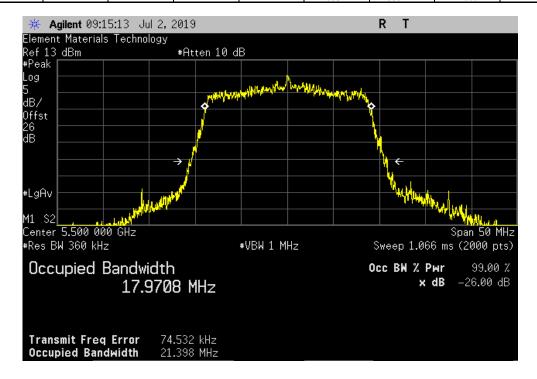
20 MHz, 802.11(n) MCS0, Ch 64, High Channel 5320 MHz

Value Limit
(26 dB) (>) Result

21.282 MHz 500 kHz Pass



20 MHz, 802.11(n) MCS0, Ch 100, Low Channel 5500 MHz										
				Value	Limit					
				(26 dB)	(>)	Result				
				21.398 MHz	500 kHz	Pass				

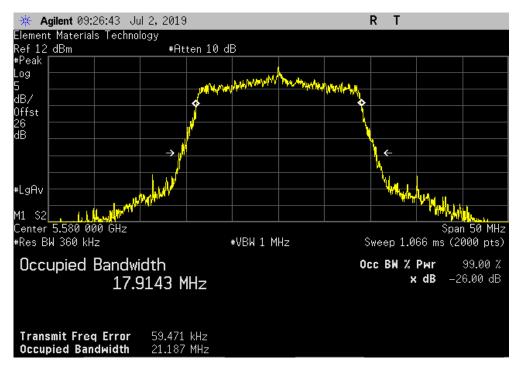




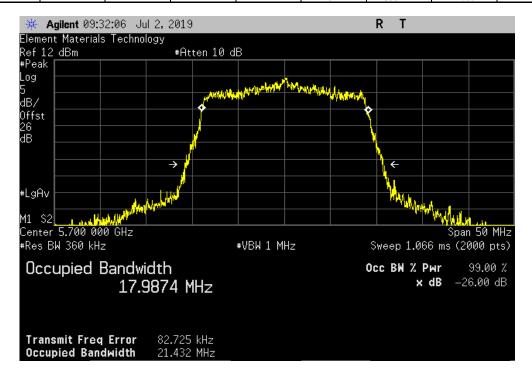
20 MHz, 802.11(n) MCS0, Ch 116, Mid Channel 5580 MHz

Value Limit
(26 dB) (>) Result

21.187 MHz 500 kHz Pass



20 MHz, 802.11(n) MCS0, Ch 140, High Channel 5700 MHz										
				Value	Limit					
				(26 dB)	(>)	Result				
				21.432 MHz	500 kHz	Pass				

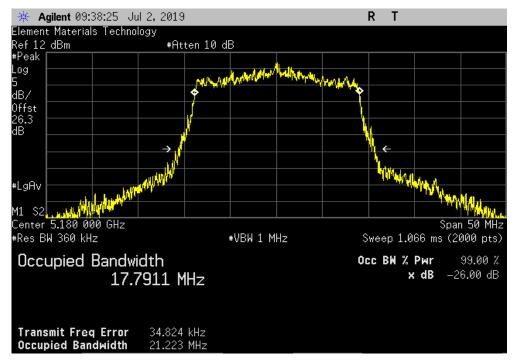


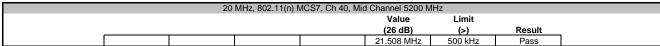


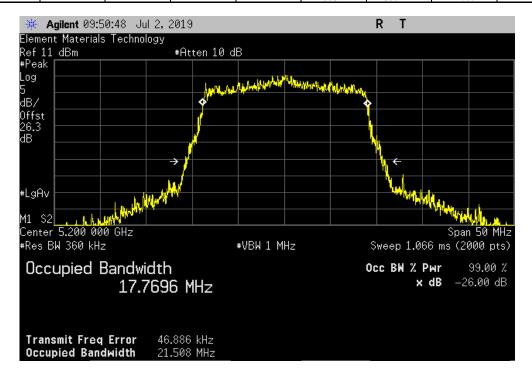
20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz

Value
Limit
(26 dB) (>) Result

21.223 MHz 500 kHz Pass





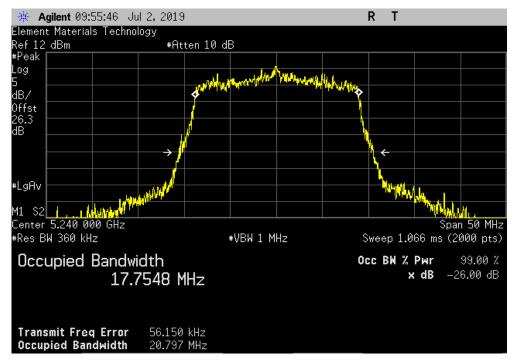


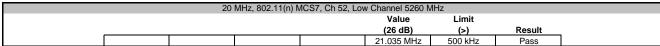


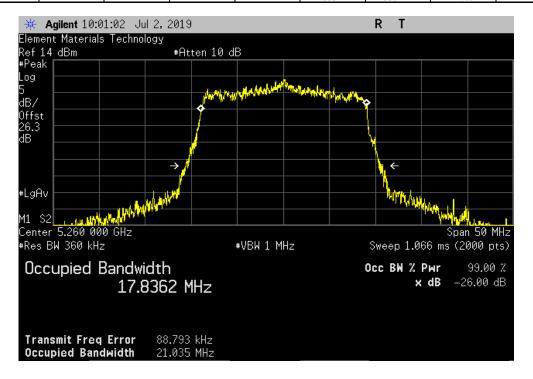
20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz

Value Limit
(26 dB) (>) Result

20.797 MHz 500 kHz Pass





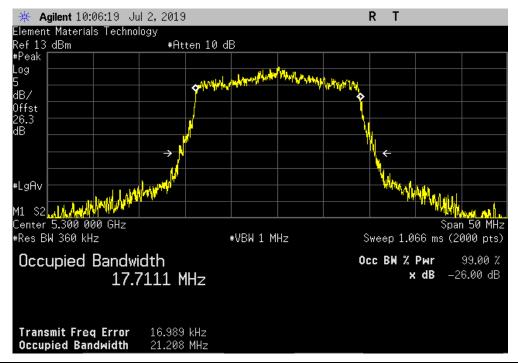


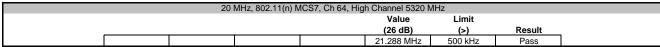


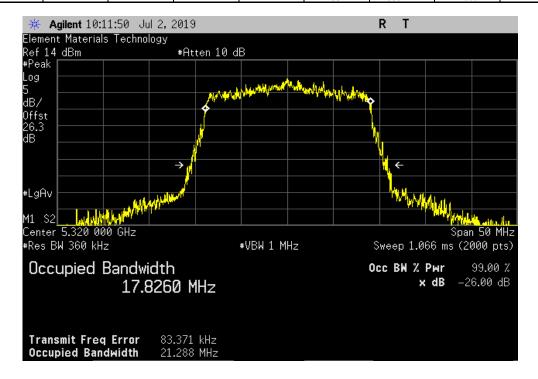
20 MHz, 802.11(n) MCS7, Ch 60, Mid Channel 5300 MHz

Value Limit
(26 dB) (>) Result

21.208 MHz 500 kHz Pass









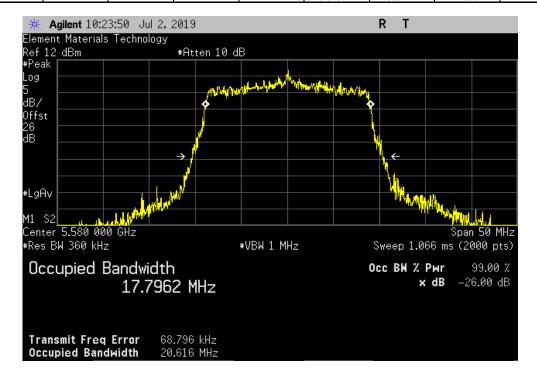
20 MHz, 802.11(n) MCS7, Ch 100, Low Channel 5500 MHz

Value
Limit
(26 dB) (-) Result

21.2 MHz 500 kHz Pass



20 MHz, 802.11(n) MCS7, Ch 116, Mid Channel 5580 MHz										
				Value	Limit					
				(26 dB)	(>)	Result				
				20.616 MHz	500 kHz	Pass				

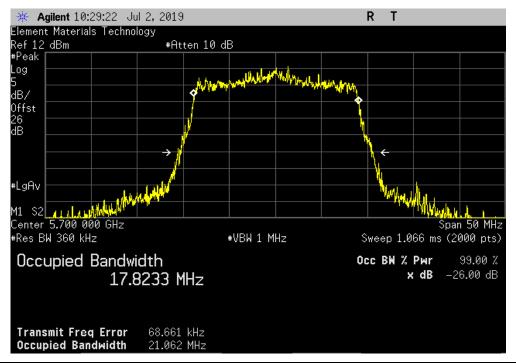




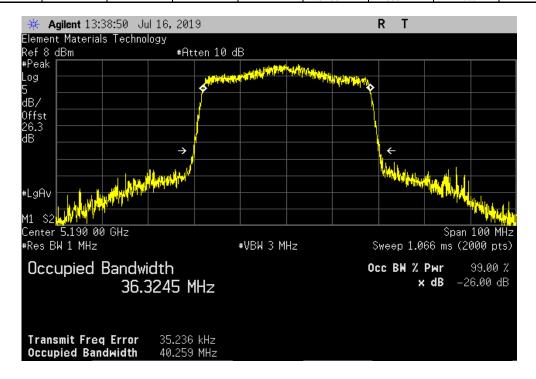
20 MHz, 802.11(n) MCS7, Ch 140, High Channel 5700 MHz

Value Limit
(26 dB) (>) Result

21.062 MHz 500 kHz Pass



40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz										
					Value	Limit				
					(26 dB)	(>)	Result			
					40.259 MHz	500 kHz	Pass			

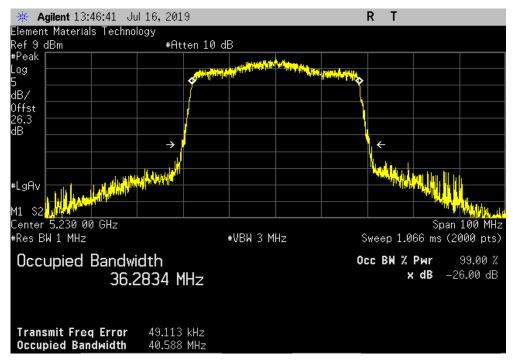


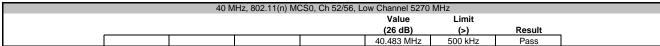


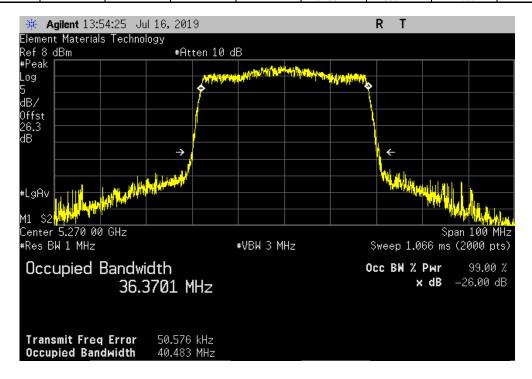
40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz

Value Limit
(26 dB) (>) Result

40.588 MHz 500 kHz Pass





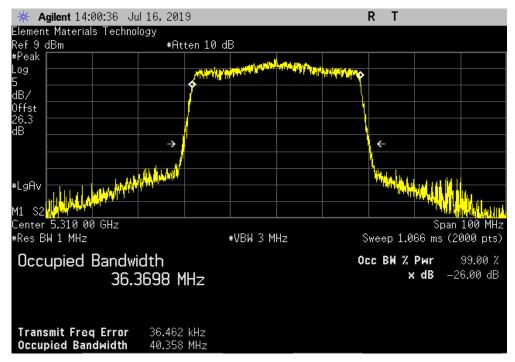




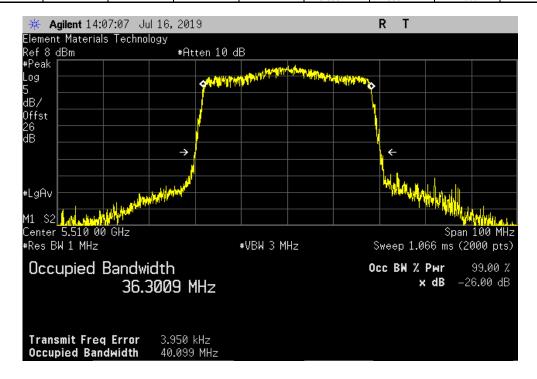
40 MHz, 802.11(n) MCS0, Ch 60/64, High Channel 5310 MHz

Value Limit
(26 dB) (>) Result

40.358 MHz 500 kHz Pass



40 MHz, 802.11(n) MCS0, Ch 100/104, Low Channel 5510 MHz										
				Value	Limit					
				(26 dB)	(>)	Result				
				40.099 MHz	500 kHz	Pass				

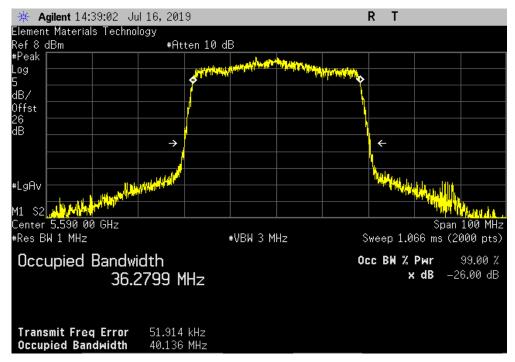




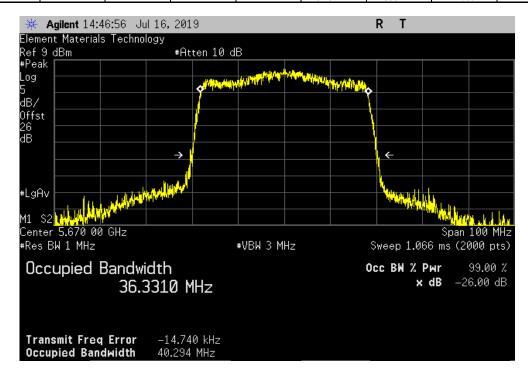
40 MHz, 802.11(n) MCS0, Ch 116/120, Mid Channel 5590 MHz

Value Limit
(26 dB) (>) Result

40.136 MHz 500 kHz Pass



40 MHz, 802.11(n) MCS0, Ch 132/136, High Channel 5670 MHz										
				Value	Limit					
				(26 dB)	(>)	Result				
				40.294 MHz	500 kHz	Pass				





40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz

Value

(26 dB)

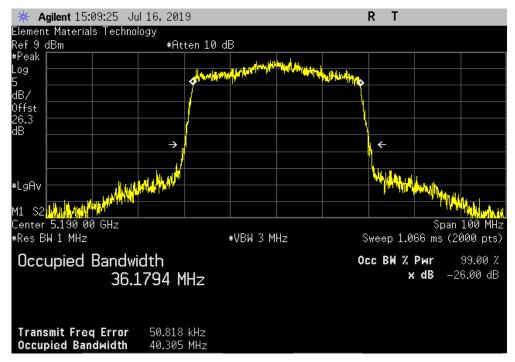
(-)

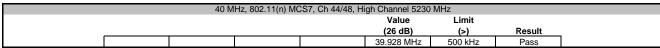
Result

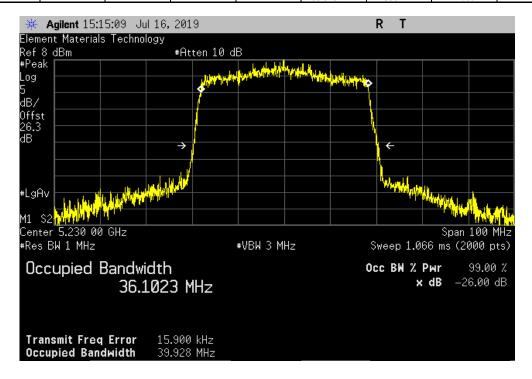
40.305 MHz

500 kHz

Pass









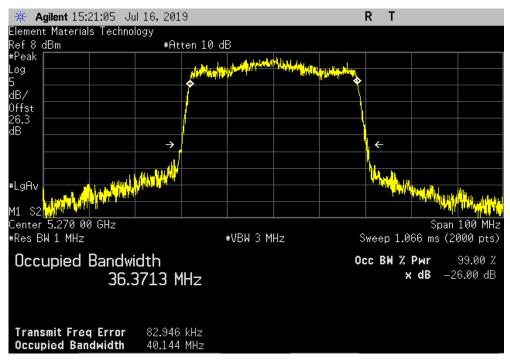
40 MHz, 802.11(n) MCS7, Ch 52/56, Low Channel 5270 MHz

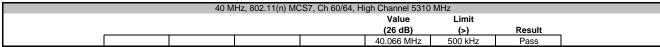
Value

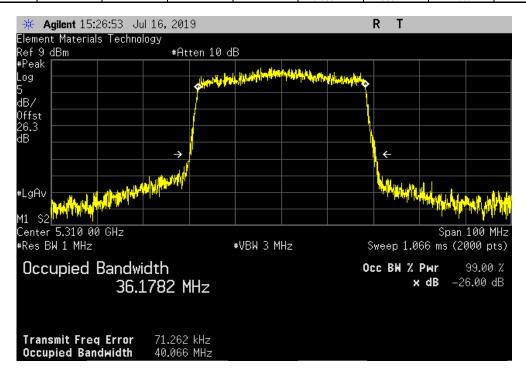
(26 dB)
(2)

Result

40.144 MHz
500 kHz
Pass





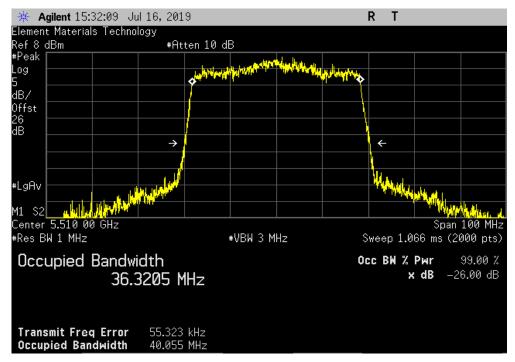




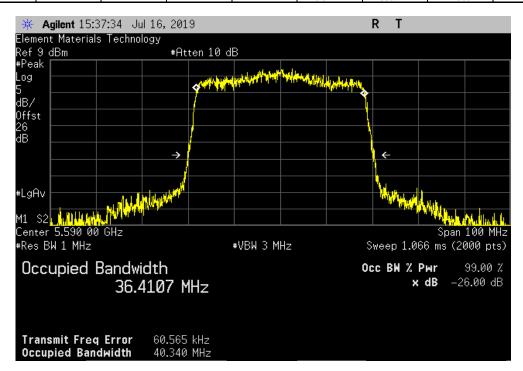
40 MHz, 802.11(n) MCS7, Ch 100/104, Low Channel 5510 MHz

Value Limit
(26 dB) (>) Result

40.055 MHz 500 kHz Pass

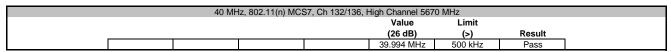


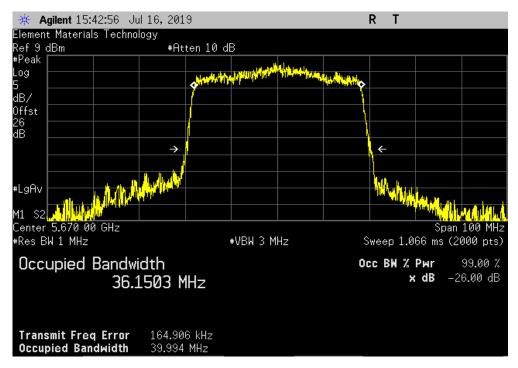
40 MHz, 802.11(n) MCS7, Ch 116/120, Mid Channel 5590 MHz										
				Value	Limit					
				(26 dB)	(>)	Result				
				40.34 MHz	500 kHz	Pass				





TbtTx 2018.09.13 XMit 2019.05.15







XMit 2019.06.11

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	nt E8257D		15-Feb-18	15-Feb-21
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	30-Nov-18	30-Nov-19

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The 99% emission bandwidth of the carrier was measured to ensure that no part of the emission of the carrier operating in a non-DFS band was operating in a band where DFS testing is required. This test is done with the U-NII-1 band (5.2 GHz band) to ensure no portion of the carrier is contained within the U-NII-2A band and with the U-NII-3 band (5.8 GHz band) to ensure no portion of the carrier is contained in the U-NII-2C band.

The transmit frequencies and data rates listed in the datasheet were measured.



EUT: MWMII
Serial Number: ENG-1
Customer: Masimo Corporation Work Order: MASI0553
Date: 16-Jul-19
Temperature: 24..5 °C Humidity: 47.2% RH Barometric Pres.: 1015 mbar Attendees: Anami Joshi & Nghi Nguyen Project: None
Tested by: Nolan De Ramos, Luis Flores, and Mark Baytan
TEST SPECIFICATIONS Power: 3.6VDC Test Method Job Site: OC13 FCC 15.407:2019 COMMENTS Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26.3dB Total Offset (5.2 GHz - 5.35 GHz) Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26dB Total Offset (5.35 GHz - 5.8 GHz) DEVIATIONS FROM TEST STANDARD 146,+ Configuration # 8 Signature OBW Within Band and Edge (MHz) Result 802.11(a) 6 Mbps Ch 48, High Channel 5240 MHz Ch 149, Low Channel 5745 MHz Yes Yes 5250 Pass 5725 Pass 802.11(a) 36 Mbps Ch 48, High Channel 5240 MHz Ch 149, Low Channel 5745 MHz Yes Yes 5250 Pass 5725 Pass 802.11(a) 54 Mbps Ch 48, High Channel 5240 MHz 5250 Yes Pass Ch 149, Low Channel 5745 MHz Yes 5725 Pass 802.11(n) MCS0 Ch 48, High Channel 5240 MHz Ch 149, Low Channel 5745 MHz Yes Yes 5250 Pass 5725 Pass 802.11(n) MCS7 CS7 Ch 48, High Channel 5240 MHz Ch 149, Low Channel 5745 MHz 5250 Pass Yes Yes 5725 Pass 40 MHz 802.11(n) MCS0 Ch 44/48, High Channel 5230 MHz Yes 5250 Pass Ch 149/153, Low Channel 5755 MHz Yes 5725 Pass Ch 44/48, High Channel 5230 MHz Ch 149/153, Low Channel 5755 MHz Yes Yes 5250 Pass 5725 Pass

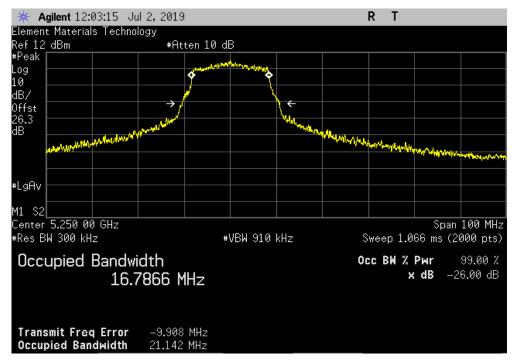


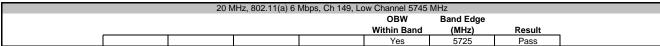
20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz

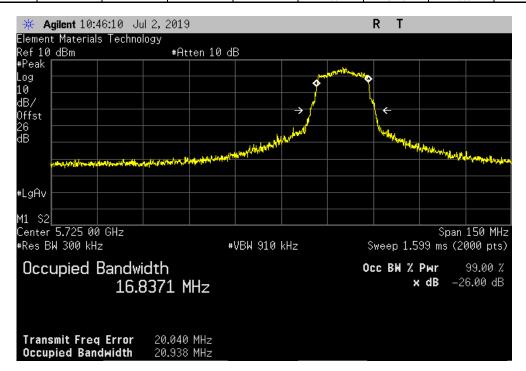
OBW Band Edge

Within Band (MHz) Result

Yes 5250 Pass







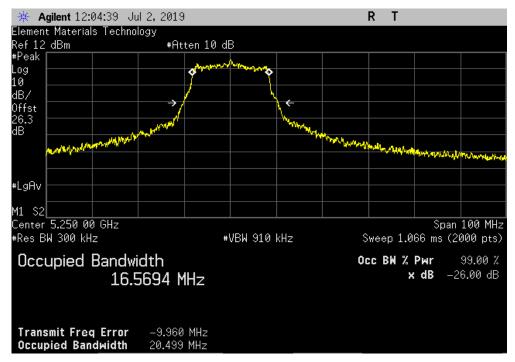


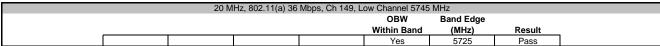
20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz

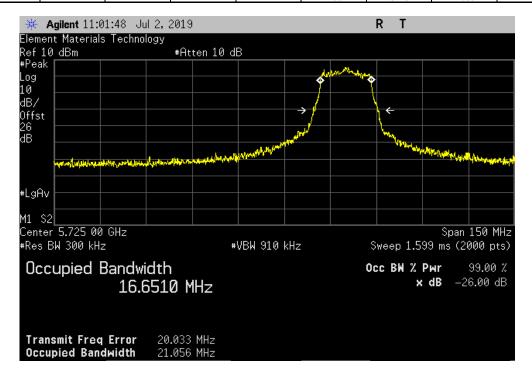
OBW Band Edge

Within Band (MHz) Result

Yes 5250 Pass







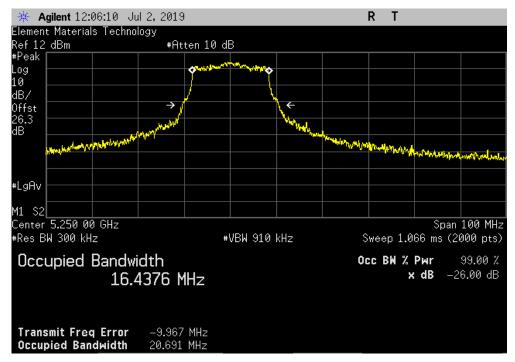


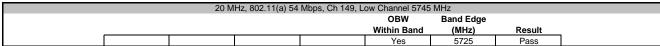
20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz

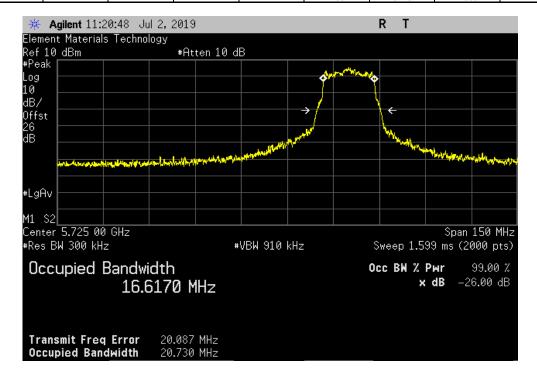
OBW Band Edge

Within Band (MHz) Result

Yes 5250 Pass







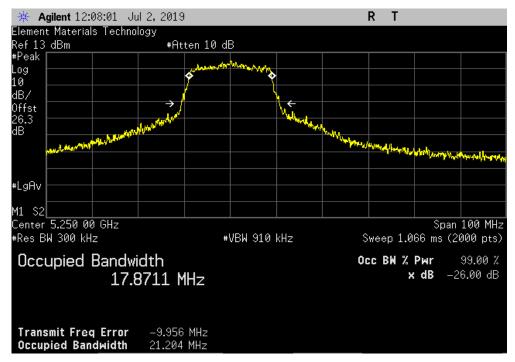


20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz

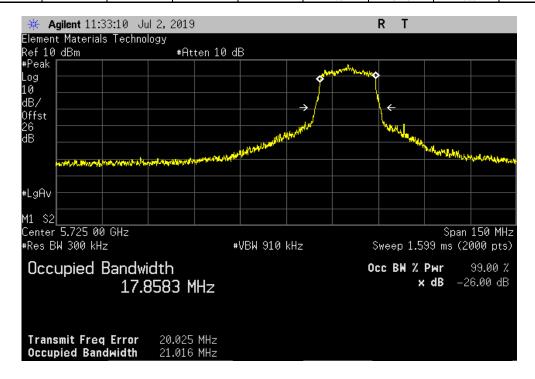
OBW Band Edge

Within Band (MHz) Result

Yes 5250 Pass



	20 N	MHz, 802.11(n) M	ICS0, Ch 149, Lo	w Channel 5745 I	ИНz	
				OBW	Band Edge	
				Within Band	(MHz)	Result
				Yes	5725	Pass



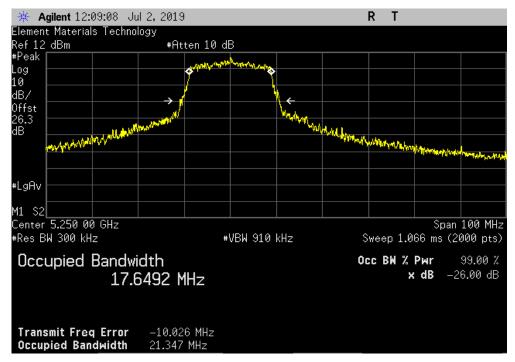


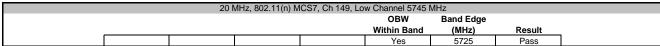
20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz

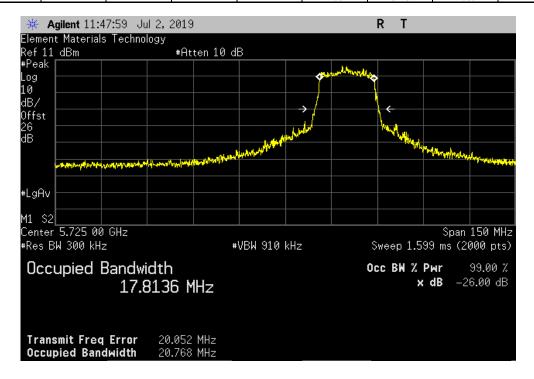
OBW Band Edge

Within Band (MHz) Result

Yes 5250 Pass







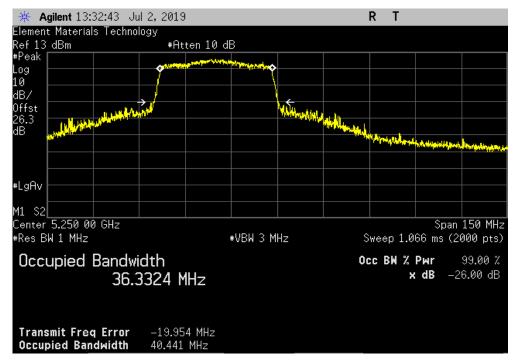


40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz

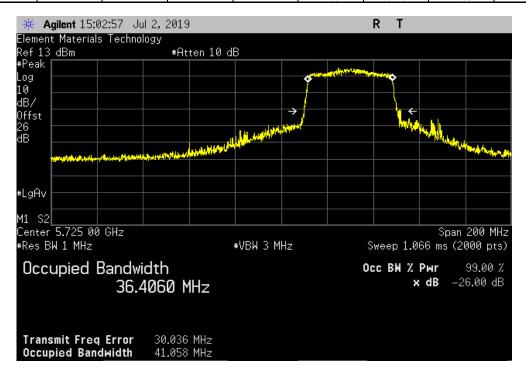
OBW Band Edge

Within Band (MHz) Result

Yes 5250 Pass



40 MHz, 802.11(n) MCS0, Ch 149/153, Low Channel 5755 MHz						
				OBW	Band Edge	
				Within Band	(MHz)	Result
				Yes	5725	Pass



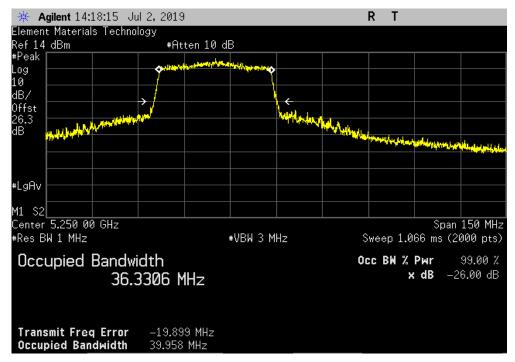


40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz

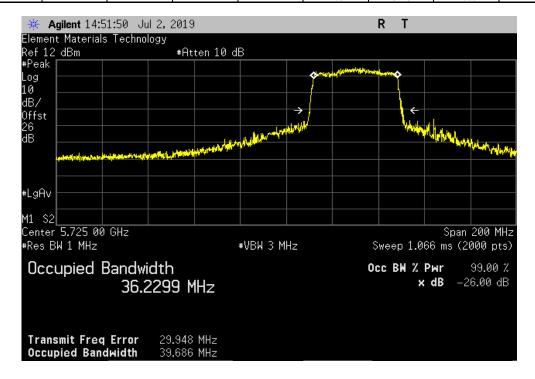
OBW Band Edge

Within Band (MHz) Result

Yes 5250 Pass



40 MHz, 802.11(n) MCS7, Ch 149/153, Low Channel 5755 MHz						
				OBW	Band Edge	
				Within Band	(MHz)	Result
				Yes	5725	Pass





XMit 2019.05.15

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	15-Feb-18	15-Feb-21
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	30-Nov-18	30-Nov-19

### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequencies and data rates listed in the datasheet were measured in each band utilized by the radio. The transmit power was set to its default maximum.

Per ANSI C63.10, the spectrum analyzer settings were as follows:

- -RBW = 100 kHz
- -VBW = ≥ 3x RBW
- -Detector = Peak
- -Trace mode = max hold

The spectrum analyzer occupied bandwidth measurement function was then used to measure the 6 dB emission bandwidth.



EUT: MWMII
Serial Number: ENG-1
Customer: Masimo Corporation Work Order: MASI0553
Date: 16-Jul-19
Temperature: 24..5 °C Attendees: Anami Joshi & Nghi Nguyen Humidity: 47.2% RH Barometric Pres.: 1015 mbar Project: None Tested by: Nolan De Ramos, Luis Flores, and Mark Baytan TEST SPECIFICATIONS Power: 3.6VDC Test Method Job Site: OC13 FCC 15.407:2019 COMMENTS Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26.3dB Total Offset (5.2 GHz - 5.35 GHz) Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26dB Total Offset (5.35 GHz - 5.8 GHz) DEVIATIONS FROM TEST STANDARD M+B+ Configuration # 8 Value (99%) (6 dB) Result (>) 802.11(a) 6 Mbps Ch 149, Low Channel 5745 MHz Ch 157, Mid Channel 5785 MHz 16.455 MHz 15.05 MHz 500 kHz Pass 16 425 MHz 15 388 MHz 500 kHz Pass Ch 165, High Channel 5825 MHz 16.44 MHz 14.228 MHz 500 kHz Pass 802.11(a) 36 Mbps Ch 149, Low Channel 5745 MHz 16.361 MHz 15.981 MHz 500 kHz Pass Ch 157, Mid Channel 5785 MHz Ch 165, High Channel 5825 MHz 500 kHz 500 kHz 16.373 MHz 15.678 MHz Pass 16.407 MHz 14.901 MHz Pass 802.11(a) 54 Mbps Ch 149, Low Channel 5745 MHz 16.377 MHz 15.621 MHz 500 kHz Pass Ch 157, Mid Channel 5785 MHz 16.366 MHz 15.515 MHz 500 kHz Pass Ch 165, High Channel 5825 MHz 16.365 MHz 15.459 MHz 500 kHz Pass 802.11(n) MCS0 Ch 149, Low Channel 5745 MHz Ch 157, Mid Channel 5785 MHz Ch 165, High Channel 5825 MHz 17.64 MHz 15.918 MHz 500 kHz Pass 17.643 MHz 16.341 MHz 500 kHz Pass 17.637 MHz 14.199 MHz 500 kHz Pass 802.11(n) MCS7 Ch 149, Low Channel 5745 MHz 17.593 MHz 16.509 MHz 500 kHz Pass Ch 157, Mid Channel 5785 MHz Ch 165, High Channel 5825 MHz 17 569 MHz 16.812 MHz 500 kHz Pass 17.582 MHz 15.833 MHz 500 kHz Pass 40 MHz 802.11(n) MCS0 Ch 149/153, Low Channel 5755 MHz Ch 157/161, High Channel 5795 MHz 36.333 MHz 40.381 MHz 500 kHz Pass 36.295 MHz 40.432 MHz 500 kHz Pass 802.11(n) MCS7 Ch 149/153, Low Channel 5755 MHz 36.438 MHz 40.105 MHz 500 kHz Pass Ch 157/161, High Channel 5795 MHz 36.487 MHz 40.451 MHz 500 kHz Pass

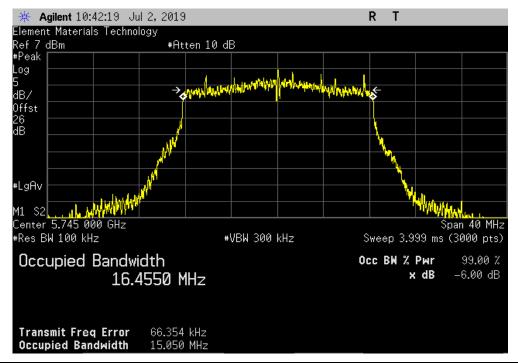


20 MHz, 802.11(a) 6 Mbps, Ch 149, Low Channel 5745 MHz

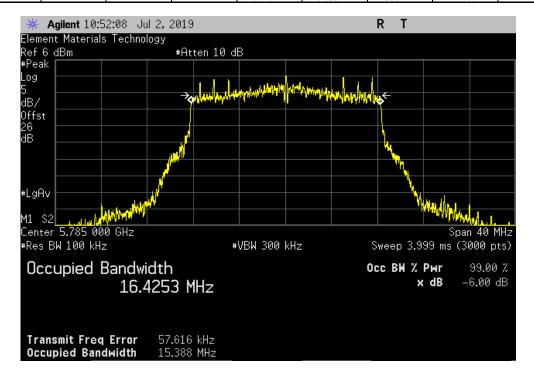
Value Value Limit

(99%) (6 dB) (>) Result

16.455 MHz 15.05 MHz 500 kHz Pass



	20 MHz, 802.11(a) 6	Mbps, Ch 157, M	id Channel 5785 I	ИНz		
		Value	Value	Limit		
		(99%)	(6 dB)	(>)	Result	
		16.425 MHz	15.388 MHz	500 kHz	Pass	



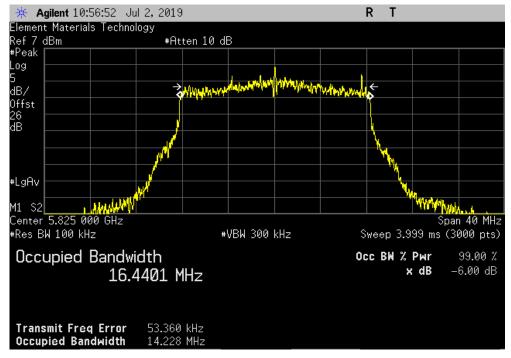


20 MHz, 802.11(a) 6 Mbps, Ch 165, High Channel 5825 MHz

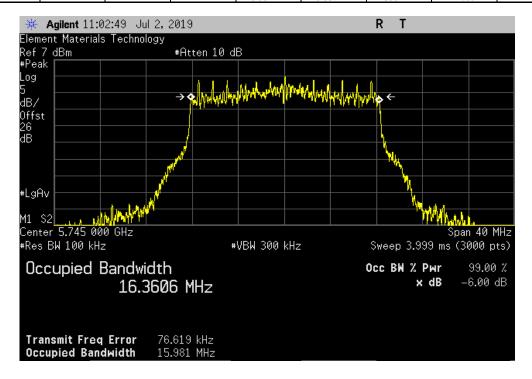
Value Value Limit

(99%) (6 dB) (>) Result

16.44 MHz 14.228 MHz 500 kHz Pass



20 MHz, 802.11(a) 36 Mbps, Ch 149, Low Channel 5745 MHz						
		Value	Value	Limit		
		(99%)	(6 dB)	(>)	Result	
		16.361 MHz	15.981 MHz	500 kHz	Pass	



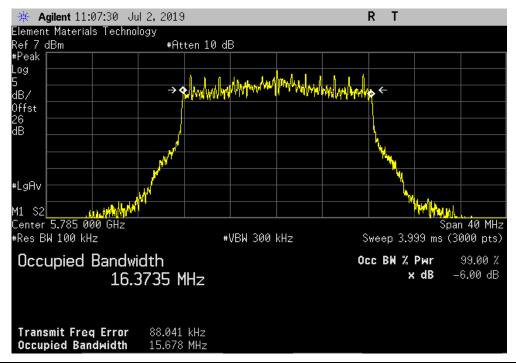


20 MHz, 802.11(a) 36 Mbps, Ch 157, Mid Channel 5785 MHz

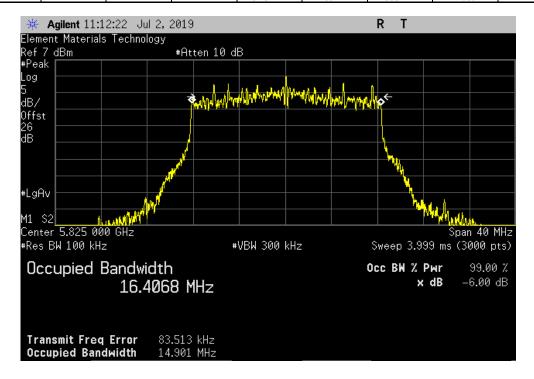
Value Value Limit

(99%) (6 dB) (>) Result

16.373 MHz 15.678 MHz 500 kHz Pass



	20 MHz, 802.11(a) 36	Mbps, Ch 165, Hi	igh Channel 5825	MHz		
		Value	Value	Limit		
		(99%)	(6 dB)	(>)	Result	
		16.407 MHz	14.901 MHz	500 kHz	Pass	



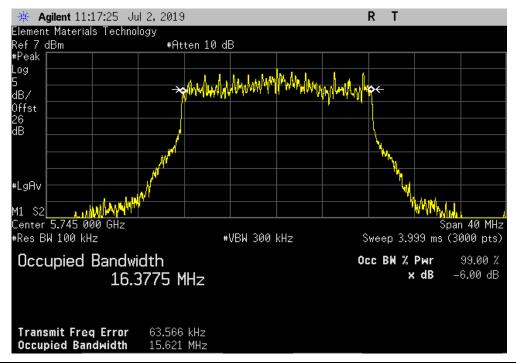


20 MHz, 802.11(a) 54 Mbps, Ch 149, Low Channel 5745 MHz

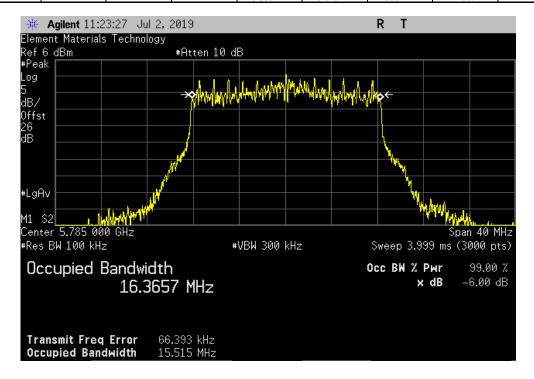
Value Value Limit

(99%) (6 dB) (>) Result

16.377 MHz 15.621 MHz 500 kHz Pass



	20 MHz, 802.11(a) 54	4 Mbps, Ch 157, N	1id Channel 5785	MHz		
		Value	Value	Limit		
		(99%)	(6 dB)	(>)	Result	
		16.366 MHz	15.515 MHz	500 kHz	Pass	i



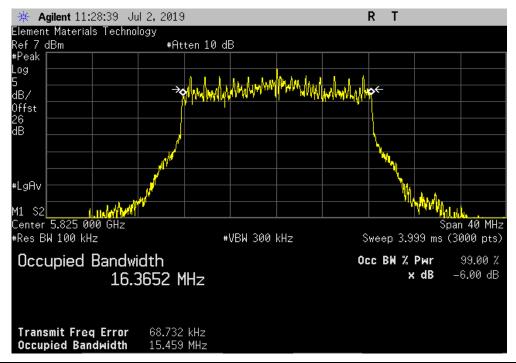


20 MHz, 802.11(a) 54 Mbps, Ch 165, High Channel 5825 MHz

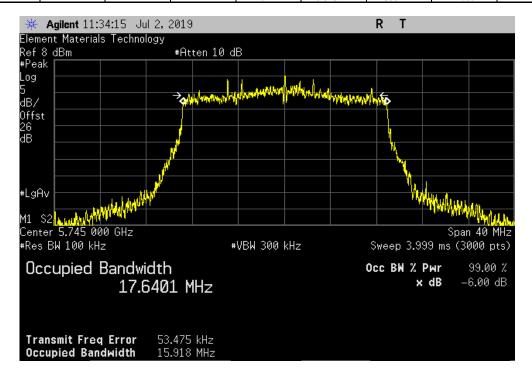
Value Value Limit

(99%) (6 dB) (>) Result

16.365 MHz 15.459 MHz 500 kHz Pass



	20 MHz, 802.11(n) N	MCS0, Ch 149, Lo	w Channel 5745 N	ЛHz		
		Value	Value	Limit		
		(99%)	(6 dB)	(>)	Result	
		17.64 MHz	15.918 MHz	500 kHz	Pass	



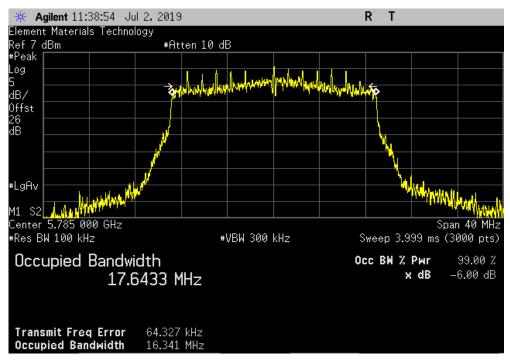


20 MHz, 802.11(n) MCS0, Ch 157, Mid Channel 5785 MHz

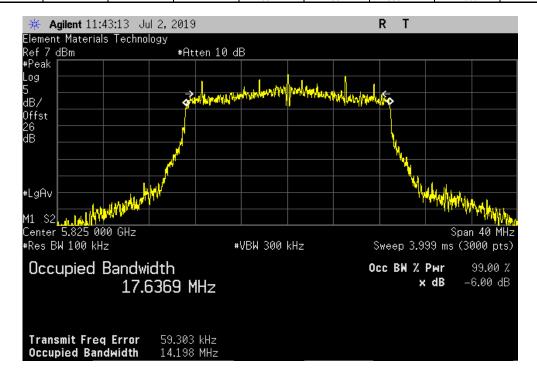
Value Value Limit

(99%) (6 dB) (>) Result

17.643 MHz 16.341 MHz 500 kHz Pass



20 MHz, 802.11(n) MCS0, Ch 165, High Channel 5825 MHz						
		Value	Value	Limit		
		(99%)	(6 dB)	(>)	Result	
		17.637 MHz	14.199 MHz	500 kHz	Pass	



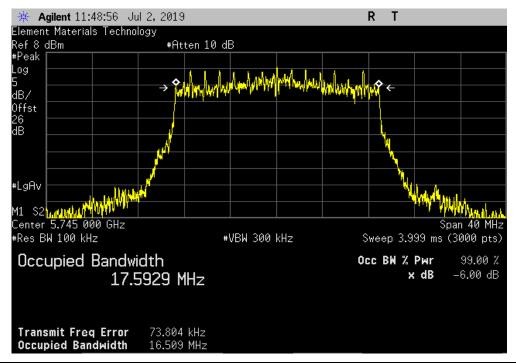


20 MHz, 802.11(n) MCS7, Ch 149, Low Channel 5745 MHz

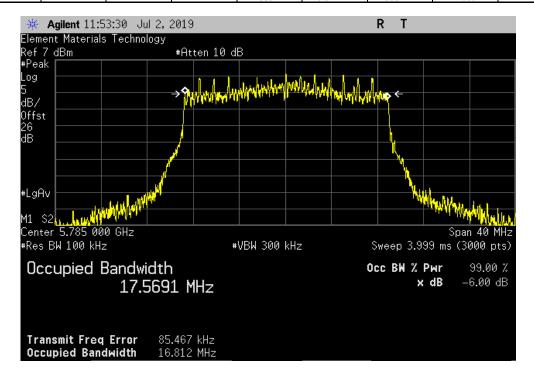
Value Value Limit

(99%) (6 dB) (>) Result

17.593 MHz 16.509 MHz 500 kHz Pass



	20 MHz, 802.11(n) N	MCS7, Ch 157, Mi	d Channel 5785 N	/lHz		
		Value	Value	Limit		
		(99%)	(6 dB)	(>)	Result	
		17.569 MHz	16.812 MHz	500 kHz	Pass	



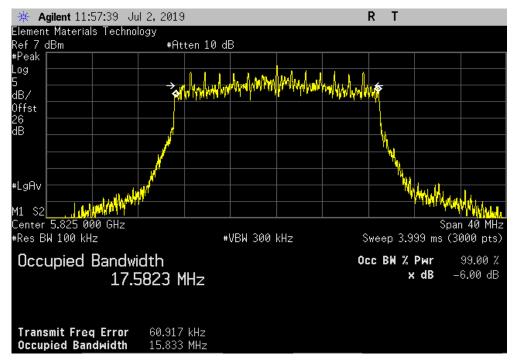


20 MHz, 802.11(n) MCS7, Ch 165, High Channel 5825 MHz

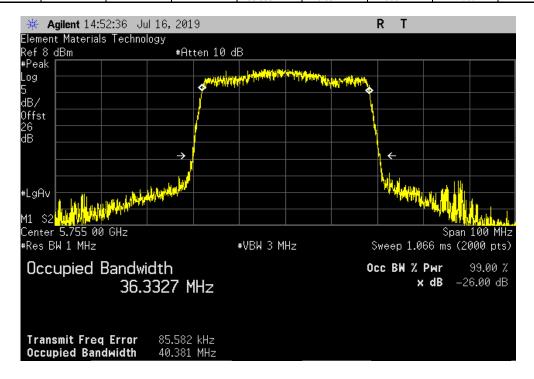
Value Value Limit

(99%) (6 dB) (>) Result

17.582 MHz 15.833 MHz 500 kHz Pass



40 MHz, 802.11(n) MCS0, Ch 149/153, Low Channel 5755 MHz						
		Value	Value	Limit		
		(99%)	(6 dB)	(>)	Result	
		36.333 MHz	40.381 MHz	500 kHz	Pass	



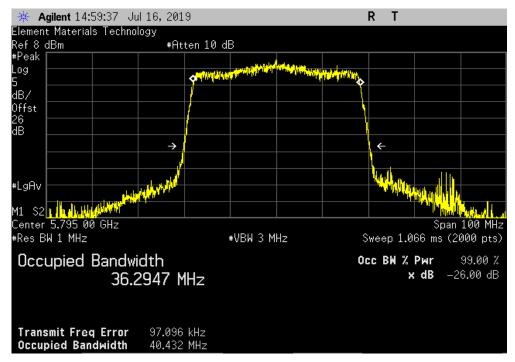


40 MHz, 802.11(n) MCS0, Ch 157/161, High Channel 5795 MHz

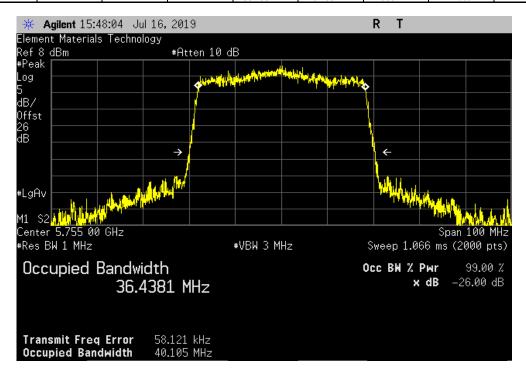
Value Value Limit

(99%) (6 dB) (>) Result

36.295 MHz 40.432 MHz 500 kHz Pass



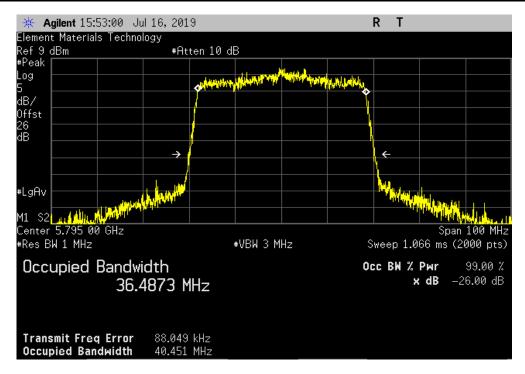
	40 MHz, 802.11(n) MCS7, Ch 149/153, Low Channel 5755 MHz								
			Value	Value	Limit				
			(99%)	(6 dB)	(>)	Result			
			36.438 MHz	40.105 MHz	500 kHz	Pass			





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40 MHz, 802.11(n) MCS7, Ch 157/161, High Channel 5795 MHz										
				Value	Value	Limit				
				(99%)	(6 dB)	(>)	Result			
				36.487 MHz	40.451 MHz	500 kHz	Pass			





XMit 2019.05.15

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	15-Feb-18	15-Feb-21
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	30-Nov-18	30-Nov-19

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

Prior to measuring maximum power spectral density, the emission bandwidth (B) was measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report

The maximum power spectral density was measured using ANSI C63.10, Method SA-2 (RMS detection and trace averaging across the on and off times of the EUT transmission and use of a duty cycle correction factor), consistent with the method used for maximum conducted output power.

The spectrum analyzer settings were set per the guidance as well as the following specifics:

- -Resolution Bandwidth of 1 MHz
- -RMS Detector
- -Trace average 100 traces in power averaging mode

The peak power spectral density (PPSD) was determined to be the highest level found across the emission in any 1 MHz band after 100 sweeps of power averaging (not video averaging).

A duty cycle correction factor was added to the measurement using the results of the formula of 10\*LOG(1/D) where D is the duty cycle.



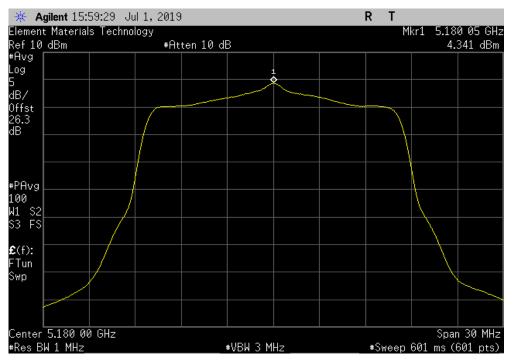
EUT: MWMII Serial Number: ENG-1 Work Order: MASI0553 Customer: Masimo Corporation Temperature: 24..5 °C Anami Joshi & Nghi Nguyen Humidity: 47.2% RH Barometric Pres.: 1015 mba Project: None Tested by: Nolan De Ramos, Luis Flores, and Mark Baytan TEST SPECIFICATIONS Power: 3.6VDC Test Method Job Site: OC13 FCC 15.407:2019 COMMENTS Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26.3dB Total Offset (5.2 GHz - 5.35 GHz) Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26dB Total Offset (5.35 GHz - 5.8 GHz) DEVIATIONS FROM TEST STANDARD M+B+ Configuration # Power (dBm/Ref BW) Duty Cycle Factor (dB) Density (dBm/Ref BW) ≤ (dBm/Ref BW) Results 802.11(a) 6 Mbps Ch 36, Low Channel 5180 MHz 4.341 4.395 Pass 4.6 4.7 Ch 40 Mid Channel 5200 MHz 0.3 11 Pass 4.7 4.4 Ch 48, High Channel 5240 MHz 4.435 0.3 Pass 11 Ch 52, Low Channel 5260 MHz Ch 60, Mid Channel 5300 MHz 4.096 0.3 11 Pass 4.7 11 4.385 0.3 Pass Ch 64, High Channel 5320 MHz Ch 100, Low Channel 5500 MHz 4.5 4.6 4.206 0.3 11 11 Pass 0.3 Pass Ch 116, Mid Channel 5580 MHz 3 961 0.3 4.3 11 11 Pass Ch 140, High Channel 5700 MHz 3.2 0.3 Pass 802.11(a) 36 Mbps Ch 36, Low Channel 5180 MHz 4.5 4.7 3.084 1.5 11 11 Pass Ch 40 Mid Channel 5200 MHz 3 299 1.5 Pass Ch 48, High Channel 5240 MHz 1.5 4.9 11 3.428 Pass 1.5 1.5 Ch 52, Low Channel 5260 MHz 3.119 4.6 11 Pass Ch 60, Mid Channel 5300 MHz 4.6 Pass 3.107 Ch 64, High Channel 5320 MHz Ch 100, Low Channel 5500 MHz 1.5 4.7 4.5 Pass Pass 3.288 11 11 3.099 Ch 116, Mid Channel 5580 MHz 3 031 1.4 4.5 11 11 Pass Ch 140, High Channel 5700 MHz 3.5 Pass 802.11(a) 54 Mbps Ch 36, Low Channel 5180 MHz 2.422 1.9 4.4 4.3 11 11 Pass Ch 40 Mid Channel 5200 MHz 2 365 20 Pass Ch 48, High Channel 5240 MHz 4.8 2.892 1.9 11 Pass Ch 52, Low Channel 5260 MHz Ch 60, Mid Channel 5300 MHz 2.260 2.0 4.2 11 Pass 2.546 1.9 4.5 11 Pass Ch 64, High Channel 5320 MHz Ch 100, Low Channel 5500 MHz 4.7 4.4 2.733 1.9 1.9 11 11 Pass Pass Ch 116, Mid Channel 5580 MHz Ch 140, High Channel 5700 MHz 2 3 1 9 1.9 4.3 11 11 Pass 1.481 1.9 3.4 Pass 802.11(n) MCS0 Ch 36, Low Channel 5180 MHz 5.7 Pass 5.359 0.3 11 11 Ch 40. Mid Channel 5200 MHz 5 279 0.3 5.6 Pass Ch 48, High Channel 5240 MHz 4.424 4.7 11 Pass 0.3 Ch 52, Low Channel 5260 MHz 5.716 0.3 6.0 11 Pass Ch 60, Mid Channel 5300 MHz 5.769 Pass 0.3 6.1 Ch 64, High Channel 5320 MHz Ch 100, Low Channel 5500 MHz 0.3 6.3 5.3 Pass Pass 5.932 11 11 4.986 Ch 116, Mid Channel 5580 MHz 4 775 0.3 5.1 4.1 11 11 Pass Ch 140, High Channel 5700 MHz Pass 0.3 802.11(n) MCS7 Ch 36, Low Channel 5180 MHz Ch 40, Mid Channel 5200 MHz 5.3 4.2 11 11 Pass 3.254 2.1 2 115 Pass 2.1 4.6 Ch 48, High Channel 5240 MHz Pass Ch 52, Low Channel 5260 MHz Ch 60, Mid Channel 5300 MHz 5.6 5.7 3.516 2.1 11 Pass 2.0 11 3.627 Pass Ch 64, High Channel 5320 MHz Ch 100, Low Channel 5500 MHz 3.740 2.0 5.8 5.0 11 11 Pass Pass Ch 116, Mid Channel 5580 MHz 2 839 2.0 4.9 11 11 Pass Ch 140, High Channel 5700 MHz 2.1 4.5 2.406 Pass 40 MHz 802.11(n) MCS0 Ch 36/40, Low Channel 5190 MHz 0 172 0.6 0.8 11 11 Pass Ch 44/48, High Channel 5230 MHz 0.402 0.6 1.0 Pass Ch 52/56, Low Channel 5270 MHz Ch 60/64, High Channel 5310 MHz 0.5 0.6 -0 139 0.6 11 11 Pass 0.6 0.007 Pass Ch 100/104, Low Channel 5510 MHz Ch 116/120, Mid Channel 5590 MHz 0.6 0.8 0.215 11 11 Pass Pass Ch 132/136, High Channel 5670 MHz -0 198 0.6 0.4 11 Pass Ch 36/40, Low Channel 5190 MHz Ch 44/48, High Channel 5230 MHz -1.959 3.0 1.0 11 11 Pass Pass -2.081 0.9 3.0 Ch 52/56 Low Channel 5270 MHz -2 795 3.0 02 11 Pass Ch 60/64, High Channel 5310 MHz -2.691 3.0 0.3 11 Pass Ch 100/104, Low Channel 5510 MHz Ch 116/120, Mid Channel 5590 MHz 3.0 3.0 0.1 0.7 -2 825 11 11 Pass -2.272 Pass Ch 132/136, High Channel 5670 MHz -1.935 2.9 1.0 11 Pass



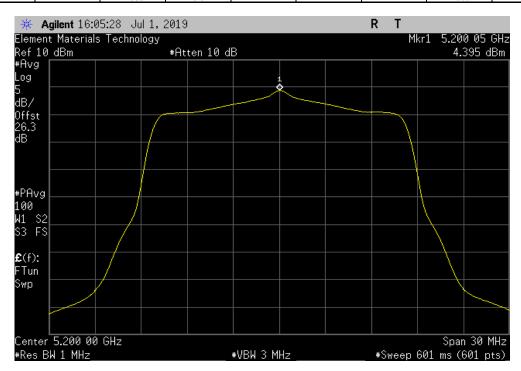
20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

4.341 0.3 4.6 11 Pass



20 MHz, 802.11(a) 6 Mbps, Ch 40, Mid Channel 5200 MHz							
Power	Duty Cycle	Density	Limit				
 (dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results			
4.395	0.3	4.7	11	Pass	ı		

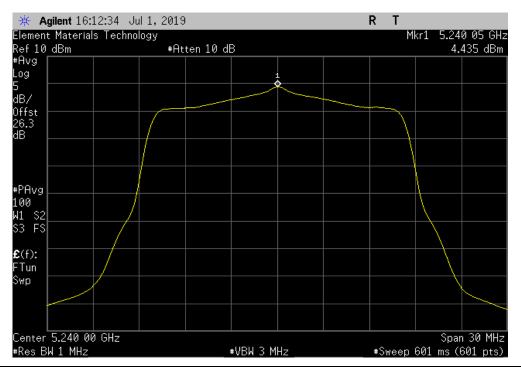




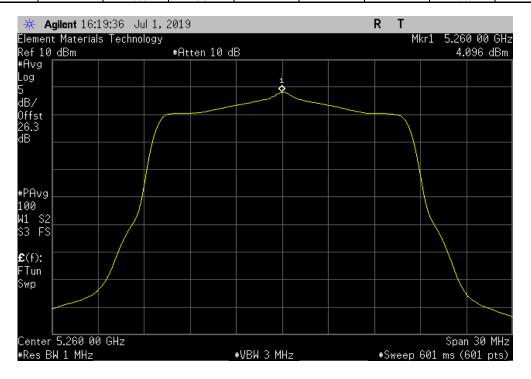
20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

4.435 0.3 4.7 11 Pass



20 MHz, 802.11(a) 6 Mbps, Ch 52, Low Channel 5260 MHz									
Power	Duty Cycle	Density	Limit						
 (dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results					
4.096	0.3	4.4	11	Pass					

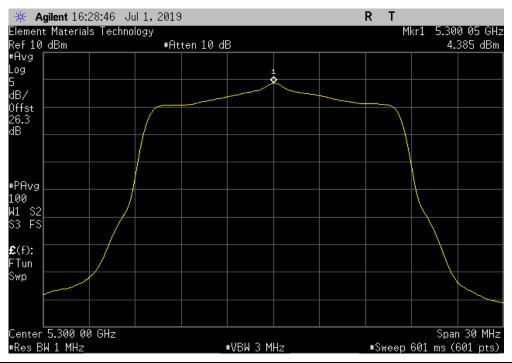


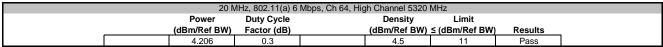


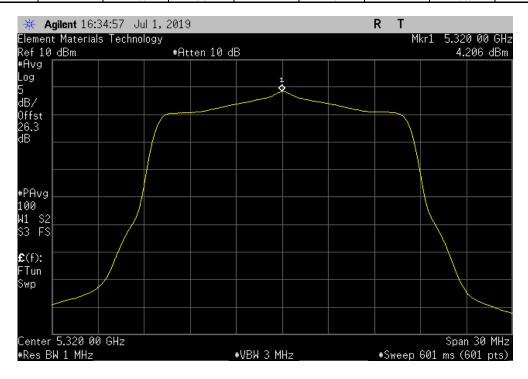
20 MHz, 802.11(a) 6 Mbps, Ch 60, Mid Channel 5300 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

4.385 0.3 4.7 11 Pass







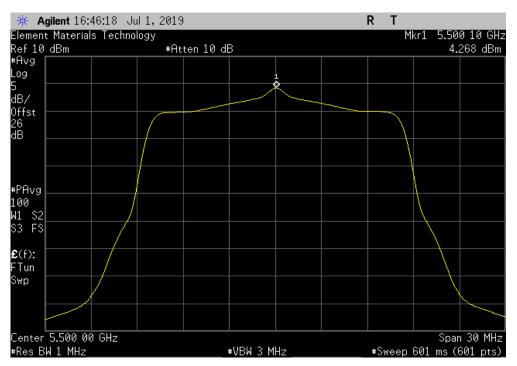


20 MHz, 802.11(a) 6 Mbps, Ch 100, Low Channel 5500 MHz

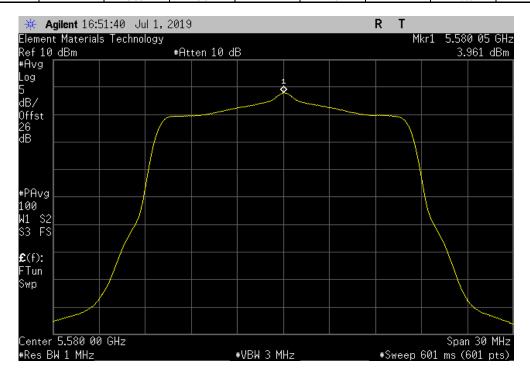
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

4.268 0.3 4.6 11 Pass



	20 MHz, 802.11(a) 6 Mbps, Ch 116, Mid Channel 5580 MHz							
		Power	Duty Cycle		Density	Limit		
_		(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results	
l l	<u> </u>	3.961	0.3		4.3	11	Pass	



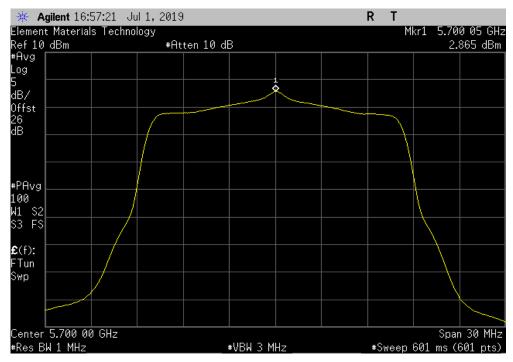


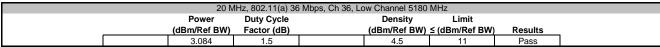
20 MHz, 802.11(a) 6 Mbps, Ch 140, High Channel 5700 MHz

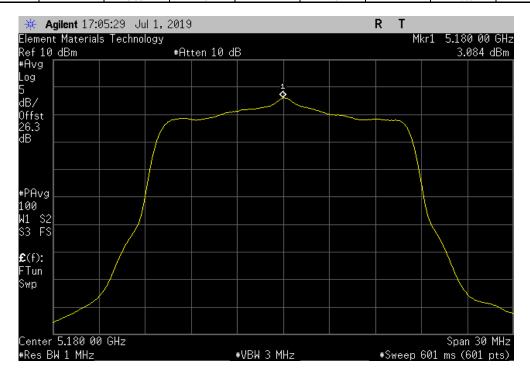
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

2.865 0.3 3.2 11 Pass







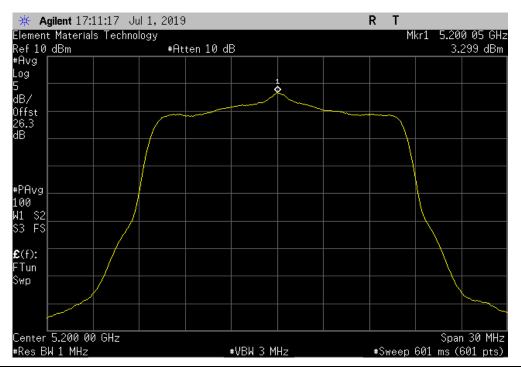


20 MHz, 802.11(a) 36 Mbps, Ch 40, Mid Channel 5200 MHz

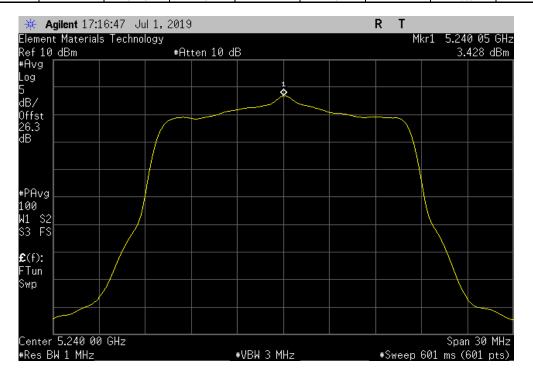
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

3.299 1.5 4.7 11 Pass



20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz							
Power	Duty Cycle	Density	Limit				
 (dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dE							
3,428	1.5	4.9	11	Pass			

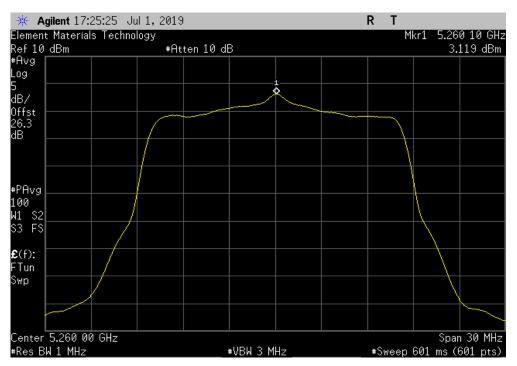




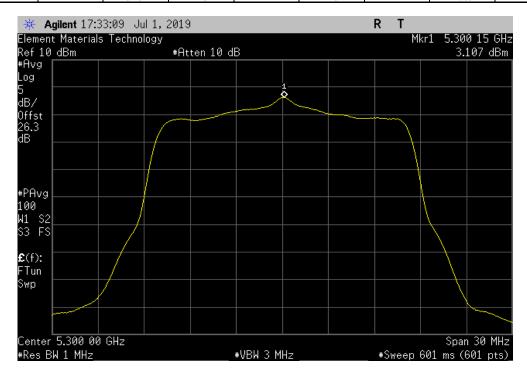
20 MHz, 802.11(a) 36 Mbps, Ch 52, Low Channel 5260 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

3.119 1.5 4.6 11 Pass



	20 MHz, 802.11(a	a) 36 Mbps, Ch 60, Mi	id Channel 5300	MHz	
Pow	er Duty Cyc	e	Density	Limit	
 (dBm/Re	ef BW) Factor (di	3)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
3.10	07 1.5		4.6	11	Pass



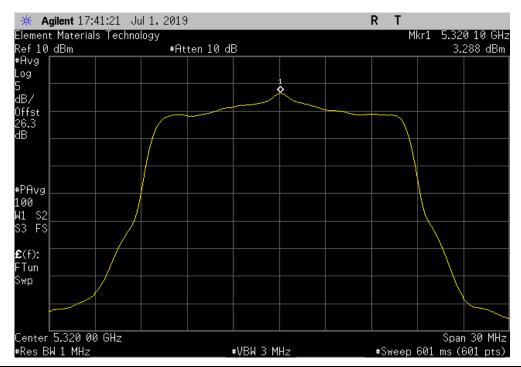


20 MHz, 802.11(a) 36 Mbps, Ch 64, High Channel 5320 MHz

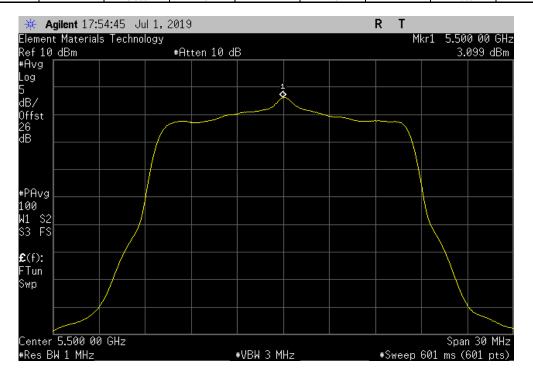
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

3.288 1.5 4.7 11 Pass



	20 MHz, 802.11(a) 36 Mbps, Ch 100, Low Channel 5500 MHz										
	Power Duty Cycle Density Limit										
		(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results				
,		3.099	1.5		4.5	11	Pass				



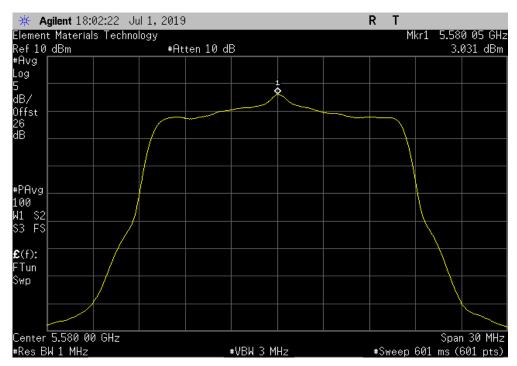


20 MHz, 802.11(a) 36 Mbps, Ch 116, Mid Channel 5580 MHz

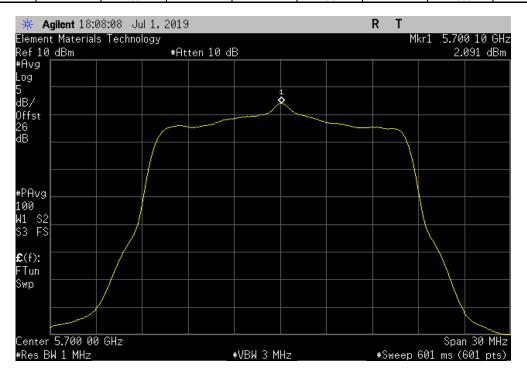
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

3.031 1.4 4.5 11 Pass



	20 MHz, 802.11(a) 36 Mbps, Ch 140, High Channel 5700 MHz							
		Power	Duty Cycle		Density	Limit		
		(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results	
i		2.091	1.4		3.5	11	Pass	



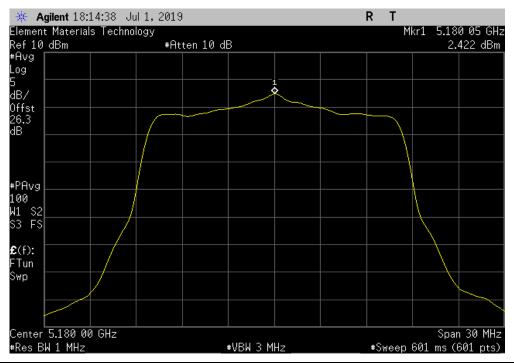


20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz

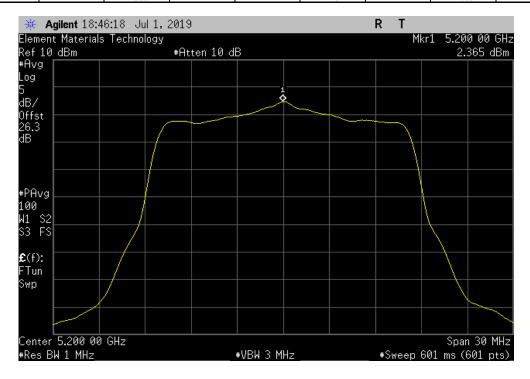
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

2.422 1.9 4.4 11 Pass



20 MHz, 802.11(a) 54 Mbps, Ch 40, Mid Channel 5200 MHz										
Power Duty Cycle Density Limit										
	(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results				
	2.365	2		4.3	11	Pass				



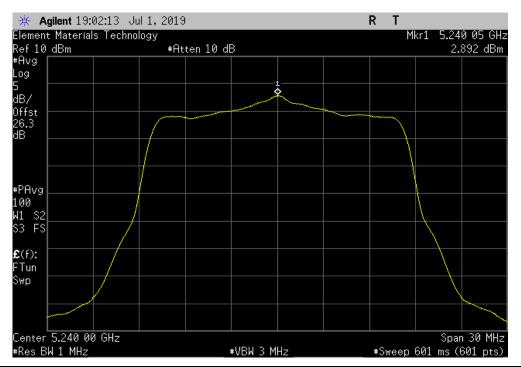


20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz

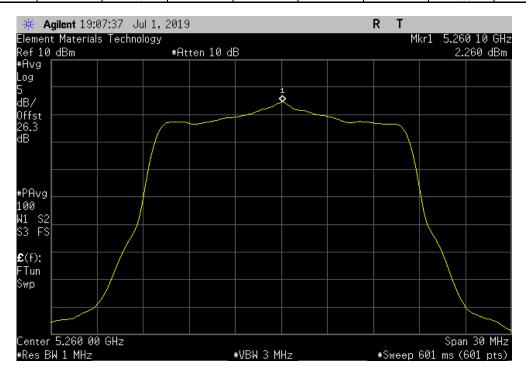
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

2.892 1.9 4.8 11 Pass



20 MHz, 802.11(a) 54 Mbps, Ch 52, Low Channel 5260 MHz									
Power Duty Cycle Density Limit									
	(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results			
	2.26	2		4.2	11	Pass			

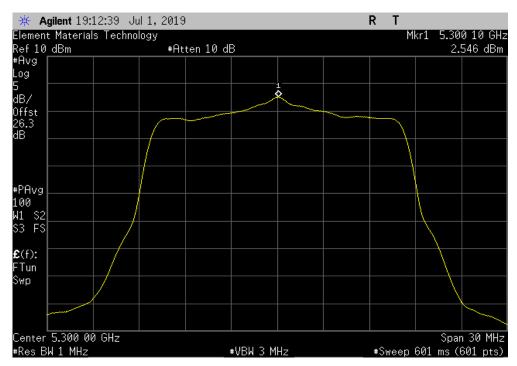




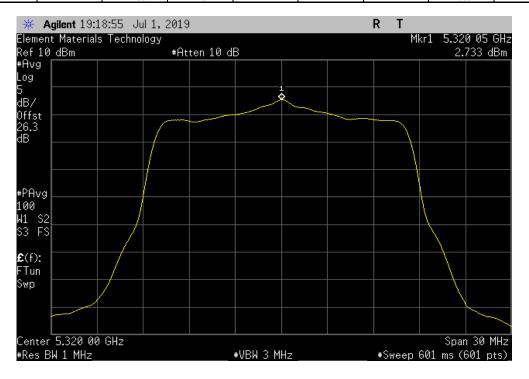
20 MHz, 802.11(a) 54 Mbps, Ch 60, Mid Channel 5300 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

2.546 1.9 4.5 11 Pass



20 MHz, 802.11(a) 54 Mbps, Ch 64, High Channel 5320 MHz							
		Power	Duty Cycle		Density	Limit	
		(dBm/Ref BW)	Factor (dB)	(d	Bm/Ref BW)	≤ (dBm/Ref BW)	Results
		2.733	1.9		4.7	11	Pass

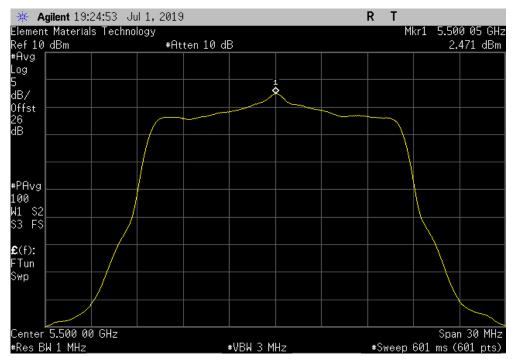


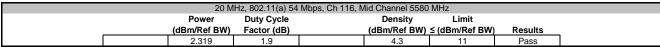


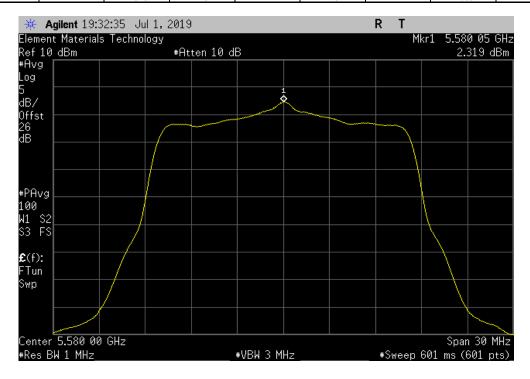
20 MHz, 802.11(a) 54 Mbps, Ch 100, Low Channel 5500 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

2.471 1.9 4.4 11 Pass





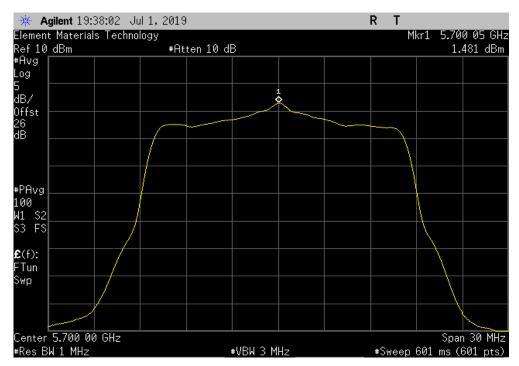




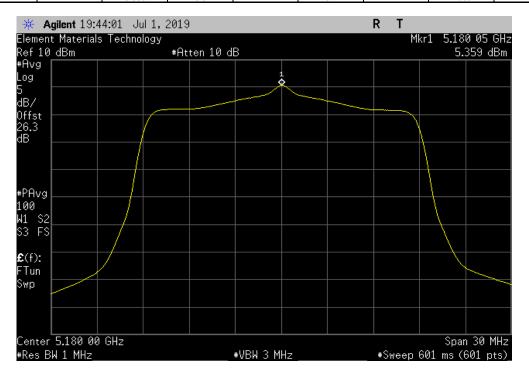
20 MHz, 802.11(a) 54 Mbps, Ch 140, High Channel 5700 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

1.481 1.9 3.4 11 Pass



	20	MHz, 802.11(n) N	MCS0, Ch 36, Lov	v Channel 5180 N	ИHz	
	Power	Duty Cycle		Density	Limit	
	 (dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
i	5.359	0.3		5.7	11	Pass

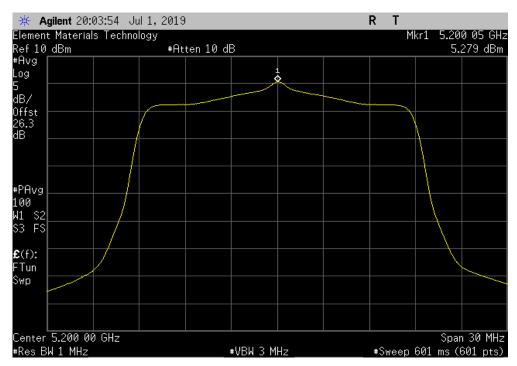




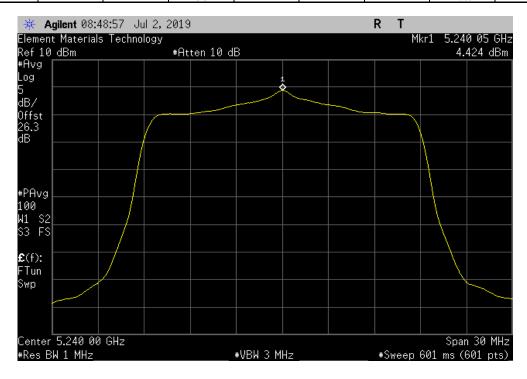
20 MHz, 802.11(n) MCS0, Ch 40, Mid Channel 5200 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

5.279 0.3 5.6 11 Pass



	20 1	MHz, 802.11(n) N	ICS0, Ch 48, Higl	h Channel 5240 M	ЛHz	
	Power	Duty Cycle		Density	Limit	
	(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
	4.424	0.3		4.7	11	Pass

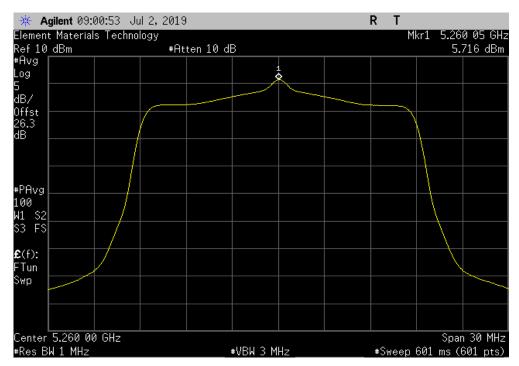




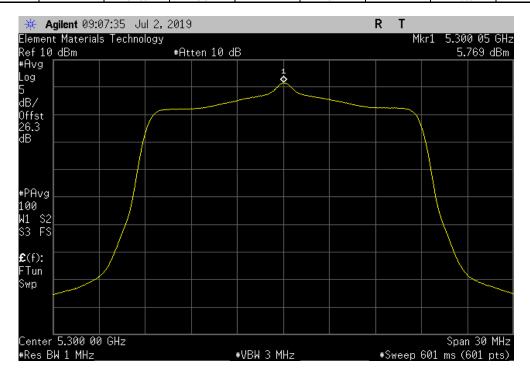
20 MHz, 802.11(n) MCS0, Ch 52, Low Channel 5260 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

5.716 0.3 6 11 Pass



		20	MHz, 802.11(n) N	MCS0, Ch 60, Mic	Channel 5300 M	1Hz	
		Power	Duty Cycle		Density	Limit	
_		(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
ĺ	·	5.769	0.3		6.1	11	Pass

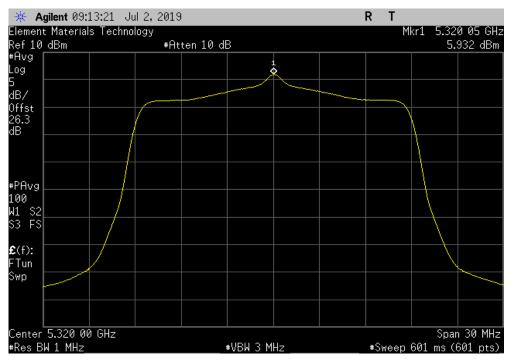




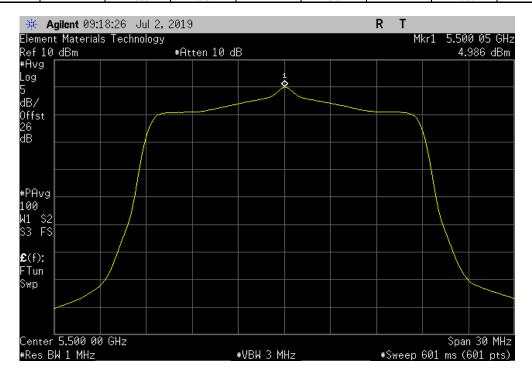
20 MHz, 802.11(n) MCS0, Ch 64, High Channel 5320 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

5.932 0.3 6.3 11 Pass



	20 N	ЛHz, 802.11(n) М	1CS0, Ch 100, Lo	w Channel 5500	MHz	
	Power	Duty Cycle		Density	Limit	
	(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
1	4.986	0.3		5.3	11	Pass

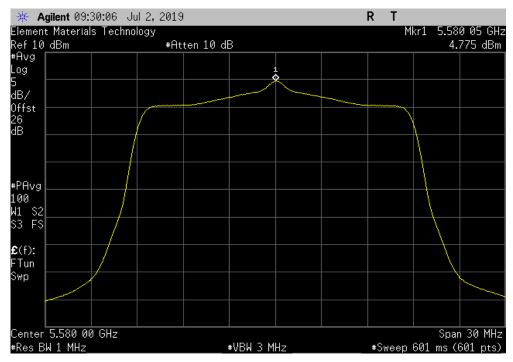




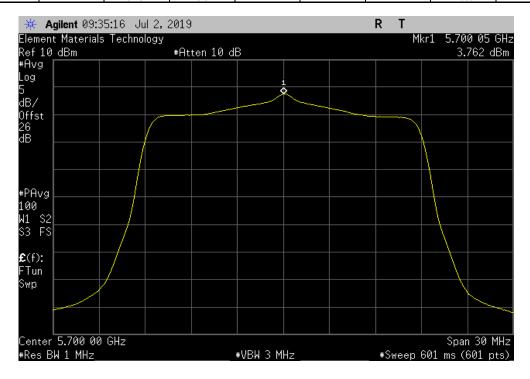
20 MHz, 802.11(n) MCS0, Ch 116, Mid Channel 5580 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

4.775 0.3 5.1 11 Pass



		20 N	1Hz, 802.11(n) M	ICS0, Ch 140, Hig	h Channel 5700	MHz	
		Power	Duty Cycle		Density	Limit	
_		(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
1	<u> </u>	3.762	0.3		4.1	11	Pass

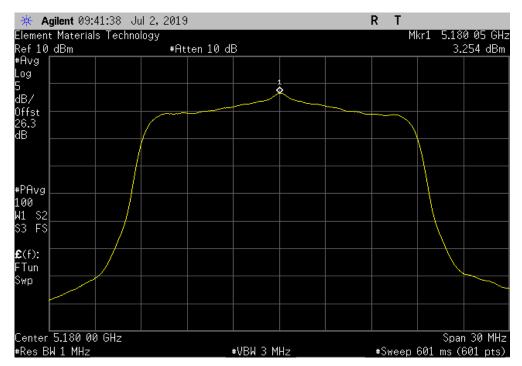




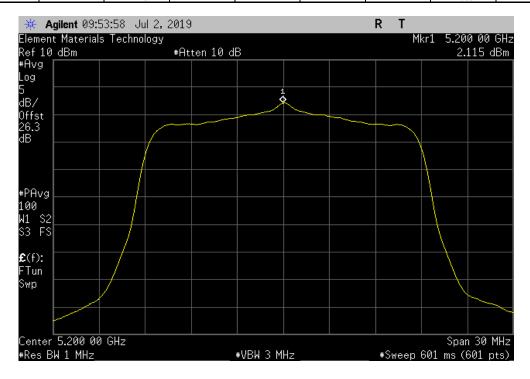
20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

3.254 2.1 5.3 11 Pass



	20	MHz, 802.11(n) N	MCS7, Ch 40, Mic	Channel 5200 M	1Hz	
	Power	Duty Cycle		Density	Limit	
	(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
ı	2.115	2.1		4.2	11	Pass

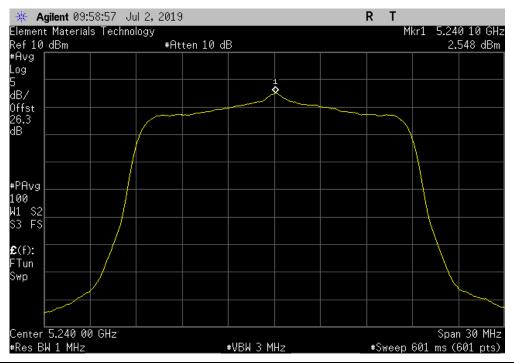




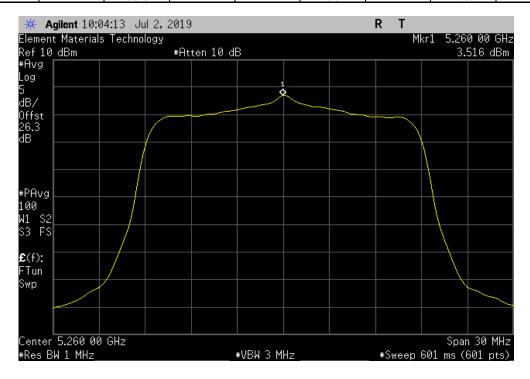
20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

2.548 2.1 4.6 11 Pass



20 I	MHz, 802.11(n) N	MCS7, Ch 52, Low Channel 5260	MHz		
Power	Duty Cycle	Density	Limit		
(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW	) ≤ (dBm/Ref BW)	Results	
3.516	2.1	5.6	11	Pass	



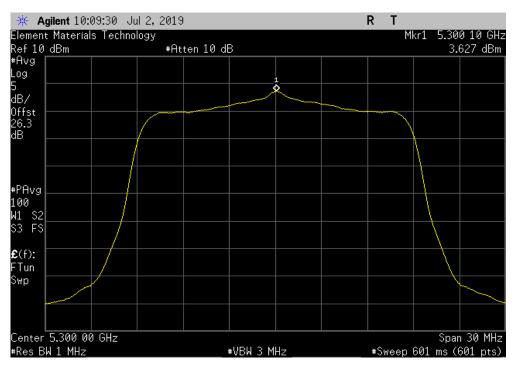


20 MHz, 802.11(n) MCS7, Ch 60, Mid Channel 5300 MHz

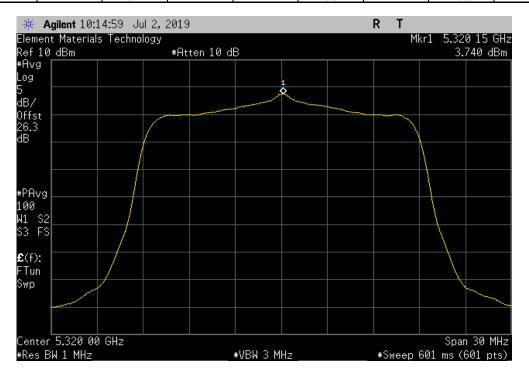
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

3.627 2 5.7 11 Pass



	20 1	MHz, 802.11(n) N	MCS7, Ch 64, Hig	h Channel 5320 M	ЛHz	
	Power	Duty Cycle		Density	Limit	
	(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
	3.74	2		5.8	11	Pass

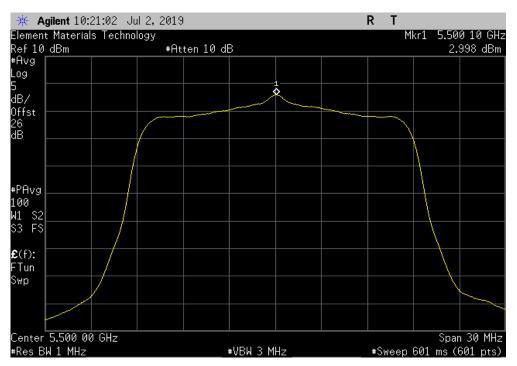




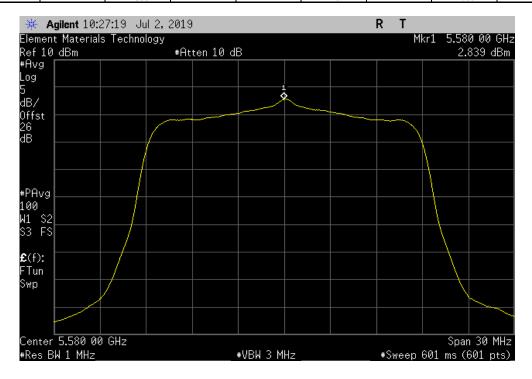
20 MHz, 802.11(n) MCS7, Ch 100, Low Channel 5500 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

2.998 2 5 11 Pass



	20 1	MHz, 802.11(n) N	ICS7, Ch 116, Mi	d Channel 5580 N	ЛHz	
	Power	Duty Cycle		Density	Limit	
	 (dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
i	2.839	2		4.9	11	Pass

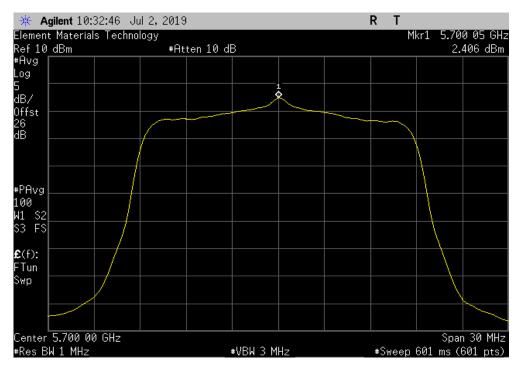




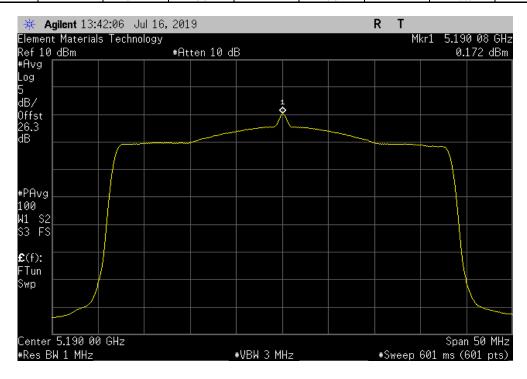
20 MHz, 802.11(n) MCS7, Ch 140, High Channel 5700 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

2.406 2.1 4.5 11 Pass



	40 M	Hz, 802.11(n) MO	CS0, Ch 36/40, Lo	w Channel 5190	MHz	
	Power	Duty Cycle		Density	Limit	
	(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
	0.172	0.6		0.8	11	Pass

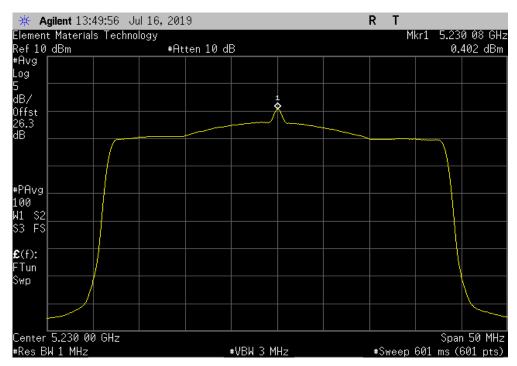




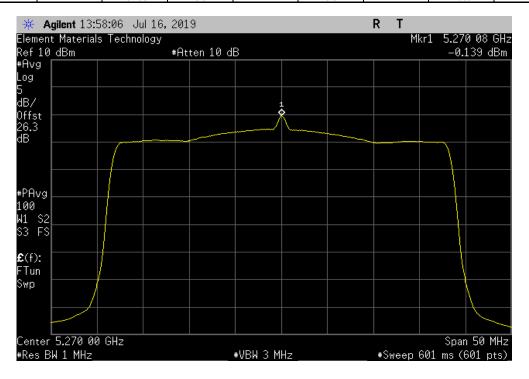
40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

0.402 0.6 1 11 Pass



		40 M	Hz, 802.11(n) M0	CS0, Ch 52/56, Lo	w Channel 5270	MHz	
		Power	Duty Cycle		Density	Limit	
		(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
İ	_	-0.139	0.6	_	0.5	11	Pass

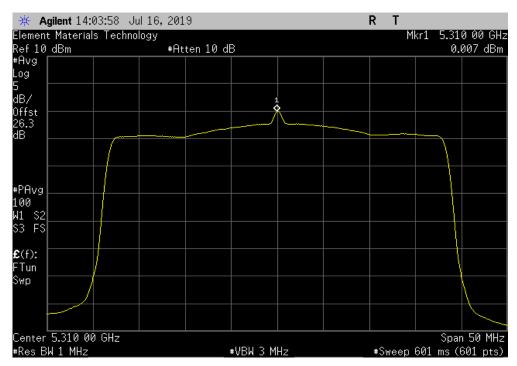




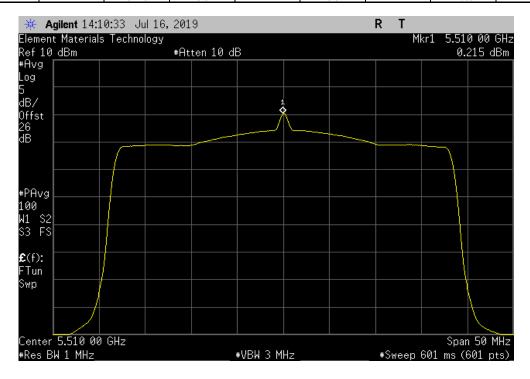
40 MHz, 802.11(n) MCS0, Ch 60/64, High Channel 5310 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

0.007 0.6 0.6 11 Pass



	40 MF	lz, 802.11(n) MC:	S0, Ch 100/104, Low	v Channel 5510	) MHz	
	Power	Duty Cycle		Density	Limit	
	 (dBm/Ref BW)	Factor (dB)	(d	IBm/Ref BW) :	≤ (dBm/Ref BW)	Results
1	0.215	0.6		0.8	11	Pass



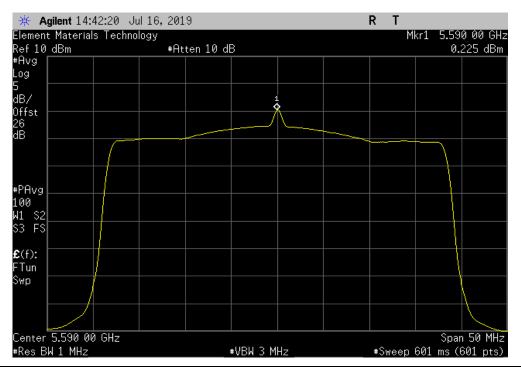


40 MHz, 802.11(n) MCS0, Ch 116/120, Mid Channel 5590 MHz

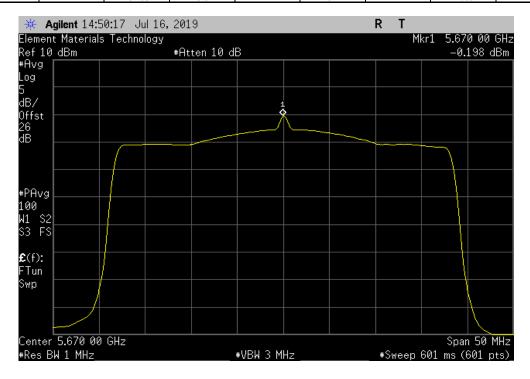
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

0.225 0.6 0.8 11 Pass



40 MH:	z, 802.11(n) MCS	S0, Ch 132/136, High Channel 567	70 MHz		
Power	Duty Cycle	Density	Limit		
(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results	
-0.198	0.6	0.4	11	Pass	



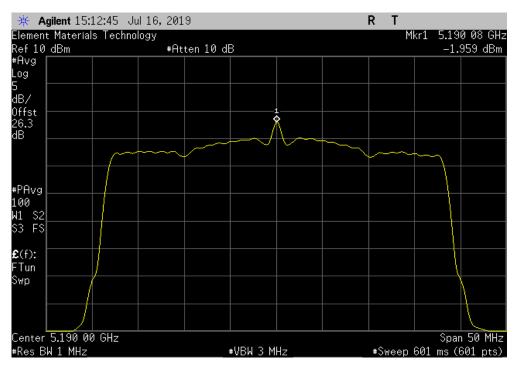


40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz

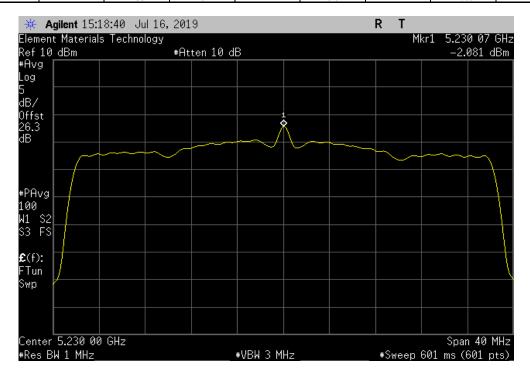
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

-1.959 3 1 11 Pass



	40 M	Hz, 802.11(n) MC	CS7, Ch 44/48, Hi	gh Channel 5230	MHz	
	Power	Duty Cycle		Density	Limit	
	 (dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
i	-2.081	3		0.9	11	Pass



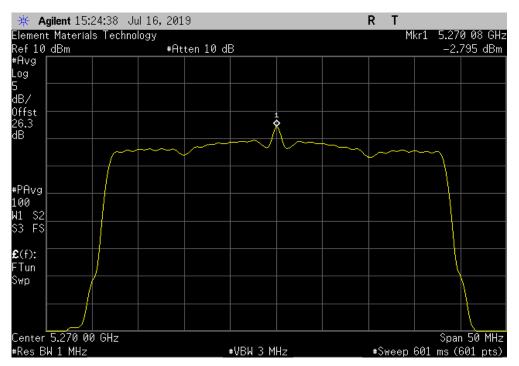


40 MHz, 802.11(n) MCS7, Ch 52/56, Low Channel 5270 MHz

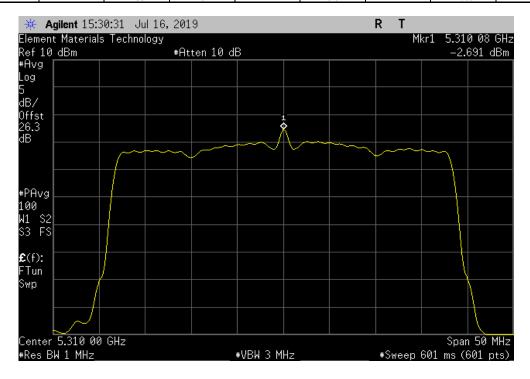
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

-2.795 3 0.2 11 Pass



	40 M	Hz, 802.11(n) MC	CS7, Ch 60/64, Hi	gh Channel 5310	MHz	
	Power	Duty Cycle		Density	Limit	
	 (dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
i	-2.691	3		0.3	11	Pass



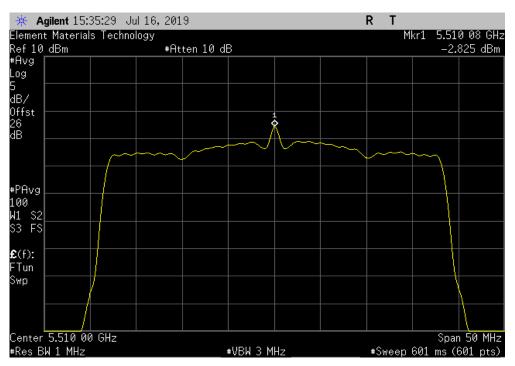


40 MHz, 802.11(n) MCS7, Ch 100/104, Low Channel 5510 MHz

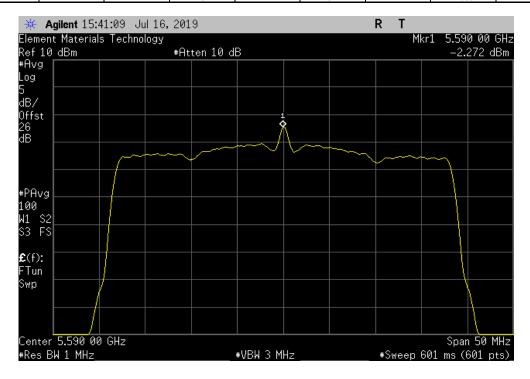
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

-2.825 3 0.1 11 Pass



	40 MF	łz, 802.11(n) MC	S7, Ch 116/120, N	Mid Channel 559	) MHz	
	Power	Duty Cycle		Density	Limit	
	 (dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results
i	-2.272	3		0.7	11	Pass

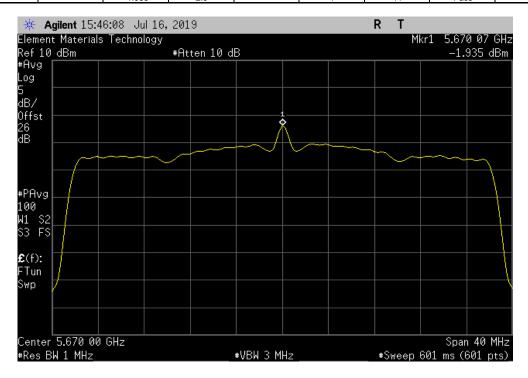




40 MHz, 802.11(n) MCS7, Ch 132/136, High Channel 5670 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

-1.935 2.9 1 11 Pass





XMit 2019.05.15

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	15-Feb-18	15-Feb-21
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	30-Nov-18	30-Nov-19

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

Prior to measuring maximum power spectral density, the emission bandwidth (B) was measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report

The maximum power spectral density was measured using ANSI C63.10, Method SA-2 (RMS detection and trace averaging across the on and off times of the EUT transmission and use of a duty cycle correction factor), consistent with the method used for maximum conducted output power.

The spectrum analyzer settings were set per the guidance as well as the following specifics:

- -Resolution Bandwidth of 510 kHz
- -RMS Detector
- -Trace average 100 traces in power averaging mode

The peak power spectral density (PPSD) was determined to be the highest level found across the emission in the reference bandwidth after 100 sweeps of power averaging (not video averaging).

A duty cycle correction factor was added to the measurement using the results of the formula of 10\*LOG(1/D) where D is the duty cycle.

Ch 157/161, High Channel 5795 MHz



EUT: MWMII
Serial Number: ENG-1
Customer: Masimo Corporation Work Order: MASI0553
Date: 16-Jul-19
Temperature: 24..5 °C Humidity: 47.2% RH Barometric Pres.: 1015 mbar Attendees: Anami Joshi & Nghi Nguyen Project: None Tested by: Nolan De Ramos, Luis Flores, and Mark Baytan TEST SPECIFICATIONS Power: 3.6VDC Test Method Job Site: OC13 FCC 15.407:2019 COMMENTS Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26.3dB Total Offset (5.2 GHz - 5.35 GHz) Reference level offset: DC block + 20dB attenuator + coax cable + client provided patch cable = 26dB Total Offset (5.35 GHz - 5.8 GHz) DEVIATIONS FROM TEST STANDARD M+B+ Configuration # 8 Power (dBm/Ref BW) Duty Cycle Factor (dB) Density (dBm/Ref BW) ≤ (dBm/Ref BW) Results 802.11(a) 6 Mbps Ch 149, Low Channel 5745 MHz Ch 157, Mid Channel 5785 MHz 1.067 Pass 0.3 1.4 1.0 0.753 0.3 30 Pass Ch 165, High Channel 5825 MHz 1.0 0.686 0.3 30 Pass 802.11(a) 36 Mbps Ch 149, Low Channel 5745 MHz 0.359 1.4 1.8 30 Pass Ch 157, Mid Channel 5785 MHz Ch 165, High Channel 5825 MHz 1.4 1.4 -0.065 30 30 Pass Pass 802.11(a) 54 Mbps Ch 149, Low Channel 5745 MHz -0.183 1.9 1.8 30 Pass 1.3 1.5 Ch 157, Mid Channel 5785 MHz -0.672 1.9 30 Pass Ch 165, High Channel 5825 MHz 30 Pass -0.427 2.0 802.11(n) MCS0 Ch 149, Low Channel 5745 MHz Ch 157, Mid Channel 5785 MHz Ch 165, High Channel 5825 MHz 2.791 0.3 3.1 30 Pass 1.684 0.3 2.0 30 Pass 30 1.861 0.3 Pass 802.11(n) MCS7 Ch 149, Low Channel 5745 MHz 0.723 2.0 2.8 30 Pass Ch 157, Mid Channel 5785 MHz Ch 165, High Channel 5825 MHz 2.0 2.0 2.3 2.1 30 30 0.225 Pass 0.014 Pass 40 MHz 802.11(n) MCS0 Ch 149/153, Low Channel 5755 MHz Ch 157/161, High Channel 5795 MHz -0.735 -1.013 0.6 0.6 -0.1 -0.4 11 11 Pass Pass 802.11(n) MCS7 Ch 149/153, Low Channel 5755 MHz Pass -2.538 2.9 0.4 11

-2.422

2.9

0.5

11

Pass

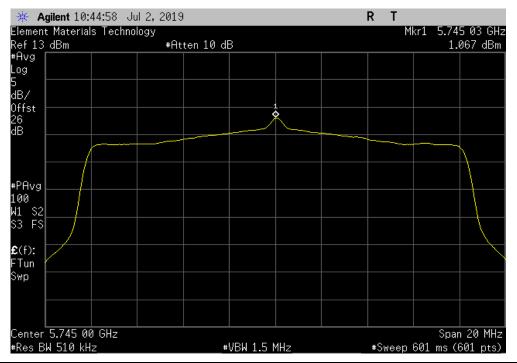


20 MHz, 802.11(a) 6 Mbps, Ch 149, Low Channel 5745 MHz

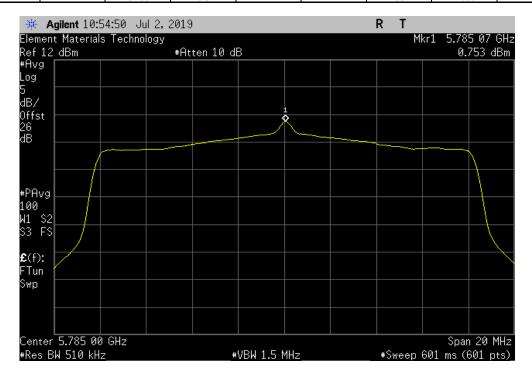
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

1.067 0.3 1.4 30 Pass



20 MHz, 802.11(a) 6 Mbps, Ch 157, Mid Channel 5785 MHz								
Power Duty Cycle Density Limit								
	(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results		
	0.753	0.3		1	30	Pass		

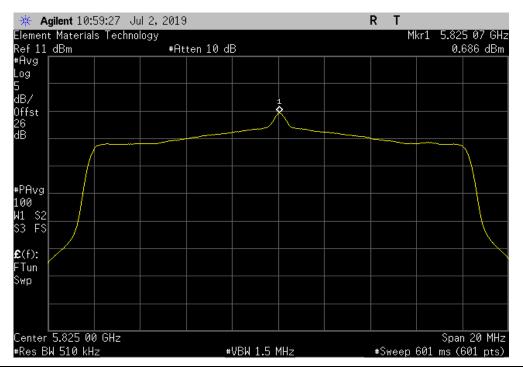




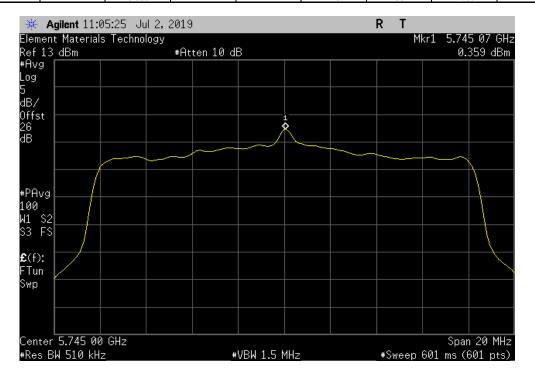
20 MHz, 802.11(a) 6 Mbps, Ch 165, High Channel 5825 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

0.686 0.3 1 30 Pass



20 MHz, 802.11(a) 36 Mbps, Ch 149, Low Channel 5745 MHz									
	Power Duty Cycle Density Limit								
	(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results				
	0.359	1.4	1.8	30	Pass				

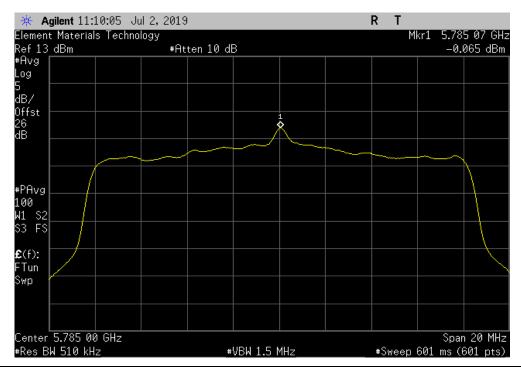




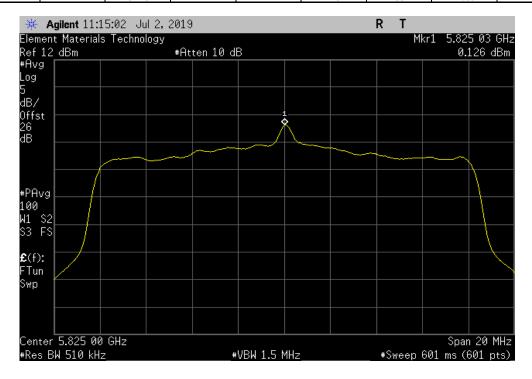
20 MHz, 802.11(a) 36 Mbps, Ch 157, Mid Channel 5785 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

-0.065 1.4 1.4 30 Pass



20 MHz, 802.11(a) 36 Mbps, Ch 165, High Channel 5825 MHz								
Power Duty Cycle Density Limit								
(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results				
0.126	1.4	1.6	30	Pass				



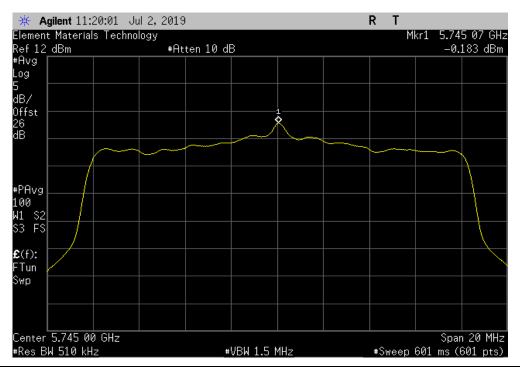


20 MHz, 802.11(a) 54 Mbps, Ch 149, Low Channel 5745 MHz

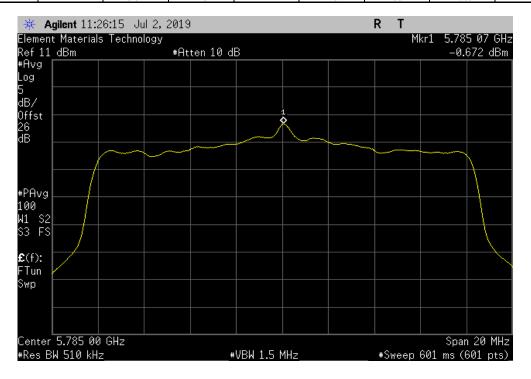
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

-0.183 1.9 1.8 30 Pass



20 MHz, 802.11(a) 54 Mbps, Ch 157, Mid Channel 5785 MHz								
Power Duty Cycle Density Limit								
	(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results			
	-0.672	1.9	1.3	30	Pass			

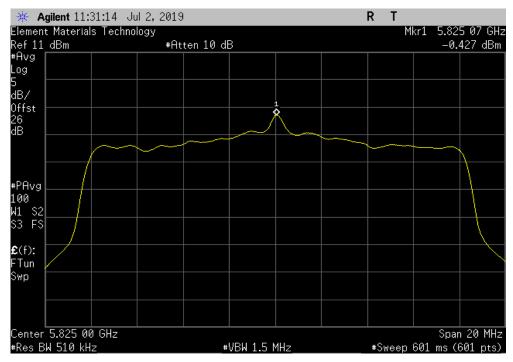




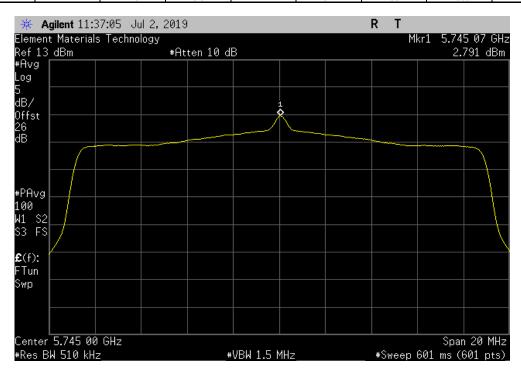
20 MHz, 802.11(a) 54 Mbps, Ch 165, High Channel 5825 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

-0.427 2 1.5 30 Pass



20 MHz, 802.11(n) MCS0, Ch 149, Low Channel 5745 MHz								
Power Duty Cycle Density Limit								
 (dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results								
2.791	0.3	3.1	30	Pass				

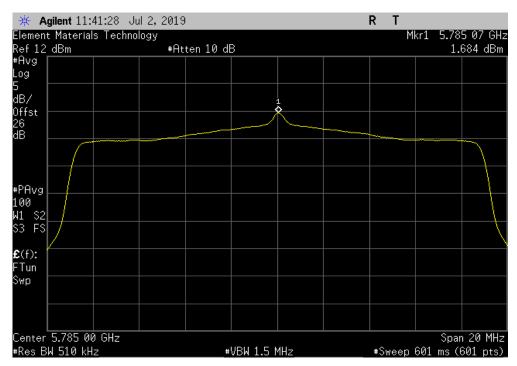




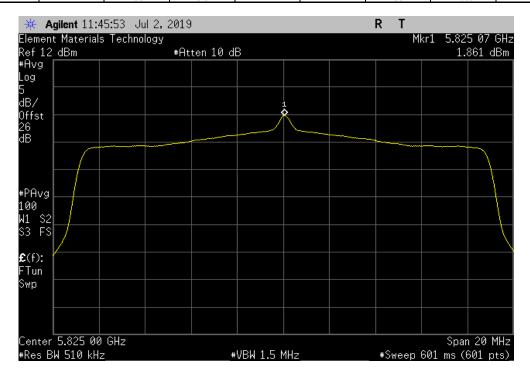
20 MHz, 802.11(n) MCS0, Ch 157, Mid Channel 5785 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

1.684 0.3 2 30 Pass



	20 MHz, 802.11(n) MCS0, Ch 165, High Channel 5825 MHz									
	Power Duty Cycle Density Limit									
	(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results					
	1.861	0.3	2.2	30	Pass					



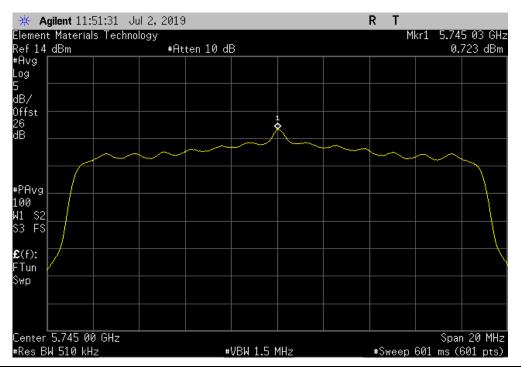


20 MHz, 802.11(n) MCS7, Ch 149, Low Channel 5745 MHz

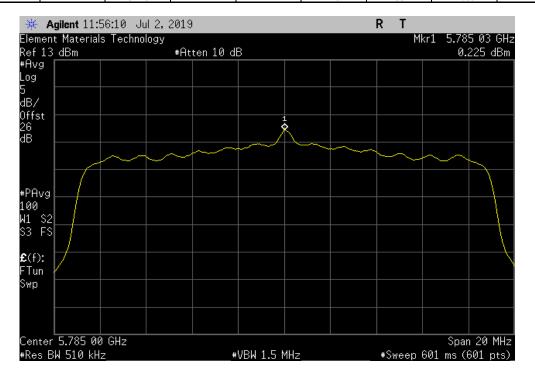
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

0.723 2 2.8 30 Pass



	20 MHz, 802.11(n) MCS7, Ch 157, Mid Channel 5785 MHz								
Power Duty Cycle Density Limit									
	(dBm/Ref BW)	Factor (dB)	(	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results	_		
	0.225	2		2.3	30	Pass	ĺ		

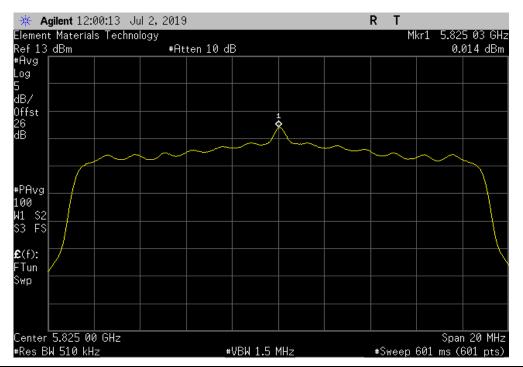




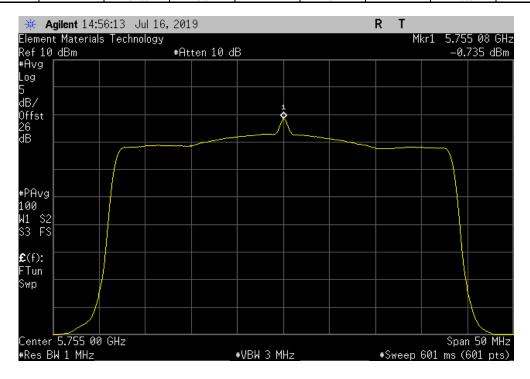
20 MHz, 802.11(n) MCS7, Ch 165, High Channel 5825 MHz

Power Duty Cycle Density Limit
(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

0.014 2 2.1 30 Pass



40 MHz, 802.11(n) MCS0, Ch 149/153, Low Channel 5755 MHz								
	Power Duty Cycle Density Limit							
	(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	Results			
	-0.735	0.6	-0.1	11	Pass			



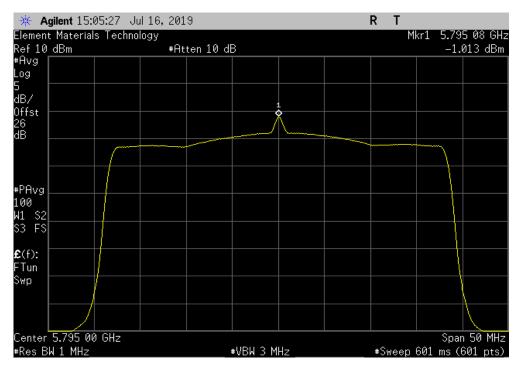


40 MHz, 802.11(n) MCS0, Ch 157/161, High Channel 5795 MHz

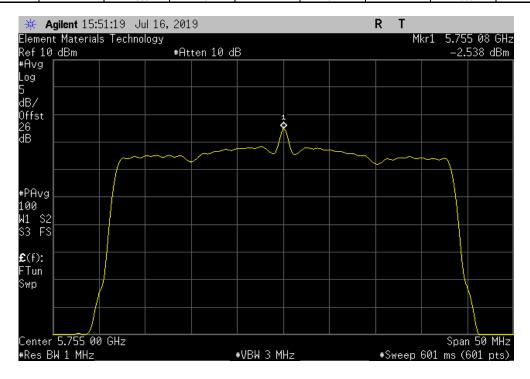
Power Duty Cycle Density Limit

(dBm/Ref BW) Factor (dB) (dBm/Ref BW) ≤ (dBm/Ref BW) Results

-1.013 0.6 -0.4 11 Pass



	40 MHz, 802.11(n) MCS7, Ch 149/153, Low Channel 5755 MHz									
	Power Duty Cycle Density Limit									
		(dBm/Ref BW)	Factor (dB)		(dBm/Ref BW)	≤ (dBm/Ref BW)	Results			
i		-2.538	2.9		0.4	11	Pass			





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40 MHz, 802.11(n) MCS7, Ch 157/161, High Channel 5795 MHz							
Power Duty Cycle Density Limit							
	(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW	) ≤ (dBm/Ref BW	Results		
	-2.422	2.9	0.5	11	Pass		

