

MAXIMUM CONDUCTED OUTPUT POWER

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 DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section C was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep) was used for this test.

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

- RBW = 1 MHz, VBW = 3 MHz
- Sample Detector
- The number of points was set to 601. This satisfied the requirement of being $> 2 * \text{span} / \text{RBW}$
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	7/23/2015	7/23/2016
Block - DC	Fairview Microwave	SD3379	AMM	2/27/2015	2/27/2016
Attenuator	Fairview Microwave	SA4018-20	TQY	2/27/2015	2/27/2016
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	7/15/2017

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EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/10/15
Customer:	WatchGuard Technologies, Inc.	Temperature:	25.1°C
Attendees:	None	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1015 mbar
Tested By:	Jonathan Kiefer	Job Site:	TX09
Power:	110VAC/60Hz	Configuration:	5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2015	ANSI C63.10:2013

COMMENTS

SISO mode, Chain A (Chain 0).

DEVIATIONS FROM TEST STANDARD

None

RESULTS

	Value	Limit (<)	Result
Chain A			
802.11(a) 6 Mbps			
20 MHz			
Low Channel 5180 MHz	13.681 dBm	24 dBm	Pass
High Channel 5240 MHz	14.181 dBm	24 dBm	Pass
Low Channel 5745 MHz	17.086 dBm	30 dBm	Pass
Mid Channel 5785 MHz	17.177 dBm	30 dBm	Pass
High Channel 5825 MHz	17.751 dBm	30 dBm	Pass
802.11(a) 36 Mbps			
20 MHz			
Low Channel 5180 MHz	13.133 dBm	24 dBm	Pass
High Channel 5240 MHz	13.598 dBm	24 dBm	Pass
Low Channel 5745 MHz	16.38 dBm	30 dBm	Pass
Mid Channel 5785 MHz	16.579 dBm	30 dBm	Pass
High Channel 5825 MHz	16.548 dBm	30 dBm	Pass
802.11(a) 54 Mbps			
20 MHz			
Low Channel 5180 MHz	12.306 dBm	24 dBm	Pass
High Channel 5240 MHz	12.902 dBm	24 dBm	Pass
Low Channel 5745 MHz	14.617 dBm	30 dBm	Pass
Mid Channel 5785 MHz	15.069 dBm	30 dBm	Pass
High Channel 5825 MHz	15.558 dBm	30 dBm	Pass
802.11(n) MCS0			
20 MHz			
Low Channel 5180 MHz	13.55 dBm	24 dBm	Pass
High Channel 5240 MHz	14.056 dBm	24 dBm	Pass
Low Channel 5745 MHz	16.782 dBm	30 dBm	Pass
Mid Channel 5785 MHz	17.172 dBm	30 dBm	Pass
High Channel 5825 MHz	17.606 dBm	30 dBm	Pass
40 MHz			
Low Channel 5190 MHz	13.176 dBm	24 dBm	Pass
High Channel 5230 MHz	13.506 dBm	24 dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER

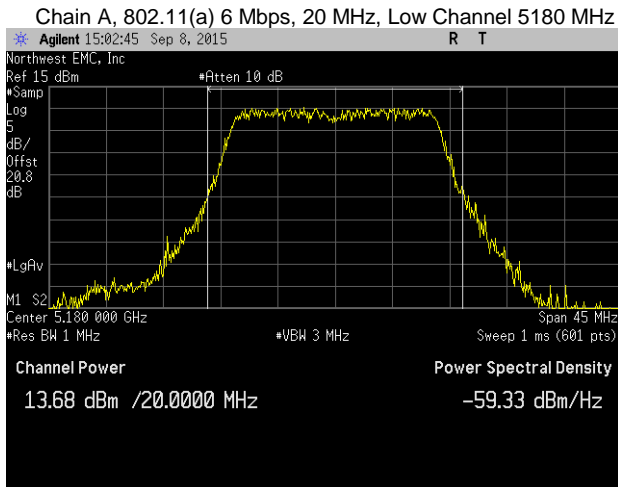


		Value	Limit (<)	Result
	Low Channel 5755 MHz	14.25 dBm	30 dBm	Pass
	High Channel 5795 MHz	15.126 dBm	30 dBm	Pass
80 MHz				
	Low Channel 5210 MHz	12.507 dBm	24 dBm	Pass
	Low Channel 5775 MHz	13.72 dBm	30 dBm	Pass
802.11(n) MCS7				
20 MHz				
	Low Channel 5180 MHz	11.261 dBm	24 dBm	Pass
	High Channel 5240 MHz	11.962 dBm	24 dBm	Pass
	Low Channel 5745 MHz	12.856 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	13.119 dBm	30 dBm	Pass
	High Channel 5825 MHz	14.74 dBm	30 dBm	Pass
40 MHz				
	Low Channel 5190 MHz	10.91 dBm	24 dBm	Pass
	High Channel 5230 MHz	11.362 dBm	24 dBm	Pass
	Low Channel 5755 MHz	12.07 dBm	30 dBm	Pass
	High Channel 5795 MHz	12.802 dBm	30 dBm	Pass
802.11(ac) MCS8 (256-QAM)				
20 MHz				
	Low Channel 5180 MHz	9.271 dBm	24 dBm	Pass
	High Channel 5240 MHz	9.859 dBm	24 dBm	Pass
	Low Channel 5745 MHz	11.299 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	11.711 dBm	30 dBm	Pass
	High Channel 5825 MHz	12.322 dBm	30 dBm	Pass
802.11(ac) MCS9 (256-QAM)				
40 MHz				
	Low Channel 5190 MHz	8.657 dBm	24 dBm	Pass
	High Channel 5230 MHz	8.792 dBm	24 dBm	Pass
	Low Channel 5755 MHz	9.861 dBm	30 dBm	Pass
	High Channel 5795 MHz	10.512 dBm	30 dBm	Pass
80 MHz				
	Low Channel 5210 MHz	8.231 dBm	24 dBm	Pass
	Low Channel 5775 MHz	9.367 dBm	30 dBm	Pass

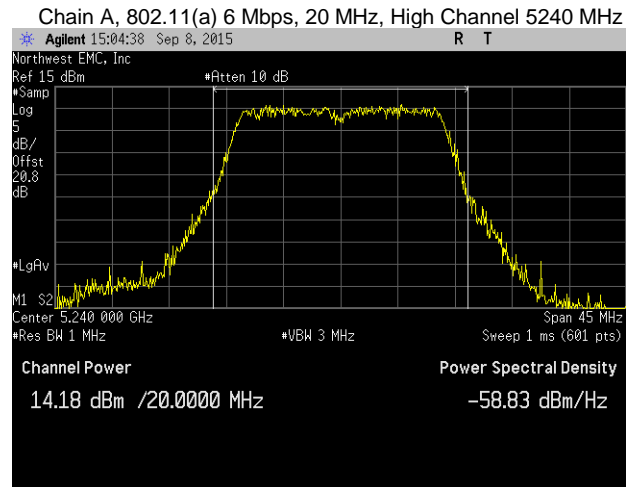
Jonathan Kiefer

Tested By

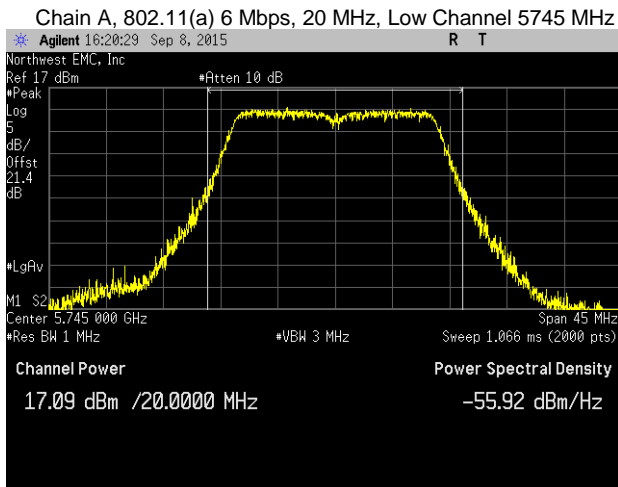
MAXIMUM CONDUCTED OUTPUT POWER



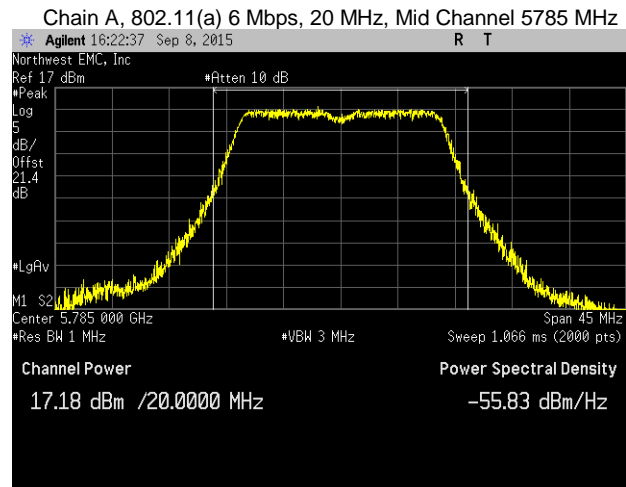
Value	13.681 dBm
Limit (<)	24 dBm
Result	Pass



Value	14.181 dBm
Limit (<)	24 dBm
Result	Pass



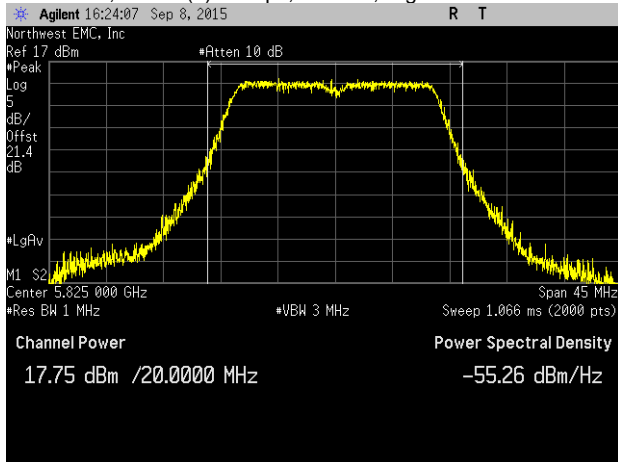
Value	17.086 dBm
Limit (<)	30 dBm
Result	Pass



Value	17.177 dBm
Limit (<)	30 dBm
Result	Pass

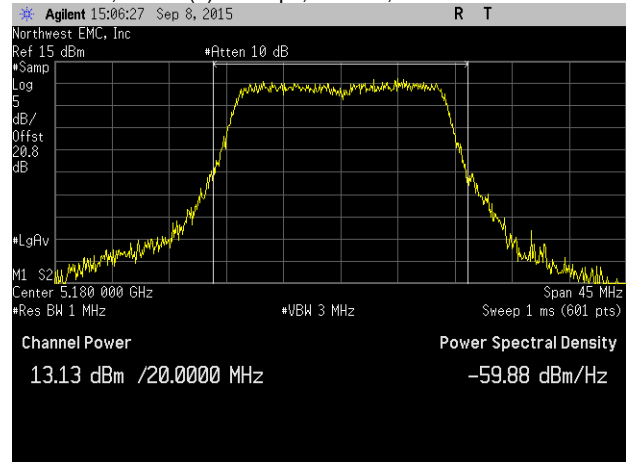
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(a) 6 Mbps, 20 MHz, High Channel 5825 MHz



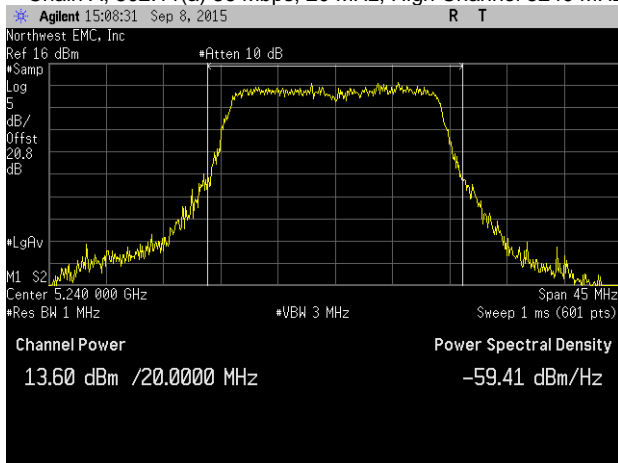
Value	17.751 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(a) 36 Mbps, 20 MHz, Low Channel 5180 MHz



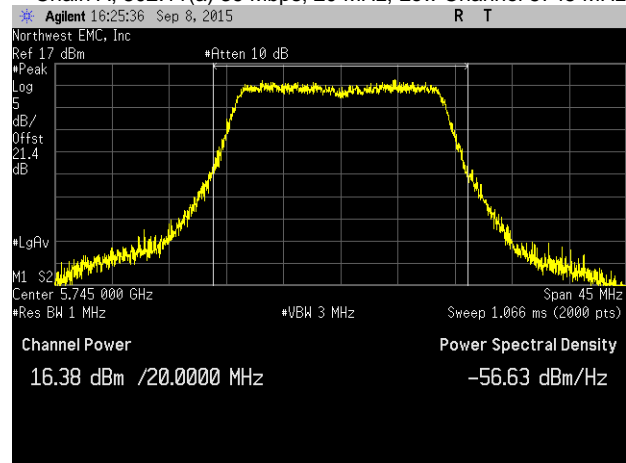
Value	13.133 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(a) 36 Mbps, 20 MHz, High Channel 5240 MHz



Value	13.598 dBm
Limit (<)	24 dBm
Result	Pass

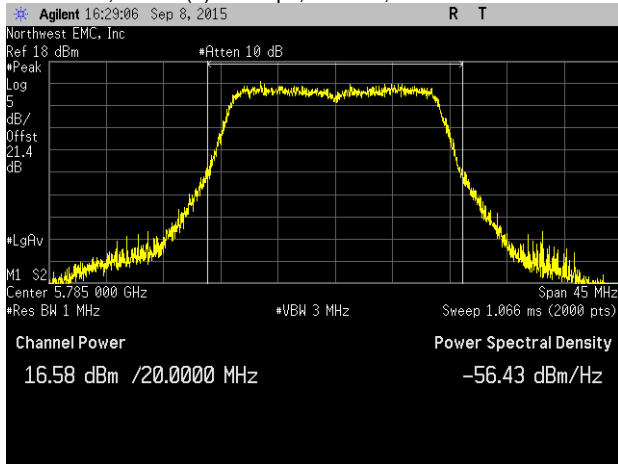
Chain A, 802.11(a) 36 Mbps, 20 MHz, Low Channel 5745 MHz



Value	16.38 dBm
Limit (<)	30 dBm
Result	Pass

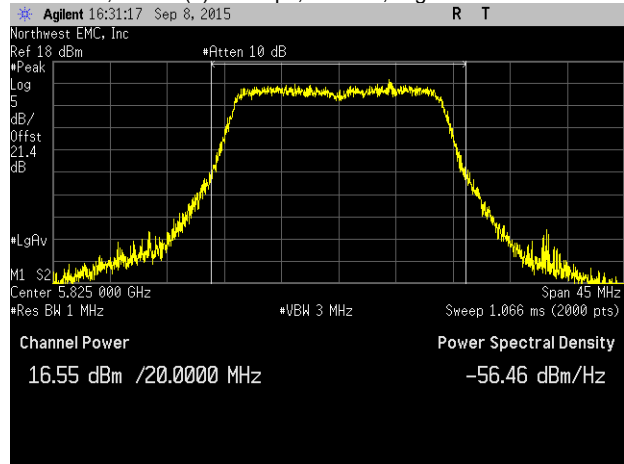
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(a) 36 Mbps, 20 MHz, Mid Channel 5785 MHz



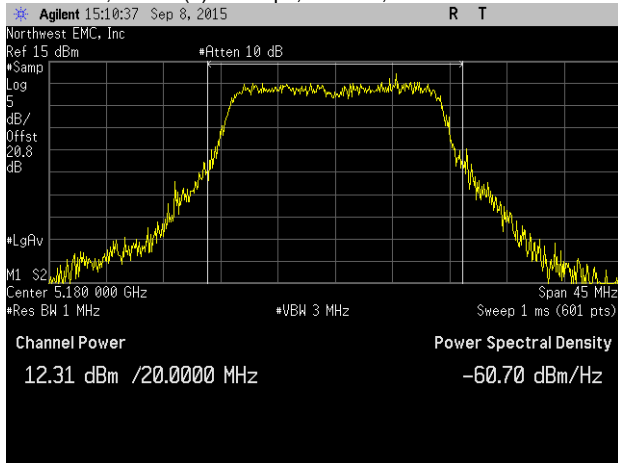
Value	16.579 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(a) 36 Mbps, 20 MHz, High Channel 5825 MHz



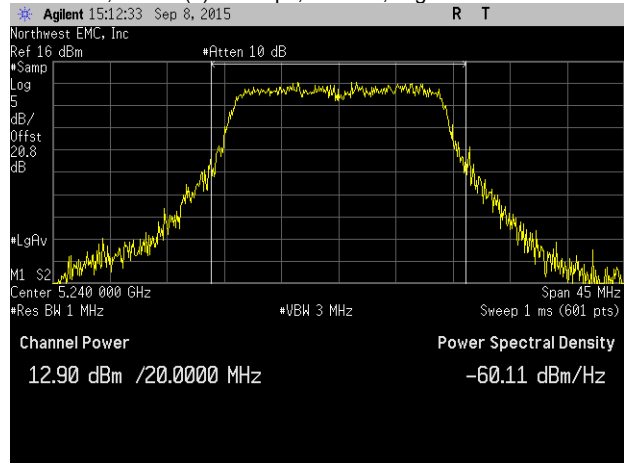
Value	16.548 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(a) 54 Mbps, 20 MHz, Low Channel 5180 MHz



Value	12.306 dBm
Limit (<)	24 dBm
Result	Pass

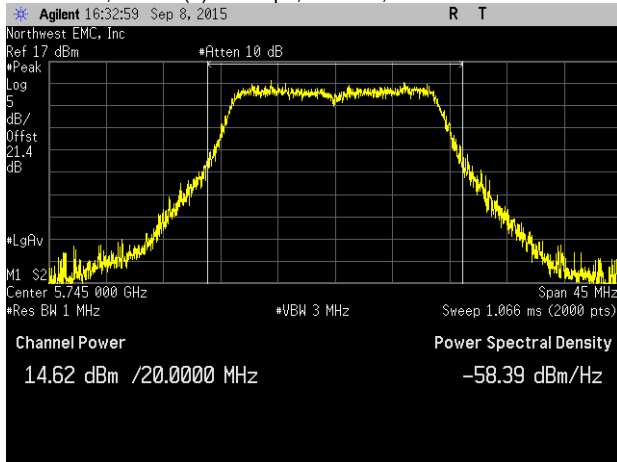
Chain A, 802.11(a) 54 Mbps, 20 MHz, High Channel 5240 MHz



Value	12.902 dBm
Limit (<)	24 dBm
Result	Pass

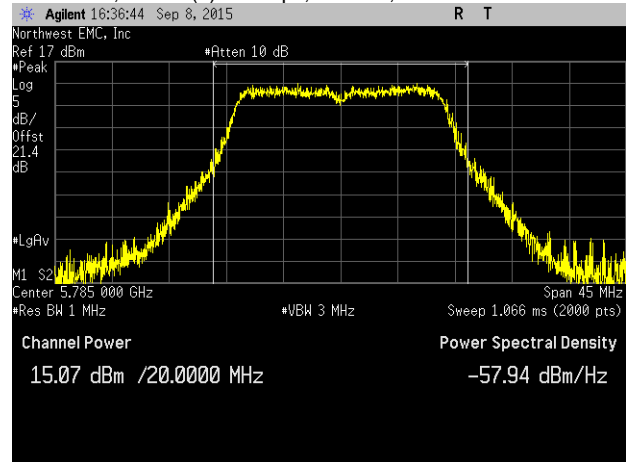
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(a) 54 Mbps, 20 MHz, Low Channel 5745 MHz



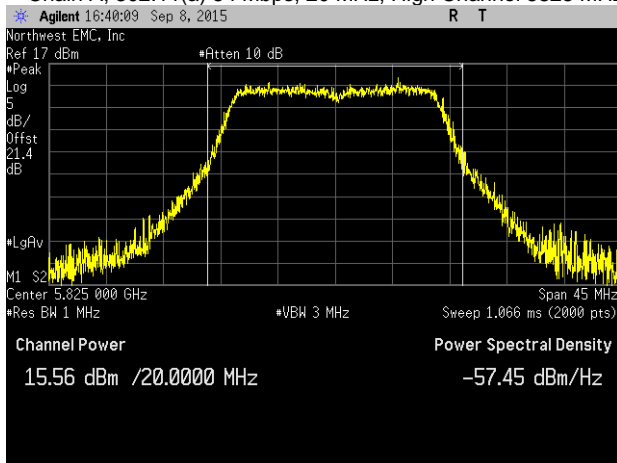
Value	14.617 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(a) 54 Mbps, 20 MHz, Mid Channel 5785 MHz



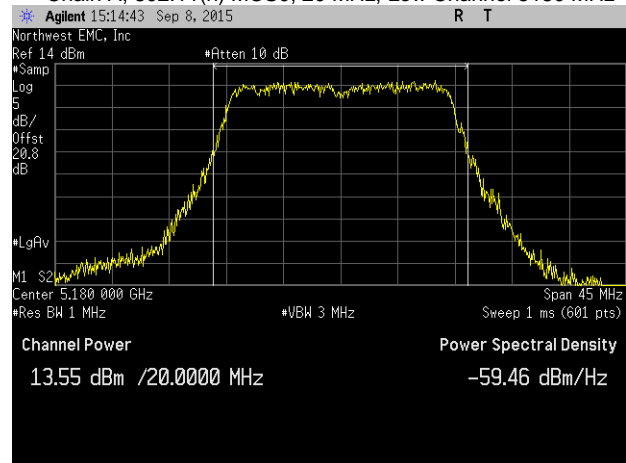
Value	15.069 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(a) 54 Mbps, 20 MHz, High Channel 5825 MHz



Value	15.558 dBm
Limit (<)	30 dBm
Result	Pass

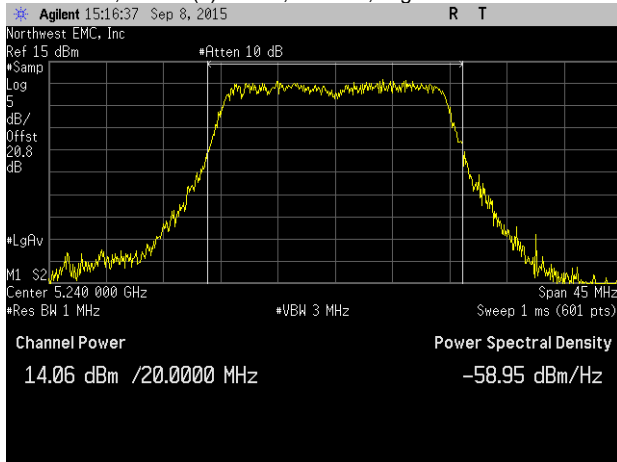
Chain A, 802.11(n) MCS0, 20 MHz, Low Channel 5180 MHz



Value	13.55 dBm
Limit (<)	24 dBm
Result	Pass

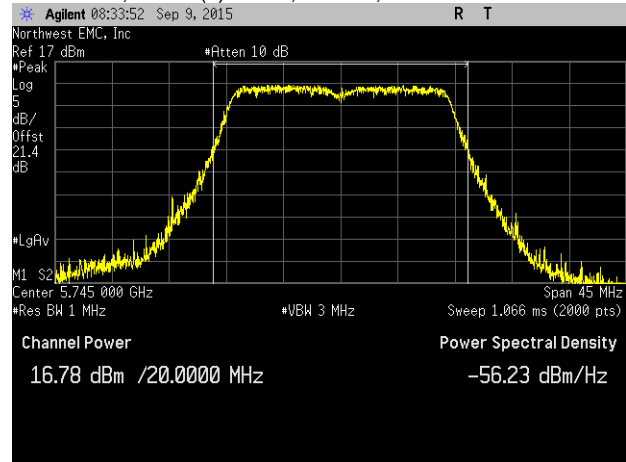
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) MCS0, 20 MHz, High Channel 5240 MHz



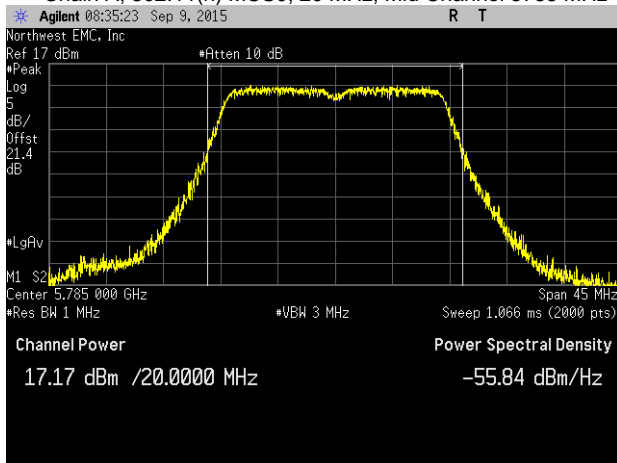
Value	14.056 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) MCS0, 20 MHz, Low Channel 5745 MHz



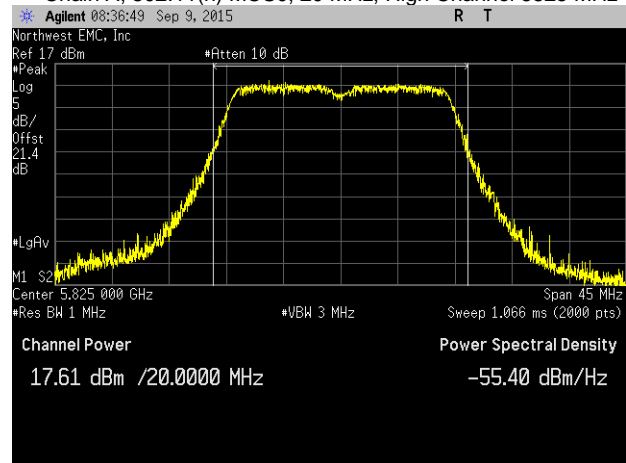
Value	16.782 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) MCS0, 20 MHz, Mid Channel 5785 MHz



Value	17.172 dBm
Limit (<)	30 dBm
Result	Pass

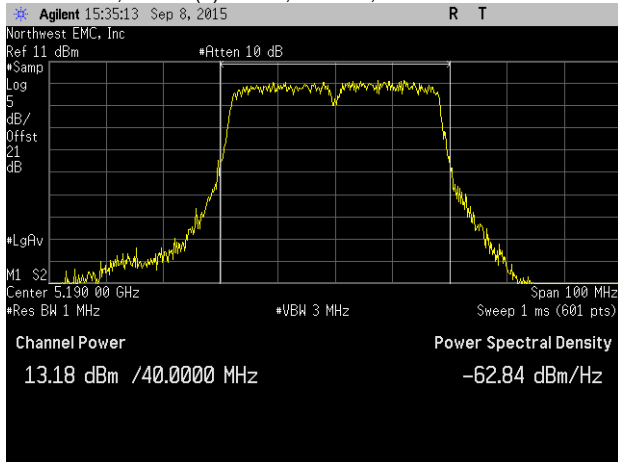
Chain A, 802.11(n) MCS0, 20 MHz, High Channel 5825 MHz



Value	17.606 dBm
Limit (<)	30 dBm
Result	Pass

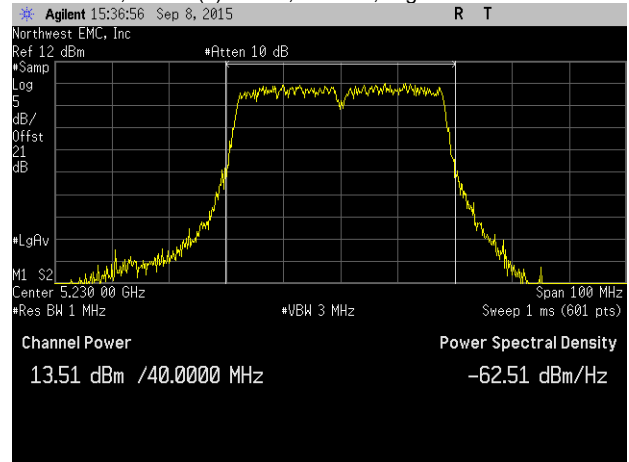
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) MCS0, 40 MHz, Low Channel 5190 MHz



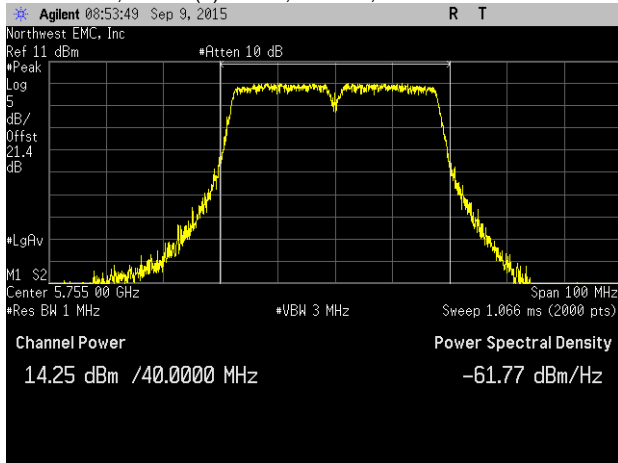
Value	13.176 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) MCS0, 40 MHz, High Channel 5230 MHz



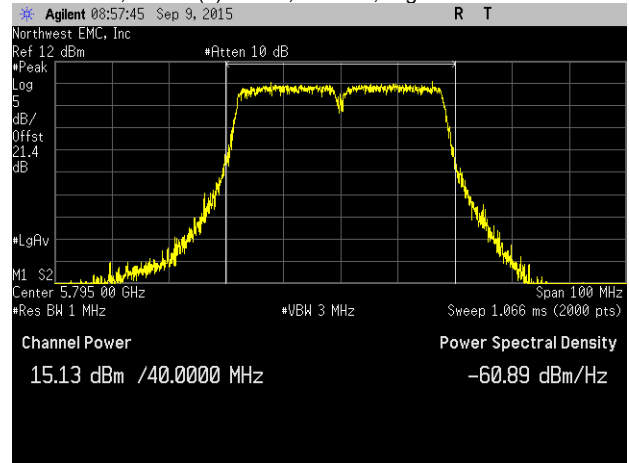
Value	13.506 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) MCS0, 40 MHz, Low Channel 5755 MHz



Value	14.25 dBm
Limit (<)	30 dBm
Result	Pass

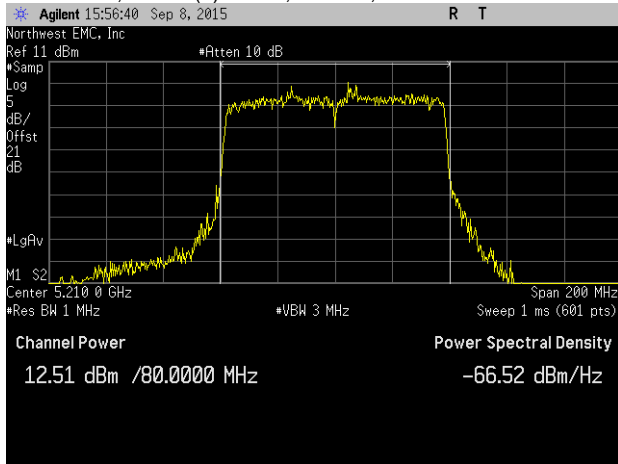
Chain A, 802.11(n) MCS0, 40 MHz, High Channel 5795 MHz



Value	15.126 dBm
Limit (<)	30 dBm
Result	Pass

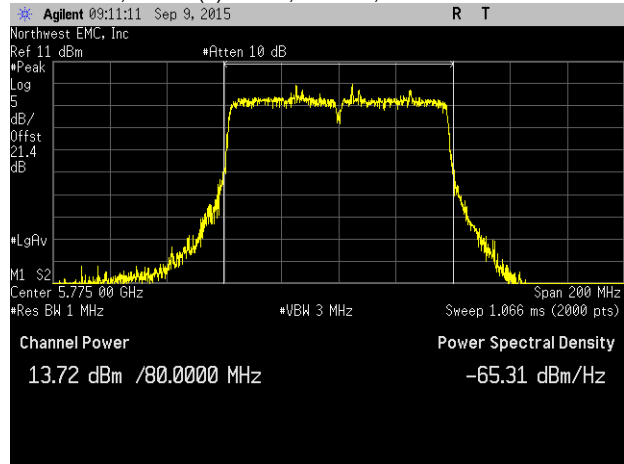
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Chain A, 802.11(n) MCS0, 80 MHz, Low Channel 5210 MHz



Value	12.507 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) MCS0, 80 MHz, Low Channel 5775 MHz



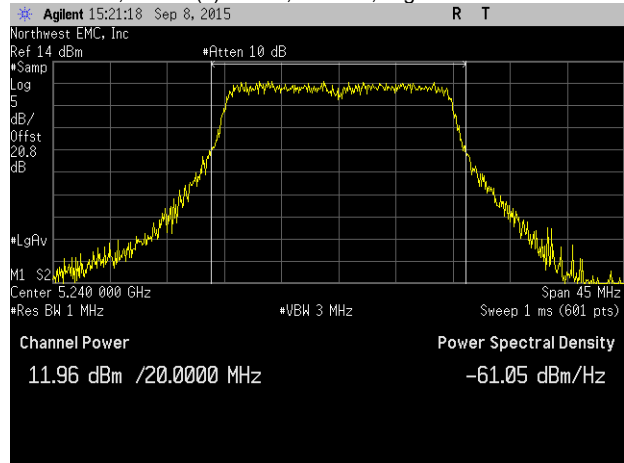
Value	13.72 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) MCS7, 20 MHz, Low Channel 5180 MHz



Value	11.261 dBm
Limit (<)	24 dBm
Result	Pass

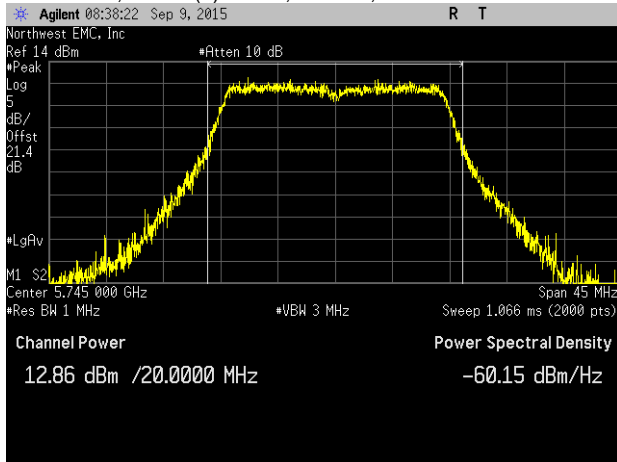
Chain A, 802.11(n) MCS7, 20 MHz, High Channel 5240 MHz



Value	11.962 dBm
Limit (<)	24 dBm
Result	Pass

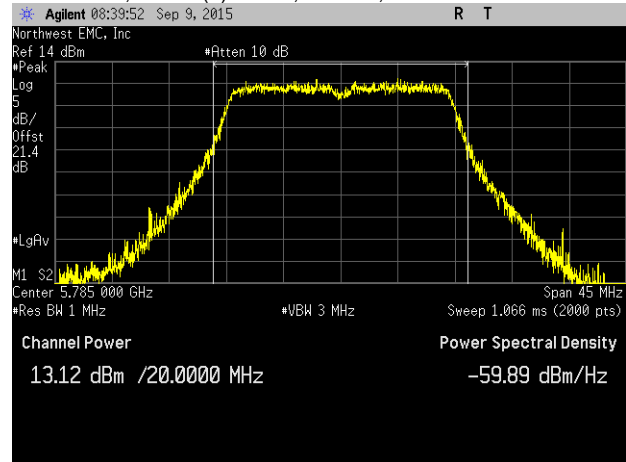
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) MCS7, 20 MHz, Low Channel 5745 MHz



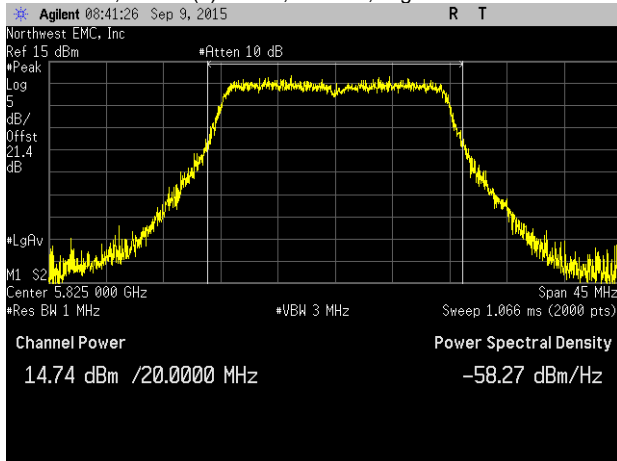
Value	12.856 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) MCS7, 20 MHz, Mid Channel 5785 MHz



Value	13.119 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) MCS7, 20 MHz, High Channel 5825 MHz



Value	14.74 dBm
Limit (<)	30 dBm
Result	Pass

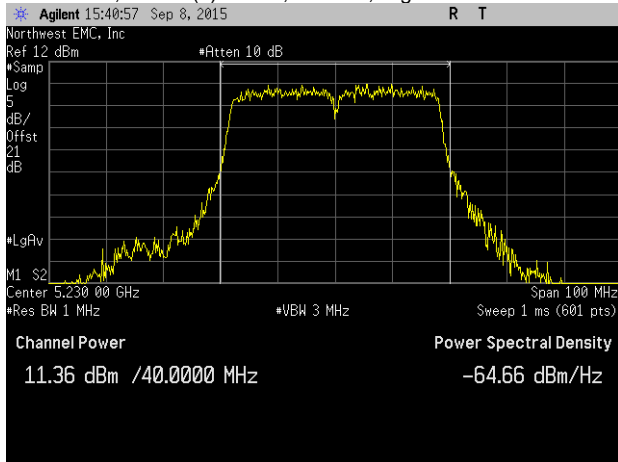
Chain A, 802.11(n) MCS7, 40 MHz, Low Channel 5190 MHz



Value	10.91 dBm
Limit (<)	24 dBm
Result	Pass

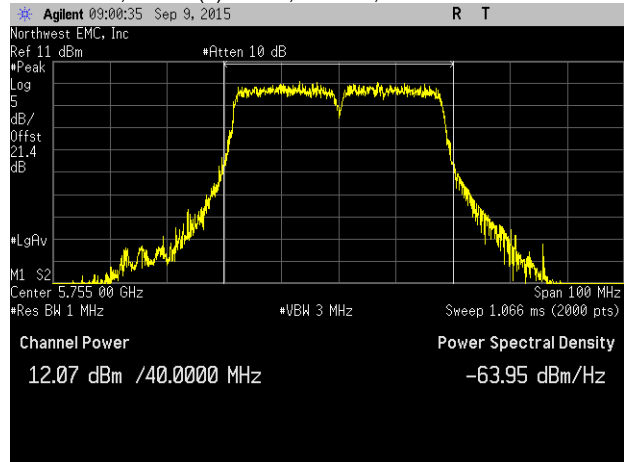
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) MCS7, 40 MHz, High Channel 5230 MHz



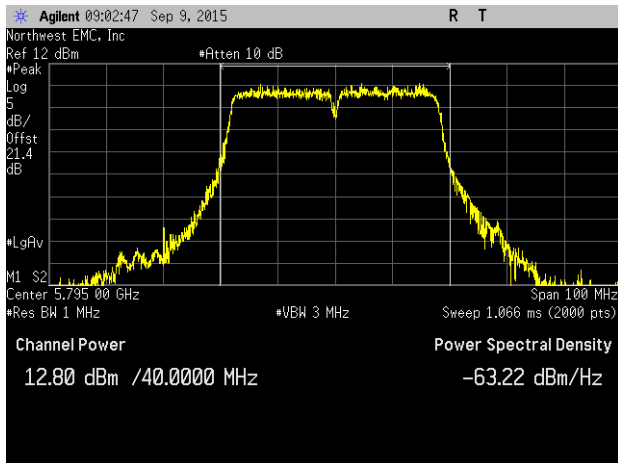
Value	11.362 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) MCS7, 40 MHz, Low Channel 5755 MHz



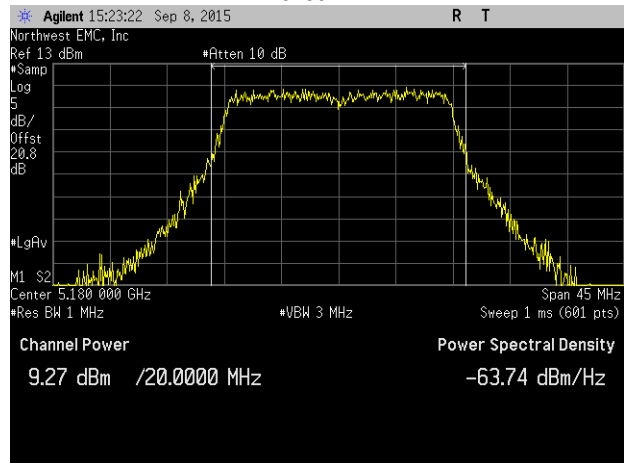
Value	12.07 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) MCS7, 40 MHz, High Channel 5795 MHz



Value	12.802 dBm
Limit (<)	30 dBm
Result	Pass

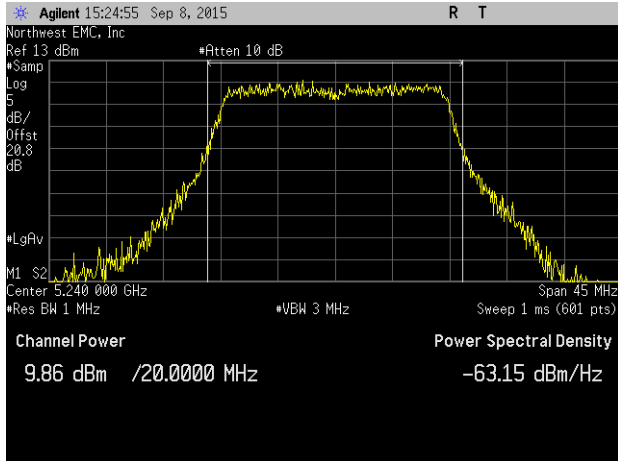
Chain A, 802.11(ac) MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	9.271 dBm
Limit (<)	24 dBm
Result	Pass

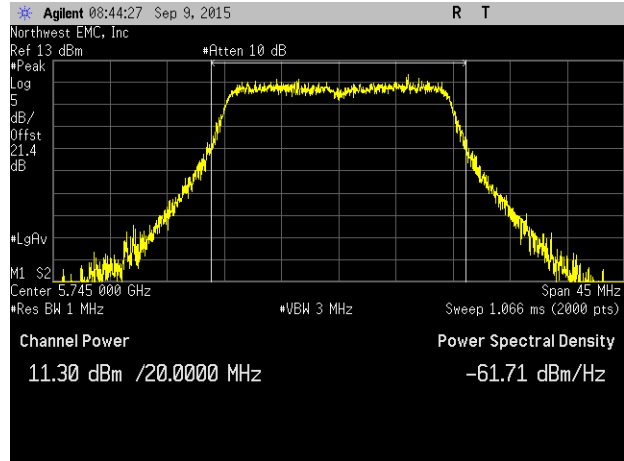
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Chain A, 802.11(ac) MCS8 (256-QAM), 20 MHz, High Channel
5240 MHz



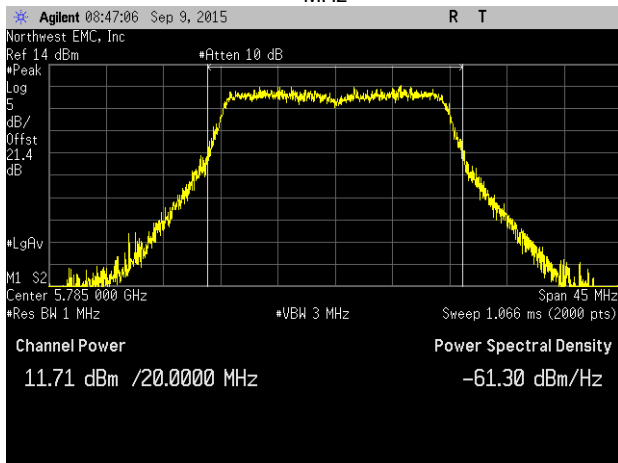
Value	9.859 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(ac) MCS8 (256-QAM), 20 MHz, Low Channel
5745 MHz



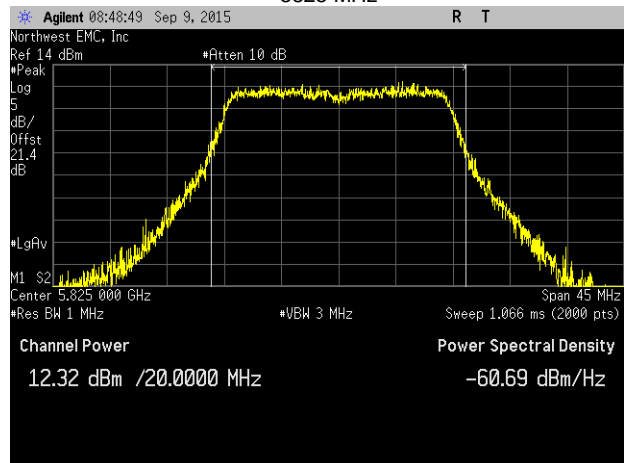
Value	11.299 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) MCS8 (256-QAM), 20 MHz, Mid Channel 5785 MHz



Value	11.711 dBm
Limit (<)	30 dBm
Result	Pass

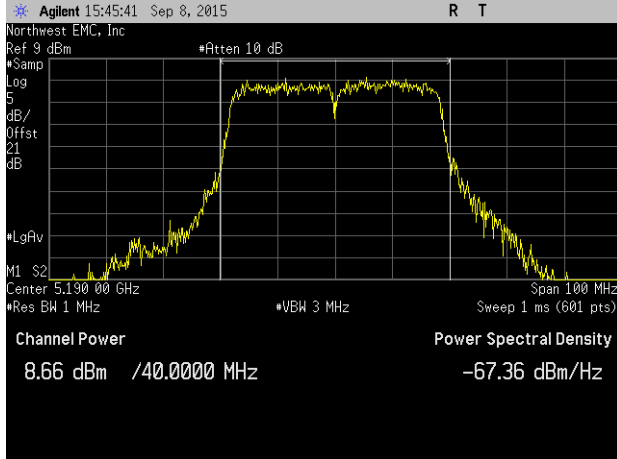
Chain A, 802.11(ac) MCS8 (256-QAM), 20 MHz, High Channel
5825 MHz



Value	12.322 dBm
Limit (<)	30 dBm
Result	Pass

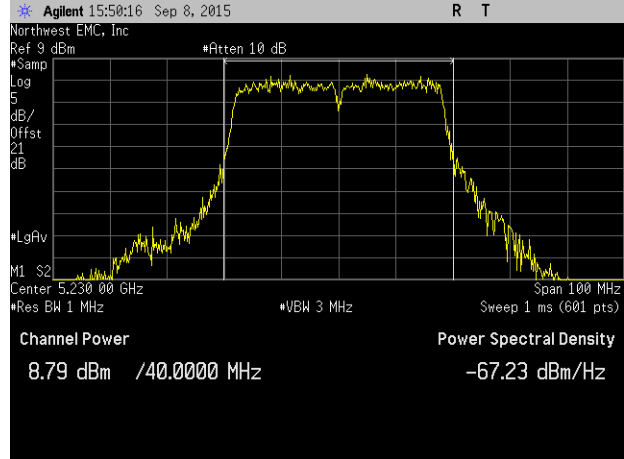
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Chain A, 802.11(ac) MCS9 (256-QAM), 40 MHz, Low Channel
5190 MHz



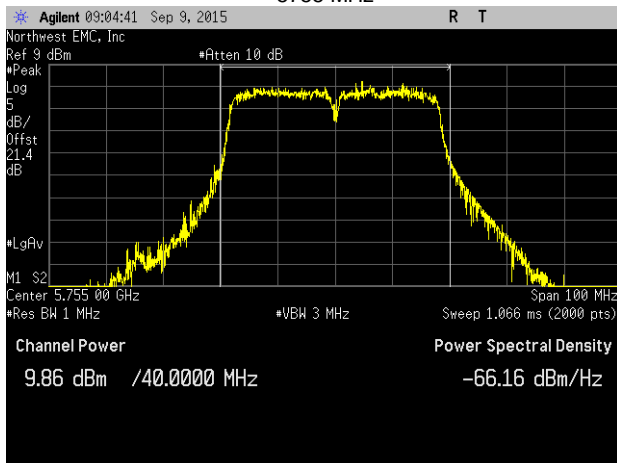
Value	8.657 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(ac) MCS9 (256-QAM), 40 MHz, High Channel
5230 MHz



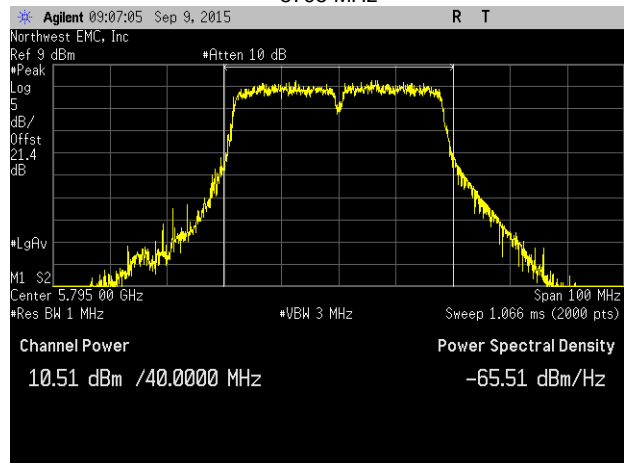
Value	8.792 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(ac) MCS9 (256-QAM), 40 MHz, Low Channel
5755 MHz



Value	9.861 dBm
Limit (<)	30 dBm
Result	Pass

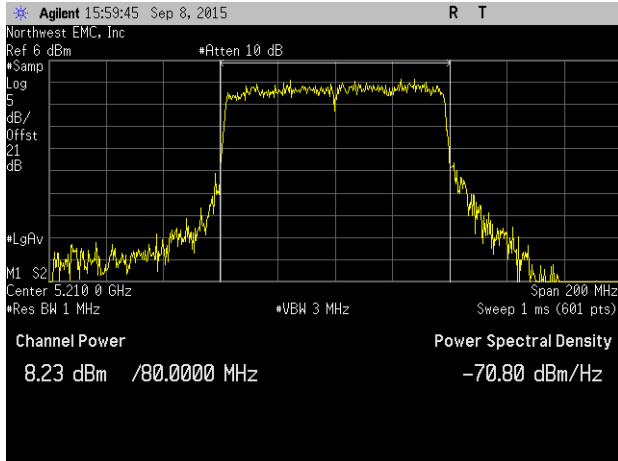
Chain A, 802.11(ac) MCS9 (256-QAM), 40 MHz, High Channel
5795 MHz



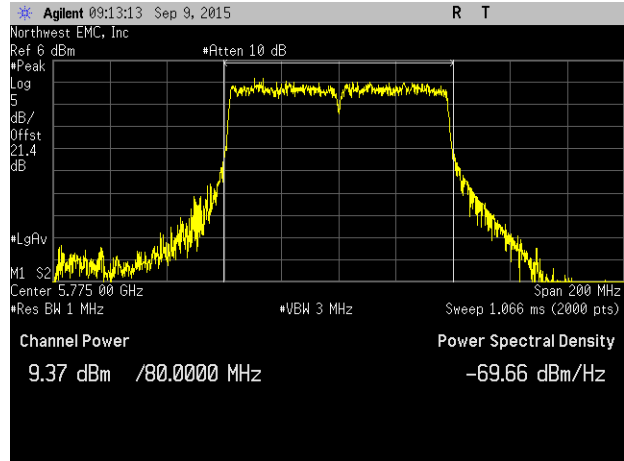
Value	10.512 dBm
Limit (<)	30 dBm
Result	Pass

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Chain A, 802.11(ac) MCS9 (256-QAM), 80 MHz, Low Channel
5210 MHz



Chain A, 802.11(ac) MCS9 (256-QAM), 80 MHz, Low Channel
5775 MHz



Value	8.231 dBm
Limit (<)	24 dBm
Result	Pass

Value	9.367 dBm
Limit (<)	30 dBm
Result	Pass

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Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep) was used for this test.

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

- RBW = 1 MHz, VBW = 3 MHz
- Sample Detector
- The number of points was set to 601. This satisfied the requirement of being $> 2 * \text{span} / \text{RBW}$
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	7/15/2017
Attenuator	Fairview Microwave	SA4018-20	TQY	2/27/2015	2/27/2016
Block - DC	Fairview Microwave	SD3379	AMM	2/27/2015	2/27/2016
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	7/23/2015	7/23/2016

MAXIMUM CONDUCTED OUTPUT POWER



EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/10/15
Customer:	WatchGuard Technologies, Inc.	Temperature:	25.1°C
Attendees:	None	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1015 mbar
Tested By:	Jonathan Kiefer	Job Site:	TX09
Power:	110VAC/60Hz	Configuration:	5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2015	ANSI C63.10:2013

COMMENTS

SISO mode, Chain B (Chain 1).

DEVIATIONS FROM TEST STANDARD

None

RESULTS

	Value	Limit (<)	Result
Chain B			
802.11(a) 6 Mbps			
20 MHz			
Low Channel 5180 MHz	16.544 dBm	24 dBm	Pass
High Channel 5240 MHz	16.968 dBm	24 dBm	Pass
Low Channel 5745 MHz	18.753 dBm	30 dBm	Pass
Mid Channel 5785 MHz	19.156 dBm	30 dBm	Pass
High Channel 5825 MHz	19.12 dBm	30 dBm	Pass
802.11(a) 36 Mbps			
20 MHz			
Low Channel 5180 MHz	15.877 dBm	24 dBm	Pass
High Channel 5240 MHz	16.333 dBm	24 dBm	Pass
Low Channel 5745 MHz	17.828 dBm	30 dBm	Pass
Mid Channel 5785 MHz	18.136 dBm	30 dBm	Pass
High Channel 5825 MHz	18.213 dBm	30 dBm	Pass
802.11(a) 54 Mbps			
20 MHz			
Low Channel 5180 MHz	14.777 dBm	24 dBm	Pass
High Channel 5240 MHz	15.34 dBm	24 dBm	Pass
Low Channel 5745 MHz	16.639 dBm	30 dBm	Pass
Mid Channel 5785 MHz	17.056 dBm	30 dBm	Pass
High Channel 5825 MHz	17.041 dBm	30 dBm	Pass
802.11(n) HT, MCS0			
20 MHz			
Low Channel 5180 MHz	16.356 dBm	24 dBm	Pass
High Channel 5240 MHz	16.877 dBm	24 dBm	Pass
Low Channel 5745 MHz	18.736 dBm	30 dBm	Pass
Mid Channel 5785 MHz	19.148 dBm	30 dBm	Pass
High Channel 5825 MHz	19.14 dBm	30 dBm	Pass
40 MHz			

MAXIMUM CONDUCTED OUTPUT POWER



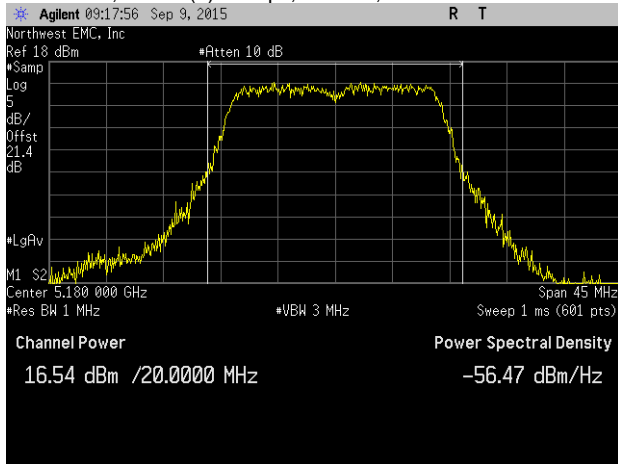
	Value	Limit (<)	Result
Low Channel 5190 MHz	14.826 dBm	24 dBm	Pass
High Channel 5230 MHz	15.106 dBm	24 dBm	Pass
Low Channel 5755 MHz	17.229 dBm	30 dBm	Pass
High Channel 5795 MHz	16.62 dBm	30 dBm	Pass
80 MHz			
Low Channel 5210 MHz	14.175 dBm	24 dBm	Pass
Low Channel 5775 MHz	15.68 dBm	30 dBm	Pass
802.11(n) HT, MCS7			
20 MHz			
Low Channel 5180 MHz	13.19 dBm	24 dBm	Pass
High Channel 5240 MHz	13.687 dBm	24 dBm	Pass
Low Channel 5745 MHz	15.363 dBm	30 dBm	Pass
Mid Channel 5785 MHz	15.88 dBm	30 dBm	Pass
High Channel 5825 MHz	16.106 dBm	30 dBm	Pass
40 MHz			
Low Channel 5190 MHz	12.636 dBm	24 dBm	Pass
High Channel 5230 MHz	13.001 dBm	24 dBm	Pass
Low Channel 5755 MHz	15.007 dBm	30 dBm	Pass
High Channel 5795 MHz	14.472 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)			
20 MHz			
Low Channel 5180 MHz	11.822 dBm	24 dBm	Pass
High Channel 5240 MHz	12.417 dBm	24 dBm	Pass
Low Channel 5745 MHz	14.315 dBm	30 dBm	Pass
Mid Channel 5785 MHz	14.58 dBm	30 dBm	Pass
High Channel 5825 MHz	14.775 dBm	30 dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)			
40 MHz			
Low Channel 5190 MHz	10.271 dBm	24 dBm	Pass
High Channel 5230 MHz	10.583 dBm	24 dBm	Pass
Low Channel 5755 MHz	12.551 dBm	30 dBm	Pass
High Channel 5795 MHz	12.11 dBm	30 dBm	Pass
80 MHz			
Low Channel 5210 MHz	9.98 dBm	24 dBm	Pass
Low Channel 5775 MHz	11.485 dBm	30 dBm	Pass

Jonathan Kieffer

Tested By

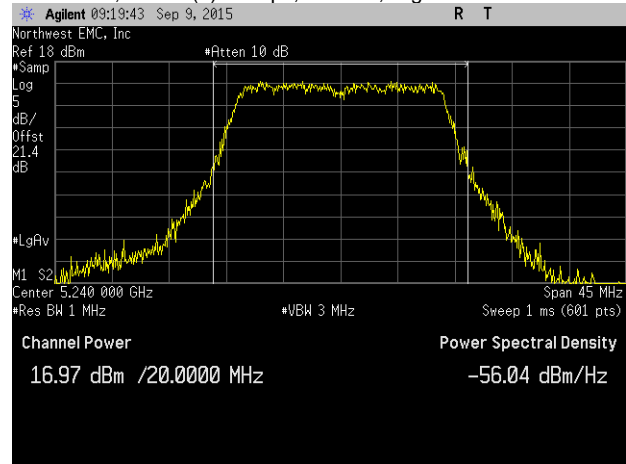
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(a) 6 Mbps, 20 MHz, Low Channel 5180 MHz



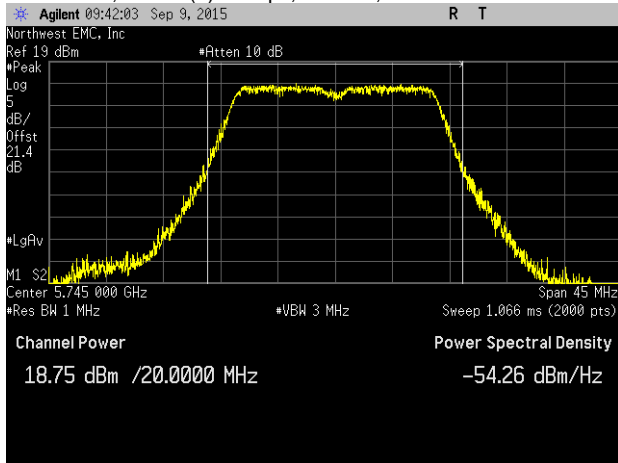
Value	16.544 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(a) 6 Mbps, 20 MHz, High Channel 5240 MHz



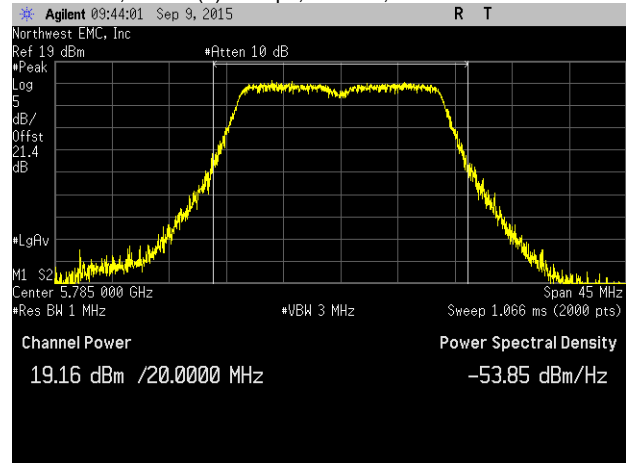
Value	16.968 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(a) 6 Mbps, 20 MHz, Low Channel 5745 MHz



Value	18.753 dBm
Limit (<)	30 dBm
Result	Pass

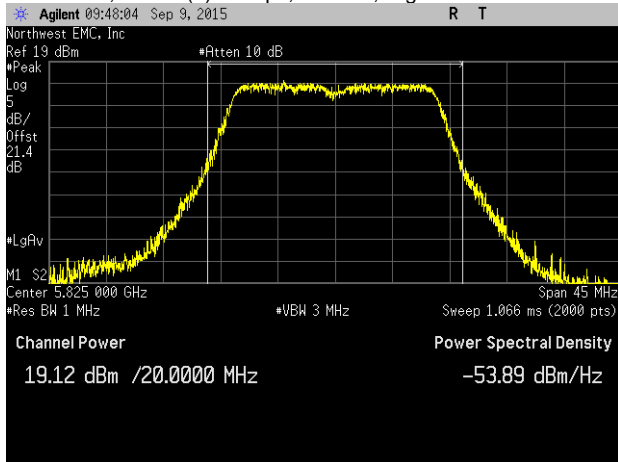
Chain B, 802.11(a) 6 Mbps, 20 MHz, Mid Channel 5785 MHz



Value	19.156 dBm
Limit (<)	30 dBm
Result	Pass

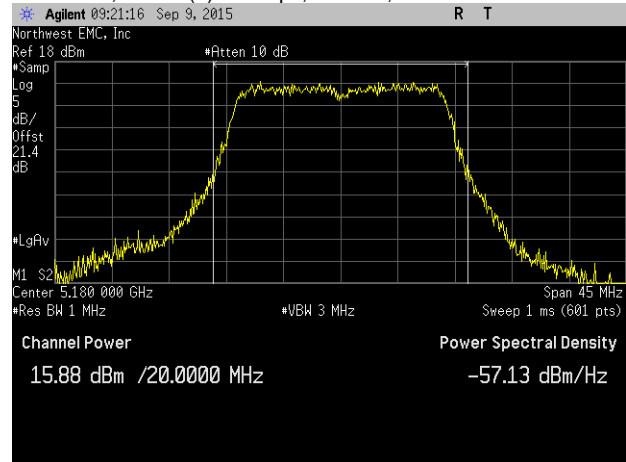
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(a) 6 Mbps, 20 MHz, High Channel 5825 MHz



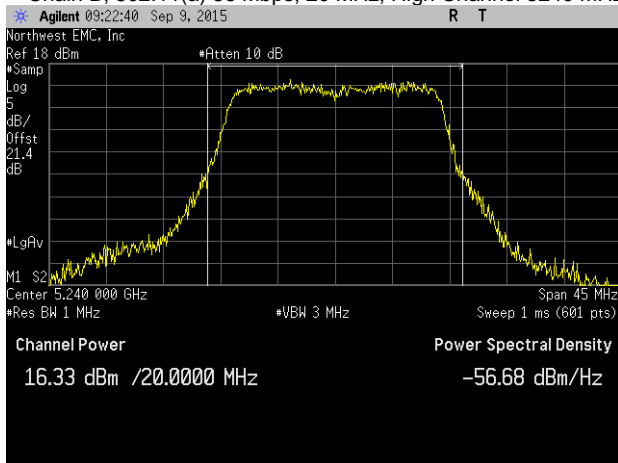
Value	19.12 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(a) 36 Mbps, 20 MHz, Low Channel 5180 MHz



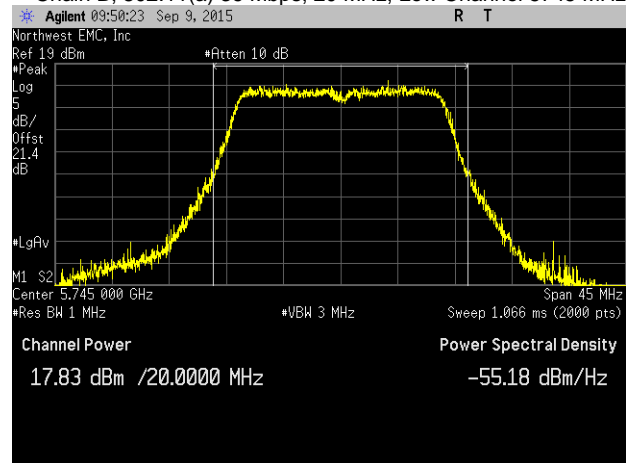
Value	15.877 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(a) 36 Mbps, 20 MHz, High Channel 5240 MHz



Value	16.333 dBm
Limit (<)	24 dBm
Result	Pass

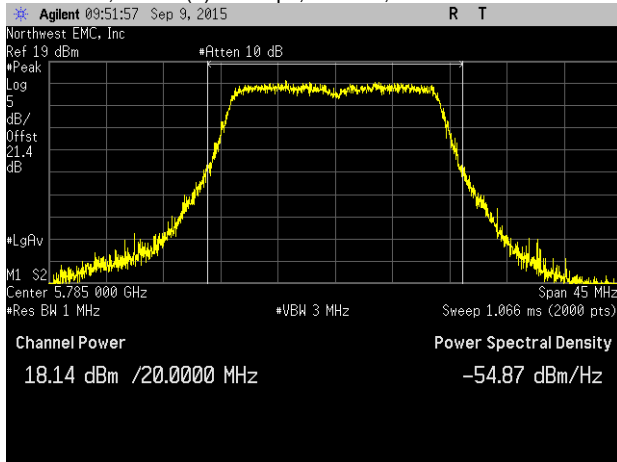
Chain B, 802.11(a) 36 Mbps, 20 MHz, Low Channel 5745 MHz



Value	17.828 dBm
Limit (<)	30 dBm
Result	Pass

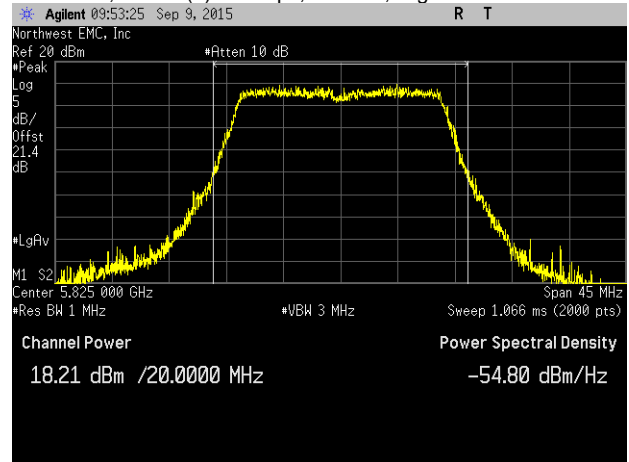
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(a) 36 Mbps, 20 MHz, Mid Channel 5785 MHz



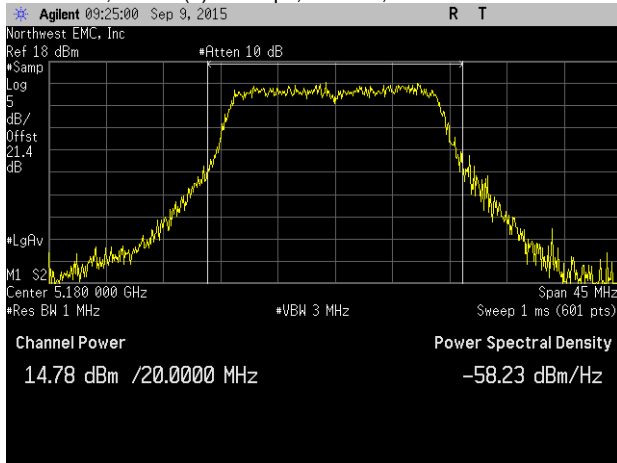
Value	18.136 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(a) 36 Mbps, 20 MHz, High Channel 5825 MHz



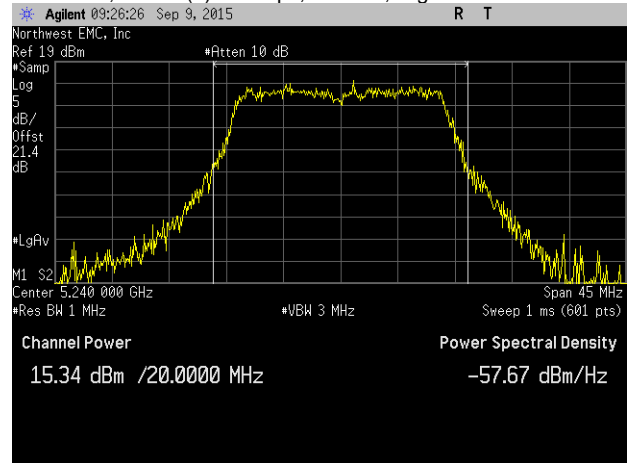
Value	18.213 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(a) 54 Mbps, 20 MHz, Low Channel 5180 MHz



Value	14.777 dBm
Limit (<)	24 dBm
Result	Pass

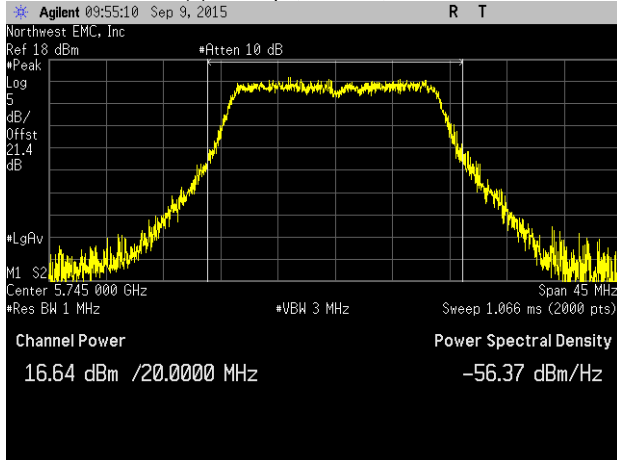
Chain B, 802.11(a) 54 Mbps, 20 MHz, High Channel 5240 MHz



Value	15.34 dBm
Limit (<)	24 dBm
Result	Pass

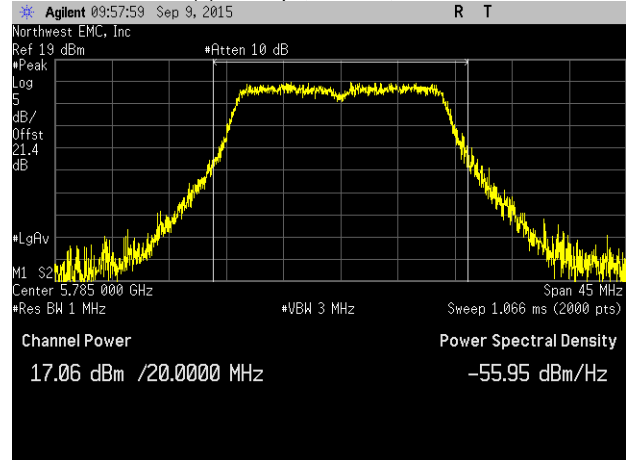
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(a) 54 Mbps, 20 MHz, Low Channel 5745 MHz



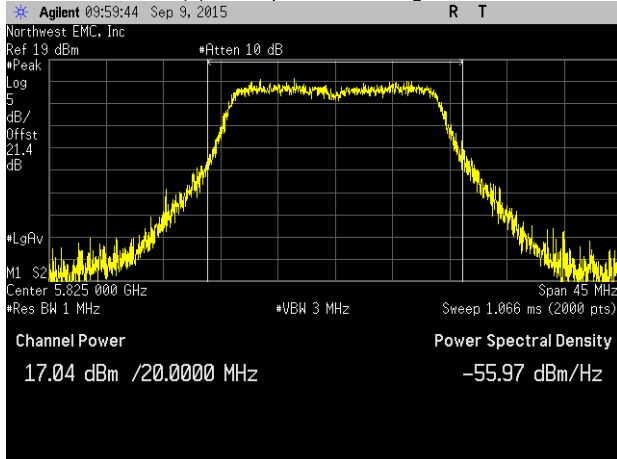
Value	16.639 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(a) 54 Mbps, 20 MHz, Mid Channel 5785 MHz



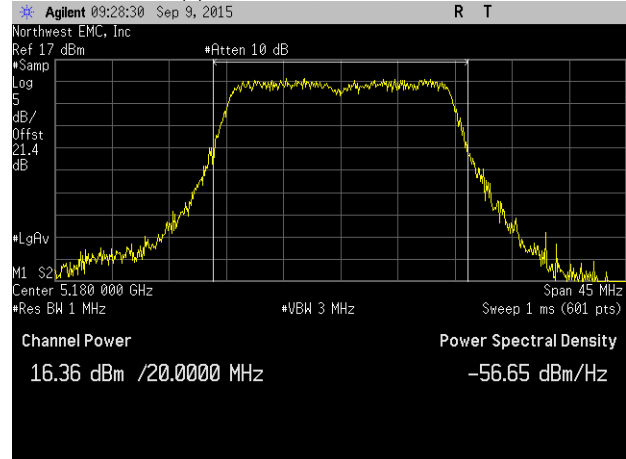
Value	17.056 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(a) 54 Mbps, 20 MHz, High Channel 5825 MHz



Value	17.041 dBm
Limit (<)	30 dBm
Result	Pass

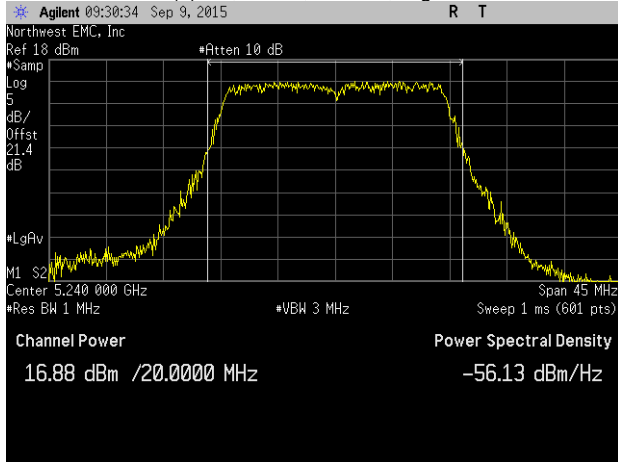
Chain B, 802.11(n) HT, MCS0, 20 MHz, Low Channel 5180 MHz



Value	16.356 dBm
Limit (<)	24 dBm
Result	Pass

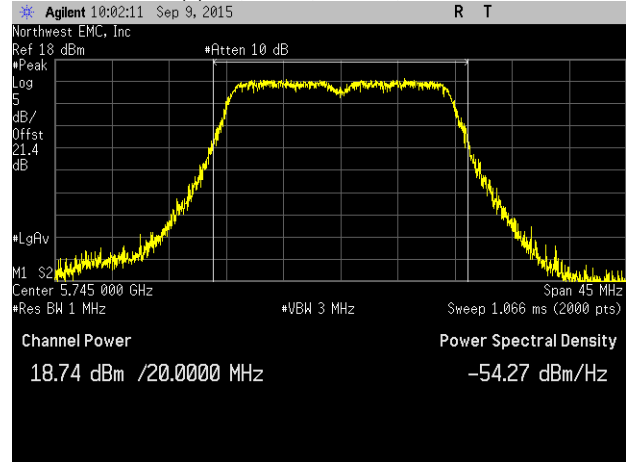
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS0, 20 MHz, High Channel 5240 MHz



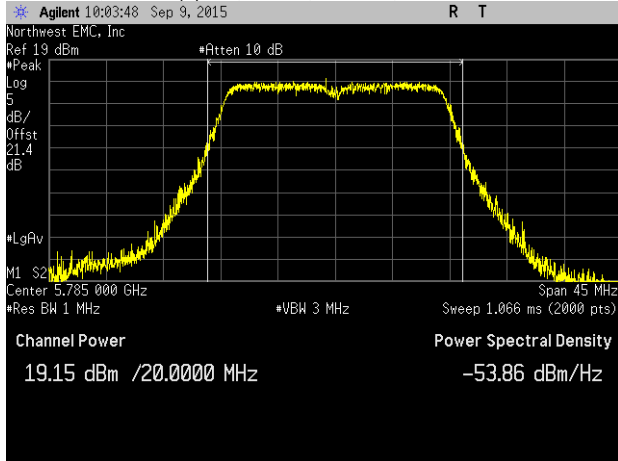
Value	16.877 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS0, 20 MHz, Low Channel 5745 MHz



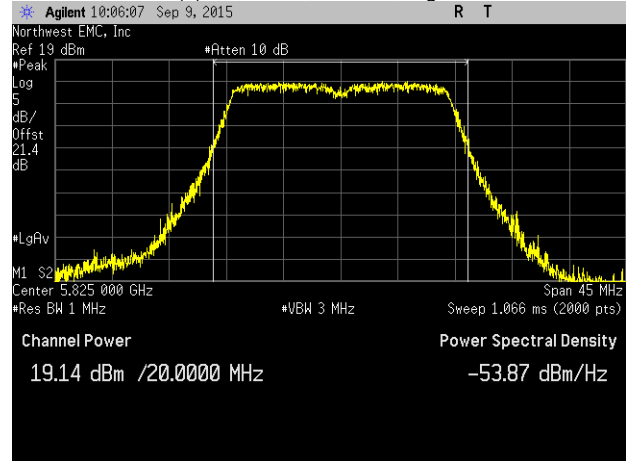
Value	18.736 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS0, 20 MHz, Mid Channel 5785 MHz



Value	19.148 dBm
Limit (<)	30 dBm
Result	Pass

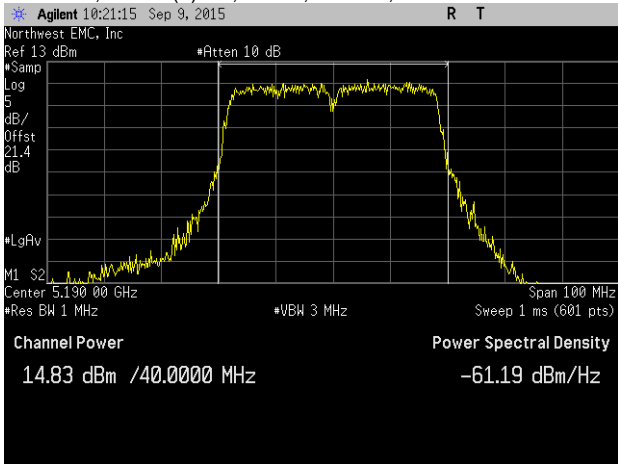
Chain B, 802.11(n) HT, MCS0, 20 MHz, High Channel 5825 MHz



Value	19.14 dBm
Limit (<)	30 dBm
Result	Pass

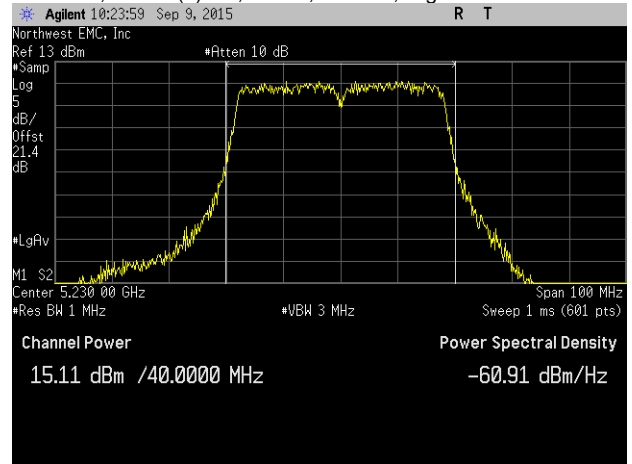
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS0, 40 MHz, Low Channel 5190 MHz



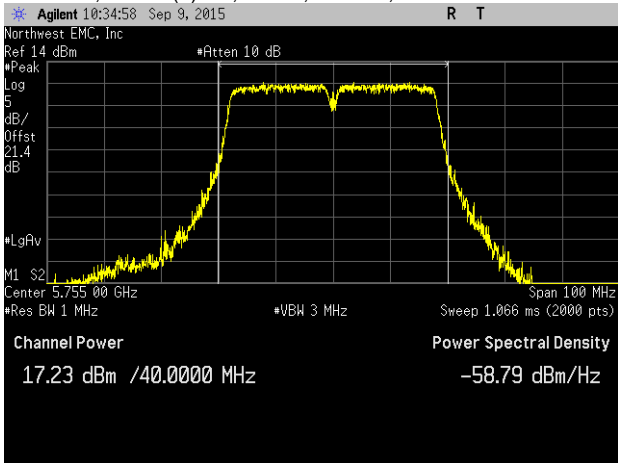
Value	14.826 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS0, 40 MHz, High Channel 5230 MHz



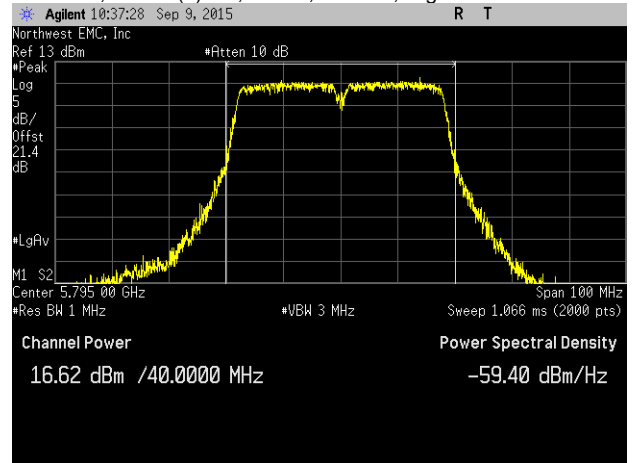
Value	15.106 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS0, 40 MHz, Low Channel 5755 MHz



Value	17.229 dBm
Limit (<)	30 dBm
Result	Pass

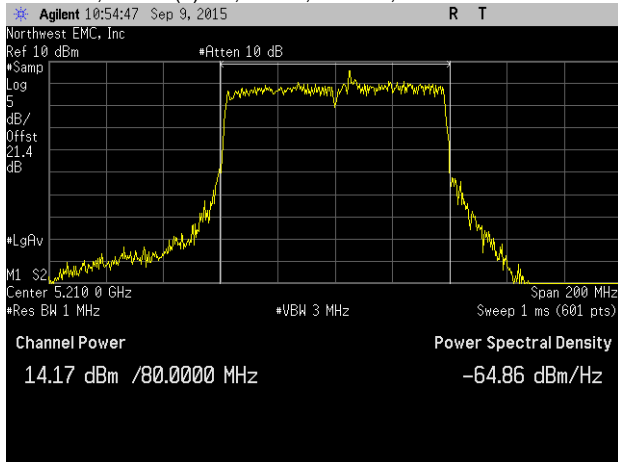
Chain B, 802.11(n) HT, MCS0, 40 MHz, High Channel 5795 MHz



Value	16.62 dBm
Limit (<)	30 dBm
Result	Pass

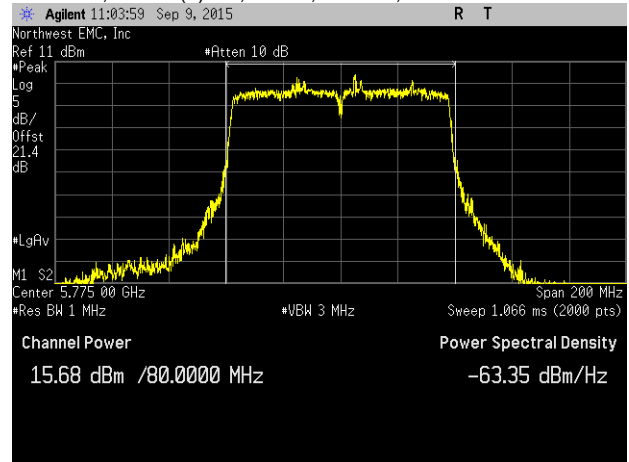
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



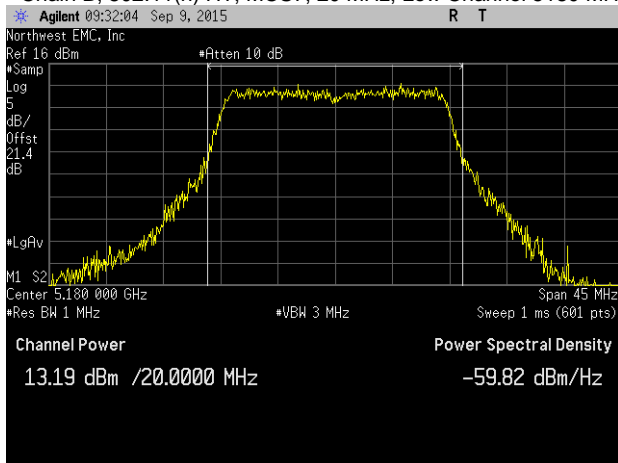
Value	14.175 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



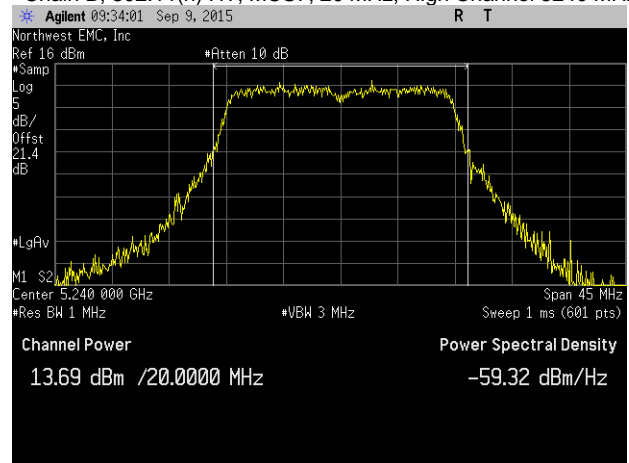
Value	15.68 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS7, 20 MHz, Low Channel 5180 MHz



Value	13.19 dBm
Limit (<)	24 dBm
Result	Pass

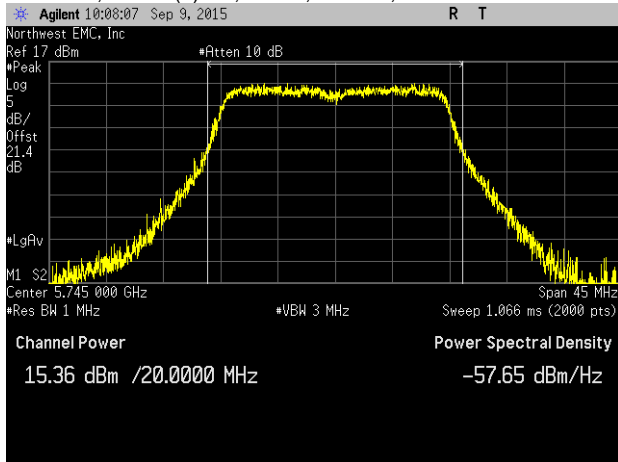
Chain B, 802.11(n) HT, MCS7, 20 MHz, High Channel 5240 MHz



Value	13.687 dBm
Limit (<)	24 dBm
Result	Pass

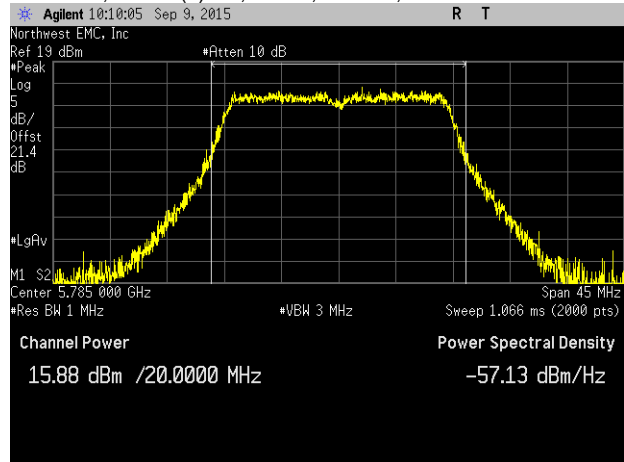
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS7, 20 MHz, Low Channel 5745 MHz



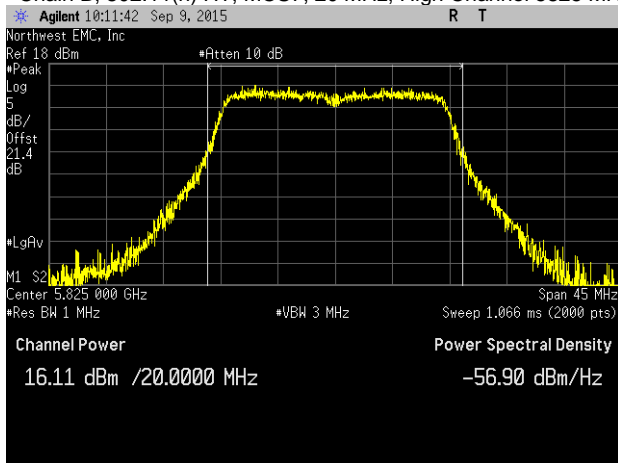
Value	15.363 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS7, 20 MHz, Mid Channel 5785 MHz



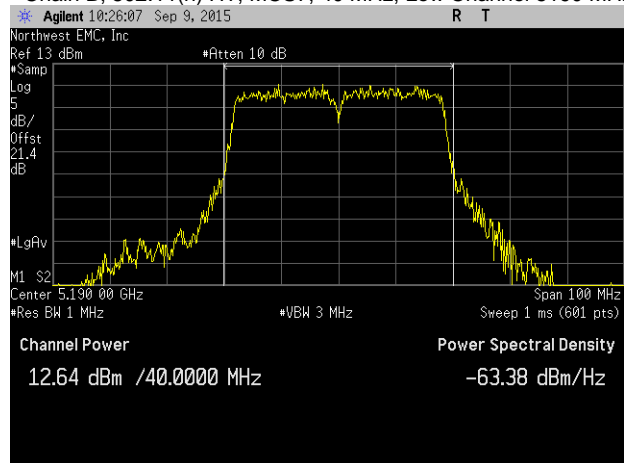
Value	15.88 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS7, 20 MHz, High Channel 5825 MHz



Value	16.106 dBm
Limit (<)	30 dBm
Result	Pass

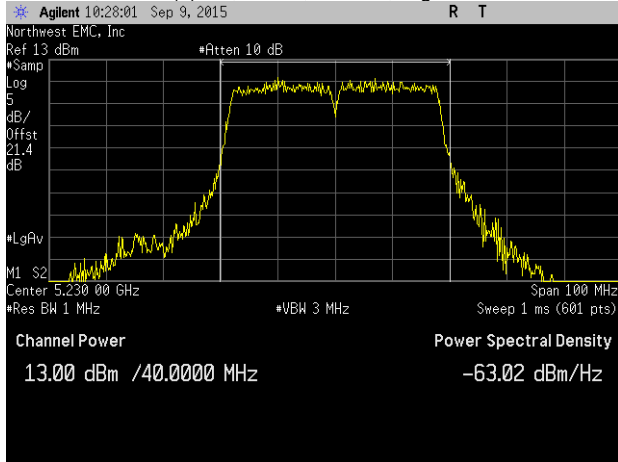
Chain B, 802.11(n) HT, MCS7, 40 MHz, Low Channel 5190 MHz



Value	12.636 dBm
Limit (<)	24 dBm
Result	Pass

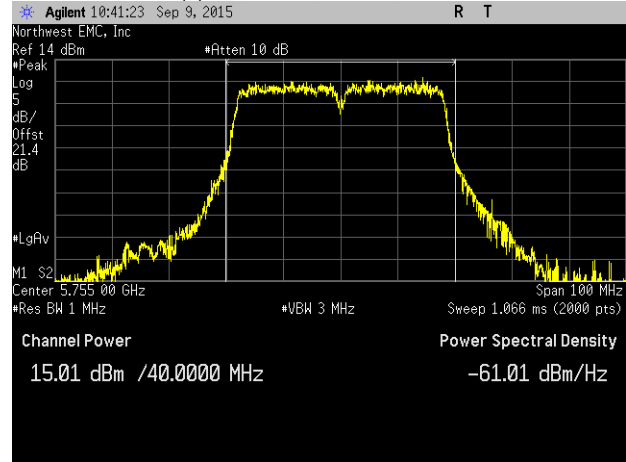
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS7, 40 MHz, High Channel 5230 MHz



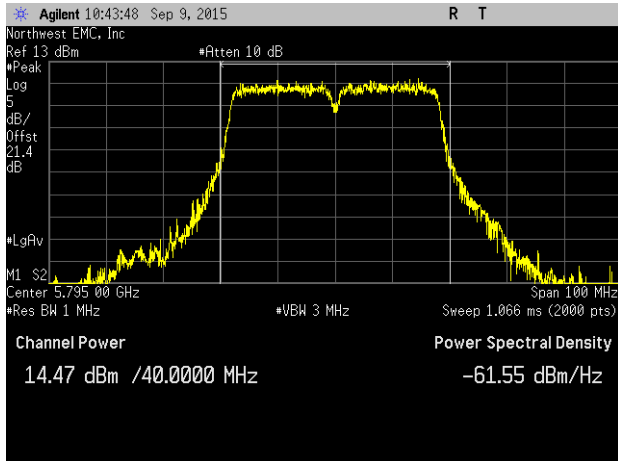
Value	13.001 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS7, 40 MHz, Low Channel 5755 MHz



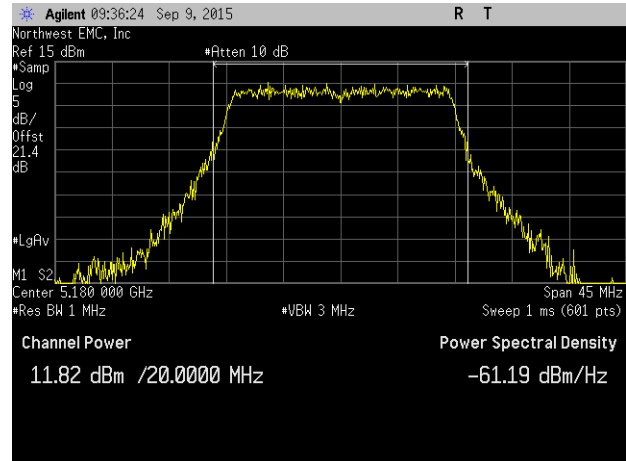
Value	15.007 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS7, 40 MHz, High Channel 5795 MHz



Value	14.472 dBm
Limit (<)	30 dBm
Result	Pass

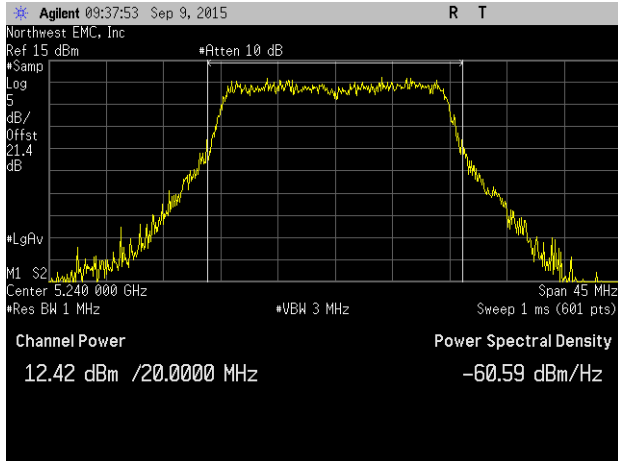
Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	11.822 dBm
Limit (<)	24 dBm
Result	Pass

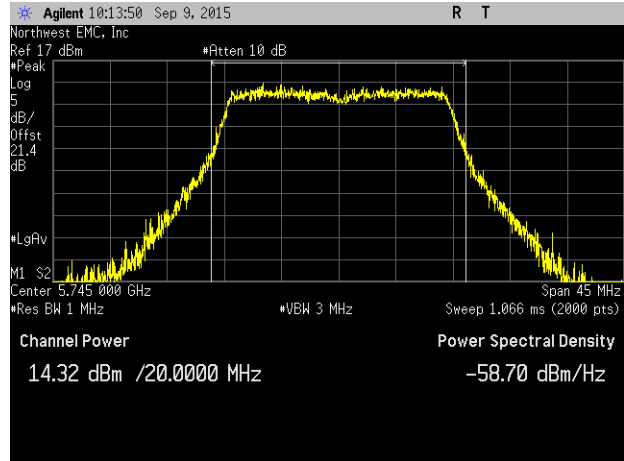
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5240 MHz



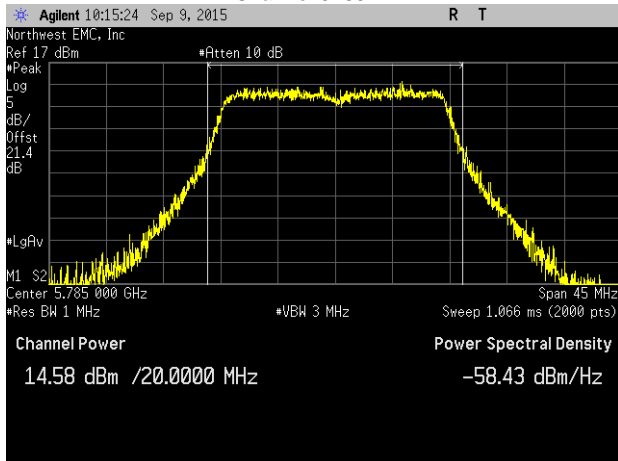
Value	12.417 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low
Channel 5745 MHz



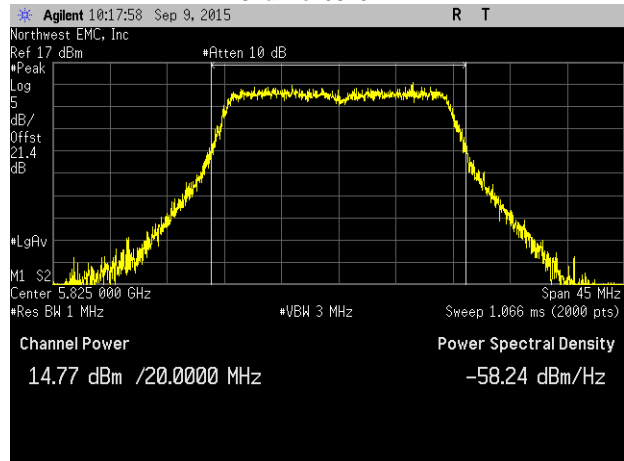
Value	14.315 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid
Channel 5785 MHz



Value	14.58 dBm
Limit (<)	30 dBm
Result	Pass

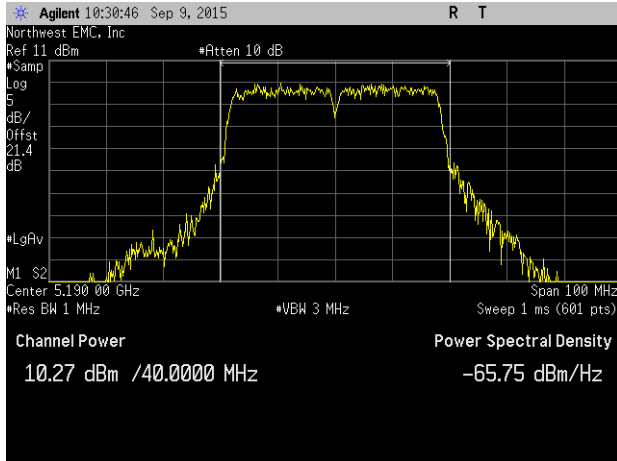
Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5825 MHz



Value	14.775 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



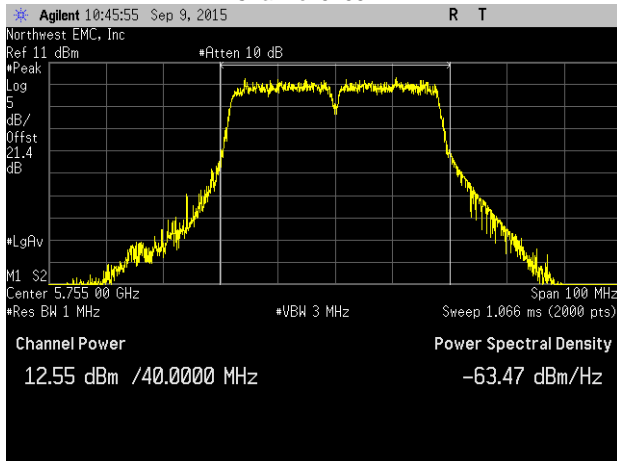
Value	10.271 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



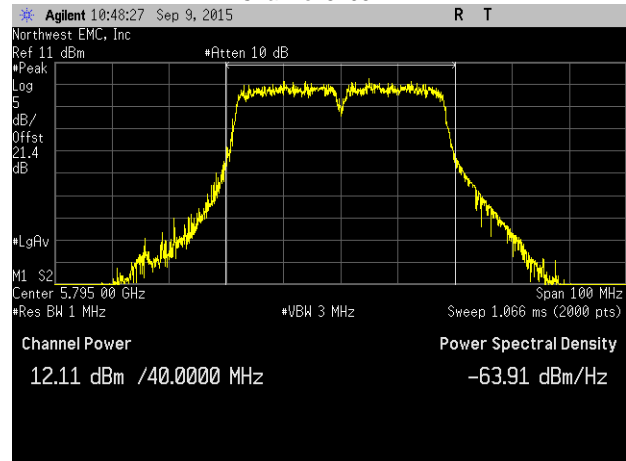
Value	10.583 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5755 MHz



Value	12.551 dBm
Limit (<)	30 dBm
Result	Pass

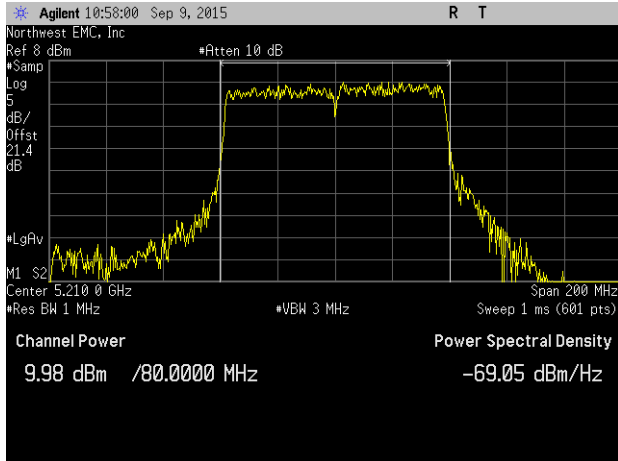
Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5795 MHz



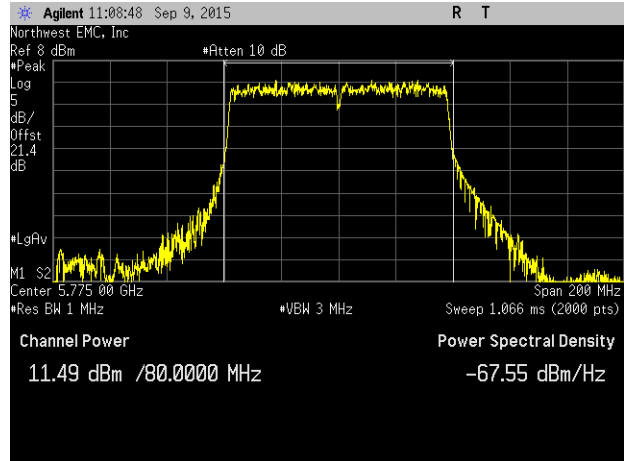
Value	12.11 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5210 MHz



Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



Value	9.98 dBm
Limit (<)	24 dBm
Result	Pass

Value	11.485 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

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 DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section C was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep) was used for this test.

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

- RBW = 1 MHz, VBW = 3 MHz
- Sample Detector
- The number of points was set to 601. This satisfied the requirement of being $> 2 * \text{span} / \text{RBW}$
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	7/23/2015	7/23/2016
Block - DC	Fairview Microwave	SD3379	AMM	2/27/2015	2/27/2016
Attenuator	Fairview Microwave	SA4018-20	TQY	2/27/2015	2/27/2016
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	7/15/2017

MAXIMUM CONDUCTED OUTPUT POWER



EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/10/15
Customer:	WatchGuard Technologies, Inc.	Temperature:	25.1°C
Attendees:	None	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1015 mbar
Tested By:	Jonathan Kiefer	Job Site:	TX09
Power:	110VAC/60Hz	Configuration:	5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2015	ANSI C63.10:2013

COMMENTS

SISO mode, Chain C (Chain 2).

DEVIATIONS FROM TEST STANDARD

None

RESULTS

	Value	Limit (<)	Result
Chain C			
802.11(a) 6 Mbps			
20 MHz			
Low Channel 5180 MHz	14.971 dBm	24 dBm	Pass
High Channel 5240 MHz	15.558 dBm	24 dBm	Pass
Low Channel 5745 MHz	16.373 dBm	30 dBm	Pass
Mid Channel 5785 MHz	17.295 dBm	30 dBm	Pass
High Channel 5825 MHz	17.031 dBm	30 dBm	Pass
802.11(a) 36 Mbps			
20 MHz			
Low Channel 5180 MHz	14.243 dBm	24 dBm	Pass
High Channel 5240 MHz	14.761 dBm	24 dBm	Pass
Low Channel 5745 MHz	16.005 dBm	30 dBm	Pass
Mid Channel 5785 MHz	16.119 dBm	30 dBm	Pass
High Channel 5825 MHz	16.677 dBm	30 dBm	Pass
802.11(a) 54 Mbps			
20 MHz			
Low Channel 5180 MHz	13.445 dBm	24 dBm	Pass
High Channel 5240 MHz	14.057 dBm	24 dBm	Pass
Low Channel 5745 MHz	14.737 dBm	30 dBm	Pass
Mid Channel 5785 MHz	15.527 dBm	30 dBm	Pass
High Channel 5825 MHz	16.23 dBm	30 dBm	Pass
802.11(n) HT, MCS0			
20 MHz			
Low Channel 5180 MHz	14.763 dBm	24 dBm	Pass
High Channel 5240 MHz	15.548 dBm	24 dBm	Pass
Low Channel 5745 MHz	16.613 dBm	30 dBm	Pass
Mid Channel 5785 MHz	17.008 dBm	30 dBm	Pass
High Channel 5825 MHz	16.831 dBm	30 dBm	Pass
40 MHz			

MAXIMUM CONDUCTED OUTPUT POWER



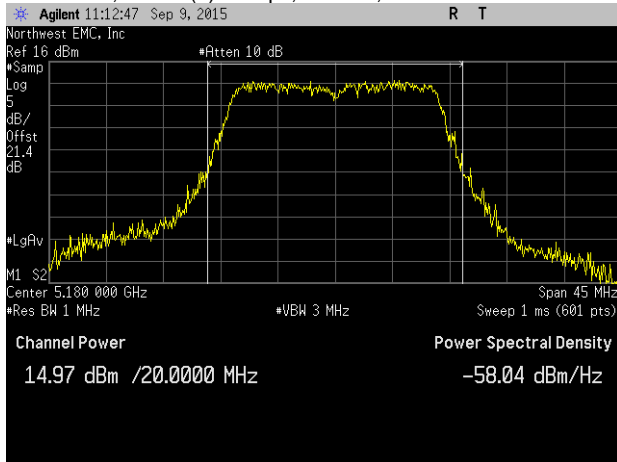
	Value	Limit (<)	Result
Low Channel 5190 MHz	14.052 dBm	24 dBm	Pass
High Channel 5230 MHz	14.443 dBm	24 dBm	Pass
Low Channel 5755 MHz	15.912 dBm	30 dBm	Pass
High Channel 5795 MHz	16.815 dBm	30 dBm	Pass
80 MHz			
Low Channel 5210 MHz	13.174 dBm	24 dBm	Pass
Low Channel 5775 MHz	15.24 dBm	30 dBm	Pass
802.11(n) HT, MCS7			
20 MHz			
Low Channel 5180 MHz	12.344 dBm	24 dBm	Pass
High Channel 5240 MHz	12.943 dBm	24 dBm	Pass
Low Channel 5745 MHz	13.82 dBm	30 dBm	Pass
Mid Channel 5785 MHz	14.662 dBm	30 dBm	Pass
High Channel 5825 MHz	15.057 dBm	30 dBm	Pass
40 MHz			
Low Channel 5190 MHz	11.724 dBm	24 dBm	Pass
High Channel 5230 MHz	12.055 dBm	24 dBm	Pass
Low Channel 5755 MHz	13.512 dBm	30 dBm	Pass
High Channel 5795 MHz	14.364 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)			
20 MHz			
Low Channel 5180 MHz	10.891 dBm	24 dBm	Pass
High Channel 5240 MHz	11.731 dBm	24 dBm	Pass
Low Channel 5745 MHz	12.87 dBm	30 dBm	Pass
Mid Channel 5785 MHz	13.051 dBm	30 dBm	Pass
High Channel 5825 MHz	13.654 dBm	30 dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)			
40 MHz			
Low Channel 5190 MHz	9.296 dBm	24 dBm	Pass
High Channel 5230 MHz	9.699 dBm	24 dBm	Pass
Low Channel 5755 MHz	11.086 dBm	30 dBm	Pass
High Channel 5795 MHz	12.263 dBm	30 dBm	Pass
80 MHz			
Low Channel 5210 MHz	8.921 dBm	24 dBm	Pass
Low Channel 5775 MHz	11.167 dBm	30 dBm	Pass

Jonathan Kiefer

Tested By

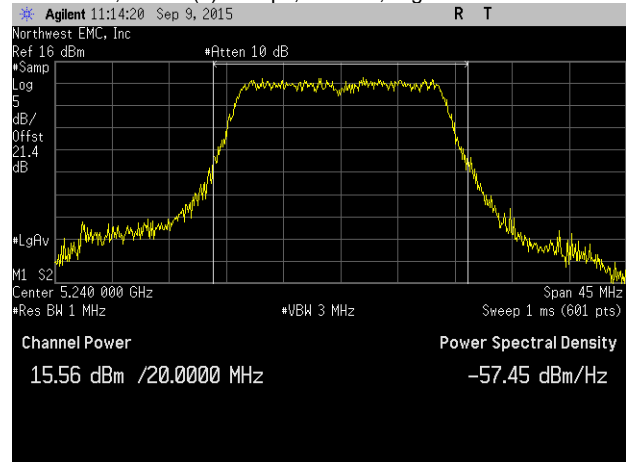
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(a) 6 Mbps, 20 MHz, Low Channel 5180 MHz



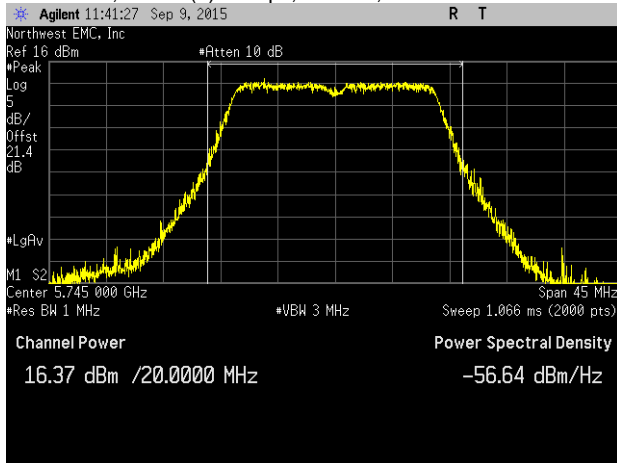
Value	14.971 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(a) 6 Mbps, 20 MHz, High Channel 5240 MHz



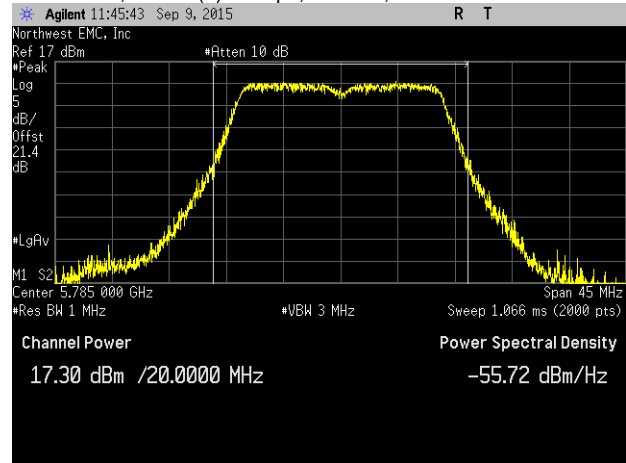
Value	15.558 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(a) 6 Mbps, 20 MHz, Low Channel 5745 MHz



Value	16.373 dBm
Limit (<)	30 dBm
Result	Pass

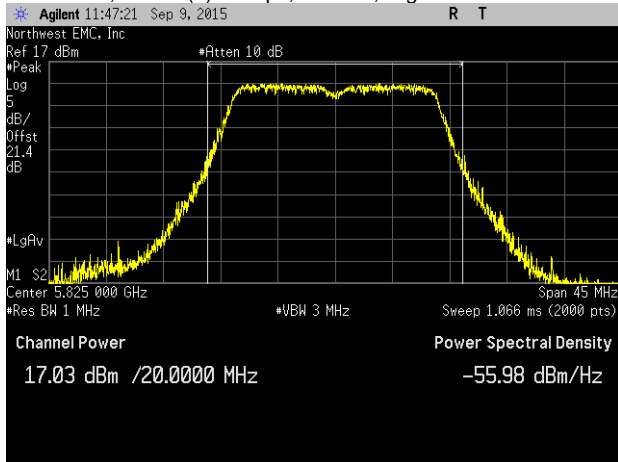
Chain C, 802.11(a) 6 Mbps, 20 MHz, Mid Channel 5785 MHz



Value	17.295 dBm
Limit (<)	30 dBm
Result	Pass

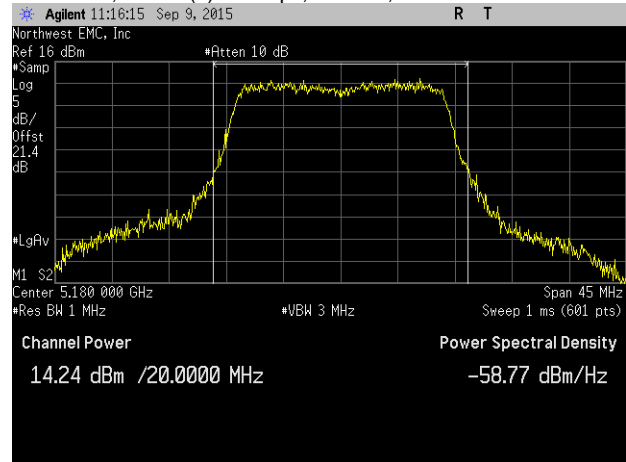
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(a) 6 Mbps, 20 MHz, High Channel 5825 MHz



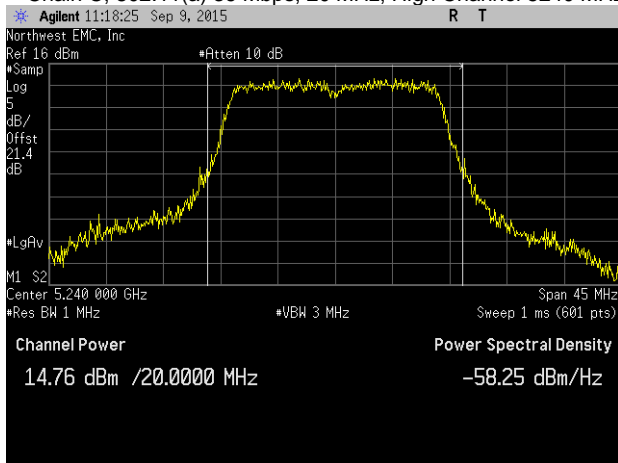
Value	17.031 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(a) 36 Mbps, 20 MHz, Low Channel 5180 MHz



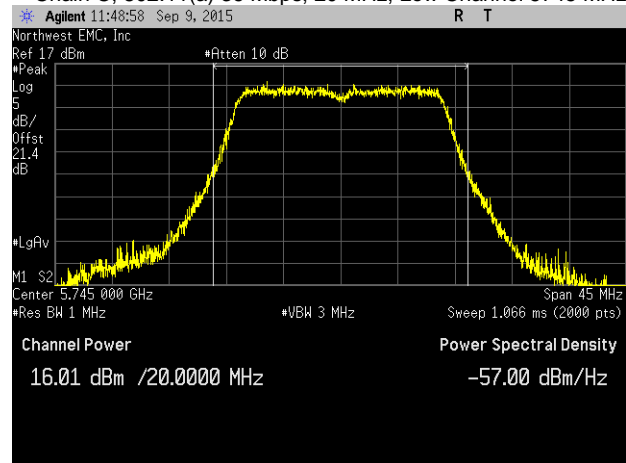
Value	14.243 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(a) 36 Mbps, 20 MHz, High Channel 5240 MHz



Value	14.761 dBm
Limit (<)	24 dBm
Result	Pass

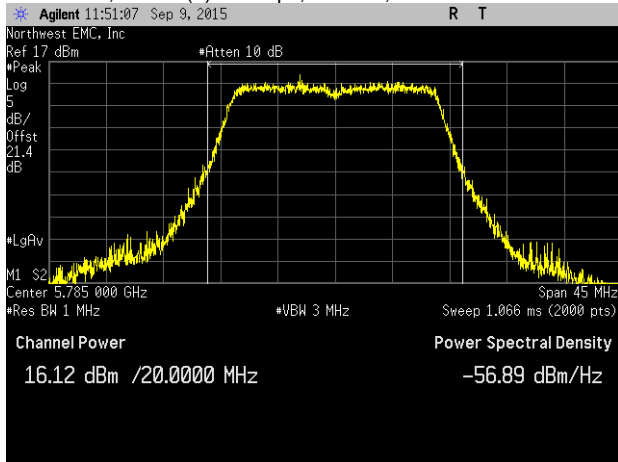
Chain C, 802.11(a) 36 Mbps, 20 MHz, Low Channel 5745 MHz



Value	16.005 dBm
Limit (<)	30 dBm
Result	Pass

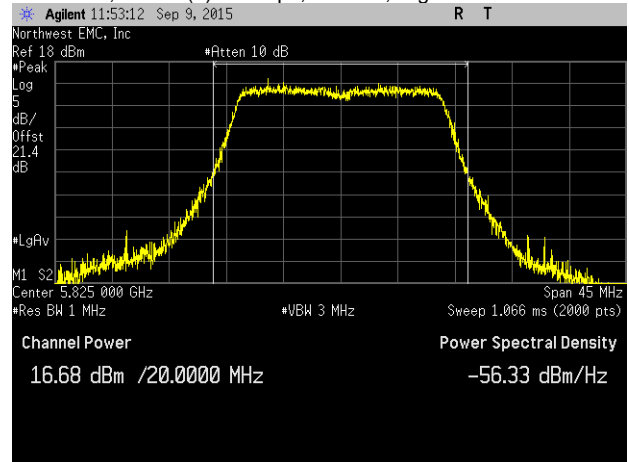
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(a) 36 Mbps, 20 MHz, Mid Channel 5785 MHz



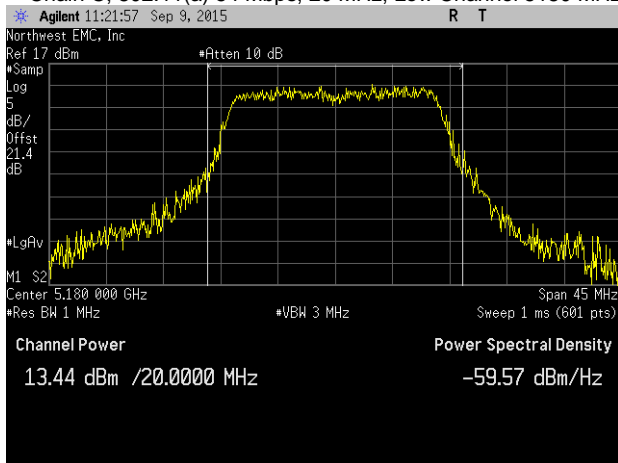
Value	16.119 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(a) 36 Mbps, 20 MHz, High Channel 5825 MHz



Value	16.677 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(a) 54 Mbps, 20 MHz, Low Channel 5180 MHz



Value	13.445 dBm
Limit (<)	24 dBm
Result	Pass

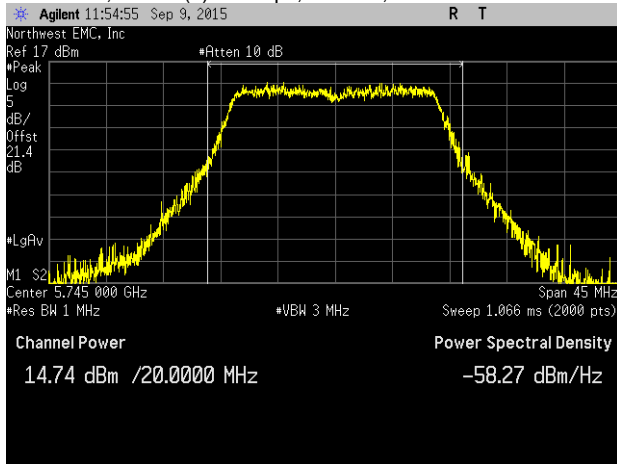
Chain C, 802.11(a) 54 Mbps, 20 MHz, High Channel 5240 MHz



Value	14.057 dBm
Limit (<)	24 dBm
Result	Pass

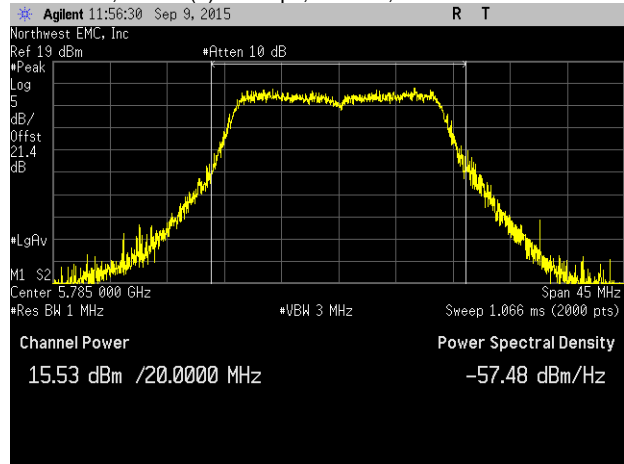
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(a) 54 Mbps, 20 MHz, Low Channel 5745 MHz



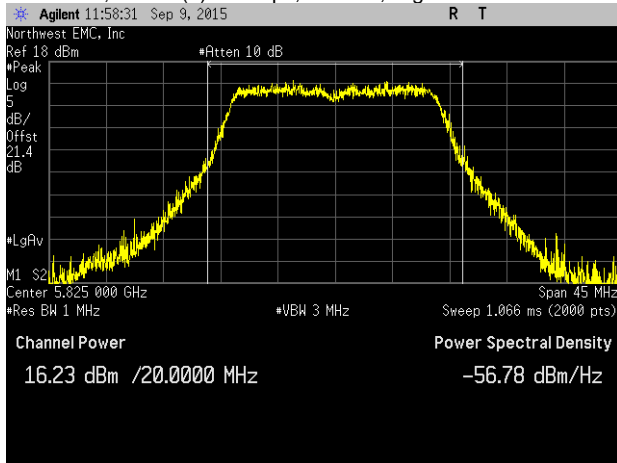
Value	14.737 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(a) 54 Mbps, 20 MHz, Mid Channel 5785 MHz



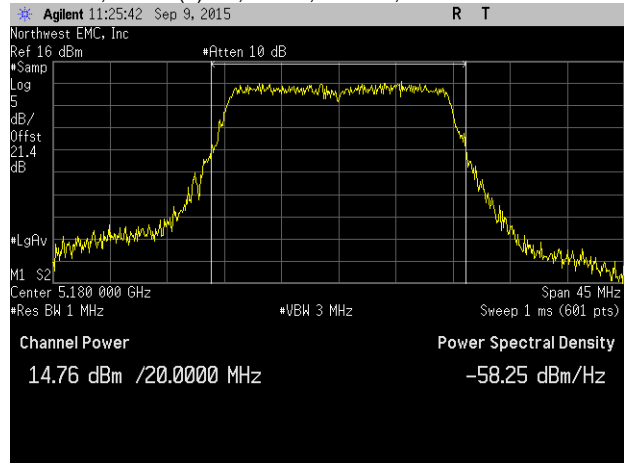
Value	15.527 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(a) 54 Mbps, 20 MHz, High Channel 5825 MHz



Value	16.23 dBm
Limit (<)	30 dBm
Result	Pass

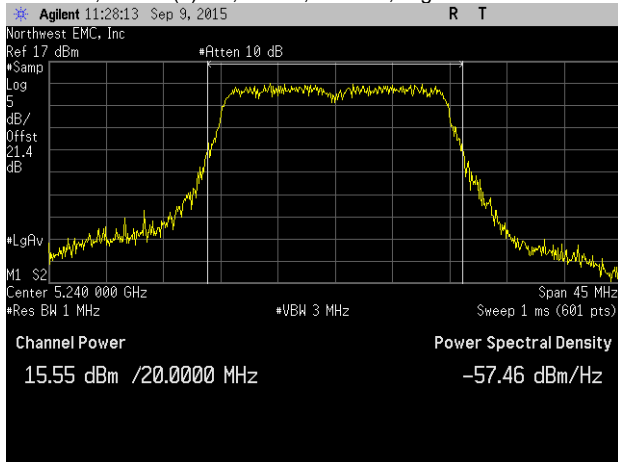
Chain C, 802.11(n) HT, MCS0, 20 MHz, Low Channel 5180 MHz



Value	14.763 dBm
Limit (<)	24 dBm
Result	Pass

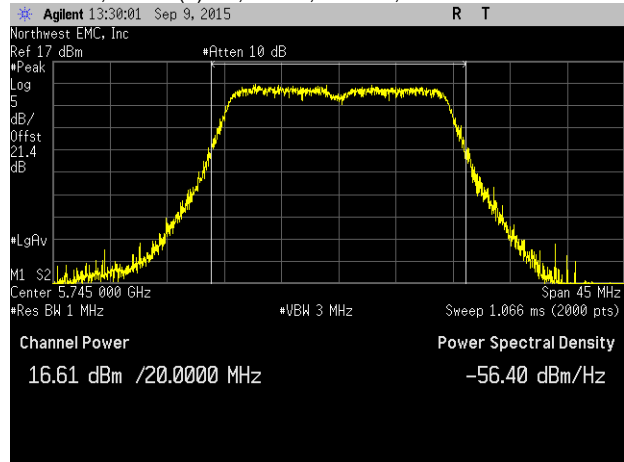
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS0, 20 MHz, High Channel 5240 MHz



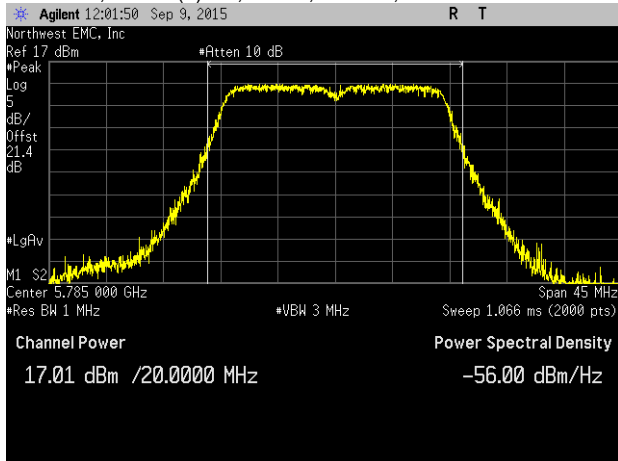
Value	15.548 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS0, 20 MHz, Low Channel 5745 MHz



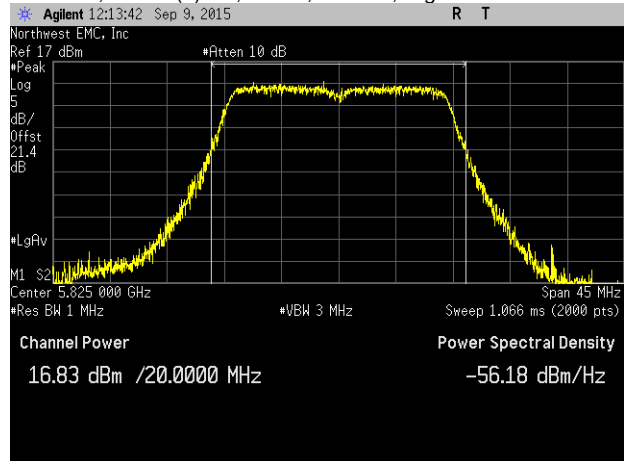
Value	16.613 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS0, 20 MHz, Mid Channel 5785 MHz



Value	17.008 dBm
Limit (<)	30 dBm
Result	Pass

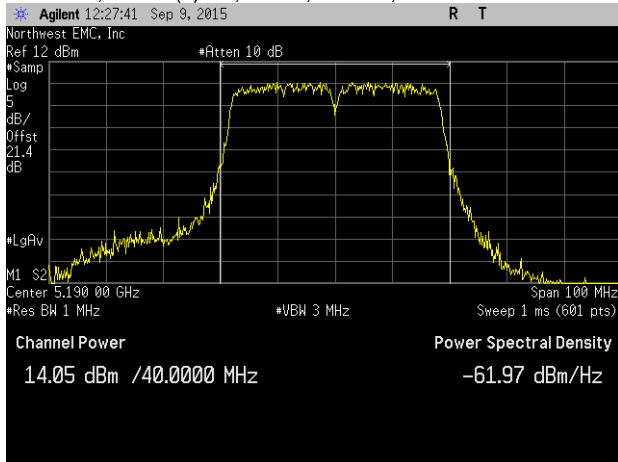
Chain C, 802.11(n) HT, MCS0, 20 MHz, High Channel 5825 MHz



Value	16.831 dBm
Limit (<)	30 dBm
Result	Pass

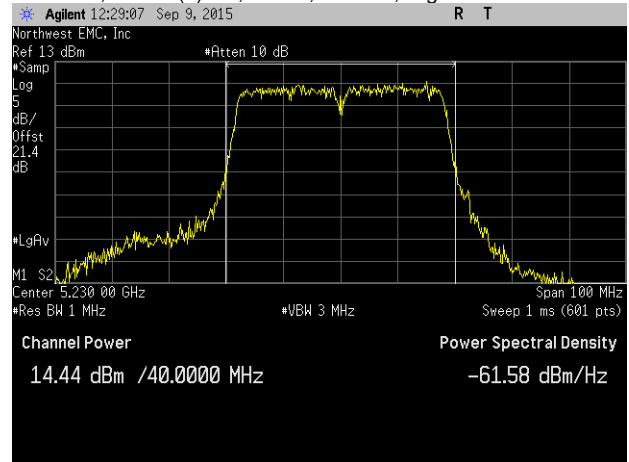
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS0, 40 MHz, Low Channel 5190 MHz



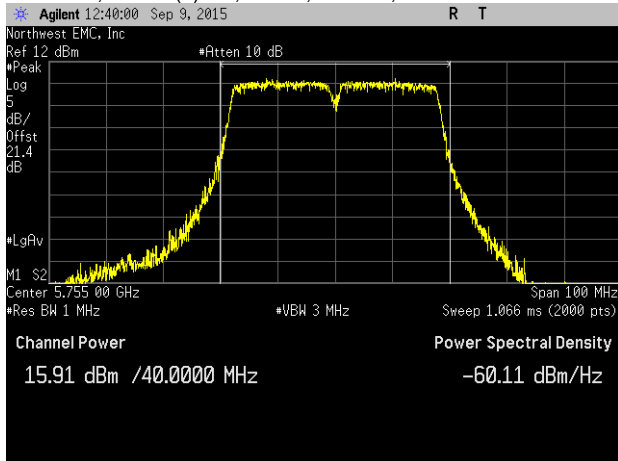
Value	14.052 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS0, 40 MHz, High Channel 5230 MHz



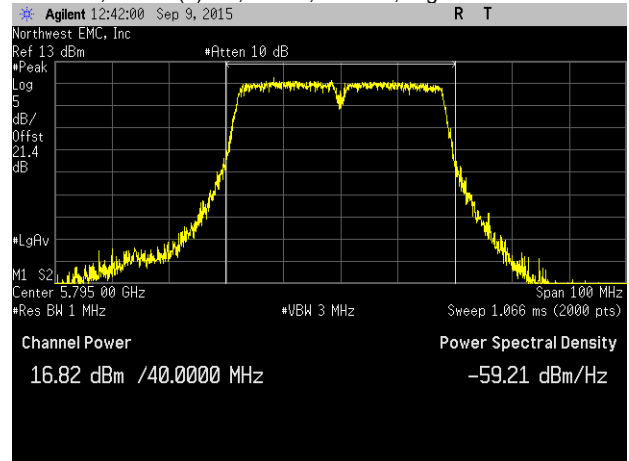
Value	14.443 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS0, 40 MHz, Low Channel 5755 MHz



Value	15.912 dBm
Limit (<)	30 dBm
Result	Pass

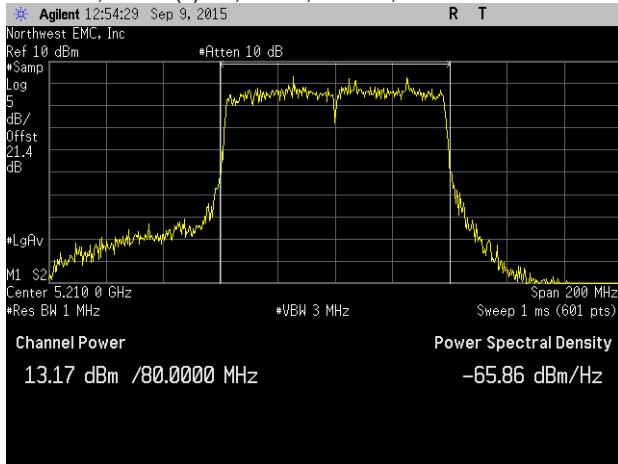
Chain C, 802.11(n) HT, MCS0, 40 MHz, High Channel 5795 MHz



Value	16.815 dBm
Limit (<)	30 dBm
Result	Pass

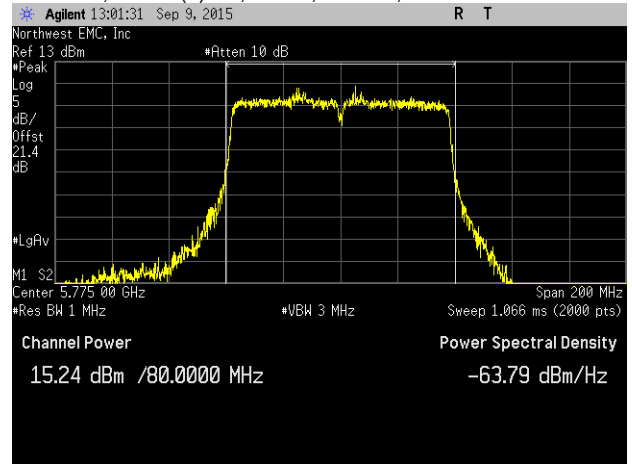
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



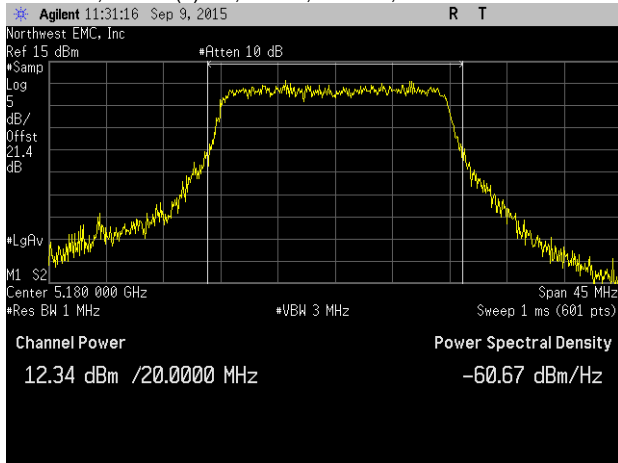
Value	13.174 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



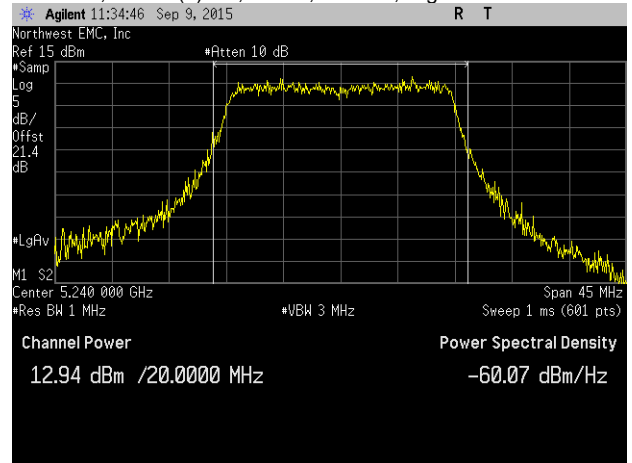
Value	15.24 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS7, 20 MHz, Low Channel 5180 MHz



Value	12.344 dBm
Limit (<)	24 dBm
Result	Pass

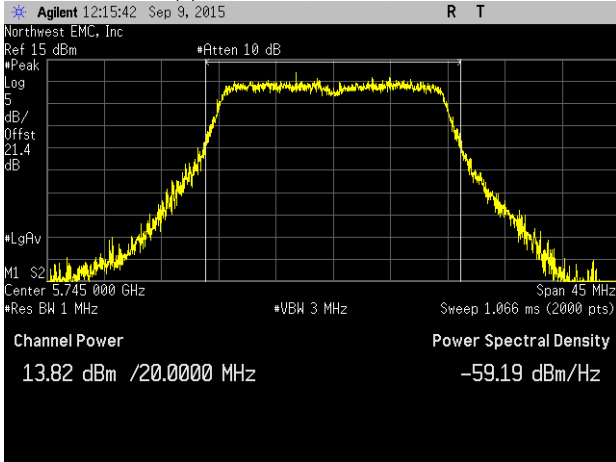
Chain C, 802.11(n) HT, MCS7, 20 MHz, High Channel 5240 MHz



Value	12.943 dBm
Limit (<)	24 dBm
Result	Pass

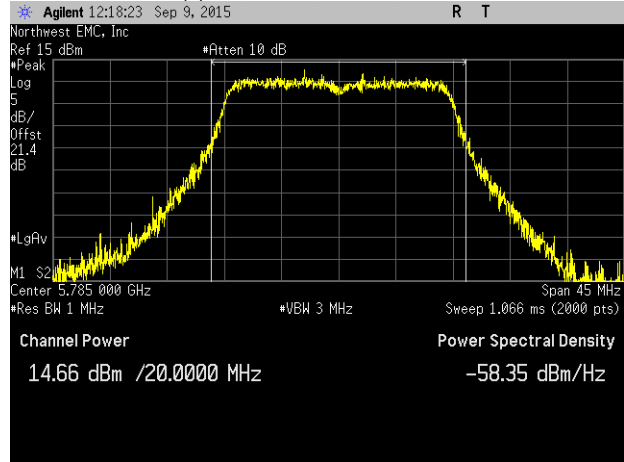
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS7, 20 MHz, Low Channel 5745 MHz



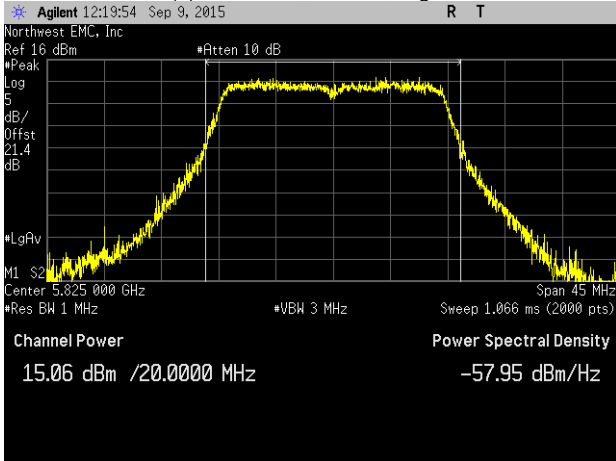
Value	13.82 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS7, 20 MHz, Mid Channel 5785 MHz



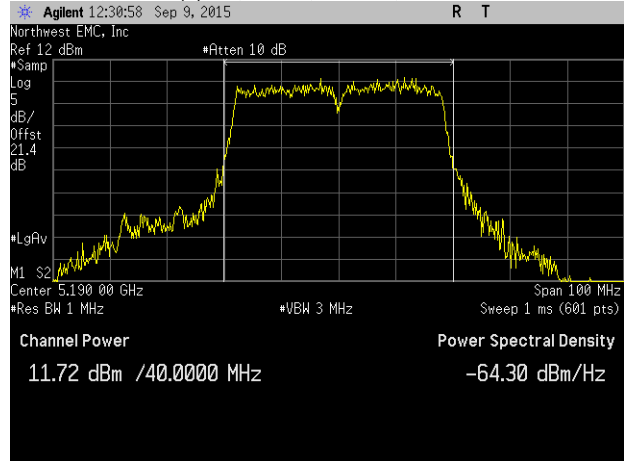
Value	14.662 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS7, 20 MHz, High Channel 5825 MHz



Value	15.057 dBm
Limit (<)	30 dBm
Result	Pass

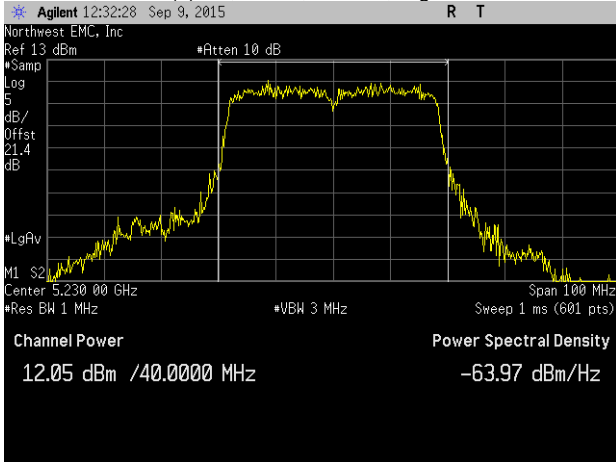
Chain C, 802.11(n) HT, MCS7, 40 MHz, Low Channel 5190 MHz



Value	11.724 dBm
Limit (<)	24 dBm
Result	Pass

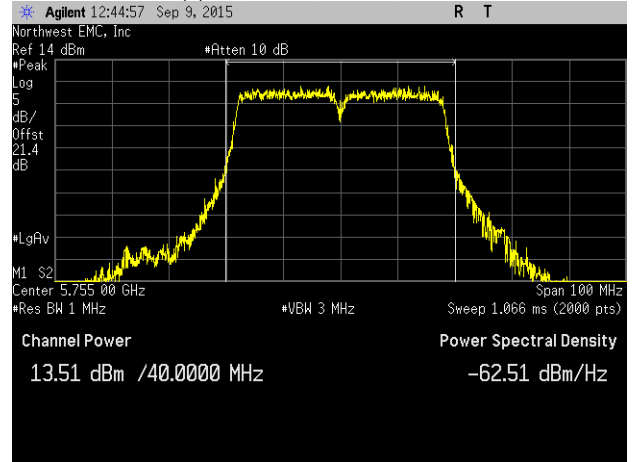
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS7, 40 MHz, High Channel 5230 MHz



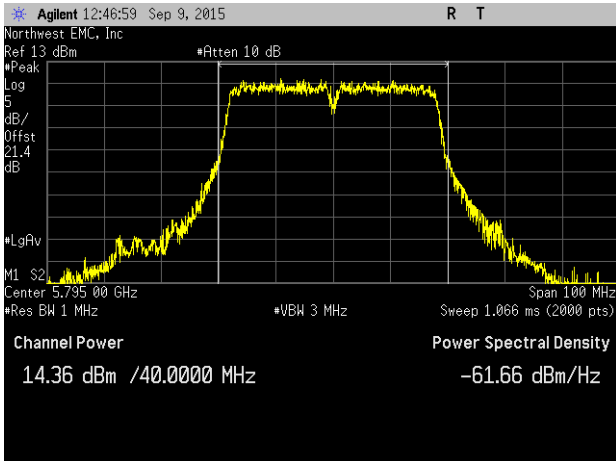
Value	12.055 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS7, 40 MHz, Low Channel 5755 MHz



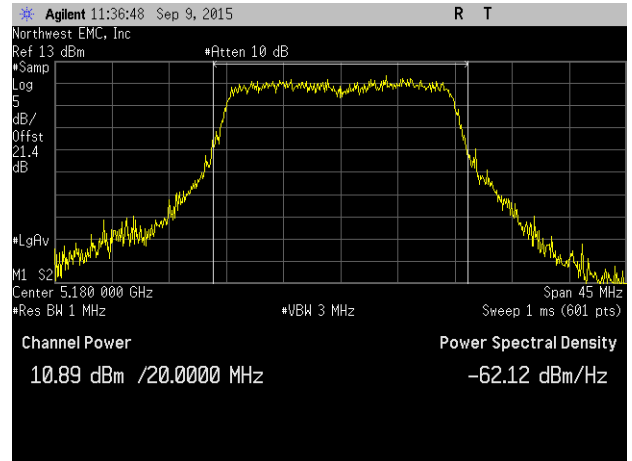
Value	13.512 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS7, 40 MHz, High Channel 5795 MHz



Value	14.364 dBm
Limit (<)	30 dBm
Result	Pass

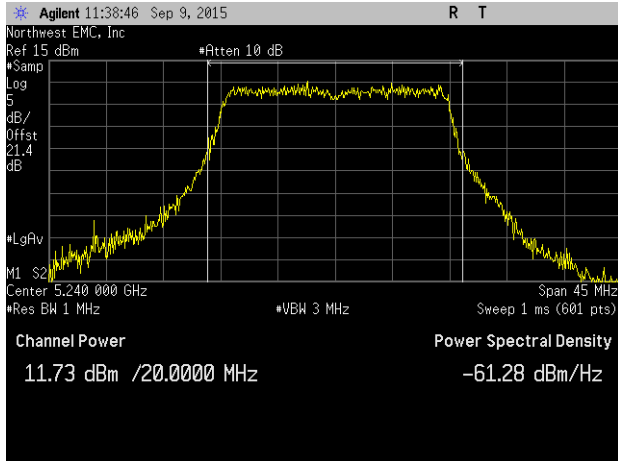
Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	10.891 dBm
Limit (<)	24 dBm
Result	Pass

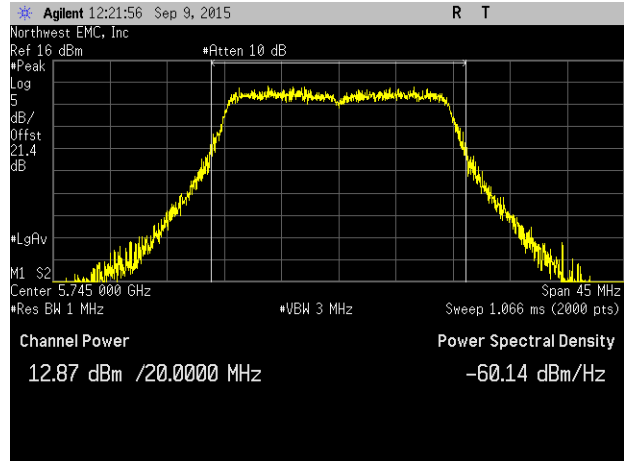
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5240 MHz



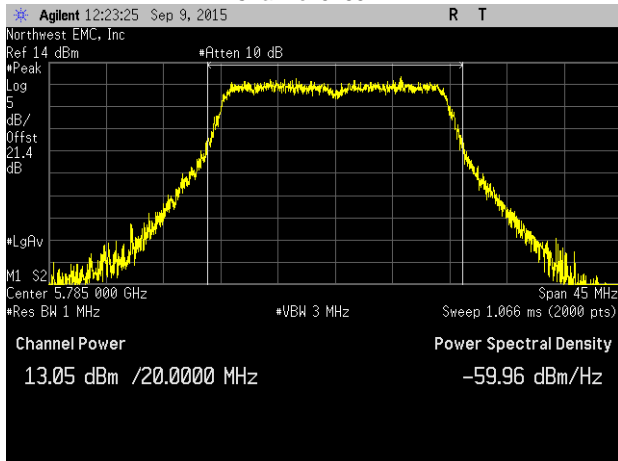
Value	11.731 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low
Channel 5745 MHz



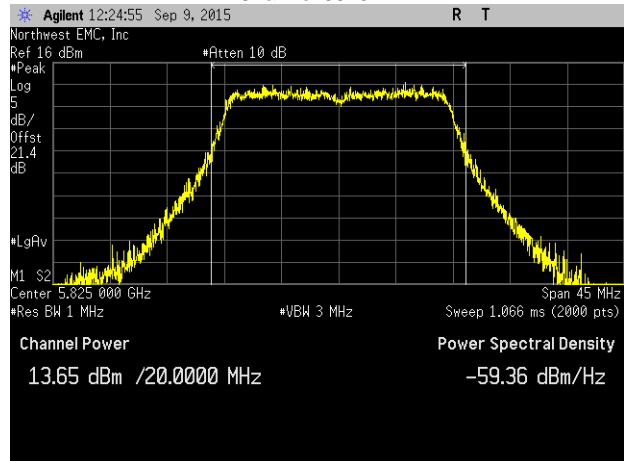
Value	12.87 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid
Channel 5785 MHz



Value	13.051 dBm
Limit (<)	30 dBm
Result	Pass

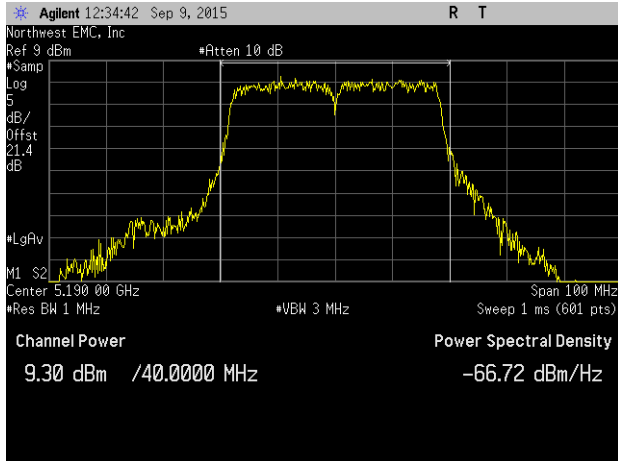
Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5825 MHz



Value	13.654 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



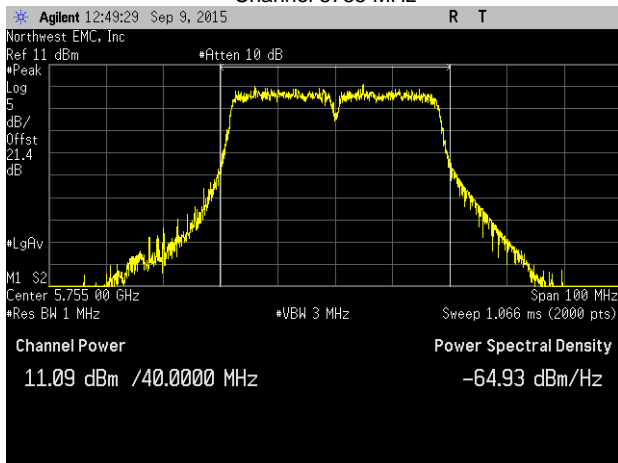
Value	9.296 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



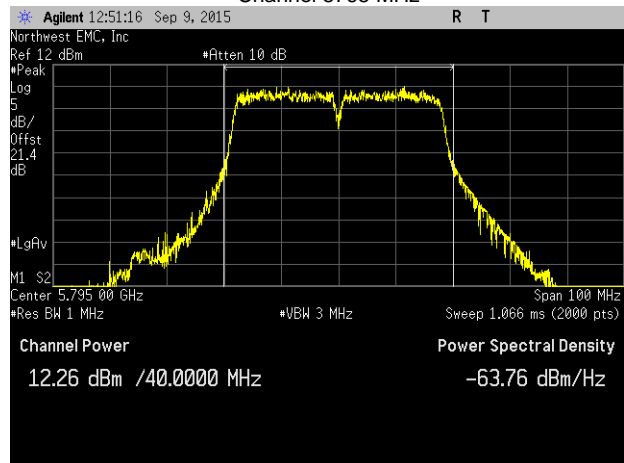
Value	9.699 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5755 MHz



Value	11.086 dBm
Limit (<)	30 dBm
Result	Pass

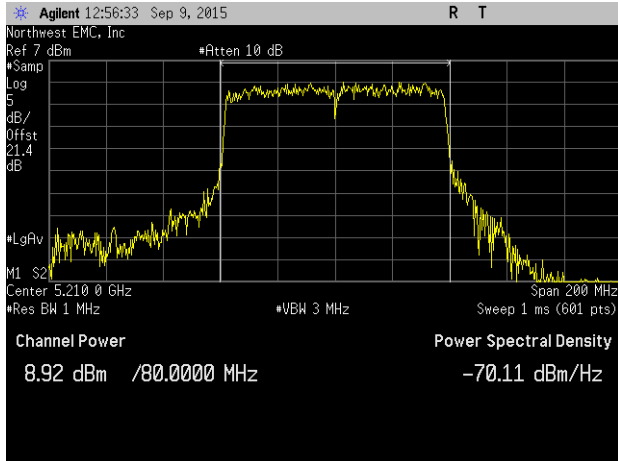
Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5795 MHz



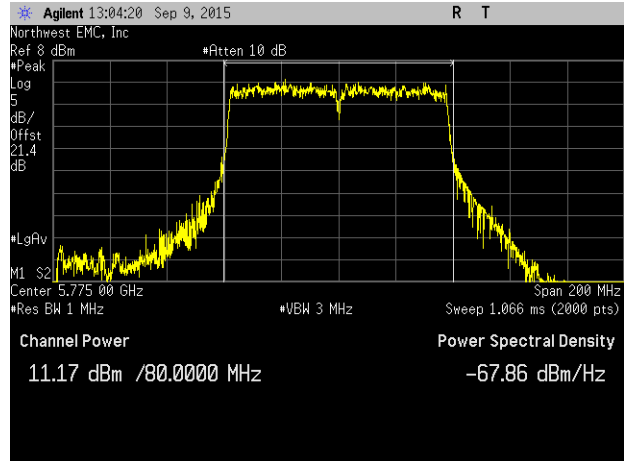
Value	12.263 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5210 MHz



Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



Value	8.921 dBm
Limit (<)	24 dBm
Result	Pass

Value	11.167 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

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 DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section C was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep) was used for this test.

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

- RBW = 1 MHz, VBW = 3 MHz
- Sample Detector
- The number of points was set to 601. This satisfied the requirement of being $> 2 * \text{span} / \text{RBW}$
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	7/23/2015	7/23/2016
Block - DC	Fairview Microwave	SD3379	AMM	2/27/2015	2/27/2016
Attenuator	Fairview Microwave	SA4018-20	TQY	2/27/2015	2/27/2016
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	7/15/2017

MAXIMUM CONDUCTED OUTPUT POWER



EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/10/15
Customer:	WatchGuard Technologies, Inc.	Temperature:	25.1°C
Attendees:	None	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1015 mbar
Tested By:	Jonathan Kiefer	Job Site:	TX09
Power:	110VAC/60Hz	Configuration:	5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2015	ANSI C63.10:2013

COMMENTS

2x2 MIMO mode, Chain AB (Chains 0 and 1).

DEVIATIONS FROM TEST STANDARD

None

RESULTS

		Value	Limit (<)	Result
Chain A				
802.11(n) HT, MCS0				
80 MHz				
	Low Channel 5210 MHz	12.758 dBm	24 dBm	Pass
	Low Channel 5775 MHz	17.023 dBm	30 dBm	Pass
802.11(n) HT, MCS8				
20 MHz				
	Low Channel 5180 MHz	14.061 dBm	24 dBm	Pass
	High Channel 5240 MHz	14.62 dBm	24 dBm	Pass
	Low Channel 5745 MHz	16.695 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	16.735 dBm	30 dBm	Pass
	High Channel 5825 MHz	16.753 dBm	30 dBm	Pass
40 MHz				
	Low Channel 5190 MHz	13.209 dBm	24 dBm	Pass
	High Channel 5230 MHz	13.529 dBm	24 dBm	Pass
	Low Channel 5755 MHz	13.982 dBm	30 dBm	Pass
	High Channel 5795 MHz	14.57 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)				
20 MHz				
	Low Channel 5180	10.456 dBm	24	Pass

MAXIMUM CONDUCTED OUTPUT POWER



	Value	Limit (<)	Result
MHz		dBm	
High Channel 5240		24	
MHz	10.545 dBm	dBm	Pass
Low Channel 5745		30	
MHz	11.102 dBm	dBm	Pass
Mid Channel 5785		30	
MHz	12.071 dBm	dBm	Pass
High Channel 5825		30	
MHz	13.003 dBm	dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)			
80 MHz			
Low Channel 5210		24	
MHz	8.47 dBm	dBm	Pass
Low Channel 5775		30	
MHz	12.74 dBm	dBm	Pass
40 MHz			
Low Channel 5190		24	
MHz	8.773 dBm	dBm	Pass
High Channel 5230		24	
MHz	9.077 dBm	dBm	Pass
Low Channel 5755		30	
MHz	9.489 dBm	dBm	Pass
High Channel 5795		30	
MHz	10.278 dBm	dBm	Pass
802.11(n) HT, MCS15			
20 MHz			
Low Channel 5180		24	
MHz	10.043 dBm	dBm	Pass
High Channel 5240		24	
MHz	10.136 dBm	dBm	Pass
Low Channel 5745		30	
MHz	10.695 dBm	dBm	Pass
Mid Channel 5785		30	
MHz	11.028 dBm	dBm	Pass
High Channel 5825		30	
MHz	12.473 dBm	dBm	Pass
40 MHz			
Low Channel 5190		24	
MHz	8.373 dBm	dBm	Pass
High Channel 5230		24	
MHz	8.724 dBm	dBm	Pass
Low Channel 5755		30	
MHz	8.986 dBm	dBm	Pass
High Channel 5795		30	
MHz	9.88 dBm	dBm	Pass
Chain B			
802.11(n) HT, MCS0			

MAXIMUM CONDUCTED OUTPUT POWER



	Value	Limit (<)	Result
80 MHz			
Low Channel 5210 MHz	14.267 dBm	24 dBm	Pass
Low Channel 5775 MHz	17.483 dBm	30 dBm	Pass
802.11(n) HT, MCS8			
20 MHz			
Low Channel 5180 MHz	16.321 dBm	24 dBm	Pass
High Channel 5240 MHz	16.694 dBm	24 dBm	Pass
Low Channel 5745 MHz	18.237 dBm	30 dBm	Pass
Mid Channel 5785 MHz	18.588 dBm	30 dBm	Pass
High Channel 5825 MHz	18.411 dBm	30 dBm	Pass
40 MHz			
Low Channel 5190 MHz	12.714 dBm	24 dBm	Pass
High Channel 5230 MHz	13.059 dBm	24 dBm	Pass
Low Channel 5755 MHz	17.092 dBm	30 dBm	Pass
High Channel 5795 MHz	16.446 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)			
20 MHz			
Low Channel 5180 MHz	11.918 dBm	24 dBm	Pass
High Channel 5240 MHz	12.472 dBm	24 dBm	Pass
Low Channel 5745 MHz	14.246 dBm	30 dBm	Pass
Mid Channel 5785 MHz	14.803 dBm	30 dBm	Pass
High Channel 5825 MHz	14.714 dBm	30 dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)			
80 MHz			
Low Channel 5210 MHz	10.004 dBm	24 dBm	Pass
Low Channel 5775 MHz	16.357 dBm	30 dBm	Pass
40 MHz			
Low Channel 5190 MHz	10.424 dBm	24 dBm	Pass
High Channel 5230 MHz	10.833 dBm	24 dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result					
	MHz		dBm						
	Low Channel 5755		30						
	MHz	12.752 dBm	dBm	Pass					
	High Channel 5795		30						
	MHz	12.139 dBm	dBm	Pass					
802.11(n) HT, MCS15									
20 MHz									
	Low Channel 5180		24						
	MHz	11.642 dBm	dBm	Pass					
	High Channel 5240		24						
	MHz	12.237 dBm	dBm	Pass					
	Low Channel 5745		30						
	MHz	13.71 dBm	dBm	Pass					
	Mid Channel 5785		30						
	MHz	14.004 dBm	dBm	Pass					
	High Channel 5825		30						
	MHz	14.531 dBm	dBm	Pass					
40 MHz									
	Low Channel 5190		24						
	MHz	10.136 dBm	dBm	Pass					
	High Channel 5230		24						
	MHz	10.514 dBm	dBm	Pass					
	Low Channel 5755		30						
	MHz	12.555 dBm	dBm	Pass					
	High Channel 5795		30						
	MHz	11.712 dBm	dBm	Pass					
Power Summing, Chain AB									
802.11(n) HT, MCS0									
	80MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
	Low Channel 5210		18.87	26.71		24			
	MHz	12.758	1	14.267	2	16.588	dBm	Pass	
	Low Channel 5775		50.38	56.01		30			
	MHz	17.023	5	17.483	4	20.269	dBm	Pass	
802.11(n) HT, MCS8									
	20MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
	Low Channel 5180		25.47	42.86		24			
	MHz	14.061	4	16.321	5	18.347	dBm	Pass	
	High Channel 5240		28.97	46.70		24			
	MHz	14.620	3	16.694	9	18.790	dBm	Pass	
	Low Channel 5745		46.72	66.63		30			
	MHz	16.695	0	18.237	5	20.544	dBm	Pass	
	Mid Channel 5785		47.15	72.24		30			
	MHz	16.735	2	18.588	4	20.770	dBm	Pass	
	High Channel 5825		16.753	47.34	18.411	69.35	20.671	30	Pass

MAXIMUM CONDUCTED OUTPUT POWER



						Value	Limit (<)	Result
MHz		8		9		dBm		
40MHz		(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Results
Low Channel 5190			20.93		18.68		24	
MHz		13.209	6	12.714	1	15.979	dBm	Pass
High Channel 5230			22.53		20.22		24	
MHz		13.529	7	13.059	6	16.311	dBm	Pass
Low Channel 5755			25.01		51.19		30	
MHz		13.982	5	17.092	2	18.820	dBm	Pass
High Channel 5795			28.64		44.11		30	
MHz		14.570	2	16.446	6	18.619	dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)								
20 MHz		(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Results
Low Channel 5180			11.10		15.55		24	
MHz		10.456	7	11.918	2	14.259	dBm	Pass
High Channel 5240			11.33		17.66		24	
MHz		10.545	7	12.472	9	14.625	dBm	Pass
Low Channel 5745			12.88		26.58		30	
MHz		11.102	8	14.246	3	15.963	dBm	Pass
Mid Channel 5785			16.11		30.22		30	
MHz		12.071	0	14.803	0	16.659	dBm	Pass
High Channel 5825			19.96		29.60		30	
MHz		13.003	6	14.714	7	16.953	dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)								
80 MHz		(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Results
Low Channel 5210					10.00		24	
MHz		8.470	7.031	10.004	9	12.315	dBm	Pass
Low Channel 5775			18.79		43.22		30	
MHz		12.740	3	16.357	2	17.925	dBm	Pass
40 MHz		(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Results
Low Channel 5190					11.02		24	
MHz		8.773	7.539	10.424	6	12.687	dBm	Pass
High Channel 5230					12.11		24	
MHz		9.077	8.085	10.833	4	13.053	dBm	Pass
Low Channel 5755					18.84		30	
MHz		9.489	8.890	12.752	5	14.430	dBm	Pass
High Channel 5795			10.66		16.36		30	
MHz		10.278	1	12.139	4	14.318	dBm	Pass
802.11(n) HT, MCS15								
20 MHz		(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Results
Low Channel 5180			10.10		14.59		24	
MHz		10.043	0	11.642	5	13.926	dBm	Pass
High Channel 5240			10.31		16.73		24	
MHz		10.136	8	12.237	8	14.323	dBm	Pass
Low Channel 5745			10.695		23.49		30	
MHz		10.695	11.73	13.710	23.49	15.469	dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



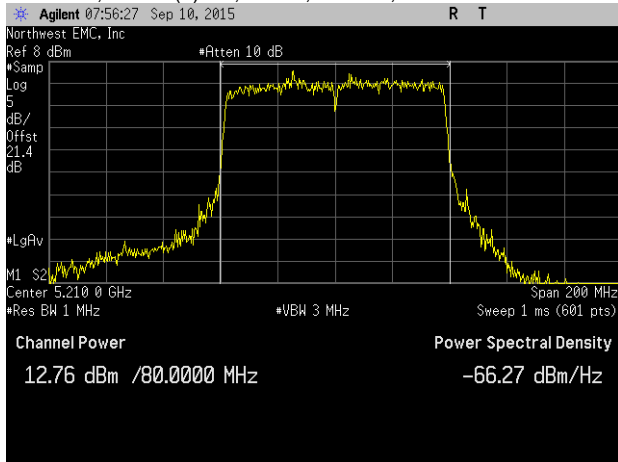
							Limit		
							Value	(<)	Result
MHz		5		6			dBm		
Mid Channel 5785		12.67		25.14			30		
MHz	11.028	1	14.004	2	15.776		dBm	Pass	
High Channel 5825		17.67		28.38			30		
MHz	12.473	3	14.531	6	16.633		dBm	Pass	
40 MHz								Result	
							Limit	s	
Low Channel 5190				10.31			24		
MHz	8.373	6.875	10.136	8	12.354		dBm	Pass	
High Channel 5230				11.25			24		
MHz	8.724	7.454	10.514	6	12.721		dBm	Pass	
Low Channel 5755				18.00			30		
MHz	8.986	7.918	12.555	9	14.138		dBm	Pass	
High Channel 5795				14.83			30		
MHz	9.880	9.727	11.712	2	13.902		dBm	Pass	

Jonathan Kiefer

Tested By

MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



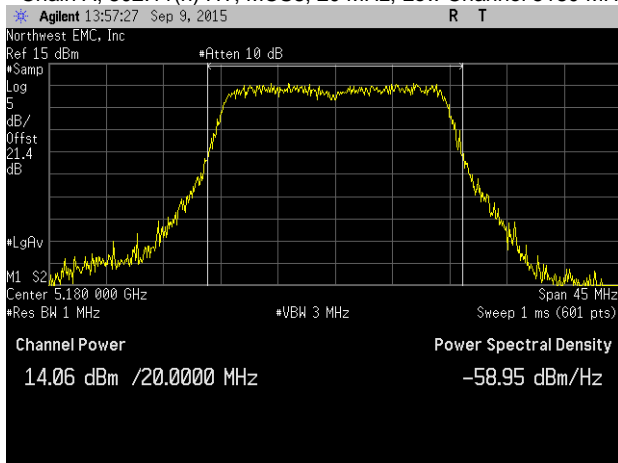
Value	12.758 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



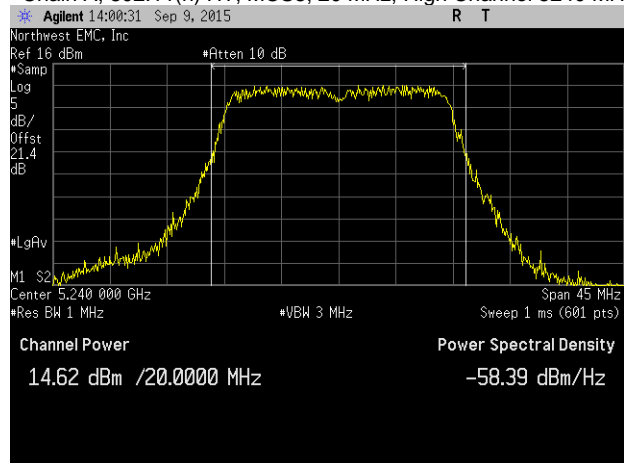
Value	17.023 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5180 MHz



Value	14.061 dBm
Limit (<)	24 dBm
Result	Pass

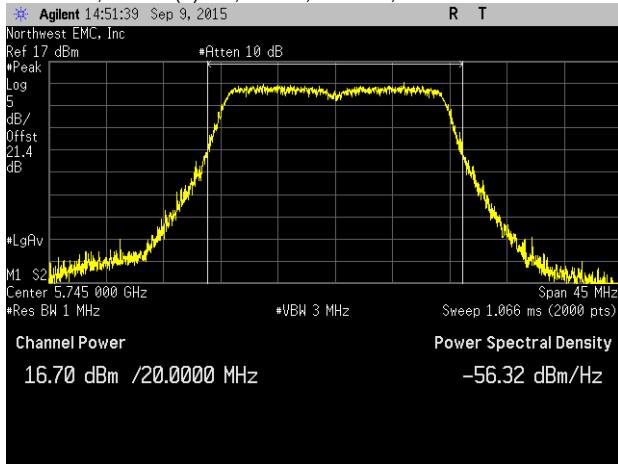
Chain A, 802.11(n) HT, MCS8, 20 MHz, High Channel 5240 MHz



Value	14.62 dBm
Limit (<)	24 dBm
Result	Pass

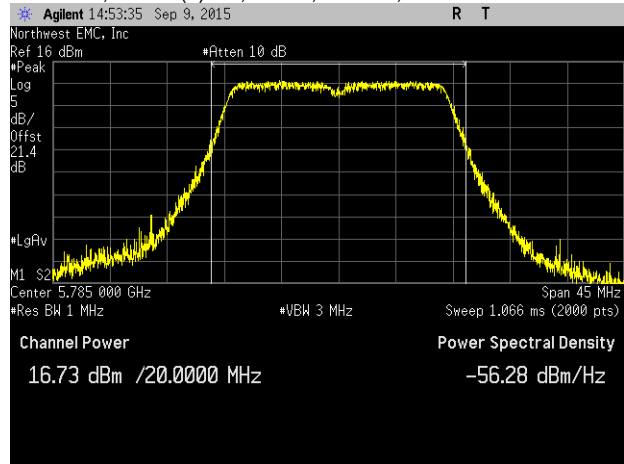
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5745 MHz



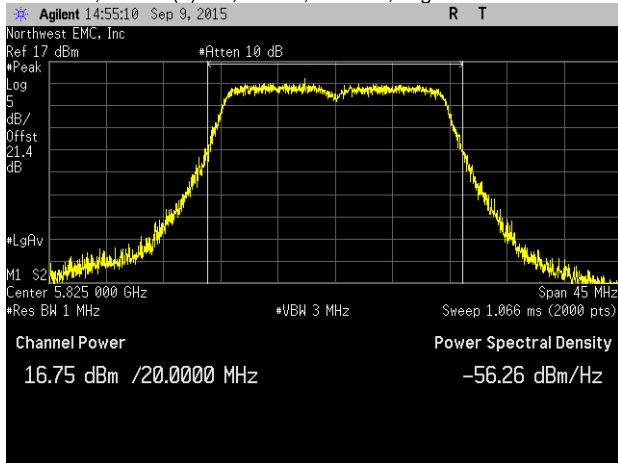
Value	16.695 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 20 MHz, Mid Channel 5785 MHz



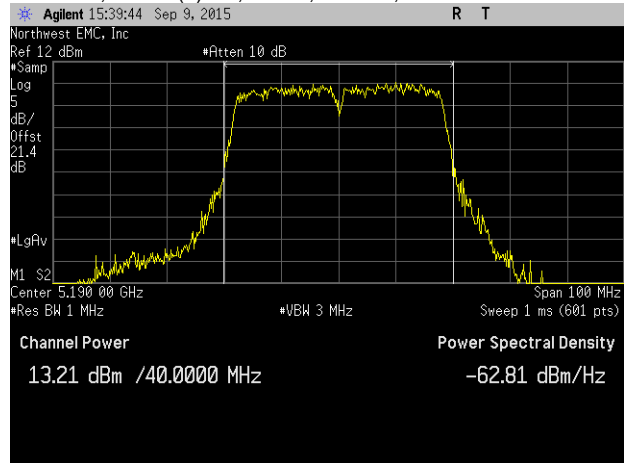
Value	16.735 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 20 MHz, High Channel 5825 MHz



Value	16.753 dBm
Limit (<)	30 dBm
Result	Pass

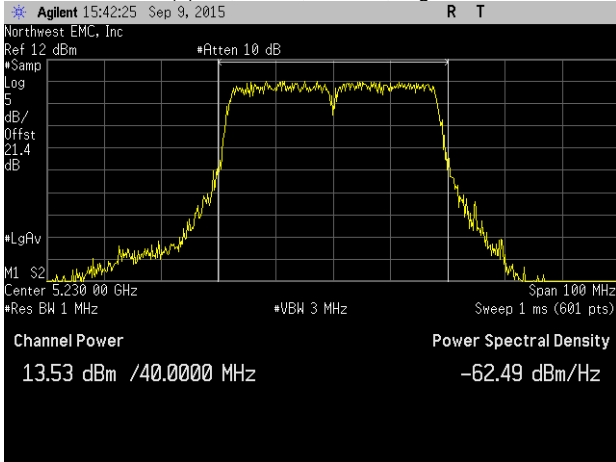
Chain A, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5190 MHz



Value	13.209 dBm
Limit (<)	24 dBm
Result	Pass

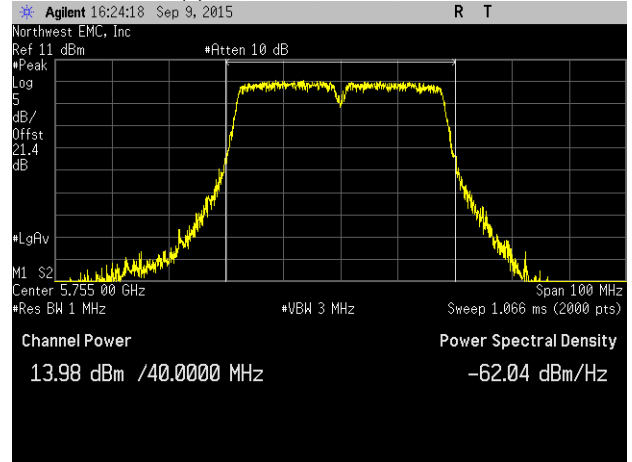
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS8, 40 MHz, High Channel 5230 MHz



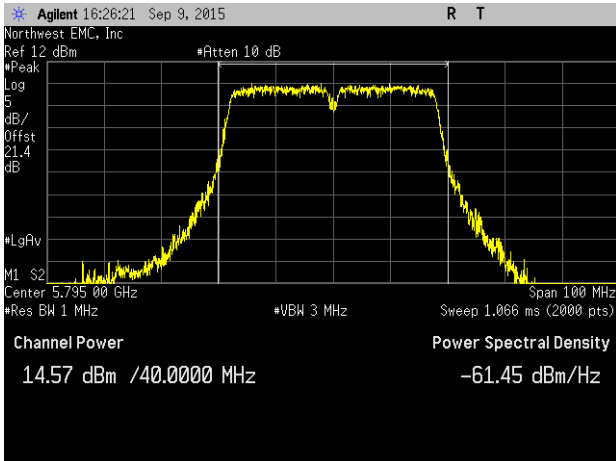
Value	13.529 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5755 MHz



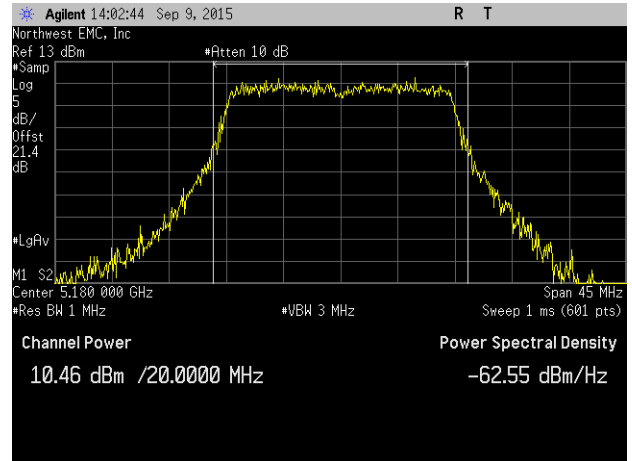
Value	13.982 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 40 MHz, High Channel 5795 MHz



Value	14.57 dBm
Limit (<)	30 dBm
Result	Pass

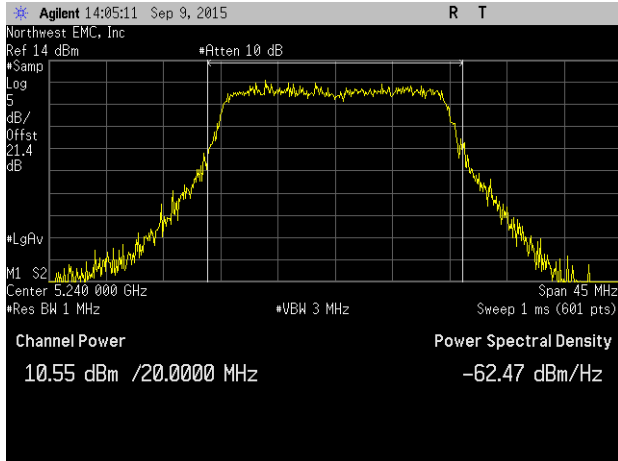
Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	10.456 dBm
Limit (<)	24 dBm
Result	Pass

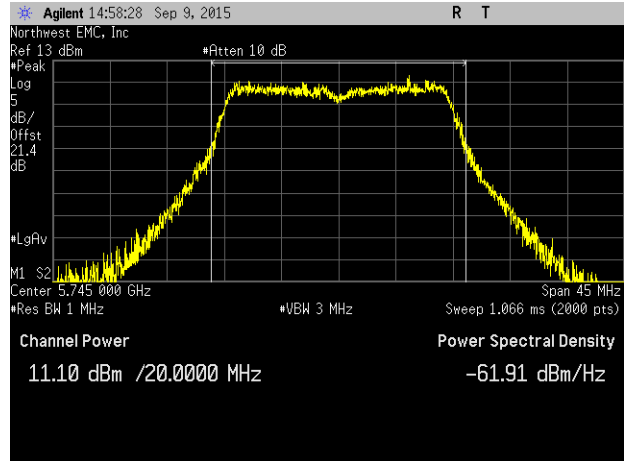
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5240 MHz



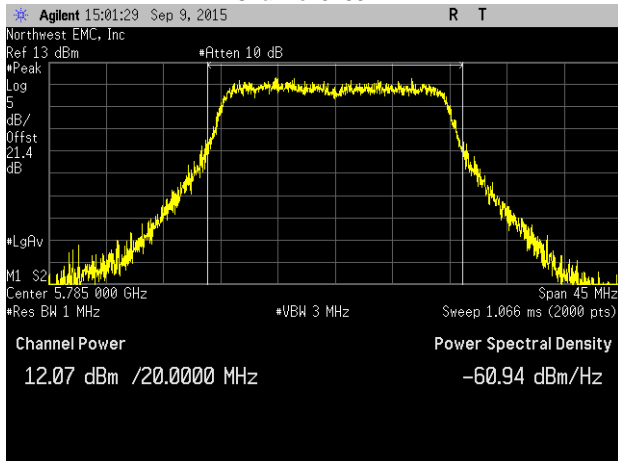
Value	10.545 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low
Channel 5745 MHz



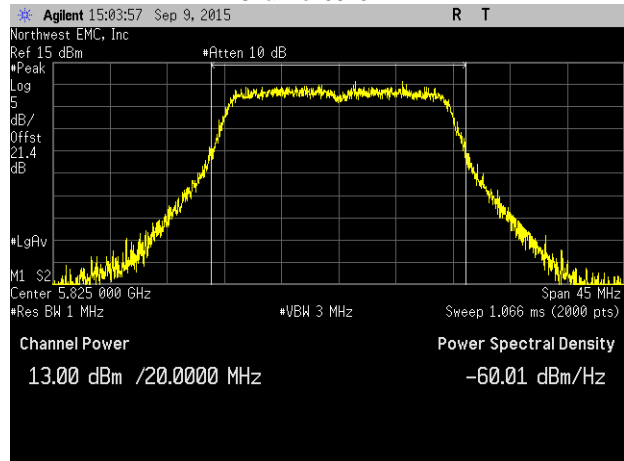
Value	11.102 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid
Channel 5785 MHz



Value	12.071 dBm
Limit (<)	30 dBm
Result	Pass

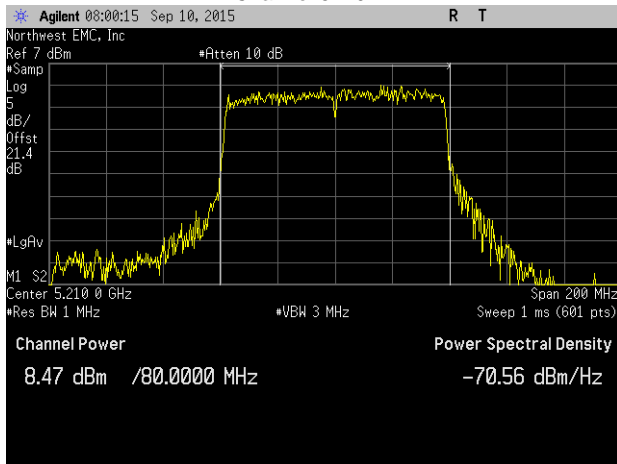
Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5825 MHz



Value	13.003 dBm
Limit (<)	30 dBm
Result	Pass

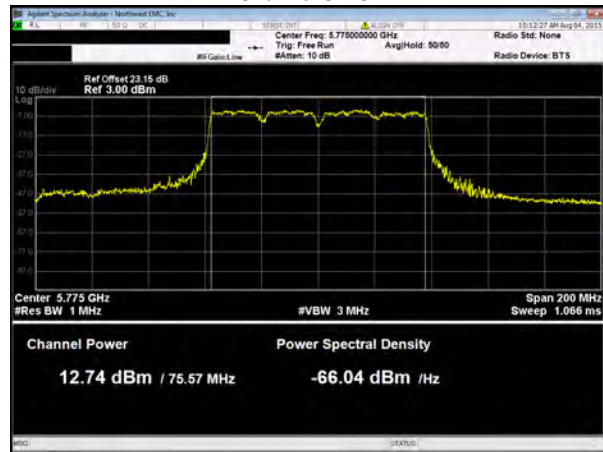
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5210 MHz



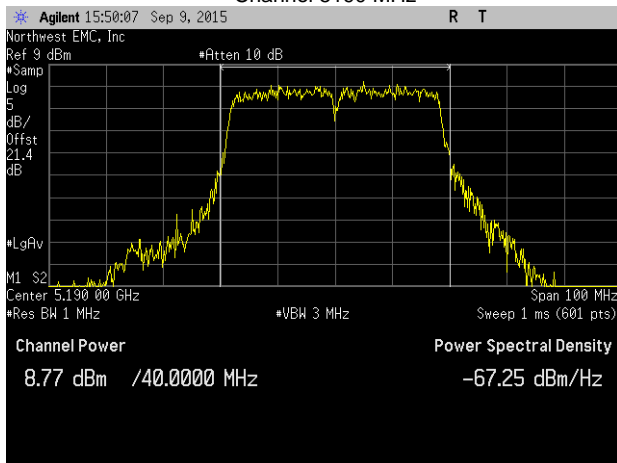
Value	8.47 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



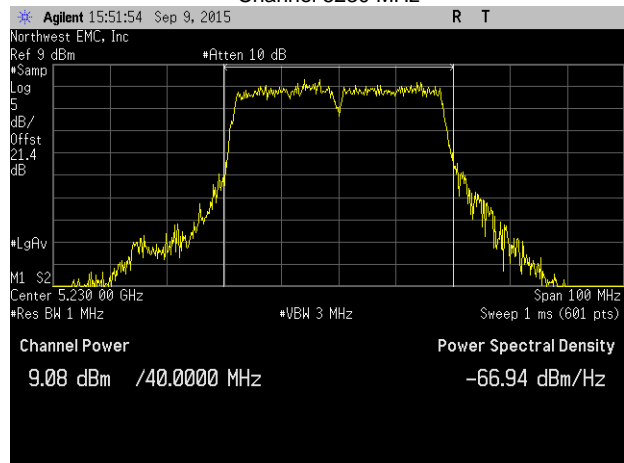
Value	12.74 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



Value	8.773 dBm
Limit (<)	24 dBm
Result	Pass

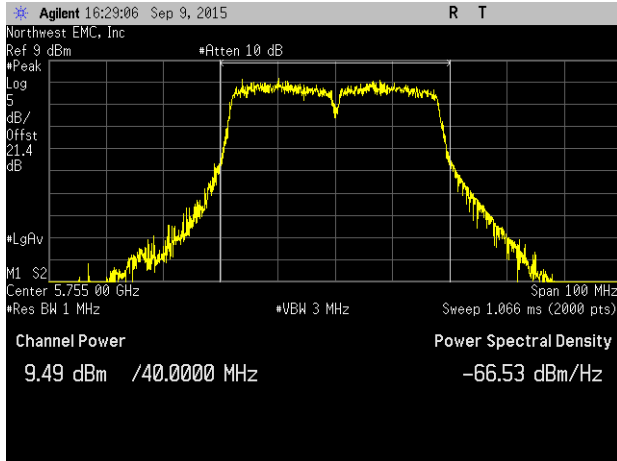
Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



Value	9.077 dBm
Limit (<)	24 dBm
Result	Pass

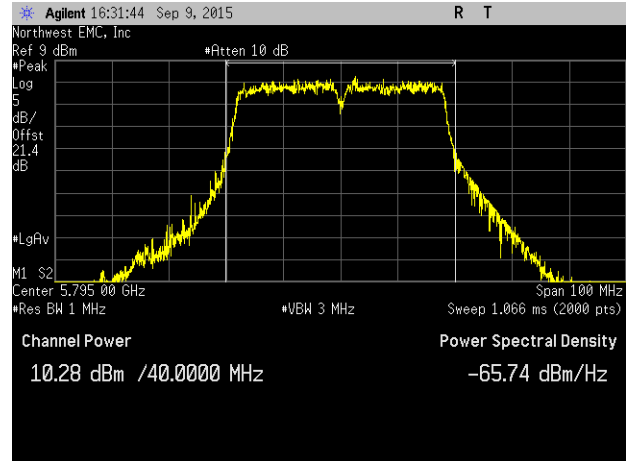
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low Channel 5755 MHz



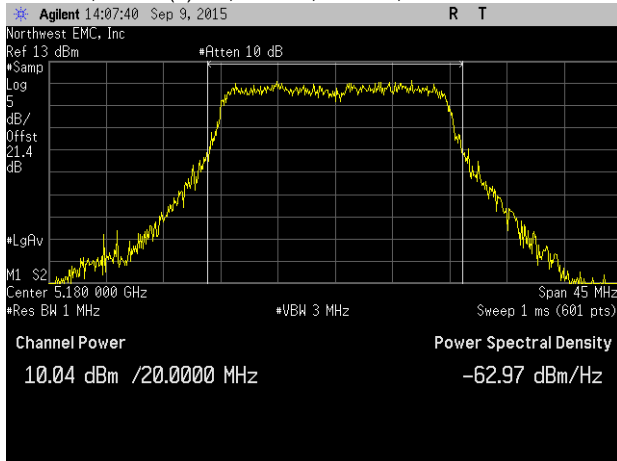
Value	9.489 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5795 MHz



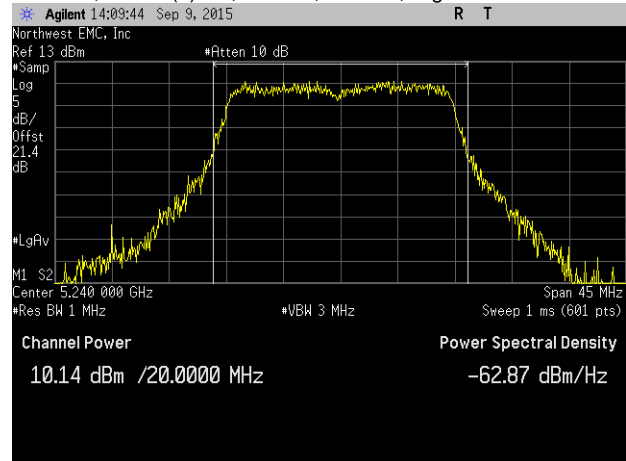
Value	10.278 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5180 MHz



Value	10.043 dBm
Limit (<)	24 dBm
Result	Pass

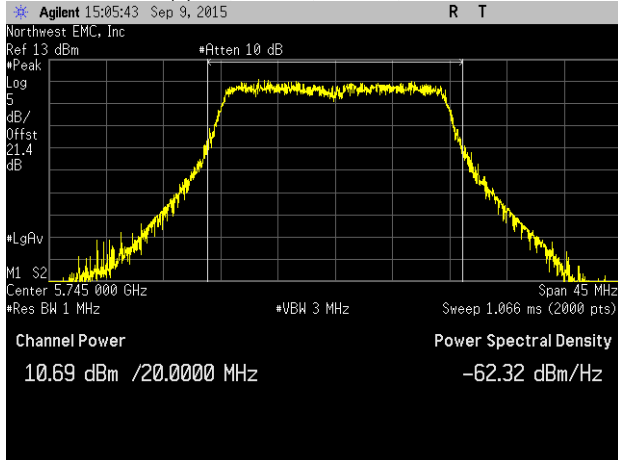
Chain A, 802.11(n) HT, MCS15, 20 MHz, High Channel 5240 MHz



Value	10.136 dBm
Limit (<)	24 dBm
Result	Pass

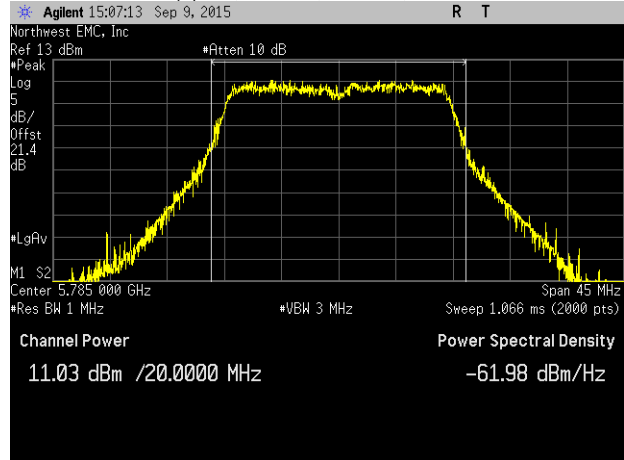
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5745 MHz



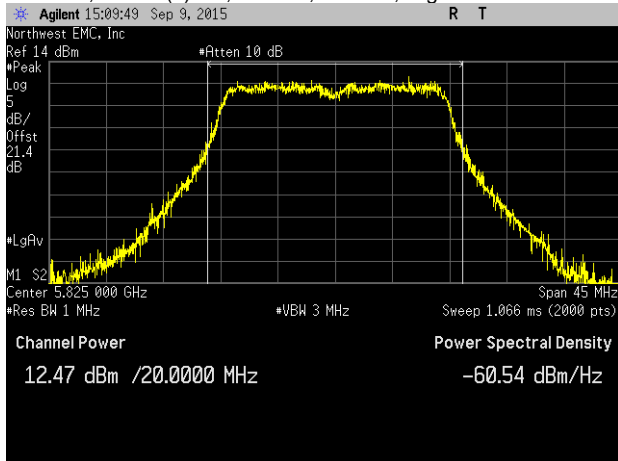
Value	10.695 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 20 MHz, Mid Channel 5785 MHz



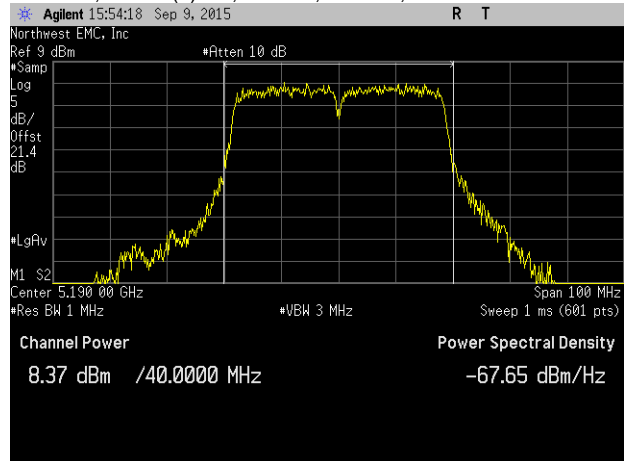
Value	11.028 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 20 MHz, High Channel 5825 MHz



Value	12.473 dBm
Limit (<)	30 dBm
Result	Pass

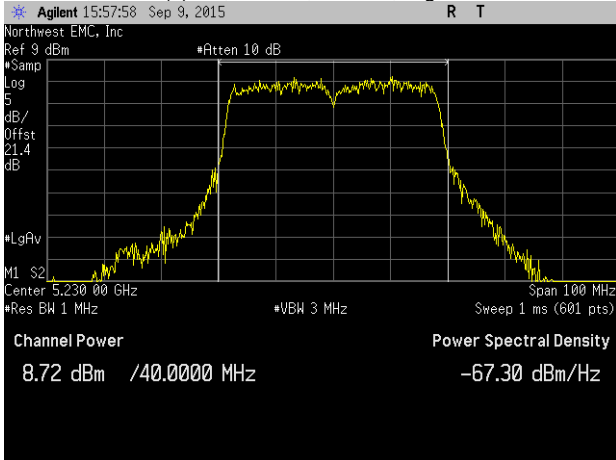
Chain A, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5190 MHz



Value	8.373 dBm
Limit (<)	24 dBm
Result	Pass

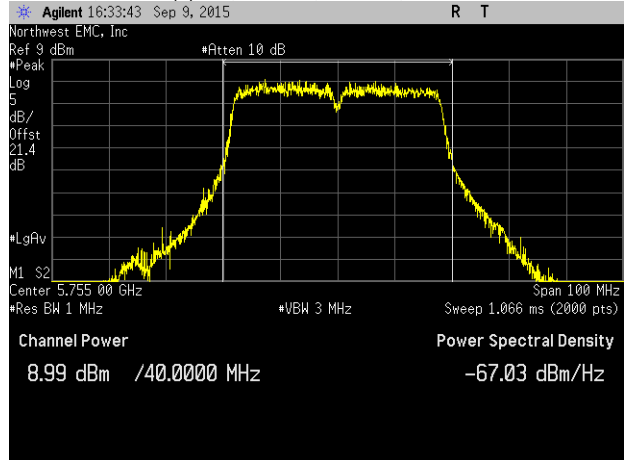
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS15, 40 MHz, High Channel 5230 MHz



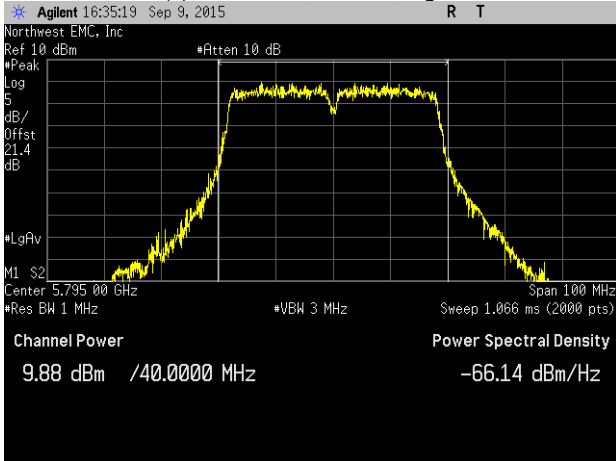
Value	8.724 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5755 MHz



Value	8.986 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 40 MHz, High Channel 5795 MHz



Value	9.88 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



Value	14.267 dBm
Limit (<)	24 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



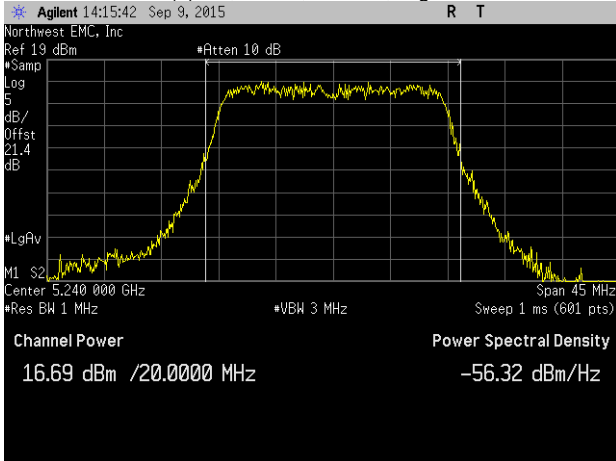
Value	17.483 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5180 MHz



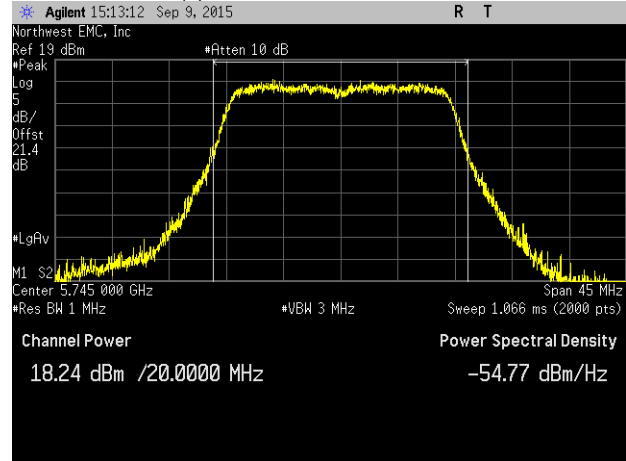
Value	16.321 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 20 MHz, High Channel 5240 MHz



Value	16.694 dBm
Limit (<)	24 dBm
Result	Pass

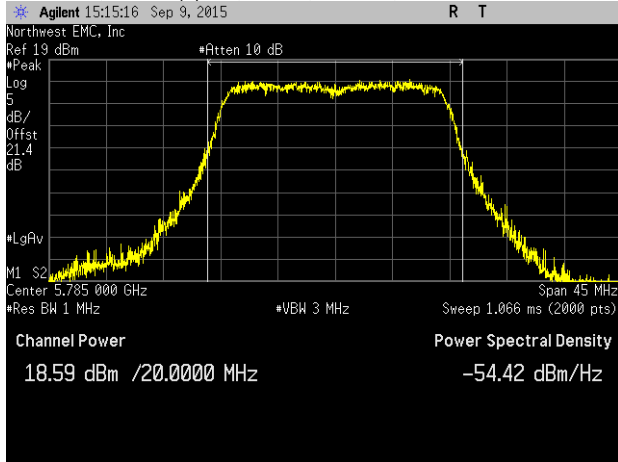
Chain B, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5745 MHz



Value	18.237 dBm
Limit (<)	30 dBm
Result	Pass

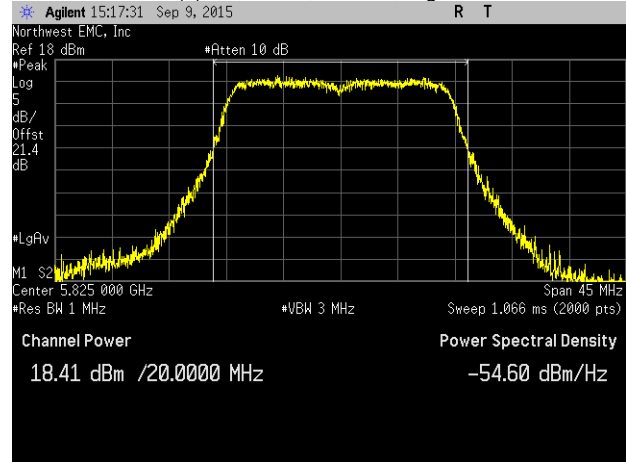
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS8, 20 MHz, Mid Channel 5785 MHz



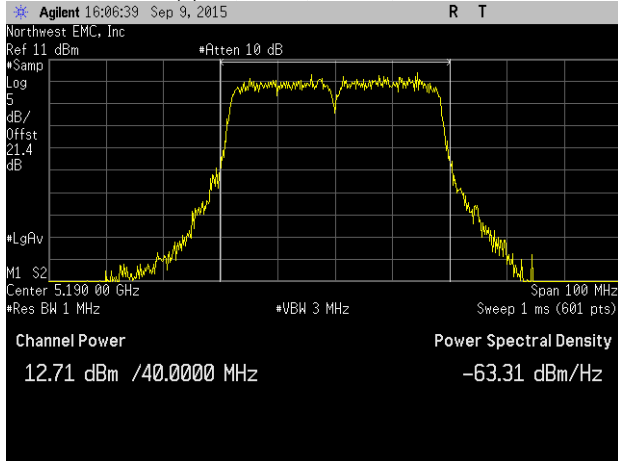
Value	18.588 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 20 MHz, High Channel 5825 MHz



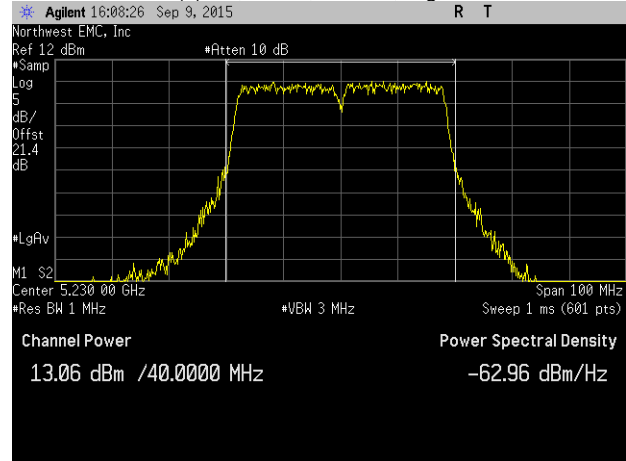
Value	18.411 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5190 MHz



Value	12.714 dBm
Limit (<)	24 dBm
Result	Pass

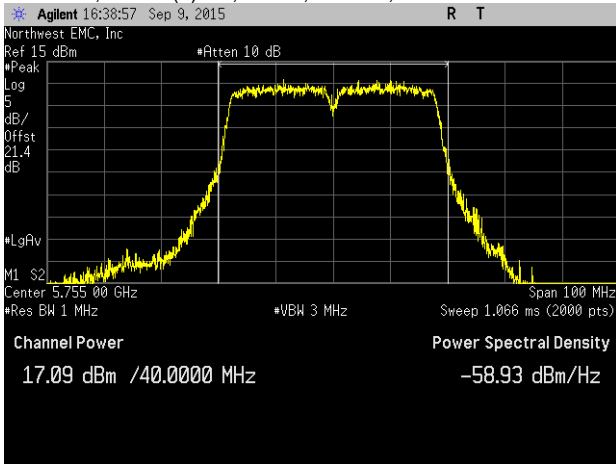
Chain B, 802.11(n) HT, MCS8, 40 MHz, High Channel 5230 MHz



Value	13.059 dBm
Limit (<)	24 dBm
Result	Pass

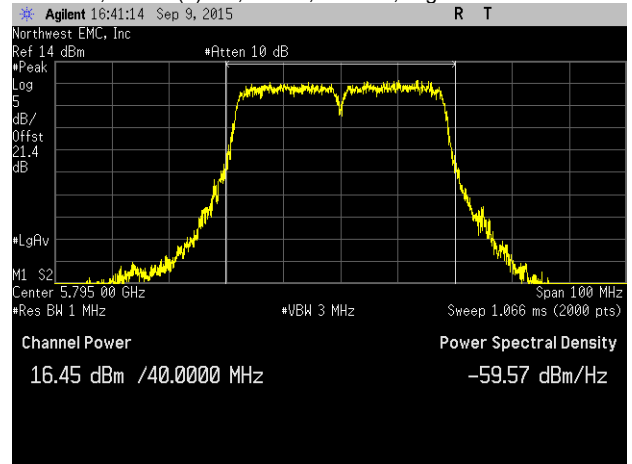
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5755 MHz



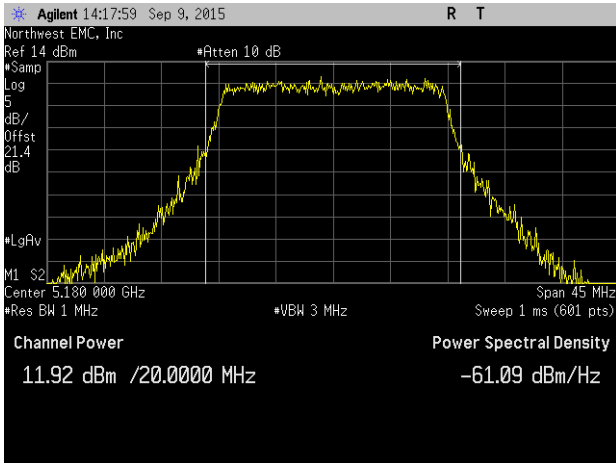
Value	17.092 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 40 MHz, High Channel 5795 MHz



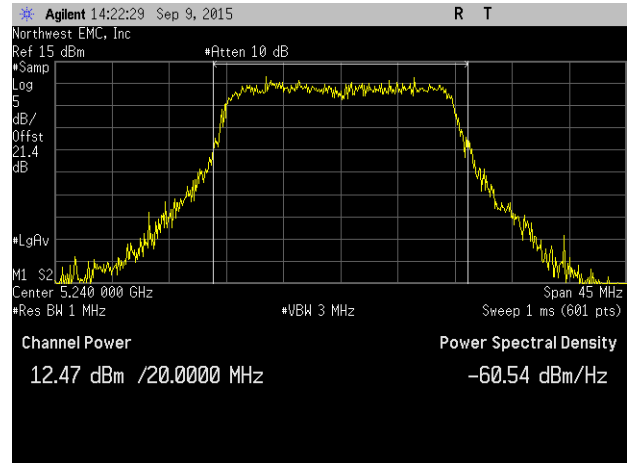
Value	16.446 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	11.918 dBm
Limit (<)	24 dBm
Result	Pass

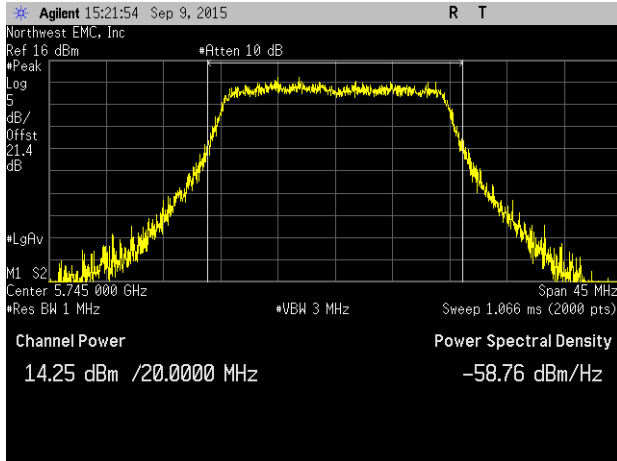
Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5240 MHz



Value	12.472 dBm
Limit (<)	24 dBm
Result	Pass

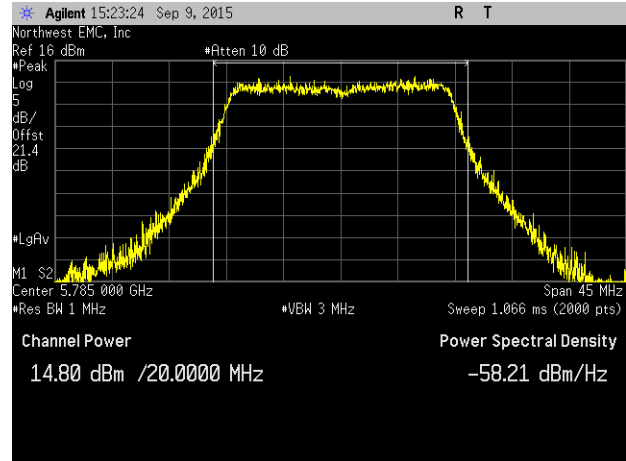
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5745 MHz



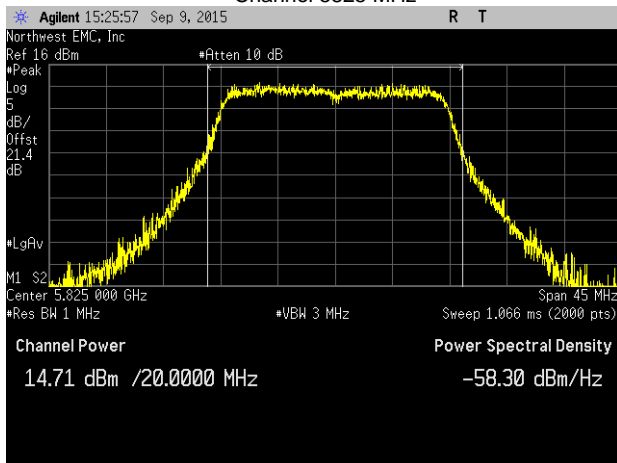
Value	14.246 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid Channel 5785 MHz



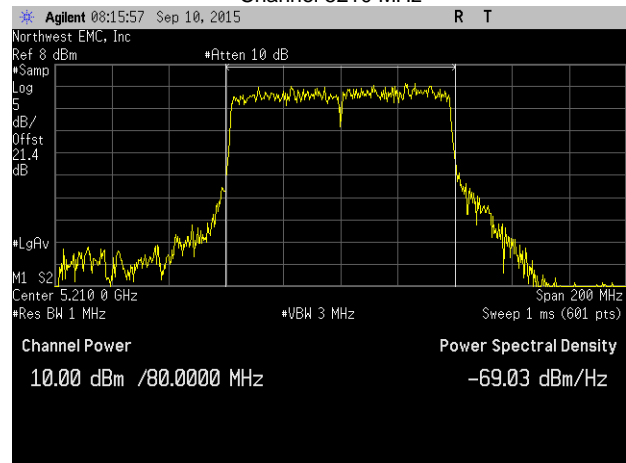
Value	14.803 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5825 MHz



Value	14.714 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low Channel 5210 MHz



Value	10.004 dBm
Limit (<)	24 dBm
Result	Pass

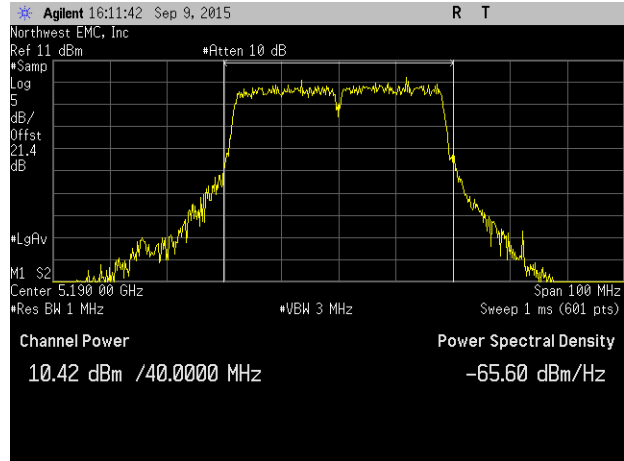
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



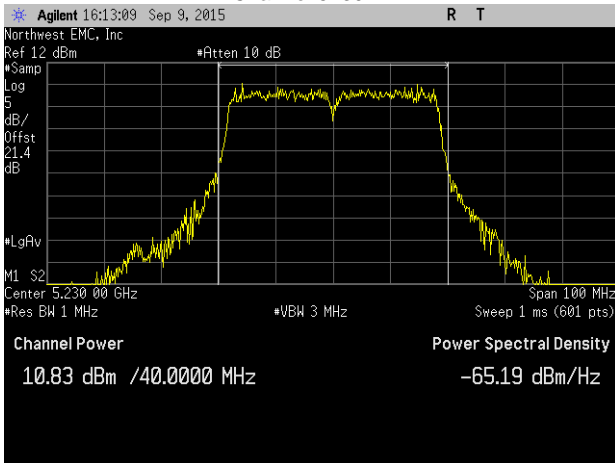
Value	16.357 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



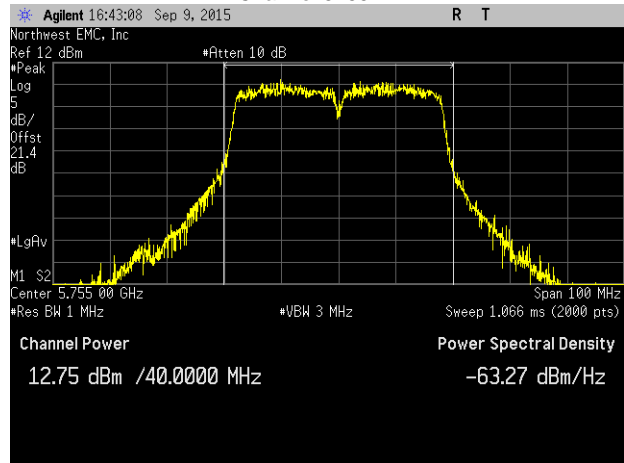
Value	10.424 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



Value	10.833 dBm
Limit (<)	24 dBm
Result	Pass

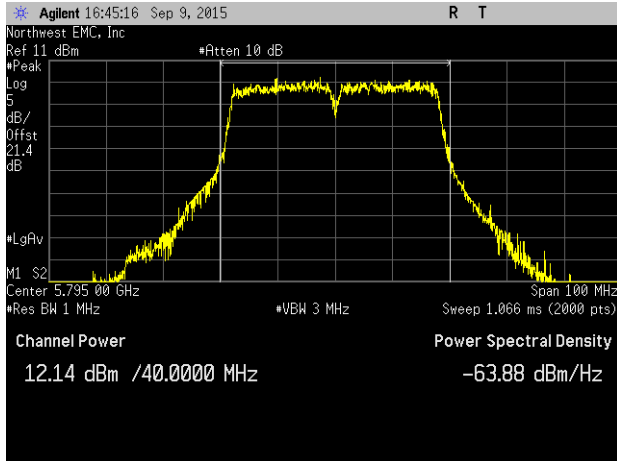
Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5755 MHz



Value	12.752 dBm
Limit (<)	30 dBm
Result	Pass

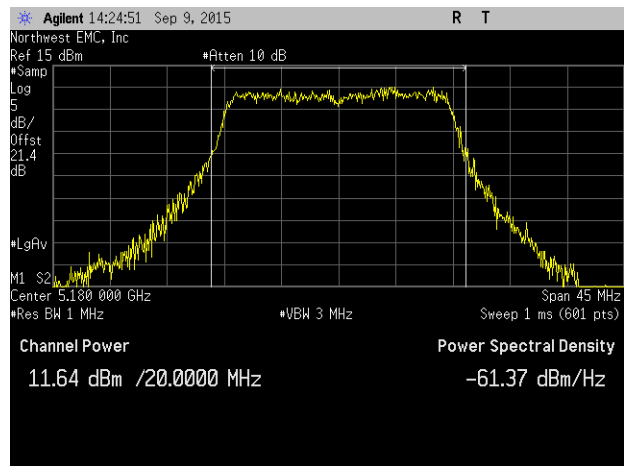
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5795 MHz



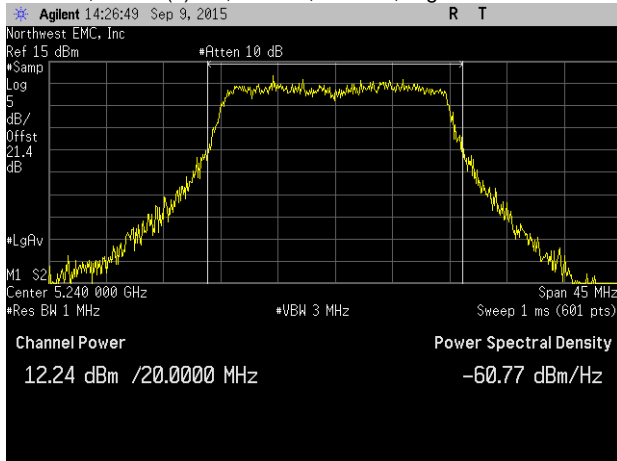
Value	12.139 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5180 MHz



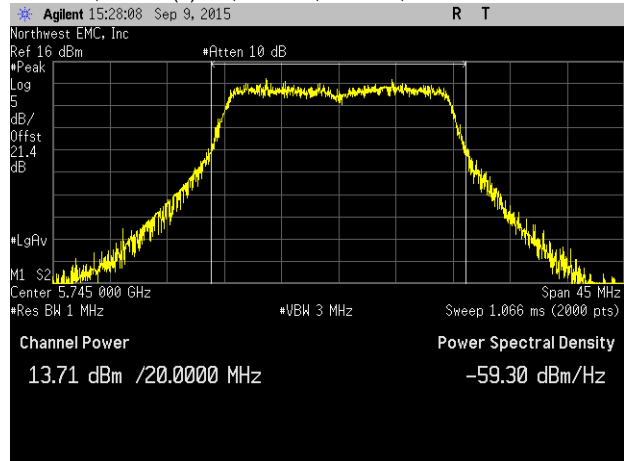
Value	11.642 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 20 MHz, High Channel 5240 MHz



Value	12.237 dBm
Limit (<)	24 dBm
Result	Pass

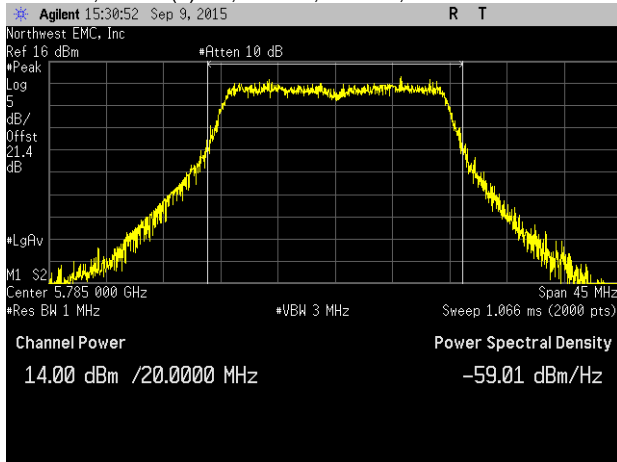
Chain B, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5745 MHz



Value	13.71 dBm
Limit (<)	30 dBm
Result	Pass

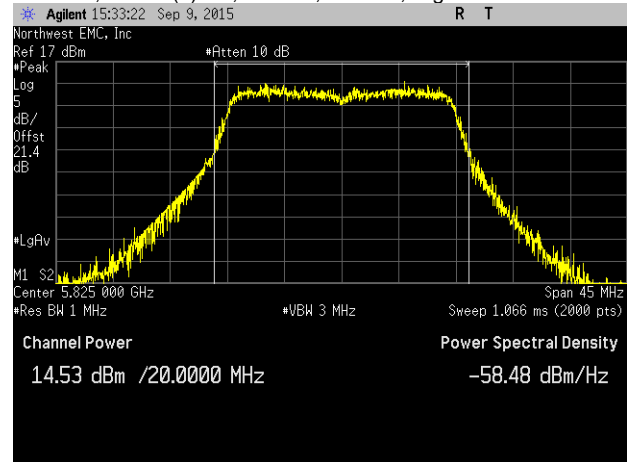
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS15, 20 MHz, Mid Channel 5785 MHz



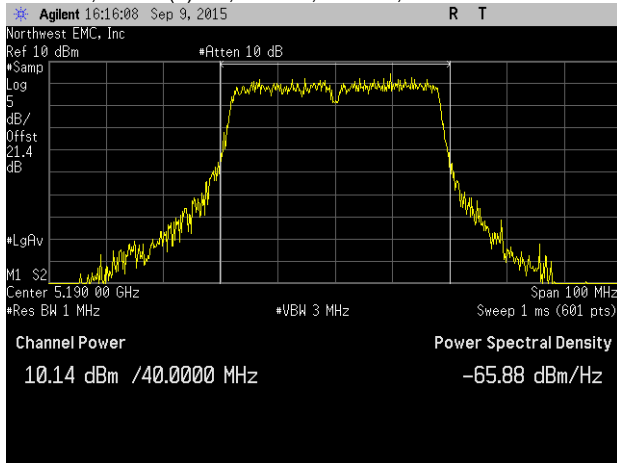
Value	14.004 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 20 MHz, High Channel 5825 MHz



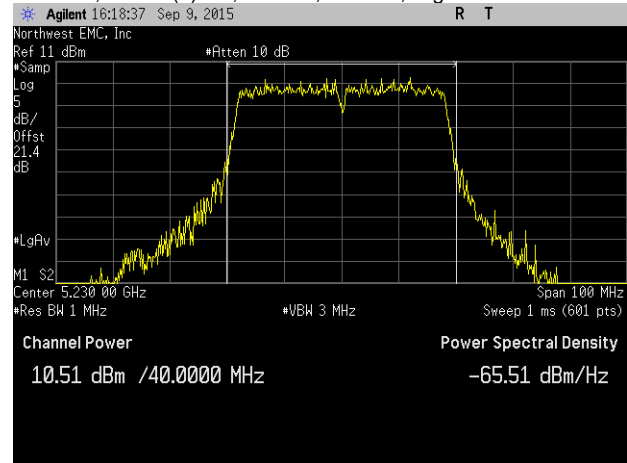
Value	14.531 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5190 MHz



Value	10.136 dBm
Limit (<)	24 dBm
Result	Pass

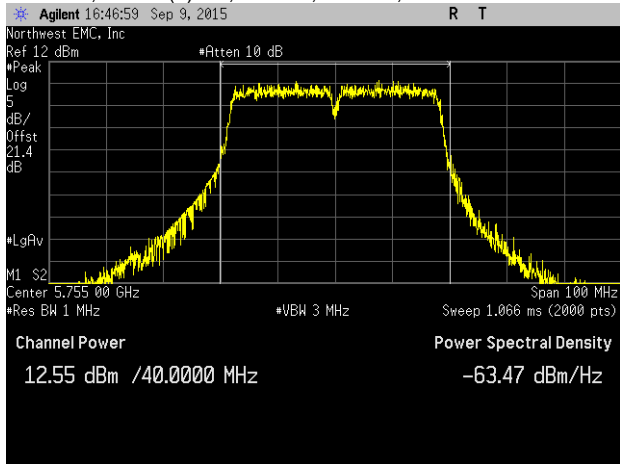
Chain B, 802.11(n) HT, MCS15, 40 MHz, High Channel 5230 MHz



Value	10.514 dBm
Limit (<)	24 dBm
Result	Pass

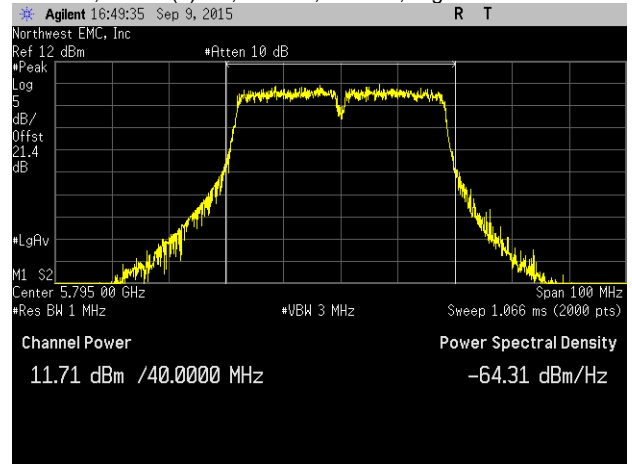
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5755 MHz



Value	12.555 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 40 MHz, High Channel 5795 MHz



Value	11.712 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

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 DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section C was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep) was used for this test.

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

- RBW = 1 MHz, VBW = 3 MHz
- Sample Detector
- The number of points was set to 601. This satisfied the requirement of being $> 2 * \text{span} / \text{RBW}$
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	7/23/2015	7/23/2016
Block - DC	Fairview Microwave	SD3379	AMM	2/27/2015	2/27/2016
Attenuator	Fairview Microwave	SA4018-20	TQY	2/27/2015	2/27/2016
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	7/15/2017

MAXIMUM CONDUCTED OUTPUT POWER



EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/10/15
Customer:	WatchGuard Technologies, Inc.	Temperature:	25.1°C
Attendees:	None	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1015 mbar
Tested By:	Jonathan Kiefer	Job Site:	TX09
Power:	110VAC/60Hz	Configuration:	5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2015	ANSI C63.10:2013

COMMENTS

2x2 MIMO mode, Chain AC (Chains 0 and 2).

DEVIATIONS FROM TEST STANDARD

None

RESULTS

		Value	Limit (<)	Result
Chain A				
	802.11(n) HT, MCS0			
	80 MHz			
	Low Channel 5210 MHz	14.597 dBm	24 dBm	Pass
	Low Channel 5775 MHz	15.463 dBm	30 dBm	Pass
	802.11(n) HT, MCS8			
	20 MHz			
	Low Channel 5180 MHz	12.81 dBm	24 dBm	Pass
	High Channel 5240 MHz	13.912 dBm	24 dBm	Pass
	Low Channel 5745 MHz	18.835 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	18.787 dBm	30 dBm	Pass
	High Channel 5825 MHz	19.006 dBm	30 dBm	Pass
	40 MHz			
	Low Channel 5190 MHz	15.021 dBm	24 dBm	Pass
	High Channel 5230 MHz	15.21 dBm	24 dBm	Pass
	Low Channel 5755 MHz	17.663 dBm	30 dBm	Pass
	High Channel 5795 MHz	18.33 dBm	30 dBm	Pass
	802.11(ac) VHT, MCS8 (256-QAM)			
	20 MHz			
	Low Channel 5180	12.181 dBm	24	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result
	MHz		dBm	
	High Channel 5240		24	
	MHz	12.156 dBm	dBm	Pass
	Low Channel 5745		30	
	MHz	13.005 dBm	dBm	Pass
	Mid Channel 5785		30	
	MHz	13.121 dBm	dBm	Pass
	High Channel 5825		30	
	MHz	15.019 dBm	dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)				
80 MHz				
	Low Channel 5210		24	
	MHz	10.051 dBm	dBm	Pass
	Low Channel 5775		30	
	MHz	10.876 dBm	dBm	Pass
40 MHz				
	Low Channel 5190		24	
	MHz	10.605 dBm	dBm	Pass
	High Channel 5230		24	
	MHz	10.802 dBm	dBm	Pass
	Low Channel 5755		30	
	MHz	13.311 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	14.161 dBm	dBm	Pass
802.11(n) HT, MCS15				
20 MHz				
	Low Channel 5180		24	
	MHz	11.347 dBm	dBm	Pass
	High Channel 5240		24	
	MHz	11.821 dBm	dBm	Pass
	Low Channel 5745		30	
	MHz	13.049 dBm	dBm	Pass
	Mid Channel 5785		30	
	MHz	13.069 dBm	dBm	Pass
	High Channel 5825		30	
	MHz	14.47 dBm	dBm	Pass
40 MHz				
	Low Channel 5190		24	
	MHz	10.181 dBm	dBm	Pass
	High Channel 5230		24	
	MHz	10.367 dBm	dBm	Pass
	Low Channel 5755		30	
	MHz	12.635 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	13.518 dBm	dBm	Pass
Chain C				
802.11(n) HT, MCS0				

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result
80 MHz				
	Low Channel 5210 MHz	15.241 dBm	24 dBm	Pass
	Low Channel 5775 MHz	17.359 dBm	30 dBm	Pass
802.11(n) HT, MCS8				
20 MHz				
	Low Channel 5180 MHz	16.714 dBm	24 dBm	Pass
	High Channel 5240 MHz	17.361 dBm	24 dBm	Pass
	Low Channel 5745 MHz	18.438 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	18.554 dBm	30 dBm	Pass
	High Channel 5825 MHz	18.815 dBm	30 dBm	Pass
40 MHz				
	Low Channel 5190 MHz	15.437 dBm	24 dBm	Pass
	High Channel 5230 MHz	16.029 dBm	24 dBm	Pass
	Low Channel 5755 MHz	17.561 dBm	30 dBm	Pass
	High Channel 5795 MHz	18.14 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)				
20 MHz				
	Low Channel 5180 MHz	12.736 dBm	24 dBm	Pass
	High Channel 5240 MHz	13.551 dBm	24 dBm	Pass
	Low Channel 5745 MHz	14.744 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	15.609 dBm	30 dBm	Pass
	High Channel 5825 MHz	15.806 dBm	30 dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)				
80 MHz				
	Low Channel 5210 MHz	10.921 dBm	24 dBm	Pass
	Low Channel 5775 MHz	13.087 dBm	30 dBm	Pass
40 MHz				
	Low Channel 5190 MHz	11.191 dBm	24 dBm	Pass
	High Channel 5230 MHz	11.713 dBm	24 dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result				
	MHz		dBm					
	Low Channel 5755		30					
	MHz	13.321 dBm	dBm	Pass				
	High Channel 5795		30					
	MHz	13.973 dBm	dBm	Pass				
802.11(n) HT, MCS15								
20 MHz								
	Low Channel 5180		24					
	MHz	11.576 dBm	dBm	Pass				
	High Channel 5240		24					
	MHz	12.221 dBm	dBm	Pass				
	Low Channel 5745		30					
	MHz	14.381 dBm	dBm	Pass				
	Mid Channel 5785		30					
	MHz	15.103 dBm	dBm	Pass				
	High Channel 5825		30					
	MHz	15.374 dBm	dBm	Pass				
40 MHz								
	Low Channel 5190		24					
	MHz	10.807 dBm	dBm	Pass				
	High Channel 5230		24					
	MHz	11.175 dBm	dBm	Pass				
	Low Channel 5755		30					
	MHz	12.677 dBm	dBm	Pass				
	High Channel 5795		30					
	MHz	13.649 dBm	dBm	Pass				
Power Summing, Chain AC								
802.11(n) HT, MCS0								
	80MHz	(dBm) (mw)	(dBm) (mw)	(dBm)	Limit	Result		
	Low Channel 5210	28.82	33.42		24			
	MHz	14.597	0	15.241	7	17.941	dBm	Pass
	Low Channel 5775	35.18	54.43		30			
	MHz	15.463	0	17.359	8	19.524	dBm	Pass
802.11(n) HT, MCS8								
	20MHz	(dBm) (mw)	(dBm) (mw)	(dBm)	Limit	Result		
	Low Channel 5180	19.09	46.92		24			
	MHz	12.810	9	16.714	5	18.197	dBm	Pass
	High Channel 5240	24.61	54.46		24			
	MHz	13.912	5	17.361	3	18.981	dBm	Pass
	Low Channel 5745	76.47	69.79		30			
	MHz	18.835	2	18.438	1	21.651	dBm	Pass
	Mid Channel 5785	75.63	71.68		30			
	MHz	18.787	1	18.554	0	21.682	dBm	Pass
	High Channel 5825	19.006	79.54	18.815	76.12	21.922	30	Pass

MAXIMUM CONDUCTED OUTPUT POWER



							Limit	Result
							Value	(<)
MHz	3		0				dBm	
40MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5190		31.77		34.97		24		
MHz	15.021	6	15.437	0	18.244	dBm	Pass	
High Channel 5230		33.18		40.07		24		
MHz	15.210	9	16.029	7	18.649	dBm	Pass	
Low Channel 5755		58.38		57.03		30		
MHz	17.663	5	17.561	0	20.623	dBm	Pass	
High Channel 5795		68.07		65.16		30		
MHz	18.330	7	18.140	3	21.246	dBm	Pass	
802.11(ac) VHT, MCS8 (256-QAM)								
20 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5180		16.52		18.77		24		
MHz	12.181	3	12.736	6	15.478	dBm	Pass	
High Channel 5240		16.42		22.65		24		
MHz	12.156	9	13.551	2	15.920	dBm	Pass	
Low Channel 5745		19.97		29.81		30		
MHz	13.005	6	14.744	3	16.971	dBm	Pass	
Mid Channel 5785		20.51		36.38		30		
MHz	13.121	6	15.609	3	17.551	dBm	Pass	
High Channel 5825		31.76		38.07		30		
MHz	15.019	1	15.806	2	18.441	dBm	Pass	
802.11(ac) VHT, MCS9 (256-QAM)								
80 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5210		10.11		12.36		24		
MHz	10.051	8	10.921	2	13.518	dBm	Pass	
Low Channel 5775		12.23		20.35		30		
MHz	10.876	5	13.087	6	15.131	dBm	Pass	
40 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5190		11.49		13.15		24		
MHz	10.605	5	11.191	5	13.918	dBm	Pass	
High Channel 5230		12.02		14.83		24		
MHz	10.802	8	11.713	5	14.292	dBm	Pass	
Low Channel 5755		21.43		21.48		30		
MHz	13.311	4	13.321	3	16.326	dBm	Pass	
High Channel 5795		26.06		24.96		30		
MHz	14.161	8	13.973	3	17.078	dBm	Pass	
802.11(n) HT, MCS15								
20 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5180		13.63		14.37		24		
MHz	11.347	6	11.576	5	14.473	dBm	Pass	
High Channel 5240		15.20		16.67		24		
MHz	11.821	9	12.221	6	15.036	dBm	Pass	
Low Channel 5745		13.049	20.17	14.381	27.42	16.776	30	Pass

MAXIMUM CONDUCTED OUTPUT POWER



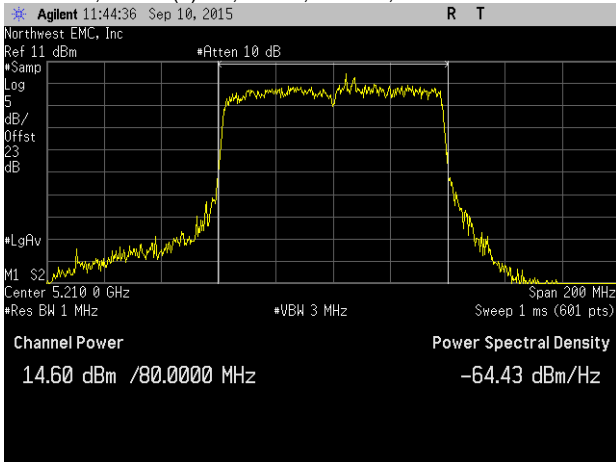
							Limit		
							Value	(<)	Result
	MHz		9		2			dBm	
	Mid Channel 5785		20.27		32.38			30	
	MHz	13.069	2	15.103	2	17.214		dBm	Pass
	High Channel 5825		27.99		34.46			30	
	MHz	14.470	0	15.374	7	17.956		dBm	Pass
									Result
	40 MHz		(dBm)	(mw)	(dBm)	(mw)		(dBm)	Limit
	Low Channel 5190		10.42		12.04			24	
	MHz	10.181	6	10.807	2	13.516		dBm	Pass
	High Channel 5230		10.88		13.10			24	
	MHz	10.367	2	11.175	7	13.800		dBm	Pass
	Low Channel 5755		18.34		18.52			30	
	MHz	12.635	4	12.677	3	15.666		dBm	Pass
	High Channel 5795		22.48		23.16			30	
	MHz	13.518	0	13.649	9	16.594		dBm	Pass

Jonathan Kiefer

Tested By

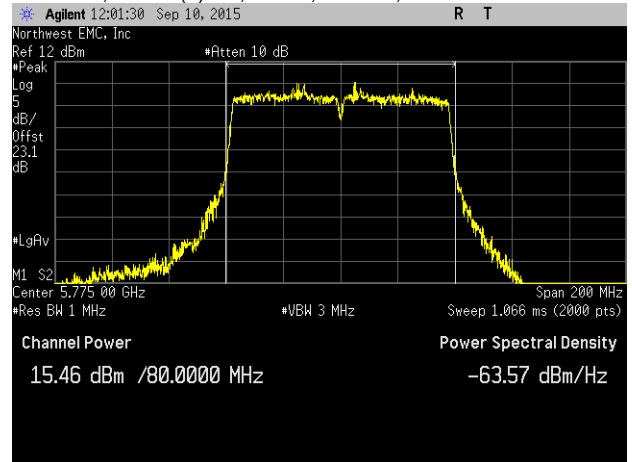
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



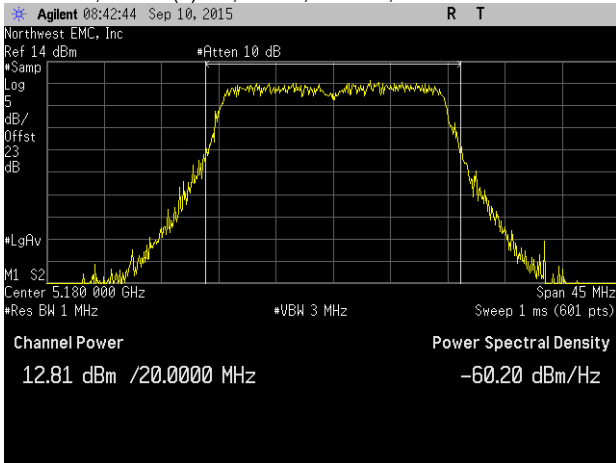
Value	14.597 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



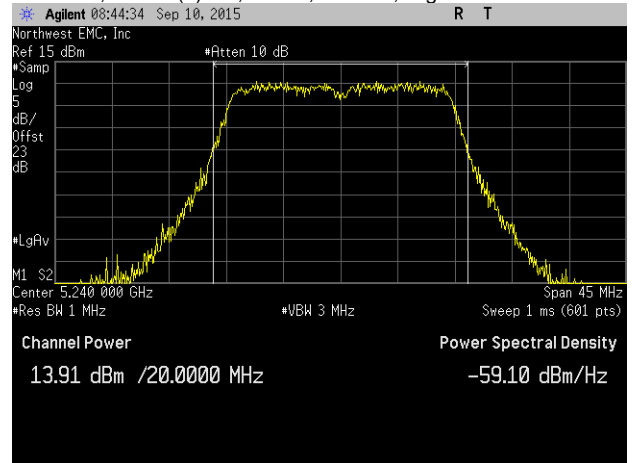
Value	15.463 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5180 MHz



Value	12.81 dBm
Limit (<)	24 dBm
Result	Pass

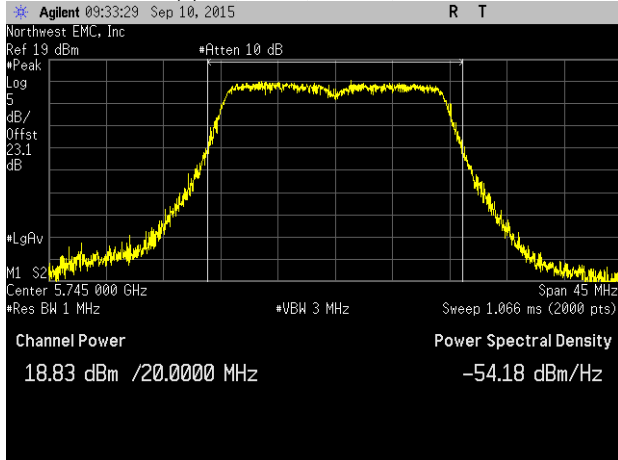
Chain A, 802.11(n) HT, MCS8, 20 MHz, High Channel 5240 MHz



Value	13.912 dBm
Limit (<)	24 dBm
Result	Pass

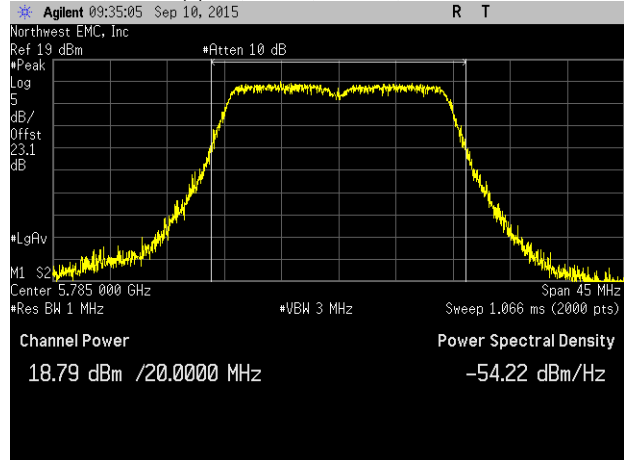
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5745 MHz



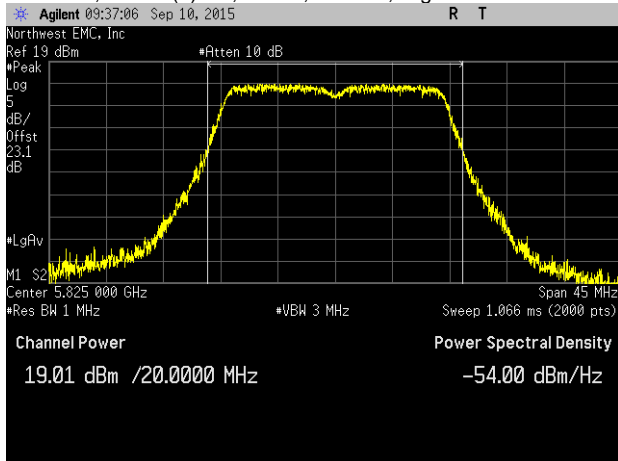
Value	18.835 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 20 MHz, Mid Channel 5785 MHz



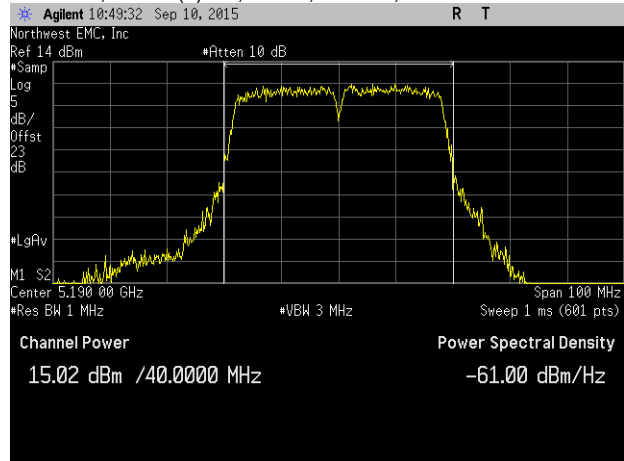
Value	18.787 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 20 MHz, High Channel 5825 MHz



Value	19.006 dBm
Limit (<)	30 dBm
Result	Pass

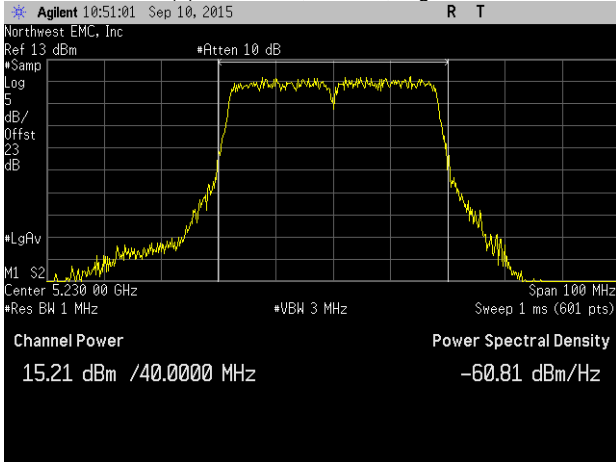
Chain A, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5190 MHz



Value	15.021 dBm
Limit (<)	24 dBm
Result	Pass

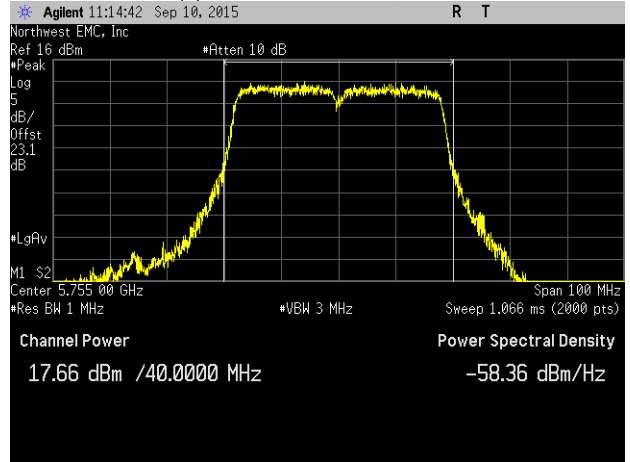
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS8, 40 MHz, High Channel 5230 MHz



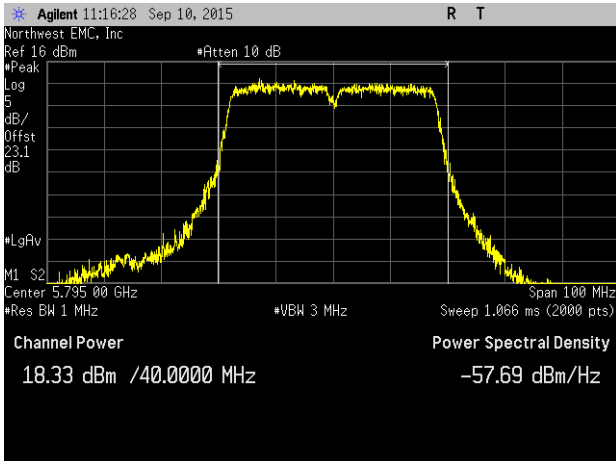
Value	15.21 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5755 MHz



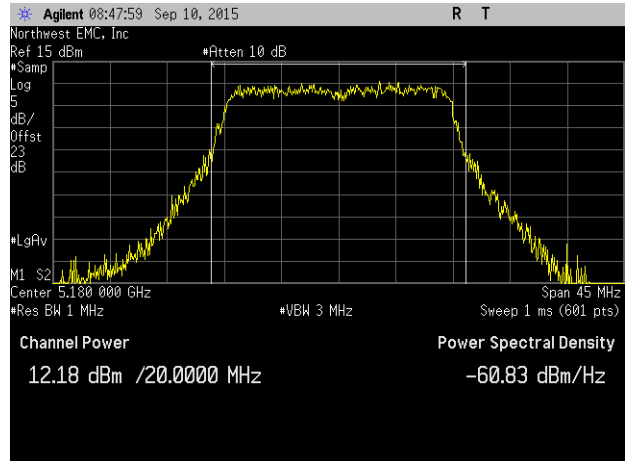
Value	17.663 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS8, 40 MHz, High Channel 5795 MHz



Value	18.33 dBm
Limit (<)	30 dBm
Result	Pass

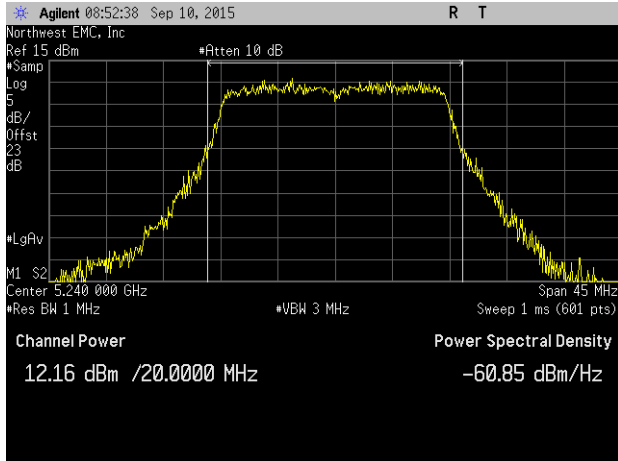
Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	12.181 dBm
Limit (<)	24 dBm
Result	Pass

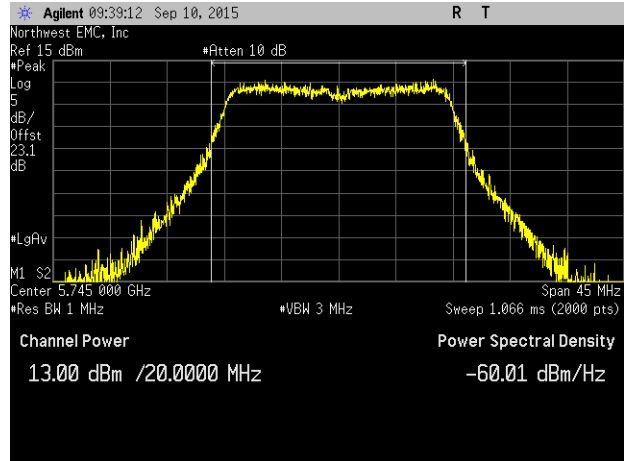
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5240 MHz



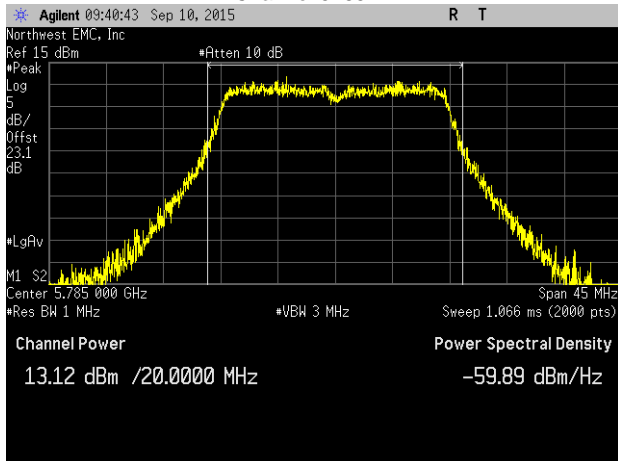
Value	12.156 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low
Channel 5745 MHz



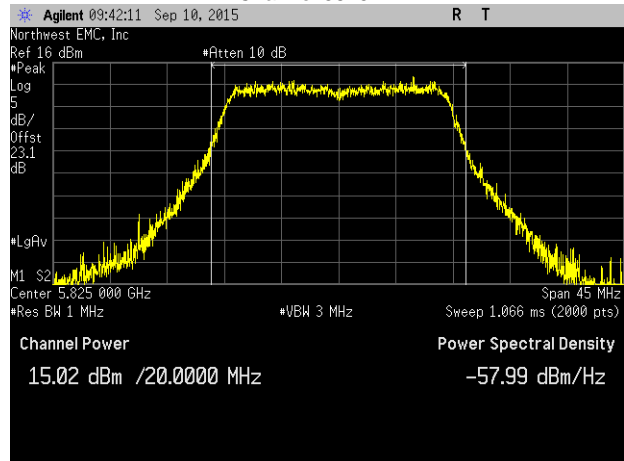
Value	13.005 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid
Channel 5785 MHz



Value	13.121 dBm
Limit (<)	30 dBm
Result	Pass

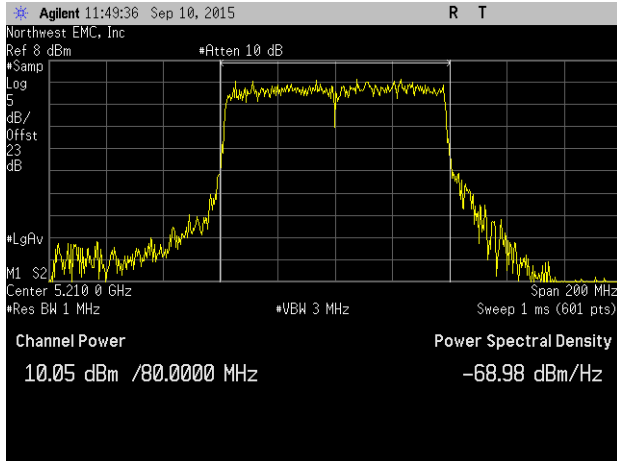
Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5825 MHz



Value	15.019 dBm
Limit (<)	30 dBm
Result	Pass

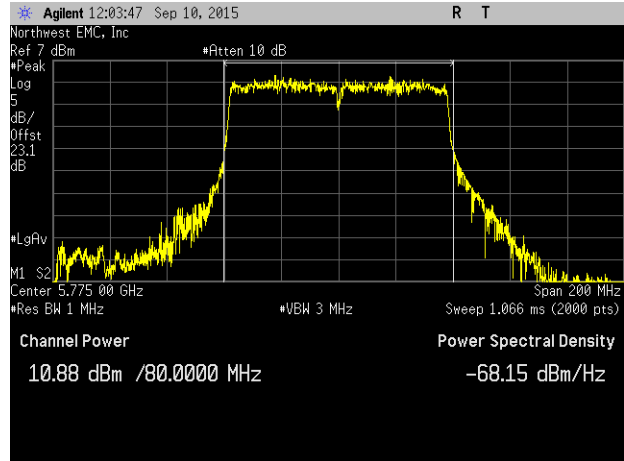
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5210 MHz



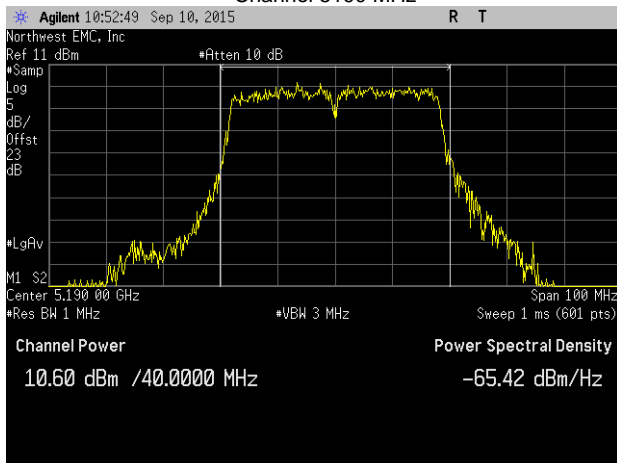
Value	10.051 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



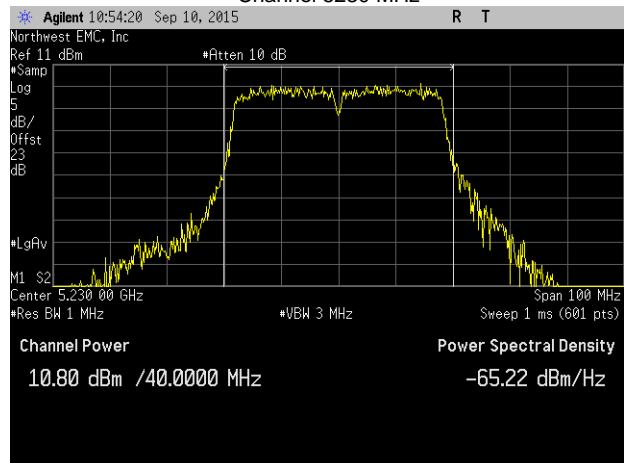
Value	10.876 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



Value	10.605 dBm
Limit (<)	24 dBm
Result	Pass

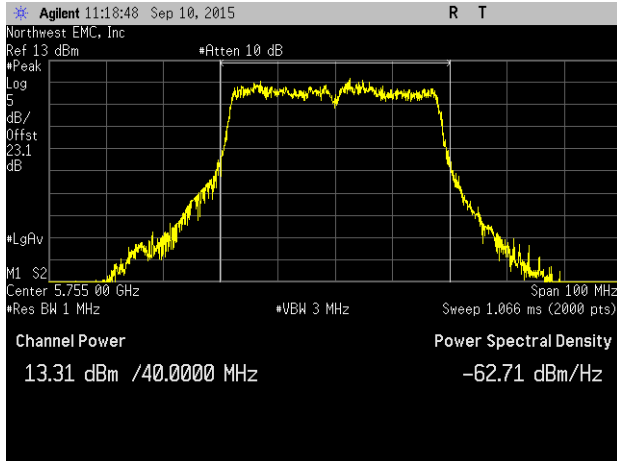
Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



Value	10.802 dBm
Limit (<)	24 dBm
Result	Pass

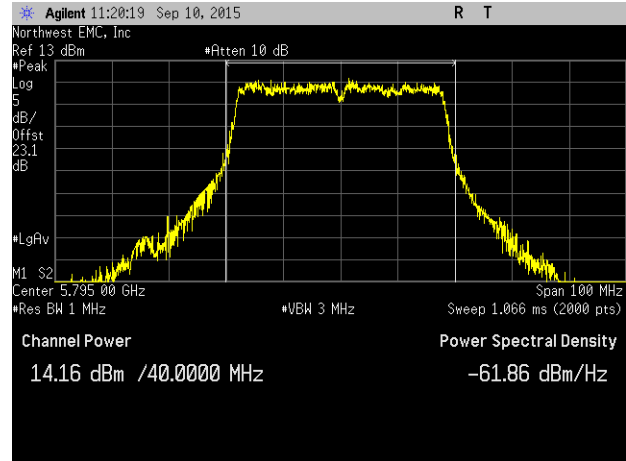
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low Channel 5755 MHz



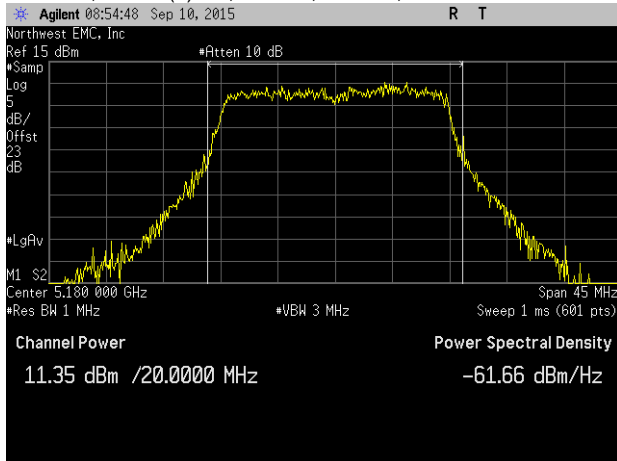
Value	13.311 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5795 MHz



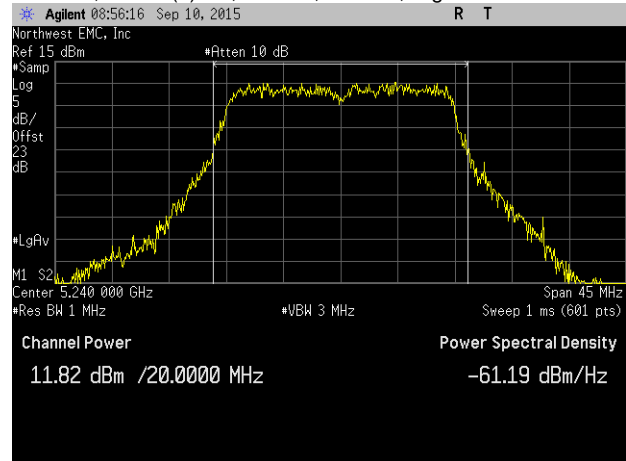
Value	14.161 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5180 MHz



Value	11.347 dBm
Limit (<)	24 dBm
Result	Pass

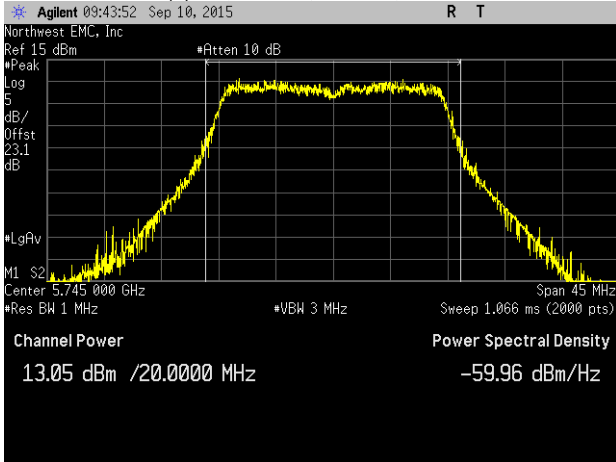
Chain A, 802.11(n) HT, MCS15, 20 MHz, High Channel 5240 MHz



Value	11.821 dBm
Limit (<)	24 dBm
Result	Pass

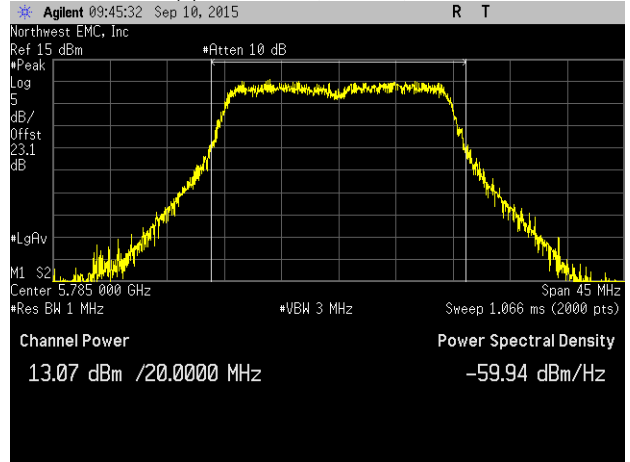
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5745 MHz



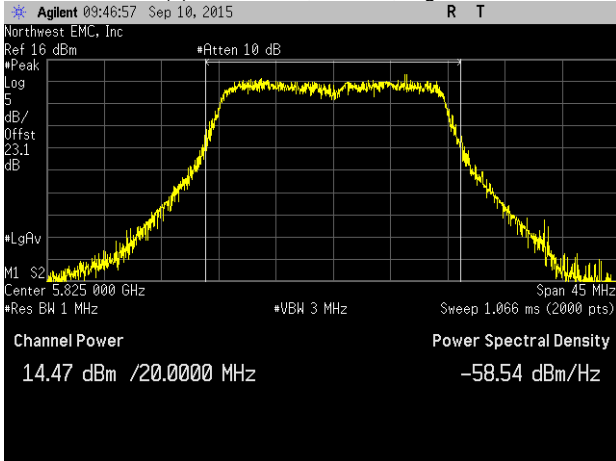
Value	13.049 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 20 MHz, Mid Channel 5785 MHz



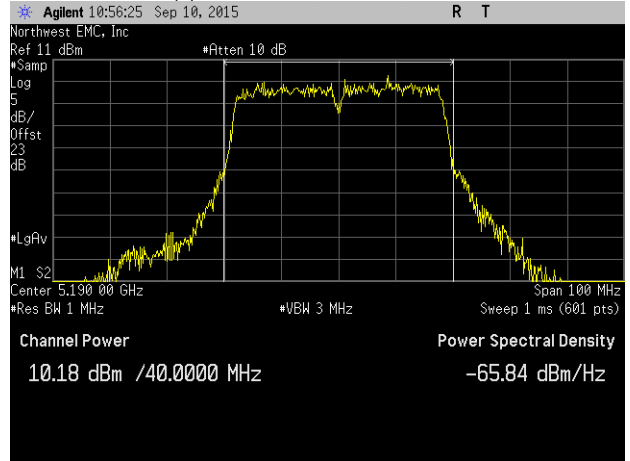
Value	13.069 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 20 MHz, High Channel 5825 MHz



Value	14.47 dBm
Limit (<)	30 dBm
Result	Pass

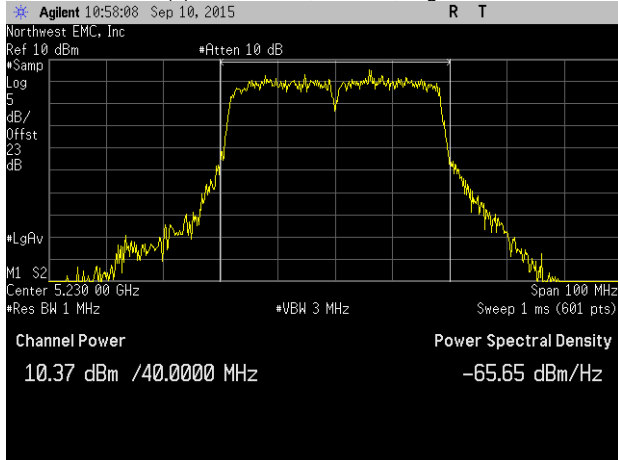
Chain A, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5190 MHz



Value	10.181 dBm
Limit (<)	24 dBm
Result	Pass

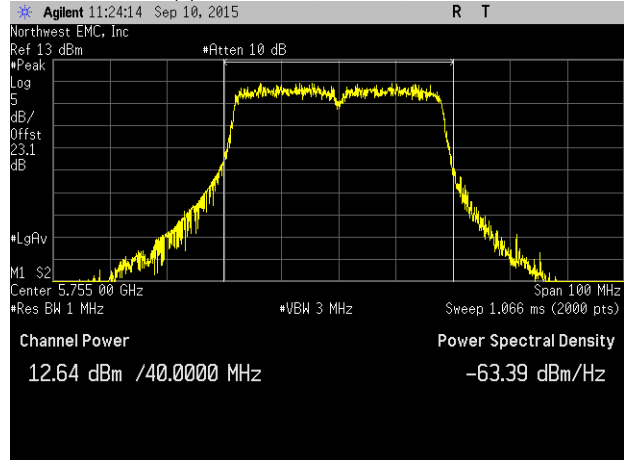
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS15, 40 MHz, High Channel 5230 MHz



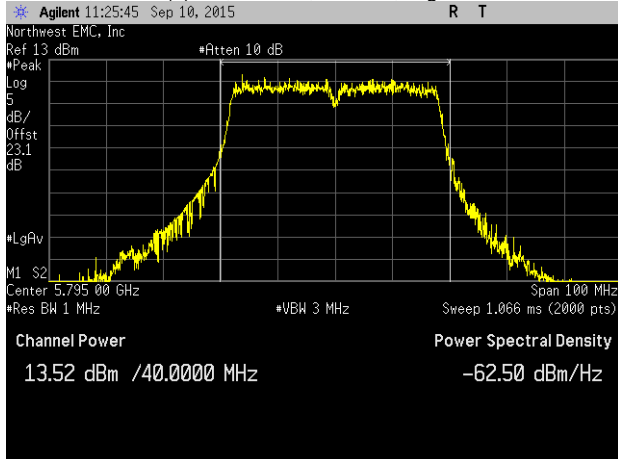
Value	10.367 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5755 MHz



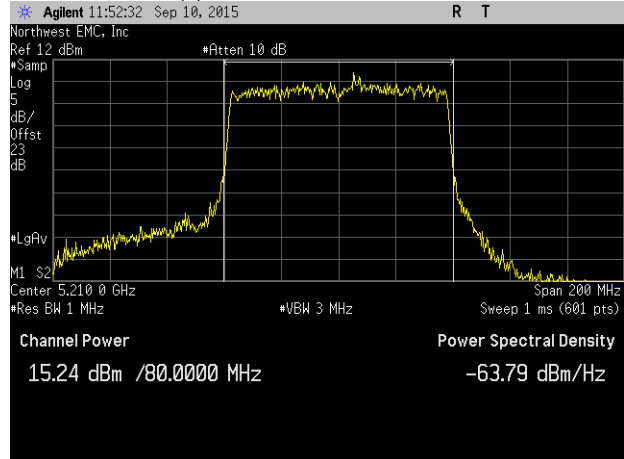
Value	12.635 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS15, 40 MHz, High Channel 5795 MHz



Value	13.518 dBm
Limit (<)	30 dBm
Result	Pass

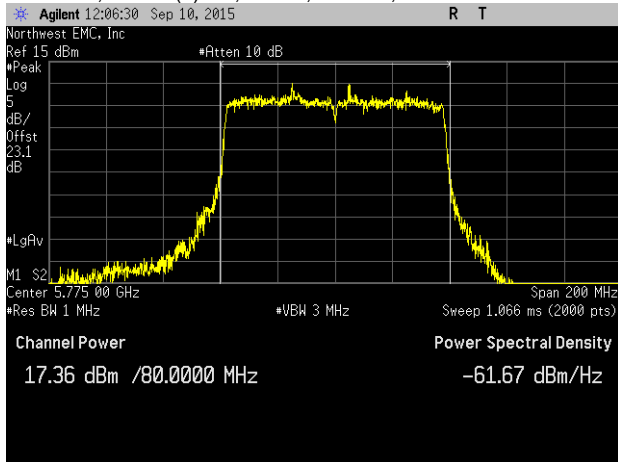
Chain C, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



Value	15.241 dBm
Limit (<)	24 dBm
Result	Pass

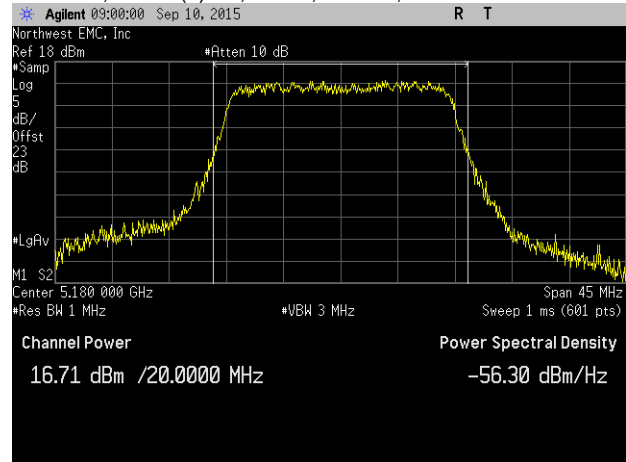
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



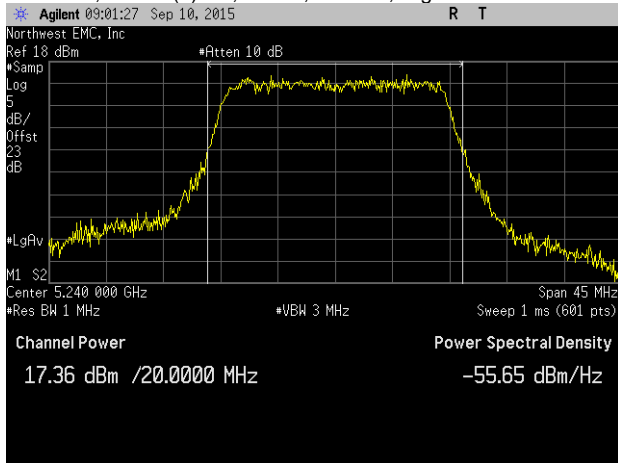
Value	17.359 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5180 MHz



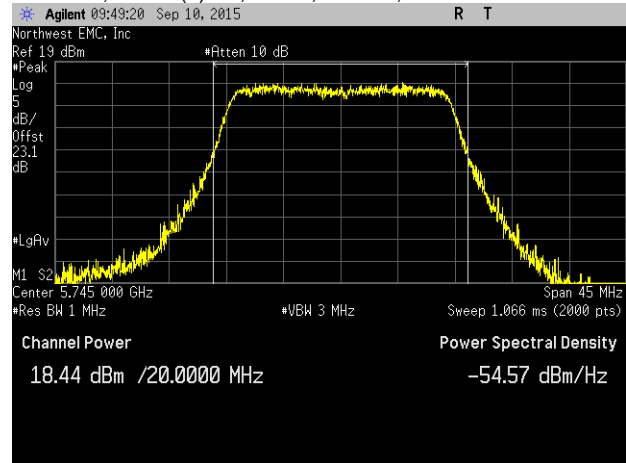
Value	16.714 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 20 MHz, High Channel 5240 MHz



Value	17.361 dBm
Limit (<)	24 dBm
Result	Pass

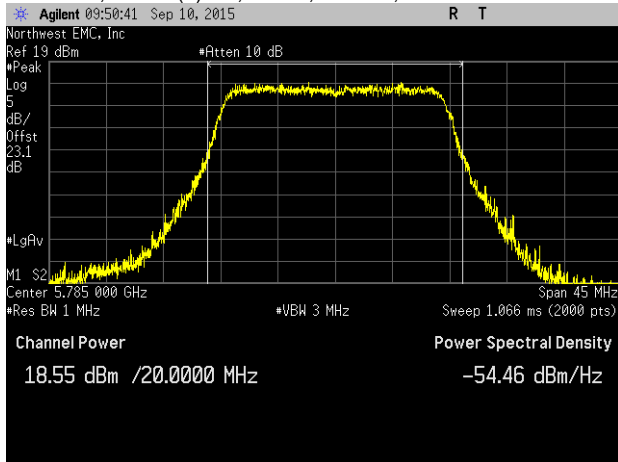
Chain C, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5745 MHz



Value	18.438 dBm
Limit (<)	30 dBm
Result	Pass

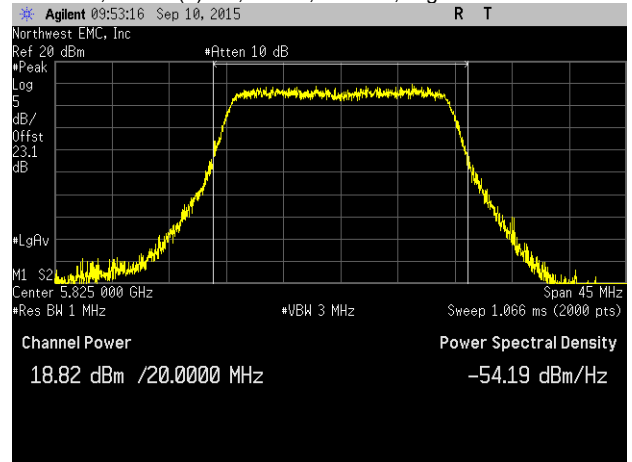
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS8, 20 MHz, Mid Channel 5785 MHz



Value	18.554 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 20 MHz, High Channel 5825 MHz



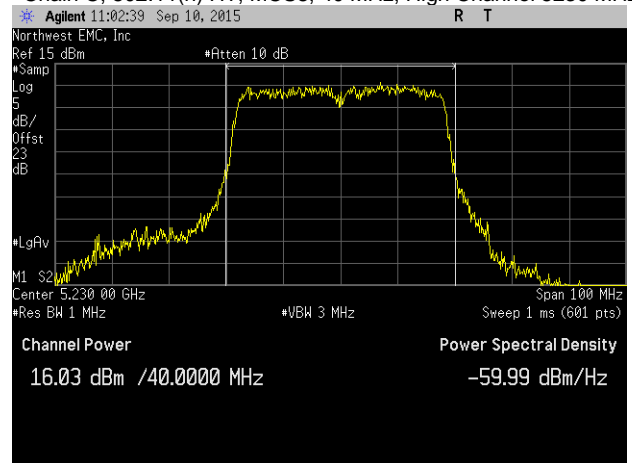
Value	18.815 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5190 MHz



Value	15.437 dBm
Limit (<)	24 dBm
Result	Pass

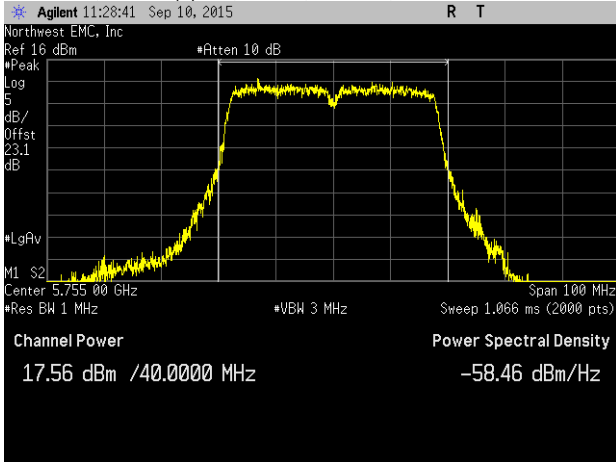
Chain C, 802.11(n) HT, MCS8, 40 MHz, High Channel 5230 MHz



Value	16.029 dBm
Limit (<)	24 dBm
Result	Pass

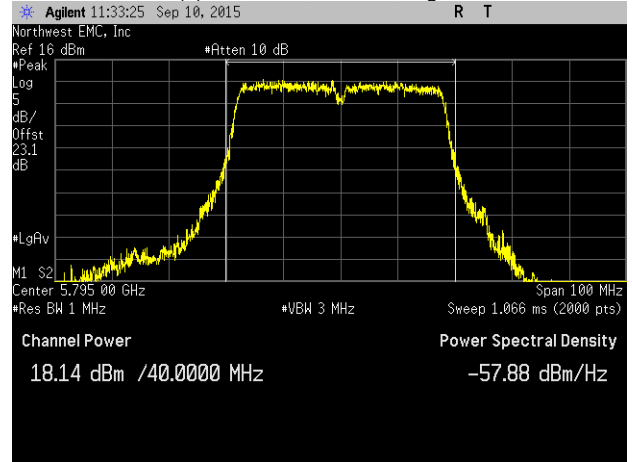
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5755 MHz



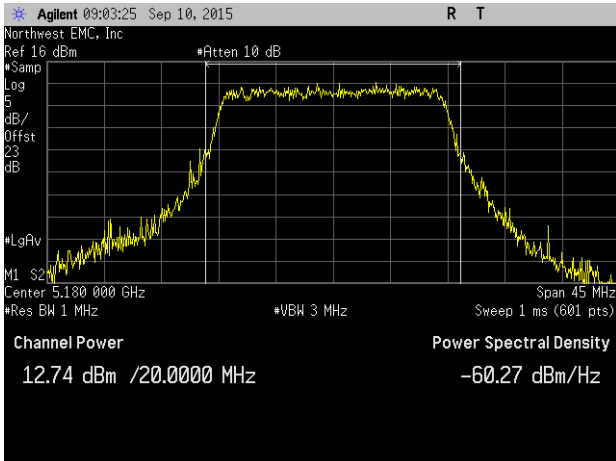
Value	17.561 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 40 MHz, High Channel 5795 MHz



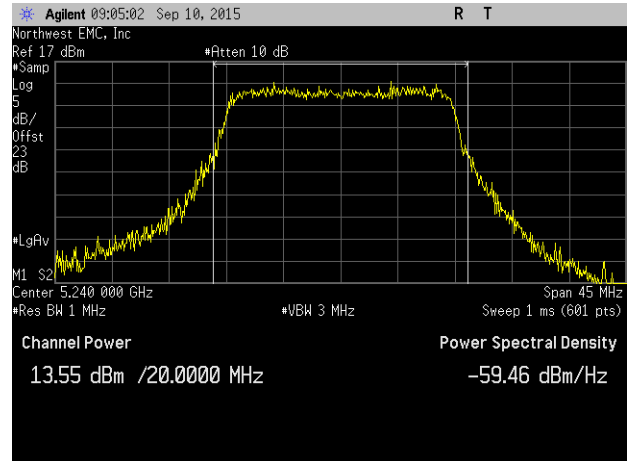
Value	18.14 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	12.736 dBm
Limit (<)	24 dBm
Result	Pass

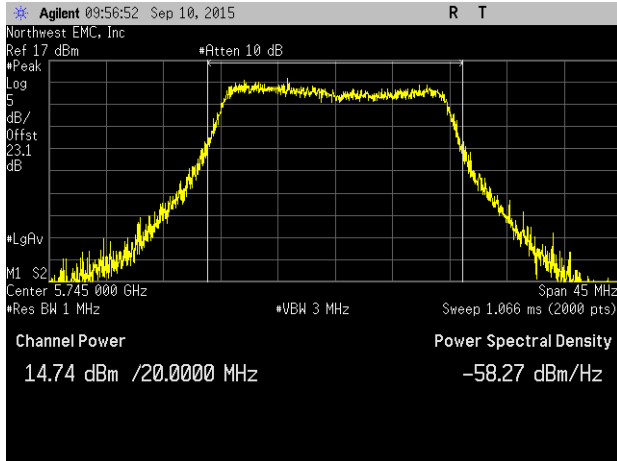
Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5240 MHz



Value	13.551 dBm
Limit (<)	24 dBm
Result	Pass

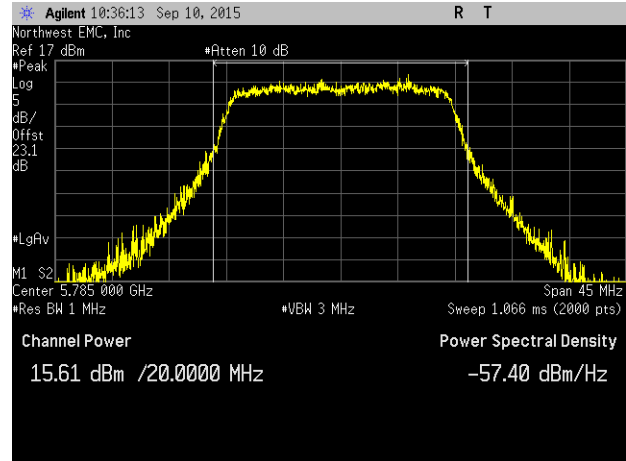
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low
Channel 5745 MHz



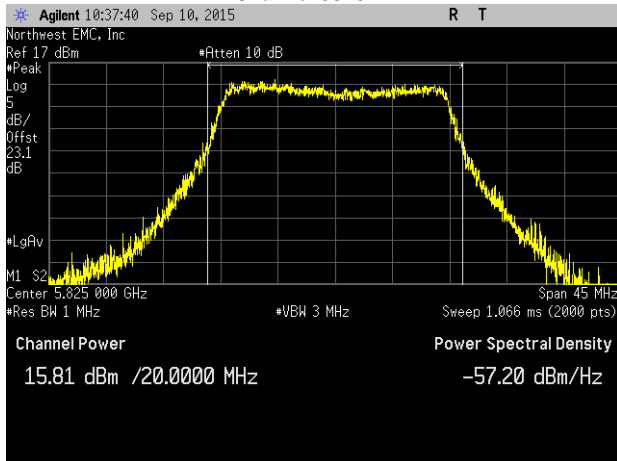
Value	14.744 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid
Channel 5785 MHz



Value	15.609 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5825 MHz



Value	15.806 dBm
Limit (<)	30 dBm
Result	Pass

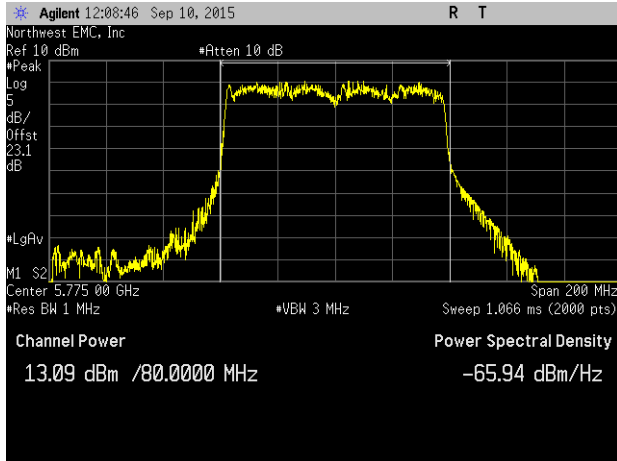
Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5210 MHz



Value	10.921 dBm
Limit (<)	24 dBm
Result	Pass

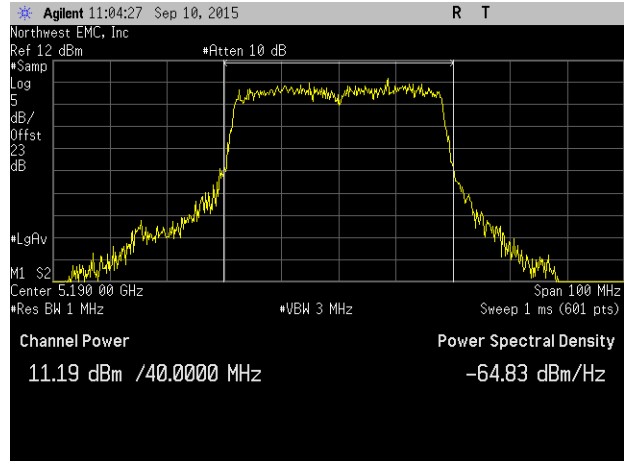
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



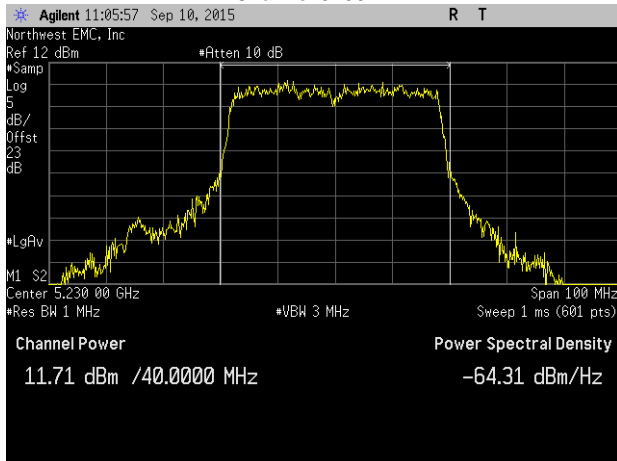
Value	13.087 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



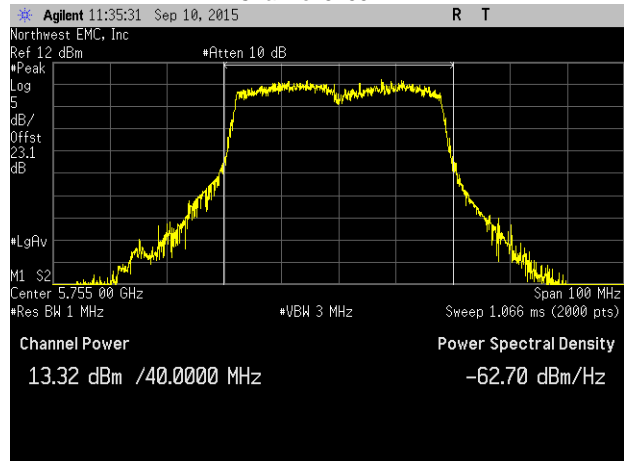
Value	11.191 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



Value	11.713 dBm
Limit (<)	24 dBm
Result	Pass

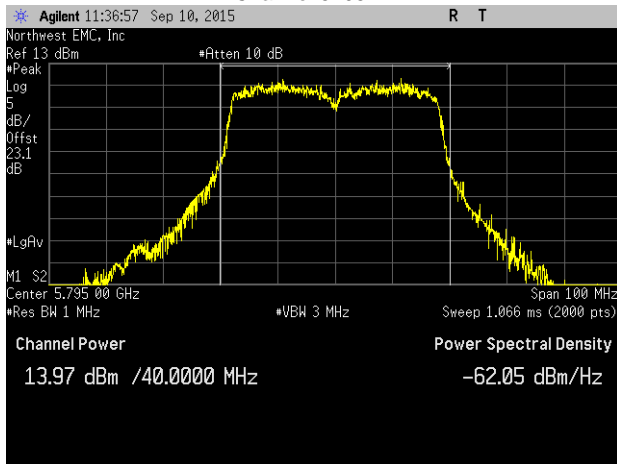
Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5755 MHz



Value	13.321 dBm
Limit (<)	30 dBm
Result	Pass

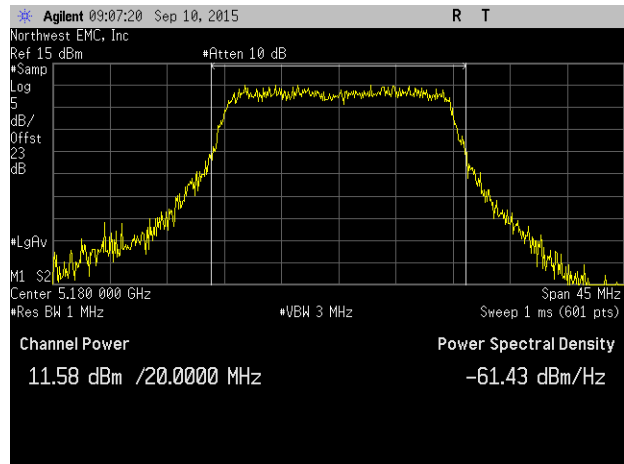
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5795 MHz



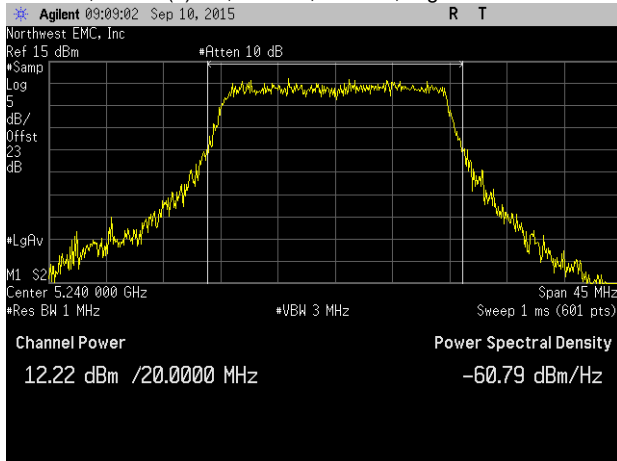
Value	13.973 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5180 MHz



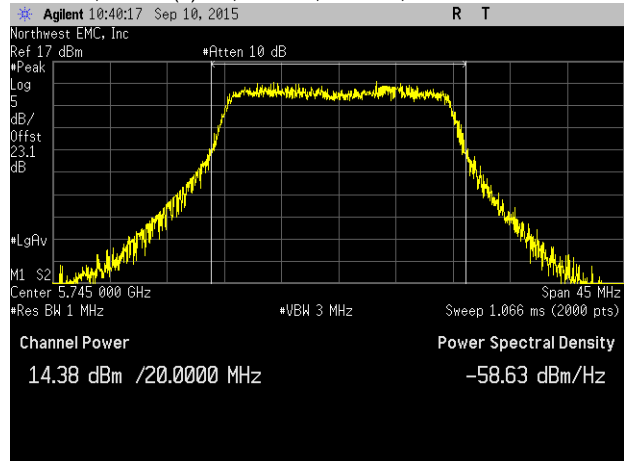
Value	11.576 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 20 MHz, High Channel 5240 MHz



Value	12.221 dBm
Limit (<)	24 dBm
Result	Pass

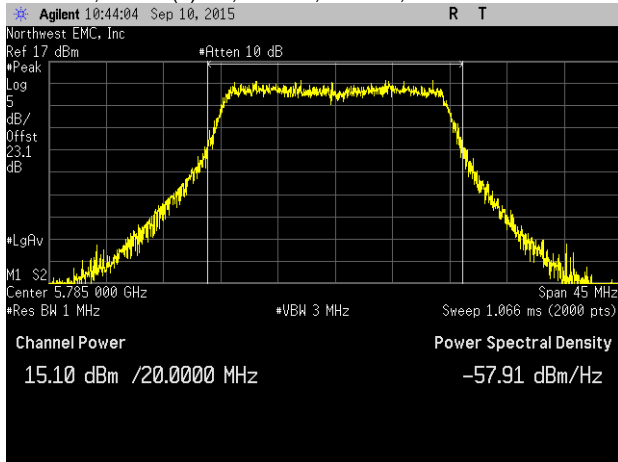
Chain C, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5745 MHz



Value	14.381 dBm
Limit (<)	30 dBm
Result	Pass

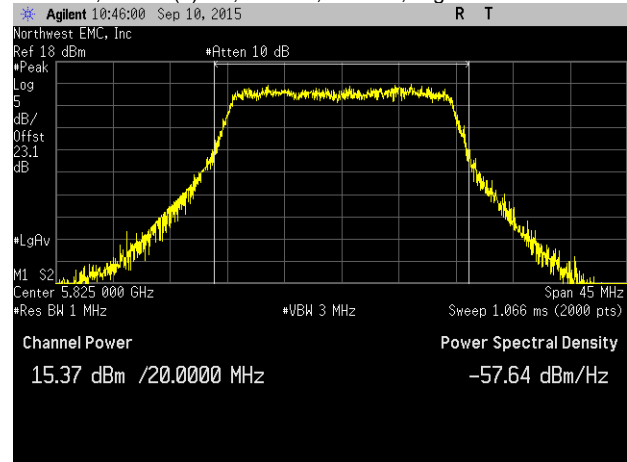
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS15, 20 MHz, Mid Channel 5785 MHz



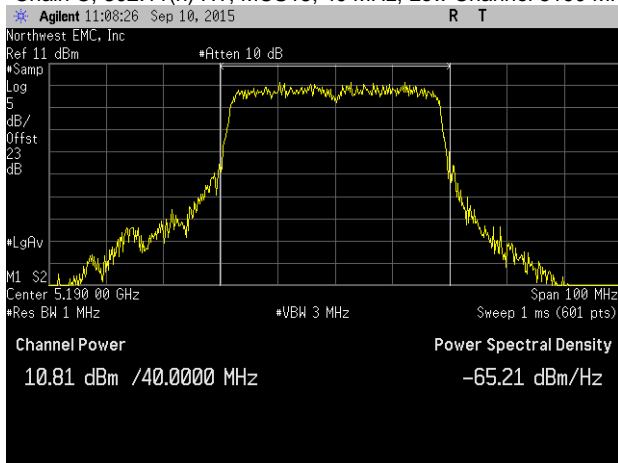
Value	15.103 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 20 MHz, High Channel 5825 MHz



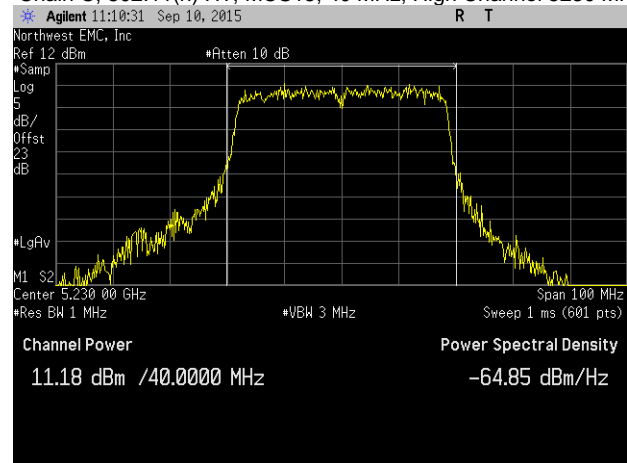
Value	15.374 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5190 MHz



Value	10.807 dBm
Limit (<)	24 dBm
Result	Pass

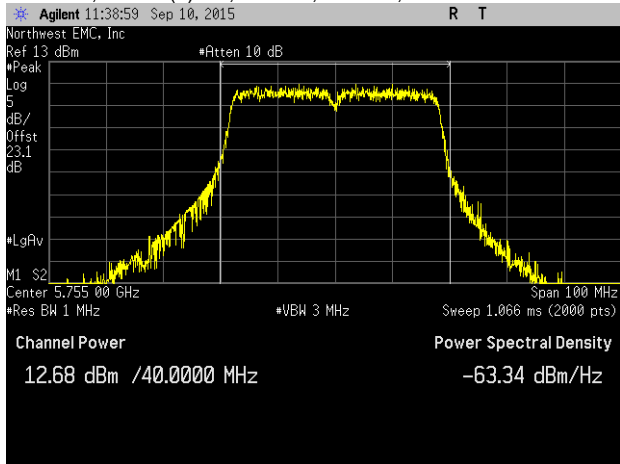
Chain C, 802.11(n) HT, MCS15, 40 MHz, High Channel 5230 MHz



Value	11.175 dBm
Limit (<)	24 dBm
Result	Pass

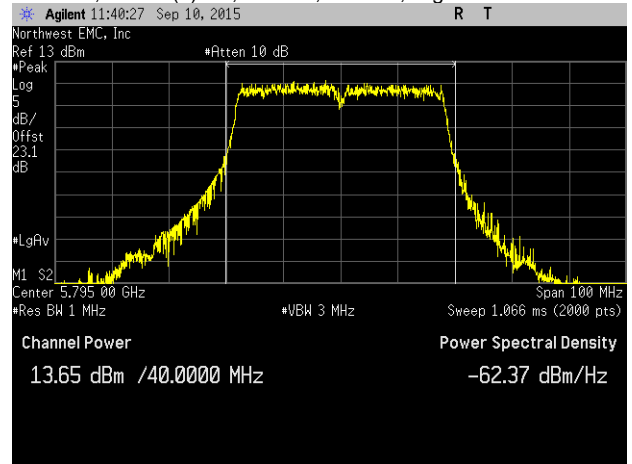
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5755 MHz



Value	12.677 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 40 MHz, High Channel 5795 MHz



Value	13.649 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

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 DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section C was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep) was used for this test.

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

- RBW = 1 MHz, VBW = 3 MHz
- Sample Detector
- The number of points was set to 601. This satisfied the requirement of being $> 2 * \text{span} / \text{RBW}$
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	7/23/2015	7/23/2016
Block - DC	Fairview Microwave	SD3379	AMM	2/27/2015	2/27/2016
Attenuator	Fairview Microwave	SA4018-20	TQY	2/27/2015	2/27/2016
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	7/15/2017

MAXIMUM CONDUCTED OUTPUT POWER



EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/10/15
Customer:	WatchGuard Technologies, Inc.	Temperature:	25.1°C
Attendees:	None	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1015 mbar
Tested By:	Jonathan Kiefer	Job Site:	TX09
Power:	110VAC/60Hz	Configuration:	5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2015	ANSI C63.10:2013

COMMENTS

2x2 MIMO mode, Chain BC (Chain 1 and 2).

DEVIATIONS FROM TEST STANDARD

None

RESULTS

		Value	Limit (<)	Result
Chain B				
802.11(n) HT, MCS0				
80 MHz				
	Low Channel 5210 MHz	16.168 dBm	24 dBm	Pass
	Low Channel 5775 MHz	17.166 dBm	30 dBm	Pass
802.11(n) HT, MCS8				
20 MHz				
	Low Channel 5180 MHz	17.978 dBm	24 dBm	Pass
	High Channel 5240 MHz	18.445 dBm	24 dBm	Pass
	Low Channel 5745 MHz	20.086 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	20.441 dBm	30 dBm	Pass
	High Channel 5825 MHz	20.361 dBm	30 dBm	Pass
40 MHz				
	Low Channel 5190 MHz	16.324 dBm	24 dBm	Pass
	High Channel 5230 MHz	16.699 dBm	24 dBm	Pass
	Low Channel 5755 MHz	18.978 dBm	30 dBm	Pass
	High Channel 5795 MHz	18.073 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)				
20 MHz				
	Low Channel 5180	13.688 dBm	24	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result
	MHz		dBm	
	High Channel 5240		24	
	MHz	14.189 dBm	dBm	Pass
	Low Channel 5745		30	
	MHz	15.93 dBm	dBm	Pass
	Mid Channel 5785		30	
	MHz	16.317 dBm	dBm	Pass
	High Channel 5825		30	
	MHz	16.642 dBm	dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)				
	80 MHz			
	Low Channel 5210		24	
	MHz	11.769 dBm	dBm	Pass
	Low Channel 5775		30	
	MHz	12.926 dBm	dBm	Pass
	40 MHz			
	Low Channel 5190		24	
	MHz	12.034 dBm	dBm	Pass
	High Channel 5230		24	
	MHz	12.26 dBm	dBm	Pass
	Low Channel 5755		30	
	MHz	14.568 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	13.715 dBm	dBm	Pass
802.11(n) HT, MCS15				
	20 MHz			
	Low Channel 5180		24	
	MHz	13.397 dBm	dBm	Pass
	High Channel 5240		24	
	MHz	13.763 dBm	dBm	Pass
	Low Channel 5745		30	
	MHz	15.549 dBm	dBm	Pass
	Mid Channel 5785		30	
	MHz	16.078 dBm	dBm	Pass
	High Channel 5825		30	
	MHz	16.21 dBm	dBm	Pass
	40 MHz			
	Low Channel 5190		24	
	MHz	11.834 dBm	dBm	Pass
	High Channel 5230		24	
	MHz	12.099 dBm	dBm	Pass
	Low Channel 5755		30	
	MHz	14.403 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	13.585 dBm	dBm	Pass
Chain C				
	802.11(n) HT, MCS0			

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result
80 MHz				
	Low Channel 5210 MHz	15.489 dBm	24 dBm	Pass
	Low Channel 5775 MHz	17.364 dBm	30 dBm	Pass
802.11(n) HT, MCS8				
20 MHz				
	Low Channel 5180 MHz	16.783 dBm	24 dBm	Pass
	High Channel 5240 MHz	17.451 dBm	24 dBm	Pass
	Low Channel 5745 MHz	18.638 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	18.729 dBm	30 dBm	Pass
	High Channel 5825 MHz	19.126 dBm	30 dBm	Pass
40 MHz				
	Low Channel 5190 MHz	15.868 dBm	24 dBm	Pass
	High Channel 5230 MHz	16.168 dBm	24 dBm	Pass
	Low Channel 5755 MHz	17.675 dBm	30 dBm	Pass
	High Channel 5795 MHz	18.549 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)				
20 MHz				
	Low Channel 5180 MHz	13.15 dBm	24 dBm	Pass
	High Channel 5240 MHz	13.807 dBm	24 dBm	Pass
	Low Channel 5745 MHz	14.856 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	15.388 dBm	30 dBm	Pass
	High Channel 5825 MHz	15.999 dBm	30 dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)				
80 MHz				
	Low Channel 5210 MHz	11.172 dBm	24 dBm	Pass
	Low Channel 5775 MHz	12.972 dBm	30 dBm	Pass
40 MHz				
	Low Channel 5190 MHz	11.337 dBm	24 dBm	Pass
	High Channel 5230 MHz	11.806 dBm	24 dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result				
	MHz		dBm					
	Low Channel 5755		30					
	MHz	13.437 dBm	dBm	Pass				
	High Channel 5795		30					
	MHz	14.385 dBm	dBm	Pass				
802.11(n) HT, MCS15								
20 MHz								
	Low Channel 5180		24					
	MHz	12.828 dBm	dBm	Pass				
	High Channel 5240		24					
	MHz	13.5 dBm	dBm	Pass				
	Low Channel 5745		30					
	MHz	14.391 dBm	dBm	Pass				
	Mid Channel 5785		30					
	MHz	15.395 dBm	dBm	Pass				
	High Channel 5825		30					
	MHz	15.821 dBm	dBm	Pass				
40 MHz								
	Low Channel 5190		24					
	MHz	11.105 dBm	dBm	Pass				
	High Channel 5230		24					
	MHz	11.541 dBm	dBm	Pass				
	Low Channel 5755		30					
	MHz	12.779 dBm	dBm	Pass				
	High Channel 5795		30					
	MHz	13.705 dBm	dBm	Pass				
Power Summing, Chain BC								
		Chain B	Chain C	Summed Power				
802.11(n) HT, MCS0								
	80MHz	(dBm)	(mw)	(dBm)	Limit	Results		
	Low Channel 5210		35.39		24			
	MHz	16.168	41.381	15.489	2	18.852	dBm	Pass
	Low Channel 5775		54.50		30			
	MHz	17.166	52.071	17.364	0	20.276	dBm	Pass
802.11(n) HT, MCS8								
	20MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Results
	Low Channel 5180		47.67				24	
	MHz	17.978	62.777	16.783	6	20.432	dBm	Pass
	High Channel 5240		55.60				24	
	MHz	18.445	69.904	17.451	3	20.987	dBm	Pass
	Low Channel 5745		73.08				30	
	MHz	20.086	0	18.638	0	22.432	dBm	Pass
	Mid Channel 5785		74.62				30	
	MHz	20.441	8	18.729	8	22.679	dBm	Pass
	High Channel 5825		81.77				30	
	MHz	20.361	108.66	19.126	81.77	22.798	dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



							Limit	Result
							Value	(<)
MHz	8		1				dBm	
40MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5190				38.61		24		
MHz	16.324	42.894	15.868	9	19.112	dBm	Pass	
High Channel 5230				41.38		24		
MHz	16.699	46.763	16.168	1	19.452	dBm	Pass	
Low Channel 5755				58.54		30		
MHz	18.978	79.031	17.675	6	21.385	dBm	Pass	
High Channel 5795				71.59		30		
MHz	18.073	64.165	18.549	8	21.328	dBm	Pass	
802.11(ac) VHT, MCS8 (256-QAM)								
20 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5180				20.65		24		
MHz	13.688	23.378	13.150	4	16.438	dBm	Pass	
High Channel 5240				24.02		24		
MHz	14.189	26.236	13.807	7	17.012	dBm	Pass	
Low Channel 5745				30.59		30		
MHz	15.930	39.174	14.856	1	18.436	dBm	Pass	
Mid Channel 5785				34.57		30		
MHz	16.317	42.825	15.388	8	18.888	dBm	Pass	
High Channel 5825				39.80		30		
MHz	16.642	46.153	15.999	2	19.343	dBm	Pass	
802.11(ac) VHT, MCS9 (256-QAM)								
80 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5210				13.09		24		
MHz	11.769	15.028	11.172	8	14.491	dBm	Pass	
Low Channel 5775				19.82		30		
MHz	12.926	19.616	12.972	4	15.959	dBm	Pass	
40 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5190				13.60		24		
MHz	12.034	15.973	11.337	5	14.710	dBm	Pass	
High Channel 5230				15.15		24		
MHz	12.260	16.827	11.806	7	15.049	dBm	Pass	
Low Channel 5755				22.06		30		
MHz	14.568	28.629	13.437	5	17.050	dBm	Pass	
High Channel 5795				27.44		30		
MHz	13.715	23.523	14.385	7	17.073	dBm	Pass	
802.11(n) HT, MCS15								
20 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Result	
Low Channel 5180				19.17		24		
MHz	13.397	21.863	12.828	8	16.132	dBm	Pass	
High Channel 5240				22.38		24		
MHz	13.763	23.785	13.500	7	16.644	dBm	Pass	
Low Channel 5745				27.48		30		
MHz	15.549	35.884	14.391	27.48	18.019	dBm	Pass	

MAXIMUM CONDUCTED OUTPUT POWER



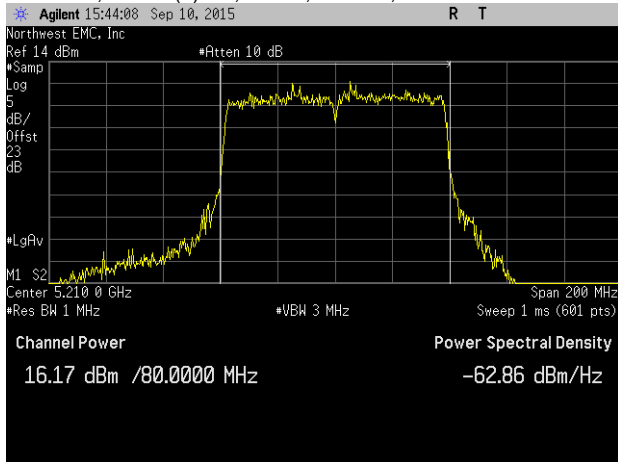
							Limit		
							Value	(<)	Result
	MHz					5			dBm
	Mid Channel 5785					34.63			30
	MHz	16.078	40.532	15.395	4	18.760			dBm Pass
	High Channel 5825					38.20			30
	MHz	16.210	41.783	15.821	3	19.030			dBm Pass
	40 MHz								Result
	Low Channel 5190					12.89			24
	MHz	11.834	15.255	11.105	7	14.495			dBm Pass
	High Channel 5230					14.25			24
	MHz	12.099	16.214	11.541	9	14.839			dBm Pass
	Low Channel 5755					18.96			30
	MHz	14.403	27.561	12.779	3	16.677			dBm Pass
	High Channel 5795					23.46			30
	MHz	13.585	22.830	13.705	9	16.656			dBm Pass

Jonathan Kiefer

Tested By

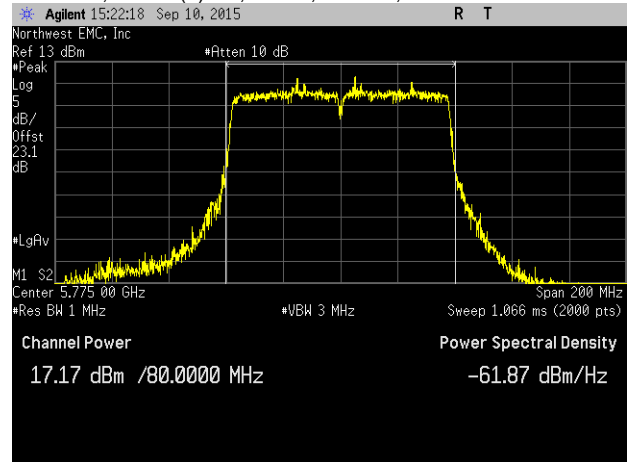
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



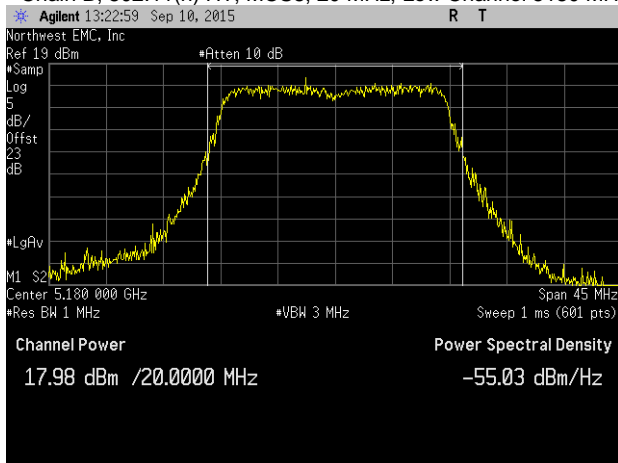
Value	16.168 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



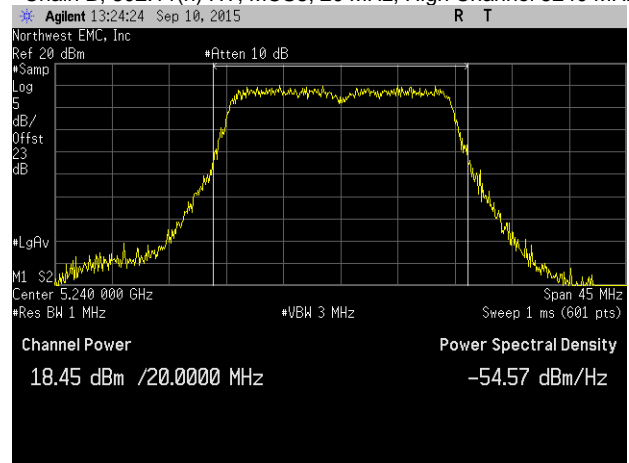
Value	17.166 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5180 MHz



Value	17.978 dBm
Limit (<)	24 dBm
Result	Pass

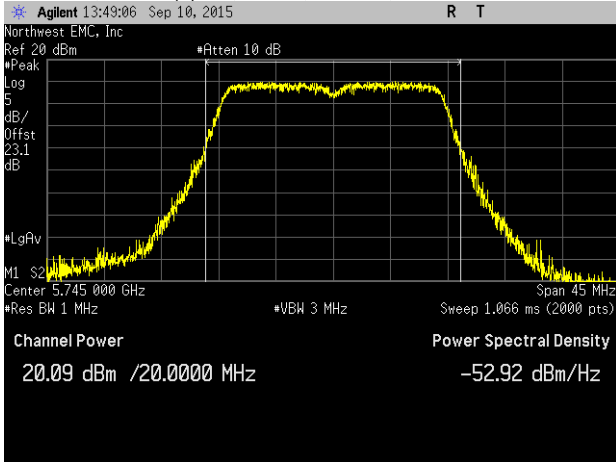
Chain B, 802.11(n) HT, MCS8, 20 MHz, High Channel 5240 MHz



Value	18.445 dBm
Limit (<)	24 dBm
Result	Pass

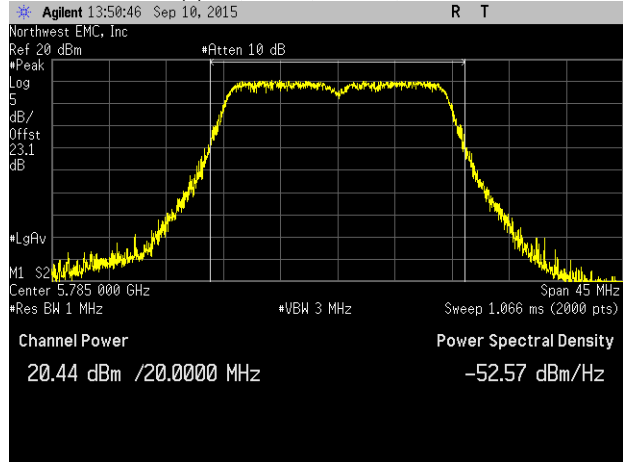
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5745 MHz



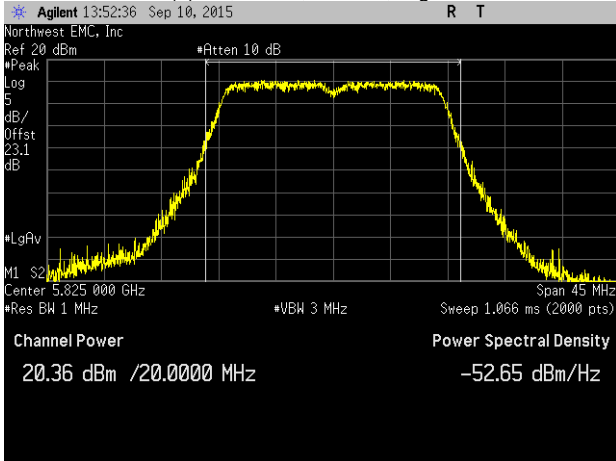
Value	20.086 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 20 MHz, Mid Channel 5785 MHz



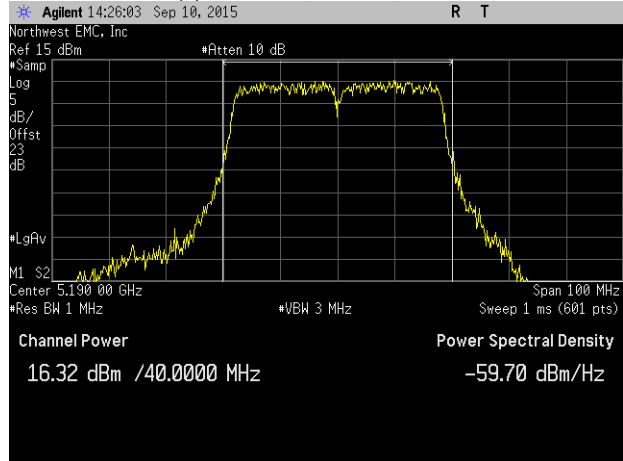
Value	20.441 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 20 MHz, High Channel 5825 MHz



Value	20.361 dBm
Limit (<)	30 dBm
Result	Pass

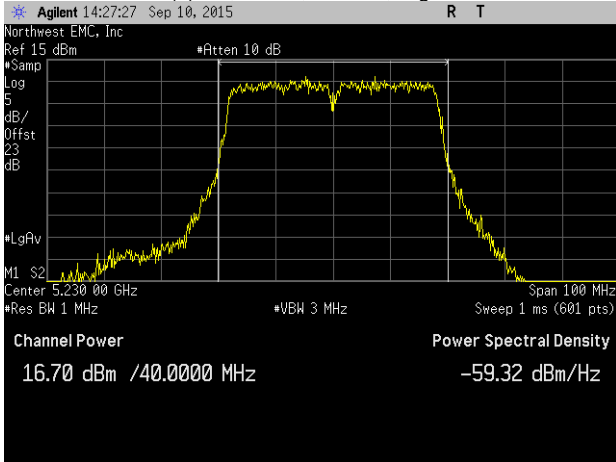
Chain B, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5190 MHz



Value	16.324 dBm
Limit (<)	24 dBm
Result	Pass

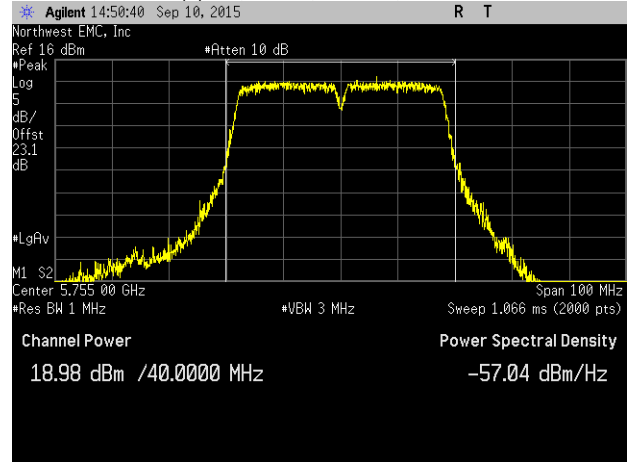
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS8, 40 MHz, High Channel 5230 MHz



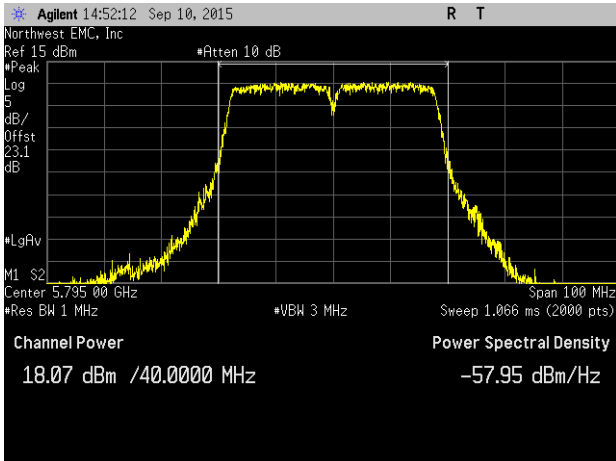
Value	16.699 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5755 MHz



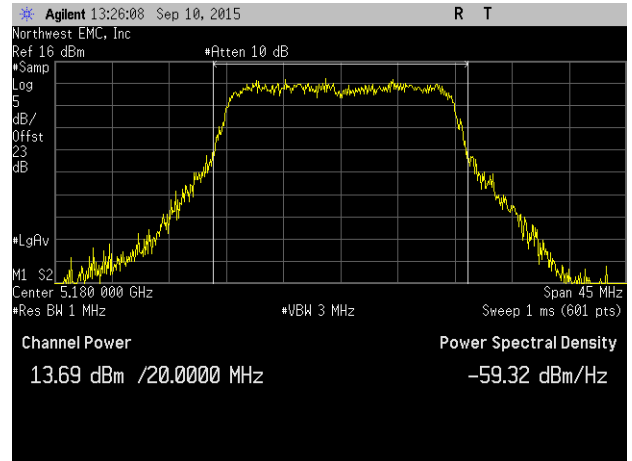
Value	18.978 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS8, 40 MHz, High Channel 5795 MHz



Value	18.073 dBm
Limit (<)	30 dBm
Result	Pass

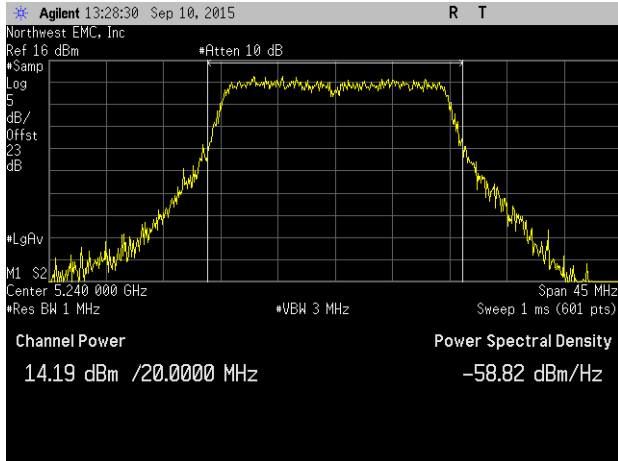
Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	13.688 dBm
Limit (<)	24 dBm
Result	Pass

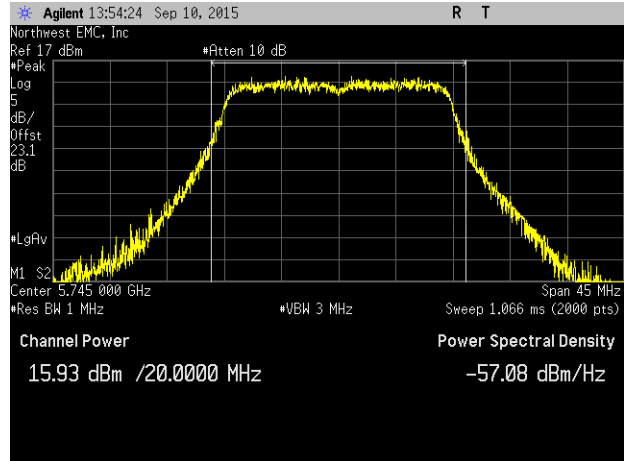
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5240 MHz



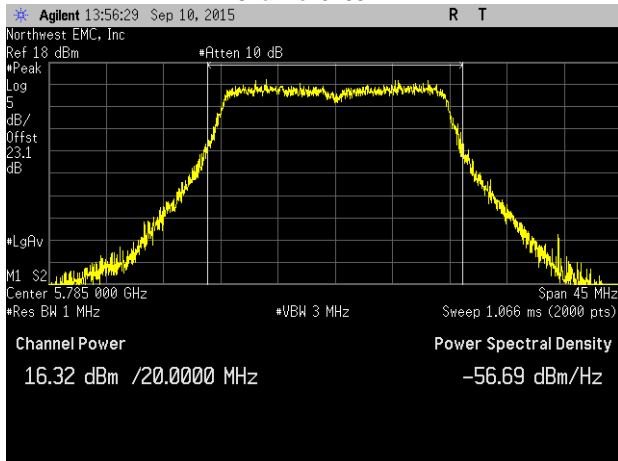
Value	14.189 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low
Channel 5745 MHz



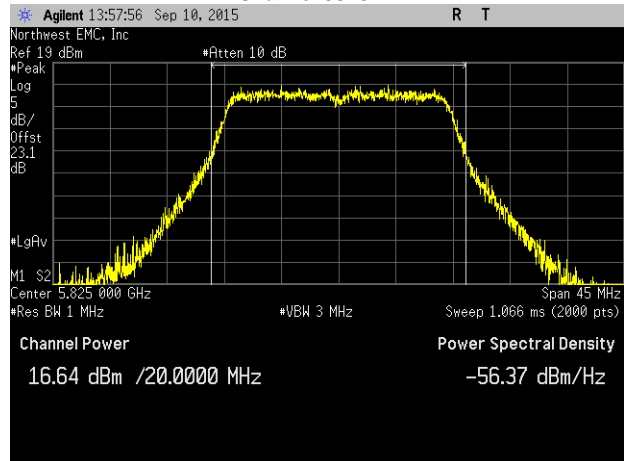
Value	15.93 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid
Channel 5785 MHz



Value	16.317 dBm
Limit (<)	30 dBm
Result	Pass

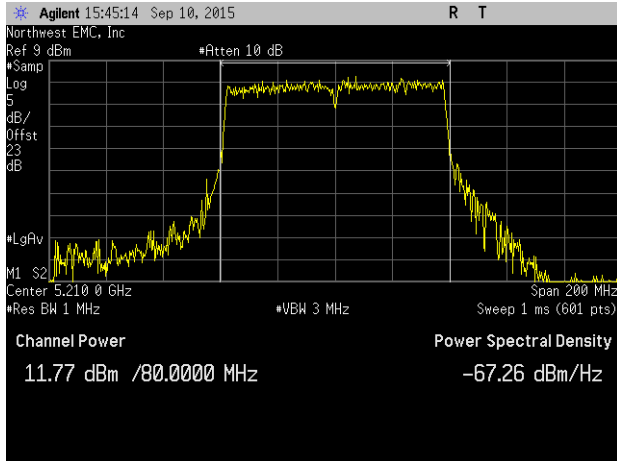
Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5825 MHz



Value	16.642 dBm
Limit (<)	30 dBm
Result	Pass

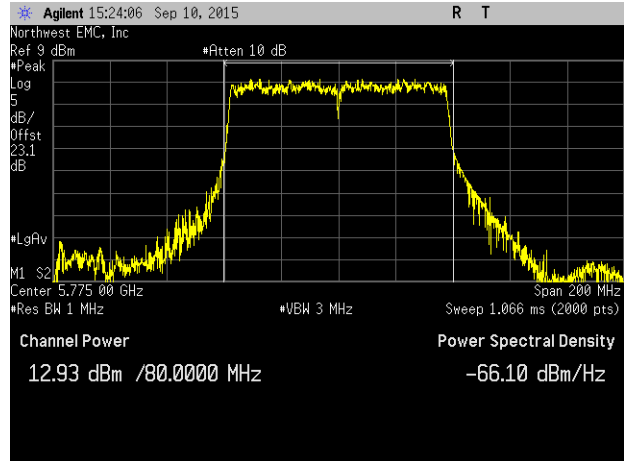
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5210 MHz



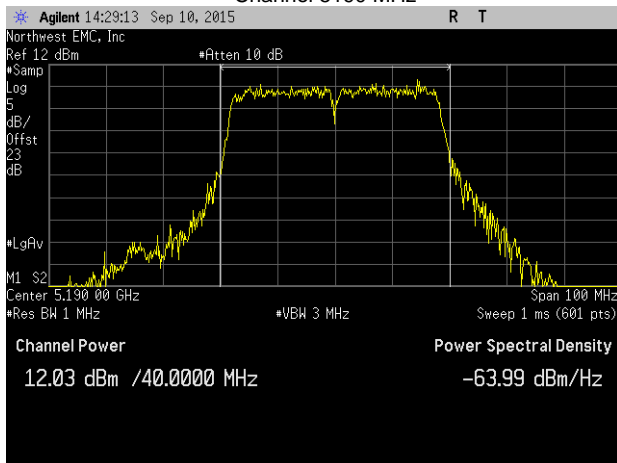
Value	11.769 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



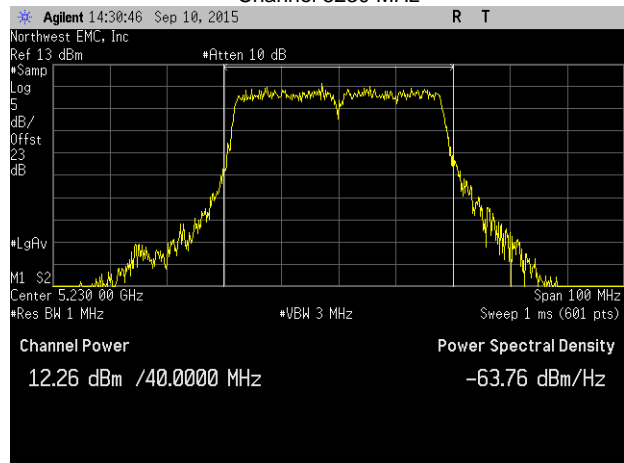
Value	12.926 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



Value	12.034 dBm
Limit (<)	24 dBm
Result	Pass

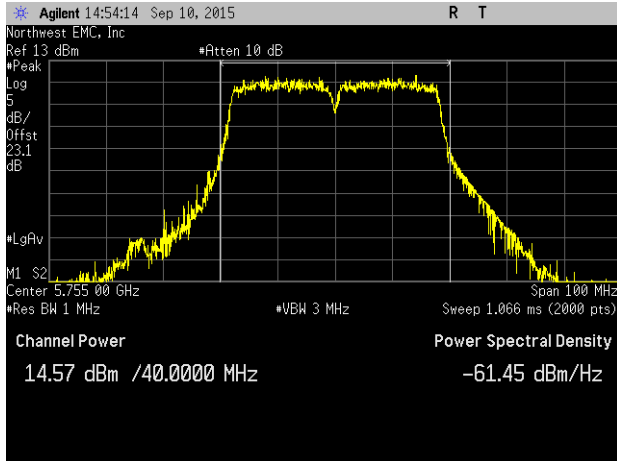
Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



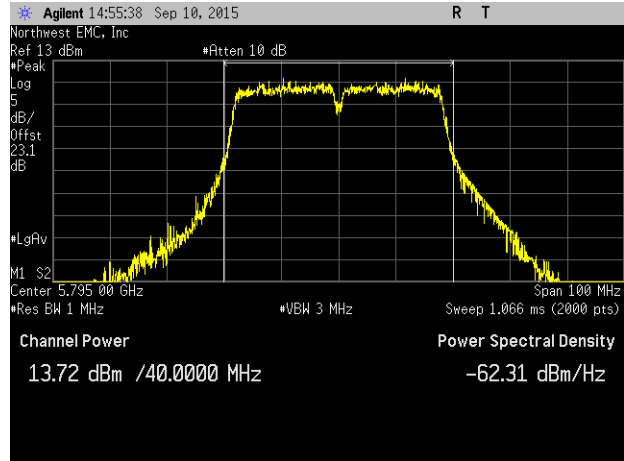
Value	12.26 dBm
Limit (<)	24 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low Channel 5755 MHz



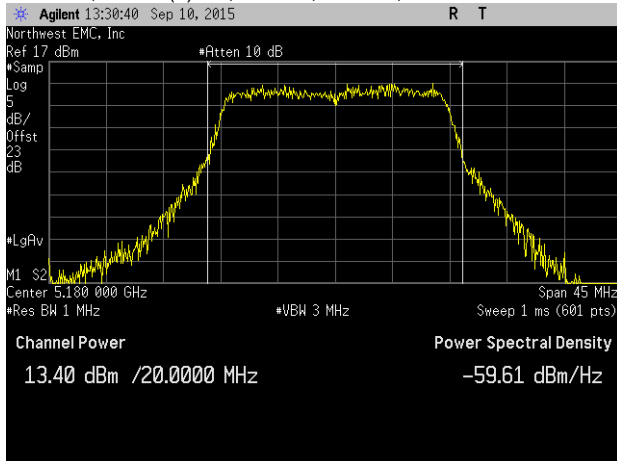
Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5795 MHz



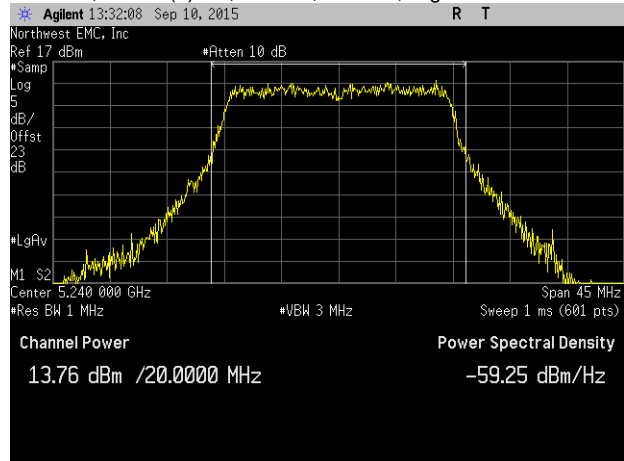
Value	14.568 dBm
Limit (<)	30 dBm
Result	Pass

Value	13.715 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5180 MHz



Chain B, 802.11(n) HT, MCS15, 20 MHz, High Channel 5240 MHz

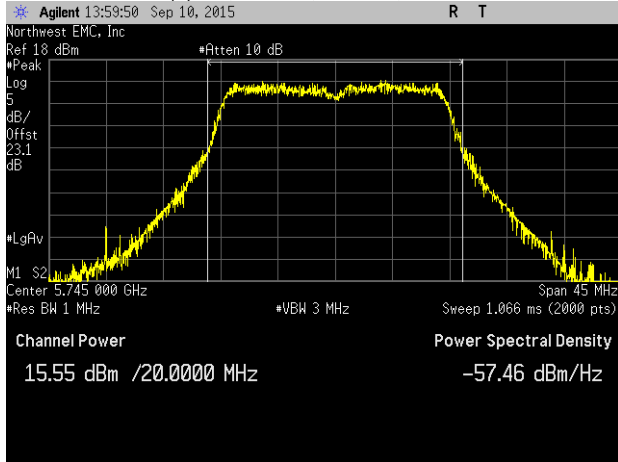


Value	13.397 dBm
Limit (<)	24 dBm
Result	Pass

Value	13.763 dBm
Limit (<)	24 dBm
Result	Pass

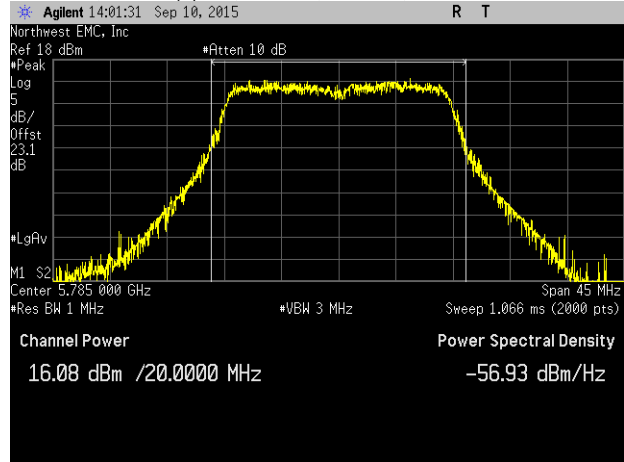
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5745 MHz



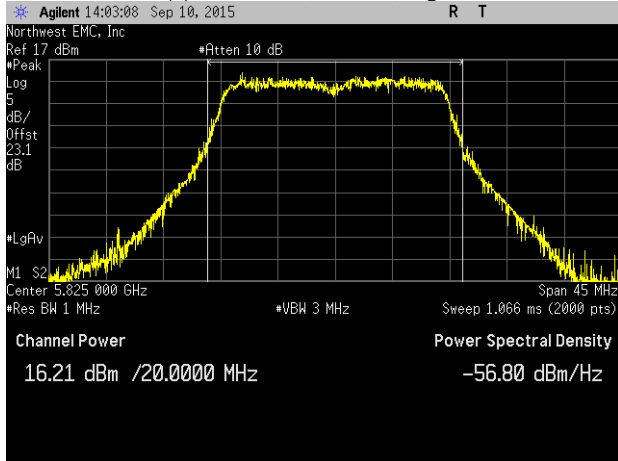
Value	15.549 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 20 MHz, Mid Channel 5785 MHz



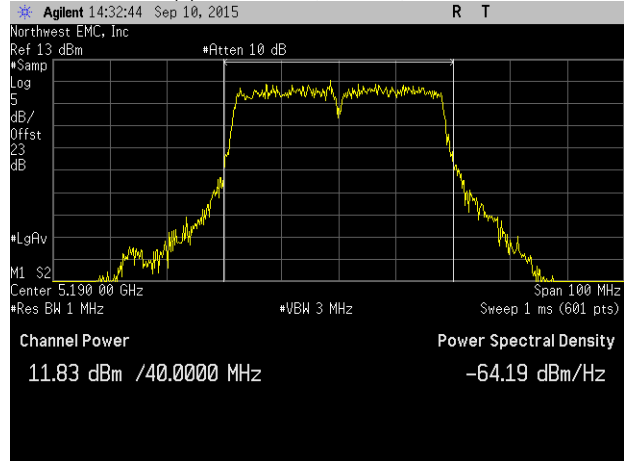
Value	16.078 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 20 MHz, High Channel 5825 MHz



Value	16.21 dBm
Limit (<)	30 dBm
Result	Pass

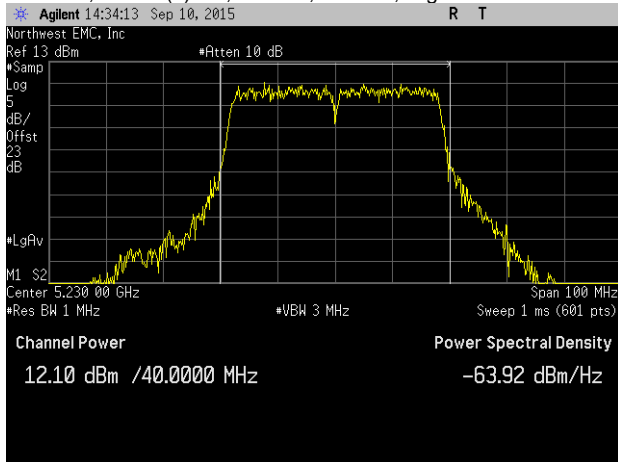
Chain B, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5190 MHz



Value	11.834 dBm
Limit (<)	24 dBm
Result	Pass

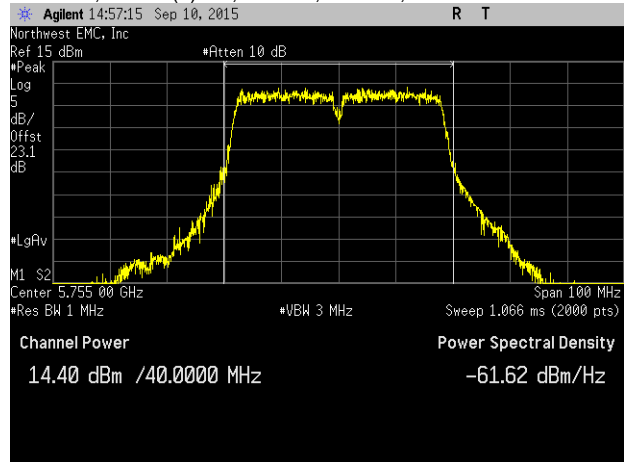
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS15, 40 MHz, High Channel 5230 MHz



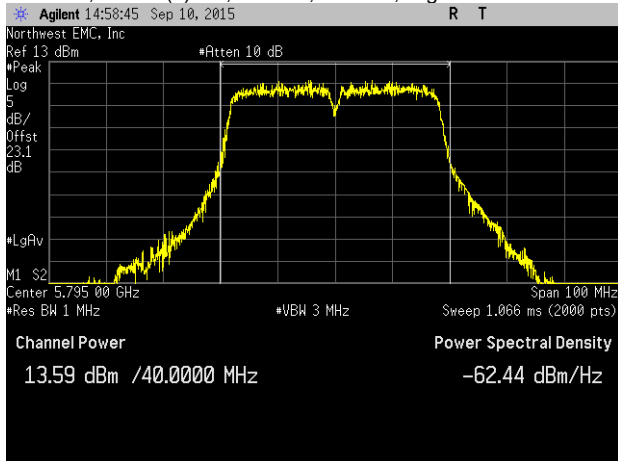
Value	12.099 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5755 MHz



Value	14.403 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS15, 40 MHz, High Channel 5795 MHz



Value	13.585 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



Value	15.489 dBm
Limit (<)	24 dBm
Result	Pass

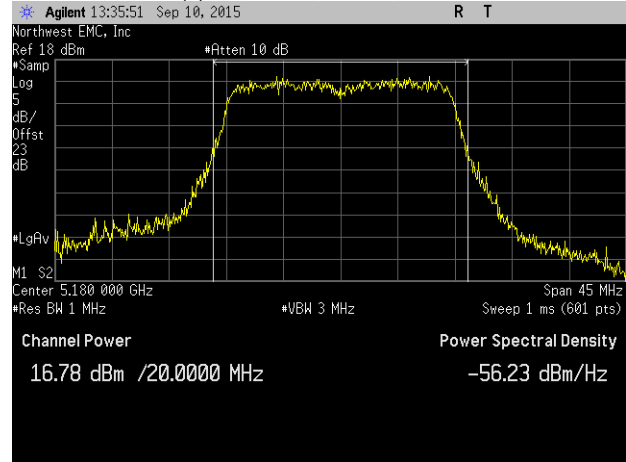
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



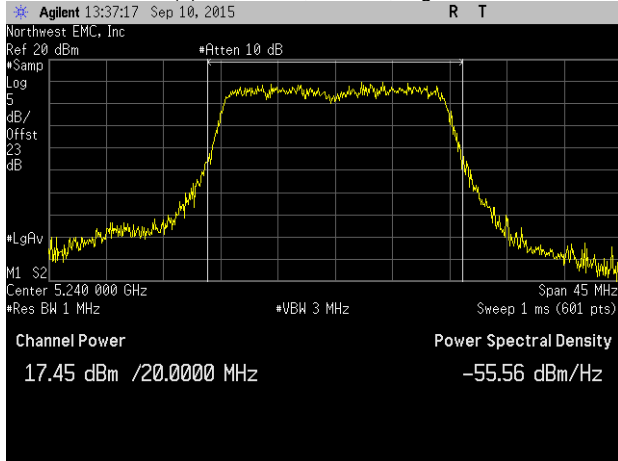
Value	17.364 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5180 MHz



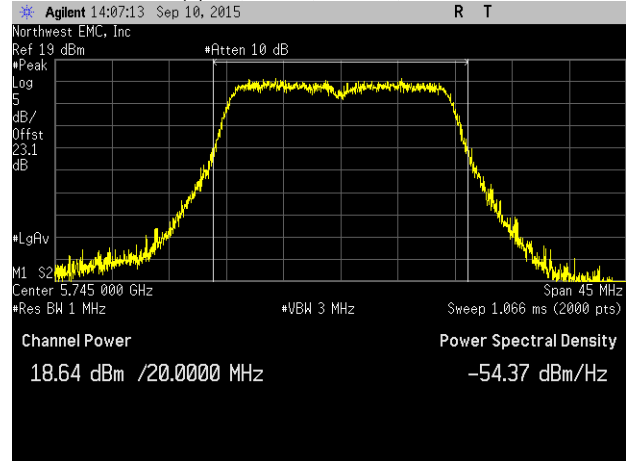
Value	16.783 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 20 MHz, High Channel 5240 MHz



Value	17.451 dBm
Limit (<)	24 dBm
Result	Pass

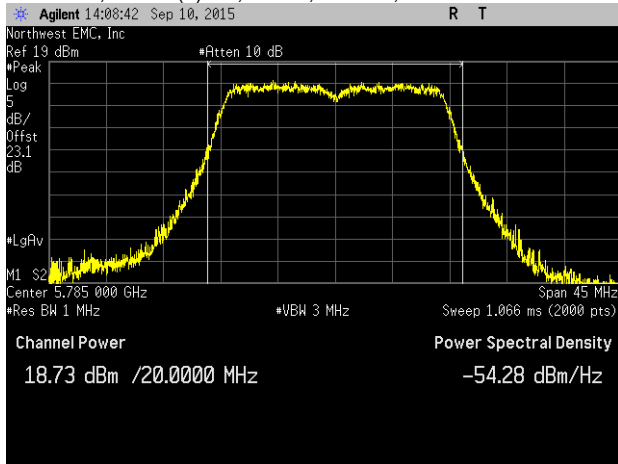
Chain C, 802.11(n) HT, MCS8, 20 MHz, Low Channel 5745 MHz



Value	18.638 dBm
Limit (<)	30 dBm
Result	Pass

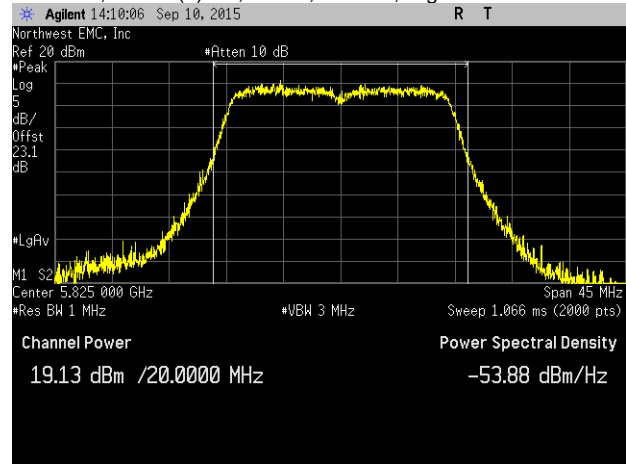
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS8, 20 MHz, Mid Channel 5785 MHz



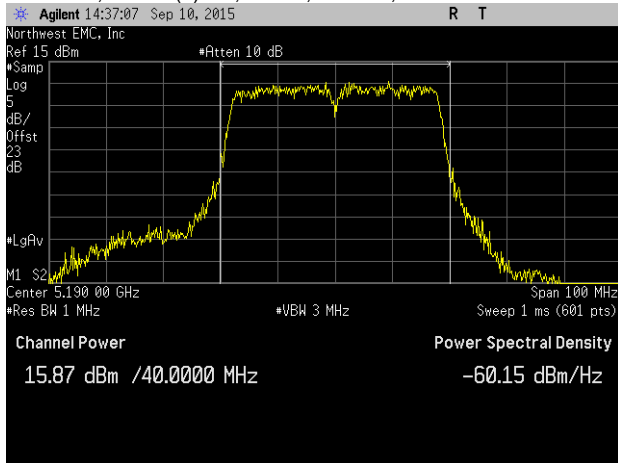
Value	18.729 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 20 MHz, High Channel 5825 MHz



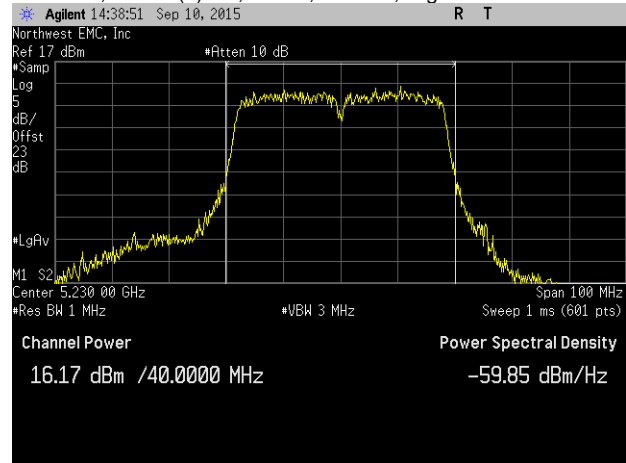
Value	19.126 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5190 MHz



Value	15.868 dBm
Limit (<)	24 dBm
Result	Pass

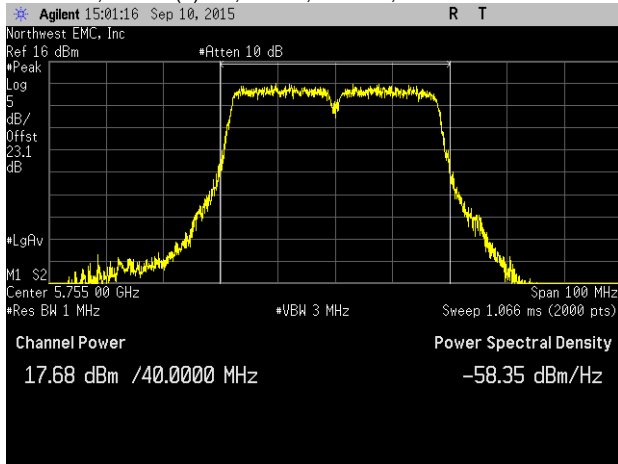
Chain C, 802.11(n) HT, MCS8, 40 MHz, High Channel 5230 MHz



Value	16.168 dBm
Limit (<)	24 dBm
Result	Pass

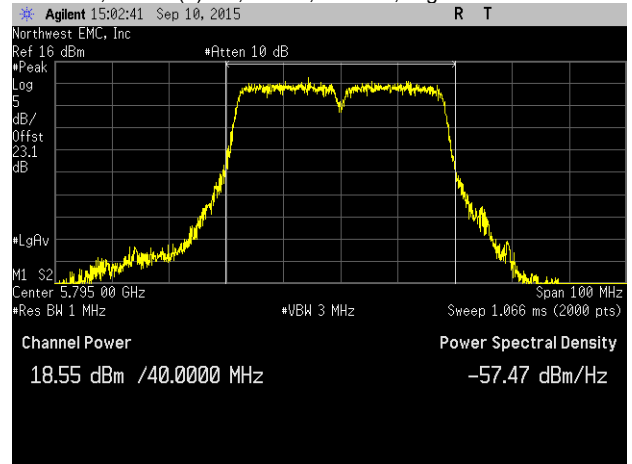
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS8, 40 MHz, Low Channel 5755 MHz



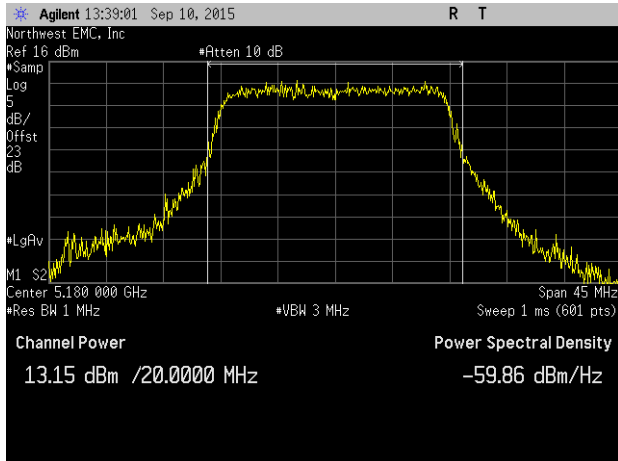
Value	17.675 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS8, 40 MHz, High Channel 5795 MHz



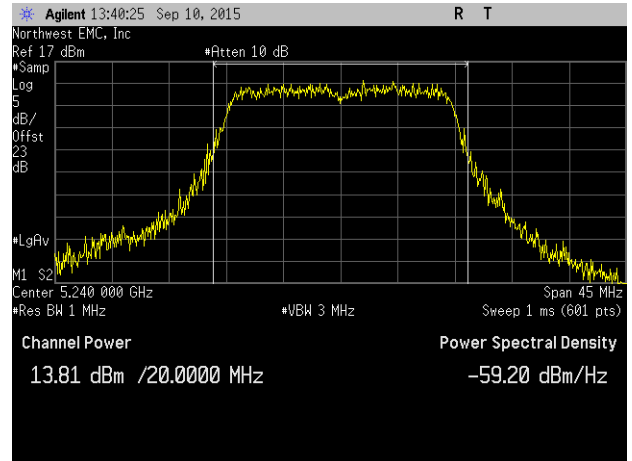
Value	18.549 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	13.15 dBm
Limit (<)	24 dBm
Result	Pass

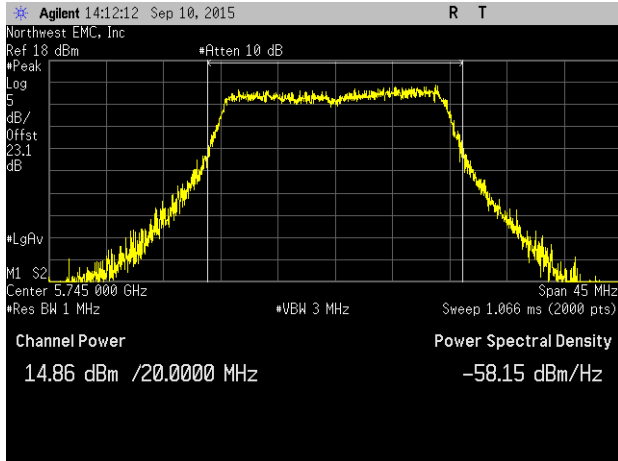
Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5240 MHz



Value	13.807 dBm
Limit (<)	24 dBm
Result	Pass

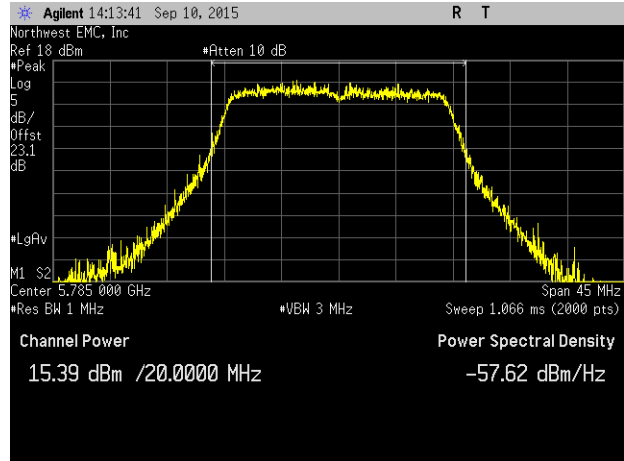
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5745 MHz



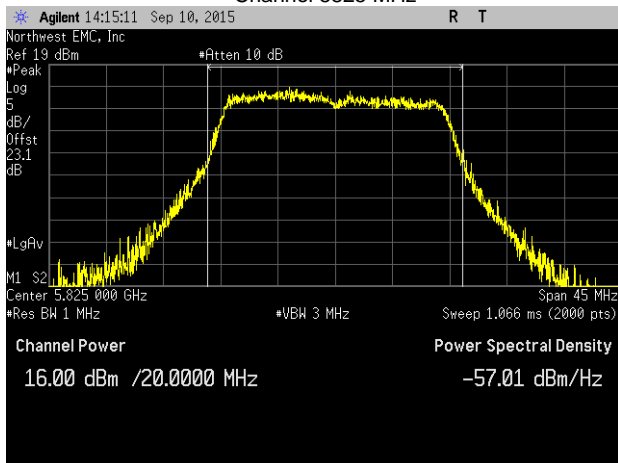
Value	14.856 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid Channel 5785 MHz



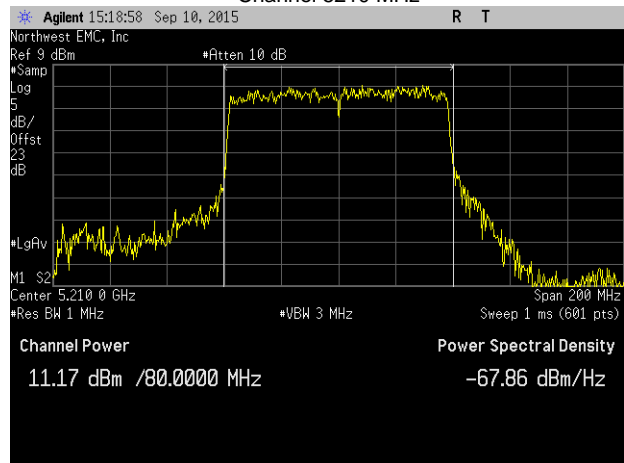
Value	15.388 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5825 MHz



Value	15.999 dBm
Limit (<)	30 dBm
Result	Pass

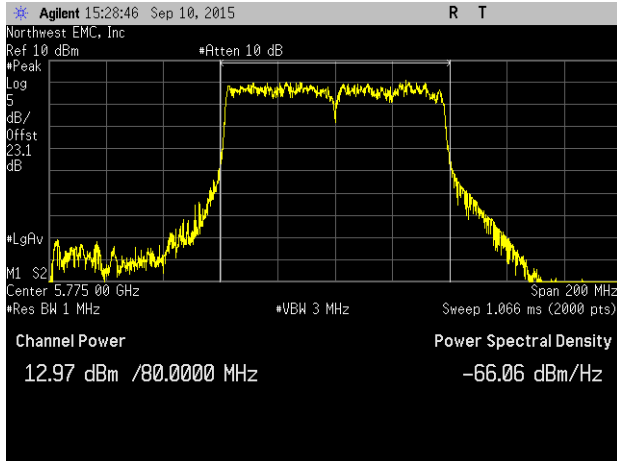
Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low Channel 5210 MHz



Value	11.172 dBm
Limit (<)	24 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



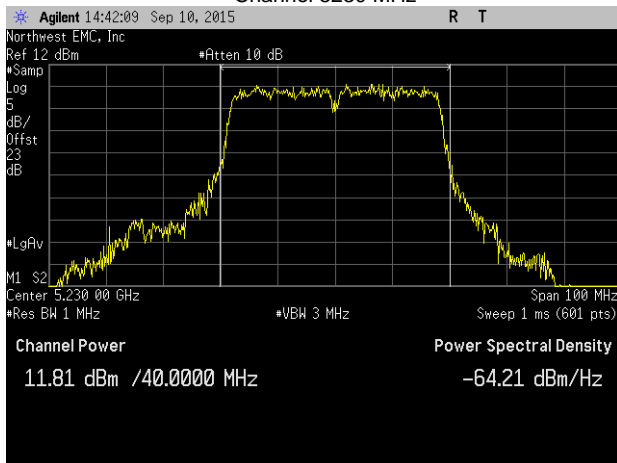
Value	12.972 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



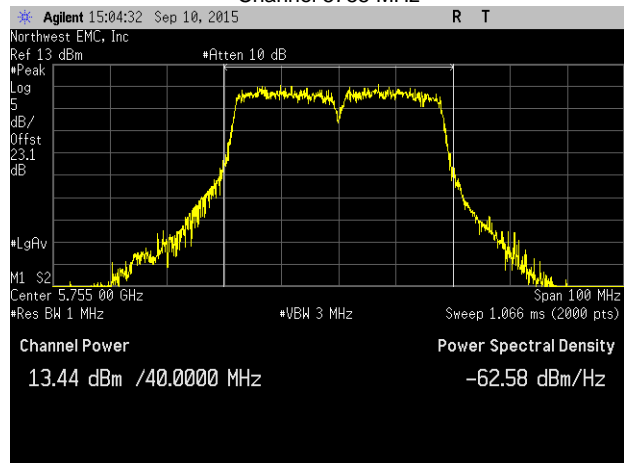
Value	11.337 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



Value	11.806 dBm
Limit (<)	24 dBm
Result	Pass

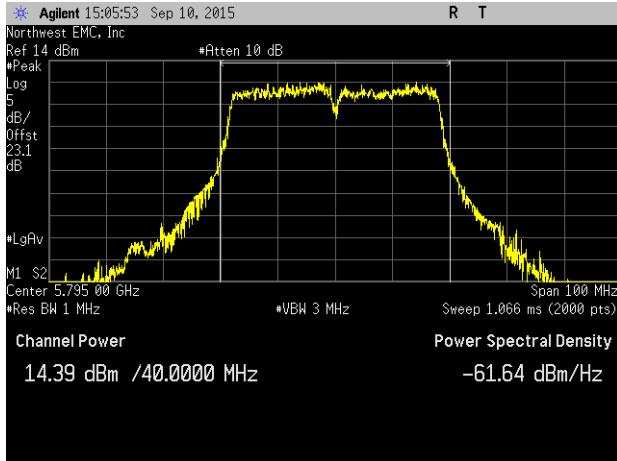
Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5755 MHz



Value	13.437 dBm
Limit (<)	30 dBm
Result	Pass

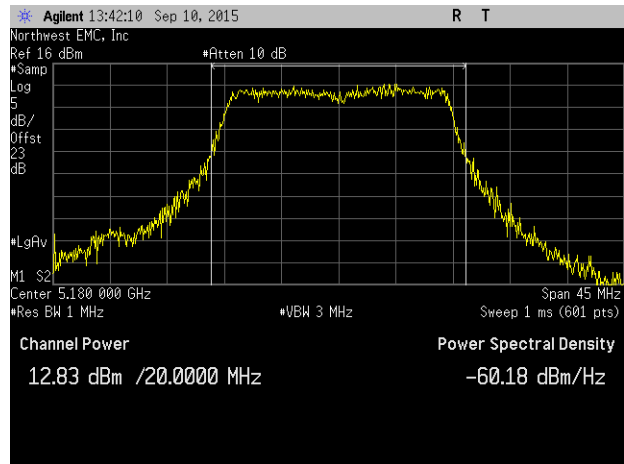
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5795 MHz



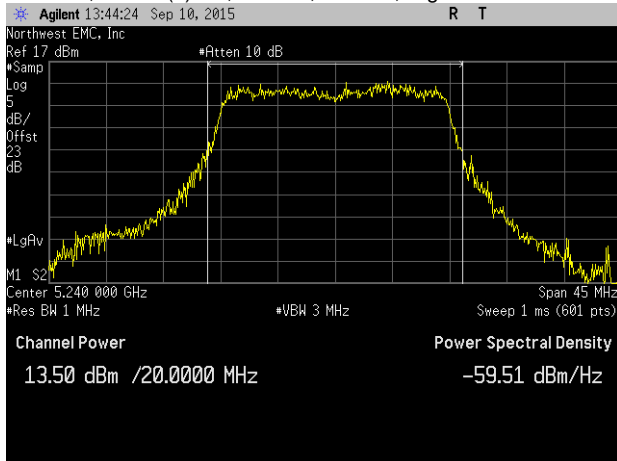
Value	14.385 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5180 MHz



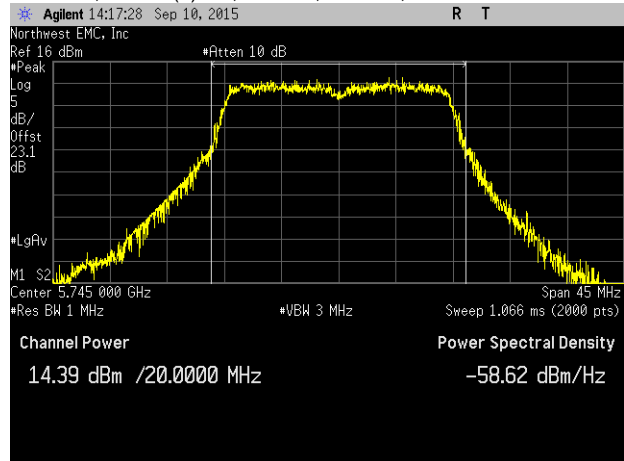
Value	12.828 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 20 MHz, High Channel 5240 MHz



Value	13.5 dBm
Limit (<)	24 dBm
Result	Pass

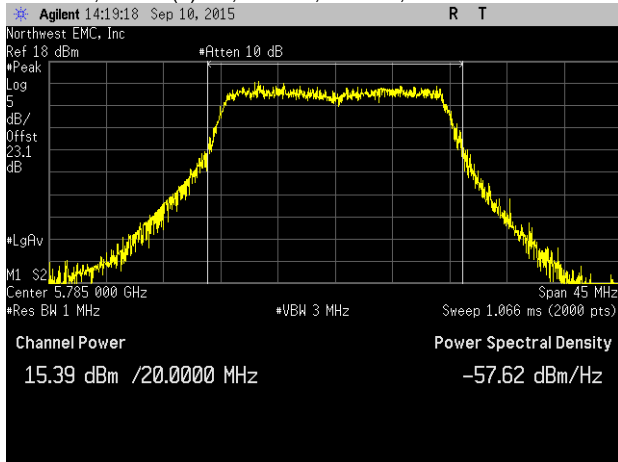
Chain C, 802.11(n) HT, MCS15, 20 MHz, Low Channel 5745 MHz



Value	14.391 dBm
Limit (<)	30 dBm
Result	Pass

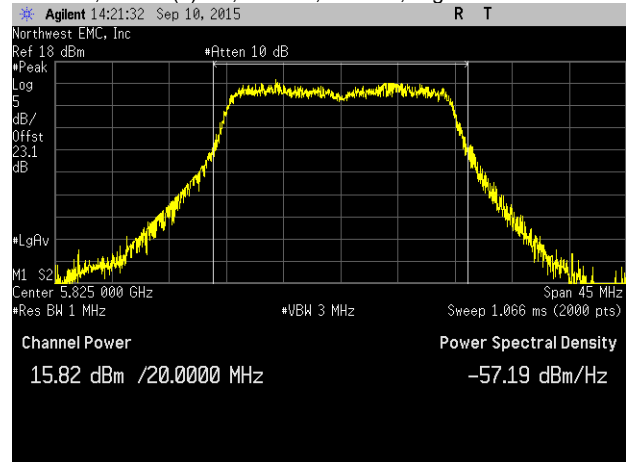
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS15, 20 MHz, Mid Channel 5785 MHz



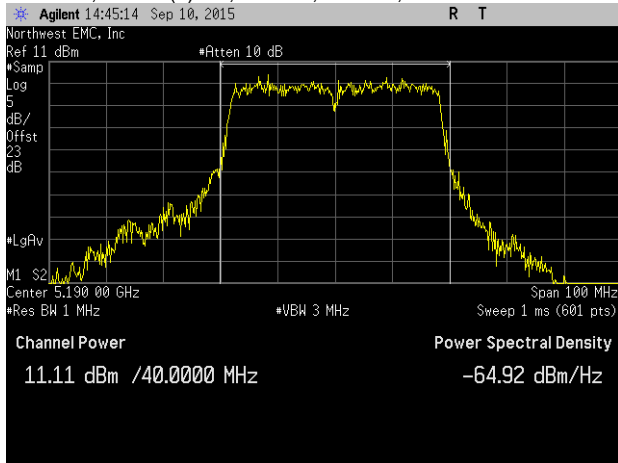
Value	15.395 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 20 MHz, High Channel 5825 MHz



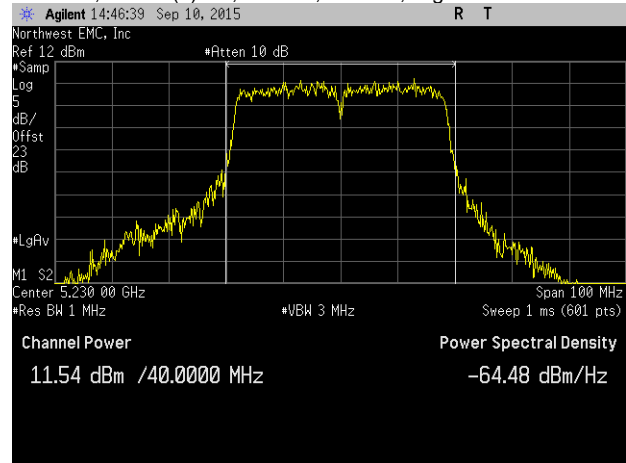
Value	15.821 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5190 MHz



Value	11.105 dBm
Limit (<)	24 dBm
Result	Pass

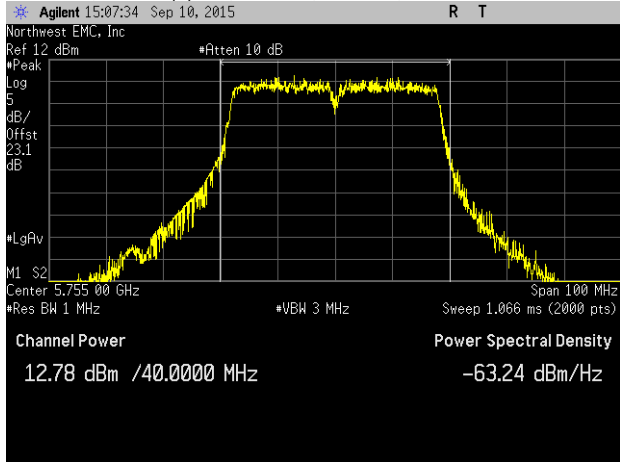
Chain C, 802.11(n) HT, MCS15, 40 MHz, High Channel 5230 MHz



Value	11.541 dBm
Limit (<)	24 dBm
Result	Pass

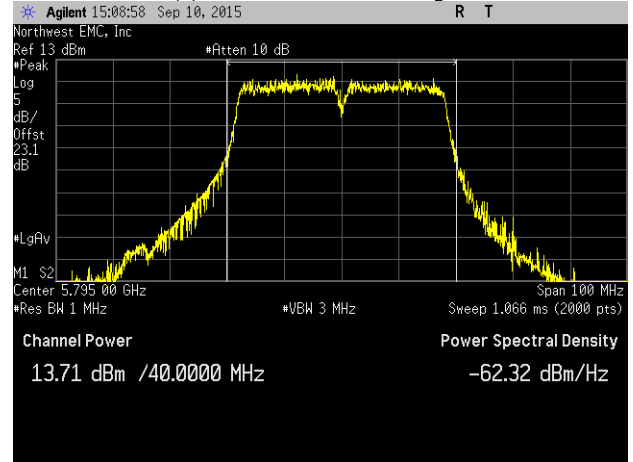
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS15, 40 MHz, Low Channel 5755 MHz



Value	12.779 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS15, 40 MHz, High Channel 5795 MHz



Value	13.705 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

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 DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section C was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep) was used for this test.

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

- RBW = 1 MHz, VBW = 3 MHz
- Sample Detector
- The number of points was set to 601. This satisfied the requirement of being $> 2 * \text{span} / \text{RBW}$
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	7/23/2015	7/23/2016
Block - DC	Fairview Microwave	SD3379	AMM	2/27/2015	2/27/2016
Attenuator	Fairview Microwave	SA4018-20	TQY	2/27/2015	2/27/2016
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	7/15/2017

MAXIMUM CONDUCTED OUTPUT POWER



EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/11/15
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1014 mbar
Tested By:	Jonathan Kiefer	Job Site:	TX09
Power:	110VAC/60Hz	Configuration:	5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2015	ANSI C63.10:2013

COMMENTS

3x3 MIMO mode, Chain ABC (Chains 0, 1, and 2). Note: chain b measured multiple times with consistent readings

DEVIATIONS FROM TEST STANDARD

None

RESULTS

	Value	Limit (<)	Result
Chain A			
802.11(n) HT, MCS0			
80 MHz			
Low Channel 5210 MHz	14.582 dBm	24 dBm	Pass
Low Channel 5775 MHz	15.527 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)			
20 MHz			
Low Channel 5180 MHz	11.734 dBm	24 dBm	Pass
High Channel 5240 MHz	12.461 dBm	24 dBm	Pass
Low Channel 5745 MHz	13.608 dBm	30 dBm	Pass
Mid Channel 5785 MHz	13.082 dBm	30 dBm	Pass
High Channel 5825 MHz	14.27 dBm	30 dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)			
80 MHz			
Low Channel 5210 MHz	10.486 dBm	24 dBm	Pass
Low Channel 5775 MHz	10.793 dBm	24 dBm	Pass
40 MHz			
Low Channel 5190 MHz	11.329 dBm	30 dBm	Pass
High Channel 5230 MHz	12.209 dBm	30 dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result
	MHz		dBm	
	Low Channel 5755		24	
	MHz	10.214 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	10.832 dBm	dBm	Pass
802.11(n) HT, MCS16				
20 MHz				
	Low Channel 5180		24	
	MHz	15.706 dBm	dBm	Pass
	High Channel 5240		24	
	MHz	16.233 dBm	dBm	Pass
	Low Channel 5745		30	
	MHz	18.516 dBm	dBm	Pass
	Mid Channel 5785		30	
	MHz	18.481 dBm	dBm	Pass
	High Channel 5825		30	
	MHz	18.08 dBm	dBm	Pass
40 MHz				
	Low Channel 5190		24	
	MHz	14.769 dBm	dBm	Pass
	High Channel 5230		24	
	MHz	15.011 dBm	dBm	Pass
	Low Channel 5755		30	
	MHz	15.655 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	16.492 dBm	dBm	Pass
802.11(n) HT, MCS23				
20 MHz				
	Low Channel 5180		24	
	MHz	10.156 dBm	dBm	Pass
	High Channel 5240		24	
	MHz	10.704 dBm	dBm	Pass
	Low Channel 5745		30	
	MHz	13.314 dBm	dBm	Pass
	Mid Channel 5785		30	
	MHz	14.907 dBm	dBm	Pass
	High Channel 5825		30	
	MHz	14.711 dBm	dBm	Pass
40 MHz				
	Low Channel 5190		24	
	MHz	9.944 dBm	dBm	Pass
	High Channel 5230		24	
	MHz	10.223 dBm	dBm	Pass
	Low Channel 5755		30	
	MHz	10.907 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	11.787 dBm	dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result
Chain B				
802.11(n) HT, MCS0				
80 MHz				
	Low Channel 5210 MHz	15.984 dBm	24 dBm	Pass
	Low Channel 5775 MHz	1.178 dBm	30 dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)				
20 MHz				
	Low Channel 5180 MHz	13.645 dBm	24 dBm	Pass
	High Channel 5240 MHz	14.271 dBm	24 dBm	Pass
	Low Channel 5745 MHz	0.782 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	1.289 dBm	30 dBm	Pass
	High Channel 5825 MHz	-0.009 dBm	30 dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)				
80 MHz				
	Low Channel 5210 MHz	11.96 dBm	24 dBm	Pass
	Low Channel 5775 MHz	12.31 dBm	24 dBm	Pass
40 MHz				
	Low Channel 5190 MHz	-1.062 dBm	30 dBm	Pass
	High Channel 5230 MHz	-2.181 dBm	30 dBm	Pass
	Low Channel 5755 MHz	11.591 dBm	24 dBm	Pass
	High Channel 5795 MHz	-3.138 dBm	30 dBm	Pass
802.11(n) HT, MCS16				
20 MHz				
	Low Channel 5180 MHz	17.874 dBm	24 dBm	Pass
	High Channel 5240 MHz	18.247 dBm	24 dBm	Pass
	Low Channel 5745 MHz	4.675 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	4.852 dBm	30 dBm	Pass
	High Channel 5825 MHz	3.226 dBm	30 dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result
	MHz		dBm	
40 MHz				
	Low Channel 5190		24	
	MHz	16.174 dBm	dBm	Pass
	High Channel 5230		24	
	MHz	16.502 dBm	dBm	Pass
	Low Channel 5755		30	
	MHz	3.169 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	2.014 dBm	dBm	Pass
802.11(n) HT, MCS23				
20 MHz				
	Low Channel 5180		24	
	MHz	12.017 dBm	dBm	Pass
	High Channel 5240		24	
	MHz	12.593 dBm	dBm	Pass
	Low Channel 5745		30	
	MHz	-1.063 dBm	dBm	Pass
	Mid Channel 5785		30	
	MHz	-0.812 dBm	dBm	Pass
	High Channel 5825		30	
	MHz	-1.798 dBm	dBm	Pass
40 MHz				
	Low Channel 5190		24	
	MHz	11.428 dBm	dBm	Pass
	High Channel 5230		24	
	MHz	11.788 dBm	dBm	Pass
	Low Channel 5755		30	
	MHz	-1.663 dBm	dBm	Pass
	High Channel 5795		30	
	MHz	-2.601 dBm	dBm	Pass
Chain C				
802.11(n) HT, MCS0				
80 MHz				
	Low Channel 5210		24	
	MHz	15.313 dBm	dBm	Pass
	Low Channel 5775		30	
	MHz	17.457 dBm	dBm	Pass
802.11(ac) VHT, MCS8 (256-QAM)				
20 MHz				
	Low Channel 5180		24	
	MHz	13.145 dBm	dBm	Pass
	High Channel 5240		24	
	MHz	13.827 dBm	dBm	Pass
	Low Channel 5745		30	
	MHz	14.502 dBm	dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



		Value	Limit (<)	Result
	Mid Channel 5785 MHz	15.258 dBm	30 dBm	Pass
	High Channel 5825 MHz	15.976 dBm	30 dBm	Pass
802.11(ac) VHT, MCS9 (256-QAM)				
	80 MHz			
	Low Channel 5210 MHz	11.137 dBm	24 dBm	Pass
	Low Channel 5775 MHz	11.769 dBm	24 dBm	Pass
	40 MHz			
	Low Channel 5190 MHz	13.268 dBm	30 dBm	Pass
	High Channel 5230 MHz	13.895 dBm	30 dBm	Pass
	Low Channel 5755 MHz	10.882 dBm	24 dBm	Pass
	High Channel 5795 MHz	13.212 dBm	30 dBm	Pass
802.11(n) HT, MCS16				
	20 MHz			
	Low Channel 5180 MHz	16.273 dBm	24 dBm	Pass
	High Channel 5240 MHz	17.11 dBm	24 dBm	Pass
	Low Channel 5745 MHz	18.205 dBm	30 dBm	Pass
	Mid Channel 5785 MHz	18.308 dBm	30 dBm	Pass
	High Channel 5825 MHz	18.637 dBm	30 dBm	Pass
	40 MHz			
	Low Channel 5190 MHz	15.595 dBm	24 dBm	Pass
	High Channel 5230 MHz	16.128 dBm	24 dBm	Pass
	Low Channel 5755 MHz	18.387 dBm	30 dBm	Pass
	High Channel 5795 MHz	18.11 dBm	30 dBm	Pass
802.11(n) HT, MCS23				
	20 MHz			
	Low Channel 5180 MHz	11.222 dBm	24 dBm	Pass
	High Channel 5240 MHz	12.005 dBm	24 dBm	Pass

MAXIMUM CONDUCTED OUTPUT POWER



	Value	Limit (<)	Result				
Low Channel 5745 MHz	13.095 dBm	30 dBm	Pass				
Mid Channel 5785 MHz	13.562 dBm	30 dBm	Pass				
High Channel 5825 MHz	14.045 dBm	30 dBm	Pass				
40 MHz							
Low Channel 5190 MHz	10.685 dBm	24 dBm	Pass				
High Channel 5230 MHz	11.179 dBm	24 dBm	Pass				
Low Channel 5755 MHz	13.83 dBm	30 dBm	Pass				
High Channel 5795 MHz	13.363 dBm	30 dBm	Pass				
Power Summing, Chain ABC	Chain A	Chain B	Chain C	Summed Power	Results		
802.11(n) HT, MCS0							
80 MHz	(dBm)	(mw)	(dBm)	(mw)	(dBm)	Limit	Results
Low Channel 5210 MHz	14.582	28.7	15.984	39.6	15.313	20.102	24 dBm Pass
Low Channel 5775 MHz	15.527	35.7	1.178	1.31	17.457	19.671	30 dBm Pass
802.11(ac) VHT, MCS8 (256-QAM)							
20 MHz		(mw)		(mw)	(dBm)	Limit	Results
Low Channel 5180 MHz	11.734	14.9	13.645	23.1	13.145	17.685	24 dBm Pass
High Channel 5240 MHz	12.461	17.6	14.271	26.7	13.827	18.357	24 dBm Pass
Low Channel 5745 MHz	13.608	22.9	0.782	1.19	14.502	17.189	30 dBm Pass
Mid Channel 5785 MHz	13.082	20.3	1.289	1.34	15.258	17.422	30 dBm Pass
High Channel 5825 MHz	14.27	26.7	-0.009	0.99	15.976	18.281	30 dBm Pass
802.11(ac) VHT, MCS9 (256-QAM)							
80 MHz		(mw)		(mw)	(dBm)	Limit	Results
Low Channel 5210 MHz	10.486	11.1	11.960	15.7	11.137	16.008	24 dBm Pass
Low Channel 5775 MHz	10.793	12.0	12.310	17.0	11.769	16.440	30 dBm Pass
40 MHz		(mw)		(mw)	(dBm)	Limit	Results

MAXIMUM CONDUCTED OUTPUT POWER



								Limit	Result	
								Value	(<)	t
Low Channel 5190	13.5	0.78	21.2					22		
MHz	11.329	80	-1.062	3	13.268	23	15.513	dBm	Pass	
High Channel 5230	16.6	0.60	24.5					23		
MHz	12.209	30	-2.181	5	13.895	19	16.207	dBm	Pass	
Low Channel 5755	10.5	14.4	12.2					24		
MHz	10.214	05	11.591	24	10.882	52	15.703	dBm	Pass	
High Channel 5795	12.1	0.48	20.9					24		
MHz	10.832	12	-3.138	6	13.212	51	15.257	dBm	Pass	
802.11(n) HT, MCS16										
									Results	
20 MHz			(mw)	(mw)	(dBm)	Limit				
Low Channel 5180	37.2	61.2	42.3					26		
MHz	15.706	05	17.874	91	16.273	94	21.489	dBm	Pass	
High Channel 5240	42.0	66.7	51.4					27		
MHz	16.233	05	18.247	88	17.110	04	22.047	dBm	Pass	
Low Channel 5745	71.0	2.93	66.1					28		
MHz	18.516	56	4.675	4	18.205	45	21.465	dBm	Pass	
Mid Channel 5785	70.4	3.05	67.7					29		
MHz	18.481	86	4.852	6	18.308	33	21.501	dBm	Pass	
High Channel 5825	64.2	2.10	73.0					30		
MHz	18.08	69	3.226	2	18.637	63	21.444	dBm	Pass	
802.11(n) HT, MCS23										
									Results	
20 MHz			(mw)	(mw)	(dBm)	Limit				
Low Channel 5180	10.3	15.9	13.2					24		
MHz	10.156	66	12.017	11	11.222	50	15.969	dBm	Pass	
High Channel 5240	11.7	18.1	15.8					24		
MHz	10.704	60	12.593	68	12.005	67	16.608	dBm	Pass	
Low Channel 5745	21.4	0.78	20.3					30		
MHz	13.314	49	-1.063	3	13.095	94	16.297	dBm	Pass	
Mid Channel 5785	30.9	0.82	22.7					30		
MHz	14.907	53	-0.812	9	13.562	09	17.363	dBm	Pass	
High Channel 5825	29.5	0.66	25.3					30		
MHz	14.711	87	-1.798	1	14.045	80	17.453	dBm	Pass	
802.11(n) HT, MCS23										
									Results	
40 MHz			(mw)	(mw)	(dBm)	Limit				
Low Channel 5190	9.87	13.8	11.7					24		
MHz	9.944	2	11.428	93	10.685	08	15.499	dBm	Pass	

MAXIMUM CONDUCTED OUTPUT POWER



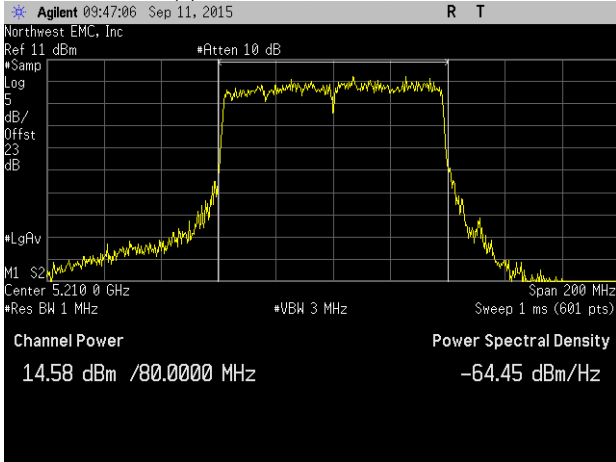
							Value	Limit (<)	Result
High Channel 5230 MHz	10.5	15.0	13.1				15.882	25 dBm	Pass
Low Channel 5755 MHz	12.3	0.68	24.1				15.701	26 dBm	Pass
High Channel 5795 MHz	15.0	0.54	21.6				15.721	27 dBm	Pass
	11.787	90	-2.601	9	13.363	92			

Jonathan Kiefer

Tested By

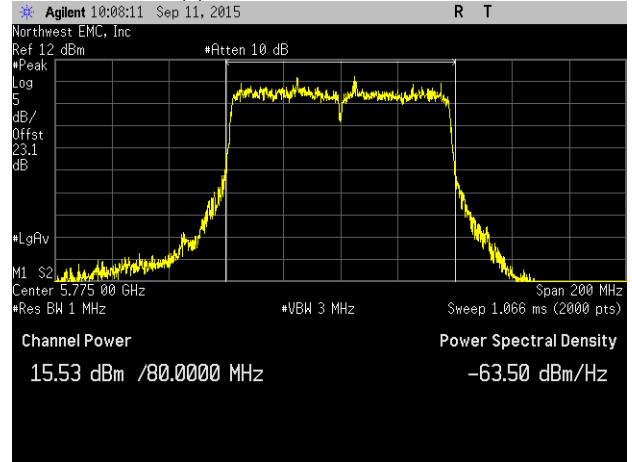
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



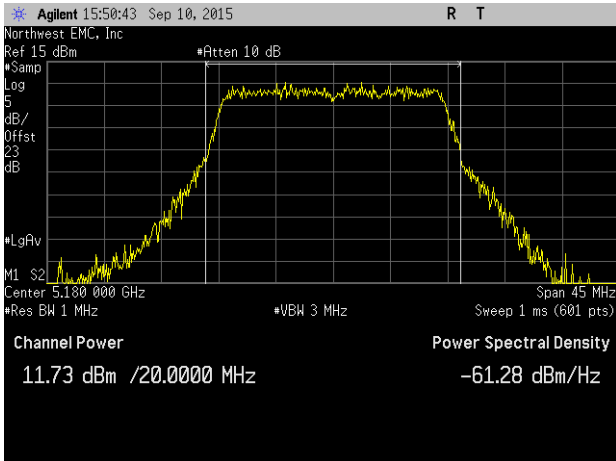
Value	14.582 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



Value	15.527 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



Value	11.734 dBm
Limit (<)	24 dBm
Result	Pass

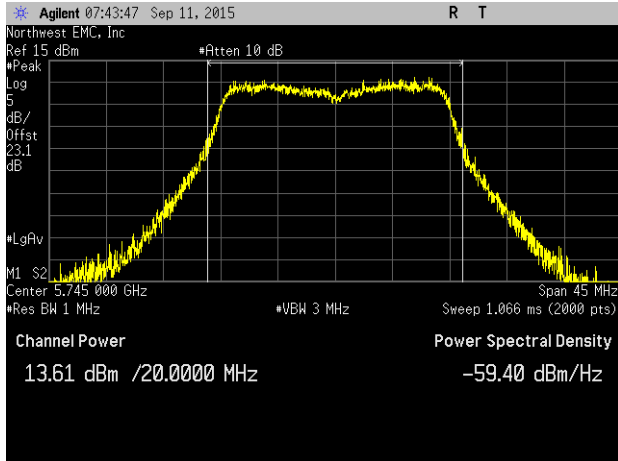
Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5240 MHz



Value	12.461 dBm
Limit (<)	24 dBm
Result	Pass

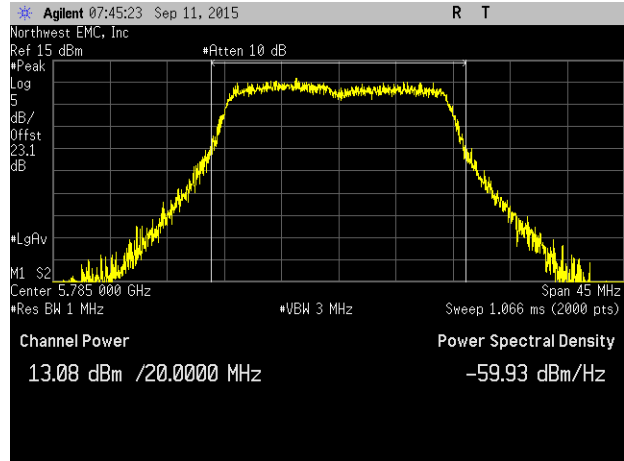
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5745 MHz



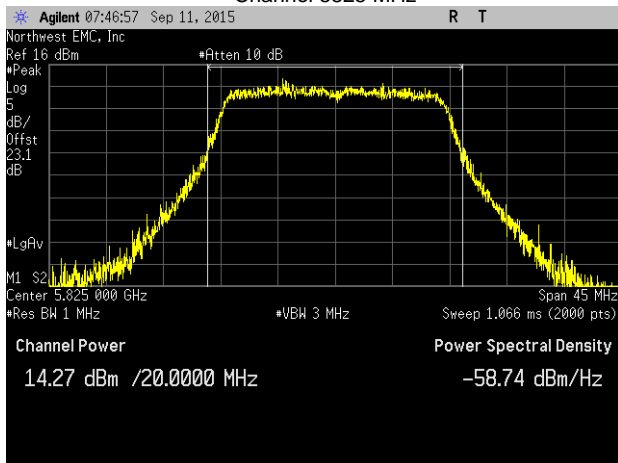
Value	13.608 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid Channel 5785 MHz



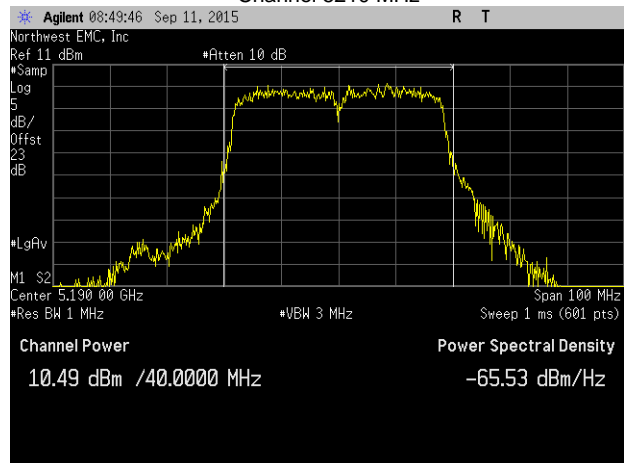
Value	13.082 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5825 MHz



Value	14.27 dBm
Limit (<)	30 dBm
Result	Pass

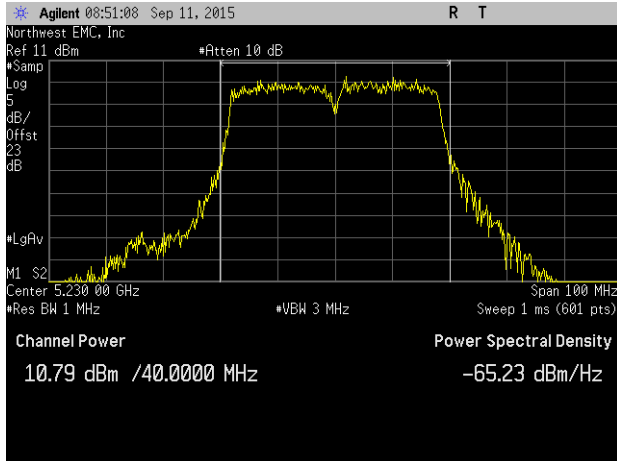
Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low Channel 5210 MHz



Value	10.486 dBm
Limit (<)	24 dBm
Result	Pass

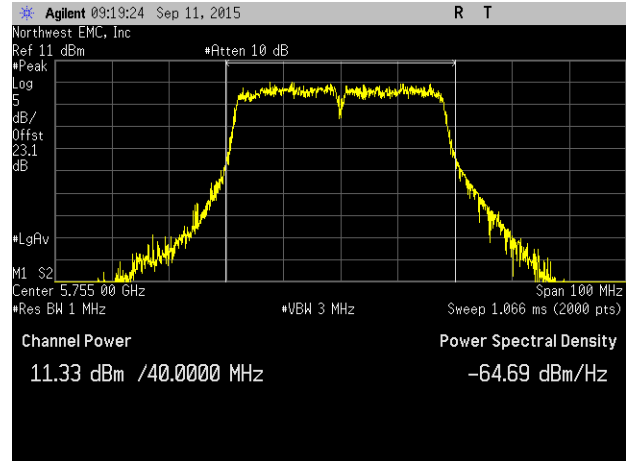
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



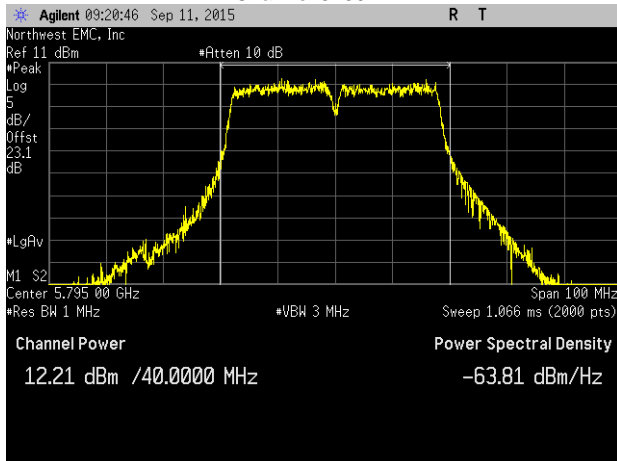
Value	10.793 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



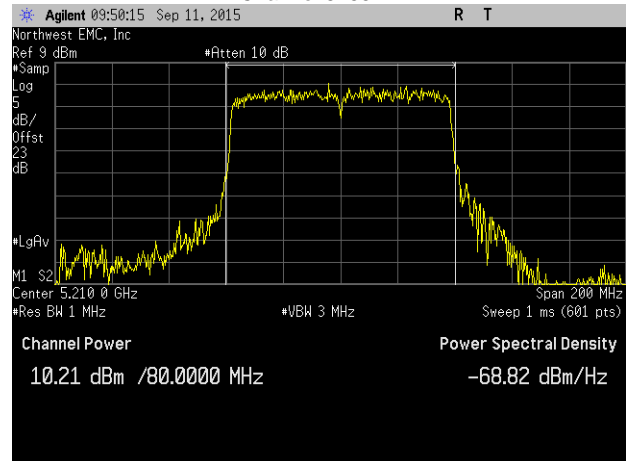
Value	11.329 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



Value	12.209 dBm
Limit (<)	30 dBm
Result	Pass

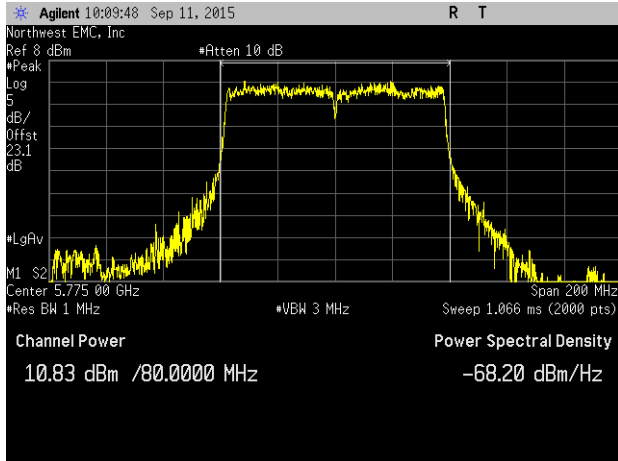
Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5755 MHz



Value	10.214 dBm
Limit (<)	24 dBm
Result	Pass

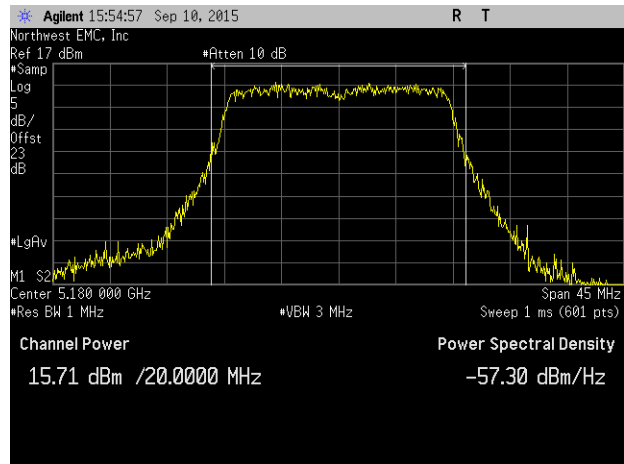
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5795 MHz



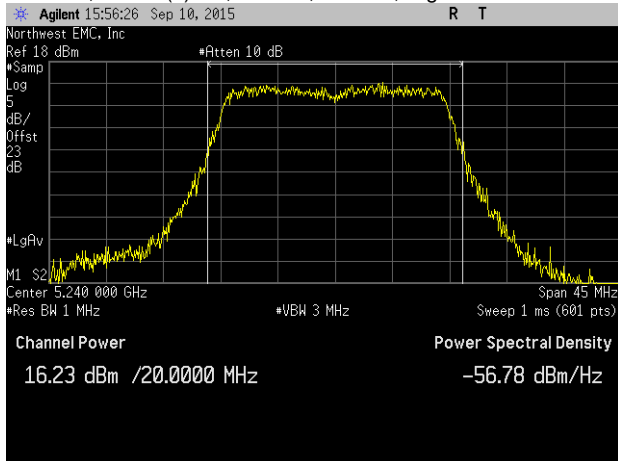
Value	10.832 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS16, 20 MHz, Low Channel 5180 MHz



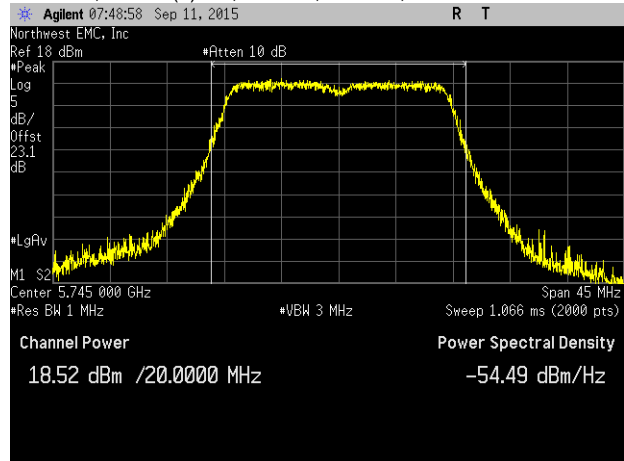
Value	15.706 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS16, 20 MHz, High Channel 5240 MHz



Value	16.233 dBm
Limit (<)	24 dBm
Result	Pass

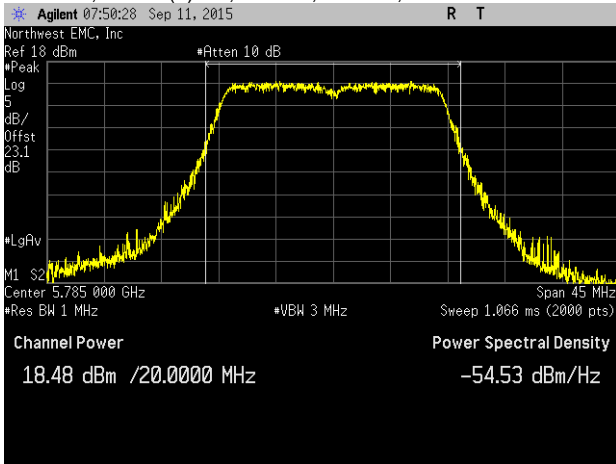
Chain A, 802.11(n) HT, MCS16, 20 MHz, Low Channel 5745 MHz



Value	18.516 dBm
Limit (<)	30 dBm
Result	Pass

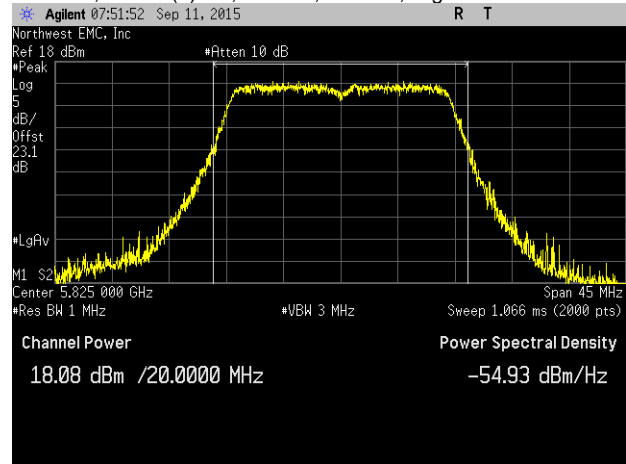
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS16, 20 MHz, Mid Channel 5785 MHz



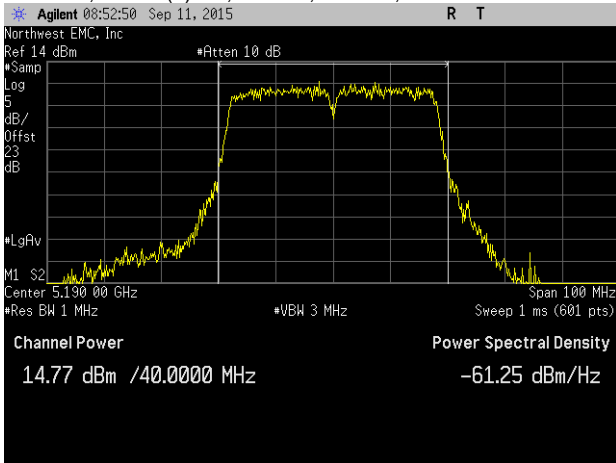
Value	18.481 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS16, 20 MHz, High Channel 5825 MHz



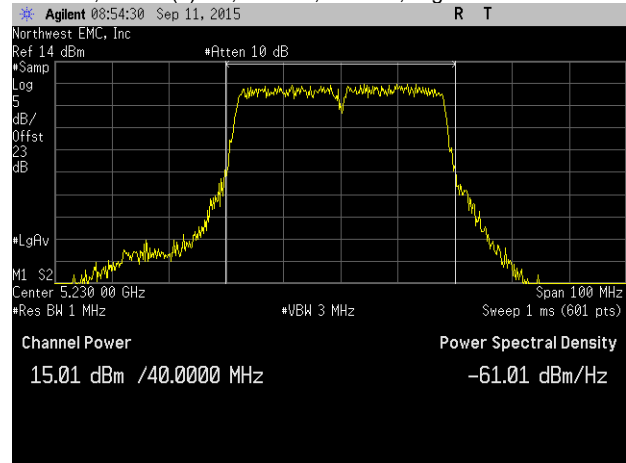
Value	18.08 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS16, 40 MHz, Low Channel 5190 MHz



Value	14.769 dBm
Limit (<)	24 dBm
Result	Pass

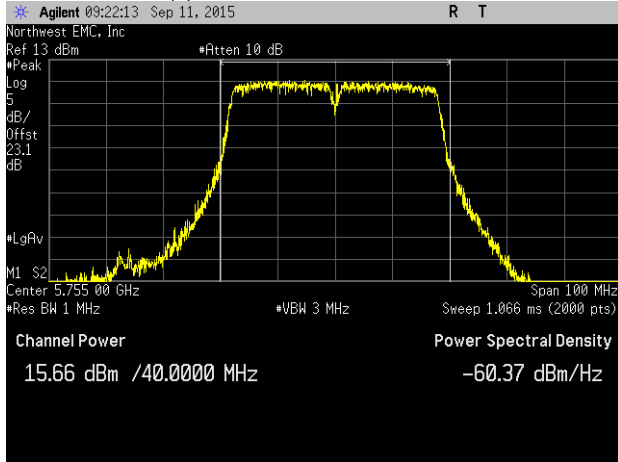
Chain A, 802.11(n) HT, MCS16, 40 MHz, High Channel 5230 MHz



Value	15.011 dBm
Limit (<)	24 dBm
Result	Pass

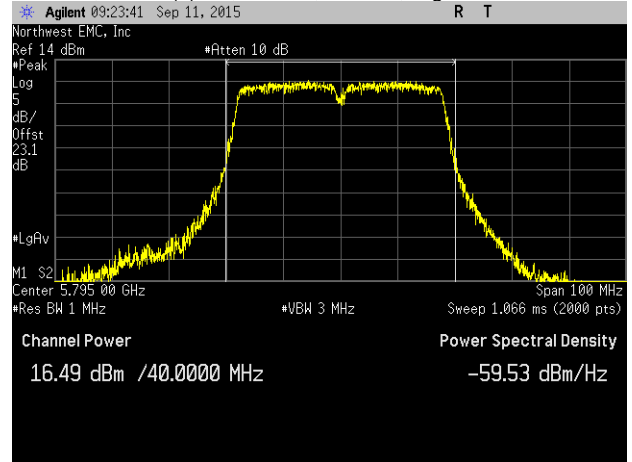
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS16, 40 MHz, Low Channel 5755 MHz



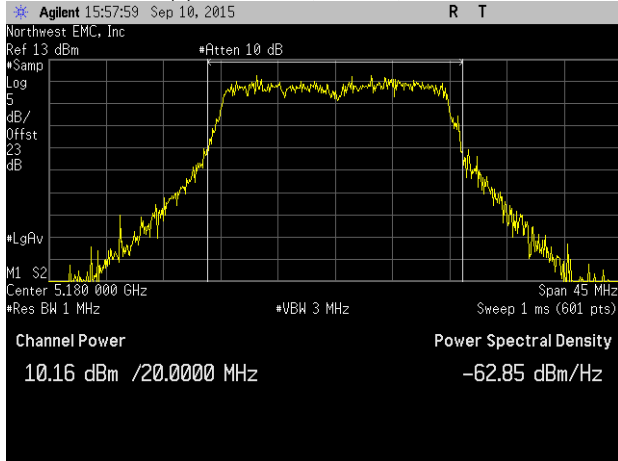
Value	15.655 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS16, 40 MHz, High Channel 5795 MHz



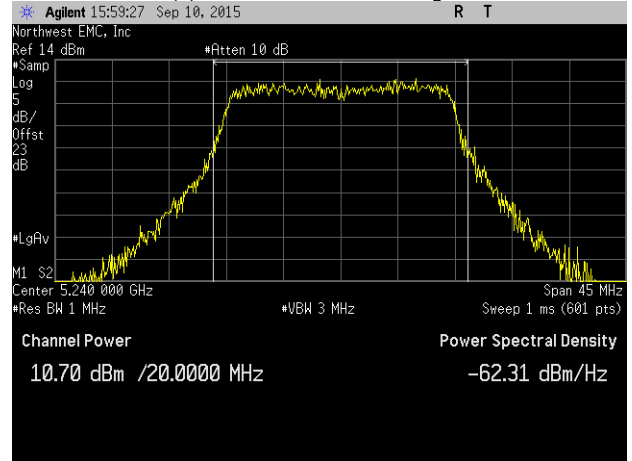
Value	16.492 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS23, 20 MHz, Low Channel 5180 MHz



Value	10.156 dBm
Limit (<)	24 dBm
Result	Pass

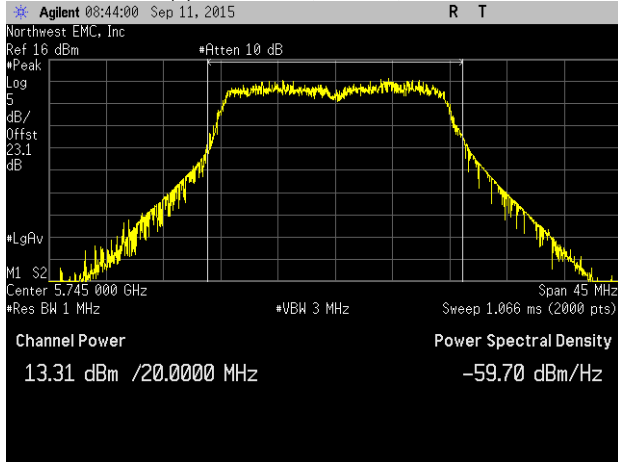
Chain A, 802.11(n) HT, MCS23, 20 MHz, High Channel 5240 MHz



Value	10.704 dBm
Limit (<)	24 dBm
Result	Pass

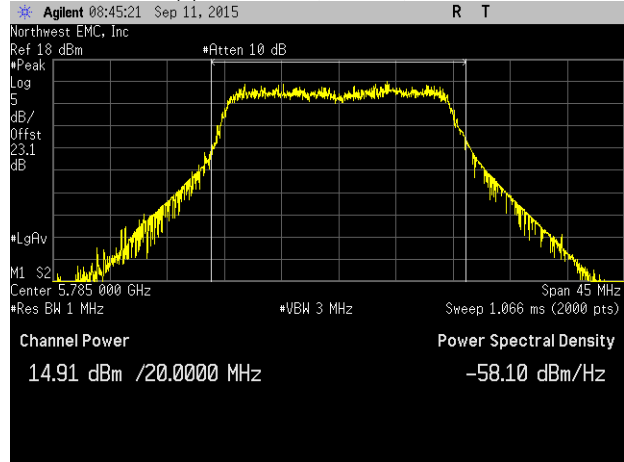
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS23, 20 MHz, Low Channel 5745 MHz



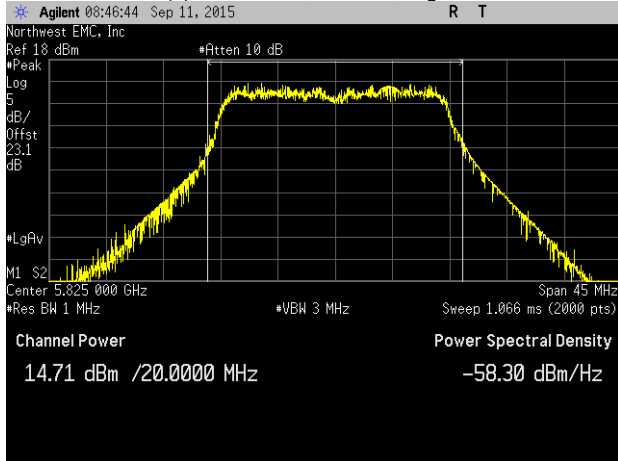
Value	13.314 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS23, 20 MHz, Mid Channel 5785 MHz



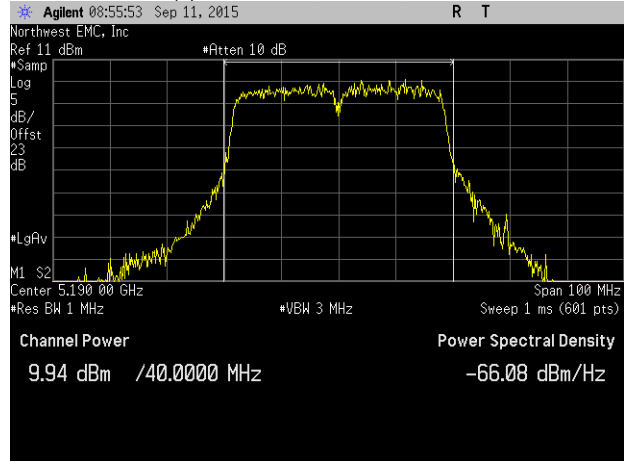
Value	14.907 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS23, 20 MHz, High Channel 5825 MHz



Value	14.711 dBm
Limit (<)	30 dBm
Result	Pass

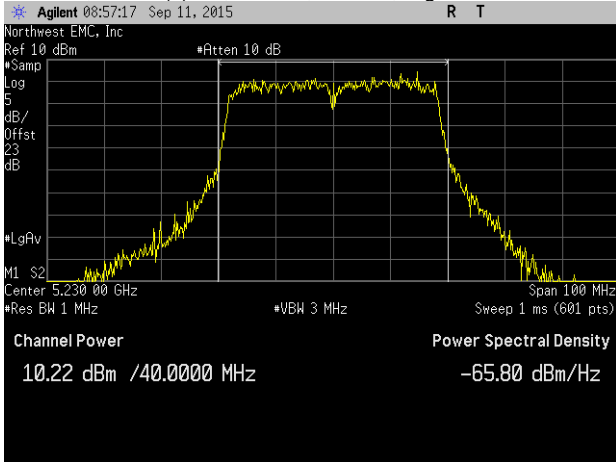
Chain A, 802.11(n) HT, MCS23, 40 MHz, Low Channel 5190 MHz



Value	9.944 dBm
Limit (<)	24 dBm
Result	Pass

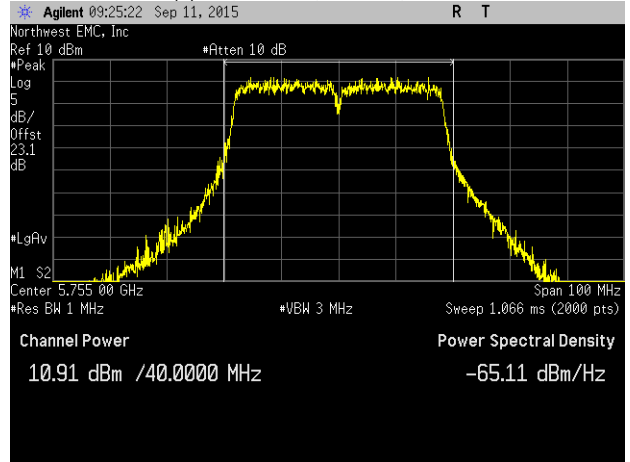
MAXIMUM CONDUCTED OUTPUT POWER

Chain A, 802.11(n) HT, MCS23, 40 MHz, High Channel 5230 MHz



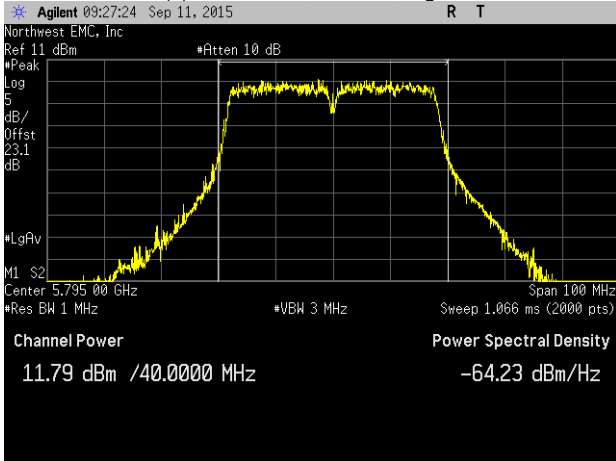
Value	10.223 dBm
Limit (<)	24 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS23, 40 MHz, Low Channel 5755 MHz



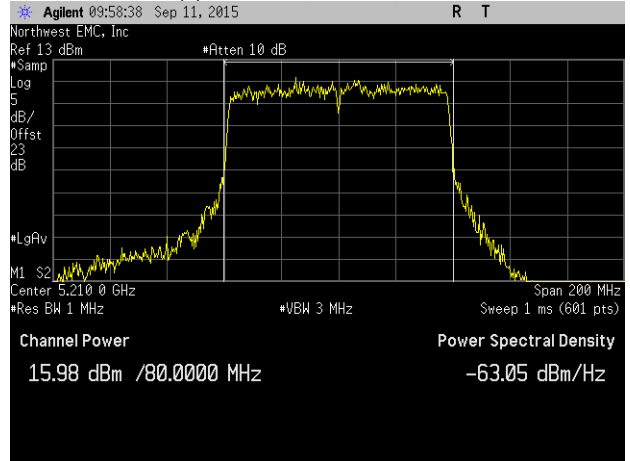
Value	10.907 dBm
Limit (<)	30 dBm
Result	Pass

Chain A, 802.11(n) HT, MCS23, 40 MHz, High Channel 5795 MHz



Value	11.787 dBm
Limit (<)	30 dBm
Result	Pass

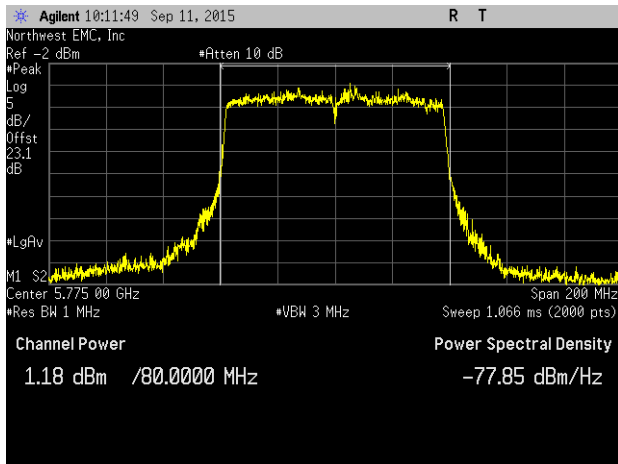
Chain B, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



Value	15.984 dBm
Limit (<)	24 dBm
Result	Pass

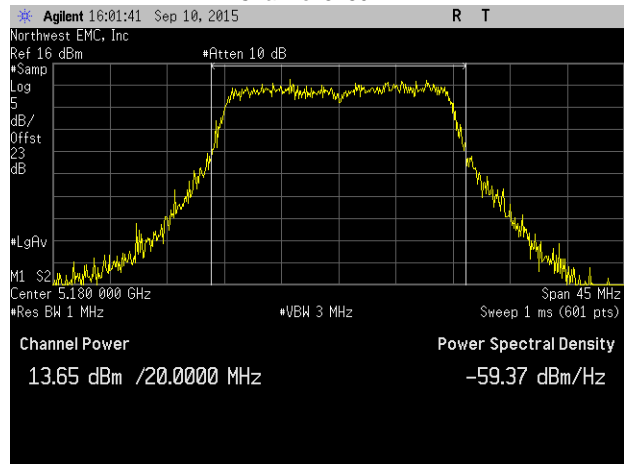
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



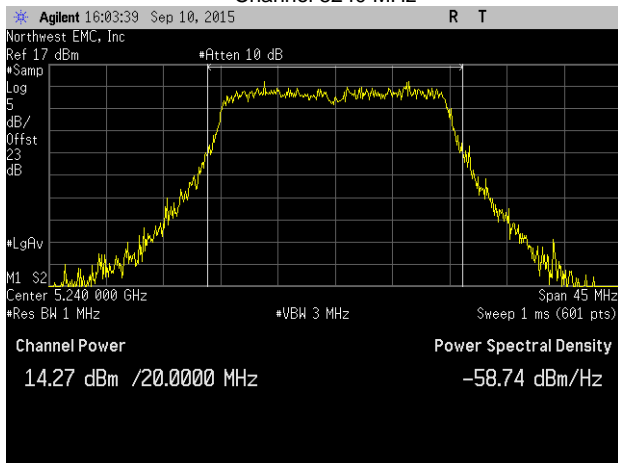
Value	1.178 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5180 MHz



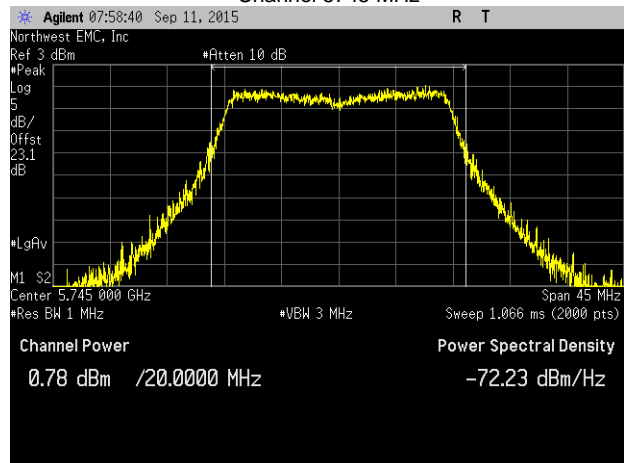
Value	13.645 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5240 MHz



Value	14.271 dBm
Limit (<)	24 dBm
Result	Pass

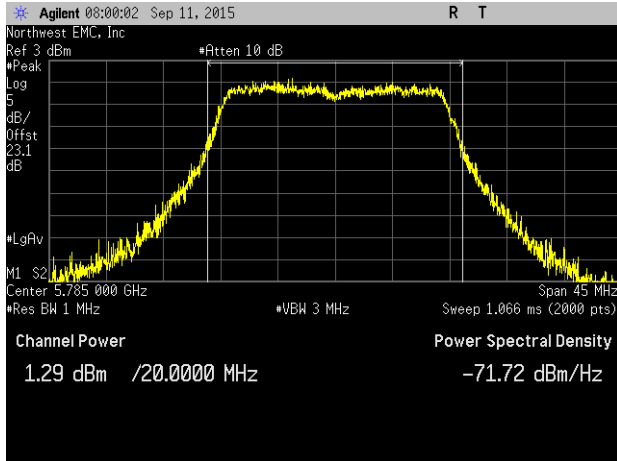
Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low Channel 5745 MHz



Value	0.782 dBm
Limit (<)	30 dBm
Result	Pass

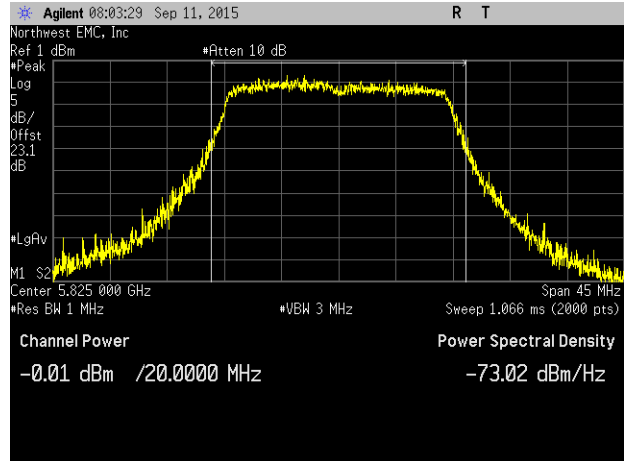
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid Channel 5785 MHz



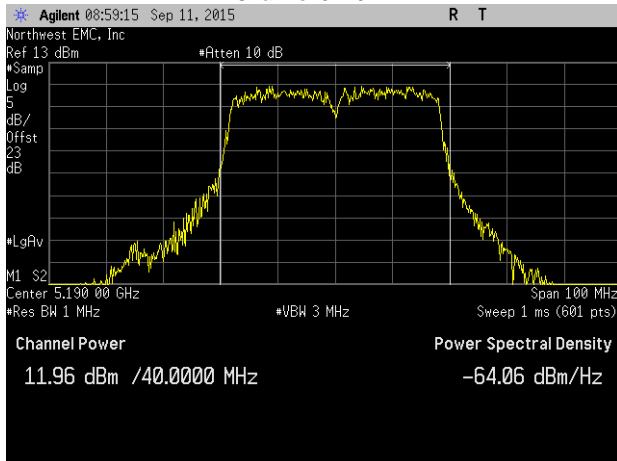
Value	1.289 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High Channel 5825 MHz



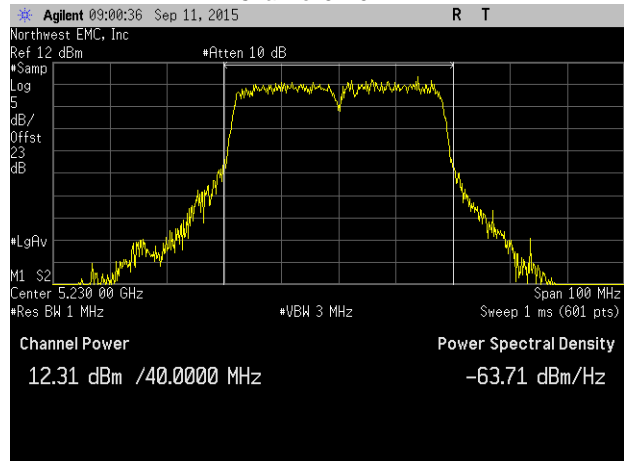
Value	-0.009 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low Channel 5210 MHz



Value	11.96 dBm
Limit (<)	24 dBm
Result	Pass

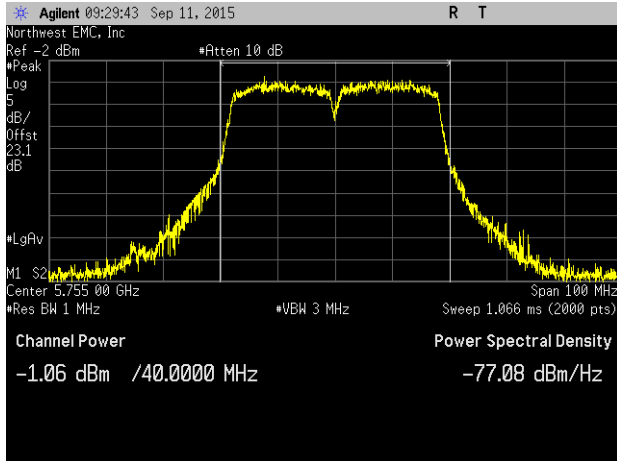
Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low Channel 5775 MHz



Value	12.31 dBm
Limit (<)	24 dBm
Result	Pass

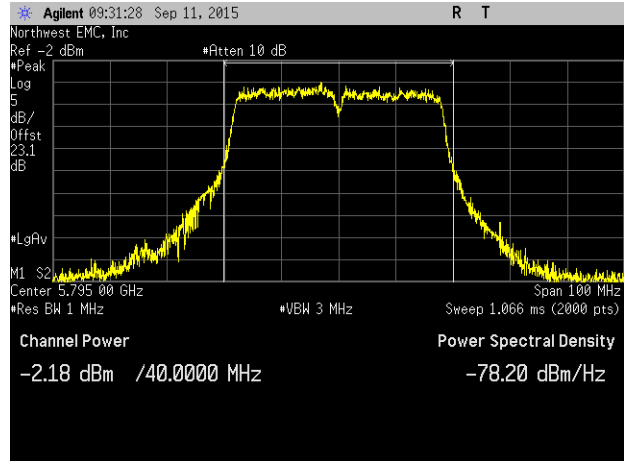
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



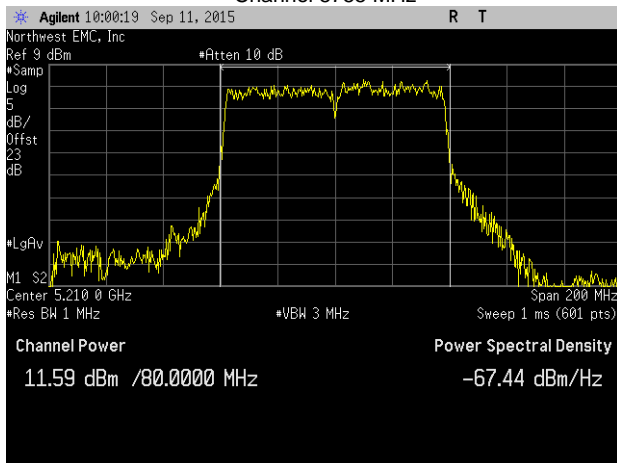
Value	-1.062 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5230 MHz



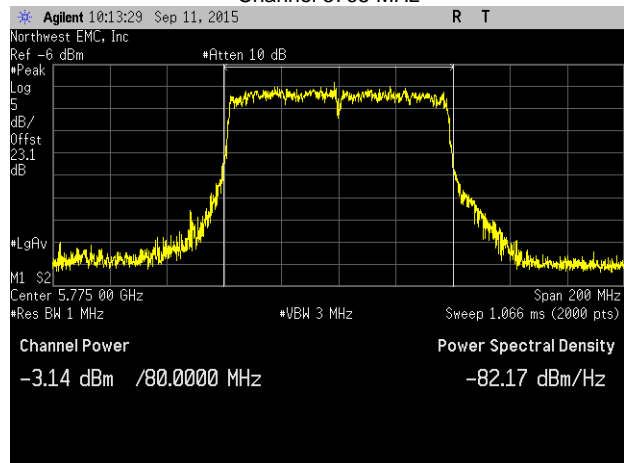
Value	-2.181 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5755 MHz



Value	11.591 dBm
Limit (<)	24 dBm
Result	Pass

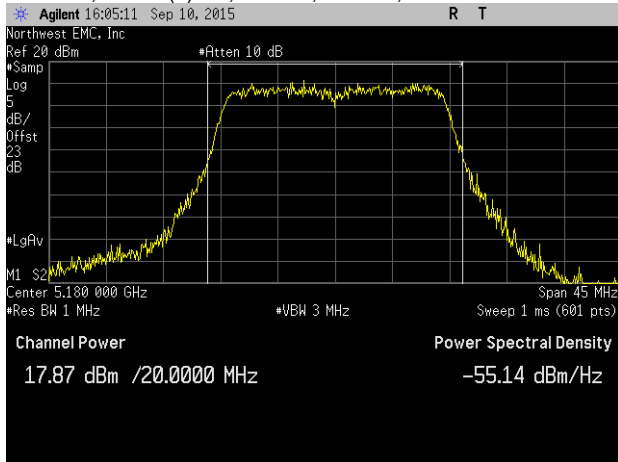
Chain B, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High
Channel 5795 MHz



Value	-3.138 dBm
Limit (<)	30 dBm
Result	Pass

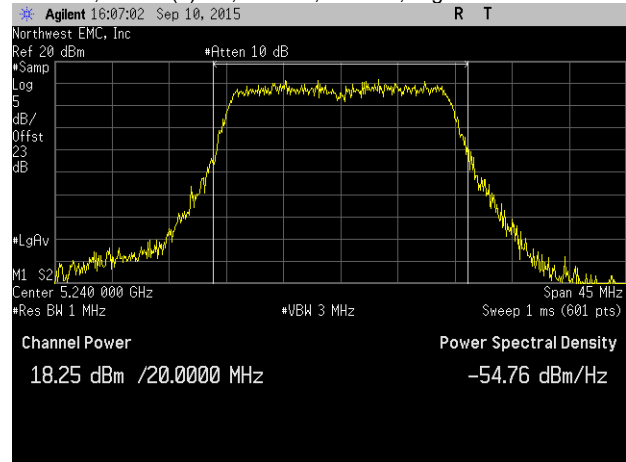
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS16, 20 MHz, Low Channel 5180 MHz



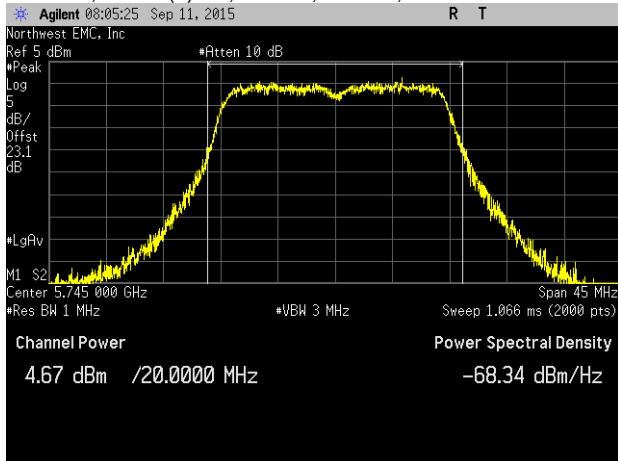
Value	17.874 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS16, 20 MHz, High Channel 5240 MHz



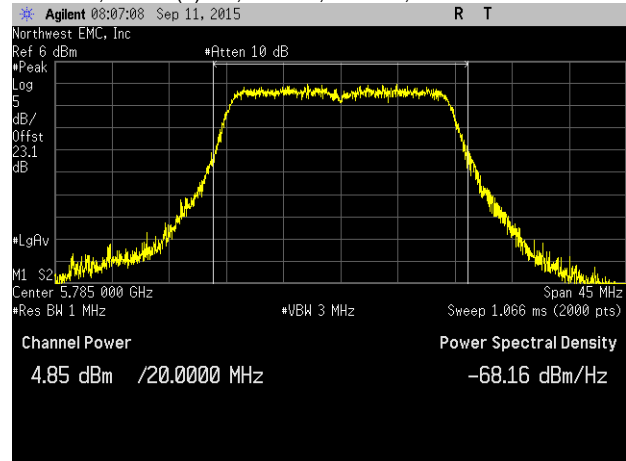
Value	18.247 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS16, 20 MHz, Low Channel 5745 MHz



Value	4.675 dBm
Limit (<)	30 dBm
Result	Pass

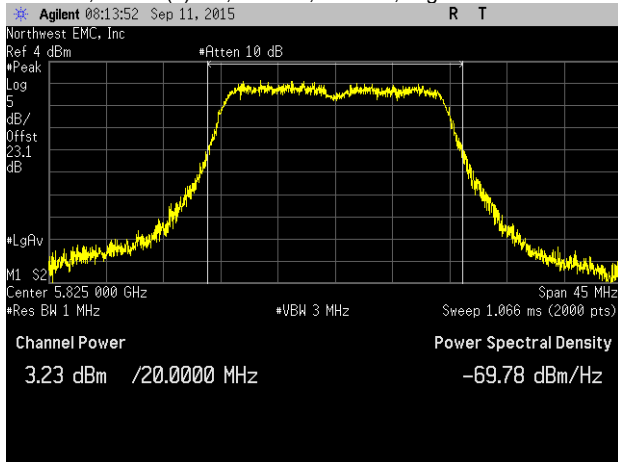
Chain B, 802.11(n) HT, MCS16, 20 MHz, Mid Channel 5785 MHz



Value	4.852 dBm
Limit (<)	30 dBm
Result	Pass

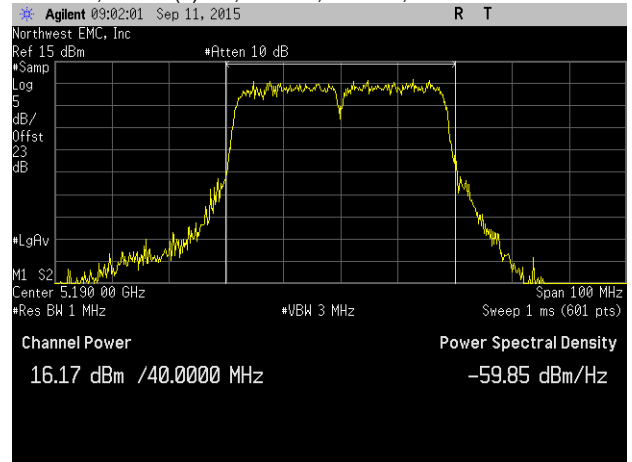
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS16, 20 MHz, High Channel 5825 MHz



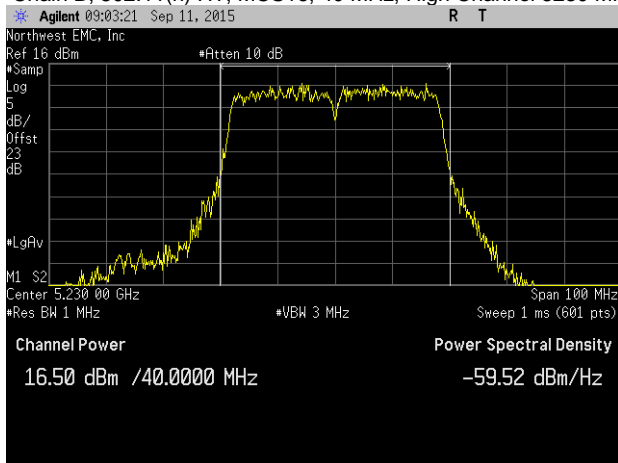
Value	3.226 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS16, 40 MHz, Low Channel 5190 MHz



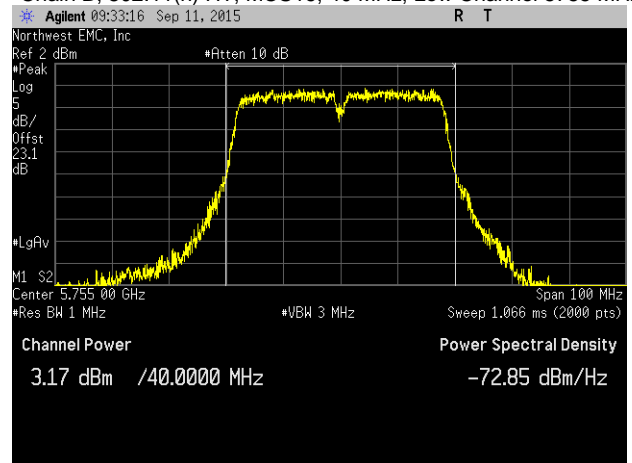
Value	16.174 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS16, 40 MHz, High Channel 5230 MHz



Value	16.502 dBm
Limit (<)	24 dBm
Result	Pass

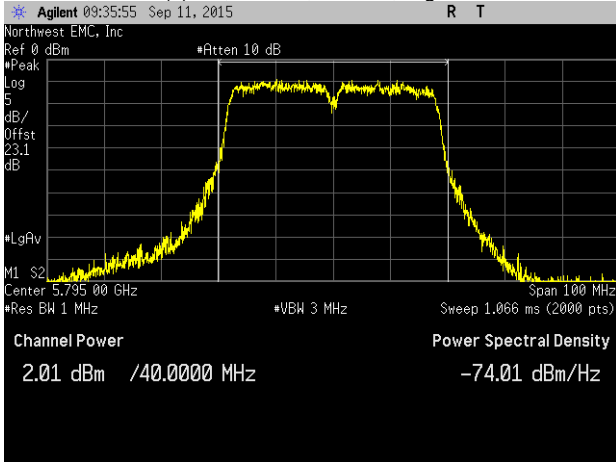
Chain B, 802.11(n) HT, MCS16, 40 MHz, Low Channel 5755 MHz



Value	3.169 dBm
Limit (<)	30 dBm
Result	Pass

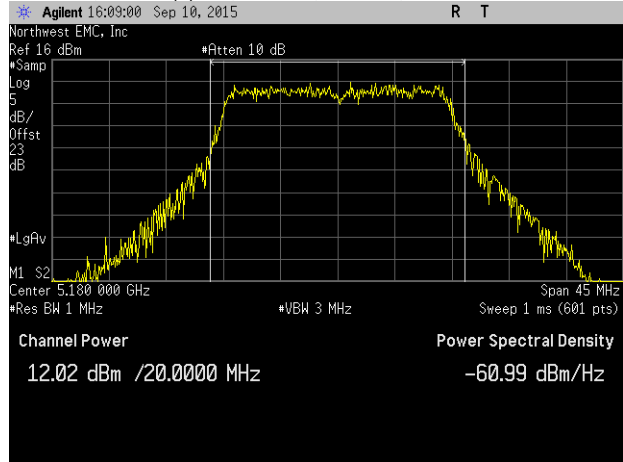
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS16, 40 MHz, High Channel 5795 MHz



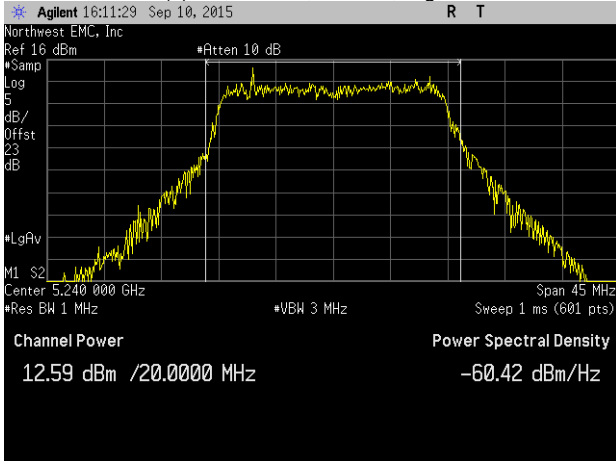
Value	2.014 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS23, 20 MHz, Low Channel 5180 MHz



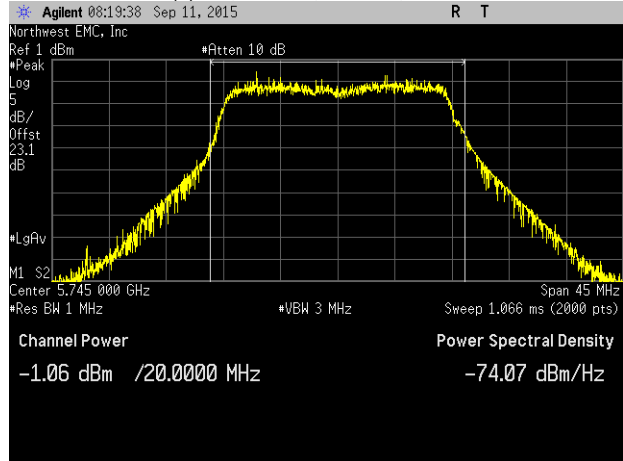
Value	12.017 dBm
Limit (<)	24 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS23, 20 MHz, High Channel 5240 MHz



Value	12.593 dBm
Limit (<)	24 dBm
Result	Pass

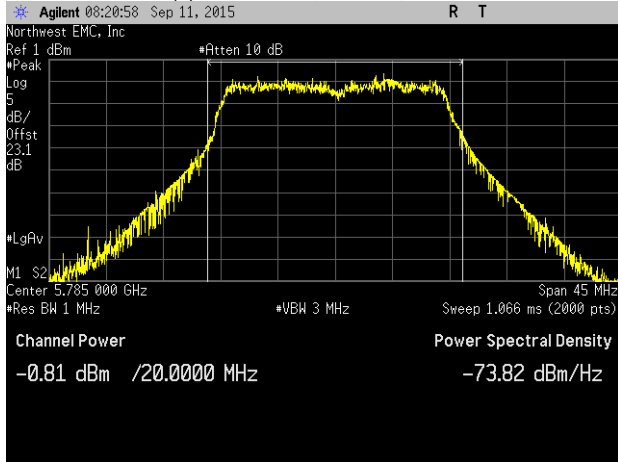
Chain B, 802.11(n) HT, MCS23, 20 MHz, Low Channel 5745 MHz



Value	-1.063 dBm
Limit (<)	30 dBm
Result	Pass

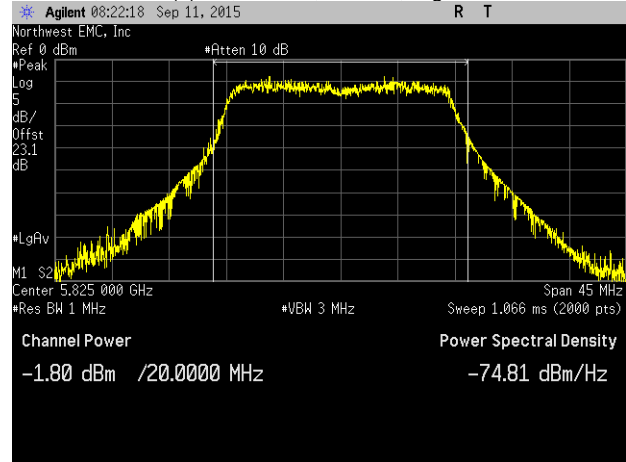
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS23, 20 MHz, Mid Channel 5785 MHz



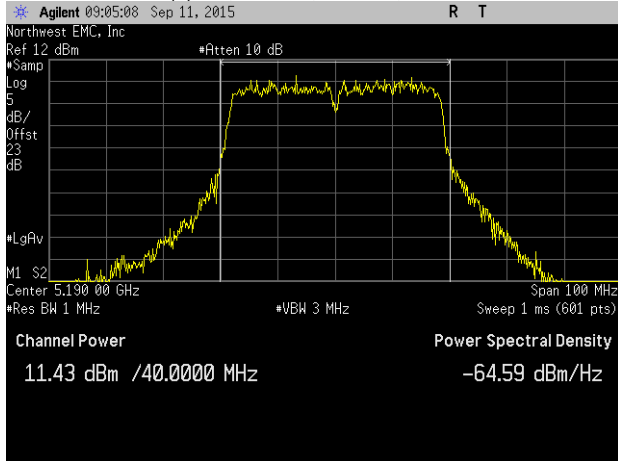
Value	-0.812 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS23, 20 MHz, High Channel 5825 MHz



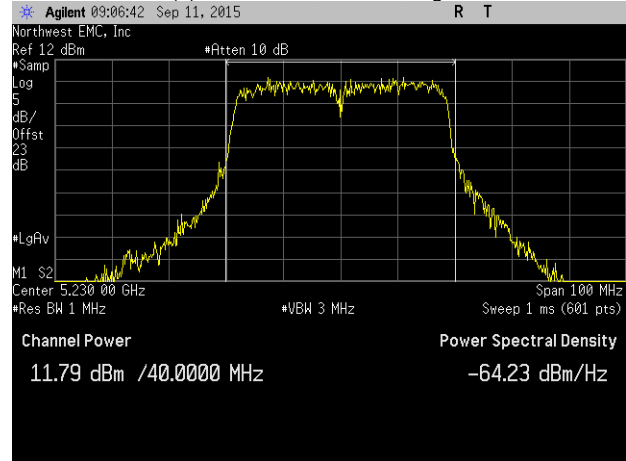
Value	-1.798 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS23, 40 MHz, Low Channel 5190 MHz



Value	11.428 dBm
Limit (<)	24 dBm
Result	Pass

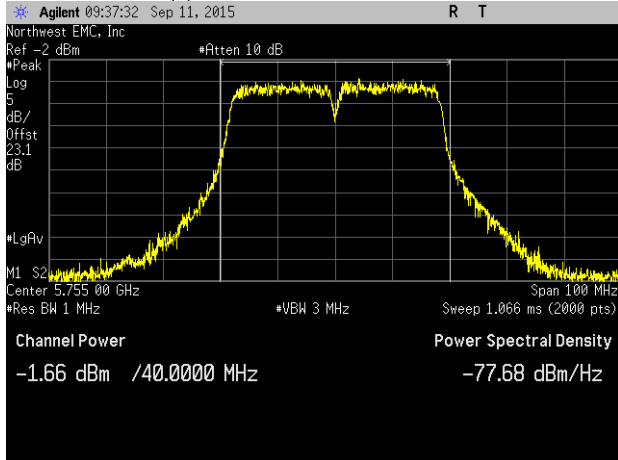
Chain B, 802.11(n) HT, MCS23, 40 MHz, High Channel 5230 MHz



Value	11.788 dBm
Limit (<)	24 dBm
Result	Pass

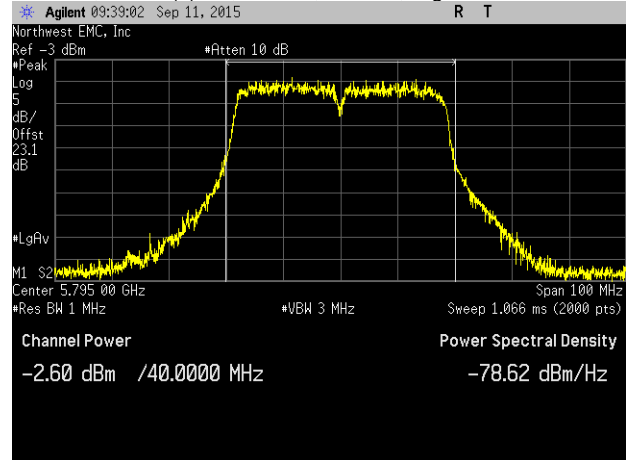
MAXIMUM CONDUCTED OUTPUT POWER

Chain B, 802.11(n) HT, MCS23, 40 MHz, Low Channel 5755 MHz



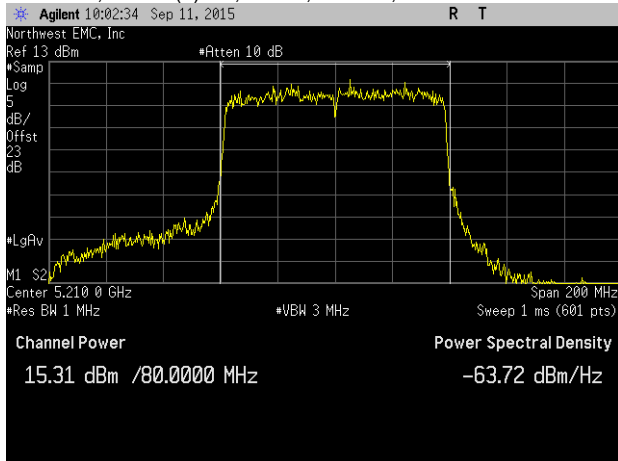
Value	-1.663 dBm
Limit (<)	30 dBm
Result	Pass

Chain B, 802.11(n) HT, MCS23, 40 MHz, High Channel 5795 MHz



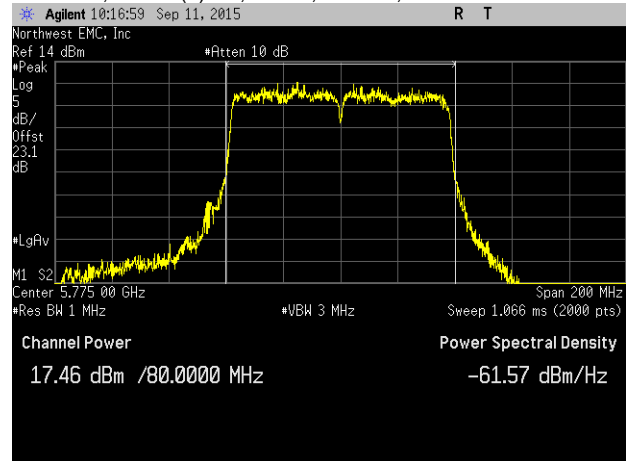
Value	-2.601 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5210 MHz



Value	15.313 dBm
Limit (<)	24 dBm
Result	Pass

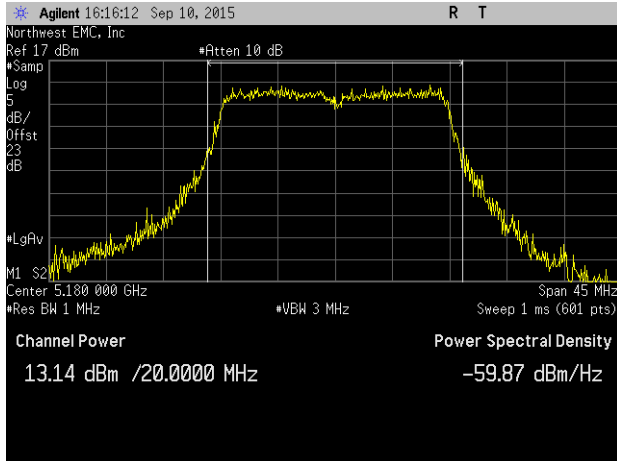
Chain C, 802.11(n) HT, MCS0, 80 MHz, Low Channel 5775 MHz



Value	17.457 dBm
Limit (<)	30 dBm
Result	Pass

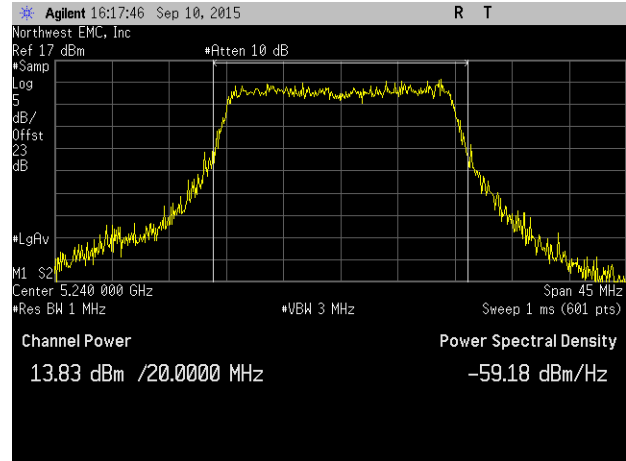
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low
Channel 5180 MHz



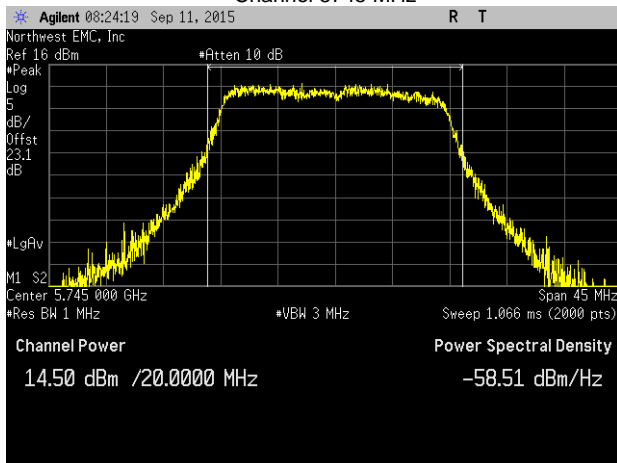
Value	13.145 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5240 MHz



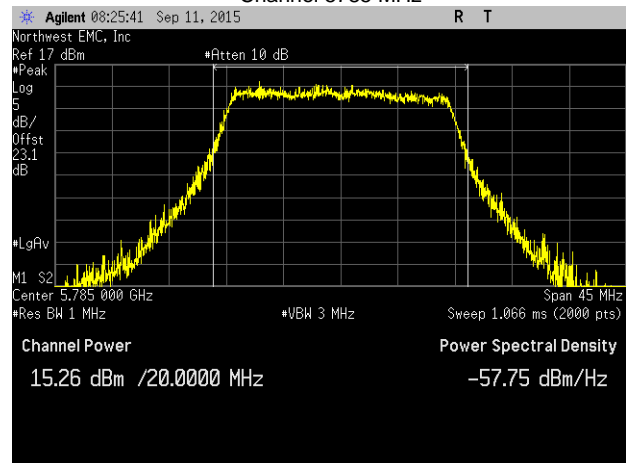
Value	13.827 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Low
Channel 5745 MHz



Value	14.502 dBm
Limit (<)	30 dBm
Result	Pass

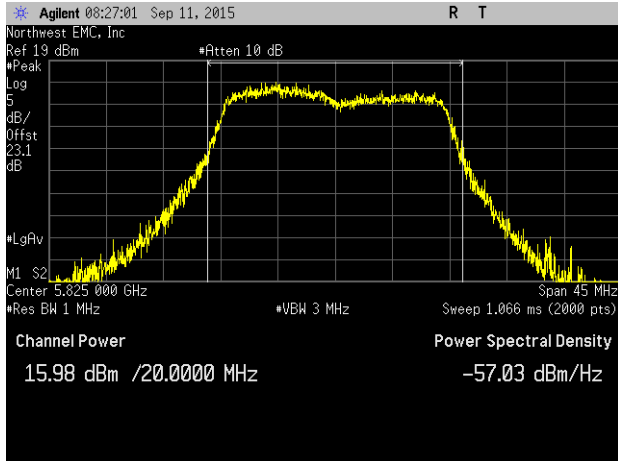
Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, Mid
Channel 5785 MHz



Value	15.258 dBm
Limit (<)	30 dBm
Result	Pass

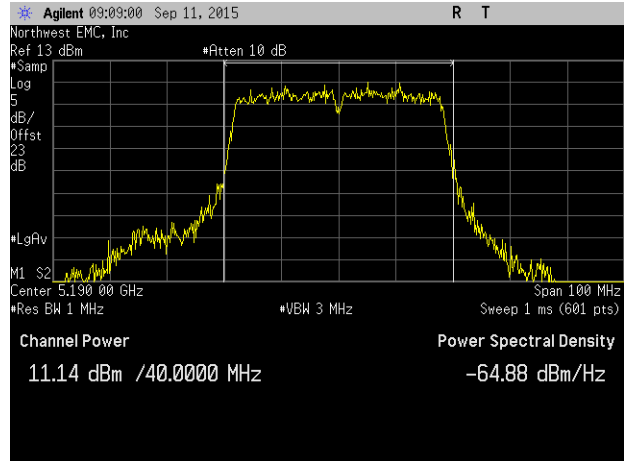
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS8 (256-QAM), 20 MHz, High
Channel 5825 MHz



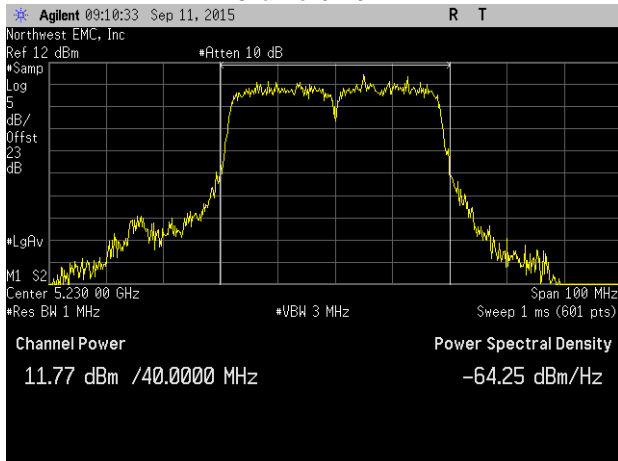
Value	15.976 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5210 MHz



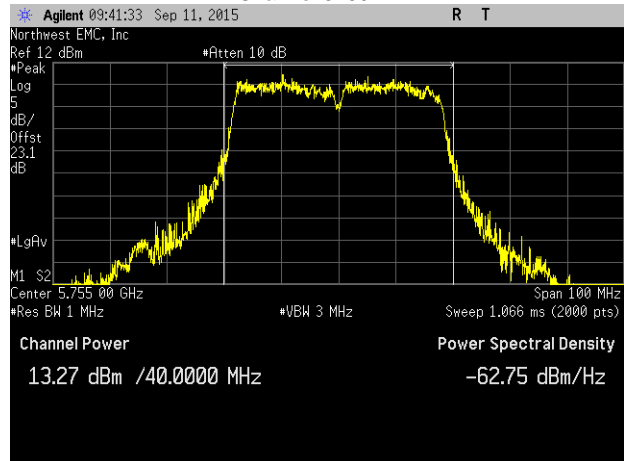
Value	11.137 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 80 MHz, Low
Channel 5775 MHz



Value	11.769 dBm
Limit (<)	24 dBm
Result	Pass

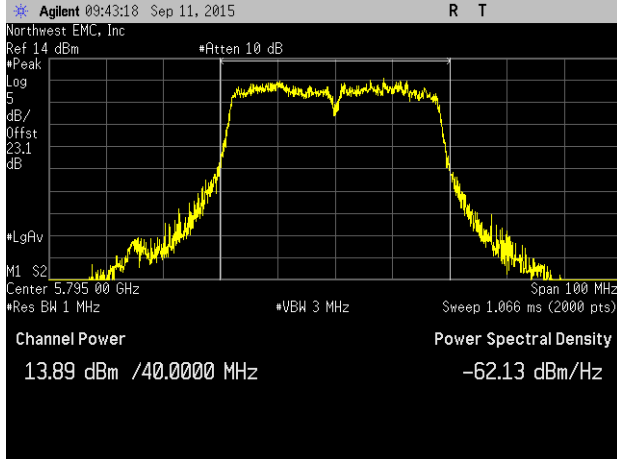
Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low
Channel 5190 MHz



Value	13.268 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5230 MHz



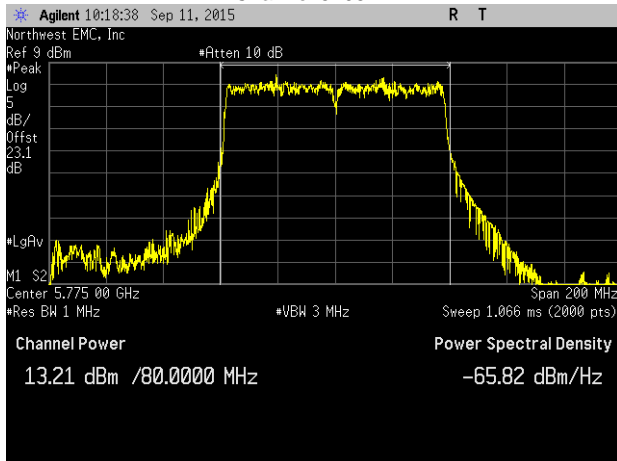
Value	13.895 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, Low Channel 5755 MHz



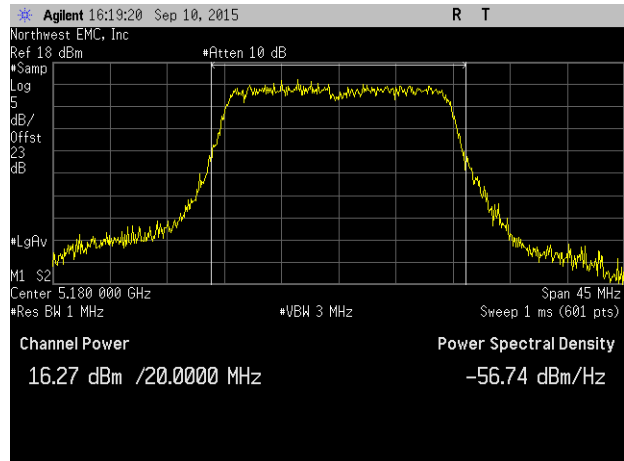
Value	10.882 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(ac) VHT, MCS9 (256-QAM), 40 MHz, High Channel 5795 MHz



Value	13.212 dBm
Limit (<)	30 dBm
Result	Pass

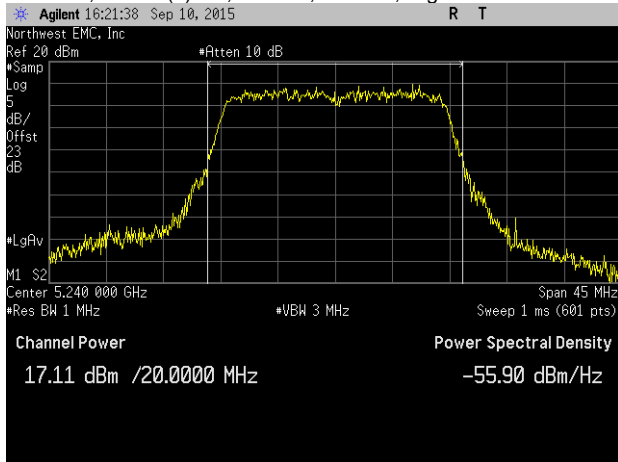
Chain C, 802.11(n) HT, MCS16, 20 MHz, Low Channel 5180 MHz



Value	16.273 dBm
Limit (<)	24 dBm
Result	Pass

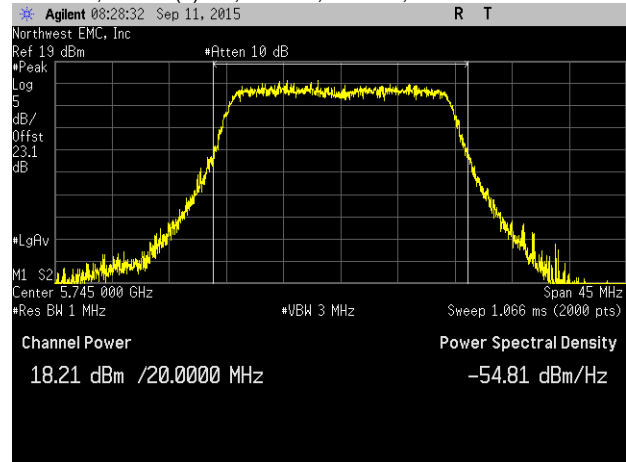
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS16, 20 MHz, High Channel 5240 MHz



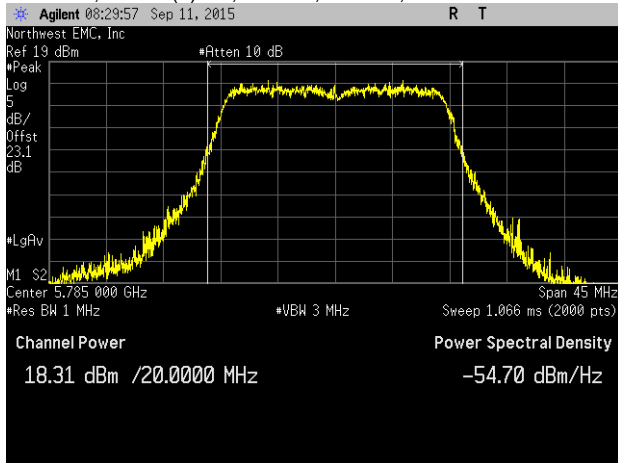
Value	17.11 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS16, 20 MHz, Low Channel 5745 MHz



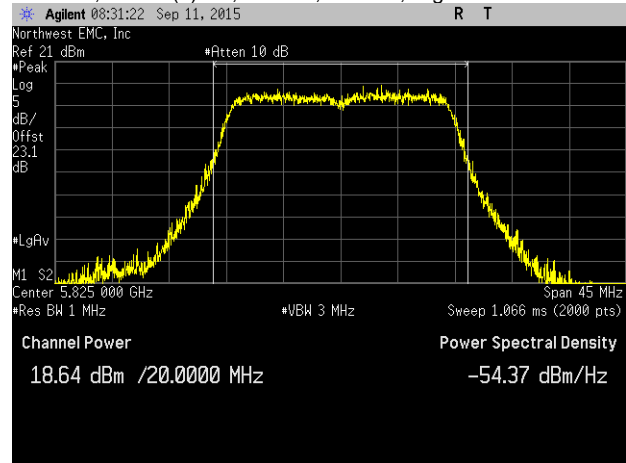
Value	18.205 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS16, 20 MHz, Mid Channel 5785 MHz



Value	18.308 dBm
Limit (<)	30 dBm
Result	Pass

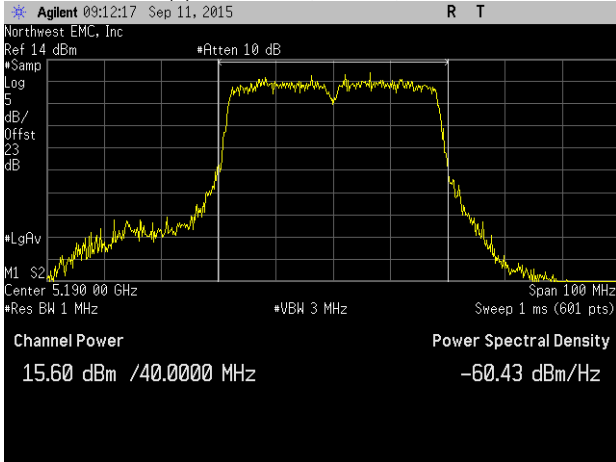
Chain C, 802.11(n) HT, MCS16, 20 MHz, High Channel 5825 MHz



Value	18.637 dBm
Limit (<)	30 dBm
Result	Pass

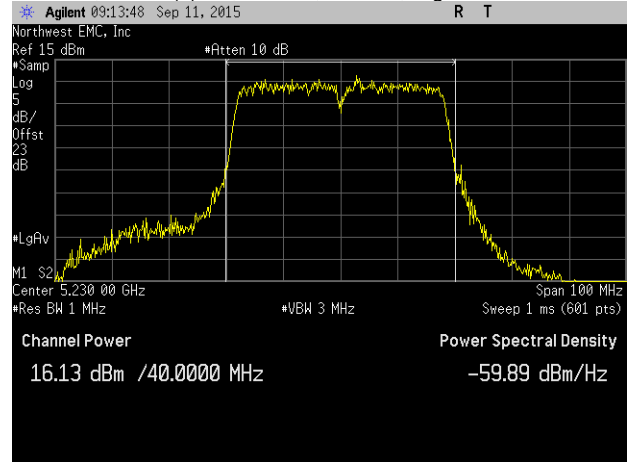
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS16, 40 MHz, Low Channel 5190 MHz



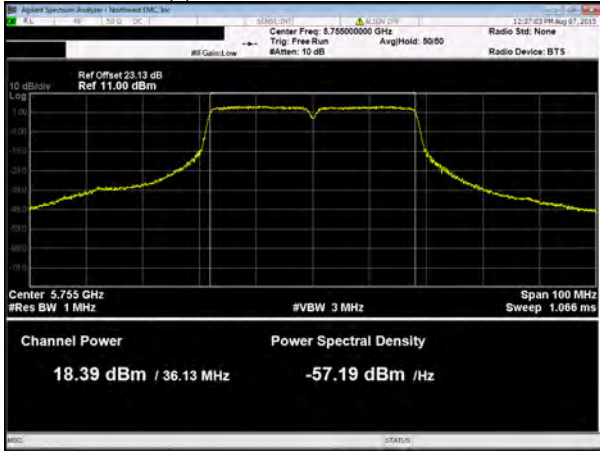
Value	15.595 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS16, 40 MHz, High Channel 5230 MHz



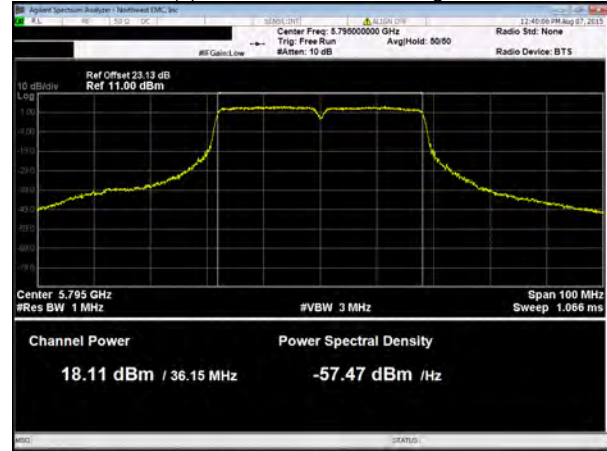
Value	16.128 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS16, 40 MHz, Low Channel 5755 MHz



Value	18.387 dBm
Limit (<)	30 dBm
Result	Pass

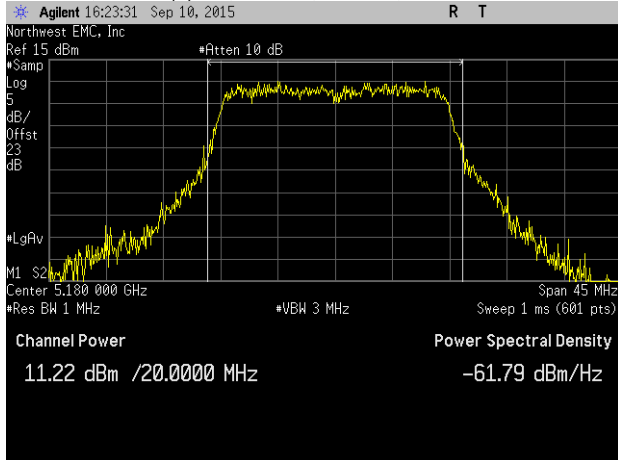
Chain C, 802.11(n) HT, MCS16, 40 MHz, High Channel 5795 MHz



Value	18.11 dBm
Limit (<)	30 dBm
Result	Pass

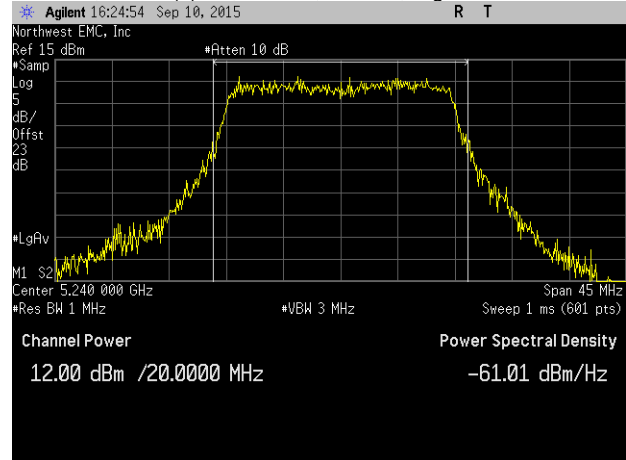
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS23, 20 MHz, Low Channel 5180 MHz



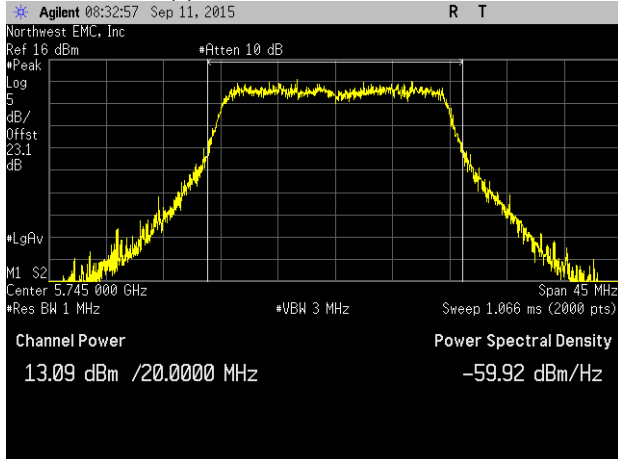
Value	11.222 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS23, 20 MHz, High Channel 5240 MHz



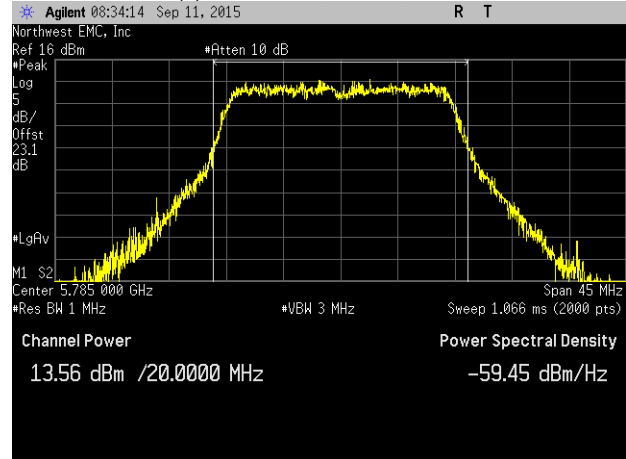
Value	12.005 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS23, 20 MHz, Low Channel 5745 MHz



Value	13.095 dBm
Limit (<)	30 dBm
Result	Pass

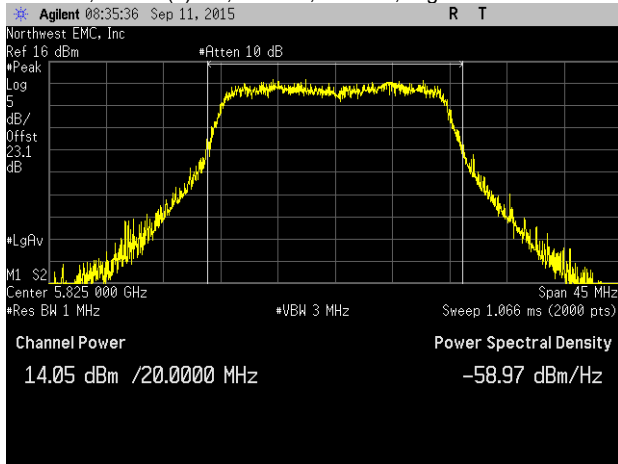
Chain C, 802.11(n) HT, MCS23, 20 MHz, Mid Channel 5785 MHz



Value	13.562 dBm
Limit (<)	30 dBm
Result	Pass

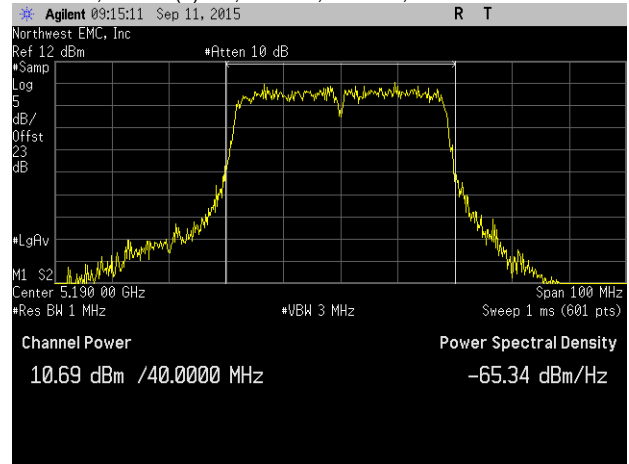
MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS23, 20 MHz, High Channel 5825 MHz



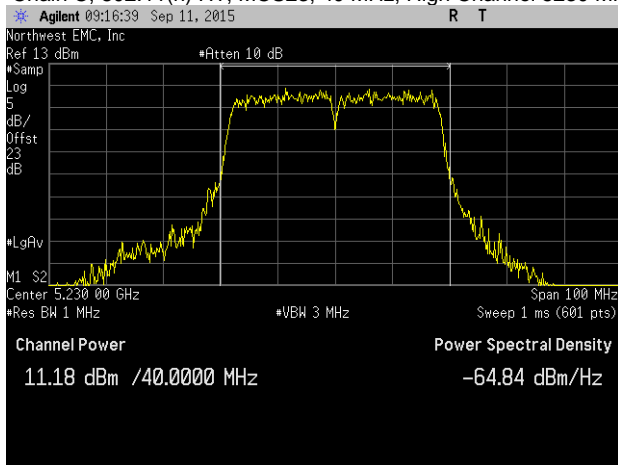
Value	14.045 dBm
Limit (<)	30 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS23, 40 MHz, Low Channel 5190 MHz



Value	10.685 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS23, 40 MHz, High Channel 5230 MHz



Value	11.179 dBm
Limit (<)	24 dBm
Result	Pass

Chain C, 802.11(n) HT, MCS23, 40 MHz, Low Channel 5755 MHz



Value	13.83 dBm
Limit (<)	30 dBm
Result	Pass

MAXIMUM CONDUCTED OUTPUT POWER

Chain C, 802.11(n) HT, MCS23, 40 MHz, High Channel 5795 MHz



Value	13.363 dBm
Limit (<)	30 dBm
Result	Pass