

DUTY CYCLE



XMIT 2019.02.26

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Block - DC	Fairview Microwave	SD3379	AMM	17-Mar-19	17-Mar-20
Attenuator	Fairview Microwave	SA4018-20	TYW	17-Mar-19	17-Mar-20
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

Per ANSI C63.10, all measurements are to be performed with the EUT operating at 100% duty cycle at its maximum power level. In the event the EUT cannot be operated at 100% duty cycle, the transmission pulse duration (T) and Duty Cycle (x) are required to be measured for each of the EUT operating modes.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, a duty cycle correction factor in dB can be calculated to add to power measurements if required in the test method guidance using the following formula

$$10 * \text{LOG} (1/D) = \text{dB}$$

Where D is duty cycle of the radio transmissions

DUTY CYCLE



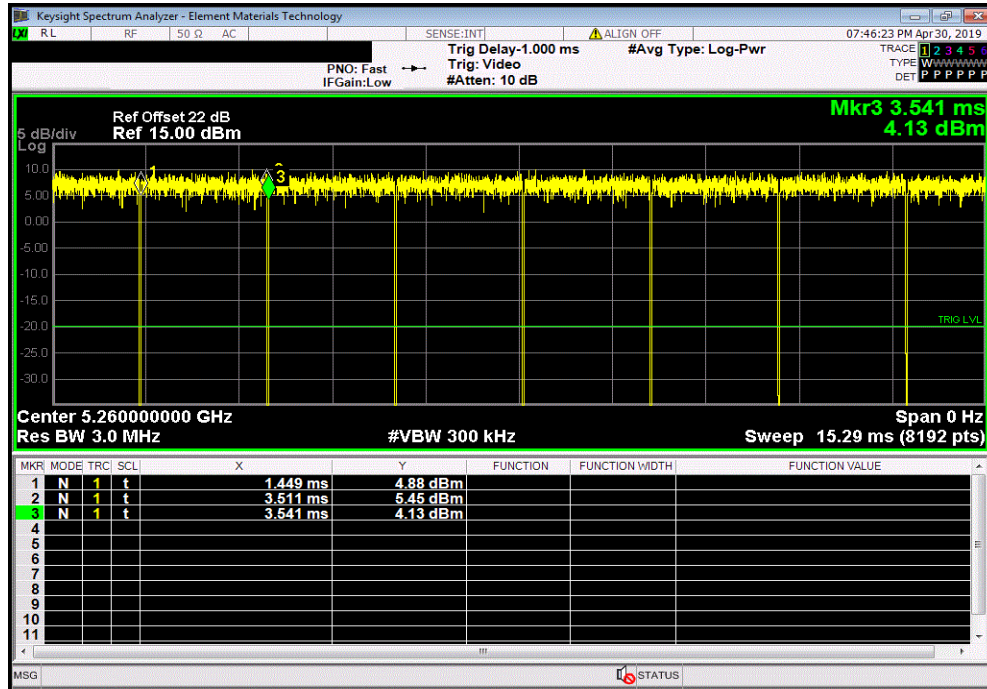
EUT: Dual Band Wireless-AC 3160 Module				Work Order: AMRN0006	
Serial Number: APT31600958				Date: 30-Apr-19	
Customer: American Portwell Technology				Temperature: 22.5 °C	
Attendees: None				Humidity: 53.2% RH	
Project: None				Barometric Pres.: 1013 mbar	
Tested by: Jonathan Kiefer		Power: 110VAC/60Hz		Job Site: TX09	
TEST SPECIFICATIONS				Test Method	
FCC 15.407:2019				ANSI C63.10:2013	
COMMENTS					
See Power Table for output power settings used.					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	1	Signature <i>Jonathan Kiefer</i>			

DUTY CYCLE

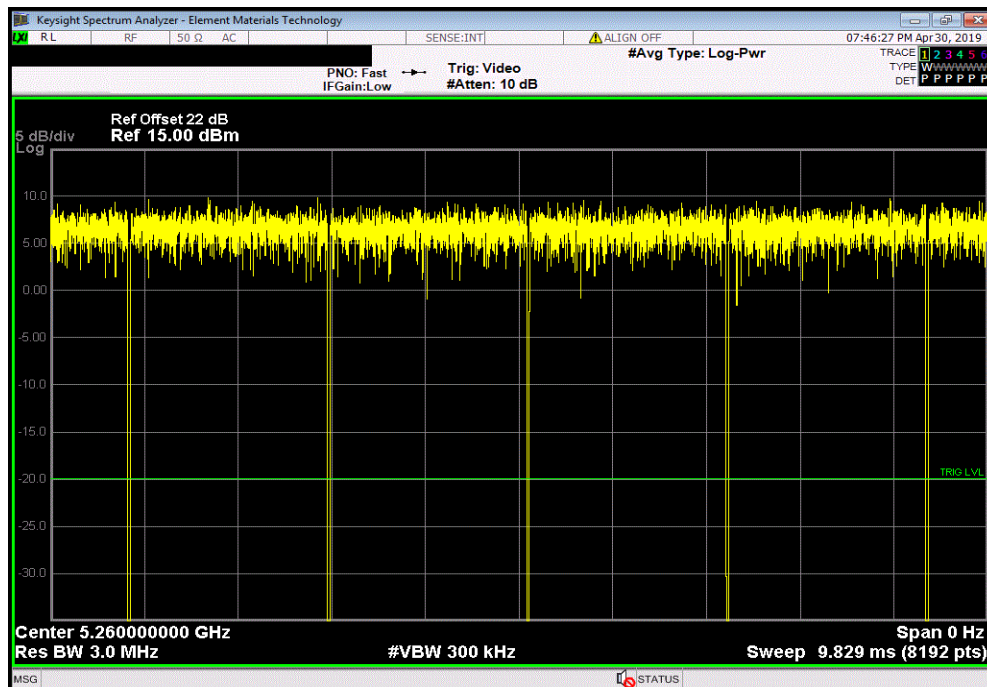


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Low Channel, Ch 52 - 5260 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
2.063 ms	2.093 ms	1	98.6	N/A	N/A	



Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Low Channel, Ch 52 - 5260 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	



[illegible]

Keysight Spectrum Analyzer - Element Materials Technology

RL RF 50 Ω AC SENSE:INT ALIGN OFF 07:49:13 PM Apr 30, 2019

PNO: Fast IFGain:Low Trig: Video #Avg Type: Log-Pwr #Atten: 10 dB

Ref Offset 22 dB
Ref 13.00 dBm

5 dB/div
Log

8.00
3.00
-2.00
-7.00
-12.0
-17.0
-22.0
-27.0
-32.0

Center 5.320000000 GHz
Res BW 3.0 MHz
#VBW 300 kHz
Sweep 9.829 ms (8192 pts)

TRIG LVL

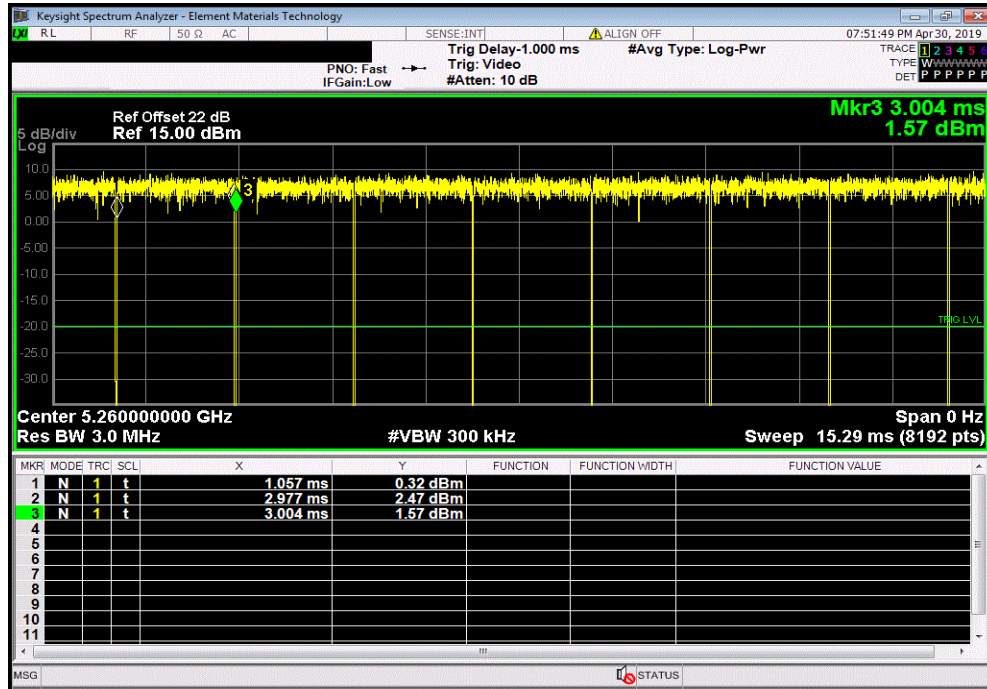
MSG STATUS

DUTY CYCLE

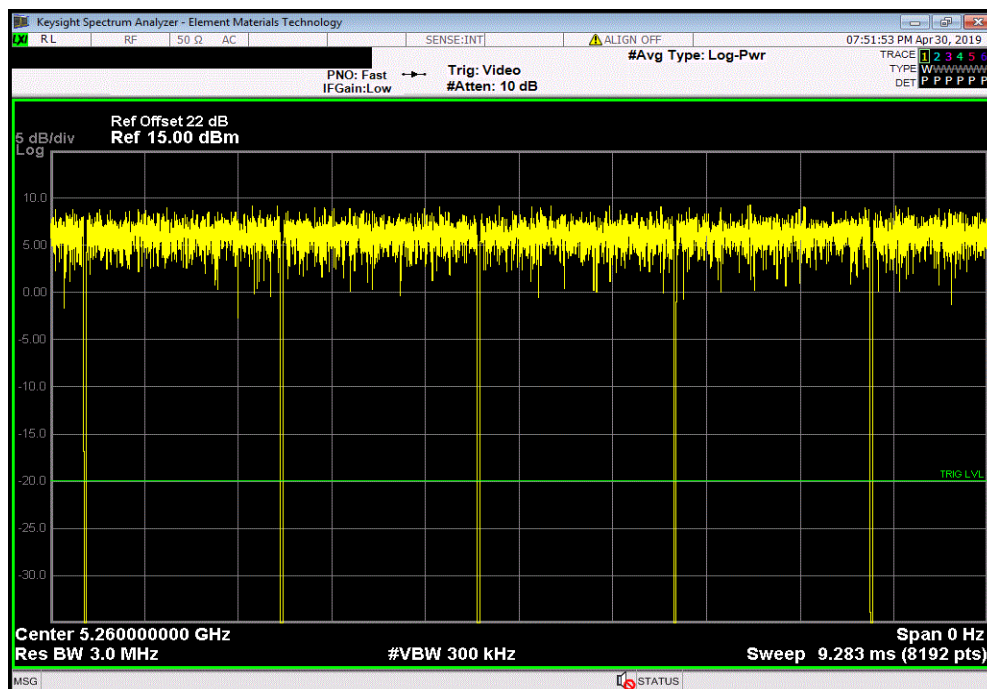


TMTx 2018.09.13 XMTx 2019.02.26

Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52 - 5260 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.921 ms	1.947 ms	1	98.7	N/A	N/A	



Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52 - 5260 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

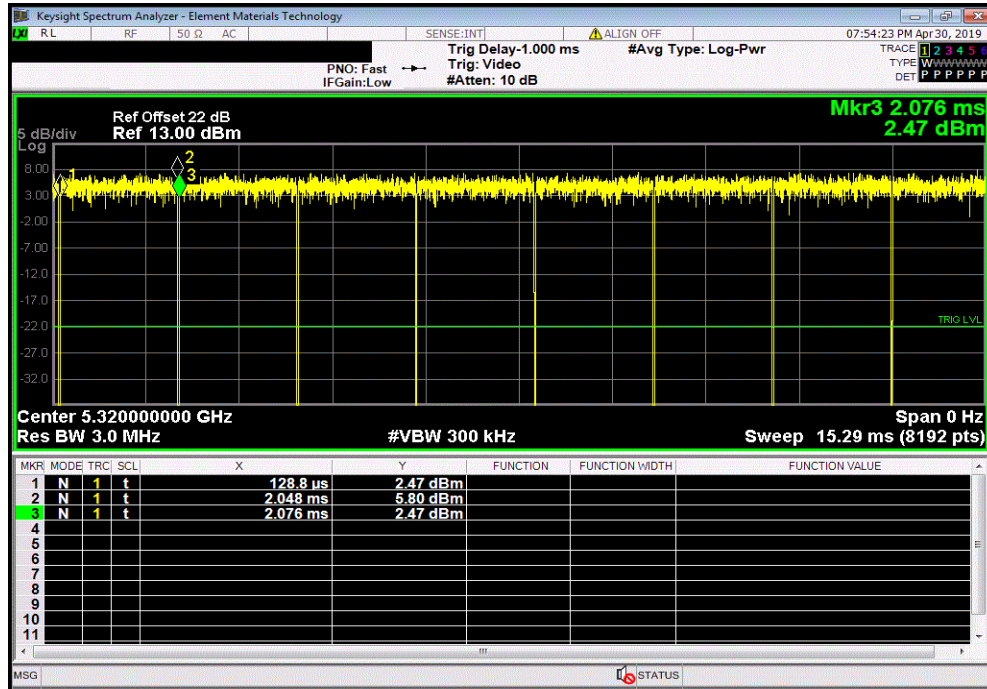


DUTY CYCLE



TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(n) MCS0, High Channel, Ch 64 - 5320 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.919 ms	1.947 ms	1	98.6	N/A	N/A	



Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(n) MCS0, High Channel, Ch 64 - 5320 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

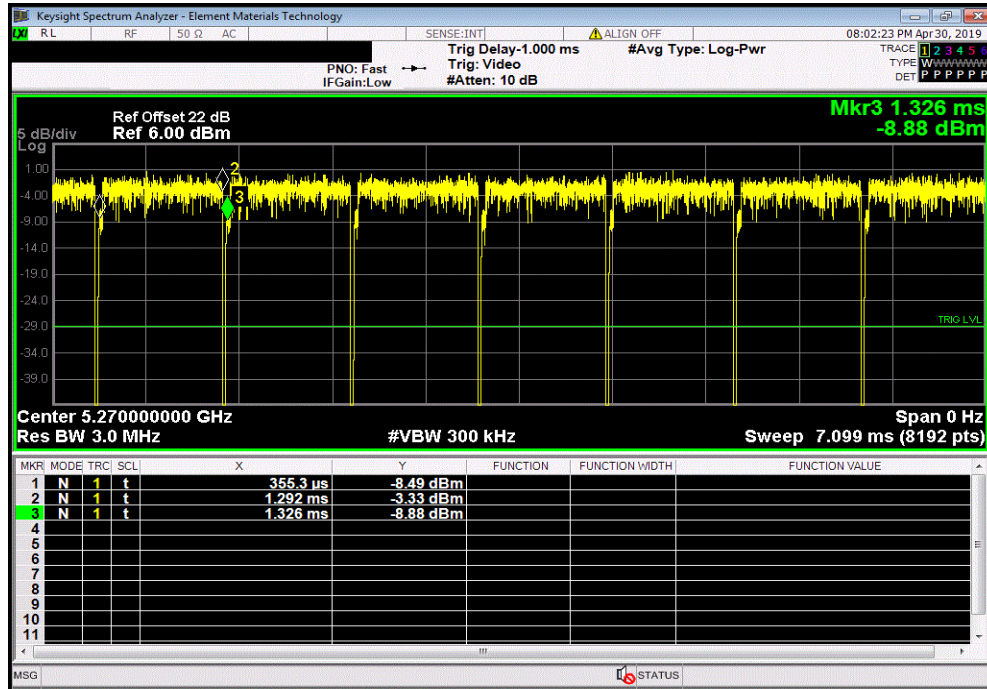


DUTY CYCLE

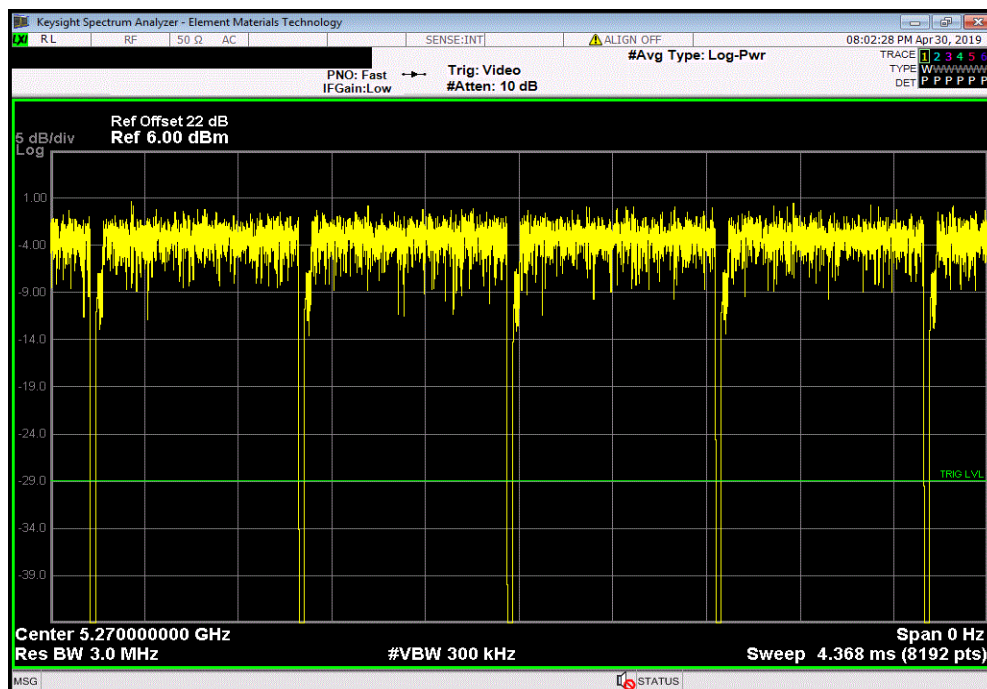


TMTx 2018.09.13 XMTx 2019.02.26

Chain A, 5250 - 5350 MHz Band, 40 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52/56 - 5270 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
936.9 μ s	970.7 μ s	1	96.5	N/A	N/A	



Chain A, 5250 - 5350 MHz Band, 40 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52/56 - 5270 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

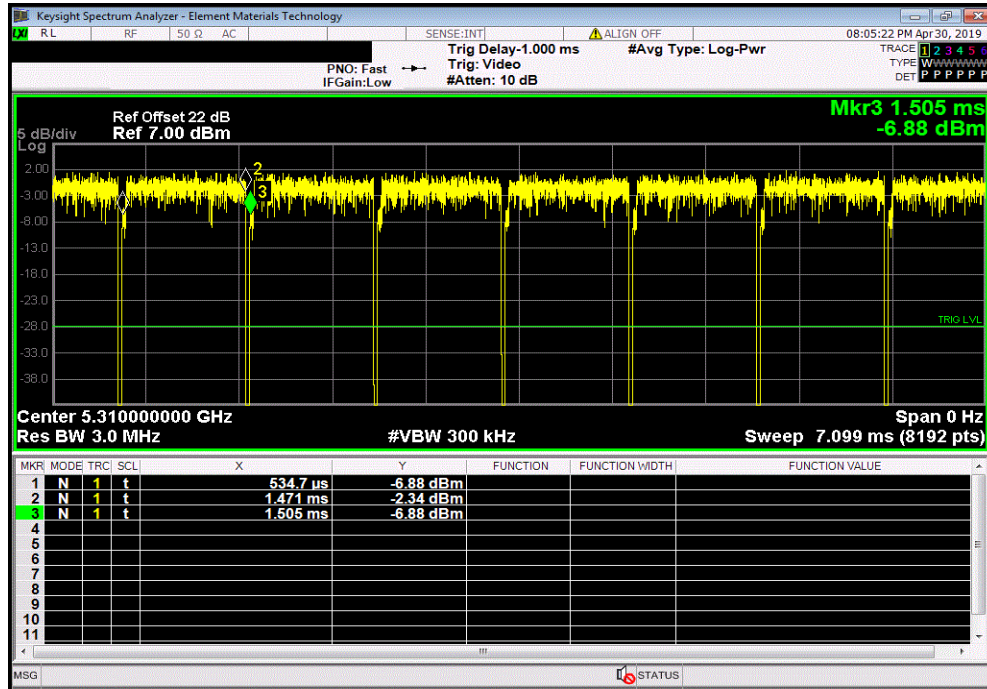


DUTY CYCLE

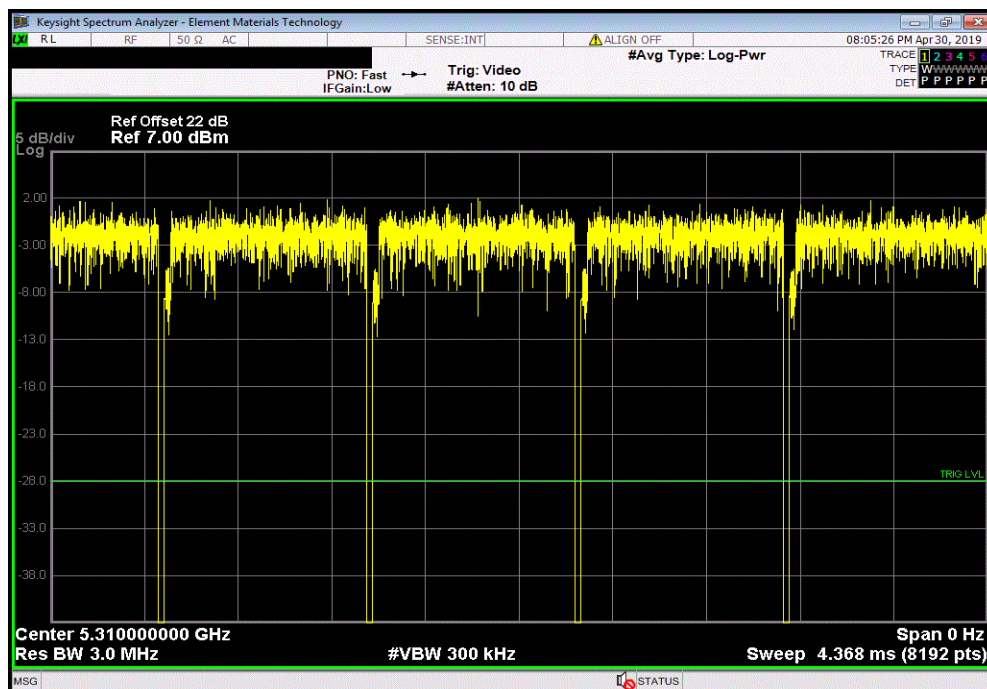


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5250 - 5350 MHz Band, 40 MHz BW, 802.11(n) MCS0, High Channel, Ch 60/64 - 5310 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
936 us	970.7 us	1	96.4	N/A	N/A	



Chain A, 5250 - 5350 MHz Band, 40 MHz BW, 802.11(n) MCS0, High Channel, Ch 60/64 - 5310 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

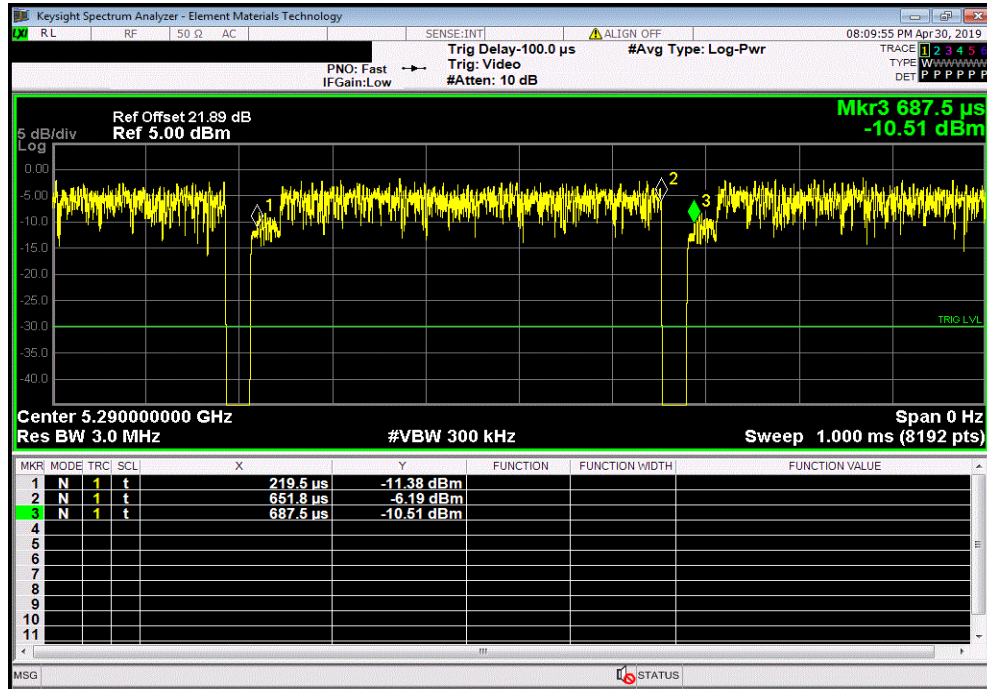


DUTY CYCLE

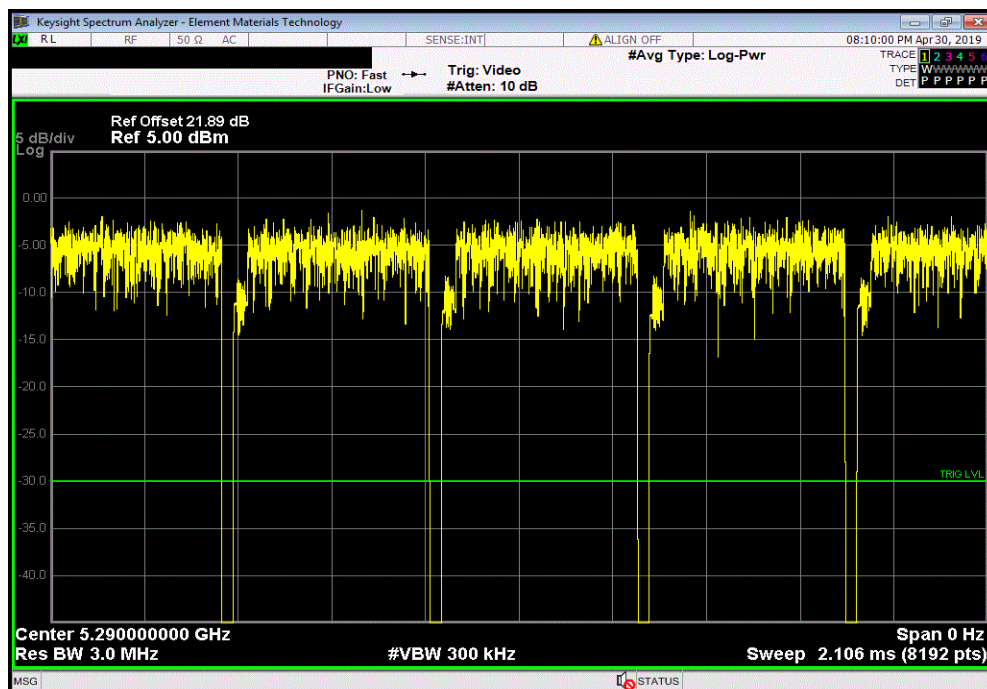


TMTx 2018.09.13 XMt 2019.02.26

Chain A, 5250 - 5350 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52-64 - 5290 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
432.3 us	468 us	1	92.4	N/A	N/A	



Chain A, 5250 - 5350 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52-64 - 5290 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

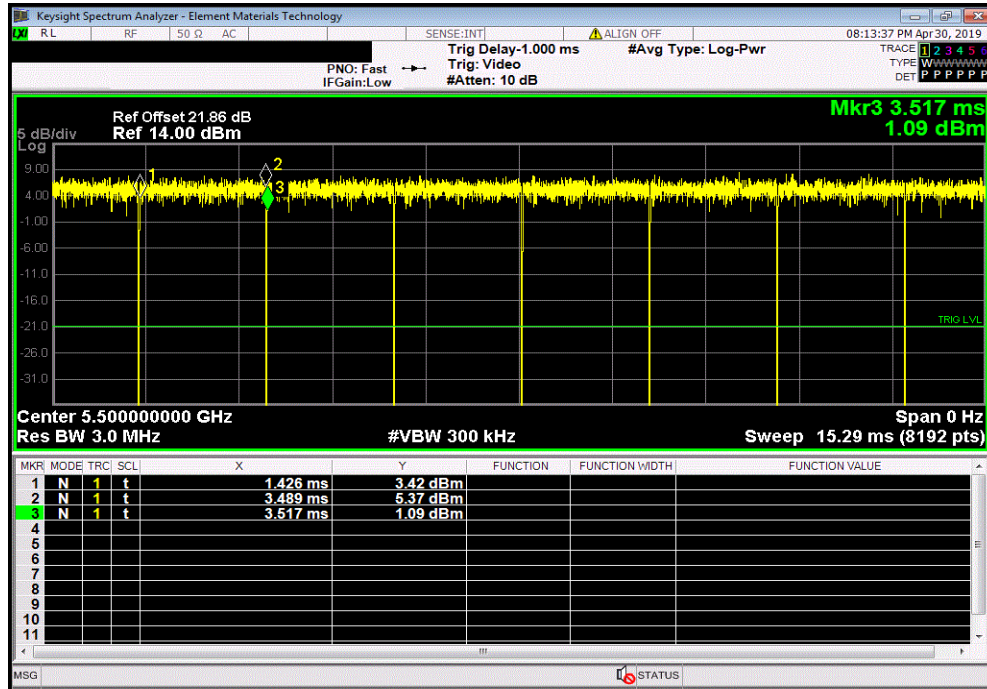


DUTY CYCLE

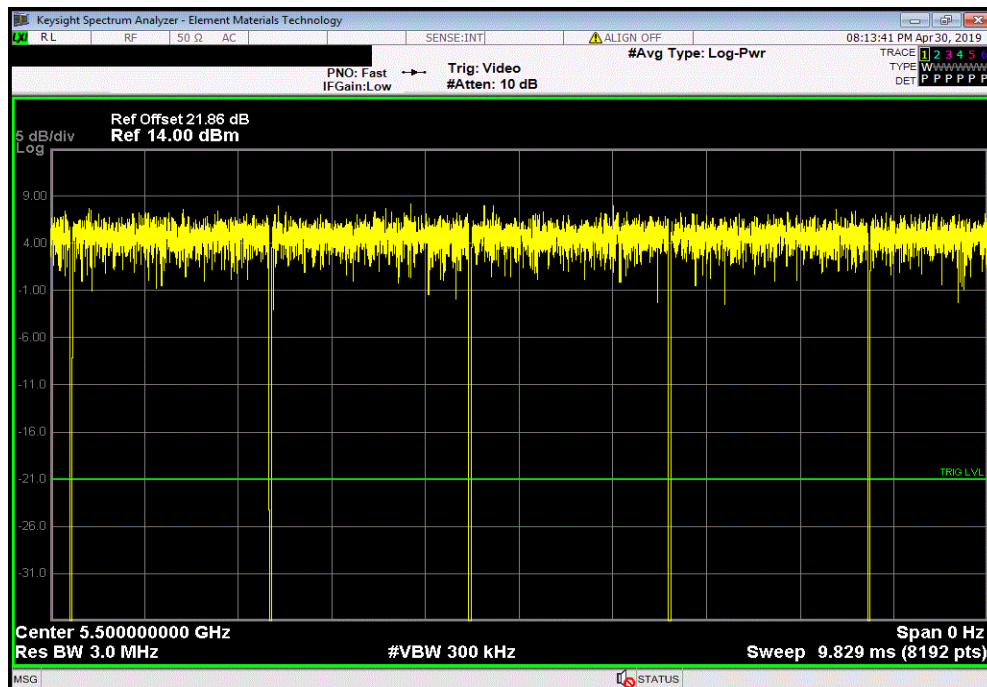


TMTx 2018.09.13 XMTx 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Low Channel, Ch 100 - 5500 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
2.063 ms	2.091 ms	1	98.7	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Low Channel, Ch 100 - 5500 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

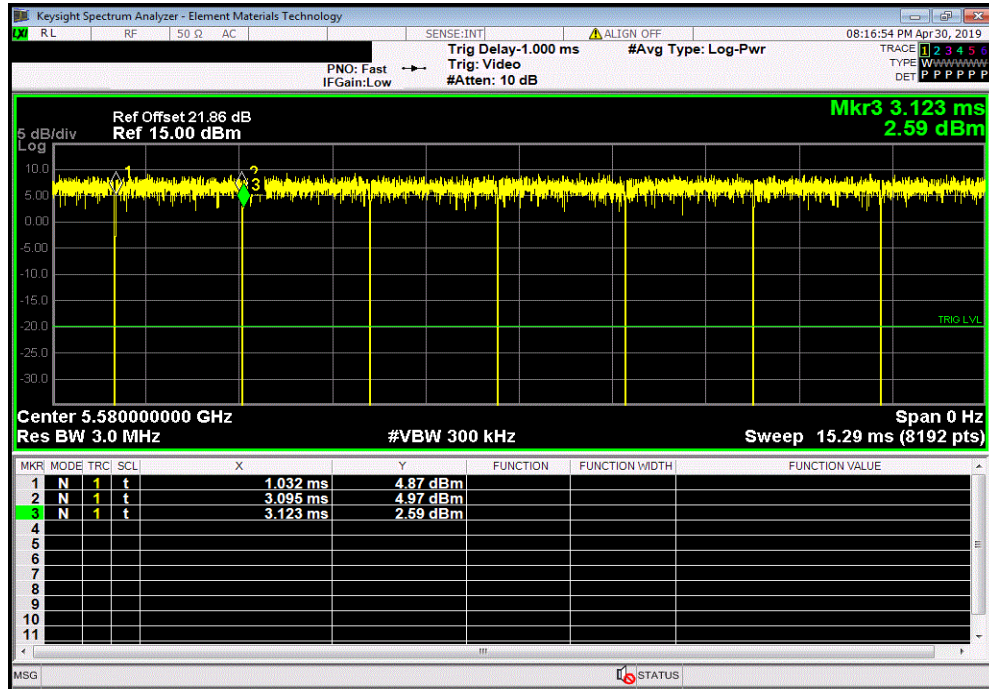


DUTY CYCLE

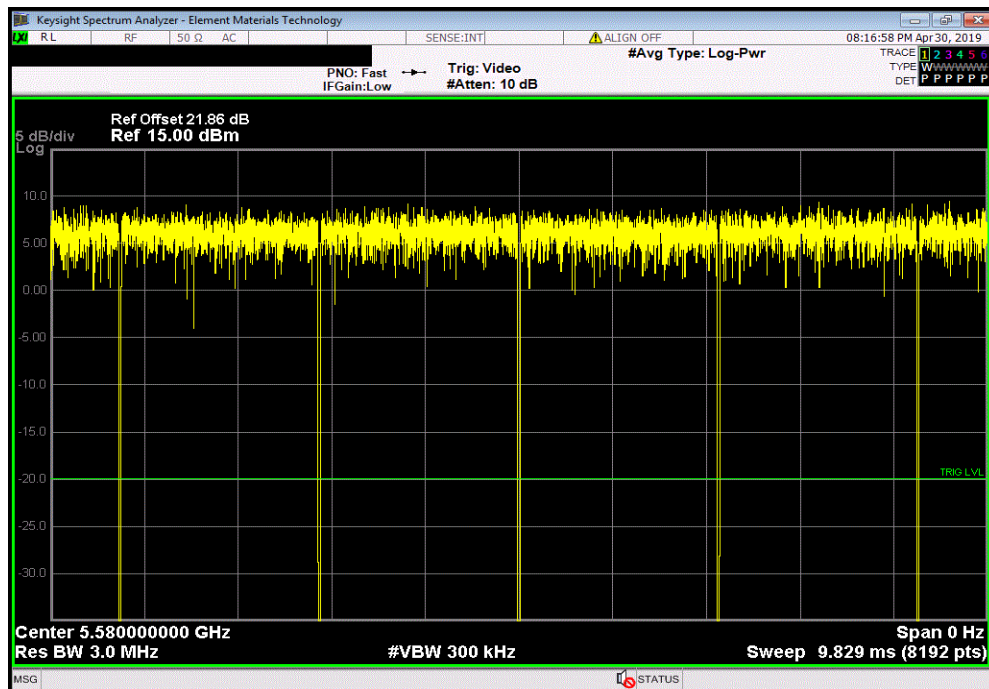


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Mid Channel, Ch 116 - 5580 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
2.063 ms	2.091 ms	1	98.7	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Mid Channel, Ch 116 - 5580 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

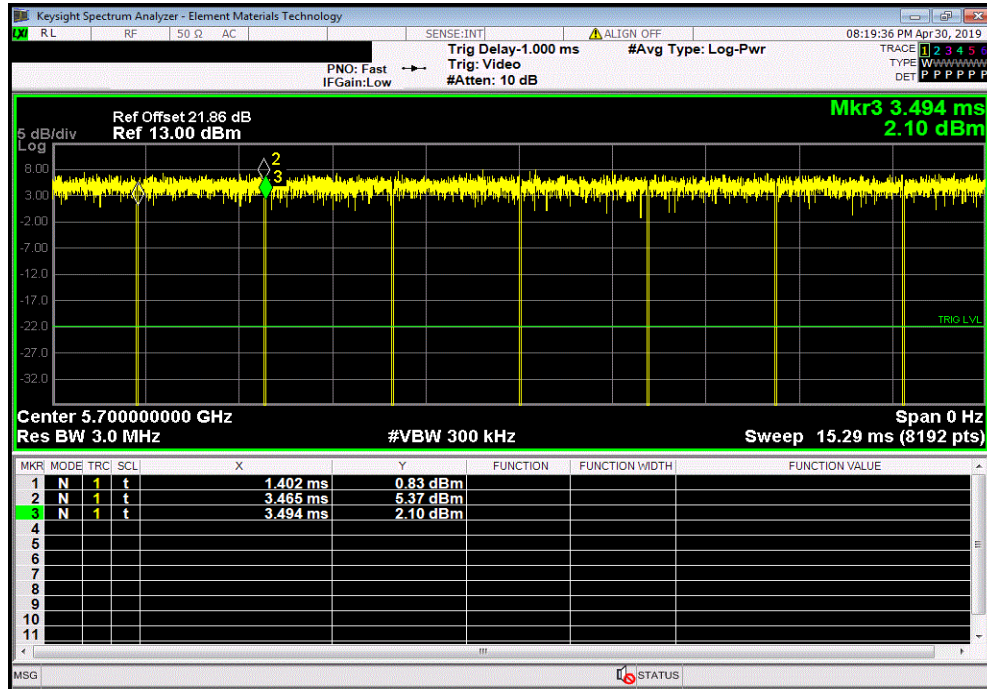


DUTY CYCLE

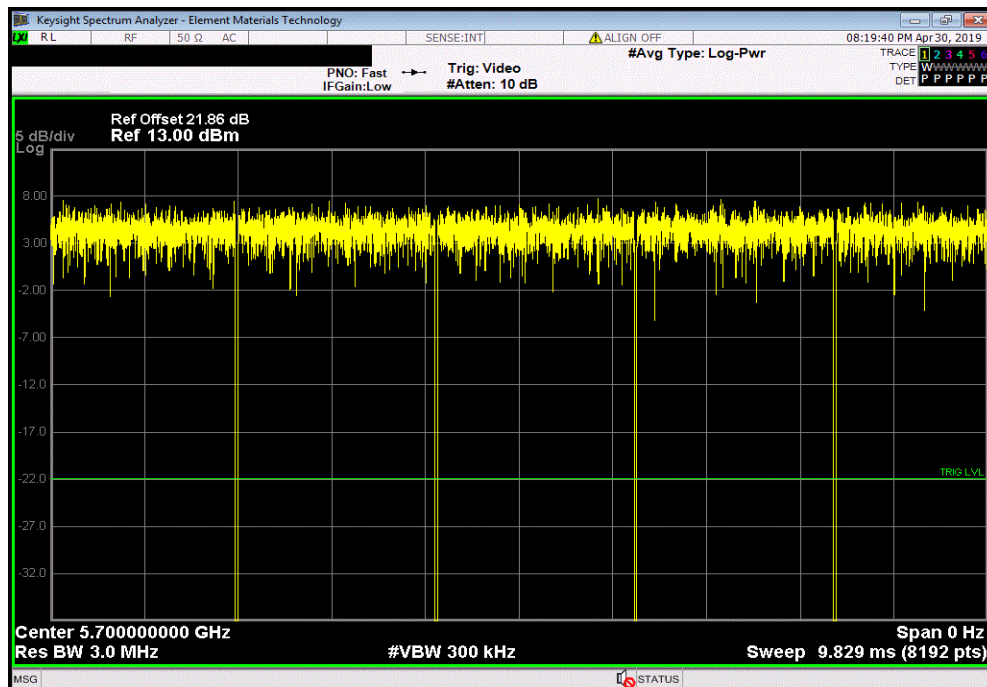


TMTx 2018.09.13 XMTx 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, High Channel, Ch 140 - 5700 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
2.063 ms	2.093 ms	1	98.6	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, High Channel, Ch 140 - 5700 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

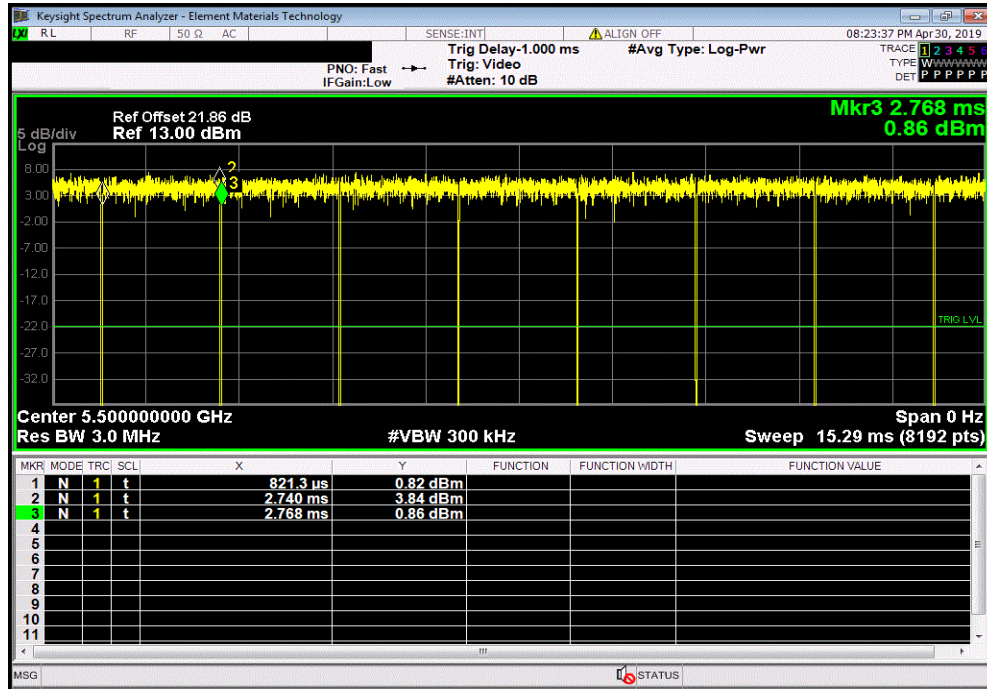


DUTY CYCLE

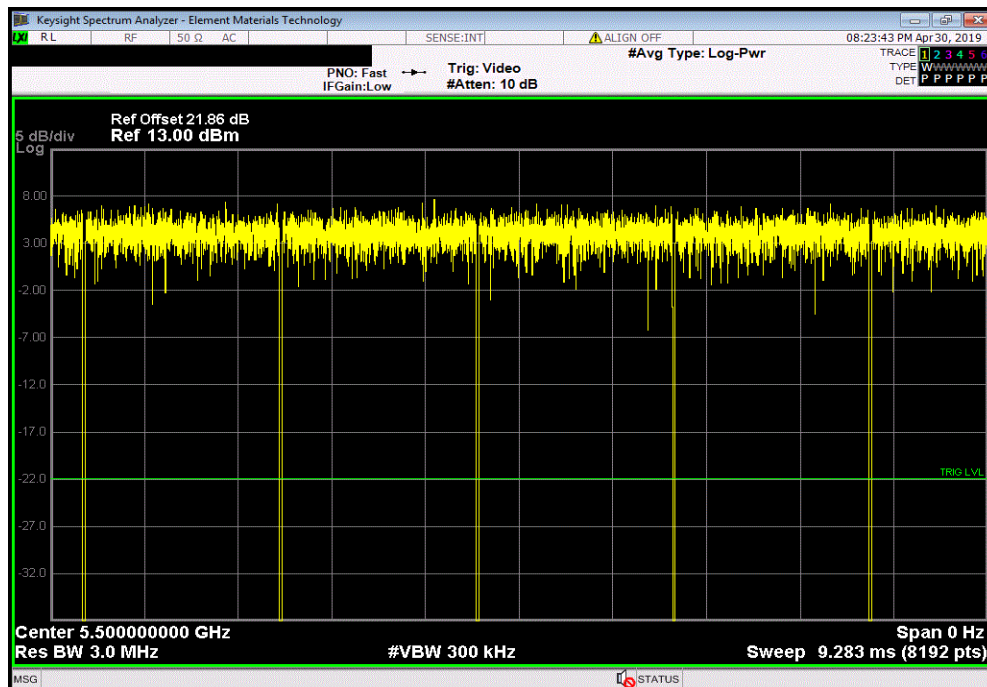


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100 - 5500 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.919 ms	1.947 ms	1	98.6	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100 - 5500 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

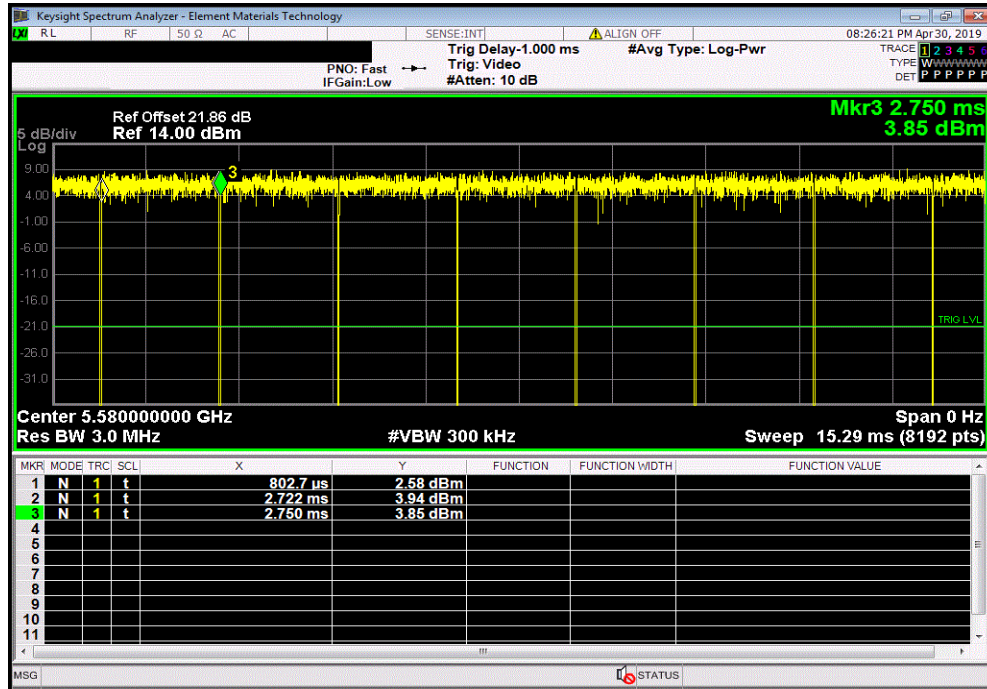


DUTY CYCLE

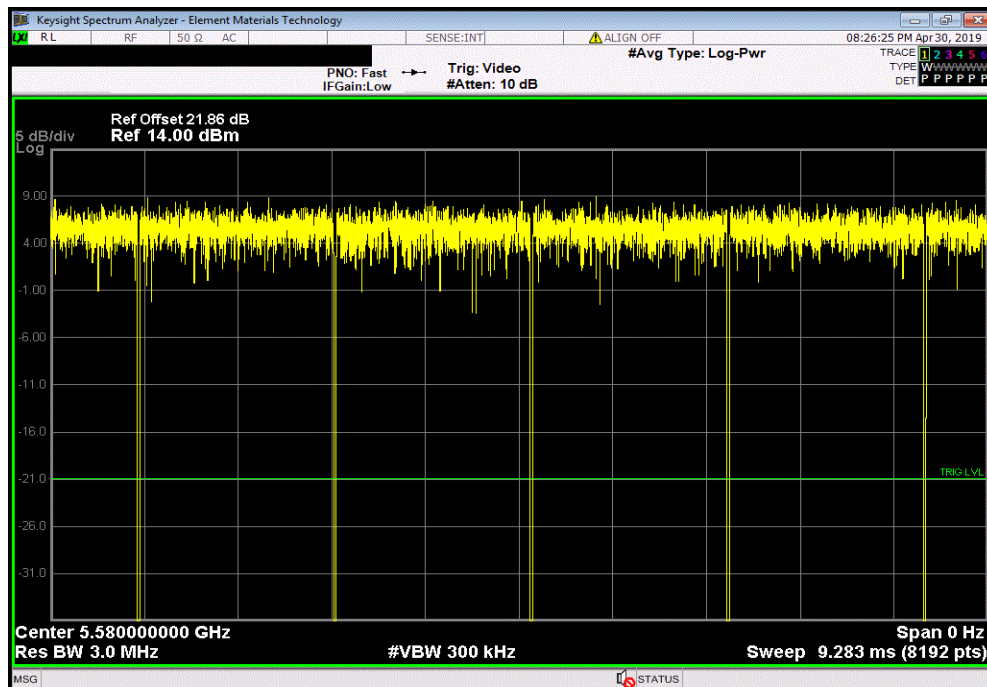


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, Mid Channel, Ch 116 - 5580 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.919 ms	1.947 ms	1	98.6	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, Mid Channel, Ch 116 - 5580 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

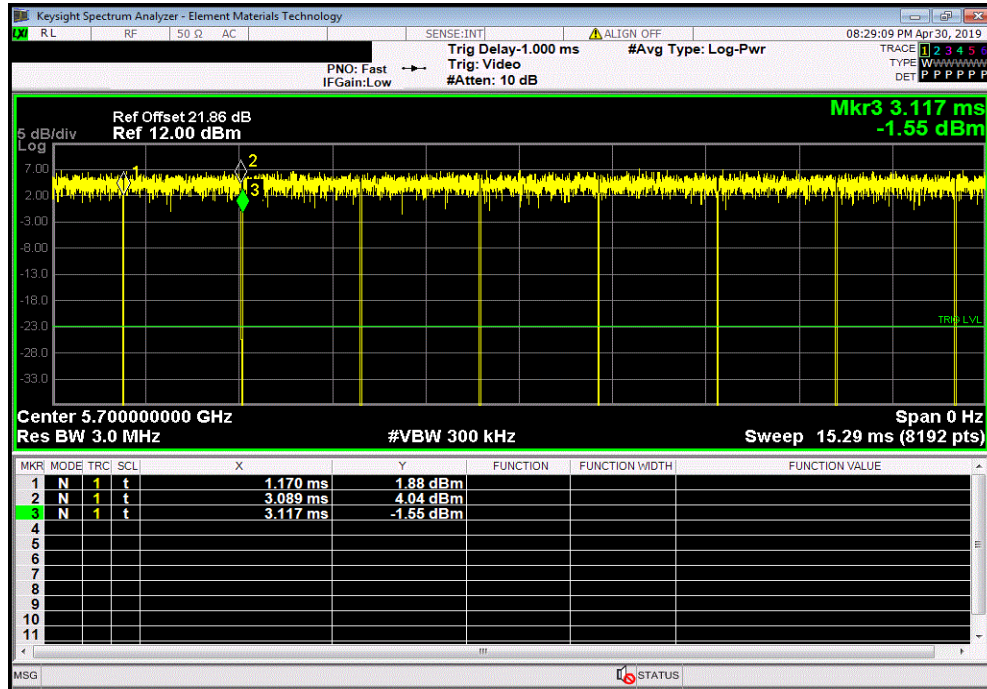


DUTY CYCLE

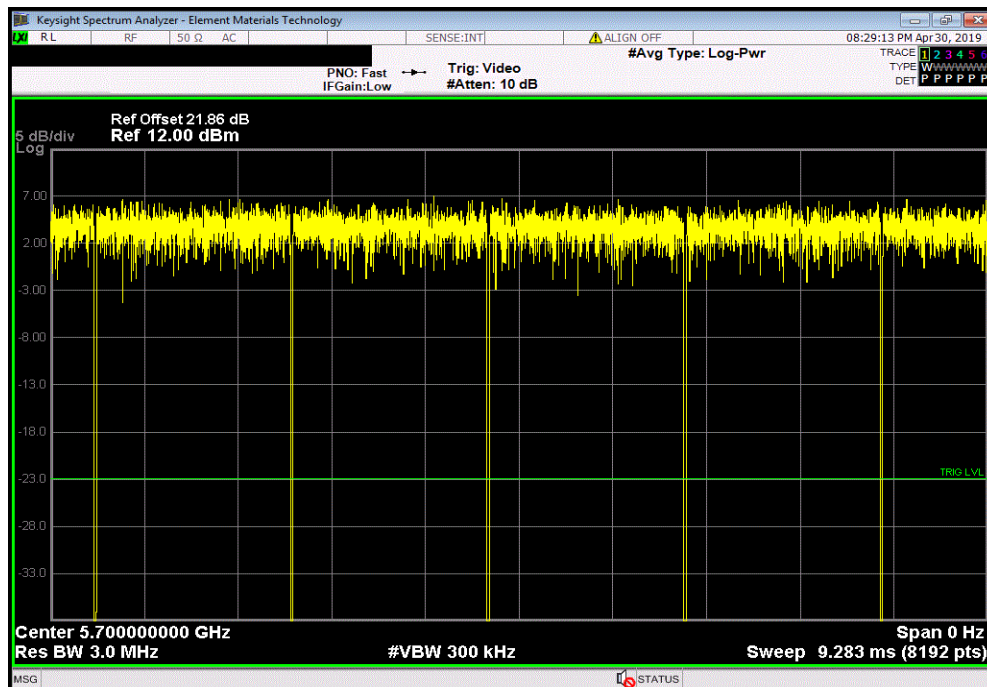


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, High Channel, Ch 140 - 5700 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.919 ms	1.947 ms	1	98.6	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, High Channel, Ch 140 - 5700 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

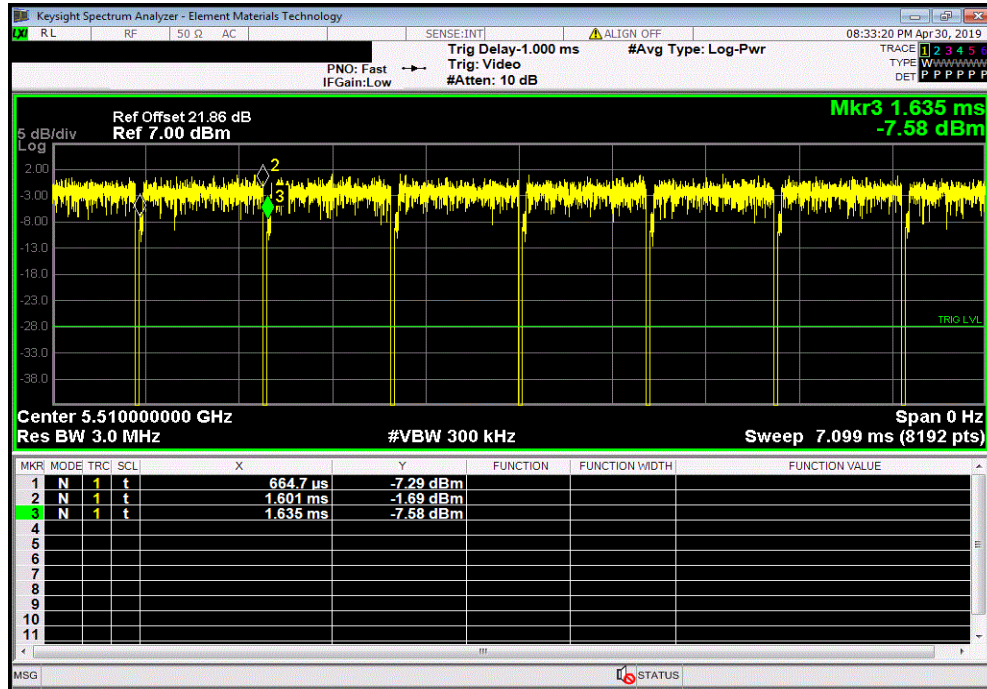


DUTY CYCLE

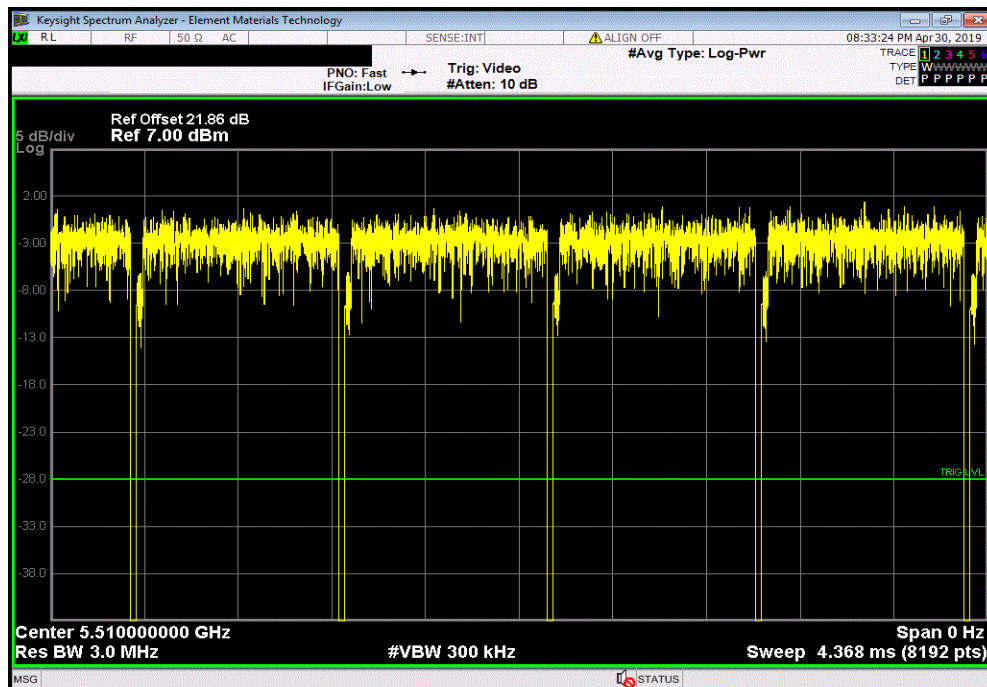


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100/104 - 5510 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
936 us	970.7 us	1	96.4	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100/104 - 5510 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	6	N/A	N/A	N/A	

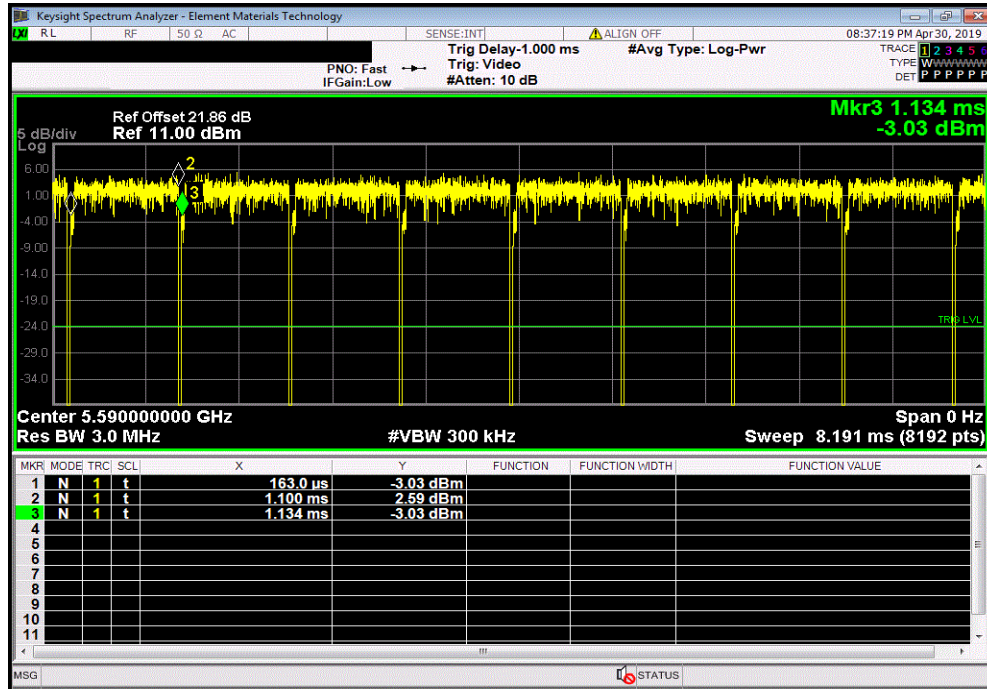


DUTY CYCLE

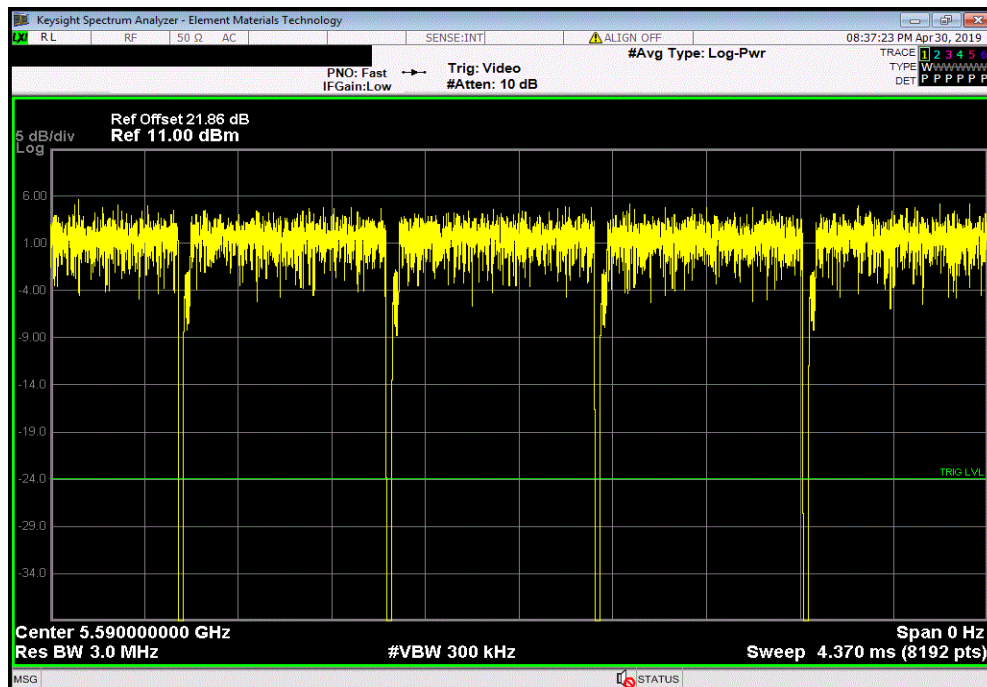


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, Mid Channel, Ch 116/120 - 5590 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
937 us	971 us	1	96.5	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, Mid Channel, Ch 116/120 - 5590 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

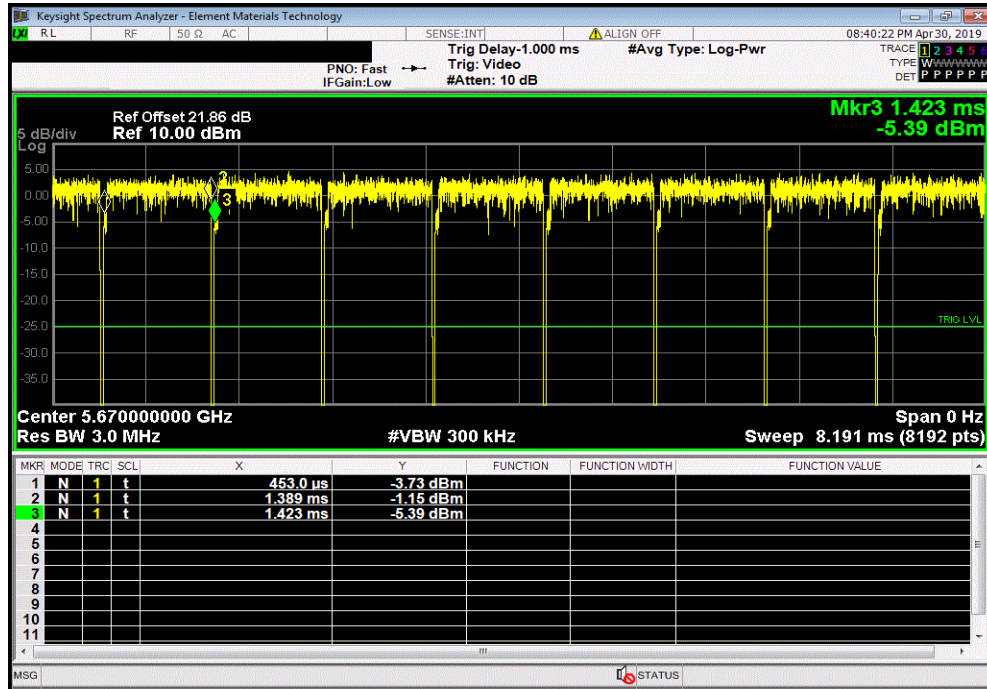


DUTY CYCLE

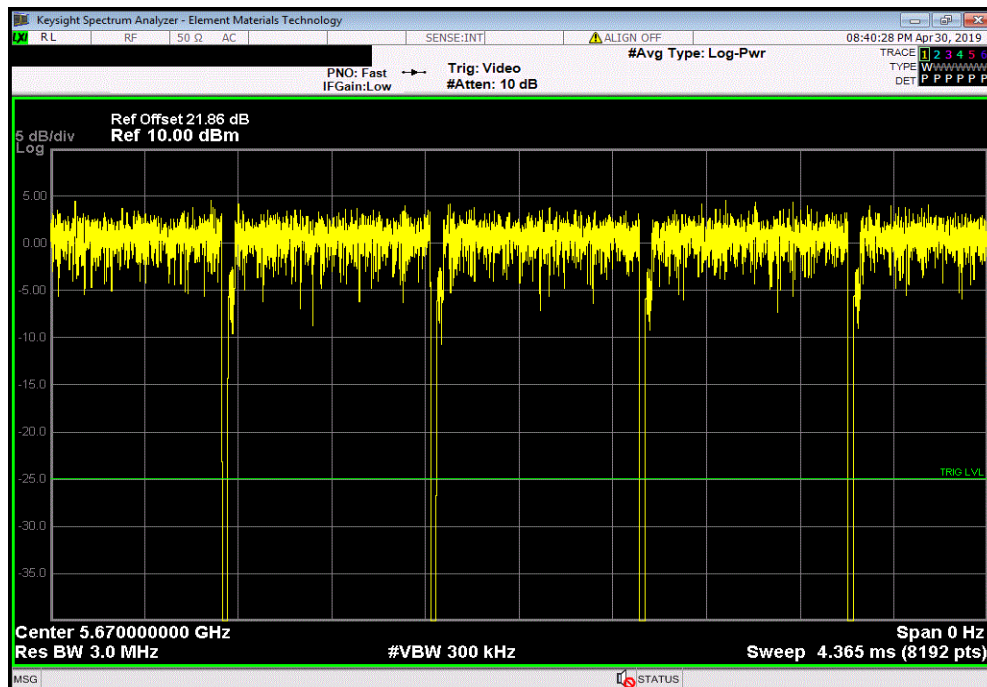


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, High Channel, Ch 132/136 - 5670 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
936 us	970 us	1	96.5	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, High Channel, Ch 132/136 - 5670 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

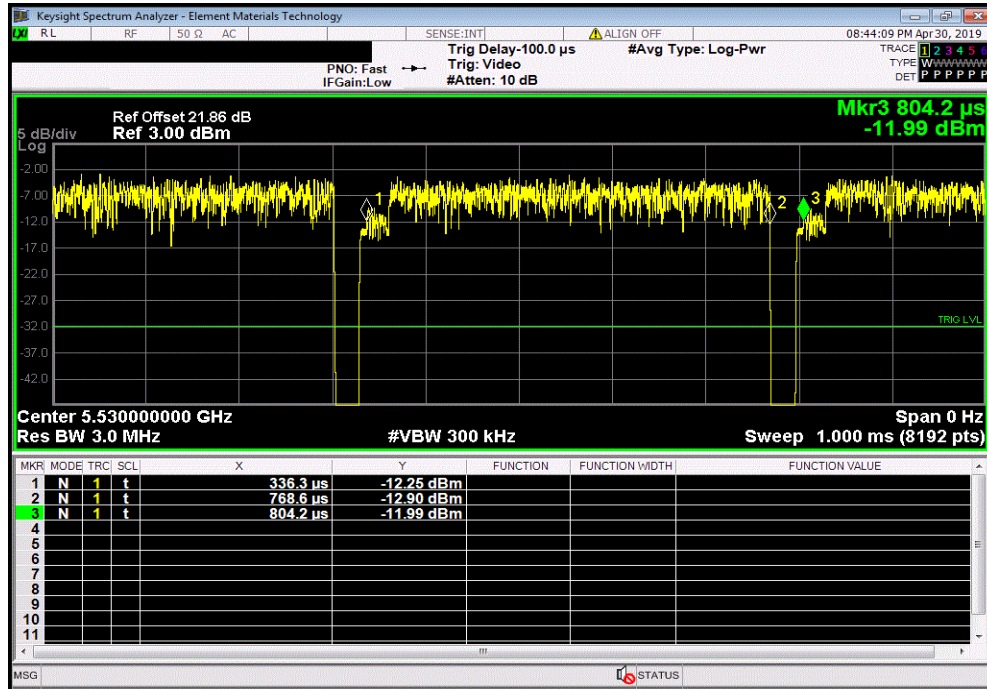


DUTY CYCLE

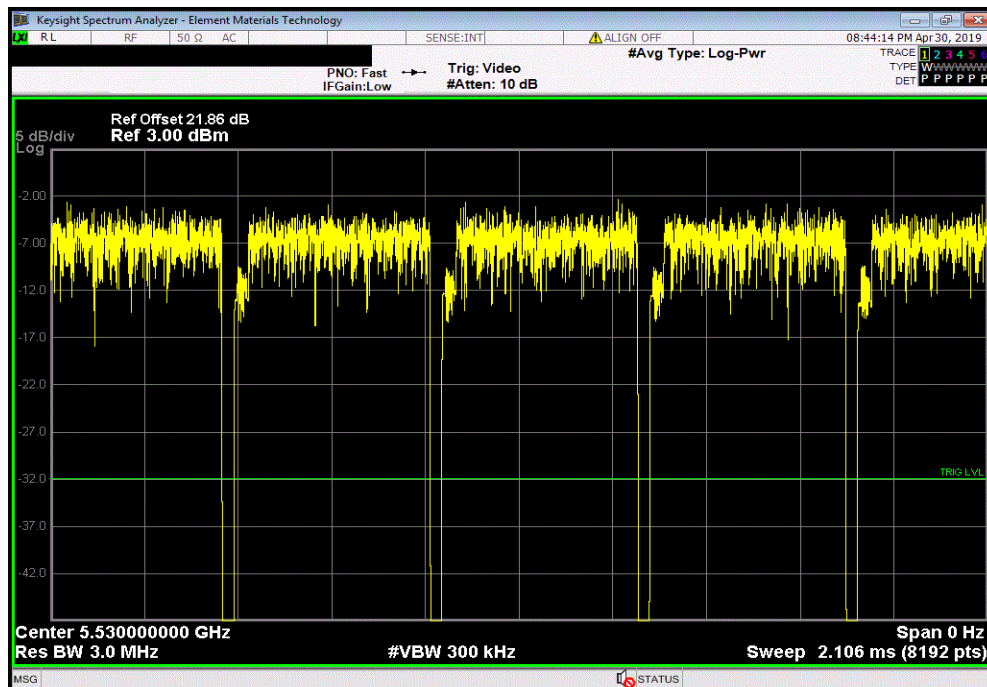


TMTx 2018.09.13 XMTx 2019.02.26

Chain A, 5470 - 5725 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100-112 - 5530 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
432.3 us	467.9 us	1	92.4	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100-112 - 5530 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

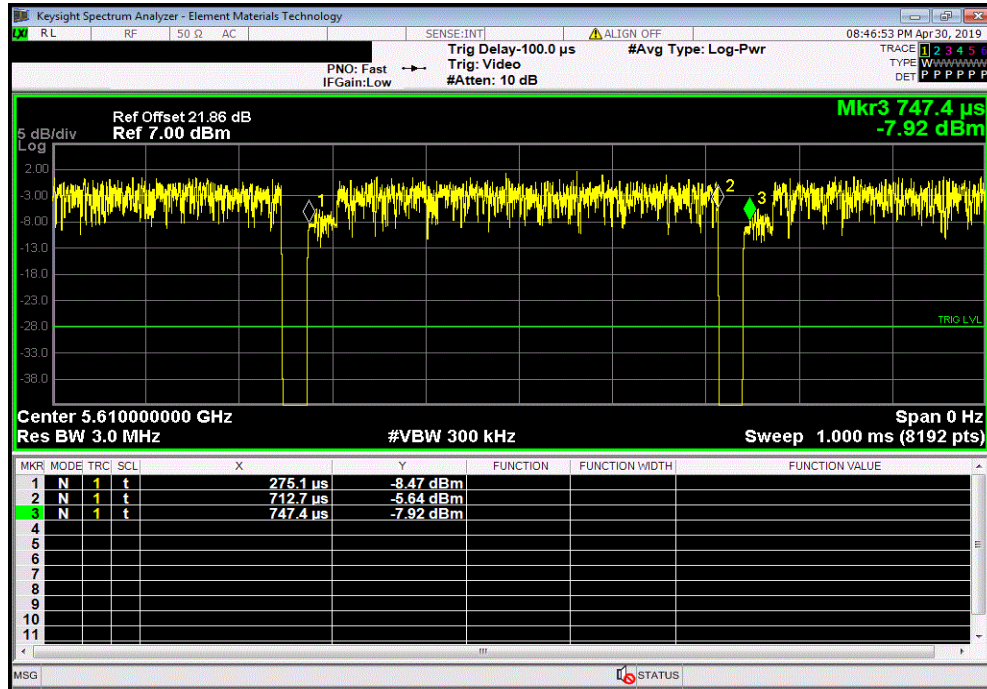


DUTY CYCLE

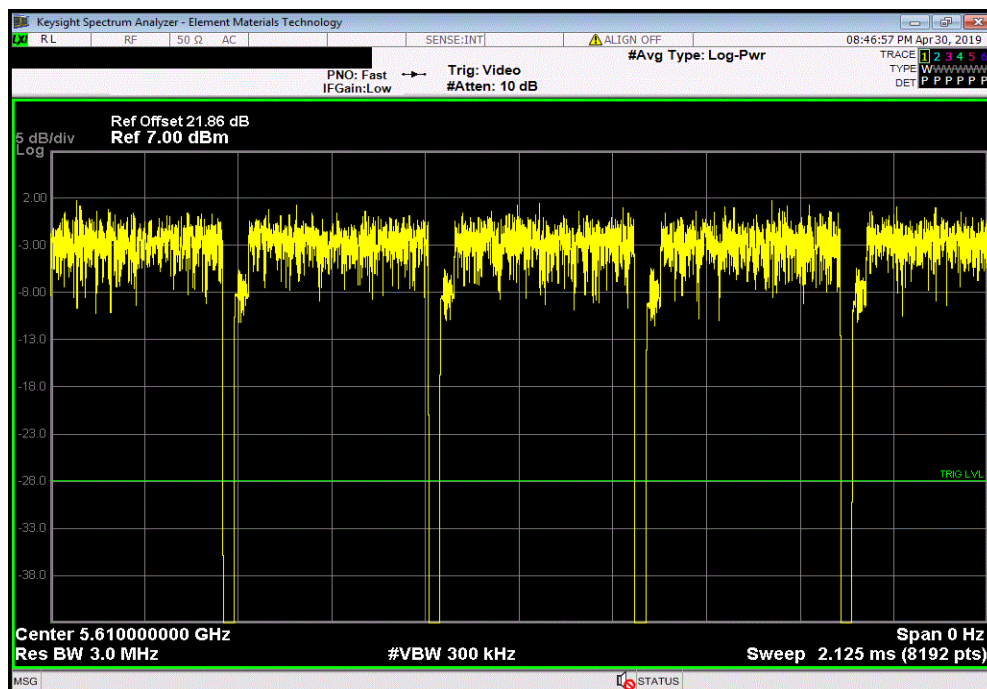


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 116-128 - 5610 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
437.6 μ s	472.3 μ s	1	92.7	N/A	N/A	



Chain A, 5470 - 5725 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 116-128 - 5610 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	



MAXIMUM CONDUCTED OUTPUT POWER



XMIT 2019.02.26

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Block - DC	Fairview Microwave	SD3379	AMM	17-Mar-19	17-Mar-20
Attenuator	Fairview Microwave	SA4018-20	TYW	17-Mar-19	17-Mar-20
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

Prior to measuring maximum 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.

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

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

- RMS Detector
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.

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

MAXIMUM CONDUCTED OUTPUT POWER



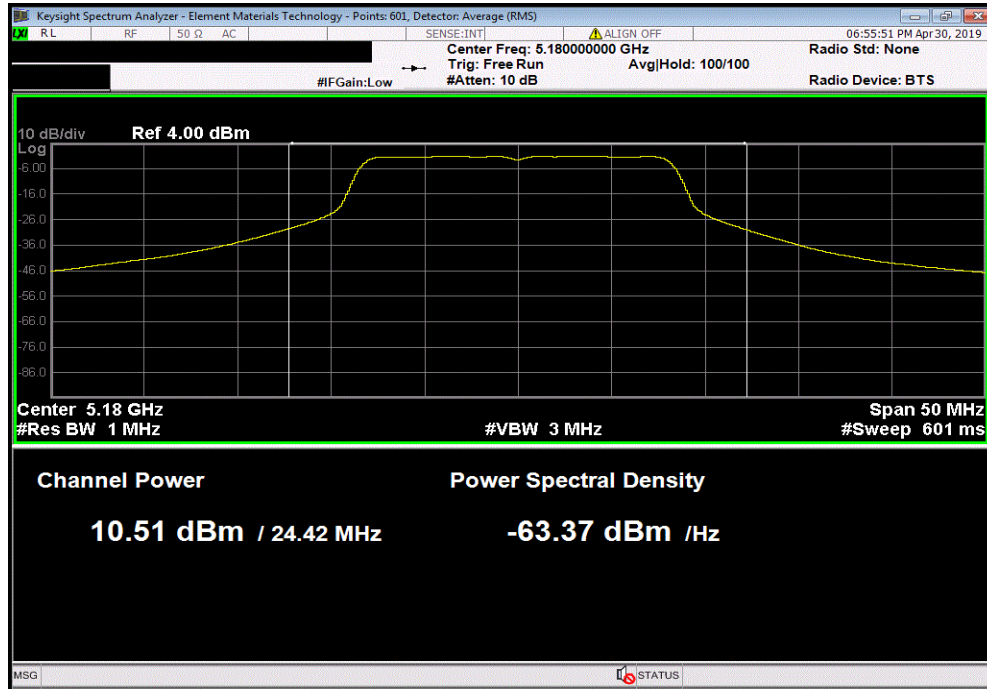
EUT: Dual Band Wireless-AC 3160 Module		Work Order: AMRN0006
Serial Number: APT31600958		Date: 30-Apr-19
Customer: American Portwell Technology		Temperature: 22.2 °C
Attendees: None		Humidity: 56% RH
Project: None		Barometric Pres.: 1013 mbar
Tested by: Jonathan Kiefer		Job Site: TX09
Power: 110VAC/60Hz		
TEST SPECIFICATIONS		Test Method
FCC 15.407:2019		ANSI C63.10:2013
COMMENTS		
See Power Table for output power settings used. External dipole antennas are used. Assembly gain = 2.0 dBi antenna gain - 1.1 dB cable loss = 0.9 dBi.		
DEVIATIONS FROM TEST STANDARD		
None		
Configuration #	1	Signature <i>Jonathan Kiefer</i>
		Avg Cond Pwr (dBm)
		Duty Cycle Factor (dB)
		Out Pwr (dBm)
		Limit (dBm)
		Result
Chain A		
5150 - 5250 MHz Band		
20 MHz BW		
802.11(a) 6 Mbps		
Low Channel, Ch 36 - 5180 MHz		10.508
High Channel, Ch 48 - 5240 MHz		12.923
		0.1
		10.6
		24
		Pass
802.11(n) MCS0		
Low Channel, Ch 36 - 5180 MHz		12.325
High Channel, Ch 48 - 5240 MHz		12.87
		0.1
		12.4
		24
		Pass
40 MHz BW		
802.11(n) MCS0		
Low Channel, Ch 36/40 - 5190 MHz		8.547
High Channel, Ch 44/48 - 5230 MHz		13.782
		0.2
		8.7
		24
		Pass
80 MHz BW		
802.11(n) MCS0		
Low Channel, Ch 36-48 - 5210 MHz		7.594
		0.3
		7.9
		24
		Pass
5725 - 5785 MHz Band		
20 MHz BW		
802.11(a) 6 Mbps		
Low Channel, Ch 149 - 5745 MHz		13.438
Mid Channel, Ch 157 - 5785 MHz		13.491
High Channel, Ch 165 - 5825 MHz		13.471
		0.1
		13.5
		30
		Pass
802.11(n) MCS0		
Low Channel, Ch 149 - 5745 MHz		13.771
Mid Channel, Ch 157 - 5785 MHz		13.426
High Channel, Ch 165 - 5825 MHz		13.43
		0.1
		13.8
		30
		Pass
40 MHz BW		
802.11(n) MCS0		
Low Channel, Ch 149/153 - 5755 MHz		13.446
High Channel, Ch 157/161 - 5795 MHz		13.258
		0.2
		13.6
		30
		Pass
80 MHz BW		
802.11(n) MCS0		
Low Channel, Ch 149-161 - 5775 MHz		12.482
		0.3
		12.8
		30
		Pass

MAXIMUM CONDUCTED OUTPUT POWER

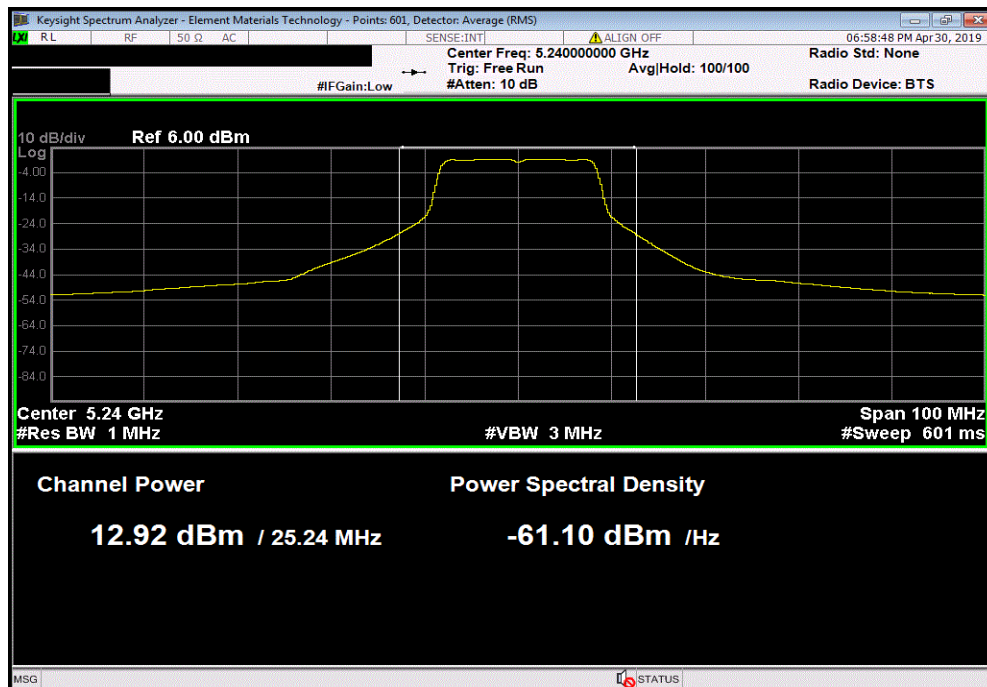


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5150 - 5250 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Low Channel, Ch 36 - 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	10.508	0.1	10.6	24	Pass	



Chain A, 5150 - 5250 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, High Channel, Ch 48 - 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.923	0.1	13	24	Pass	

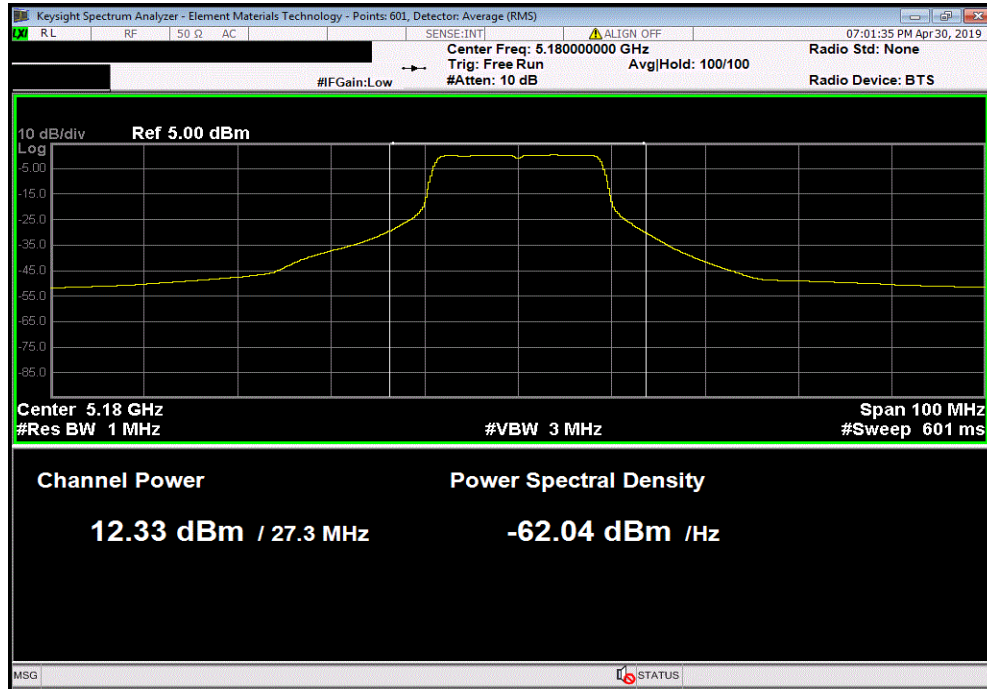


MAXIMUM CONDUCTED OUTPUT POWER

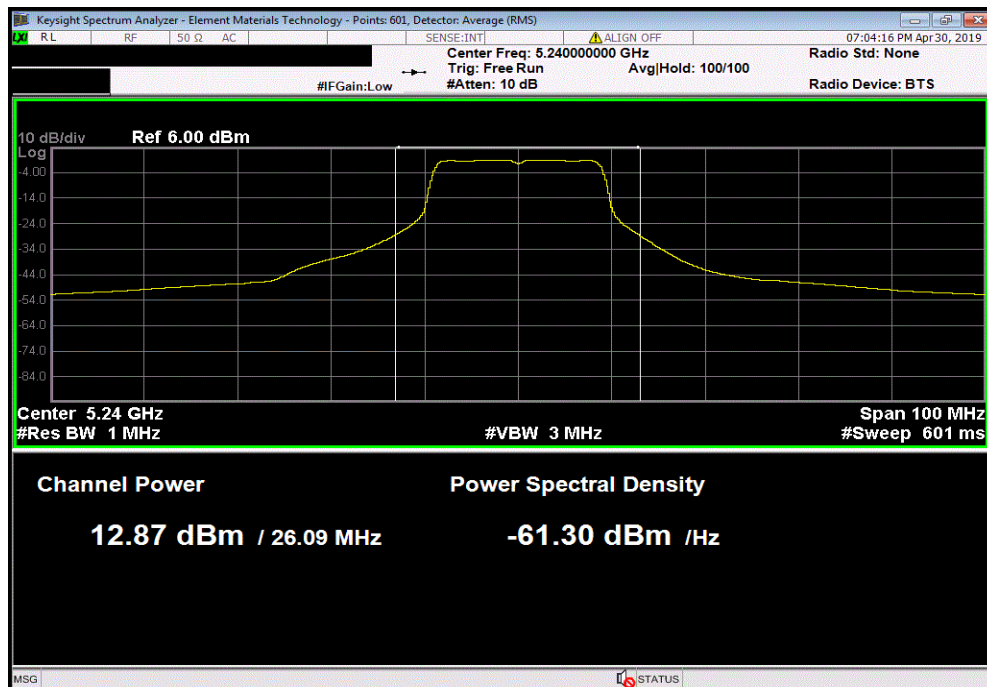


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5150 - 5250 MHz Band, 20 MHz BW, 802.11(n) MCS0, Low Channel, Ch 36 - 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.325	0.1	12.4	24	Pass	



Chain A, 5150 - 5250 MHz Band, 20 MHz BW, 802.11(n) MCS0, High Channel, Ch 48 - 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.87	0.1	12.9	24	Pass	

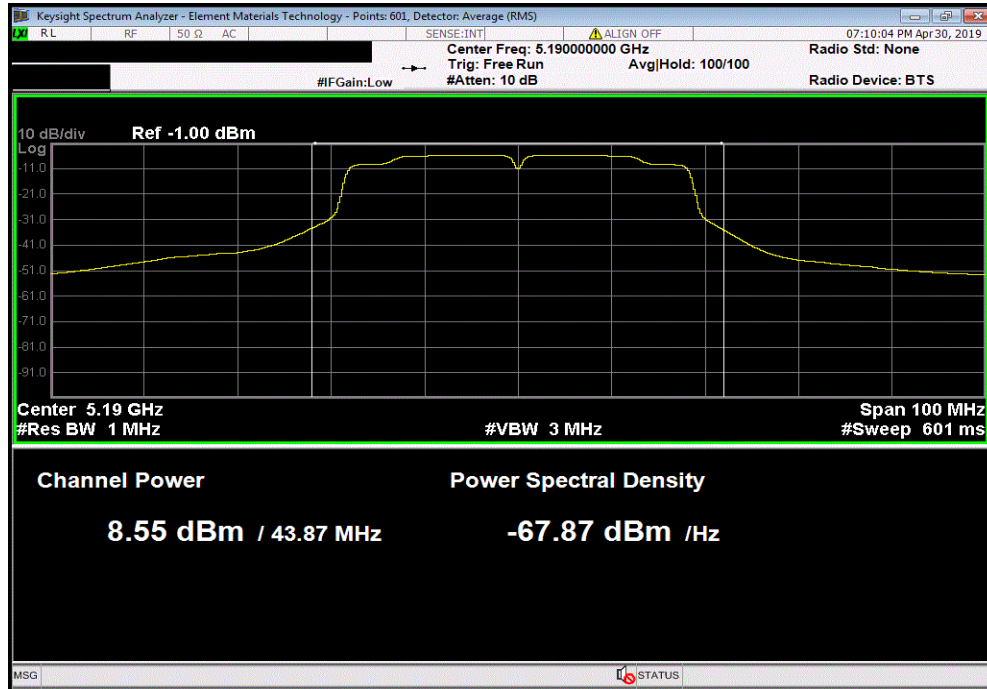


MAXIMUM CONDUCTED OUTPUT POWER

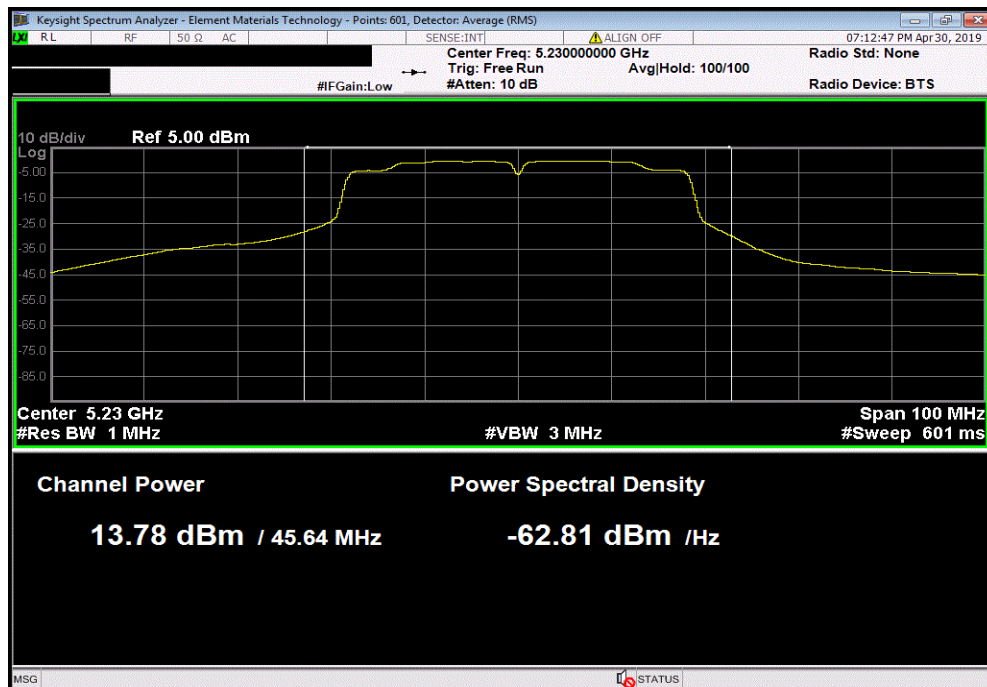


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5150 - 5250 MHz Band, 40 MHz BW, 802.11(n) MCS0, Low Channel, Ch 36/40 - 5190 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.547	0.2	8.7	24	Pass	



Chain A, 5150 - 5250 MHz Band, 40 MHz BW, 802.11(n) MCS0, High Channel, Ch 44/48 - 5230 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.782	0.2	13.9	24	Pass	

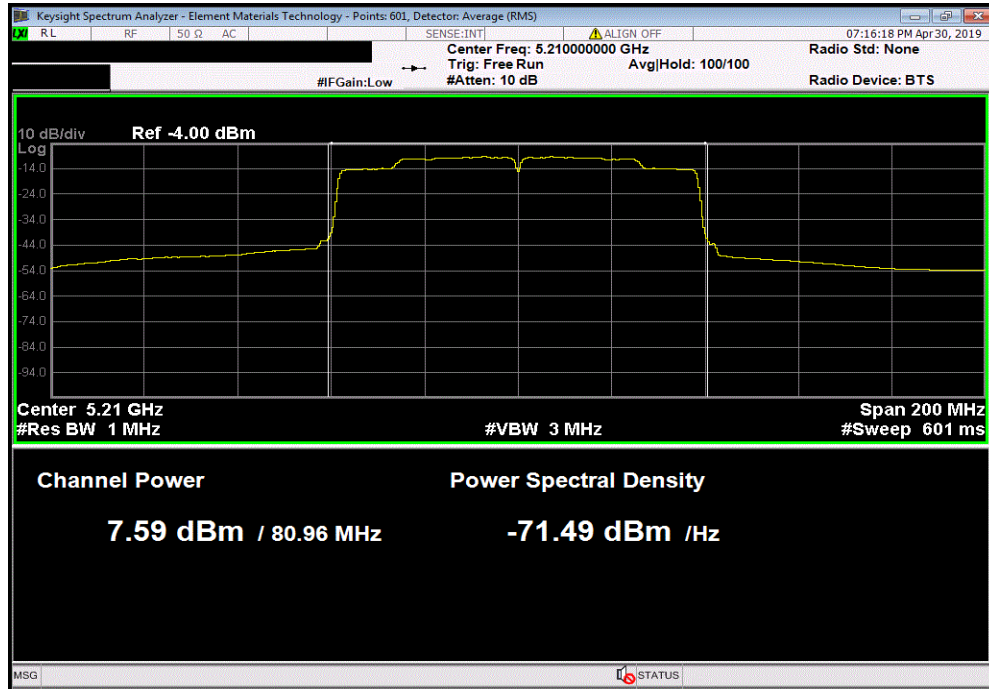


MAXIMUM CONDUCTED OUTPUT POWER

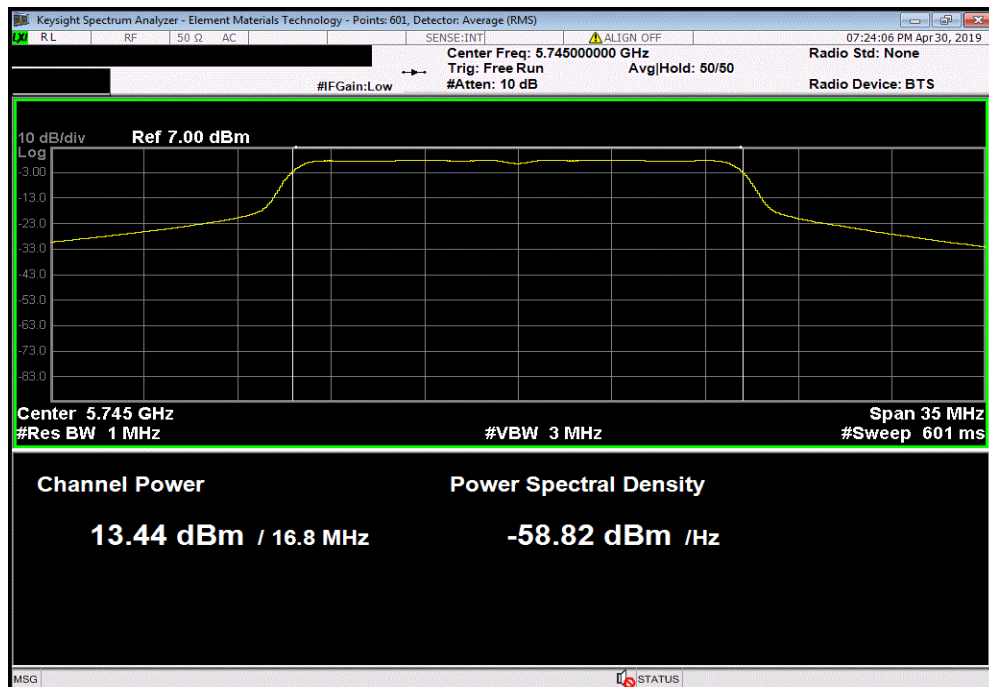


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5150 - 5250 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 36-48 - 5210 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	7.594	0.3	7.9	24	Pass	



Chain A, 5725 - 5785 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Low Channel, Ch 149 - 5745 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.438	0.1	13.5	30	Pass	

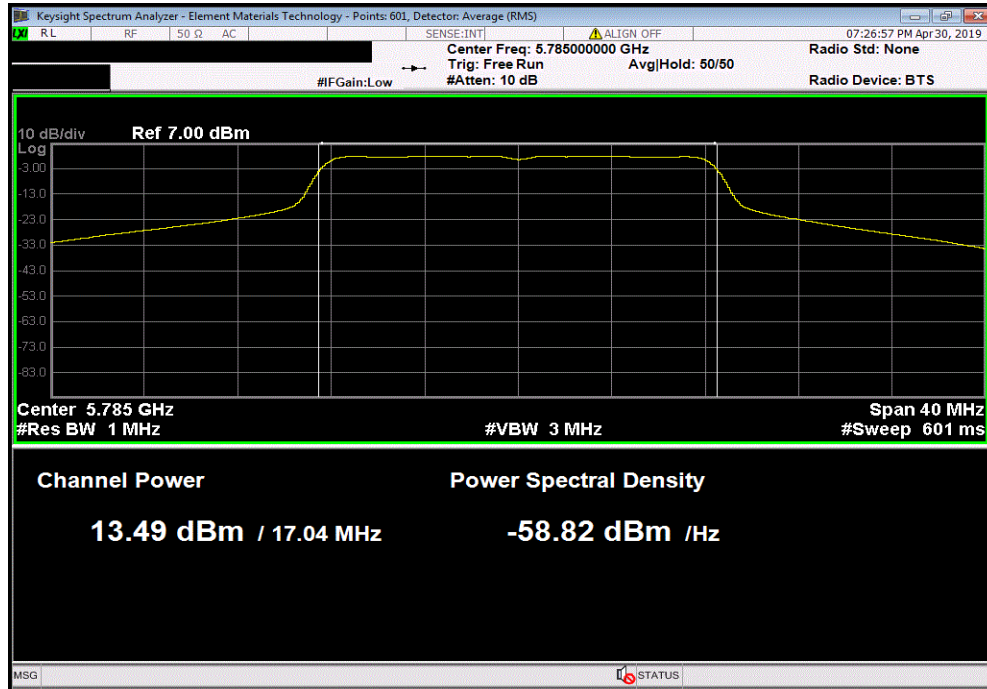


MAXIMUM CONDUCTED OUTPUT POWER

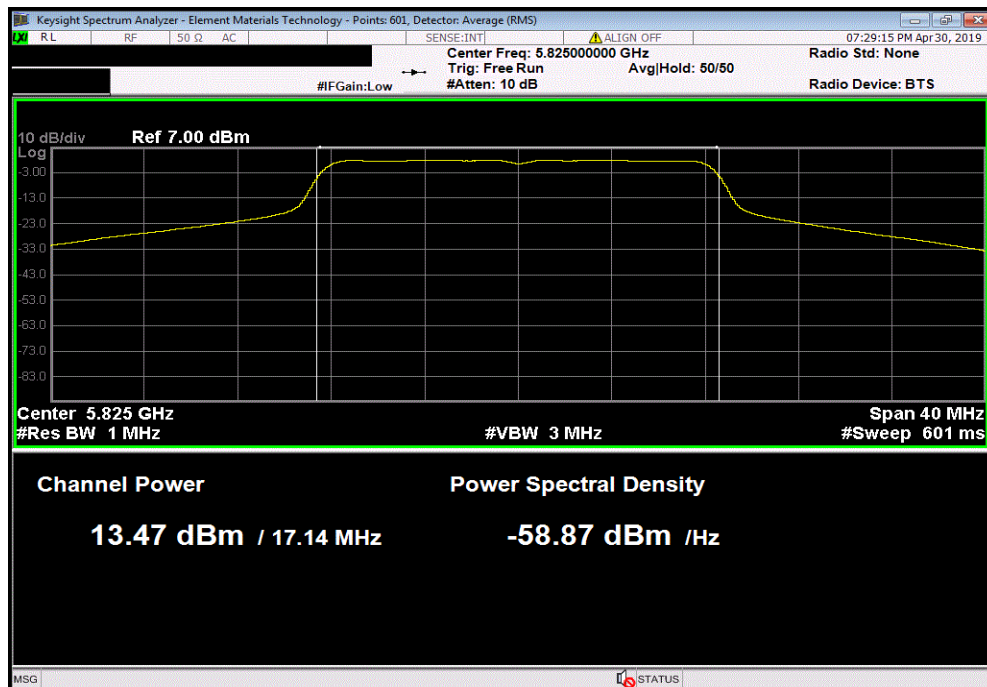


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5725 - 5785 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Mid Channel, Ch 157 - 5785 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.491	0.1	13.5	30	Pass	



Chain A, 5725 - 5785 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, High Channel, Ch 165 - 5825 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.471	0.1	13.5	30	Pass	

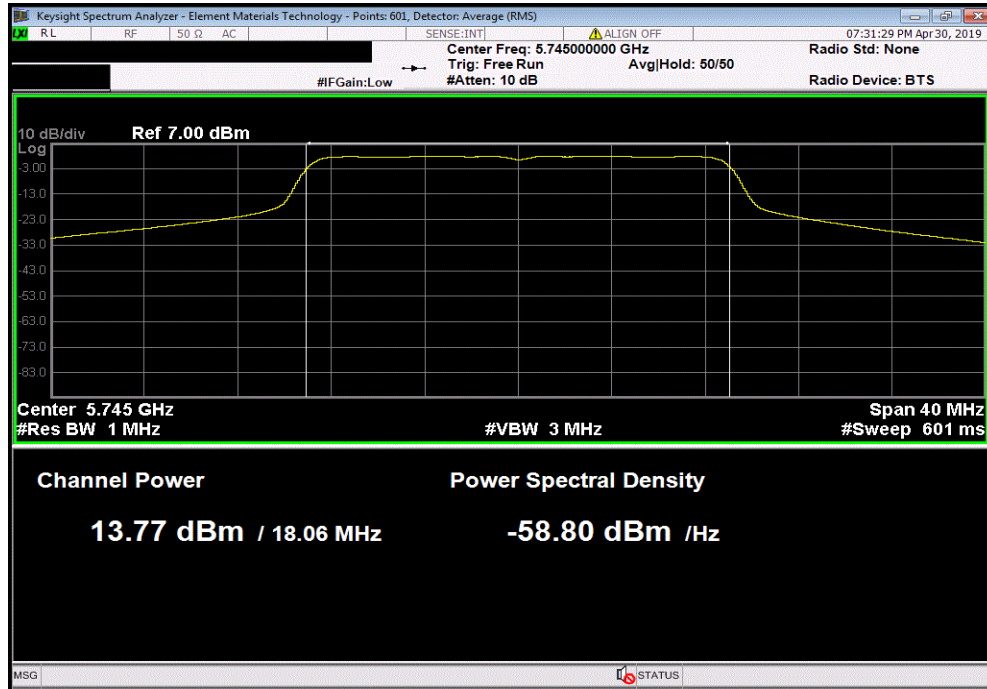


MAXIMUM CONDUCTED OUTPUT POWER

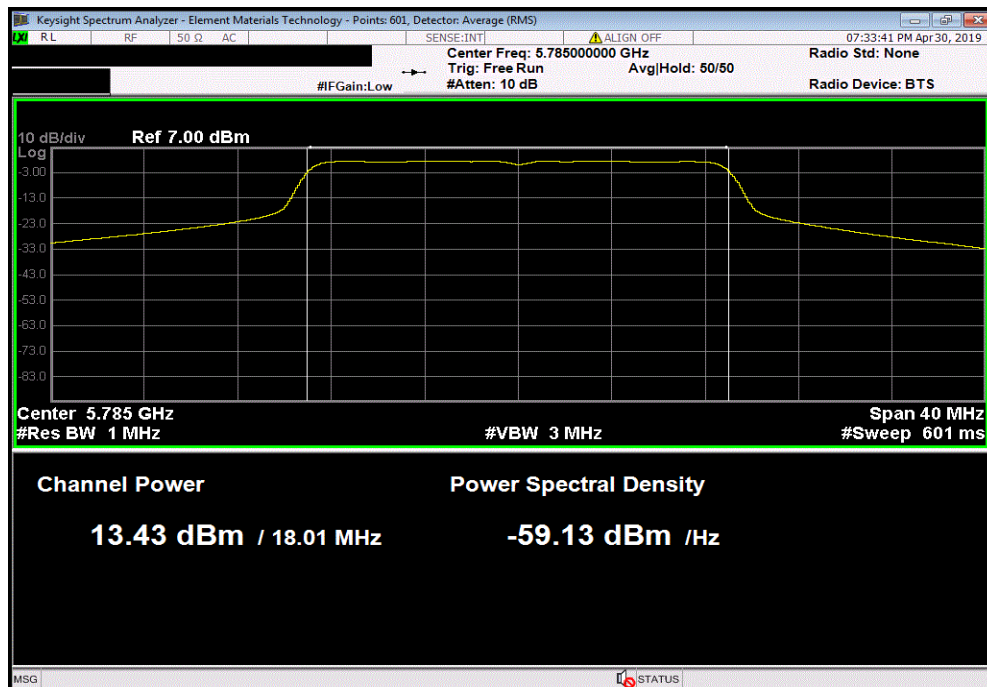


TMTx 2018.09.13 XMM 2019.02.26

Chain A, 5725 - 5785 MHz Band, 20 MHz BW, 802.11(n) MCS0, Low Channel, Ch 149 - 5745 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.771	0.1	13.8	30	Pass	



Chain A, 5725 - 5785 MHz Band, 20 MHz BW, 802.11(n) MCS0, Mid Channel, Ch 157 - 5785 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.426	0.1	13.5	30	Pass	

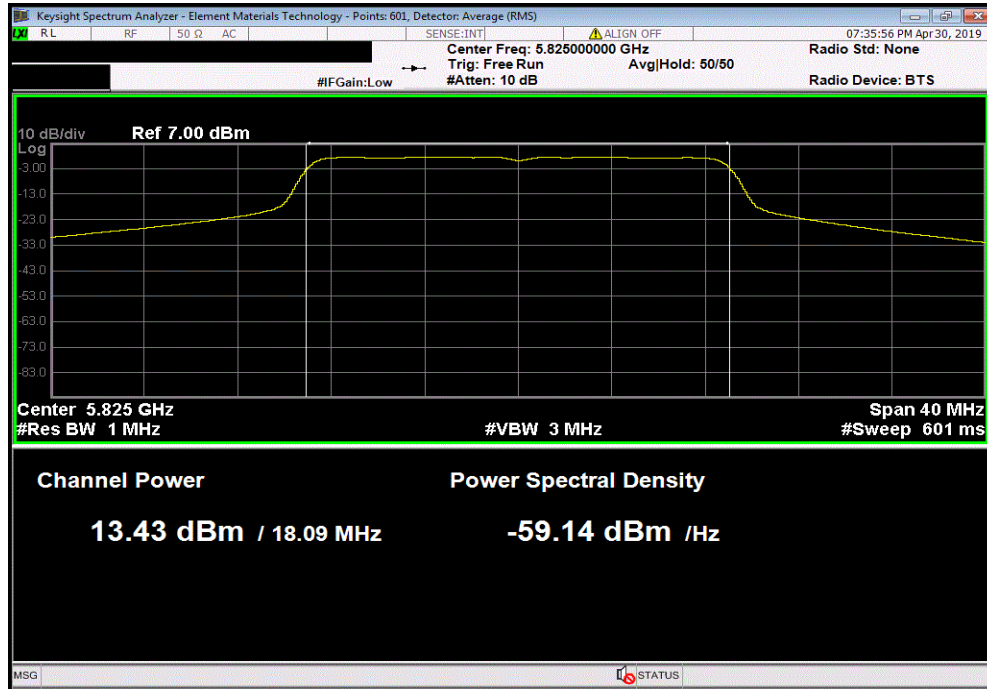


MAXIMUM CONDUCTED OUTPUT POWER

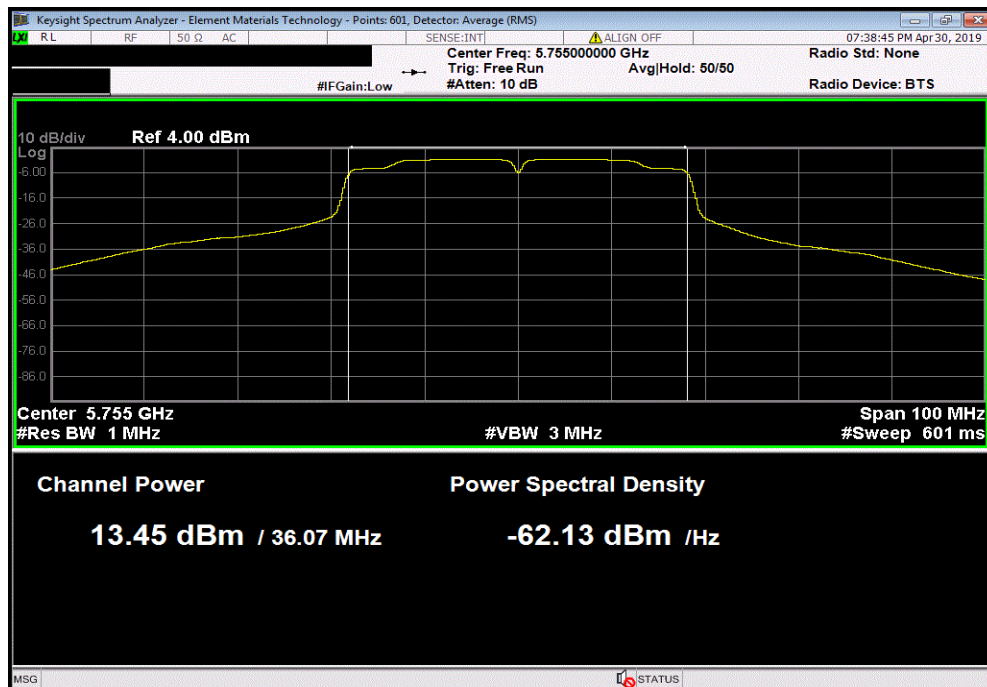


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5725 - 5785 MHz Band, 20 MHz BW, 802.11(n) MCS0, High Channel, Ch 165 - 5825 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.43	0.1	13.5	30	Pass	



Chain A, 5725 - 5785 MHz Band, 40 MHz BW, 802.11(n) MCS0, Low Channel, Ch 149/153 - 5755 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.446	0.2	13.6	30	Pass	

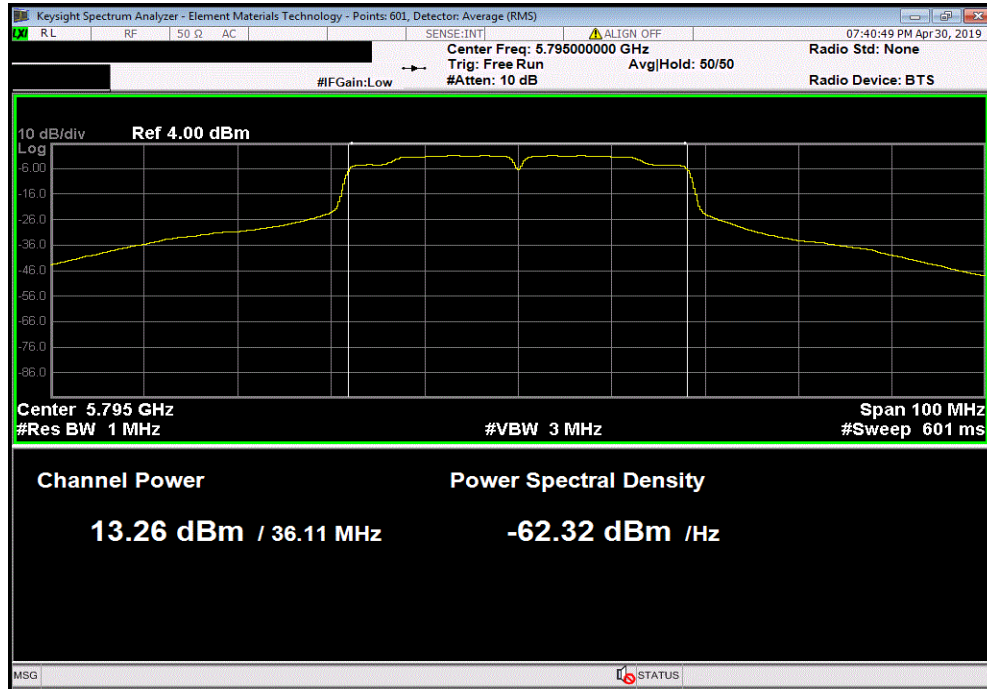


MAXIMUM CONDUCTED OUTPUT POWER

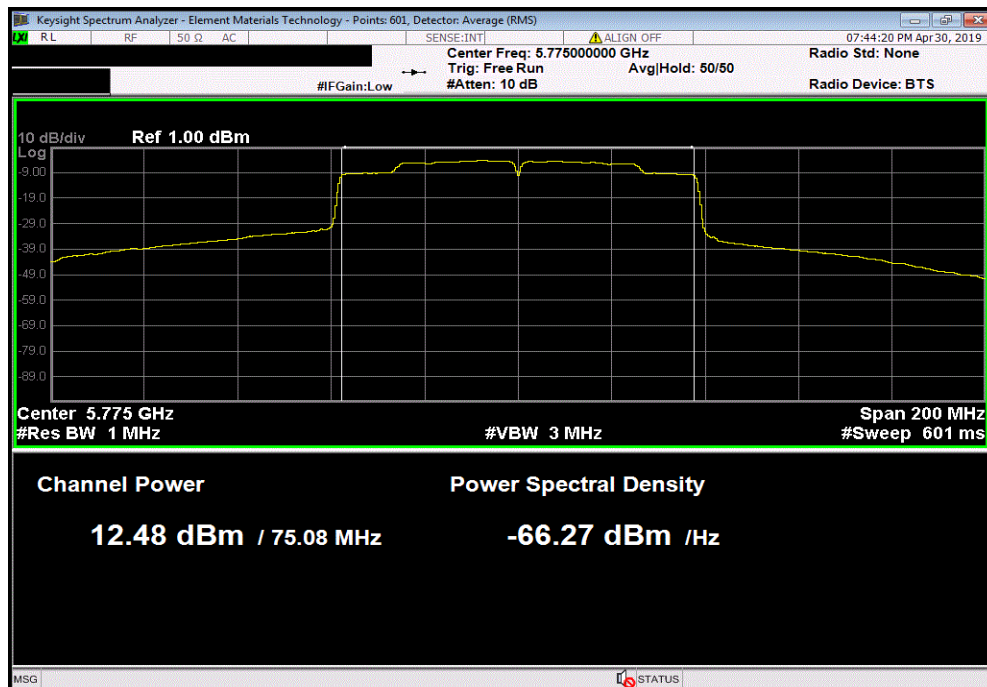


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5725 - 5785 MHz Band, 40 MHz BW, 802.11(n) MCS0, High Channel, Ch 157/161 - 5795 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.258	0.2	13.4	30	Pass	



Chain A, 5725 - 5785 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 149-161 - 5775 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.482	0.3	12.8	30	Pass	



MAXIMUM CONDUCTED OUTPUT POWER



XMIT 2019.02.26

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMM	17-Mar-19	17-Mar-20
Attenuator	Fairview Microwave	SA4018-20	TYW	17-Mar-19	17-Mar-20
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	10-Oct-18	10-Oct-19
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

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

Prior to measuring maximum 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.

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

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

-RMS Detector

-Trace average 100 traces in power averaging mode.

-Power was integrated across "B", by using the channel power function of the analyzer.

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

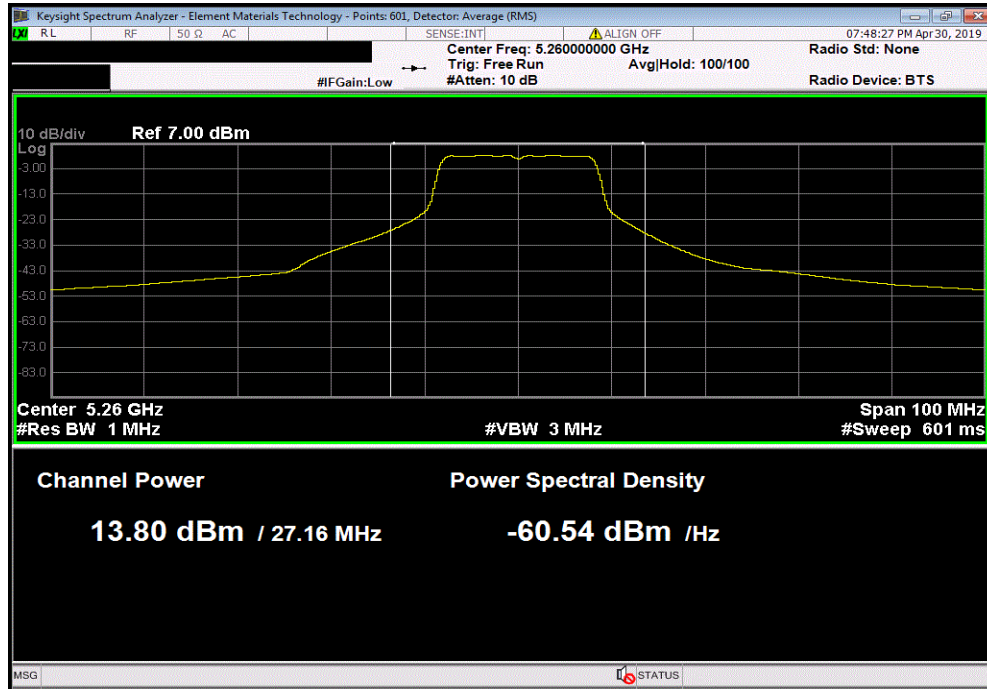
Report No. AMRN0006.1

MAXIMUM CONDUCTED OUTPUT POWER

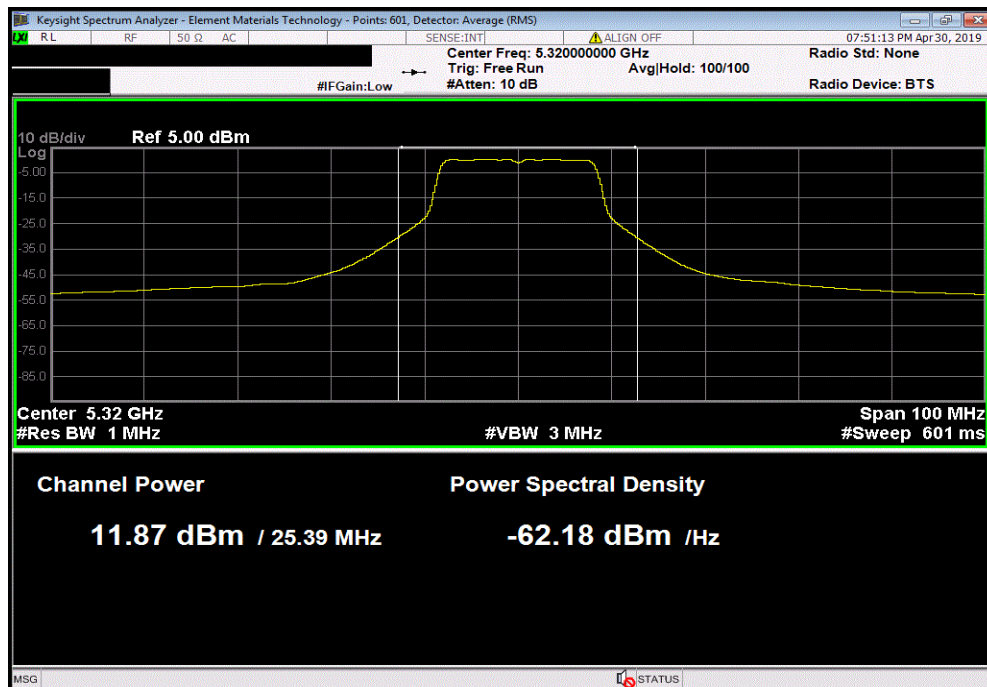


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Low Channel, Ch 52 - 5260 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.797	0.1	13.9	24	Pass	



Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, High Channel, Ch 64 - 5320 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.866	0.1	11.9	24	Pass	

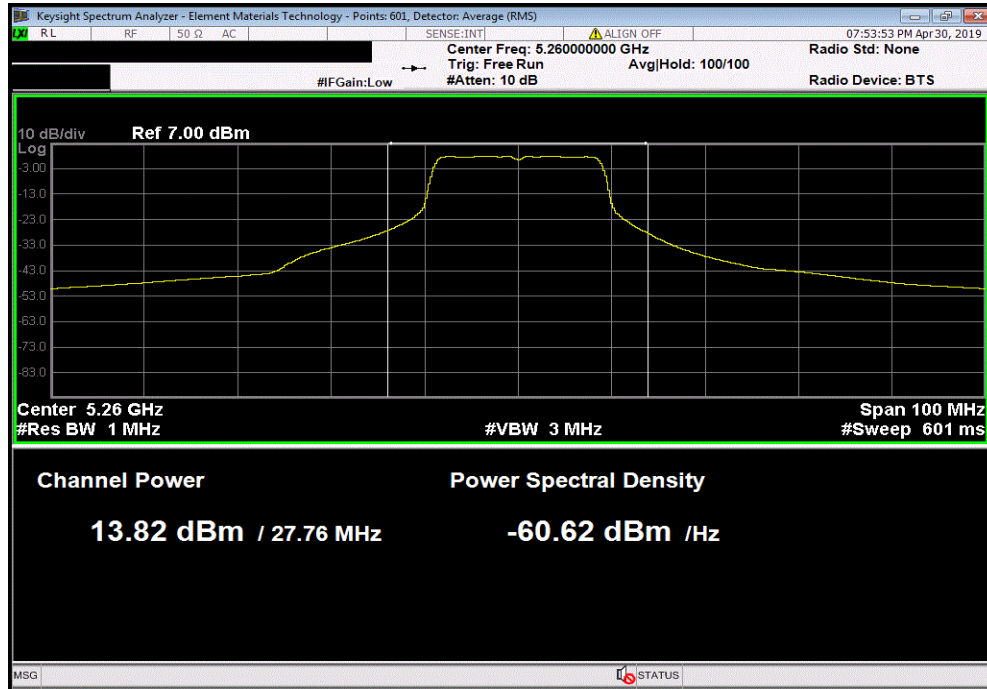


MAXIMUM CONDUCTED OUTPUT POWER

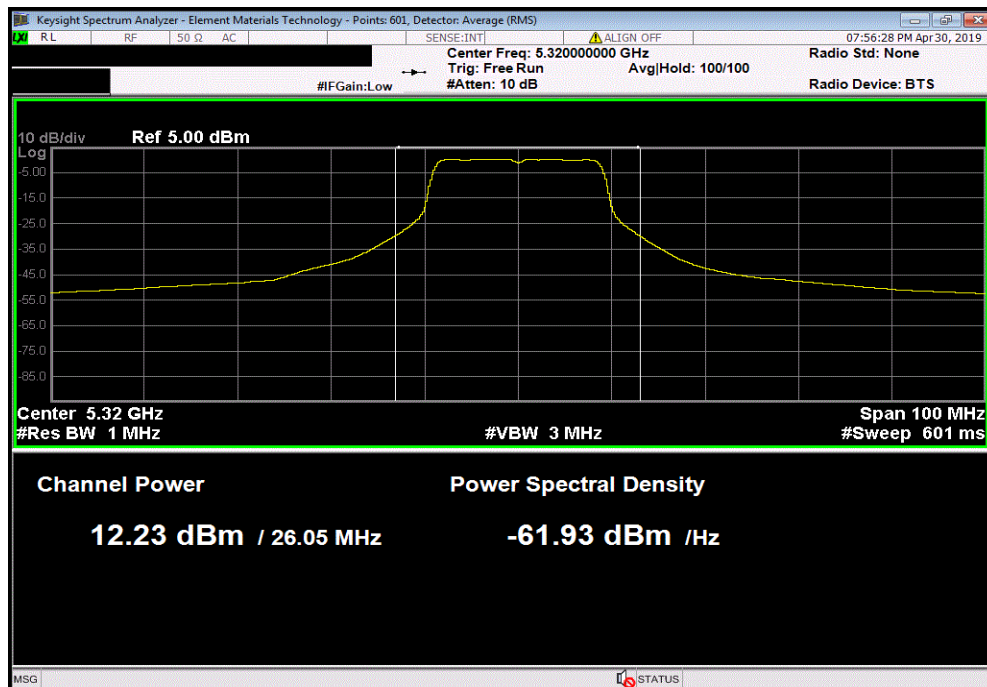


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52 - 5260 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.816	0.1	13.9	24	Pass	



Chain A, 5250 - 5350 MHz Band, 20 MHz BW, 802.11(n) MCS0, High Channel, Ch 64 - 5320 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.229	0.1	12.3	24	Pass	

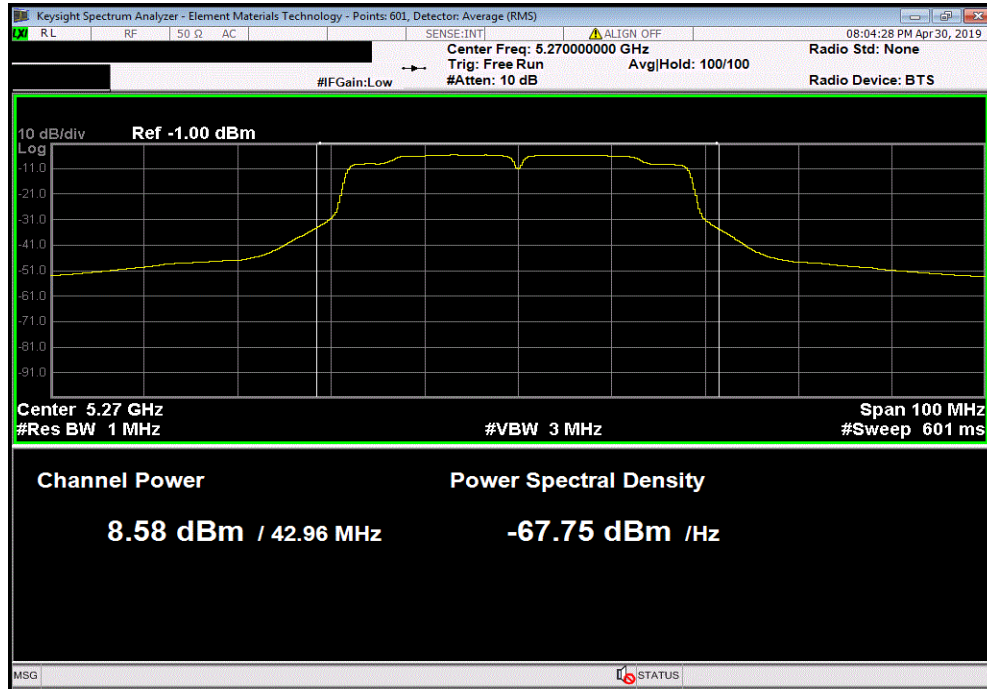


MAXIMUM CONDUCTED OUTPUT POWER

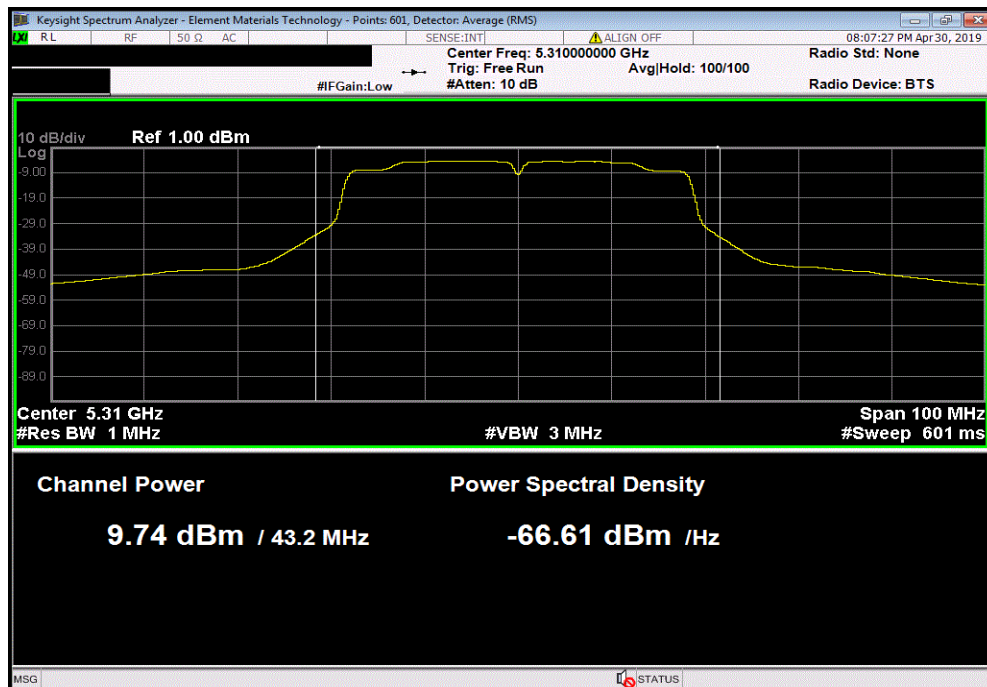


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5250 - 5350 MHz Band, 40 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52/56 - 5270 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.578	0.2	8.7	24	Pass	



Chain A, 5250 - 5350 MHz Band, 40 MHz BW, 802.11(n) MCS0, High Channel, Ch 60/64 - 5310 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	9.745	0.2	9.9	24	Pass	

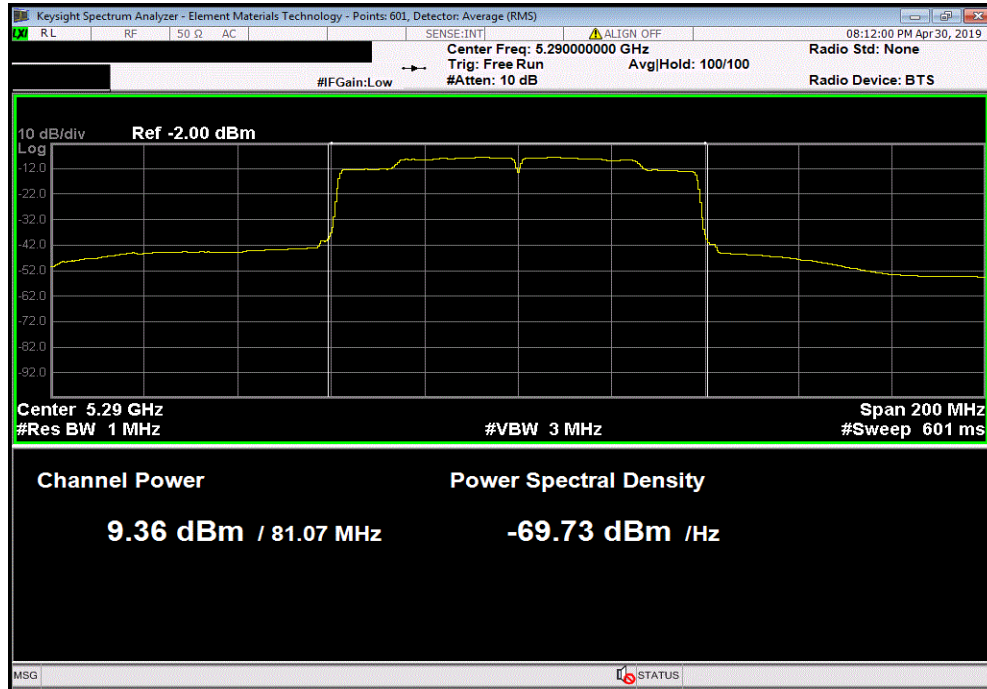


MAXIMUM CONDUCTED OUTPUT POWER

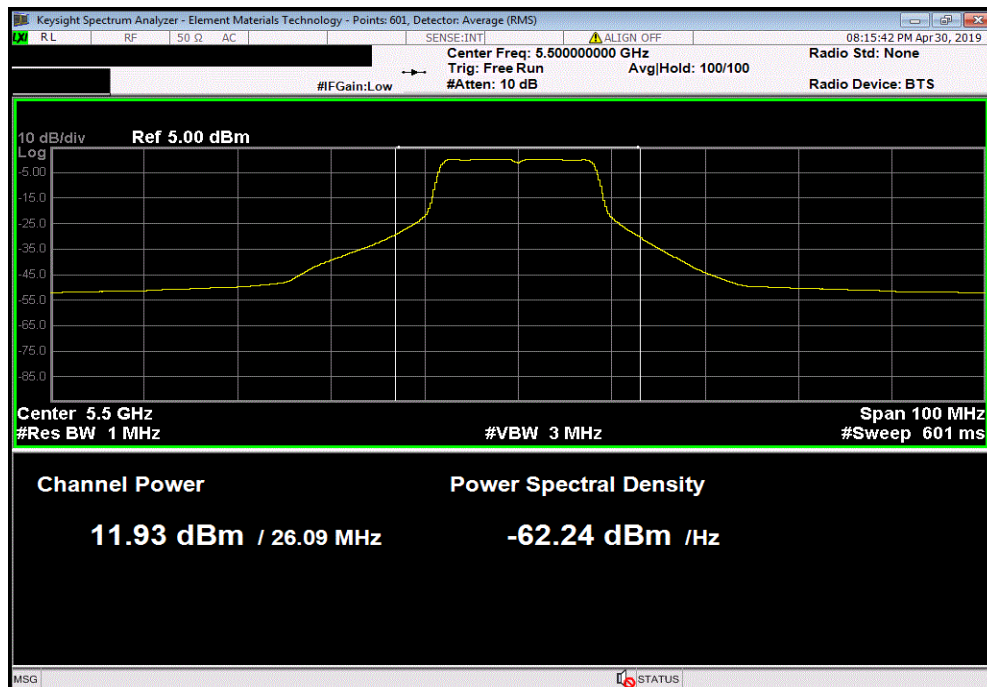


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5250 - 5350 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 52-64 - 5290 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	9.363	0.3	9.7	24	Pass	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Low Channel, Ch 100 - 5500 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.929	0.1	12	24	Pass	

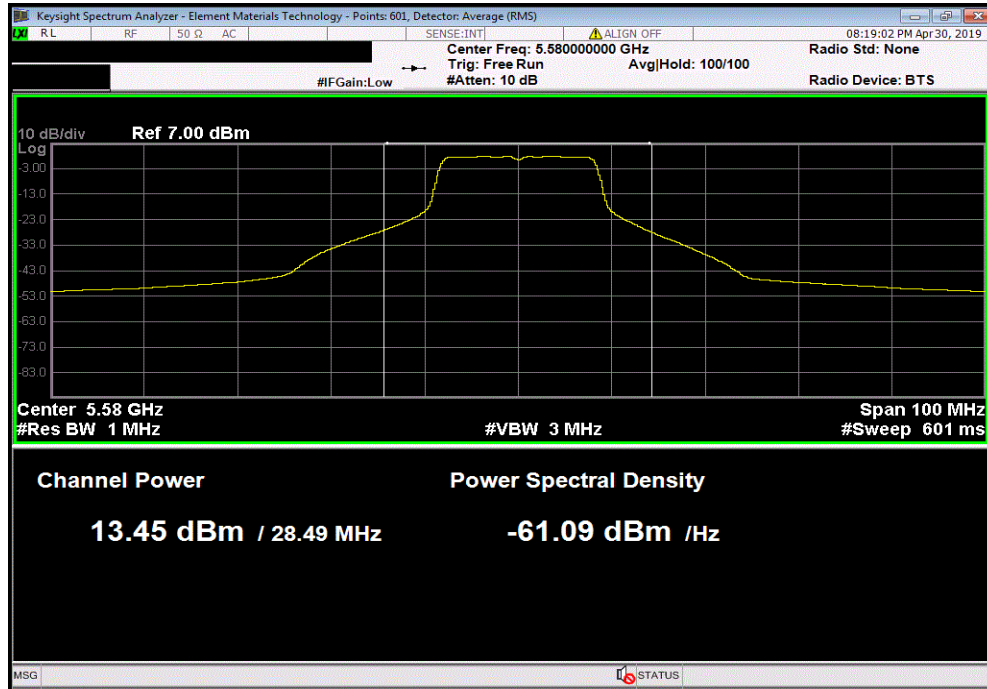


MAXIMUM CONDUCTED OUTPUT POWER

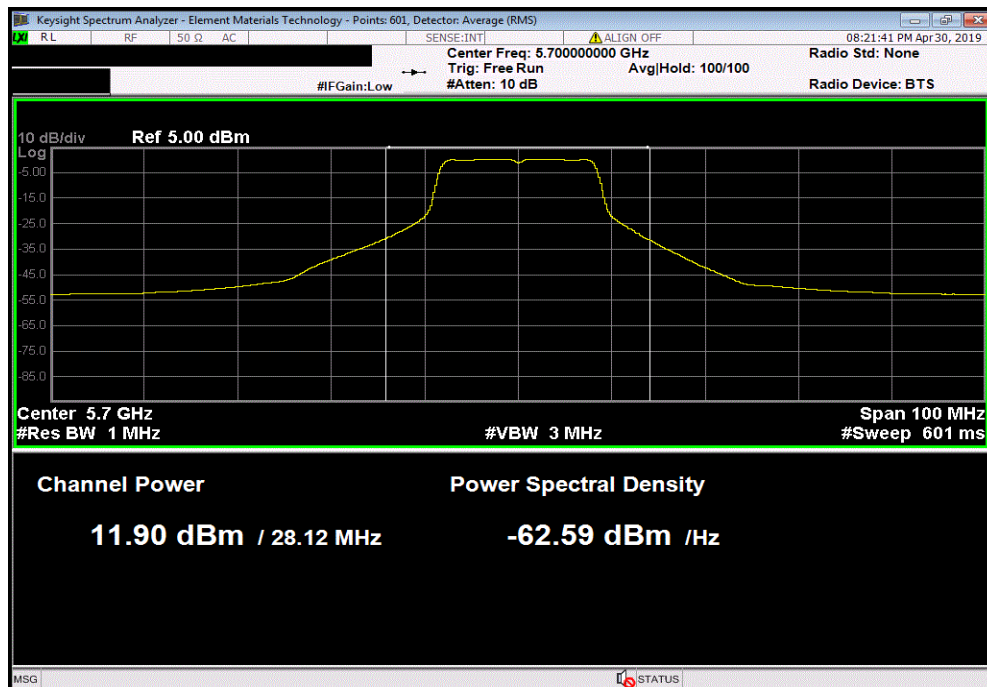


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, Mid Channel, Ch 116 - 5580 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.454	0.1	13.5	24	Pass	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(a) 6 Mbps, High Channel, Ch 140 - 5700 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.9	0.1	12	24	Pass	

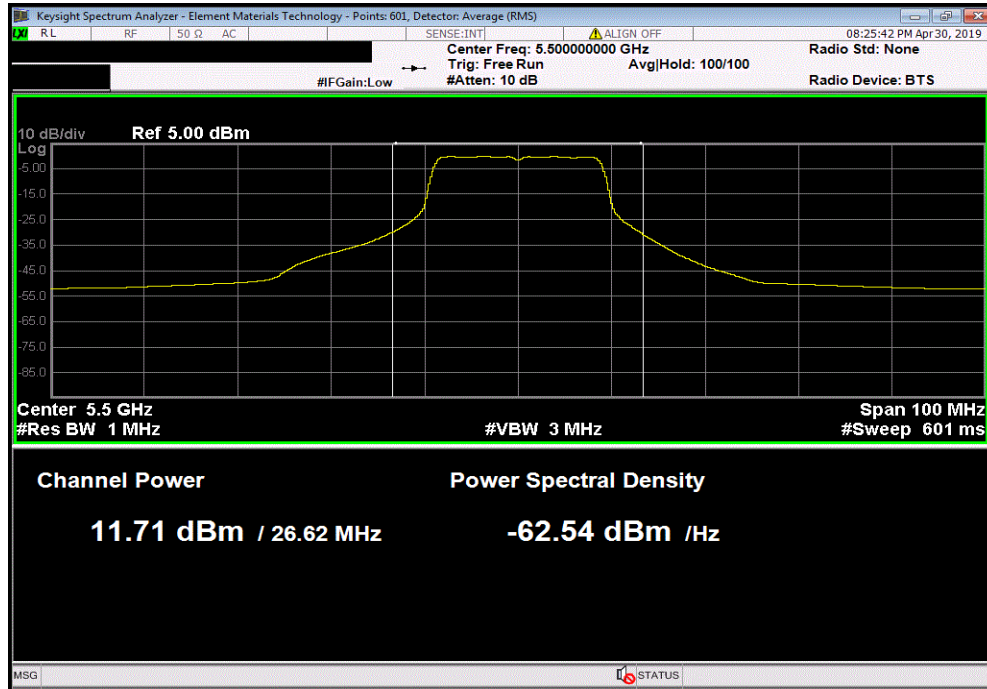


MAXIMUM CONDUCTED OUTPUT POWER

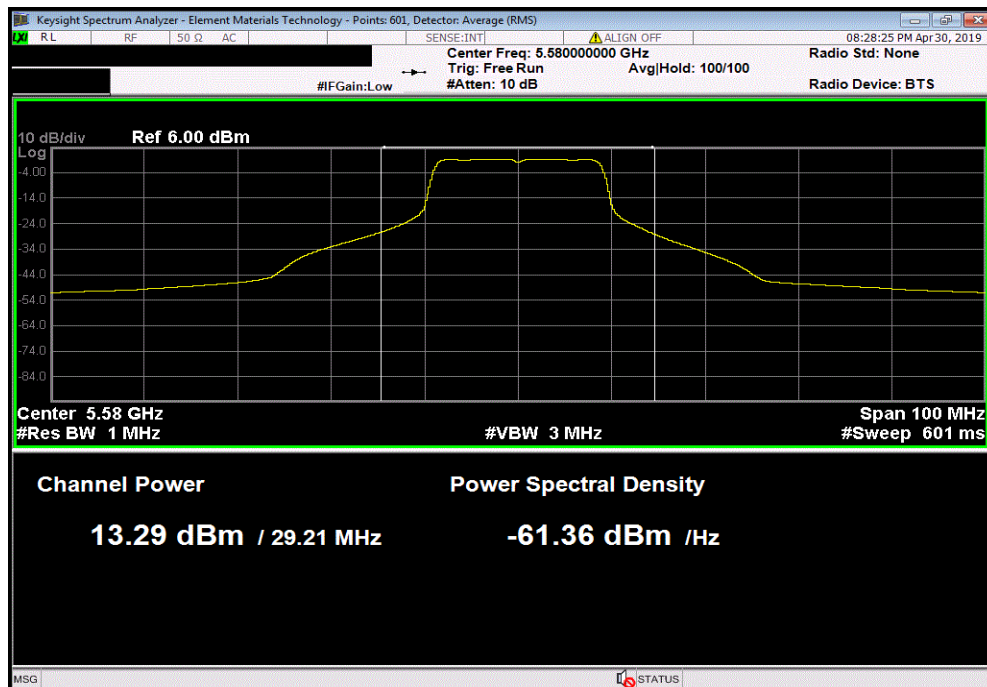


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100 - 5500 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.71	0.1	11.8	24	Pass	



Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, Mid Channel, Ch 116 - 5580 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.294	0.1	13.4	24	Pass	

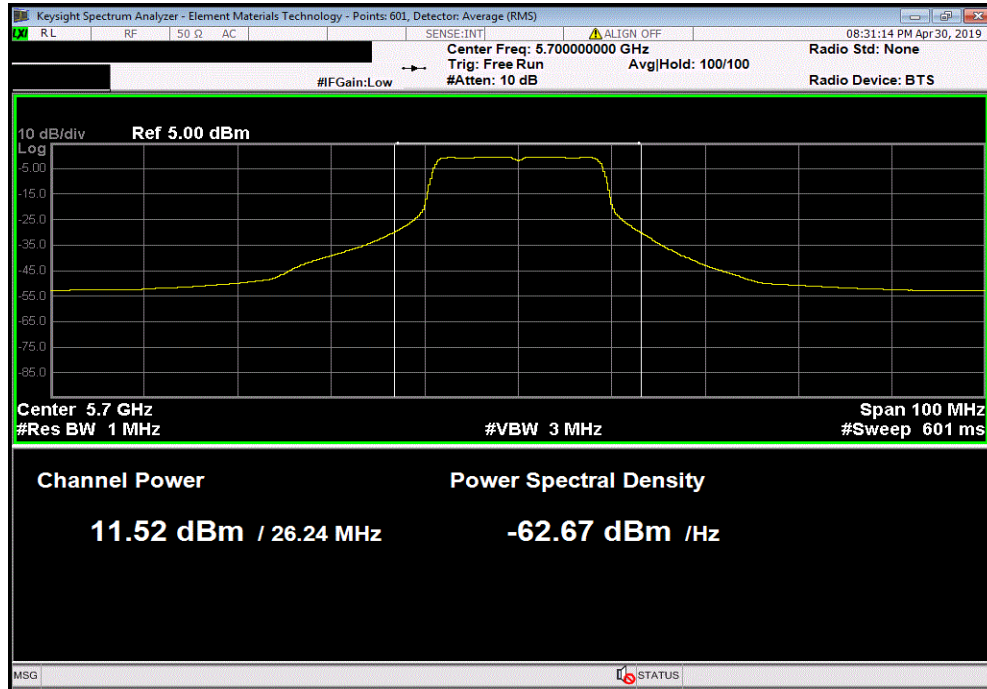


MAXIMUM CONDUCTED OUTPUT POWER

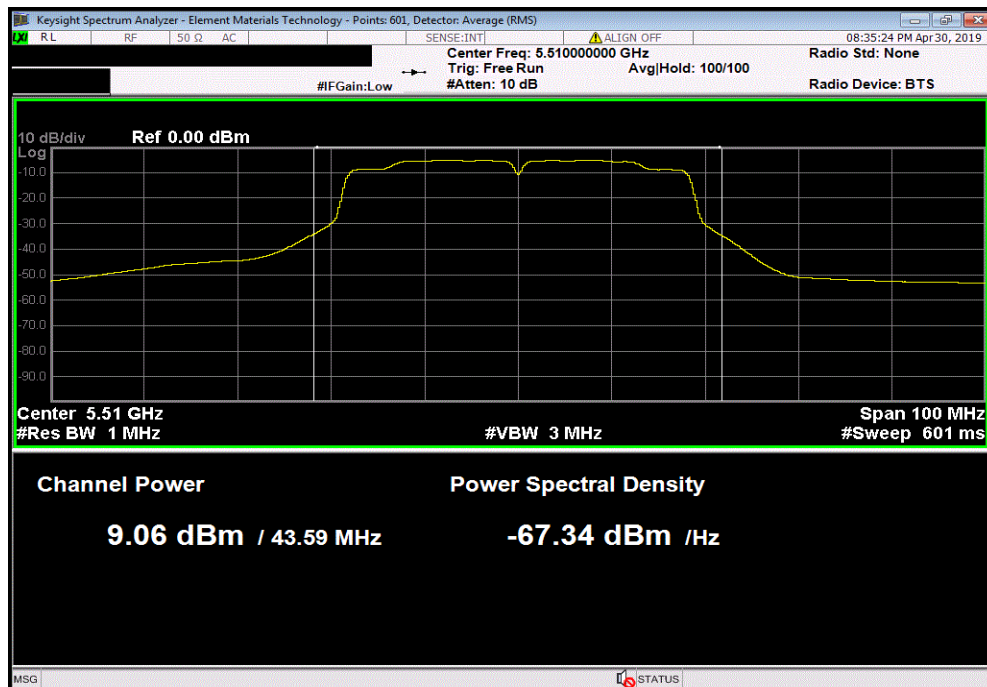


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 20 MHz BW, 802.11(n) MCS0, High Channel, Ch 140 - 5700 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.523	0.1	11.6	24	Pass	



Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100/104 - 5510 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	9.057	0.2	9.2	24	Pass	

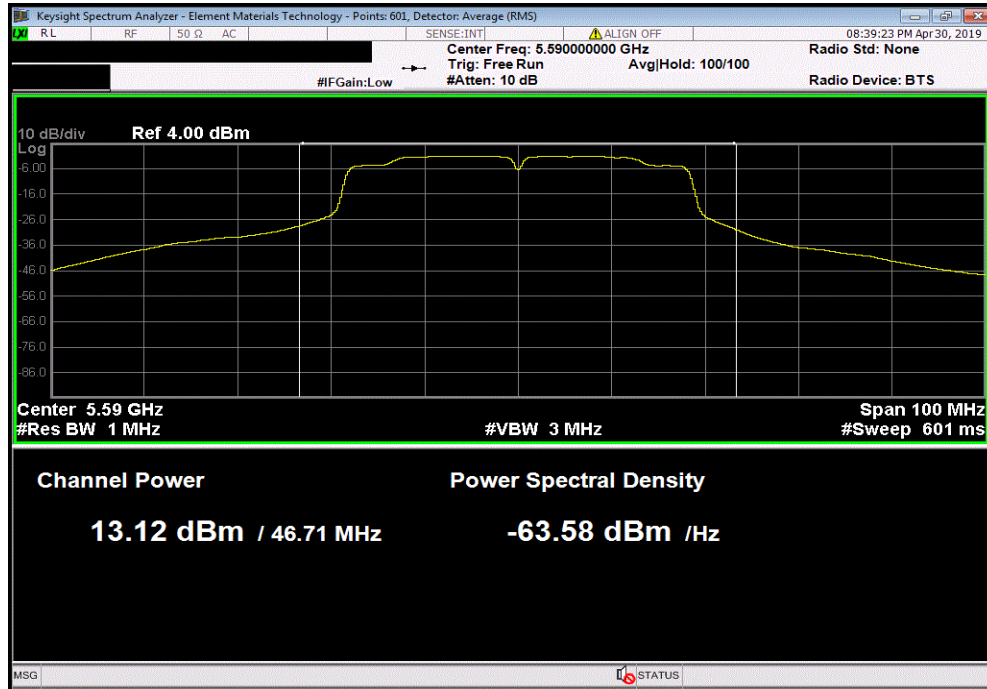


MAXIMUM CONDUCTED OUTPUT POWER

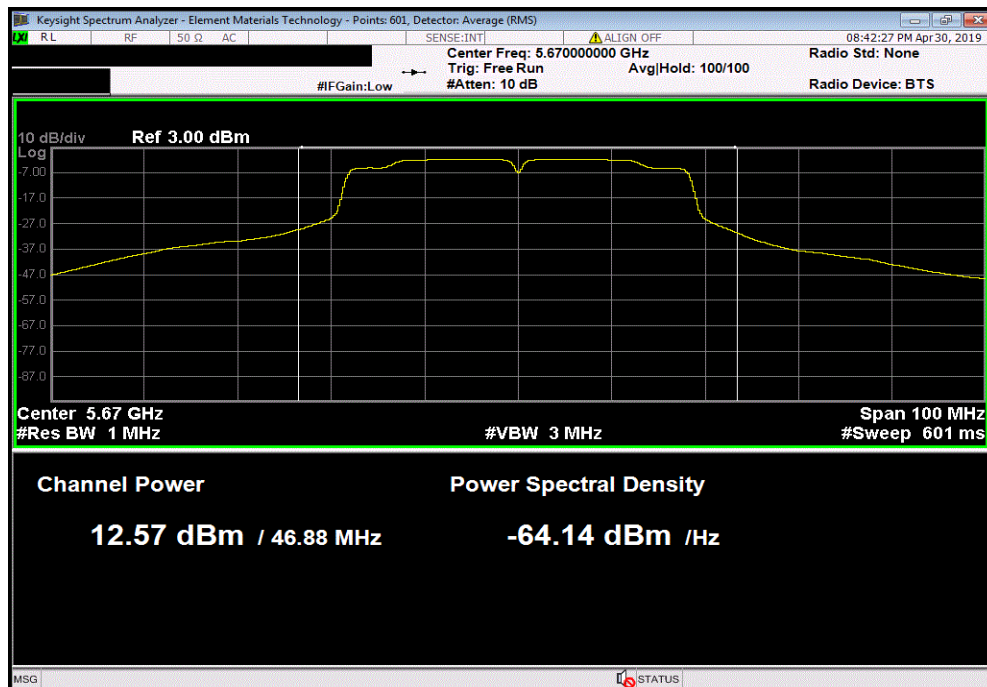


TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, Mid Channel, Ch 116/120 - 5590 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.118	0.2	13.3	24	Pass	



Chain A, 5470 - 5725 MHz Band, 40 MHz BW, 802.11(n) MCS0, High Channel, Ch 132/136 - 5670 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.571	0.2	12.7	24	Pass	

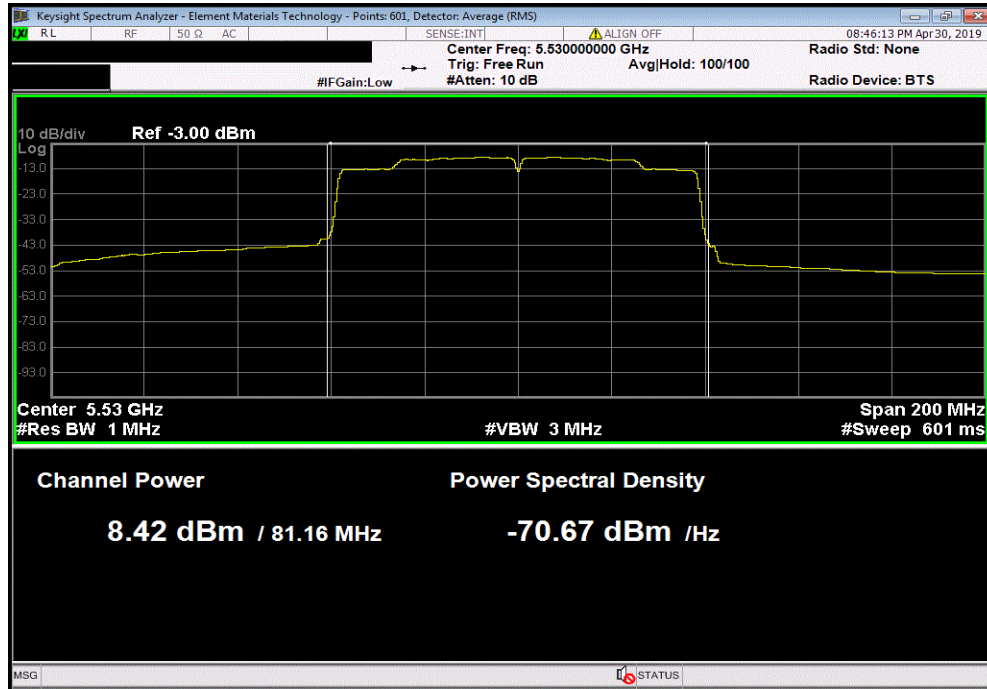


MAXIMUM CONDUCTED OUTPUT POWER



TMTx 2018.09.13 XMI 2019.02.26

Chain A, 5470 - 5725 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 100-112 - 5530 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.421	0.3	8.8	24	Pass	



Chain A, 5470 - 5725 MHz Band, 80 MHz BW, 802.11(n) MCS0, Low Channel, Ch 116-128 - 5610 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.178	0.3	12.5	24	Pass	

