



element

A-dec, Inc.

A-dec Gateway

**802.11 an, ac
FCC 15.407:2020**

Report: A-DE0149.7, Issue Date: April 8, 2021



NVLAP LAB CODE: 200630-0



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CERTIFICATE OF TEST



Last Date of Test: December 15, 2020

A-dec, Inc.

EUT: A-dec Gateway

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2020	ANSI C63.10:2013, KDB 789033, KDB 905462
FCC 15.407:2020	

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.8	Frequency Stability	Yes	Pass	
12.2	Duty Cycle	Yes	Pass	
12.3.2.4	Maximum Conducted Output Power	Yes	Pass	
12.3.2.4	Equivalent Isotropic Radiated Power (EIRP)	Yes	Pass	
12.4.1	Emission Bandwidth	Yes	Pass	
12.4.2	Occupied Bandwidth	No	N/A	Not required for devices that do not support the 5.8 GHz band.
12.4.2	Band Edge	Yes	Pass	
12.5	Maximum Power Spectral Density	Yes	Pass	
12.7, 6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
KDB 789033 -H	Measurement of Emission at Elevation Angle Higher Than 30 Degrees From Horizon	No	N/A	Not required unless the EUT is a Master device used outdoors.

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS



United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

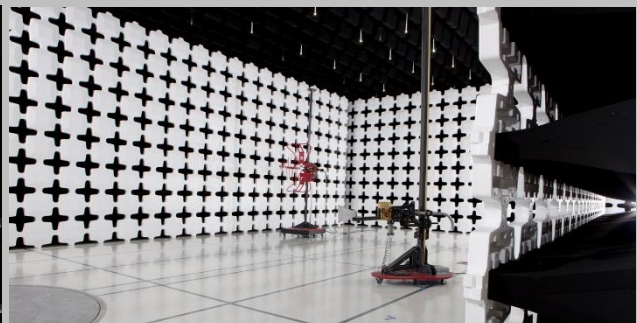
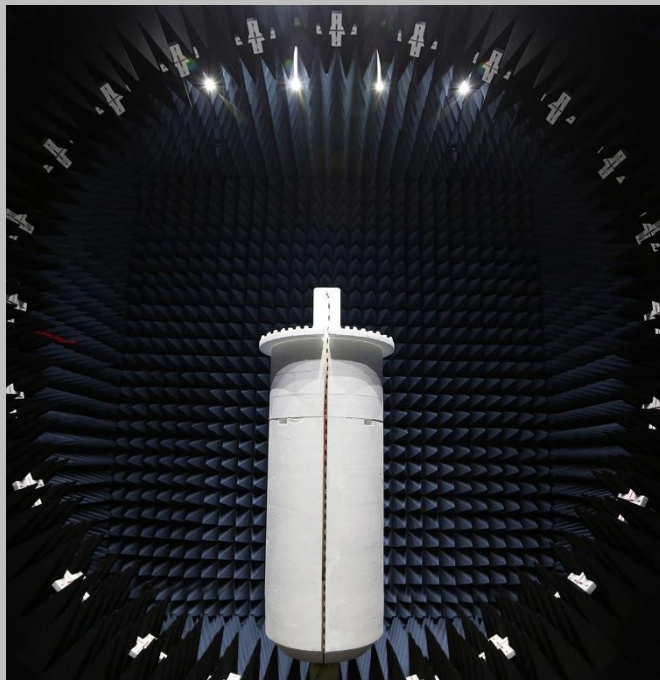
For details on the Scopes of our Accreditations, please visit:

<https://www.nwemc.com/emc-testing-accreditations>

FACILITIES



California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157



MEASUREMENT UNCERTAINTY

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

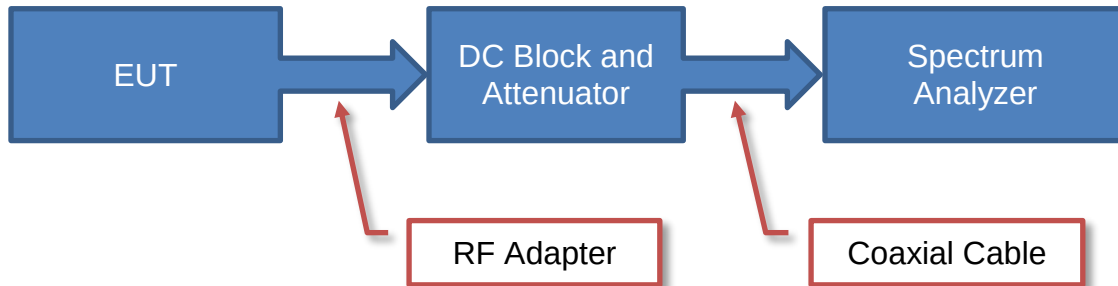
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

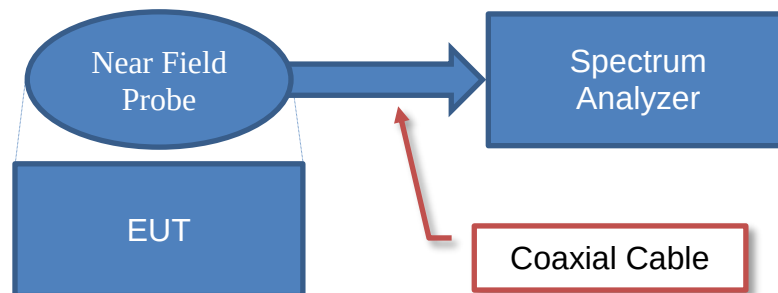
Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.6 dB	-2.6 dB

Test Setup Block Diagrams

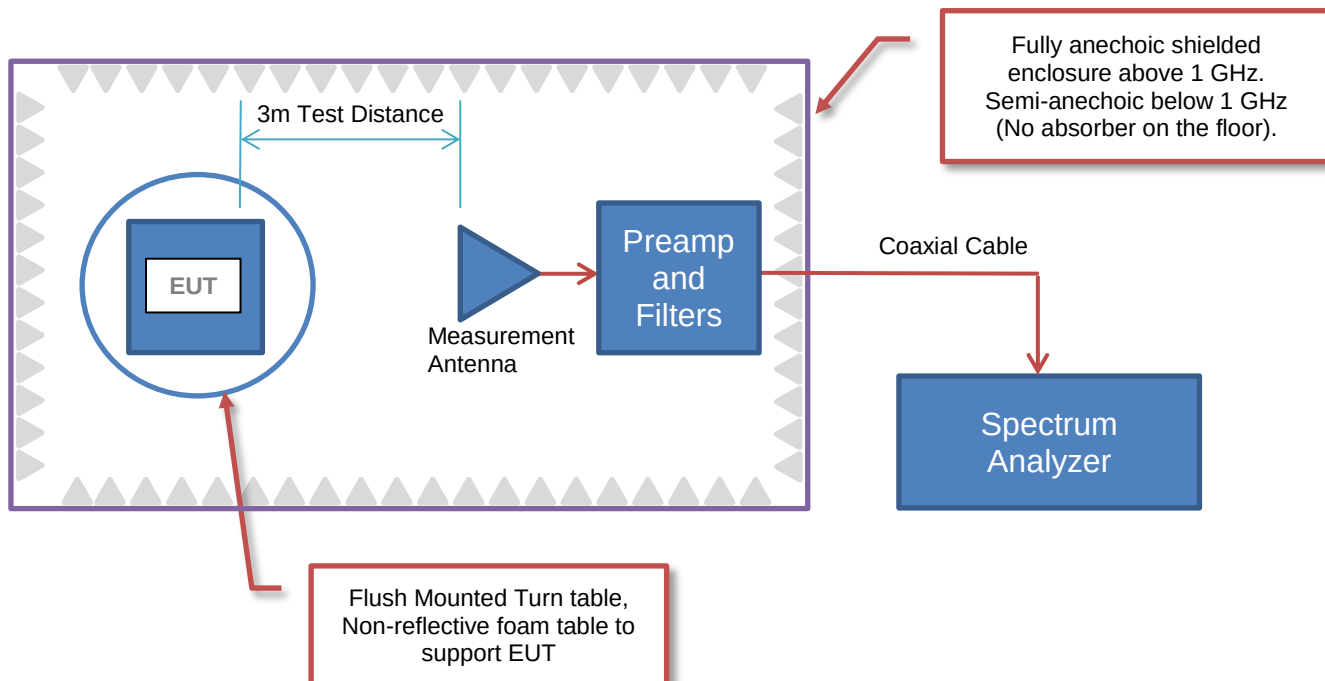
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	A-dec, Inc.
Address:	2601 Crestview Drive, Building 4
City, State, Zip:	Newberg, OR 97132-9528
Test Requested By:	Michael Yurkoski
EUT:	A-dec Gateway
First Date of Test:	November 30, 2020
Last Date of Test:	December 15, 2020
Receipt Date of Samples:	November 17, 2020
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Network Gateway with WLAN 802.11 b/g/n/an/ac, Bluetooth 4.0 and BLE
Testing Objective:
To demonstrate compliance of the 802.11 radio under FCC 15.407 for operation in the 5.2 GHz band.

POWER SETTINGS AND ANTENNAS



The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information.

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
Ceramic Chip	Manufacturer	5150 - 5250	5.2

The EUT was tested using the power settings provided by the manufacturer:

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Channel Bandwidths	Channel	Position	Frequency (MHz)	Power Setting
6 Mbps	20	36	Low Channel	5180	13
		48	High Channel	5240	13
36 Mbps	20	36	Low Channel	5180	13
		48	High Channel	5240	13
54 Mbps	20	36	Low Channel	5180	13
		48	High Channel	5240	13
MCS0	20	36	Low Channel	5180	13
		48	High Channel	5240	13
MCS7	20	36	Low Channel	5180	13
		48	High Channel	5240	13
MCS8 (256-QAM)	20	36	Low Channel	5180	10
		48	High Channel	5240	10
MCS0	40	36/40	Low Channel	5190	8
		44/48	High Channel	5230	8
MCS7	40	36/40	Low Channel	5190	8
		44/48	High Channel	5230	8
MCS9 (256-QAM)	40	36/40	Low Channel	5190	9
		44/48	High Channel	5230	9
MCS0	80	36-48	Low Channel	5210	7
MCS9 (256-QAM)	80	36-48	Low Channel	5210	7

CONFIGURATIONS



Configuration A-DE0149- 1

Software/Firmware Running during test	
Description	Version
Murata Test Firmware	None

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Access Point / IoT Device	A-dec, Inc.	43.0531.00	521O041984

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Lattitude E7470	BRXX1G2

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Serial to USB	Yes	2.0 m	No	Laptop	Wireless Access Point / IoT Device
DC Power	Yes	1.5 m	No	ITE Power Supply	Wireless Access Point / IoT Device

CONFIGURATIONS



Configuration A-DE0149- 2

Software/Firmware Running during test	
Description	Version
Murata Test Firmware	None

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Access Point / IoT Device	A-dec, Inc.	43.0531.00	521O041985

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude E7470	BRXX1G2

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Serial to USB	Yes	2.0 m	No	Laptop	Wireless Access Point / IoT Device
DC Power	Yes	1.5 m	No	ITE Power Supply	Wireless Access Point / IoT Device
Ethernet	No	5.5 m	No	Laptop	Wireless Access Point / IoT Device
CAN	No	7.6 m	No	Unterminated	Wireless Access Point / IoT Device
CAN FD	No	7.6 m	No	Unterminated	Wireless Access Point / IoT Device

CONFIGURATIONS



Configuration A-DE0149- 7

Software/Firmware Running during test	
Description	Version
Murata Test Firmware	None

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Access Point / IoT Device	A-dec, Inc.	43.0531.00	521O041984

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude E7470	BRXX1G2

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Serial to USB	Yes	2.0 m	No	Laptop	Wireless Access Point / IoT Device
DC Power	No	1.0 m	No	Wireless Access Point / IoT Device	DC Leads
DC Leads	No	1.0 m	No	DC Power	Linear DC Power Supply

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2020-11-30	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2020-12-03	Maximum Conducted Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2020-12-03	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2020-12-03	Emission Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2020-12-03	Band Edge	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2020-12-07	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2020-12-08	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2020-12-14	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	2020-12-15	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
10	2020-12-15	Maximum Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARH	2020-05-13	2021-05-13
Cable - Conducted Cable Assembly	Northwest EMC	EVG, HHD, RKT	EVGA	2020-01-06	2021-01-06
LISN	Solar Electronics	9252-50-R-24-BNC	LIP	2020-08-31	2021-08-31

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.6 dB	-2.6 dB

CONFIGURATIONS INVESTIGATED

A-DE0149-2

MODES INVESTIGATED

Continuous Tx, 802.11a, Ch. 40 = 5200 MHz, 6 Mbps

POWERLINE CONDUCTED EMISSIONS



EUT:	A-dec Gateway	Work Order:	A-DE0149
Serial Number:	5210041985	Date:	2020-12-07
Customer:	A-dec, Inc.	Temperature:	23.5°C
Attendees:	Spencer Warneke	Relative Humidity:	32.5%
Customer Project:	None	Bar. Pressure:	1032 mb
Tested By:	Jeff Alcock	Job Site:	EV07
Power:	110VAC/60Hz	Configuration:	A-DE0149-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	4	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

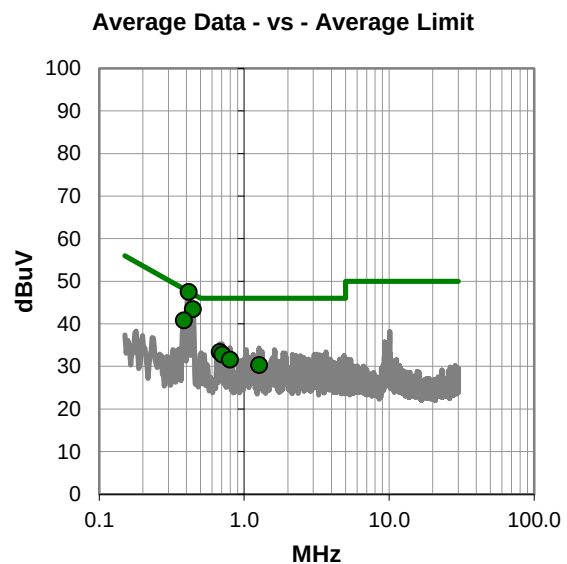
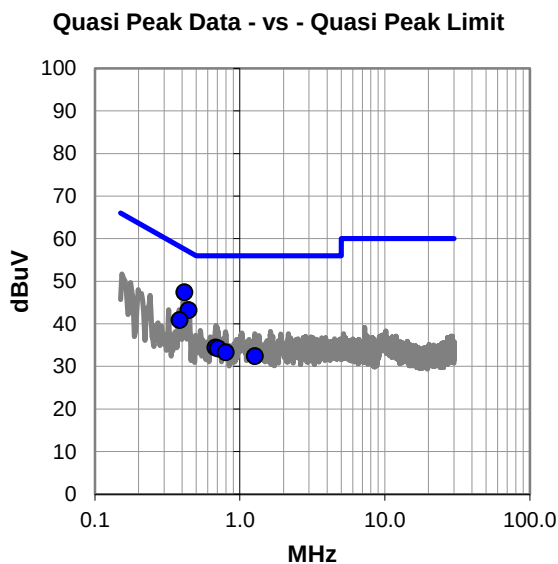
None

EUT OPERATING MODES

Continuous Tx, 802.11a, Ch. 40 = 5200 MHz, 6 Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.415	27.5	19.9	47.4	57.6	-10.2
0.444	23.3	19.9	43.2	57.0	-13.8
0.383	21.0	19.9	40.9	58.2	-17.3
0.680	14.5	19.9	34.4	56.0	-21.6
0.709	14.3	19.9	34.2	56.0	-21.8
0.801	13.4	19.9	33.3	56.0	-22.7
1.268	12.5	19.9	32.4	56.0	-23.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.415	27.6	19.9	47.5	47.6	-0.1
0.444	23.5	19.9	43.4	47.0	-3.6
0.383	20.9	19.9	40.8	48.2	-7.4
0.680	13.5	19.9	33.4	46.0	-12.6
0.709	12.9	19.9	32.8	46.0	-13.2
0.801	11.7	19.9	31.6	46.0	-14.4
1.268	10.4	19.9	30.3	46.0	-15.7

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



EUT:	A-dec Gateway	Work Order:	A-DE0149
Serial Number:	521O041985	Date:	2020-12-07
Customer:	A-dec, Inc.	Temperature:	23.5°C
Attendees:	Spencer Warneke	Relative Humidity:	32.5%
Customer Project:	None	Bar. Pressure:	1032 mb
Tested By:	Jeff Alcock	Job Site:	EV07
Power:	110VAC/60Hz	Configuration:	A-DE0149-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2020	ANSI C63.10:2013

TEST PARAMETERS

Run #:	5	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

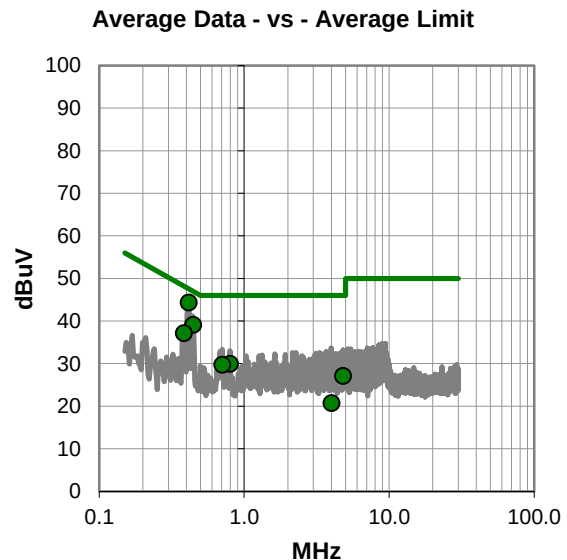
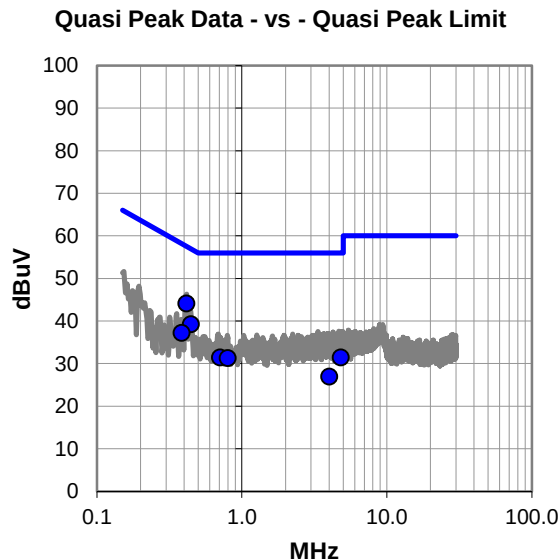
None

EUT OPERATING MODES

Continuous Tx, 802.11a, Ch. 40 = 5200 MHz, 6 Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #5

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.414	24.2	19.9	44.1	57.6	-13.5
0.445	19.3	19.9	39.2	57.0	-17.8
0.384	17.3	19.9	37.2	58.2	-21.0
0.708	11.5	19.9	31.4	56.0	-24.6
4.816	11.3	20.1	31.4	56.0	-24.6
0.800	11.4	19.9	31.3	56.0	-24.7
4.005	6.8	20.1	26.9	56.0	-29.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.414	24.4	19.9	44.3	47.6	-3.3
0.445	19.2	19.9	39.1	47.0	-7.9
0.384	17.2	19.9	37.1	48.2	-11.1
0.800	10.0	19.9	29.9	46.0	-16.1
0.708	9.8	19.9	29.7	46.0	-16.3
4.816	7.0	20.1	27.1	46.0	-18.9
4.005	0.6	20.1	20.7	46.0	-25.3

CONCLUSION

Pass



Tested By

FREQUENCY STABILITY

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	29-Aug-20	29-Aug-23
Chamber - Temperature/Humidity	Cincinnati Sub Zero (CSZ)	ZPH-8-2-SCT/AC	TBI	NCR	NCR
Thermometer	Omegatette	HH311	DTY	5-Jan-18	5-Jan-21
Power Supply - DC	Topward	TPS-2000	TPD	NCR	NCR
Meter - Multimeter	Tektronix	DMM912	MMH	15-Feb-19	15-Feb-22
Cable	Micro-Coax	UFD150A-1-0720-200200	EVK	13-Mar-20	13-Mar-21
Attenuator	S.M. Electronics	SA26B-20	AUY	13-Mar-20	13-Mar-21
Block - DC	Fairview Microwave	SD3379	AMW	13-Mar-20	13-Mar-21
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFE	3-Aug-20	3-Aug-21

TEST DESCRIPTION

The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made at the edges of the main transmit bands as called out on the data sheets. Testing was done with an absence of modulation in a CW mode of operation.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-30 ° to +50° C) and at 10°C intervals.

Where a ppm limit applies: $\text{ppm} = (\text{Measured Frequency} / \text{Measured Nominal Frequency} - 1) * 1,000,000$

Per the requirements of FCC 15.407:

“Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user’s manual.”

No specific limits are provided in either FCC 15.407, the product specific rule part, or FCC 2.1055, the equipment authorization procedure for testing frequency stability. While there are no limits called out, any results less than 100ppm will still allow the radio to be operating within the band.

FREQUENCY STABILITY



TbTtx 2019.08.30.0 XME 2020.03.25.0

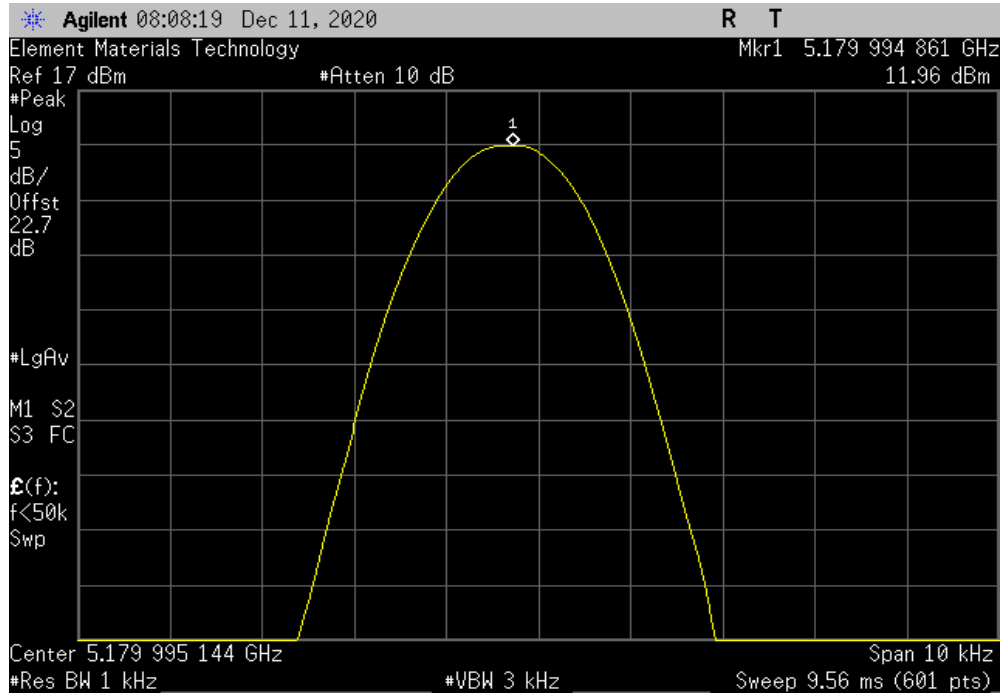
EUT: A-dec Gateway		Work Order: A-DE0149	
Serial Number: 521O041984		Date: 14-Dec-20	
Customer: A-dec, Inc.		Temperature: 21.4 °C	
Attendees: Spencer Warneke		Humidity: 37.5% RH	
Project: None		Barometric Pres.: 1028 mbar	
Tested by: Jeff Alcock		Power: 110VAC/60Hz	
TEST SPECIFICATIONS		Job Site: EV06	
FCC 15.407:2020		Test Method	
		ANSI C63.10:2013	
COMMENTS			
Reference offset includes: DC Block, 20 dB attenuator and measurement cable.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	7	Signature	
		Measured Value (MHz)	Measured Nominal Value (MHz)
		Error (ppm)	Limit (ppm)
			Results
Continuous Wave (CW)			
5150 MHz - 5250 MHz - Low Channel, 5180 MHz			
Voltage: 115%, 27.6 VDC		5179.99486	5179.995028
Nominal Voltage: 100%, 24.0 VDC		5179.99503	5179.995028
Voltage: 85%, 20.4 VDC		5179.99471	5179.995028
Temperature: +50°		5179.99484	5179.995028
Temperature: +40°		5179.99306	5179.995028
Temperature: +30°		5180.00061	5179.995028
Temperature: +20°		5180.01148	5179.995028
Temperature: +10°		5180.02667	5179.995028
Temperature: 0°		5180.03755	5179.995028
Temperature: -10°		5180.04506	5179.995028
Temperature: -20°		5180.04509	5179.995028
Temperature: -30°		5180.03669	5179.995028

FREQUENCY STABILITY

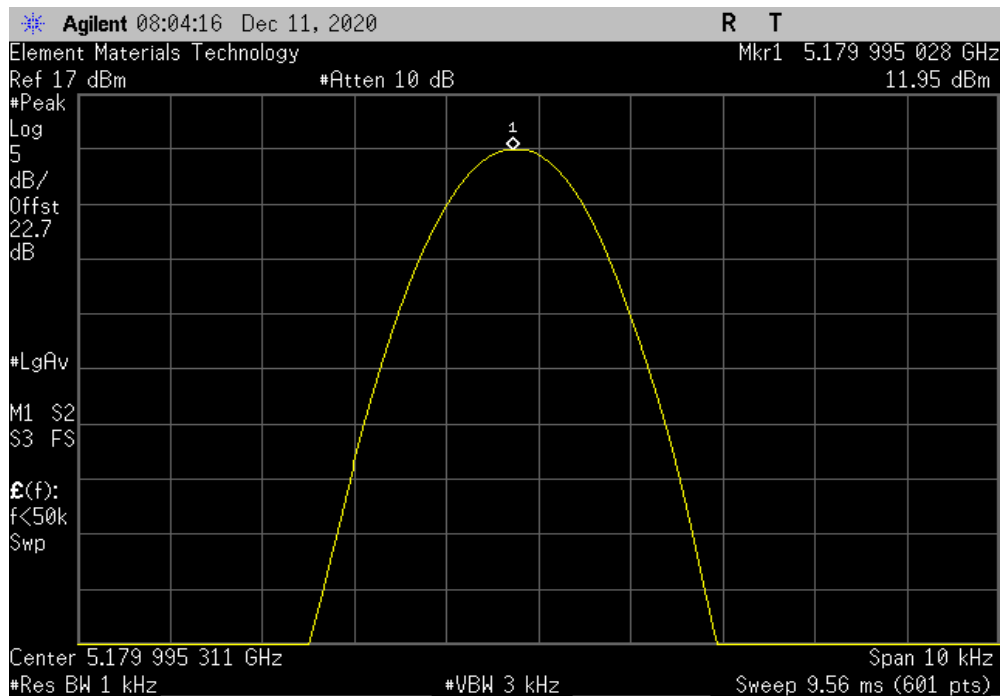


TbTx 2019.08.30.0 XMM 2020.03.25.0

Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 115%, 27.6 VDC						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5179.994861	5179.995028	0	100	Pass	



Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Nominal Voltage: 100%, 24.0 VDC						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5179.995028	5179.995028	0	100	Pass	

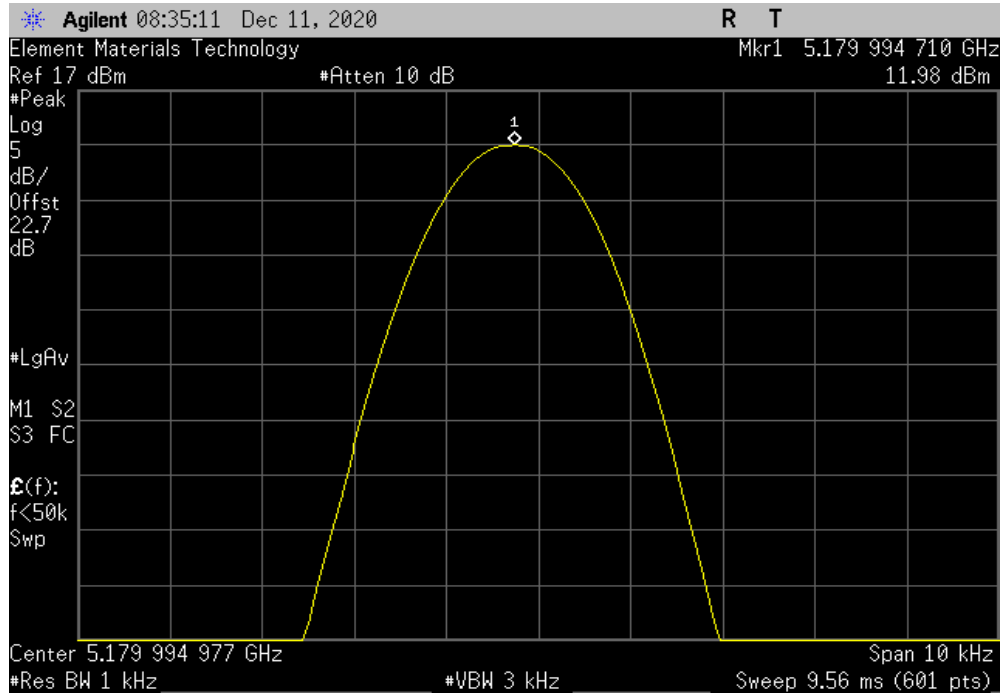


FREQUENCY STABILITY

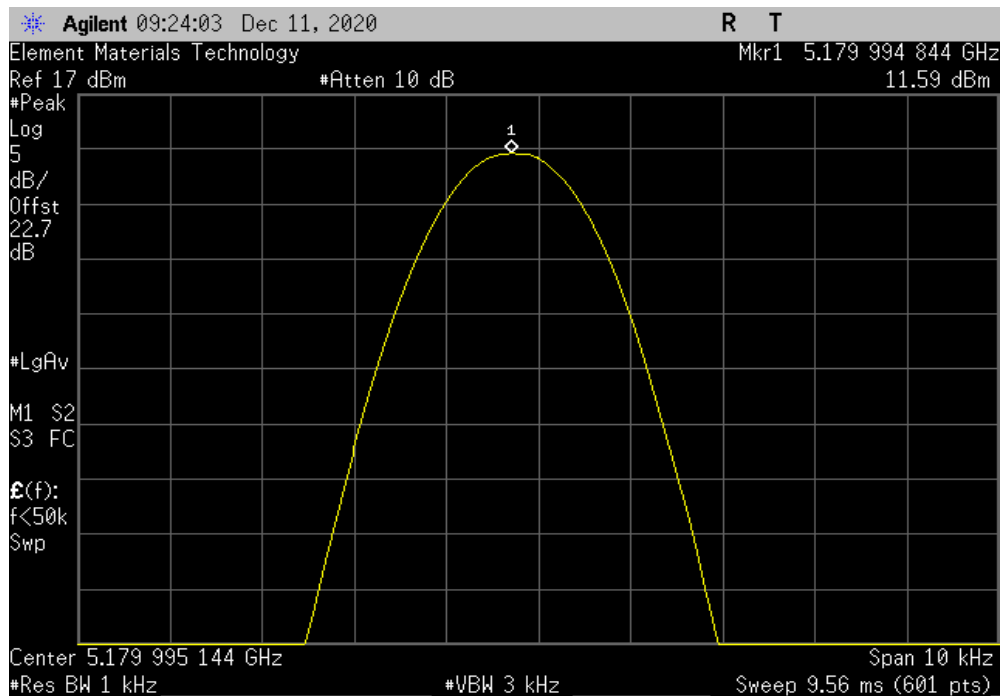


TbTx 2019.08.30.0 XMM 2020.03.25.0

Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 85%, 20.4 VDC						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5179.99471	5179.995028	0	100	Pass	



Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +50°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5179.994844	5179.995028	0	100	Pass	

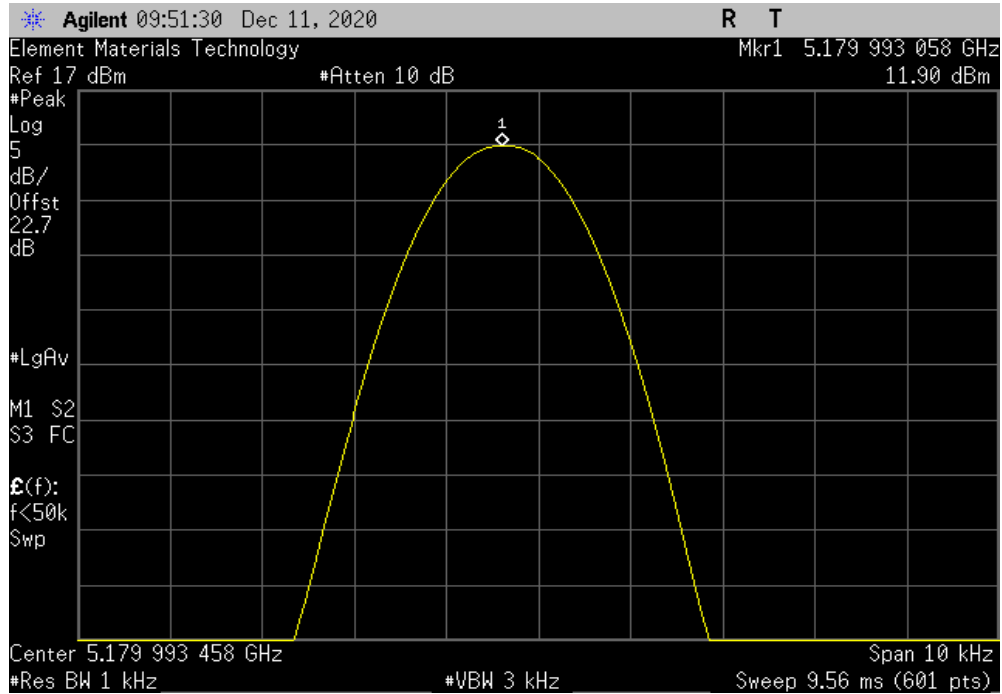


FREQUENCY STABILITY

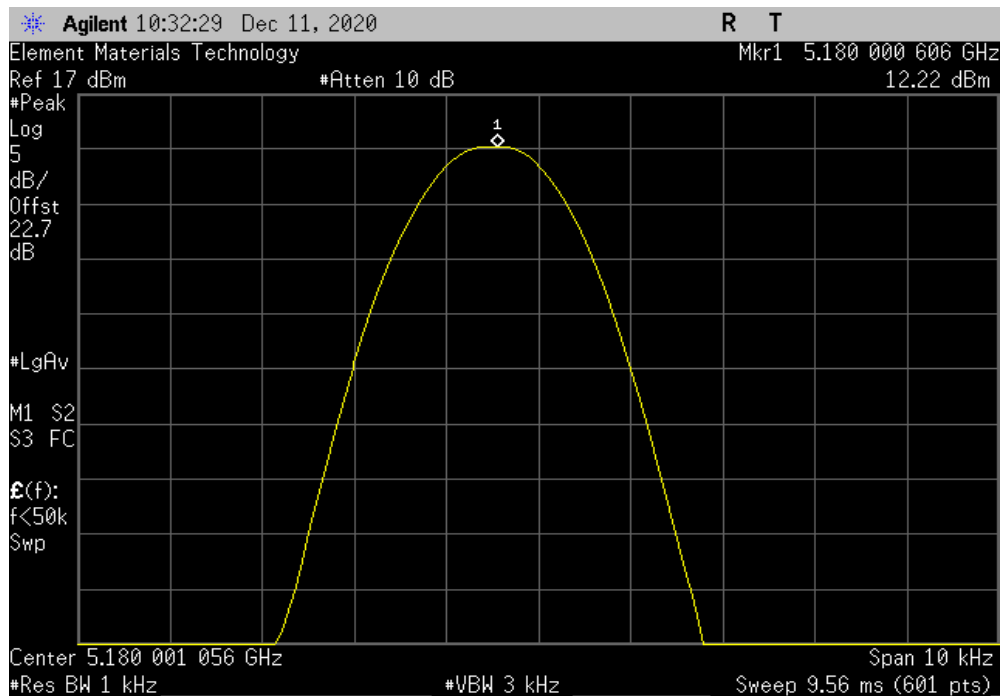


TbTx 2019.08.30.0 XMM 2020.03.25.0

Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +40°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5179.993058	5179.995028	0	100	Pass	



Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +30°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5180.000606	5179.995028	1	100	Pass	

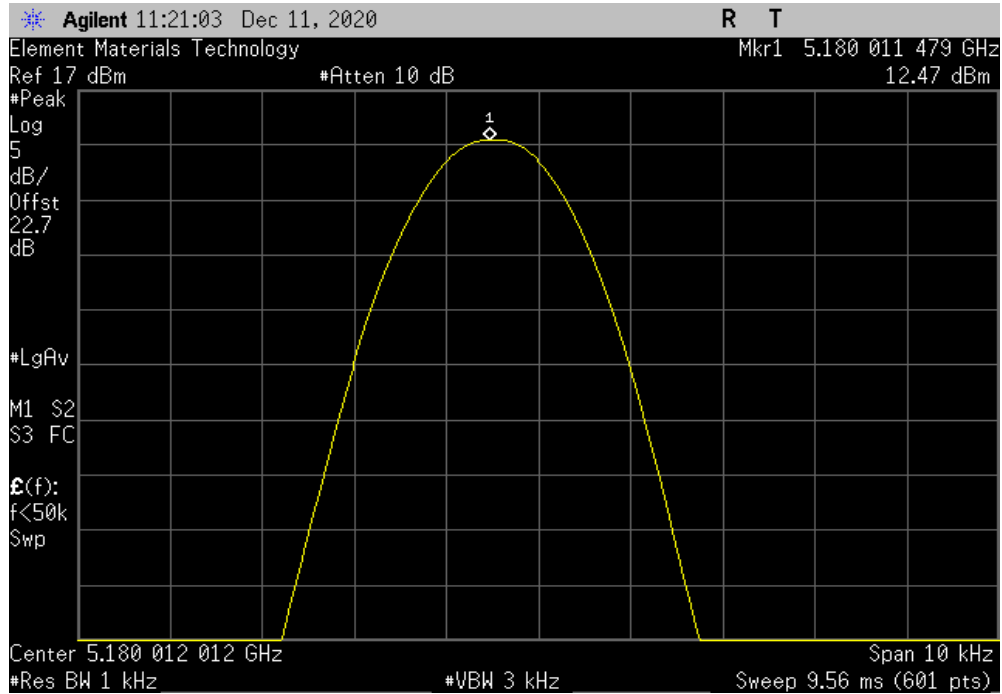


FREQUENCY STABILITY

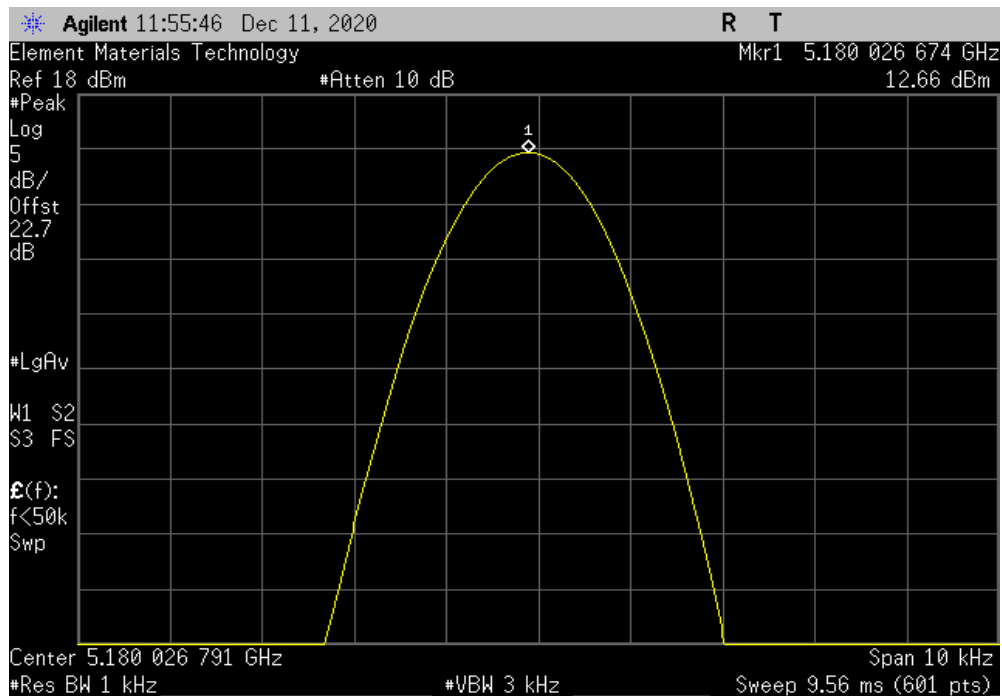


TbTx 2019.08.30.0 XMt 2020.03.25.0

Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +20°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5180.011479	5179.995028	3	100	Pass	



Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +10°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5180.026674	5179.995028	6	100	Pass	

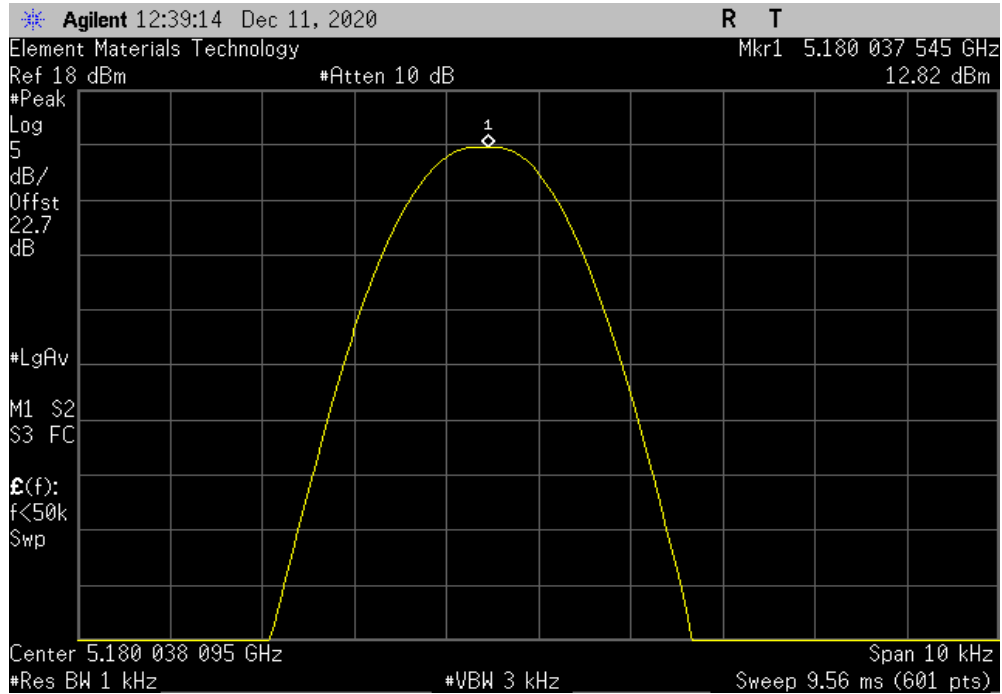


FREQUENCY STABILITY

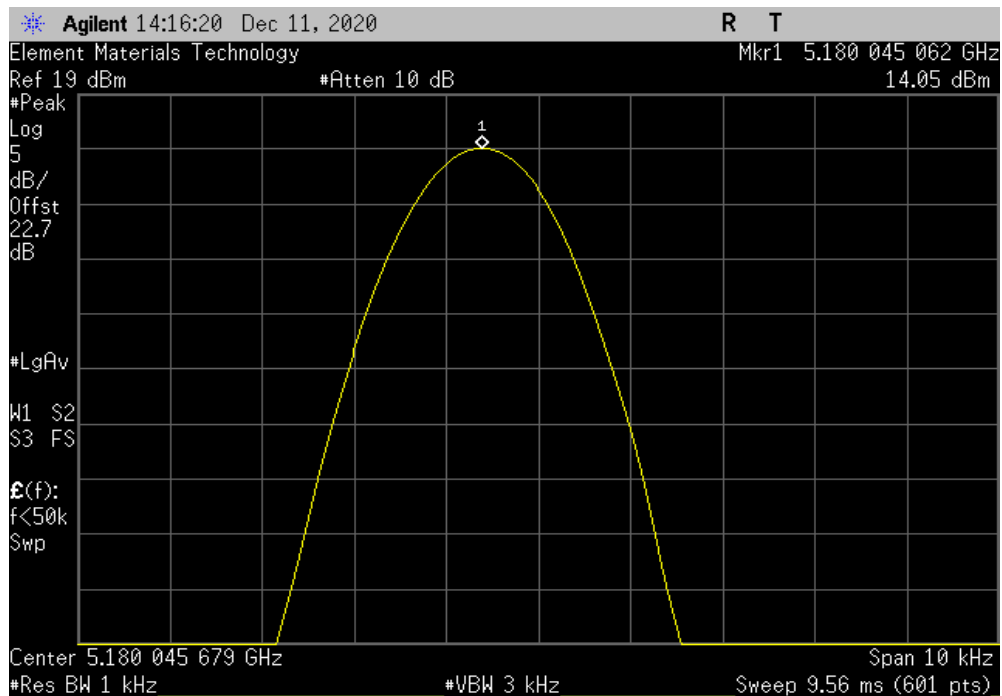


TbTx 2019.08.30.0 XMM 2020.03.25.0

Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: 0°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5180.037545	5179.995028	8	100	Pass	



Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: -10°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5180.045062	5179.995028	10	100	Pass	

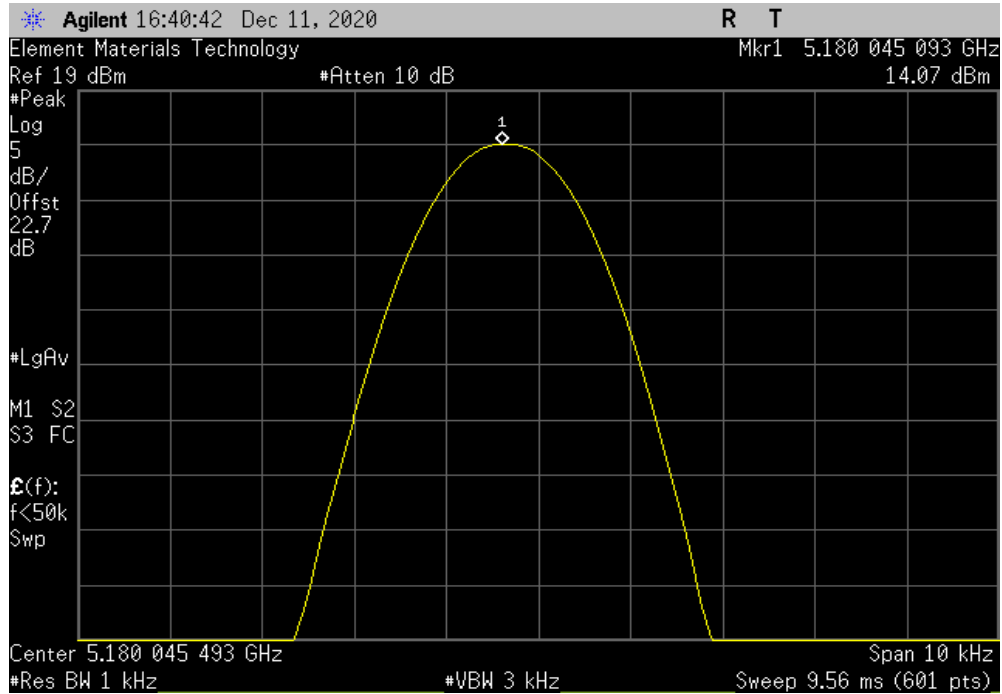


FREQUENCY STABILITY

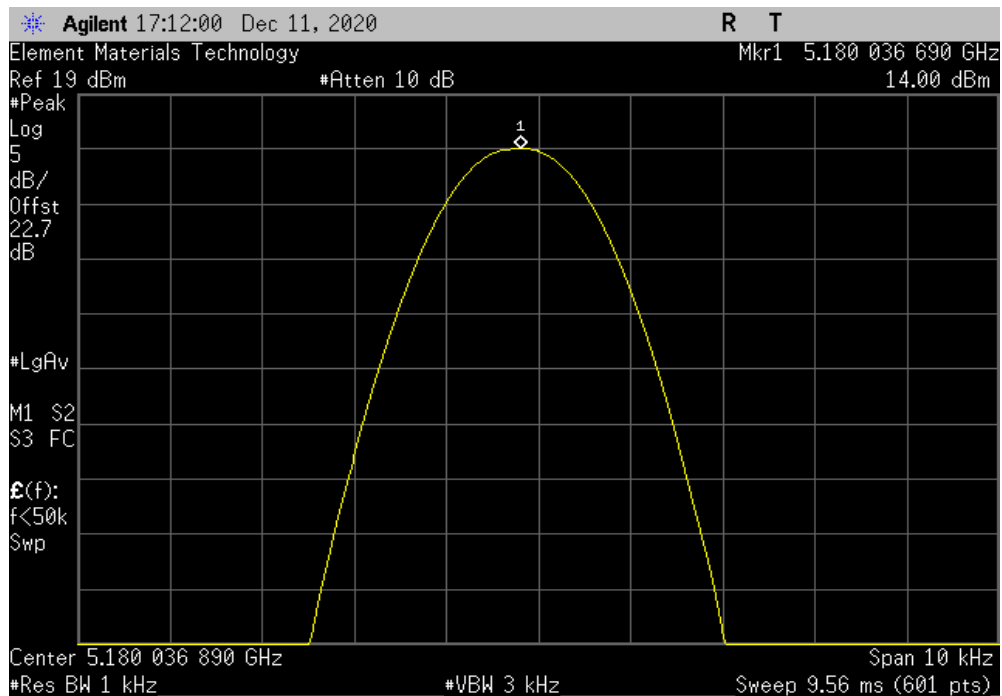


TbTx 2019.08.30.0 XMM 2020.03.25.0

Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: -20°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5180.045093	5179.995028	10	100	Pass	



Continuous Wave (CW), 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: -30°						
	Measured Value (MHz)	Measured Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	5180.03669	5179.995028	8	100	Pass	



DUTY CYCLE



XMIT 2020.03.25.0

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
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	28-Oct-20	28-Oct-21
Block - DC	Fairview Microwave	SD3379	AMW	13-Mar-20	13-Mar-21
Attenuator	S.M. Electronics	SA26B-20	AUY	13-Mar-20	13-Mar-21
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	13-Mar-20	13-Mar-21
Generator - Signal	Agilent	N5183A	TID	26-Apr-19	26-Apr-21

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

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, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE



TWTx 2019.08.30.0 XMR 2020.03.25.0

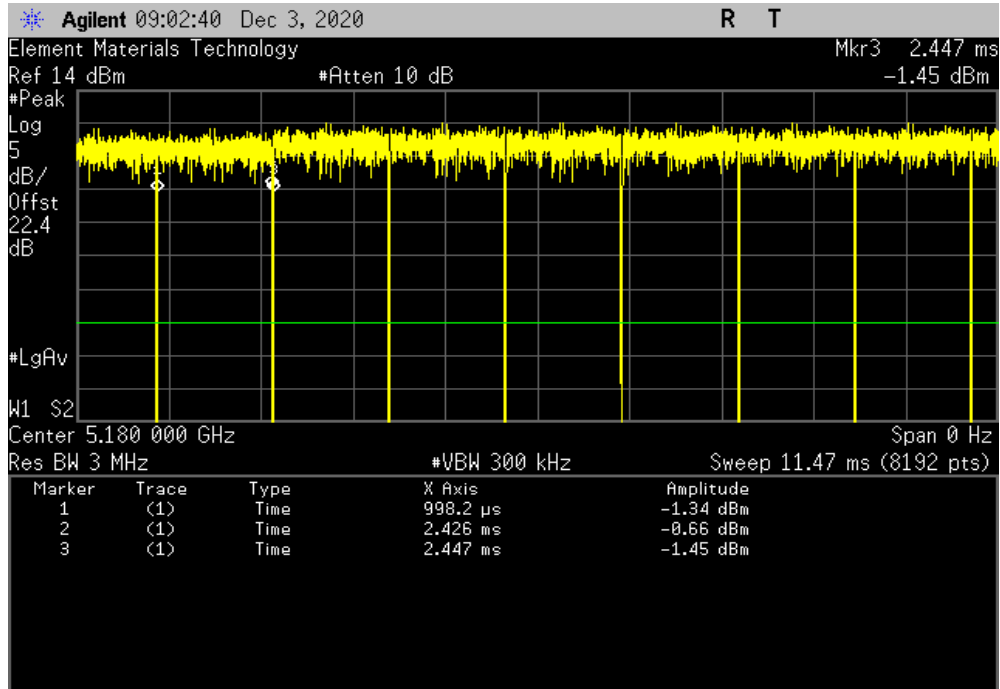
EUT: A-dec Gateway				Work Order: A-DE0149			
Serial Number: 5210041984				Date: 3-Dec-20			
Customer: A-dec, Inc.				Temperature: 23 °C			
Attendees: Spencer Warneke				Humidity: 30.4% RH			
Project: None				Barometric Pres.: 1030 mbar			
Tested by: Jeff Alcoke		Power: 110VAC/60Hz		Job Site: EV06			
TEST SPECIFICATIONS				Test Method			
FCC 15.407:2020		ANSI C63.10:2013					
COMMENTS							
Reference level offset includes: DC block, 20 dB attenuator and measurement cable.							
DEVIATIONS FROM TEST STANDARD							
None							
Configuration #	1	Signature 					
		Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
20 MHz							
802.11(a) 6 Mbps							
Ch 36, Low Channel 5180 MHz		1.428 ms	1.449 ms	1	98.6	N/A	N/A
Ch 36, Low Channel 5180 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 48, High Channel 5240 MHz		1.428 ms	1.449 ms	1	98.6	N/A	N/A
Ch 48, High Channel 5240 MHz		N/A	N/A	4	N/A	N/A	N/A
802.11(a) 36 Mbps							
Ch 36, Low Channel 5180 MHz		256.3 us	277.1 us	1	92.5	N/A	N/A
Ch 36, Low Channel 5180 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 48, High Channel 5240 MHz		256.3 us	277.1 us	1	92.5	N/A	N/A
Ch 48, High Channel 5240 MHz		N/A	N/A	4	N/A	N/A	N/A
802.11(a) 54 Mbps							
Ch 36, Low Channel 5180 MHz		180.4 us	201.3 us	1	89.6	N/A	N/A
Ch 36, Low Channel 5180 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 48, High Channel 5240 MHz		180.3 us	201.2 us	1	89.6	N/A	N/A
Ch 48, High Channel 5240 MHz		N/A	N/A	4	N/A	N/A	N/A
802.11(n) MCS0							
Ch 36, Low Channel 5180 MHz		1.345 ms	1.366 ms	1	98.5	N/A	N/A
Ch 36, Low Channel 5180 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 48, High Channel 5240 MHz		1.344 ms	1.365 ms	1	98.5	N/A	N/A
Ch 48, High Channel 5240 MHz		N/A	N/A	4	N/A	N/A	N/A
802.11(n) MCS7							
Ch 36, Low Channel 5180 MHz		172.2 us	193.3 us	1	89.1	N/A	N/A
Ch 36, Low Channel 5180 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 48, High Channel 5240 MHz		172.2 us	193.4 us	1	89	N/A	N/A
Ch 48, High Channel 5240 MHz		N/A	N/A	4	N/A	N/A	N/A
802.11(ac) MCS8 (256-QAM)							
Ch 36, Low Channel 5180 MHz		152.3 us	173.1 us	1	88	N/A	N/A
Ch 36, Low Channel 5180 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 48, High Channel 5240 MHz		152.4 us	173.1 us	1	88	N/A	N/A
Ch 48, High Channel 5240 MHz		N/A	N/A	4	N/A	N/A	N/A
40 MHz							
802.11(n) MCS0							
Ch 36/40, Low Channel 5190 MHz		669.7 us	688.6 us	1	97.3	N/A	N/A
Ch 36/40, Low Channel 5190 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 44/48, High Channel 5230 MHz		669.6 us	689.2 us	1	97.2	N/A	N/A
Ch 44/48, High Channel 5230 MHz		N/A	N/A	4	N/A	N/A	N/A
802.11(n) MCS7							
Ch 36/40, Low Channel 5190 MHz		105.6 us	125.1 us	1	84.4	N/A	N/A
Ch 36/40, Low Channel 5190 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 44/48, High Channel 5230 MHz		105.7 us	125.1 us	1	84.5	N/A	N/A
Ch 44/48, High Channel 5230 MHz		N/A	N/A	4	N/A	N/A	N/A
802.11(ac) MCS9 (256-QAM)							
Ch 36/40, Low Channel 5190 MHz		89.7 us	109.3 us	1	82.1	N/A	N/A
Ch 36/40, Low Channel 5190 MHz		N/A	N/A	4	N/A	N/A	N/A
Ch 44/48, High Channel 5230 MHz		89.7 us	109.4 us	1	82	N/A	N/A
Ch 44/48, High Channel 5230 MHz		N/A	N/A	4	N/A	N/A	N/A
80 MHz							
802.11(ac) MCS0							
Ch 36-48, Low Channel 5210 MHz		334.1 us	353.2 us	1	94.6	N/A	N/A
Ch 36-48, Low Channel 5210 MHz		N/A	N/A	4	N/A	N/A	N/A
802.11(ac) MCS9 (256-QAM)							
Ch 36-48, Low Channel 5210 MHz		65.9 us	85.4 us	1	77.2	N/A	N/A
Ch 36-48, Low Channel 5210 MHz		N/A	N/A	4	N/A	N/A	N/A

DUTY CYCLE

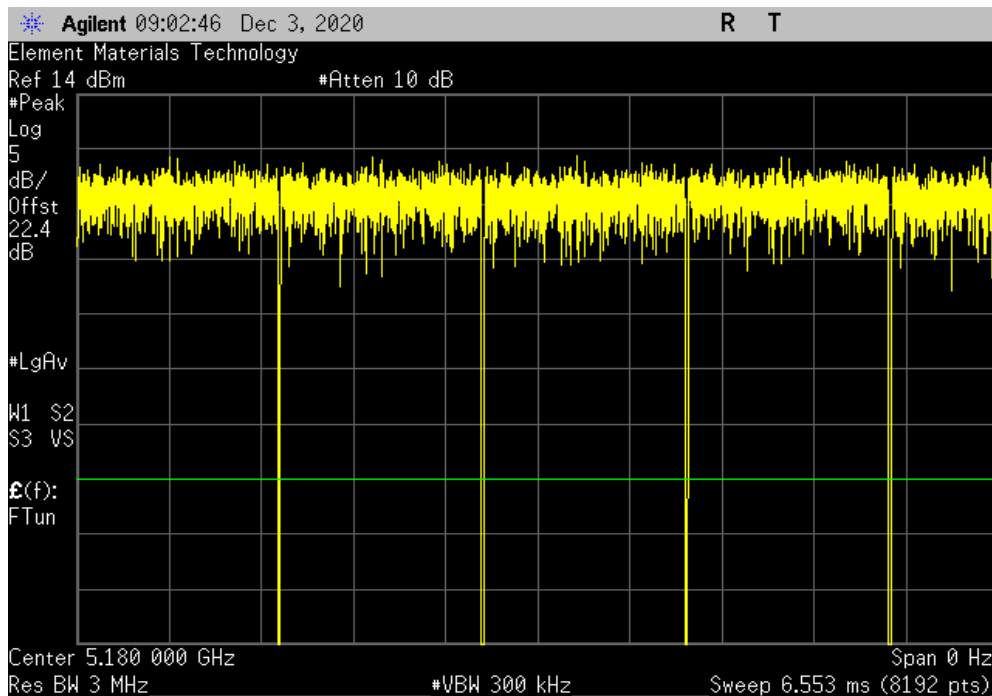


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	1.428 ms	1.449 ms	1	98.6	N/A	N/A



20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	4	N/A	N/A	N/A

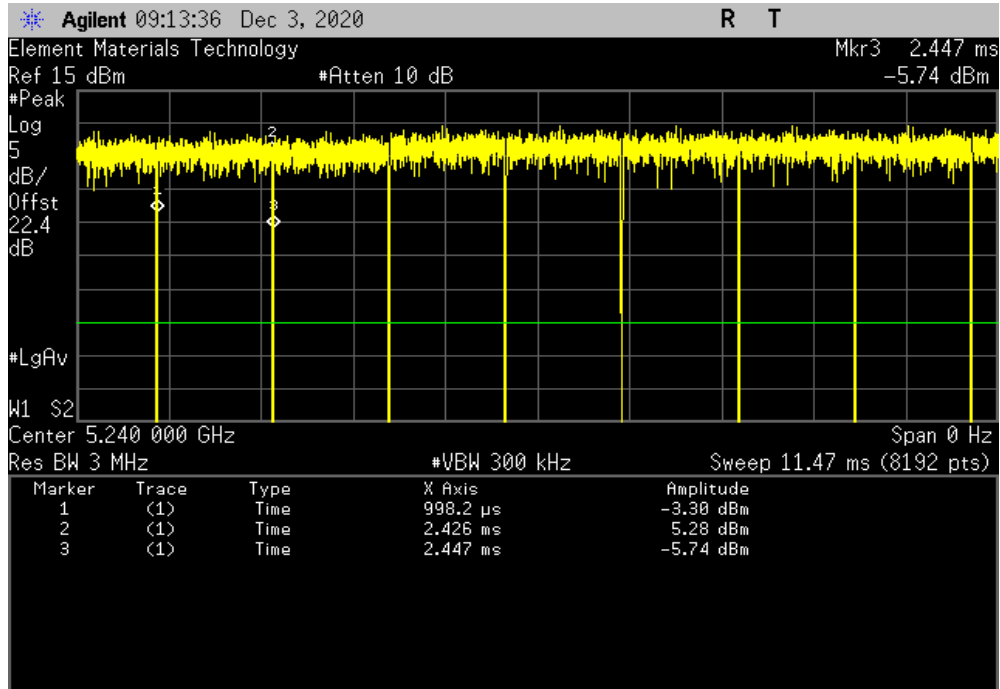


DUTY CYCLE

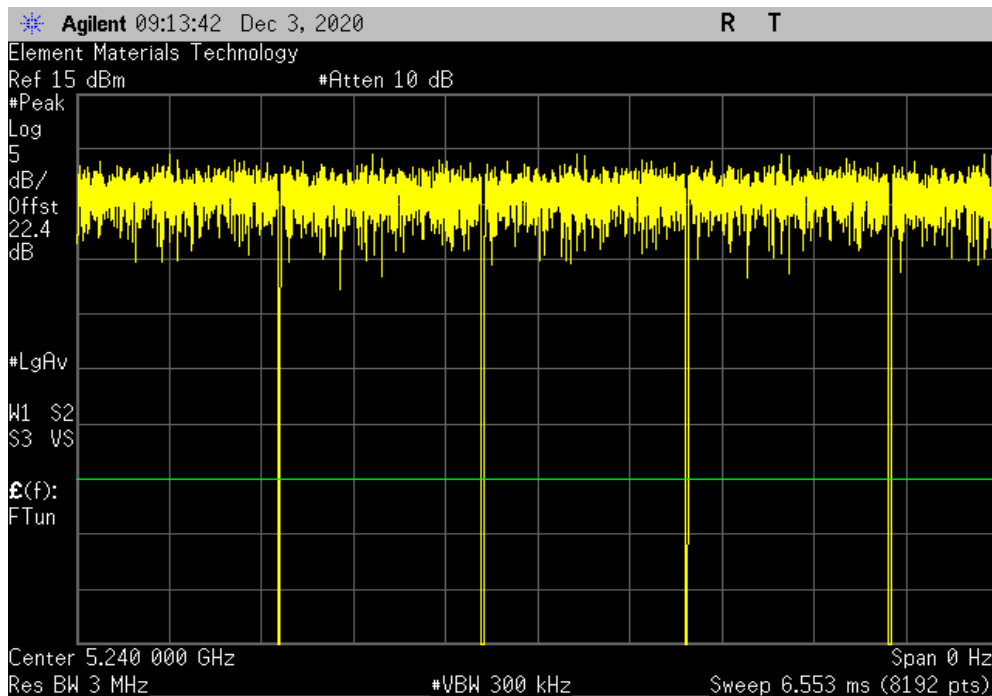


TbTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	1.428 ms	1.449 ms	1	98.6	N/A	N/A



20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	4	N/A	N/A	N/A

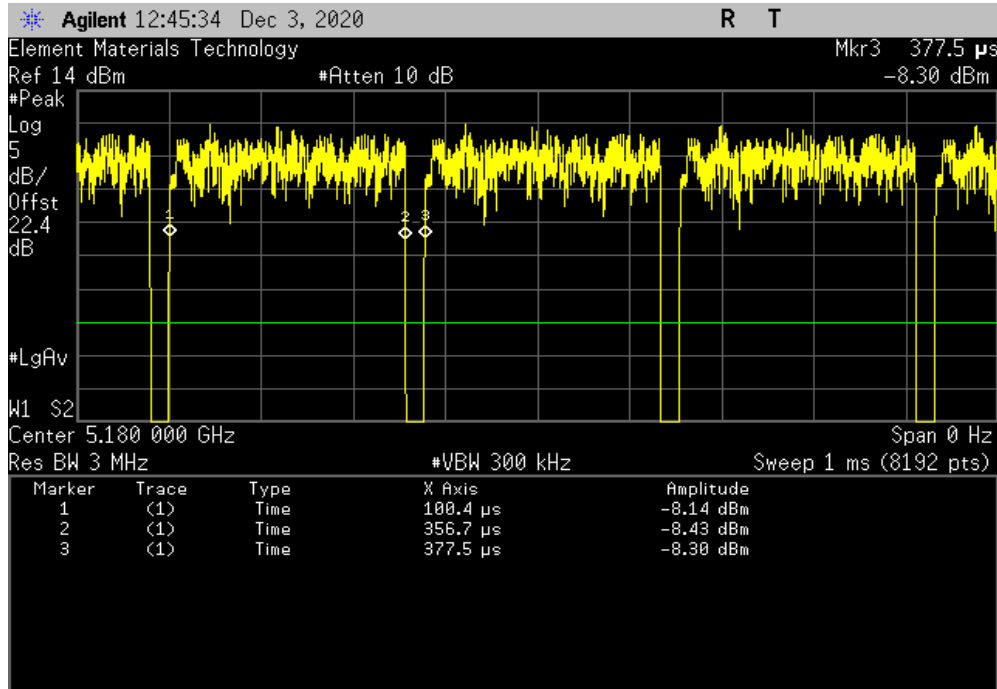


DUTY CYCLE

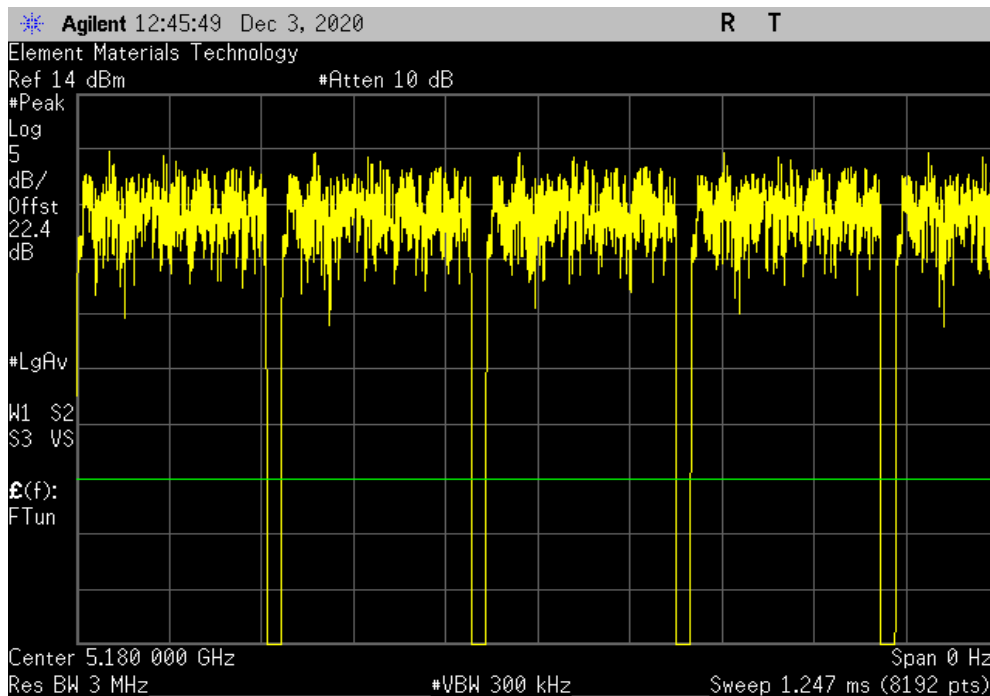


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	256.3 us	277.1 us	1	92.5	N/A	N/A



20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	4	N/A	N/A	N/A

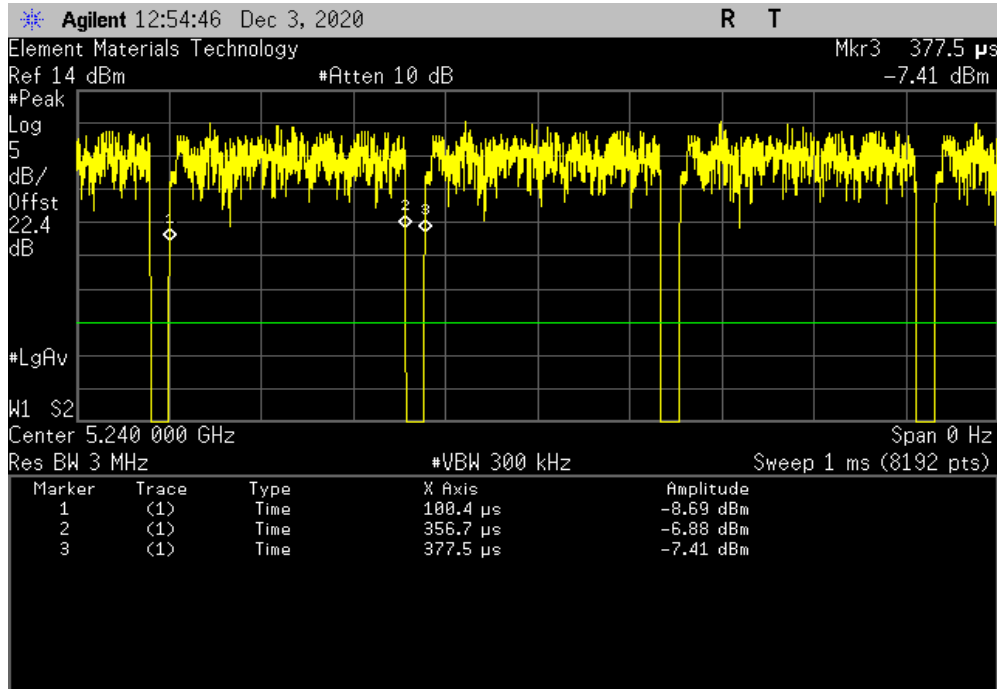


DUTY CYCLE

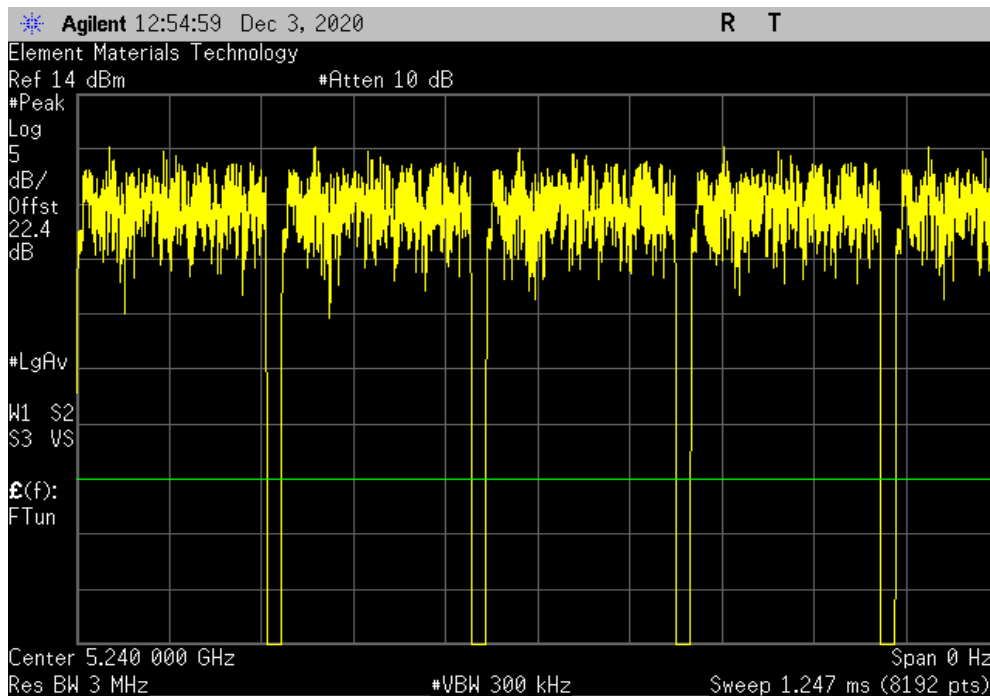


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
256.3 us	277.1 us	1	92.5	N/A (N/A)	N/A	



20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

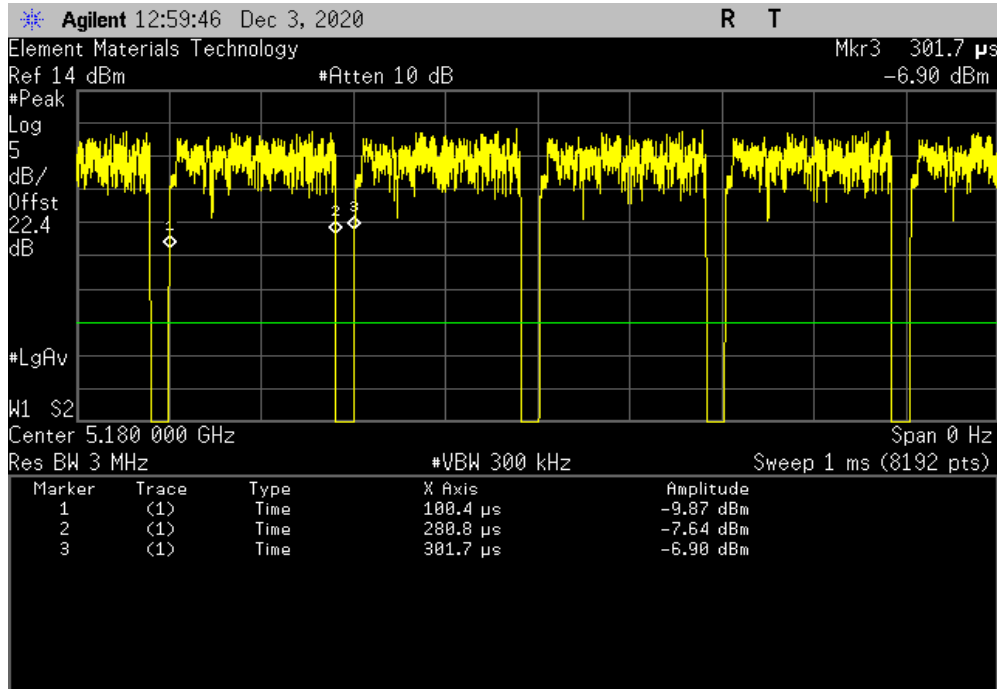


DUTY CYCLE



TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	180.4 us	201.3 us	1	89.6	N/A	N/A



20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	4	N/A	N/A	N/A

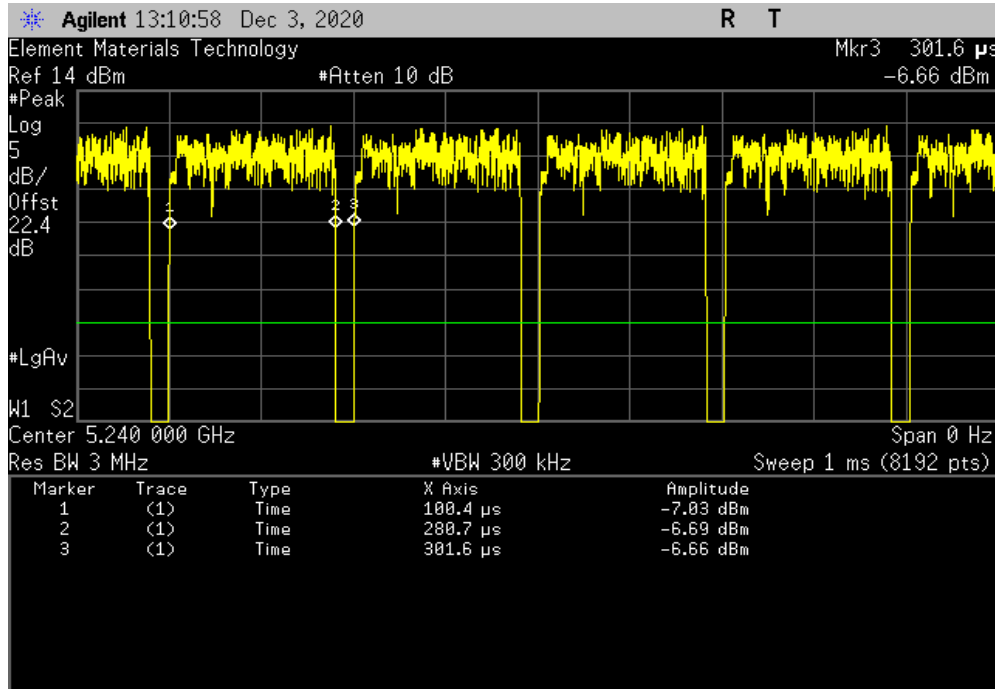


DUTY CYCLE



TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	180.3 us	201.2 us	1	89.6	N/A	N/A



20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	4	N/A	N/A	N/A

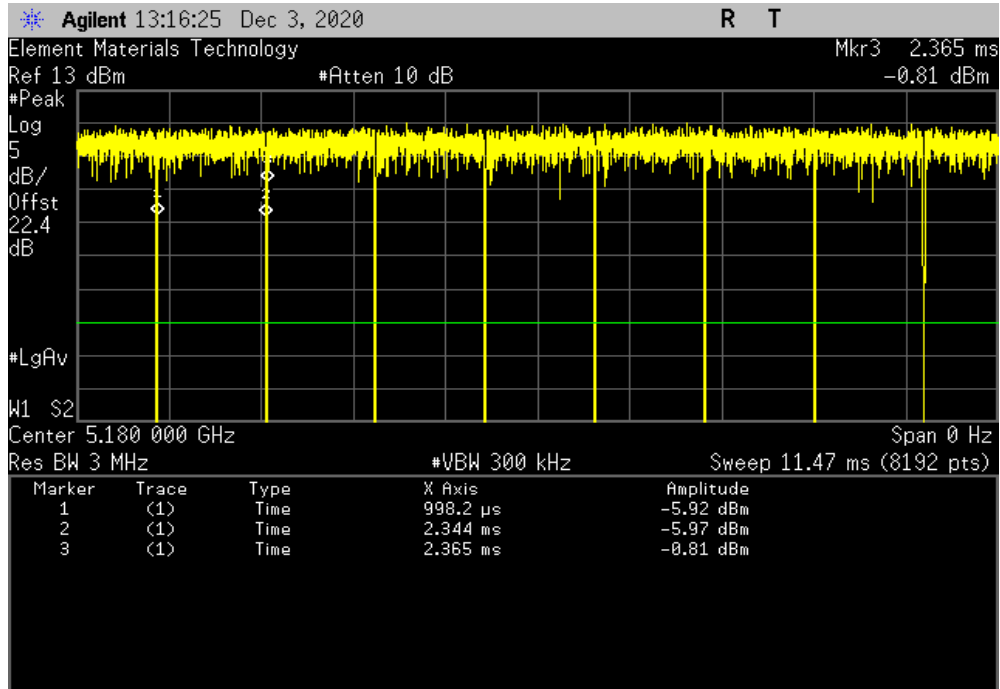


DUTY CYCLE

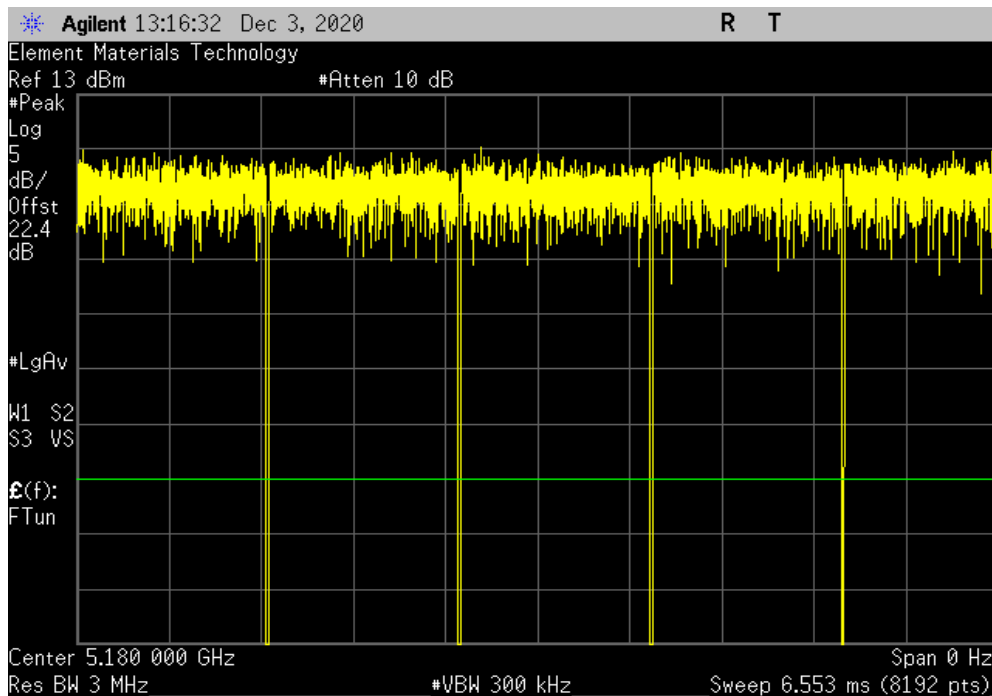


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
1.345 ms	1.366 ms	1	98.5	N/A (N/A)	N/A	



20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

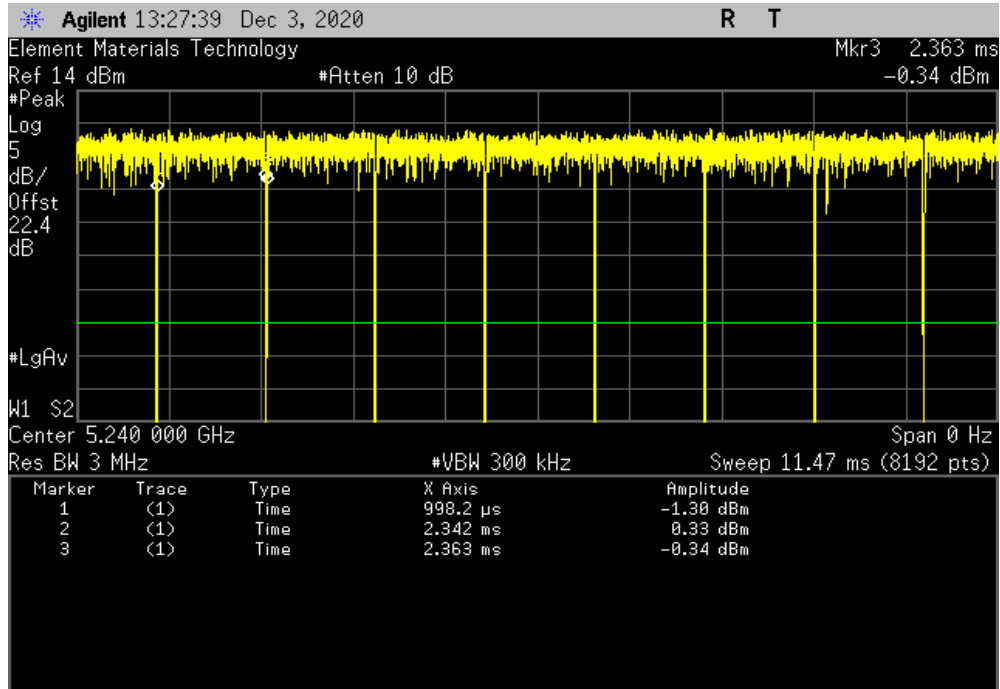


DUTY CYCLE

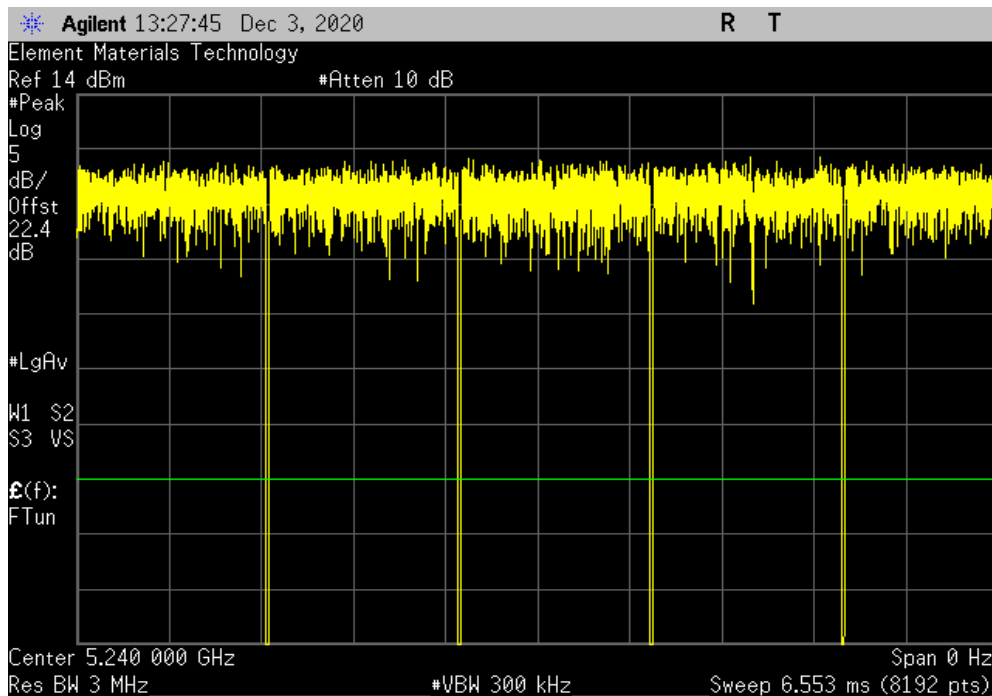


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	1.344 ms	1.365 ms	1	98.5	N/A	N/A



20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	4	N/A	N/A	N/A

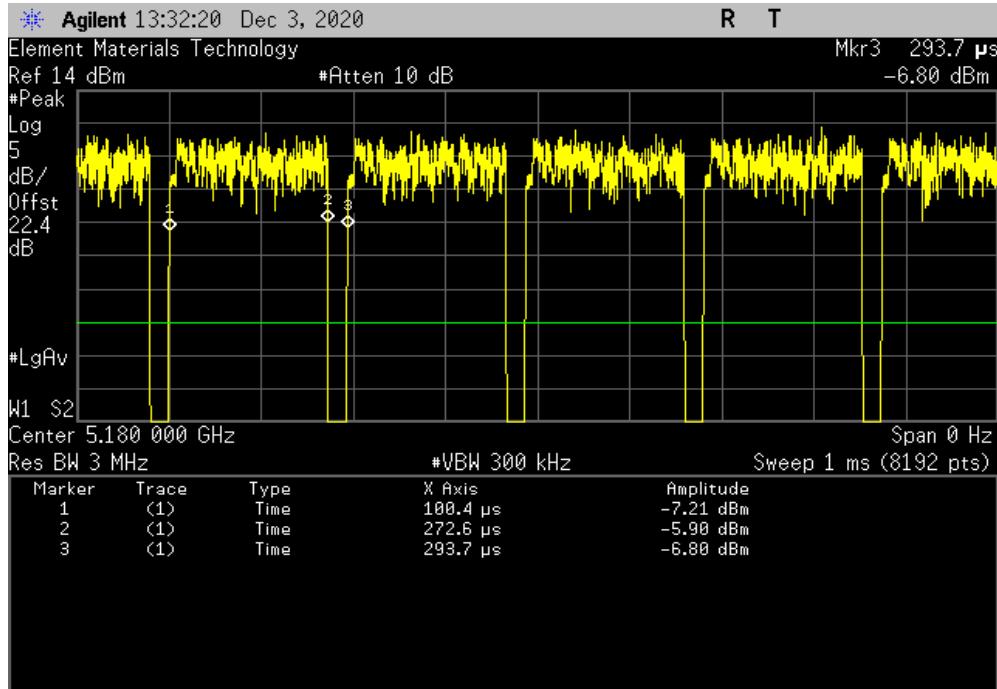


DUTY CYCLE

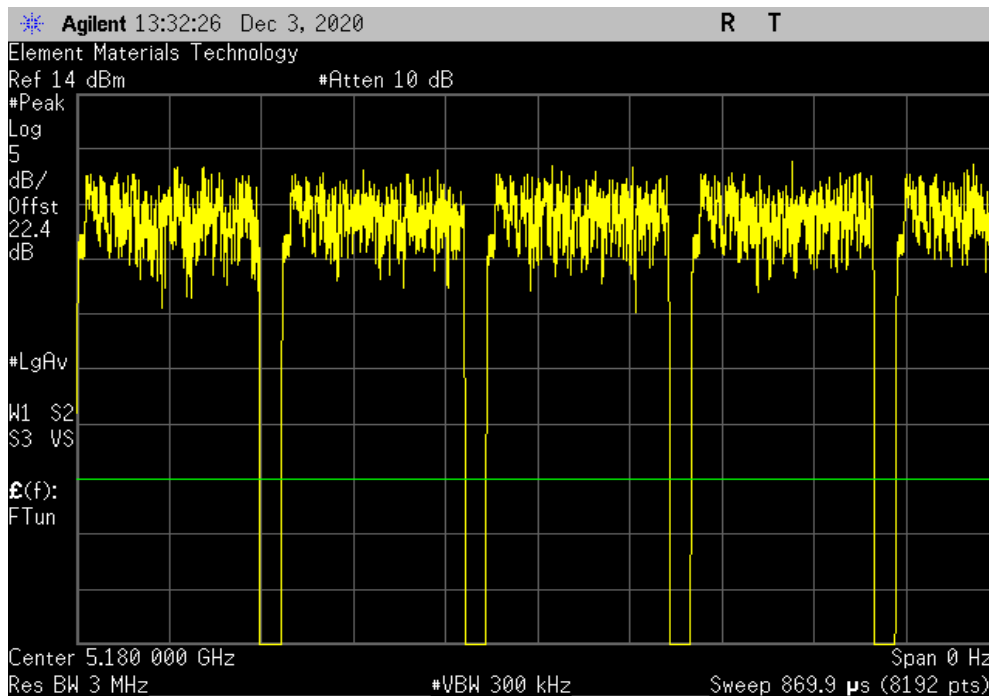


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
172.2 us	193.3 us	1	89.1	N/A (N/A)	N/A	



20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

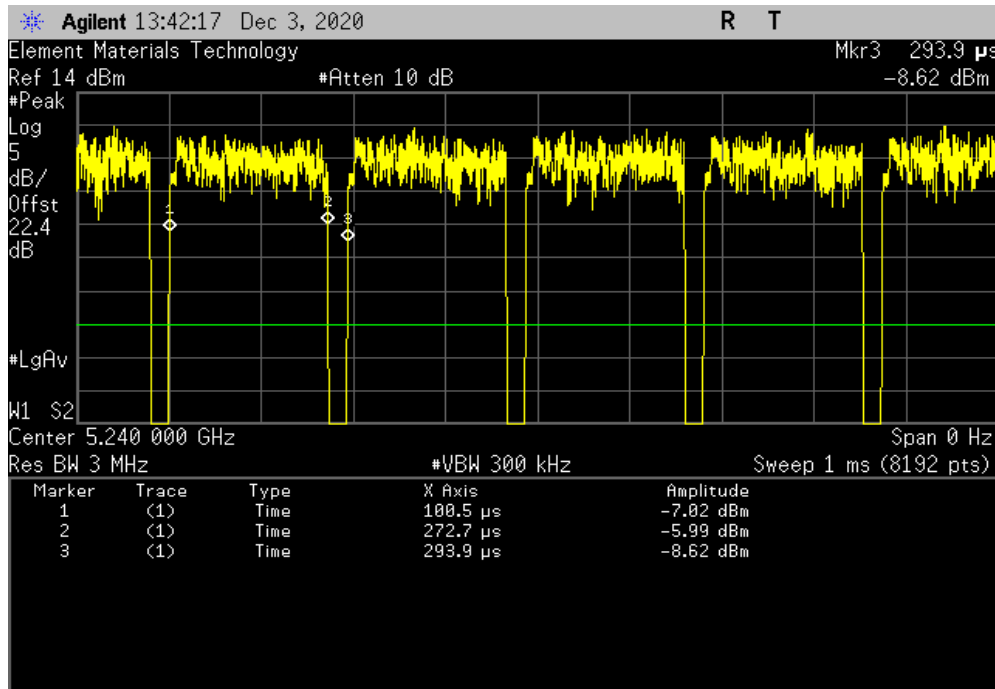


DUTY CYCLE

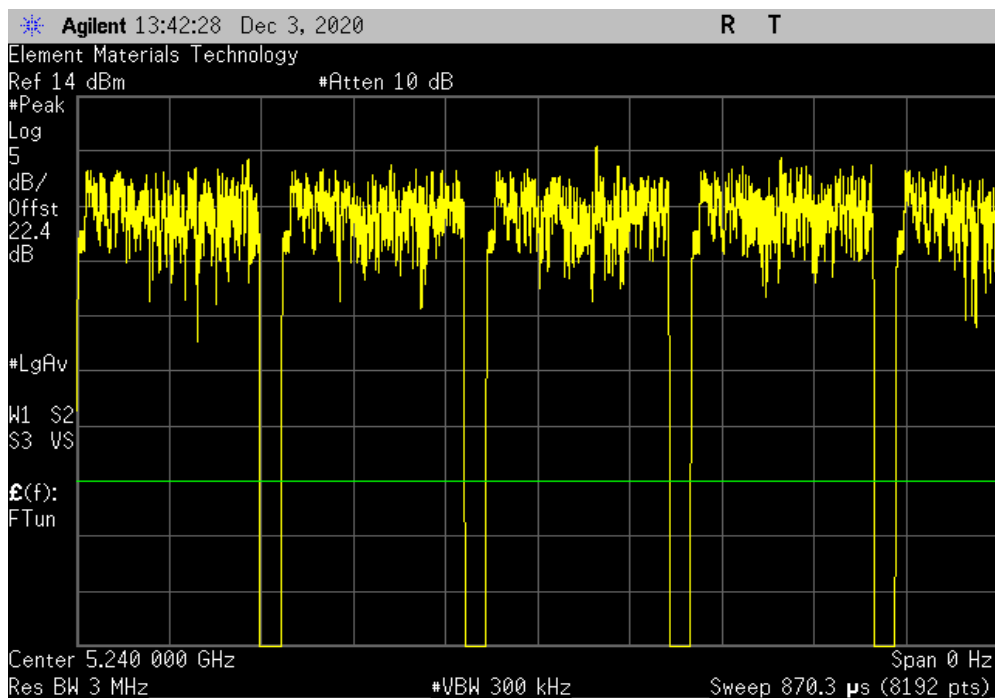


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
172.2 us	193.4 us	1	89	N/A (N/A)	N/A	



20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

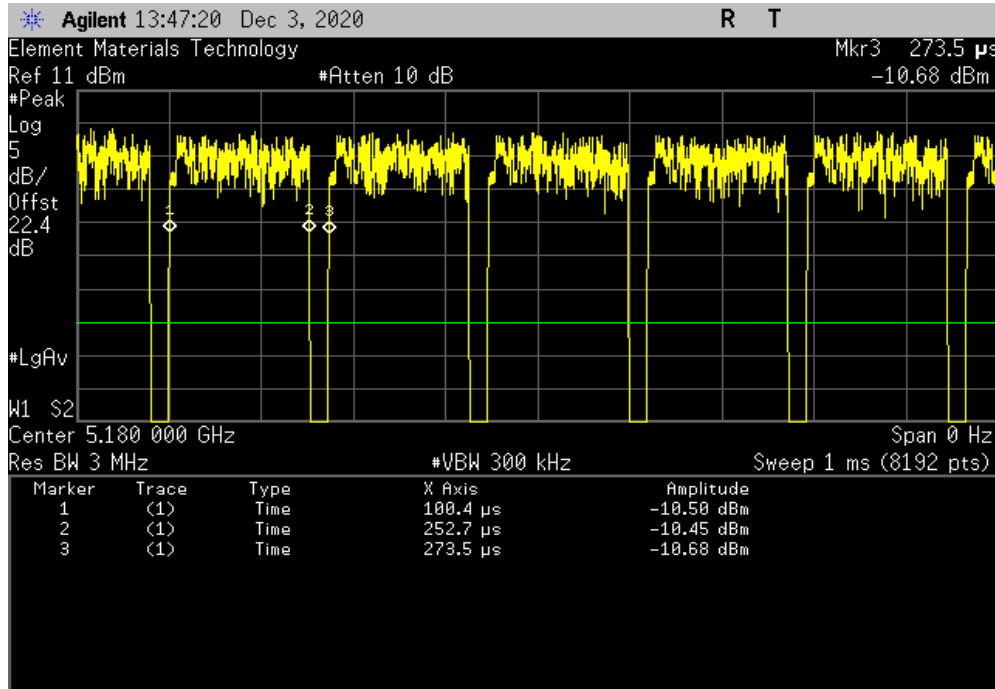


DUTY CYCLE

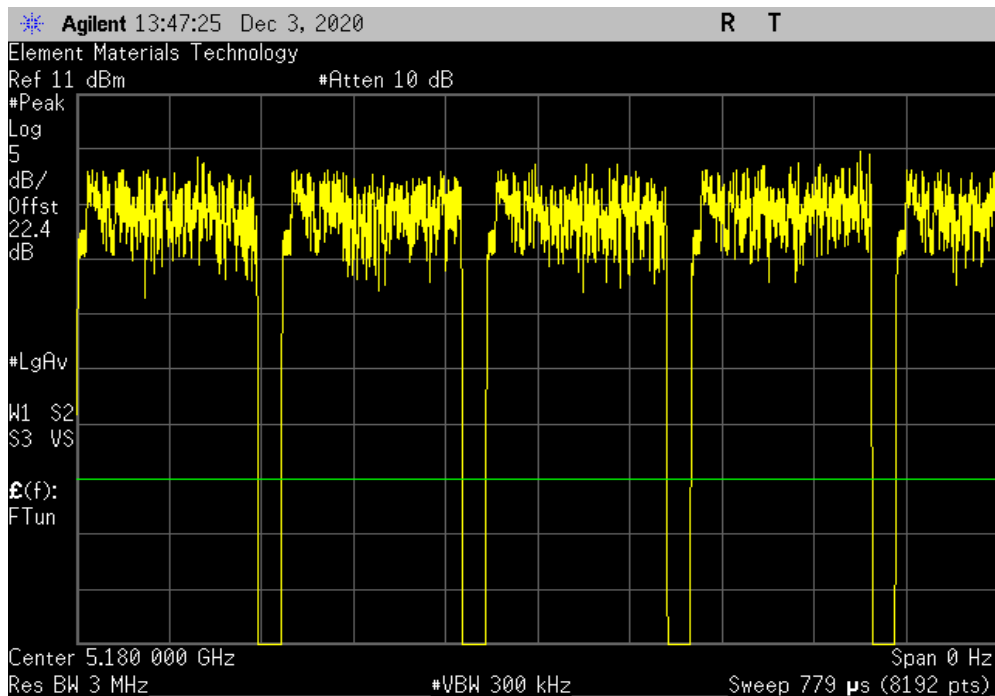


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 36, Low Channel 5180 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
152.3 us	173.1 us	1	88	N/A (N/A)	N/A	



20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 36, Low Channel 5180 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

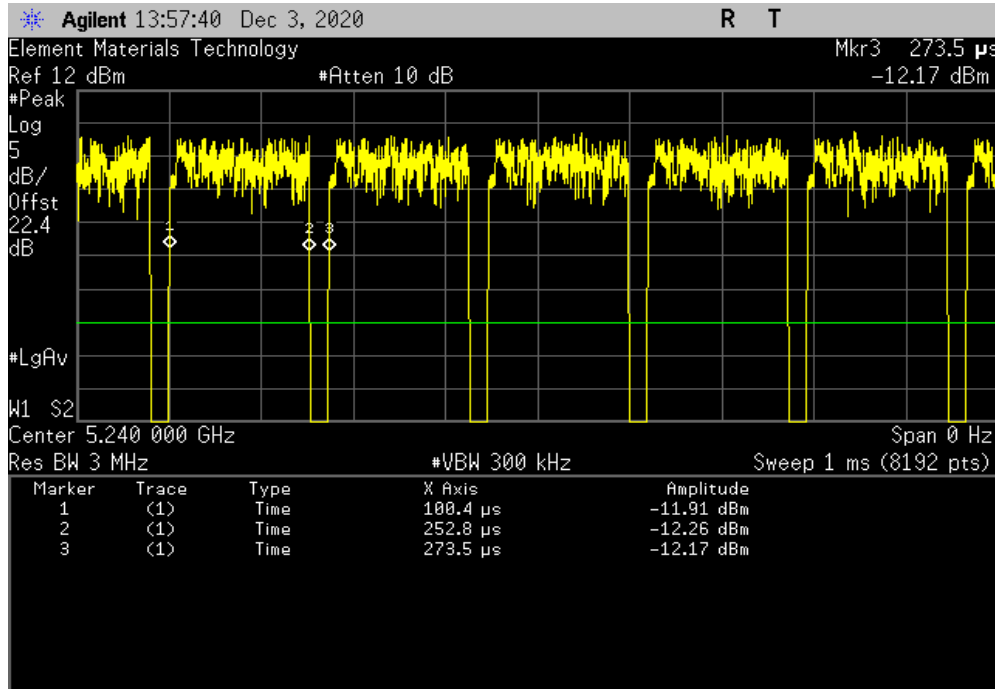


DUTY CYCLE

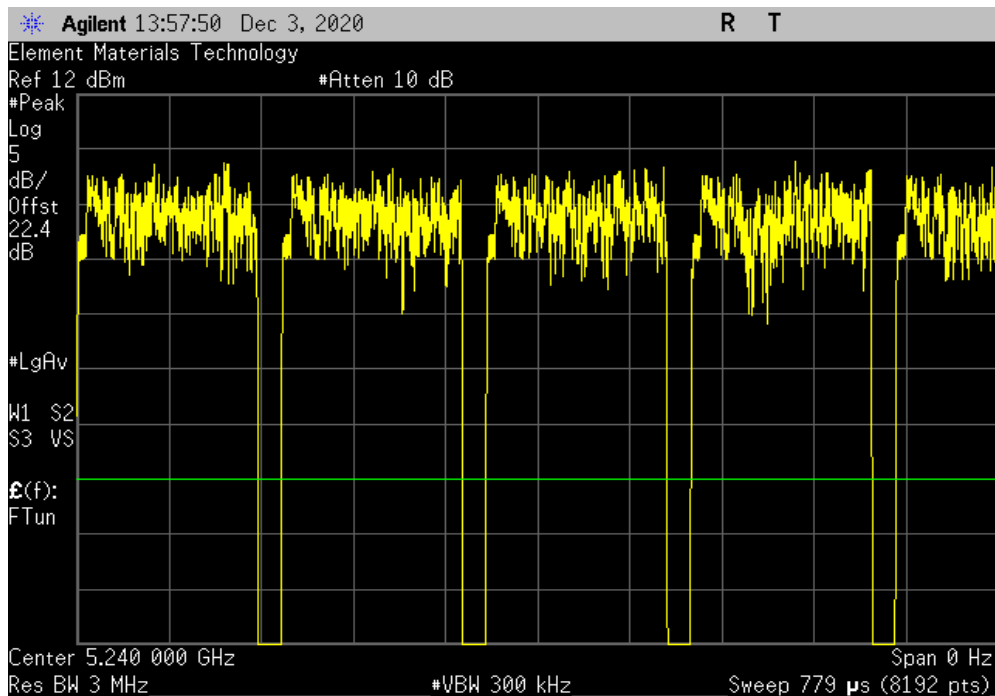


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 48, High Channel 5240 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
152.4 us	173.1 us	1	88	N/A (N/A)	N/A	



20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 48, High Channel 5240 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

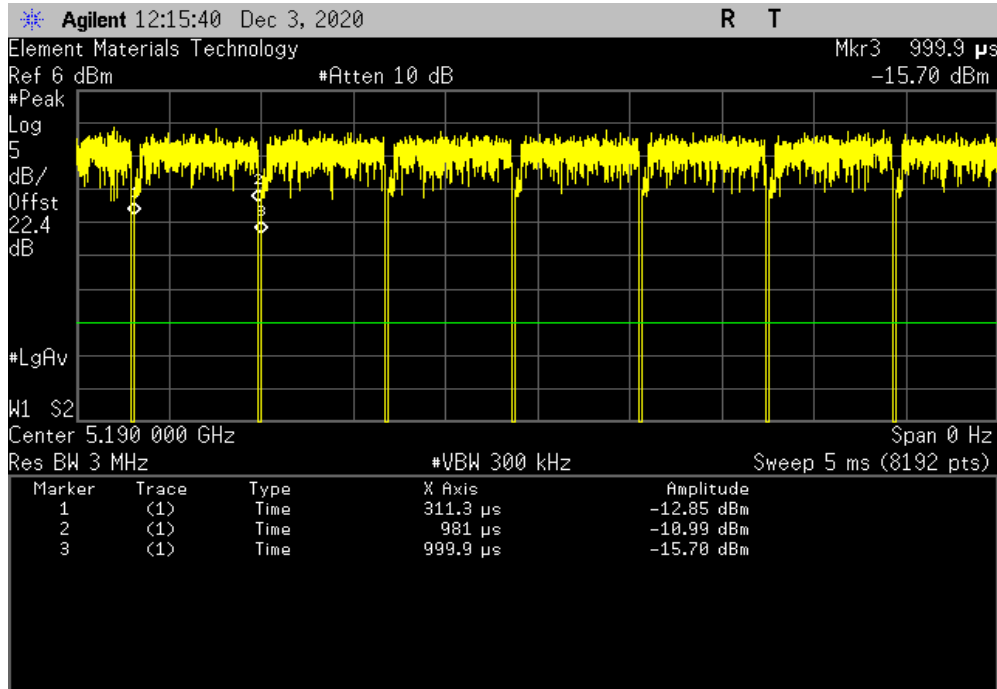


DUTY CYCLE

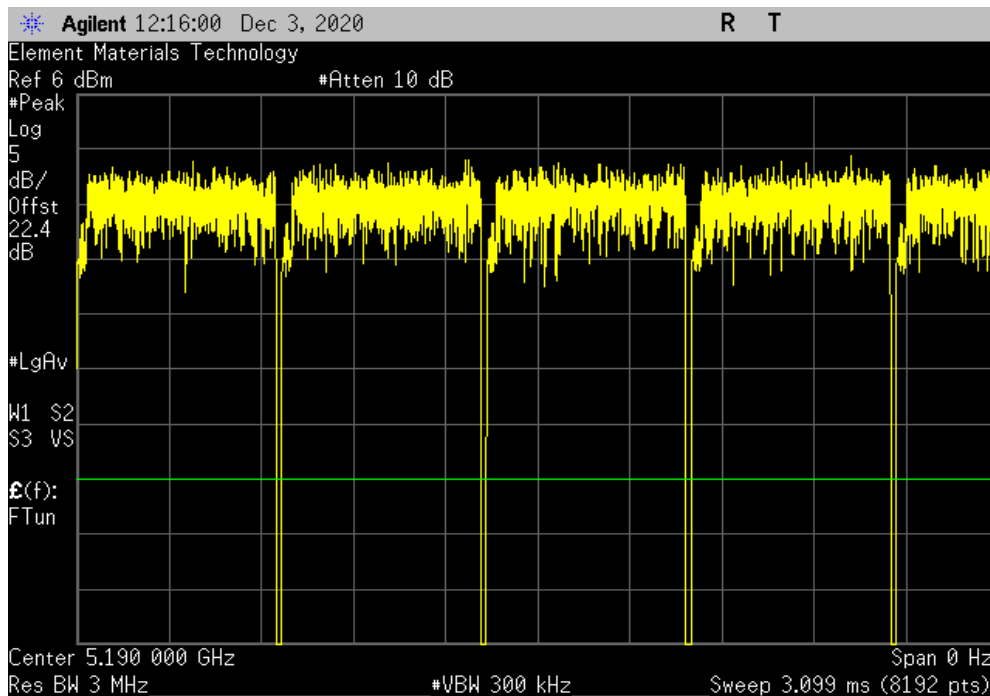


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
669.7 us	688.6 us	1	97.3	N/A (N/A)	N/A	



40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

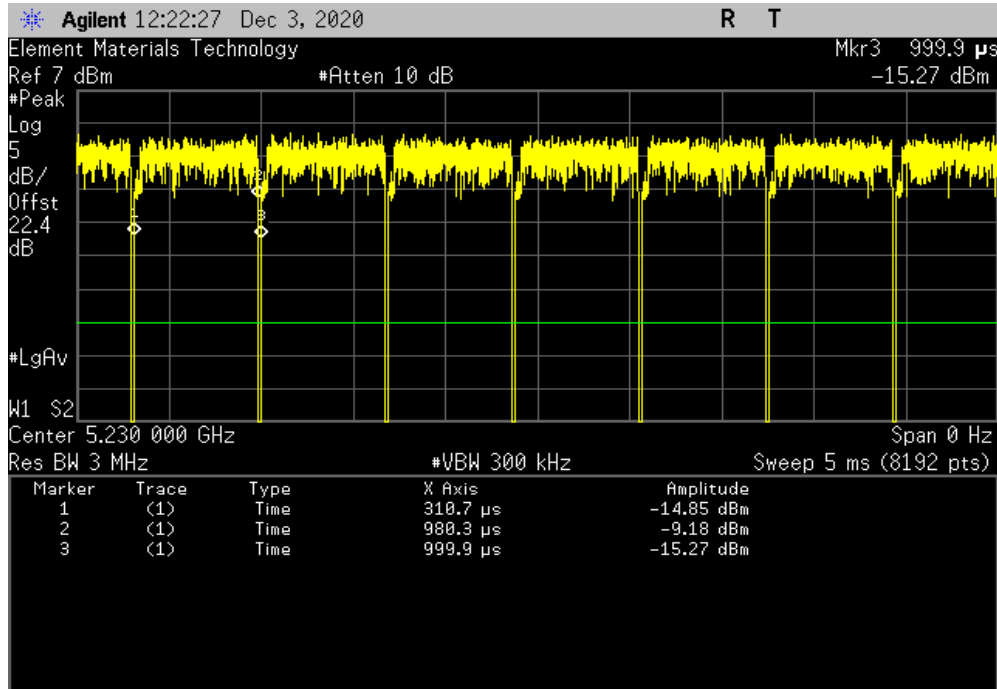


DUTY CYCLE

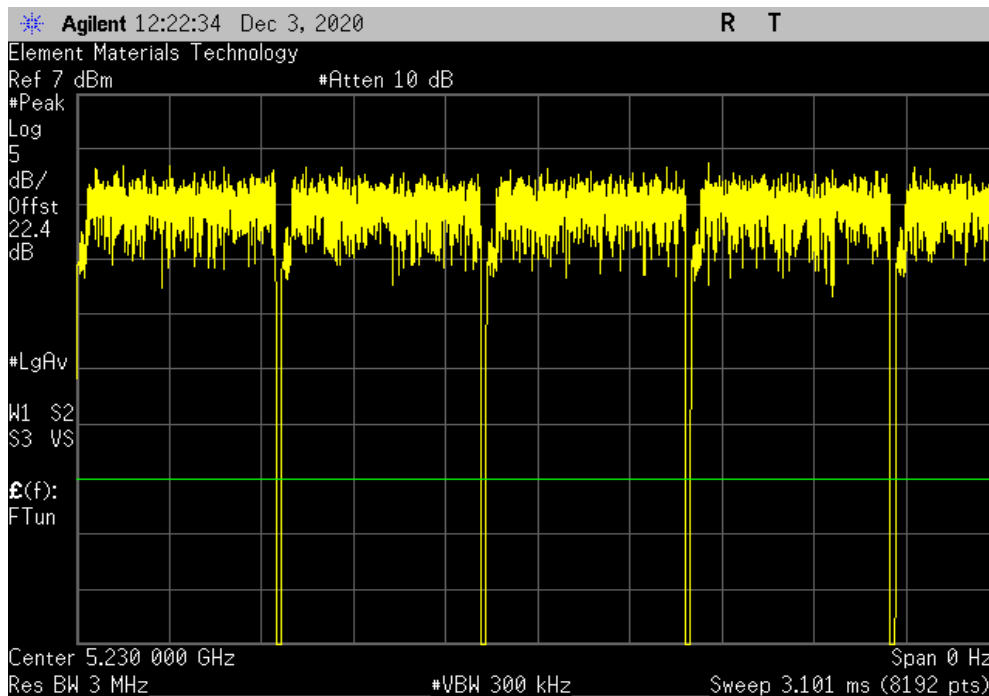


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
669.6 us	689.2 us	1	97.2	N/A (N/A)	N/A	



40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

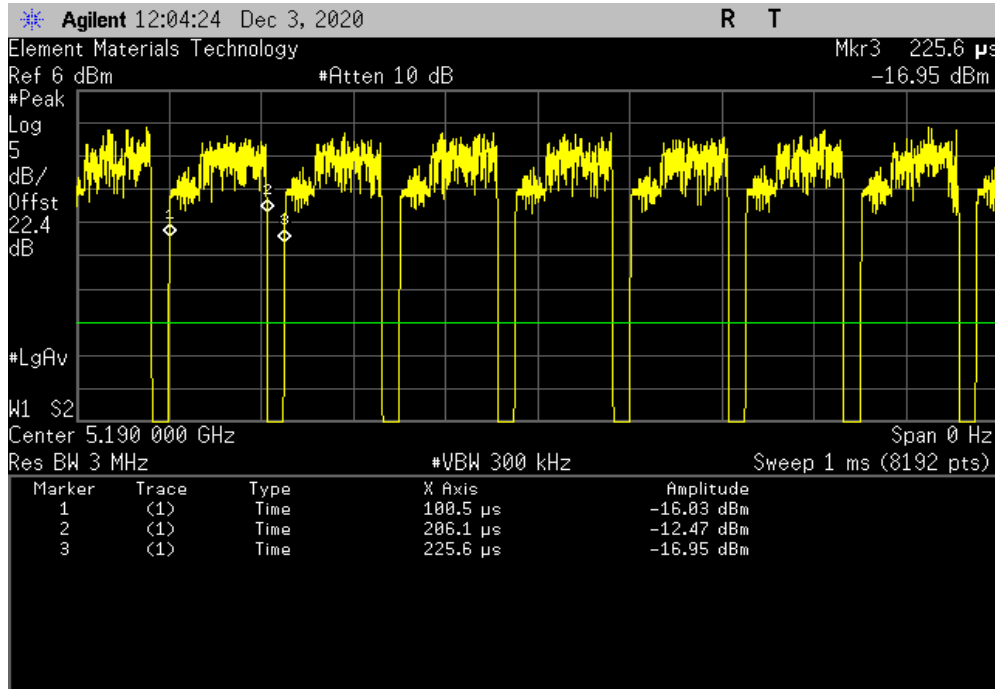


DUTY CYCLE

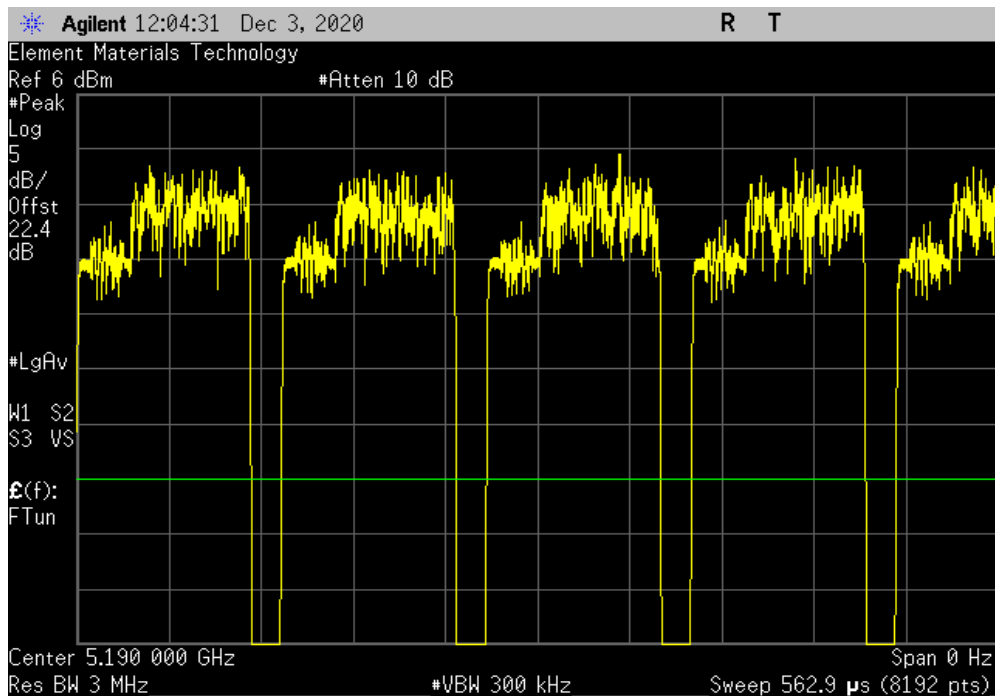


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
105.6 us	125.1 us	1	84.4	N/A (N/A)	N/A	



40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

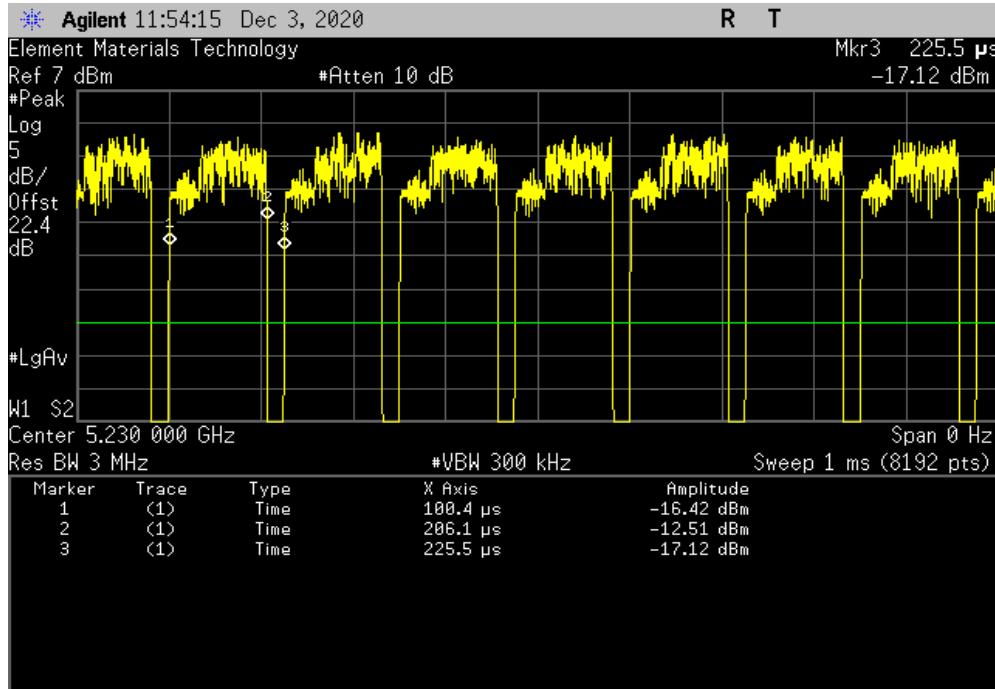


DUTY CYCLE

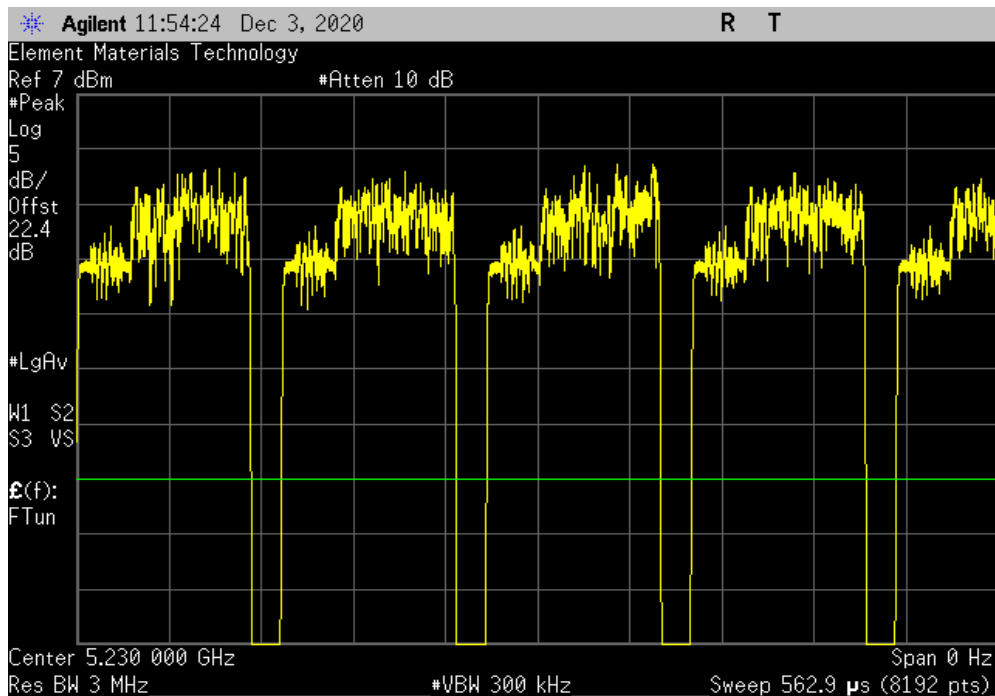


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	105.7 us	125.1 us	1	84.5	N/A	N/A



40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	4	N/A	N/A	N/A

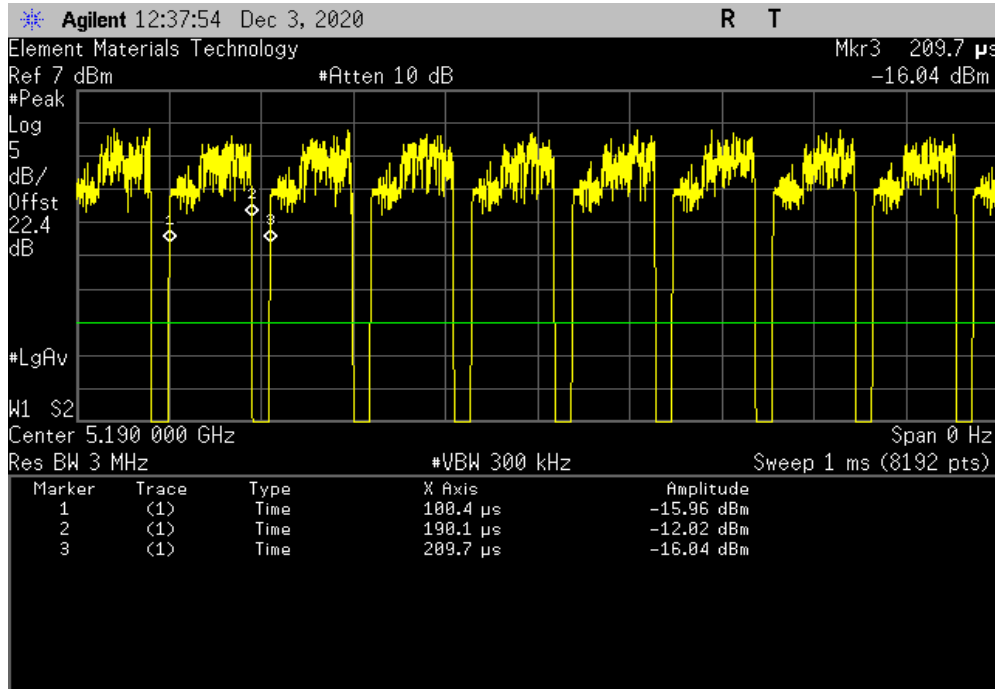


DUTY CYCLE

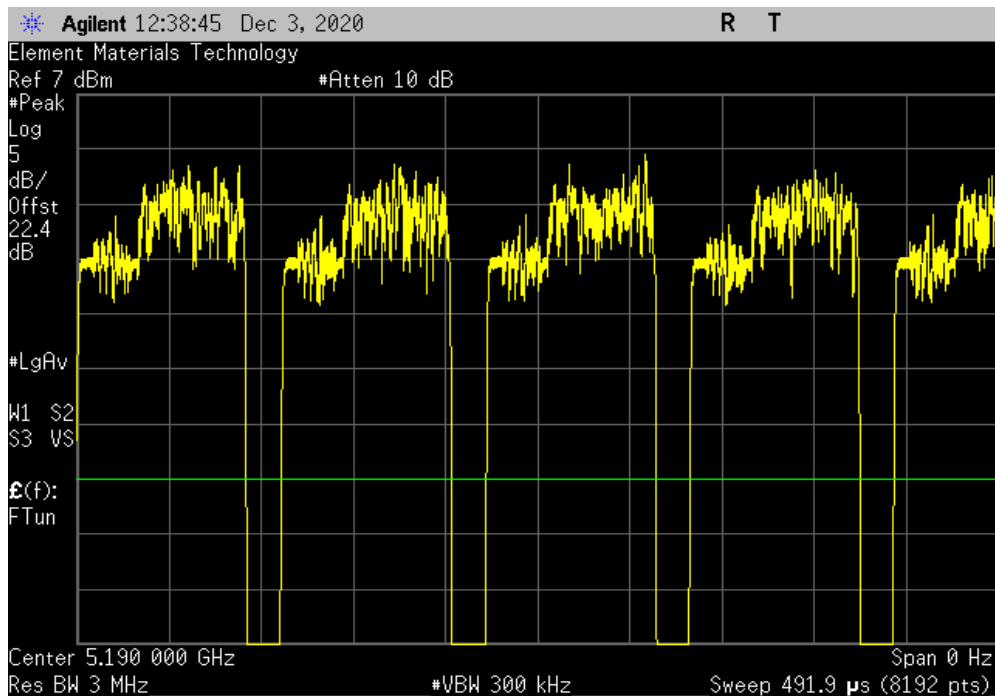


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36/40, Low Channel 5190 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
89.7 us	109.3 us	1	82.1	N/A (N/A)	N/A	



40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36/40, Low Channel 5190 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

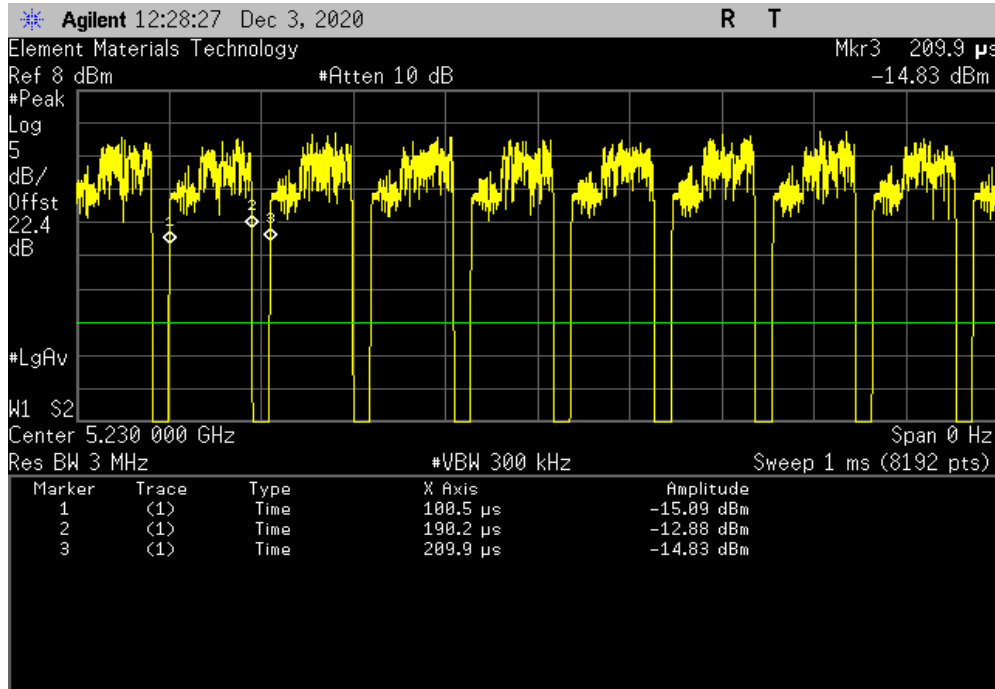


DUTY CYCLE



TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 44/48, High Channel 5230 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results
	89.7 us	109.4 us	1	82	N/A (N/A)	N/A



40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 44/48, High Channel 5230 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results
	N/A	N/A	4	N/A	N/A (N/A)	N/A

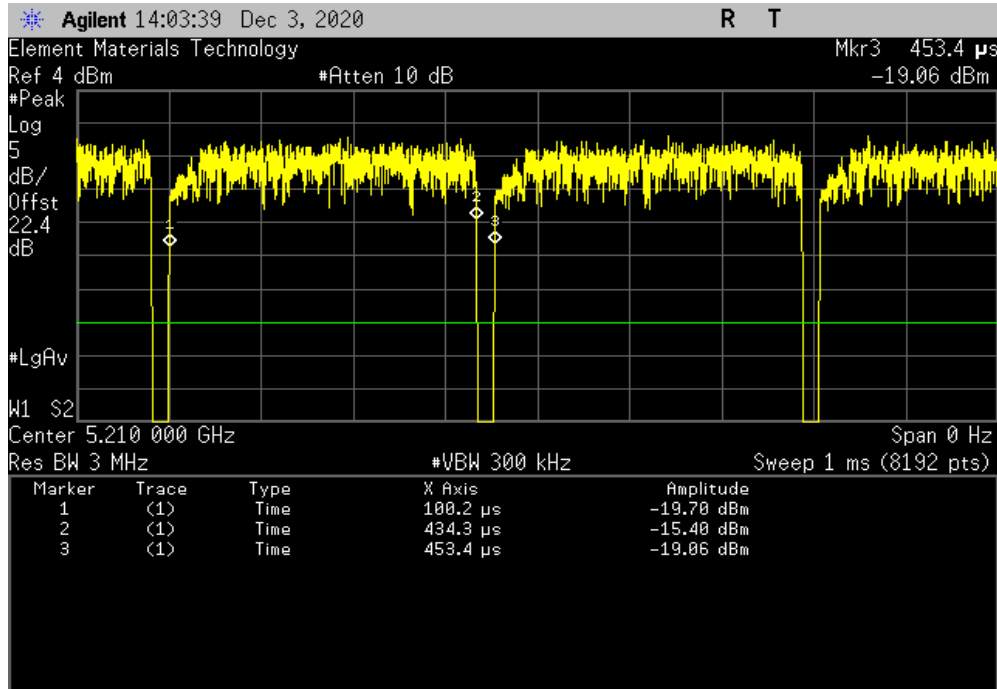


DUTY CYCLE

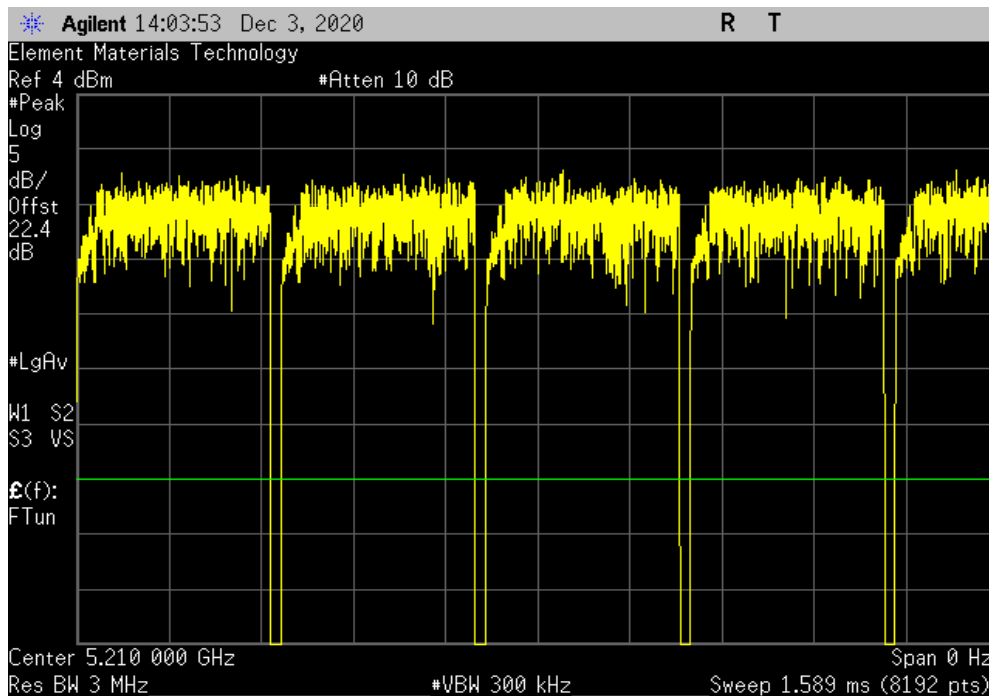


TMTx 2019.08.30.0 XMR 2020.03.25.0

80 MHz, 802.11(ac) MCS0, Ch 36-48, Low Channel 5210 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
334.1 us	353.2 us	1	94.6	N/A (N/A)	N/A	



80 MHz, 802.11(ac) MCS0, Ch 36-48, Low Channel 5210 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results	
N/A	N/A	4	N/A	N/A (N/A)	N/A	

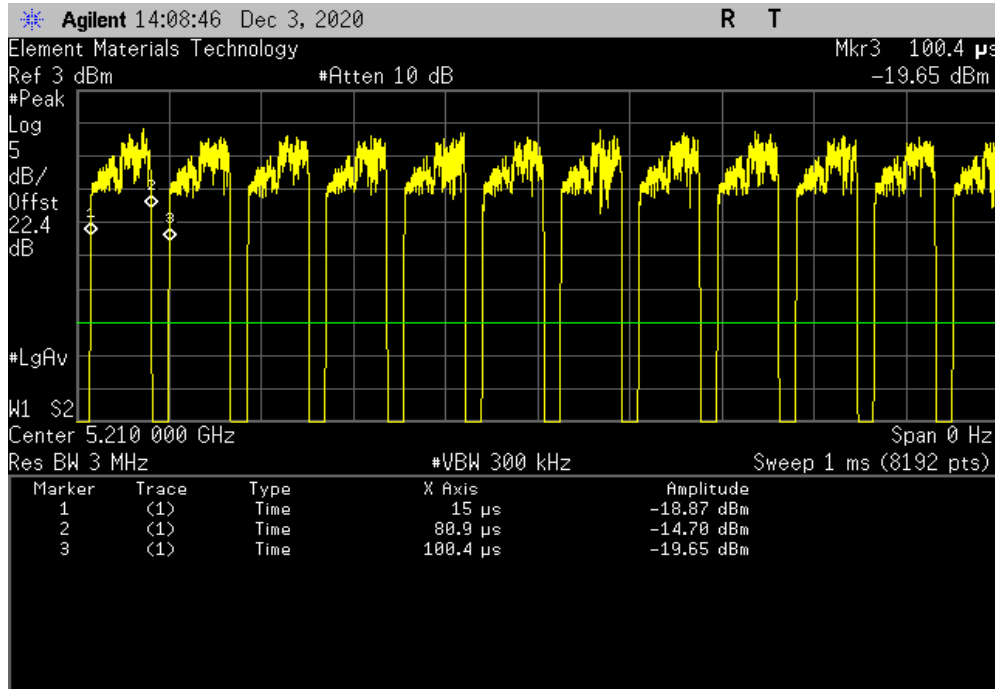


DUTY CYCLE

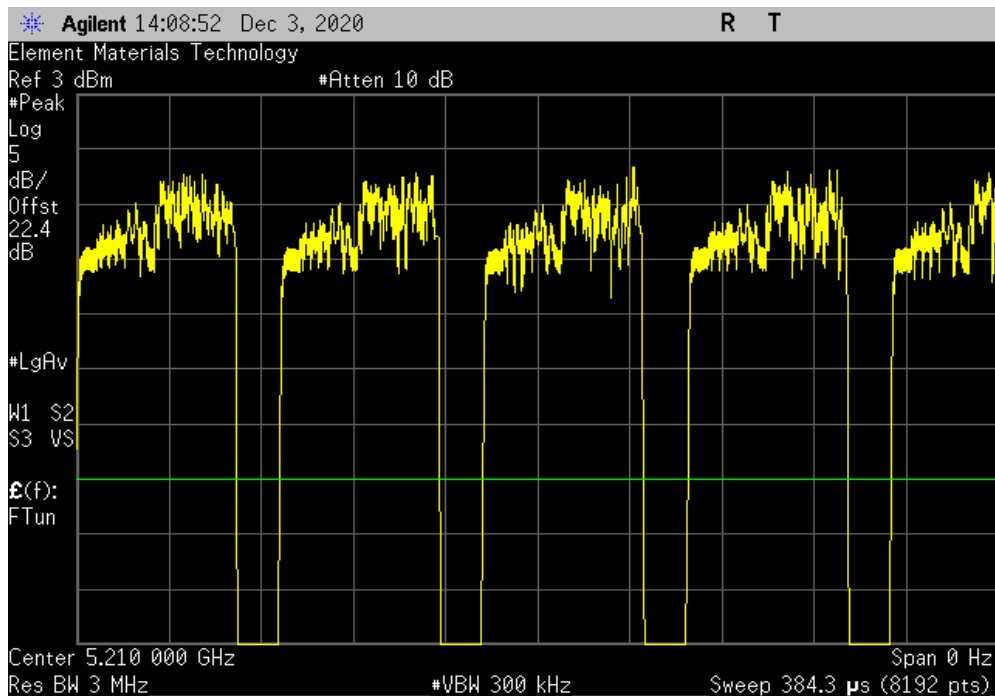


TMTx 2019.08.30.0 XMR 2020.03.25.0

80 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36-48, Low Channel 5210 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results
	65.9 us	85.4 us	1	77.2	N/A (N/A)	N/A



80 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36-48, Low Channel 5210 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Results
	N/A	N/A	4	N/A	N/A (N/A)	N/A



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 EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TID	26-Apr-19	26-Apr-21
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	13-Mar-20	13-Mar-21
Attenuator	S.M. Electronics	SA26B-20	AUY	13-Mar-20	13-Mar-21
Block - DC	Fairview Microwave	SD3379	AMW	13-Mar-20	13-Mar-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	28-Oct-20	28-Oct-21

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



TSTx 2019.08.30.0 XMR 2020.03.25.0

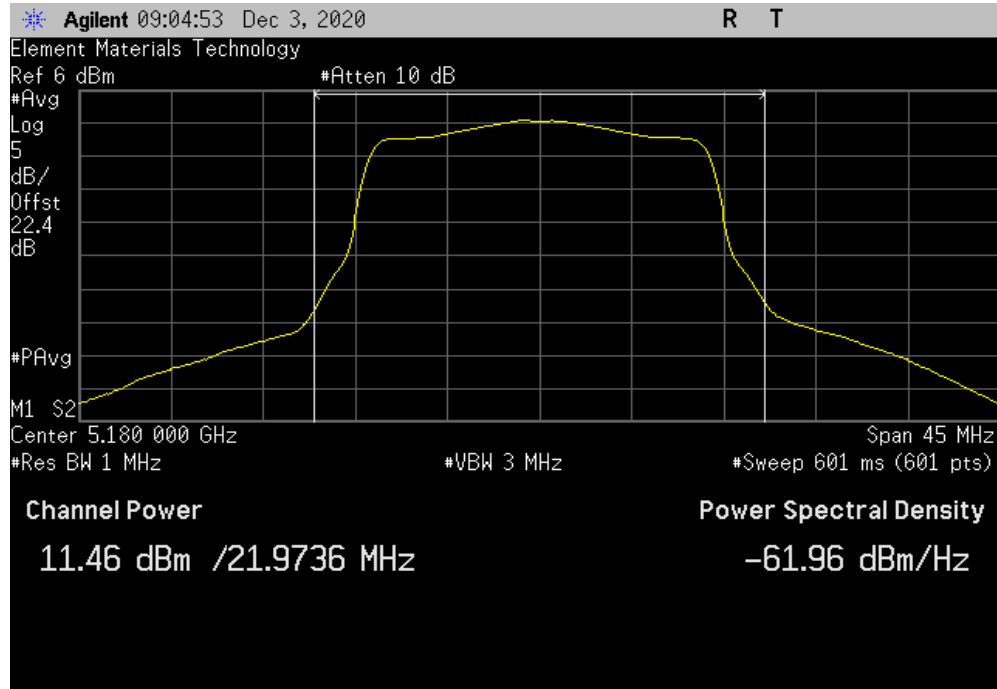
EUT: A-dec Gateway		Work Order: A-DE0149	
Serial Number: 5210041984		Date: 3-Dec-20	
Customer: A-dec, Inc.		Temperature: 23 °C	
Attendees: Spencer Warneke		Humidity: 30.4% RH	
Project: None		Barometric Pres.: 1030 mbar	
Tested by: Jeff Alcock		Power: 110VAC/60Hz	
Job Site: EV06			
TEST SPECIFICATIONS		Test Method	
FCC 15.407:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes: DC Block, 20 dB attenuator, and measurement cable.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature	
		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)
		Out Pwr (dBm)	Limit (dBm)
			Result
20 MHz			
802.11(a) 6 Mbps			
	Ch 36, Low Channel 5180 MHz	11.461	0.1
	Ch 48, High Channel 5240 MHz	11.912	0.1
802.11(a) 36 Mbps			
	Ch 36, Low Channel 5180 MHz	10.924	0.3
	Ch 48, High Channel 5240 MHz	11.359	0.3
802.11(a) 54 Mbps			
	Ch 36, Low Channel 5180 MHz	10.835	0.5
	Ch 48, High Channel 5240 MHz	11.314	0.5
802.11(n) MCS0			
	Ch 36, Low Channel 5180 MHz	10.956	0.1
	Ch 48, High Channel 5240 MHz	11.428	0.1
802.11(n) MCS7			
	Ch 36, Low Channel 5180 MHz	10.655	0.5
	Ch 48, High Channel 5240 MHz	11.135	0.5
802.11(ac) MCS8 (256-QAM)			
	Ch 36, Low Channel 5180 MHz	7.979	0.6
	Ch 48, High Channel 5240 MHz	8.48	0.6
40 MHz			
802.11(n) MCS0			
	Ch 36/40, Low Channel 5190 MHz	6.95	0.1
	Ch 44/48, High Channel 5230 MHz	7.499	0.1
802.11(n) MCS7			
	Ch 36/40, Low Channel 5190 MHz	6.382	0.7
	Ch 44/48, High Channel 5230 MHz	6.928	0.7
802.11(ac) MCS9 (256-QAM)			
	Ch 36/40, Low Channel 5190 MHz	7.036	0.9
	Ch 44/48, High Channel 5230 MHz	7.612	0.9
80 MHz			
802.11(ac) MCS0			
	Ch 36-48, Low Channel 5210 MHz	6.259	0.2
802.11(ac) MCS9 (256-QAM)			
	Ch 36-48, Low Channel 5210 MHz	5.324	1.1

MAXIMUM CONDUCTED OUTPUT POWER

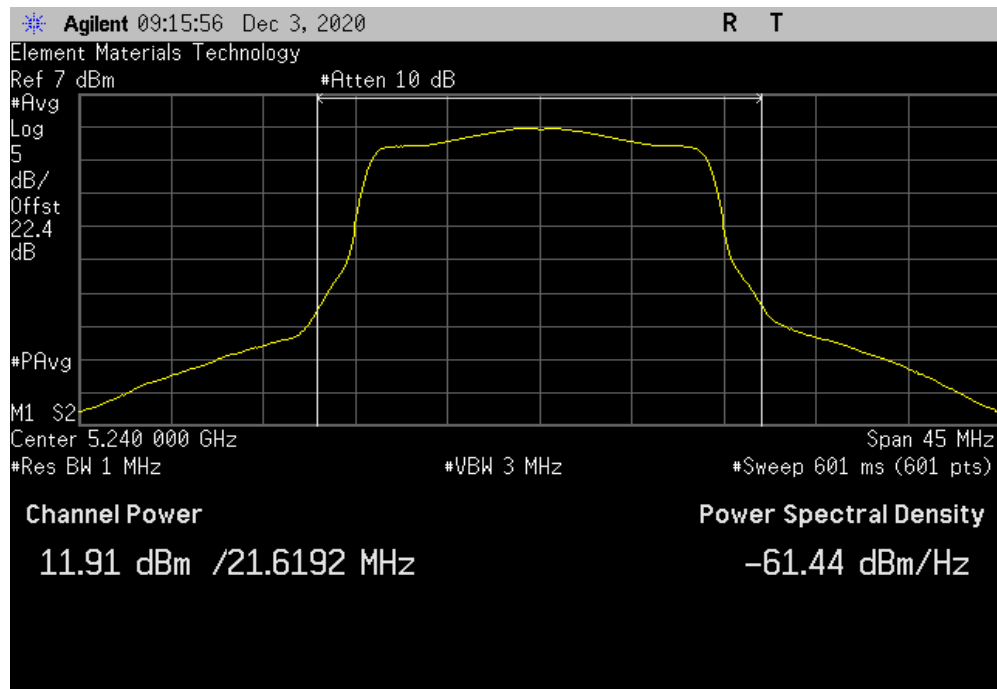


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.461	0.1	11.5	24	Pass	



20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.912	0.1	12	24	Pass	

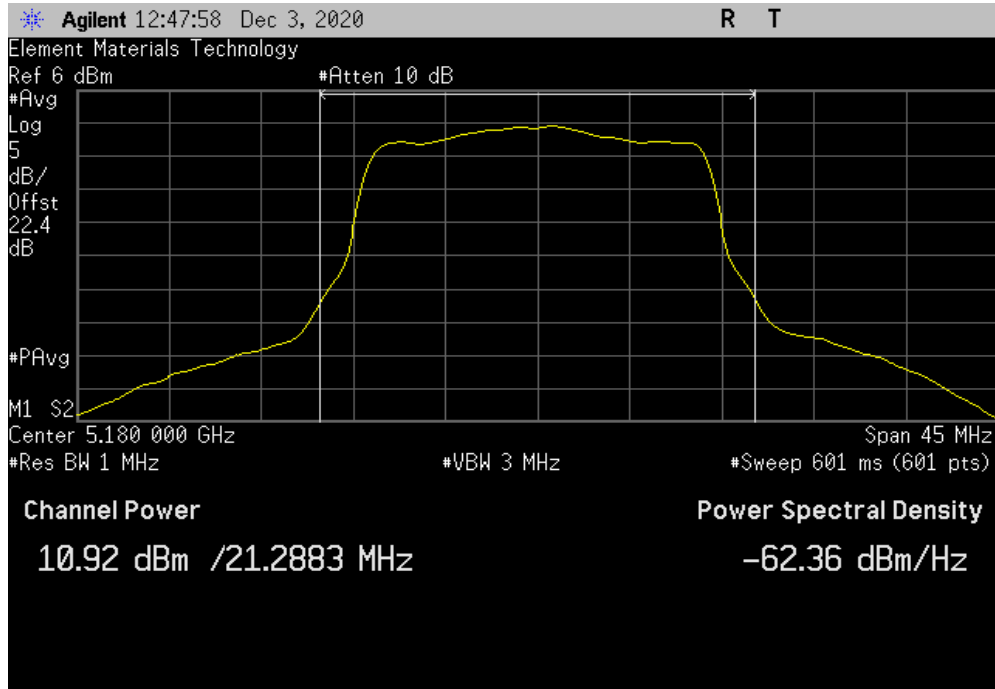


MAXIMUM CONDUCTED OUTPUT POWER

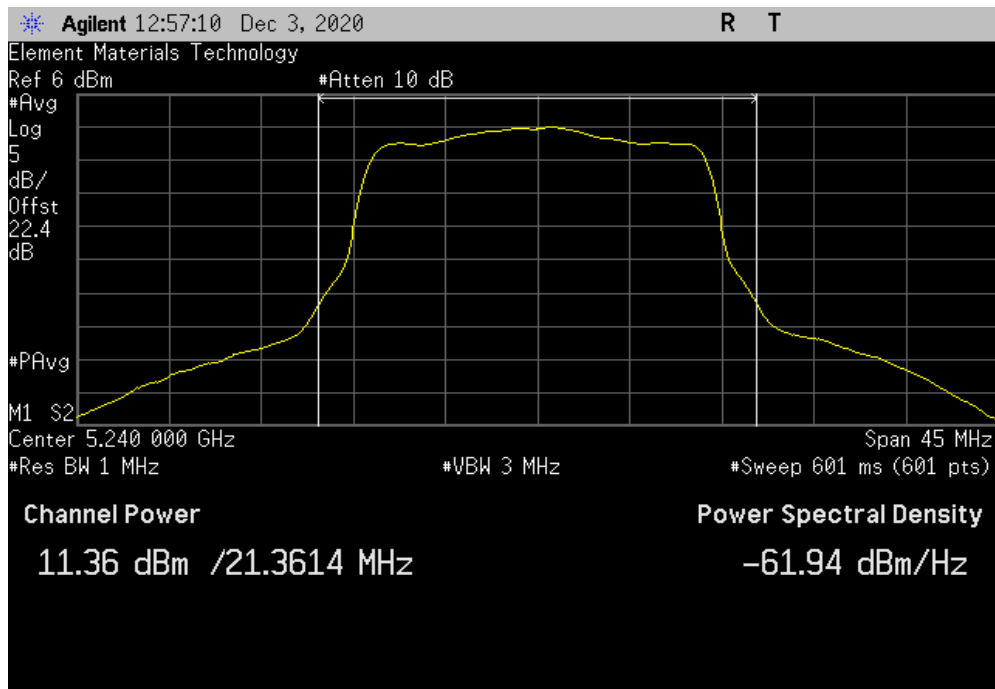


TUTx 2019.08.30.0 XMt 2020.03.25.0

20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	10.924	0.3	11.3	24	Pass	



20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.359	0.3	11.7	24	Pass	

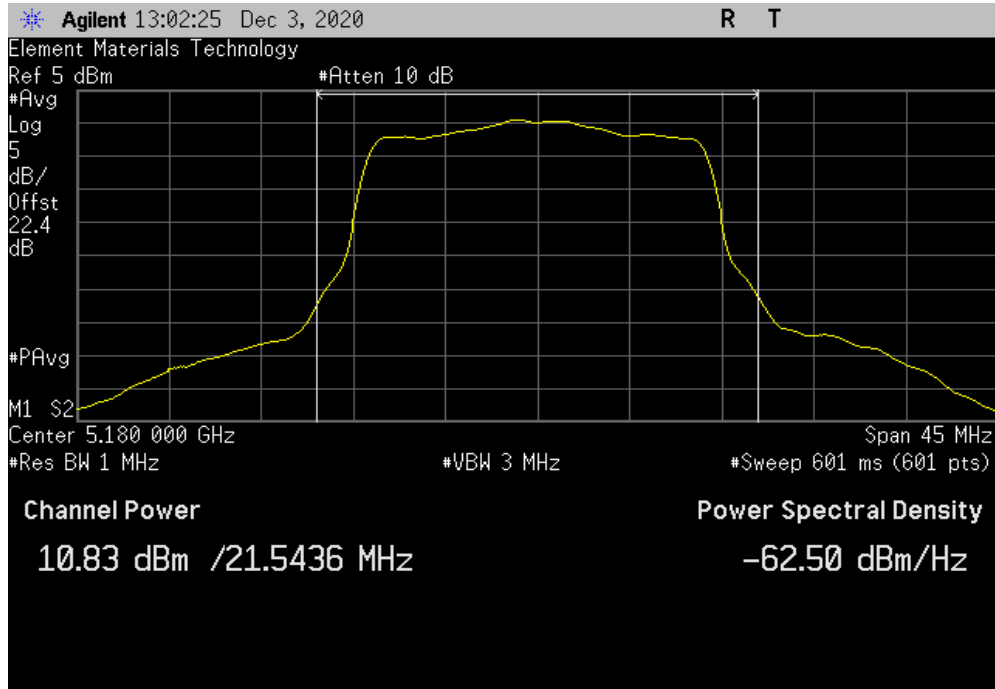


MAXIMUM CONDUCTED OUTPUT POWER

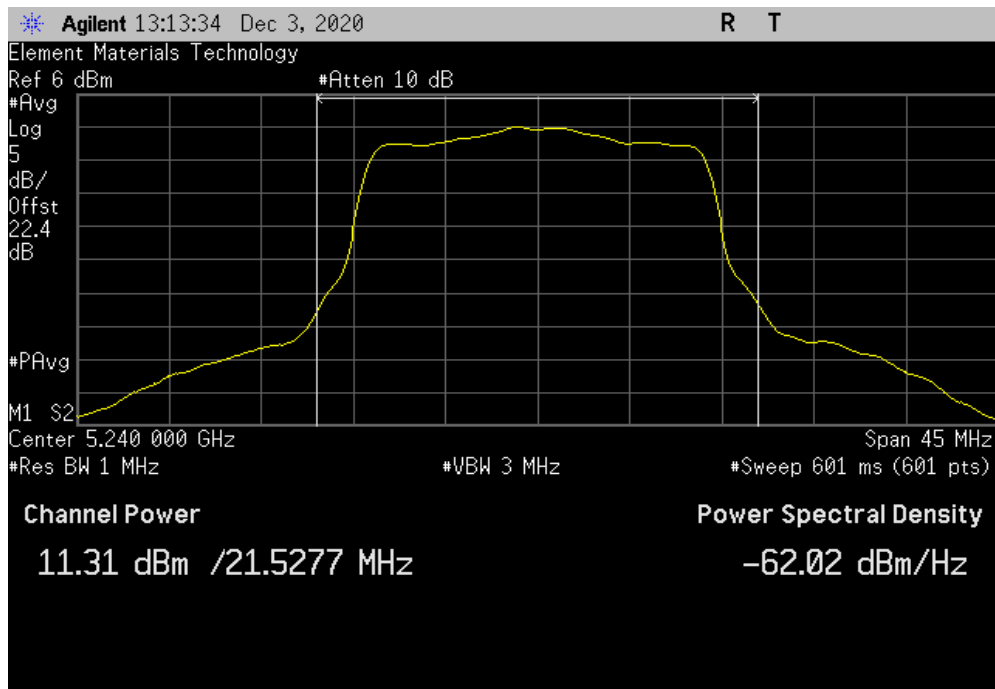


TUTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	10.835	0.5	11.3	24	Pass	



20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.314	0.5	11.8	24	Pass	

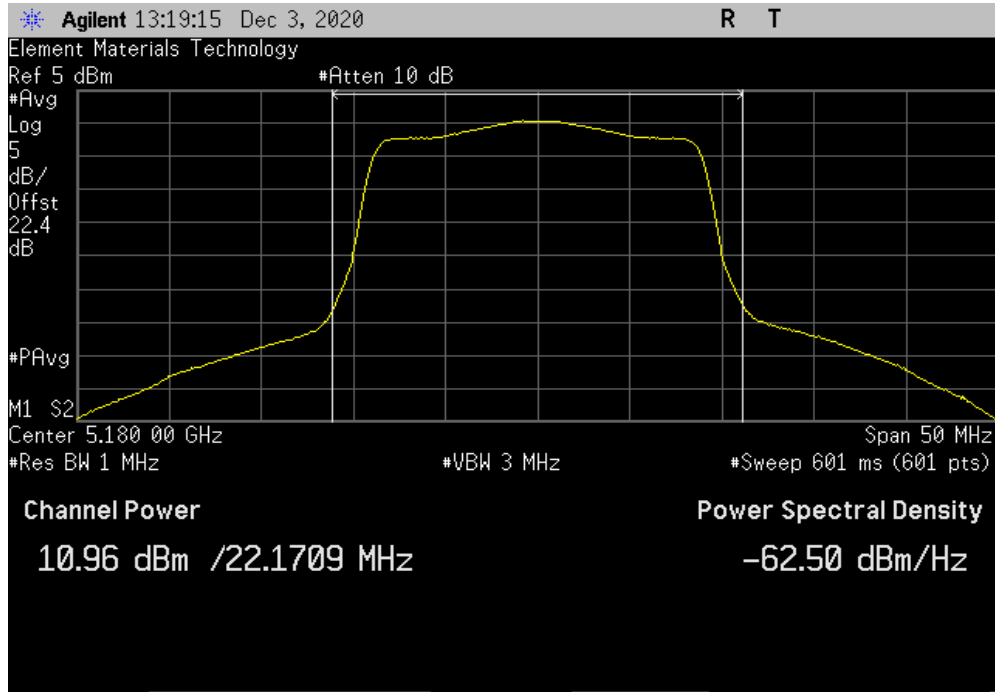


MAXIMUM CONDUCTED OUTPUT POWER

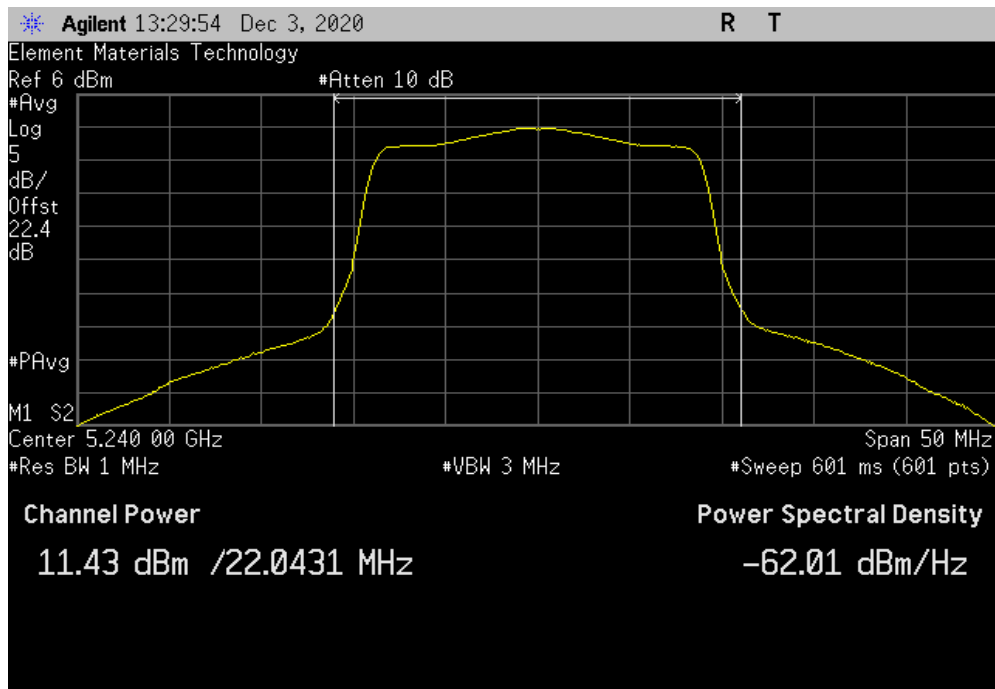


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	10.956	0.1	11	24	Pass	



20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.428	0.1	11.5	24	Pass	

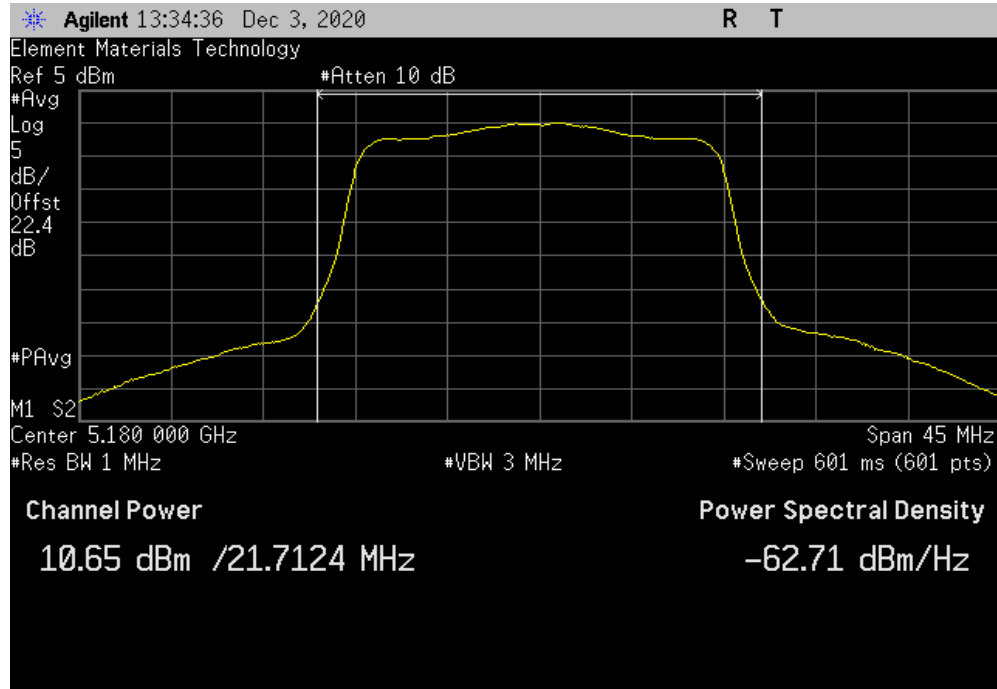


MAXIMUM CONDUCTED OUTPUT POWER

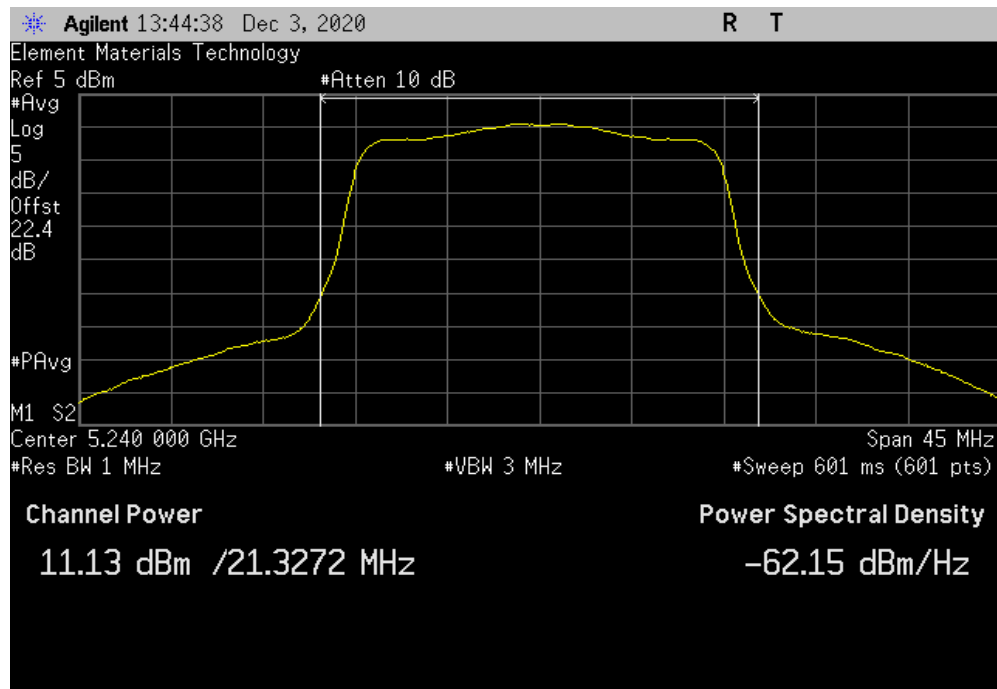


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	10.655	0.5	11.2	24	Pass	



20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	11.135	0.5	11.6	24	Pass	

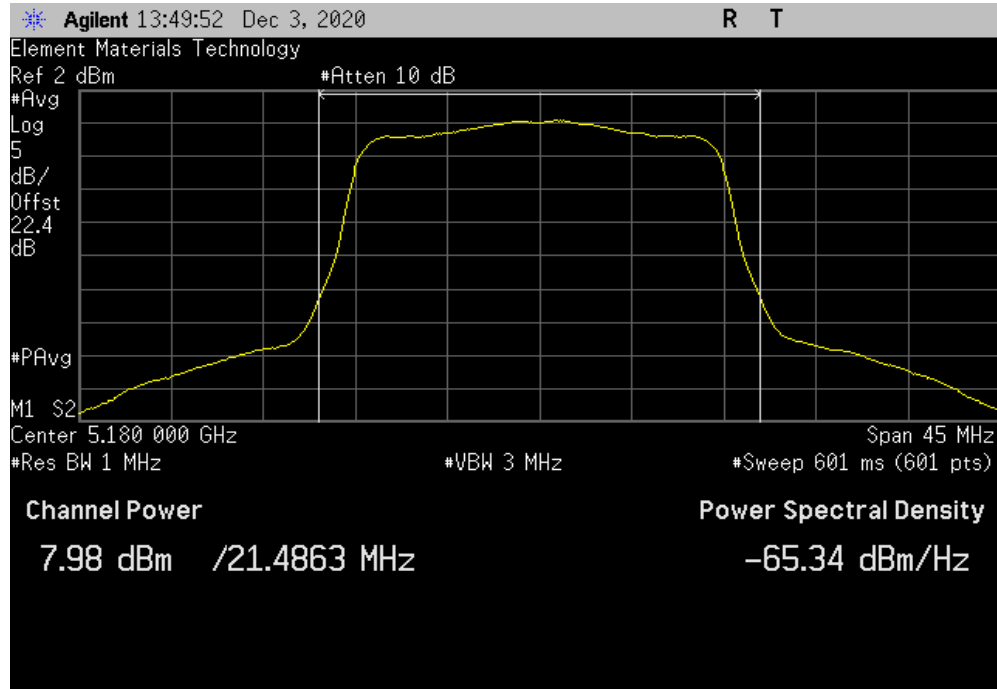


MAXIMUM CONDUCTED OUTPUT POWER

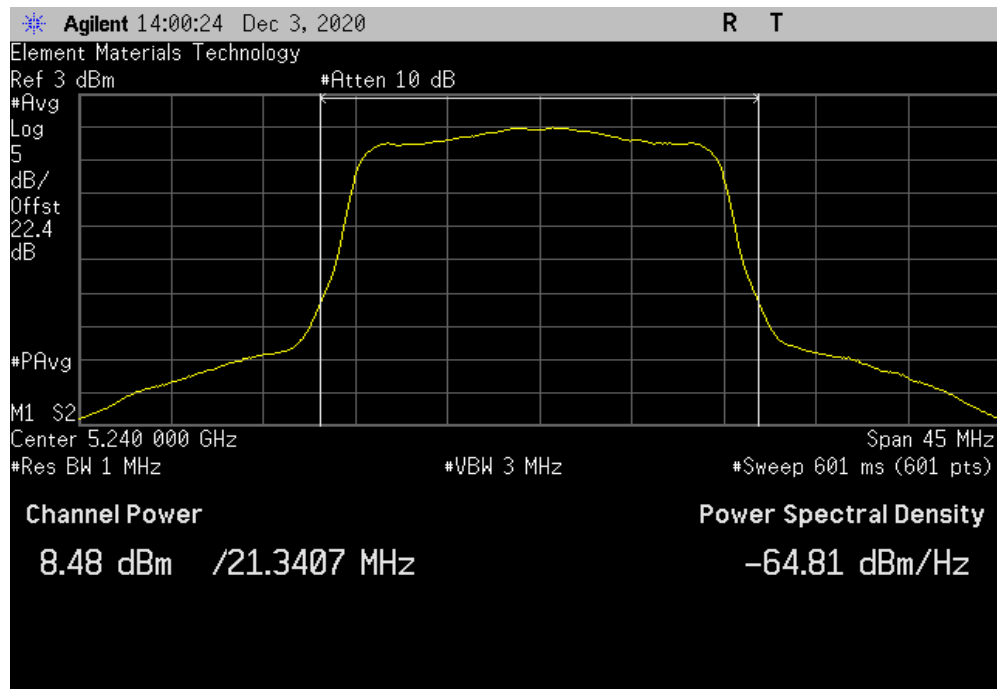


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	7.979	0.6	8.5	24	Pass	



20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 48, High Channel 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.48	0.6	9	24	Pass	

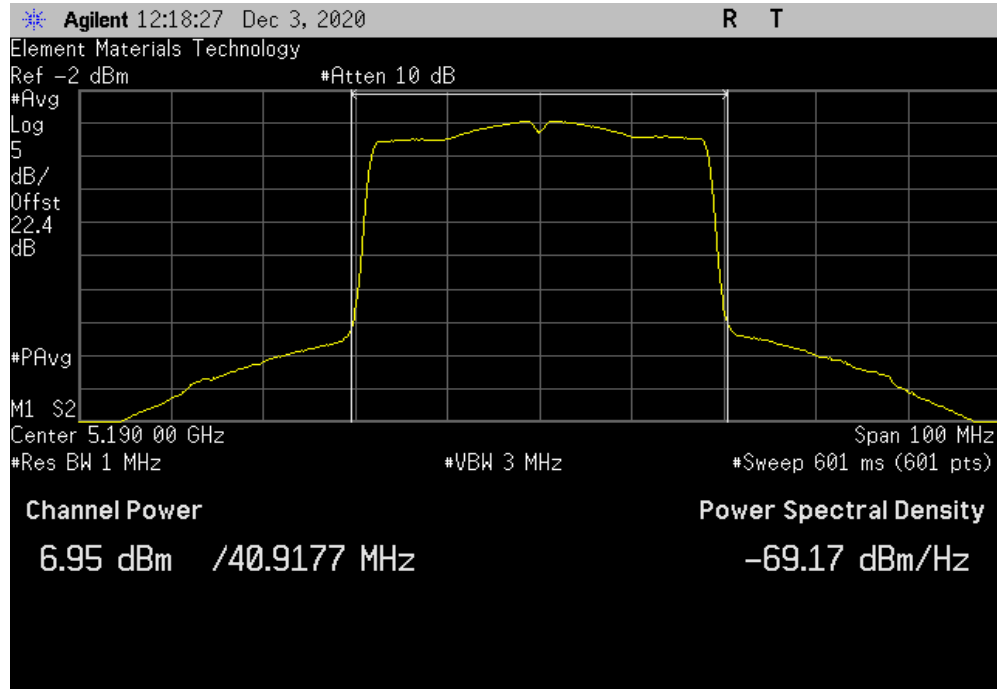


MAXIMUM CONDUCTED OUTPUT POWER

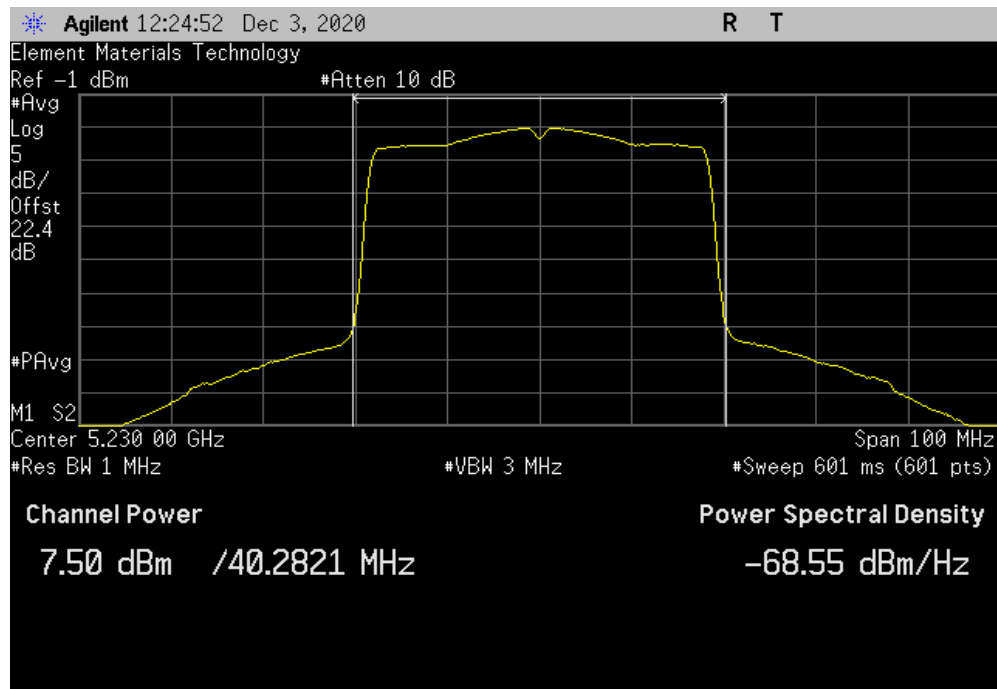


TbTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	6.95	0.1	7.1	24	Pass	



40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	7.499	0.1	7.6	24	Pass	

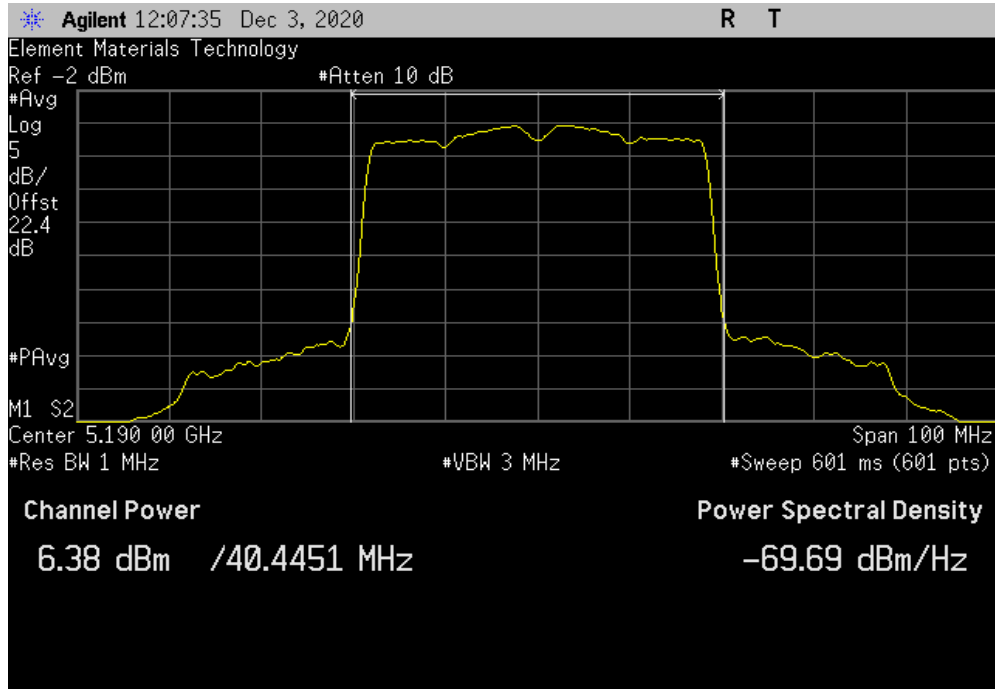


MAXIMUM CONDUCTED OUTPUT POWER

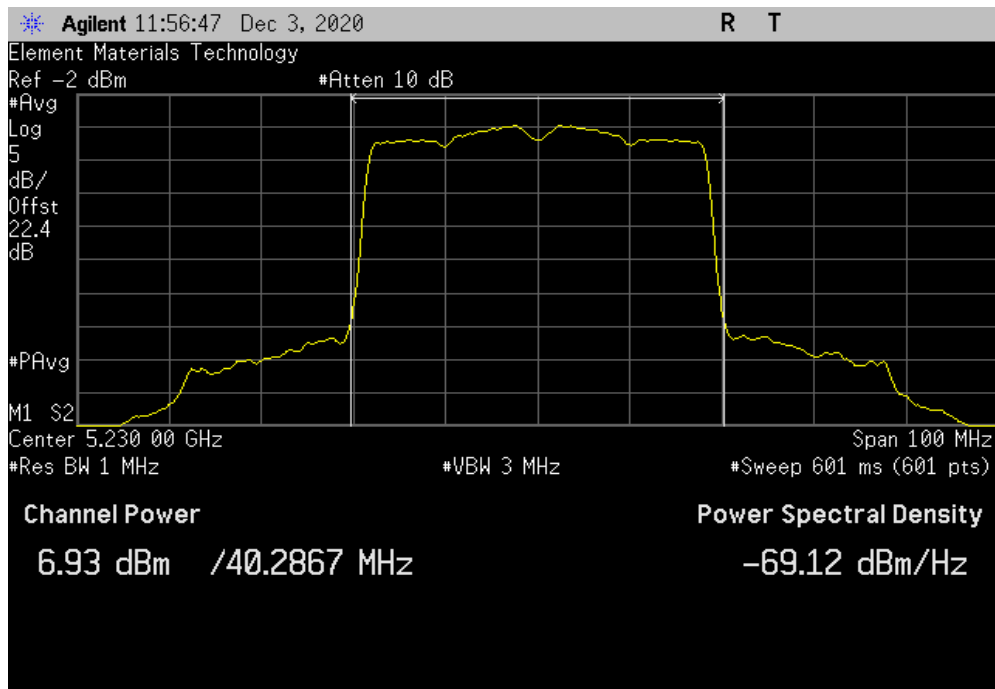


TbTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	6.382	0.7	7.1	24	Pass	



40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	6.928	0.7	7.7	24	Pass	

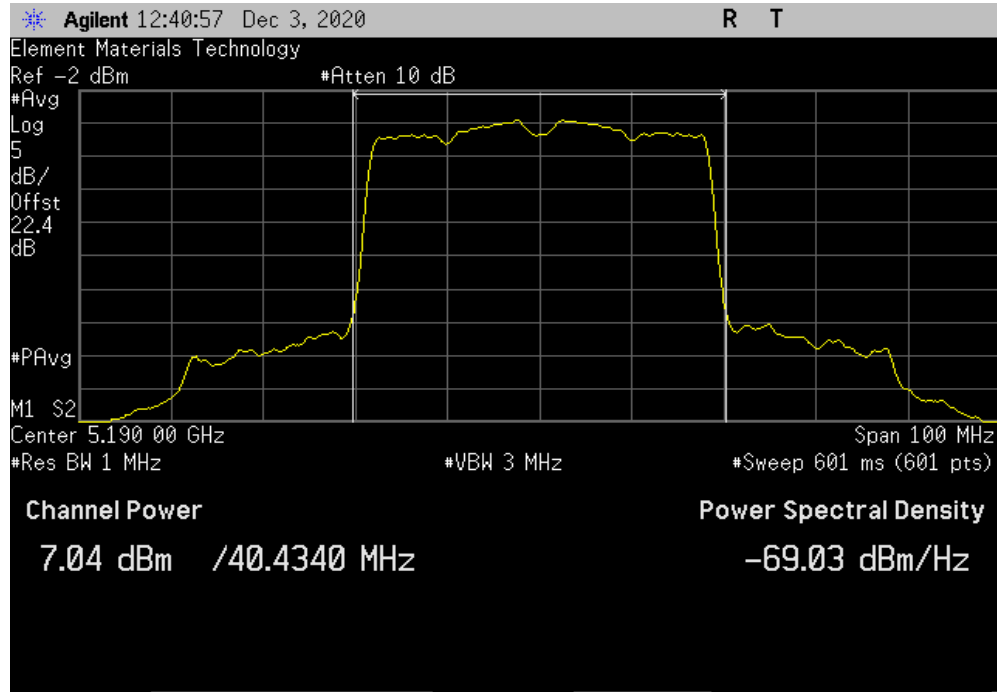


MAXIMUM CONDUCTED OUTPUT POWER

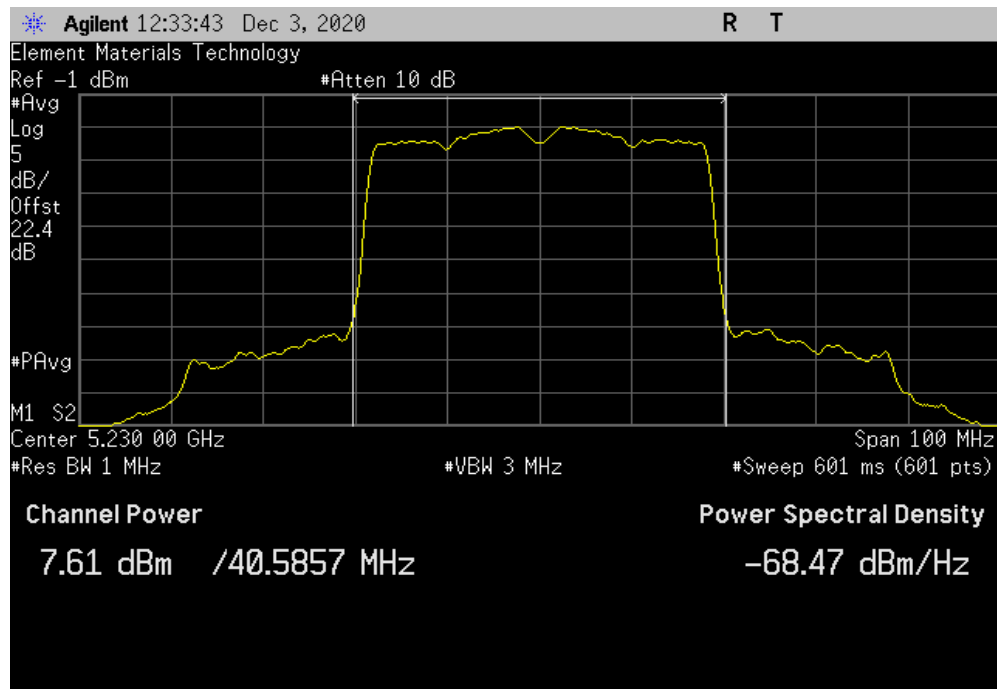


TUTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36/40, Low Channel 5190 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	7.036	0.9	7.9	24	Pass	



40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 44/48, High Channel 5230 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	7.612	0.9	8.5	24	Pass	

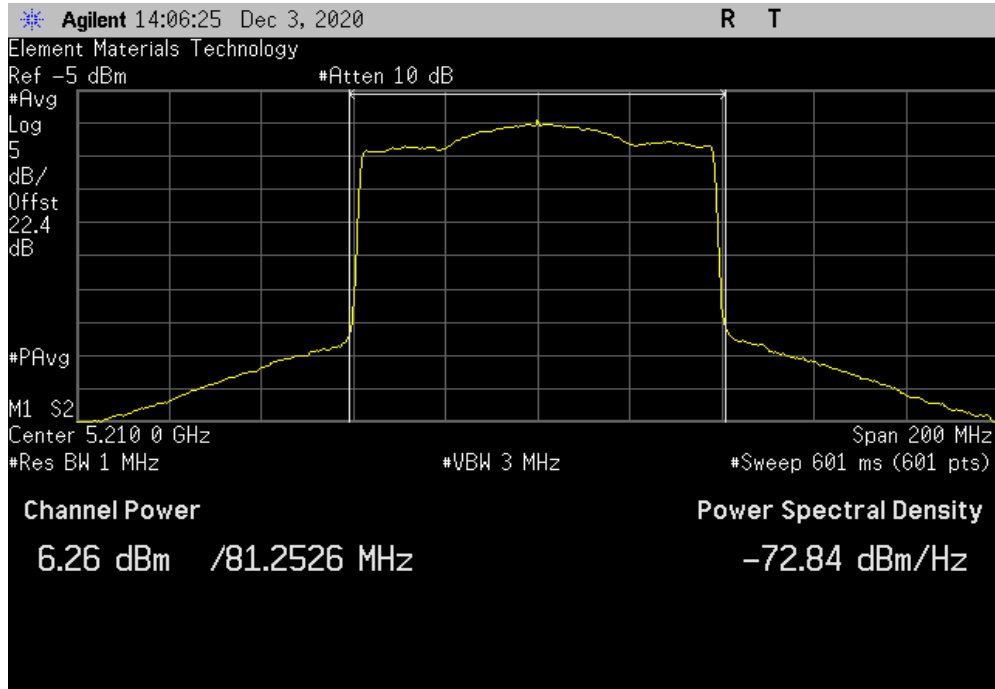


MAXIMUM CONDUCTED OUTPUT POWER

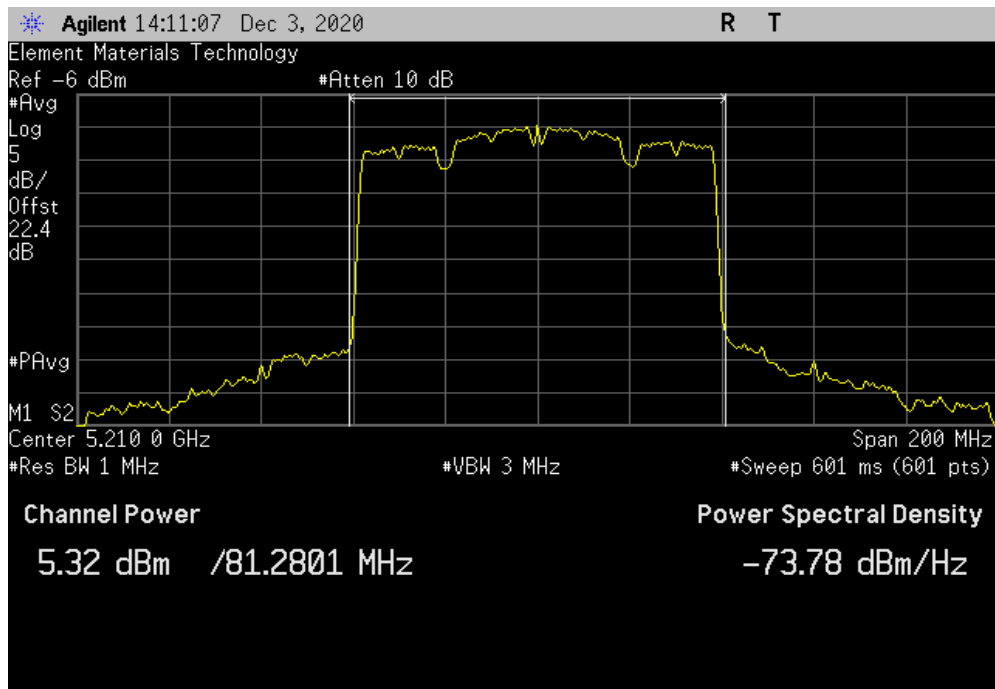


TMTx 2019.08.30.0 XMR 2020.03.25.0

80 MHz, 802.11(ac) MCS0, Ch 36-48, Low Channel 5210 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	6.259	0.2	6.5	24	Pass	



80 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36-48, Low Channel 5210 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	5.324	1.1	6.4	24	Pass	



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



XMIT 2020.03.25.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TID	26-Apr-19	26-Apr-21
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	13-Mar-20	13-Mar-21
Attenuator	S.M. Electronics	SA26B-20	AUY	13-Mar-20	13-Mar-21
Block - DC	Fairview Microwave	SD3379	AMW	13-Mar-20	13-Mar-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	28-Oct-20	28-Oct-21

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.

Equivalent Isotropic Radiated Power (EIRP) = Max Measured Power + Antenna gain (dBi)

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TSTx 2019.08.30.0 XMR 2020.03.25.0

EUT: A-dec Gateway

Serial Number: 5210041984

Customer: A-dec, Inc.

Attendees: Spencer Warneke

Project: None

Tested by: Jeff Alcoke

Work Order: A-DE0149

Date: 3-Dec-20

Temperature: 23 °C

Humidity: 30.4% RH

Barometric Pres.: 1030 mbar

Job Site: EV06

TEST SPECIFICATIONS

FCC 15.407:2020

ANSI C63.10:2013

COMMENTS

Reference level offset includes: DC Block, 20 dB attenuator, and measurement cable.

DEVIATIONS FROM TEST STANDARD

None

Configuration #

1

Signature



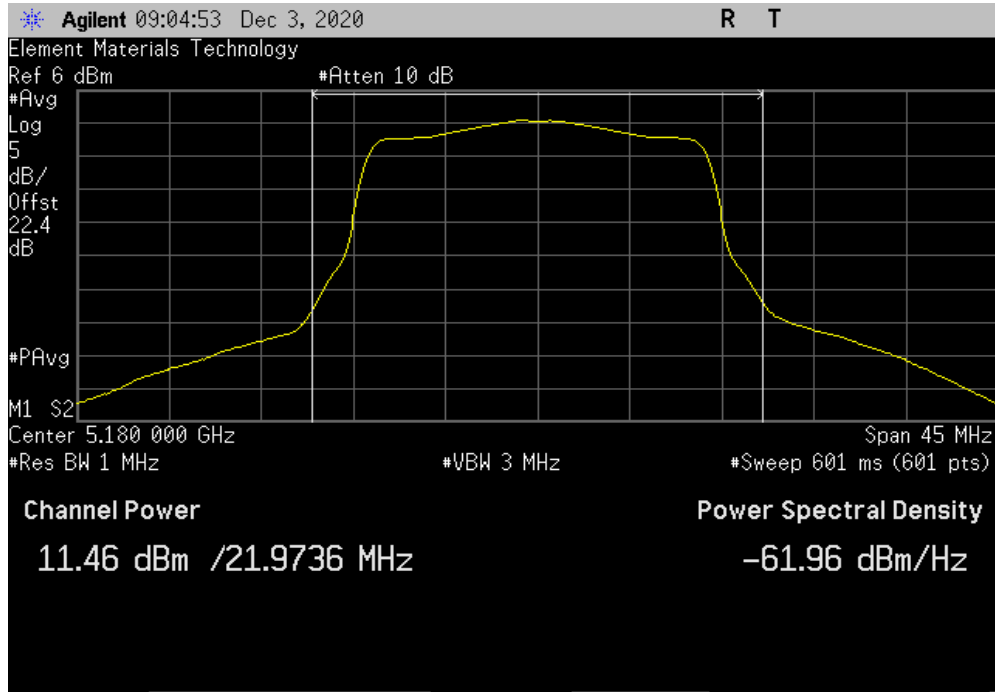
		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
20 MHz								
802.11(a) 6 Mbps								
Ch 36, Low Channel 5180 MHz		11.461	0.1	11.5	5.2	16.7	30	Pass
Ch 48, High Channel 5240 MHz		11.912	0.1	12	5.2	17.2	30	Pass
802.11(a) 36 Mbps								
Ch 36, Low Channel 5180 MHz		10.924	0.3	11.3	5.2	16.5	30	Pass
Ch 48, High Channel 5240 MHz		11.359	0.3	11.7	5.2	16.9	30	Pass
802.11(a) 54 Mbps								
Ch 36, Low Channel 5180 MHz		10.835	0.5	11.3	5.2	16.5	30	Pass
Ch 48, High Channel 5240 MHz		11.314	0.5	11.8	5.2	17	30	Pass
802.11(n) MCS0								
Ch 36, Low Channel 5180 MHz		10.956	0.1	11	5.2	16.2	30	Pass
Ch 48, High Channel 5240 MHz		11.428	0.1	11.5	5.2	16.7	30	Pass
802.11(n) MCS7								
Ch 36, Low Channel 5180 MHz		10.655	0.5	11.2	5.2	16.4	30	Pass
Ch 48, High Channel 5240 MHz		11.135	0.5	11.6	5.2	16.8	30	Pass
802.11(ac) MCS8 (256-QAM)								
Ch 36, Low Channel 5180 MHz		7.979	0.6	8.5	5.2	13.7	30	Pass
Ch 48, High Channel 5240 MHz		8.48	0.6	9	5.2	14.2	30	Pass
40 MHz								
802.11(n) MCS0								
Ch 36/40, Low Channel 5190 MHz		6.95	0.1	7.1	5.2	12.3	30	Pass
Ch 44/48, High Channel 5230 MHz		7.499	0.1	7.6	5.2	12.8	30	Pass
802.11(n) MCS7								
Ch 36/40, Low Channel 5190 MHz		6.382	0.7	7.1	5.2	12.3	30	Pass
Ch 44/48, High Channel 5230 MHz		6.928	0.7	7.7	5.2	12.9	30	Pass
802.11(ac) MCS9 (256-QAM)								
Ch 36/40, Low Channel 5190 MHz		7.036	0.9	7.9	5.2	13.1	30	Pass
Ch 44/48, High Channel 5230 MHz		7.612	0.9	8.5	5.2	13.7	30	Pass
80 MHz								
802.11(ac) MCS0								
Ch 36-48, Low Channel 5210 MHz		6.259	0.2	6.5	5.2	11.7	30	Pass
802.11(ac) MCS9 (256-QAM)								
Ch 36-48, Low Channel 5210 MHz		5.324	1.1	6.4	5.2	11.6	30	Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

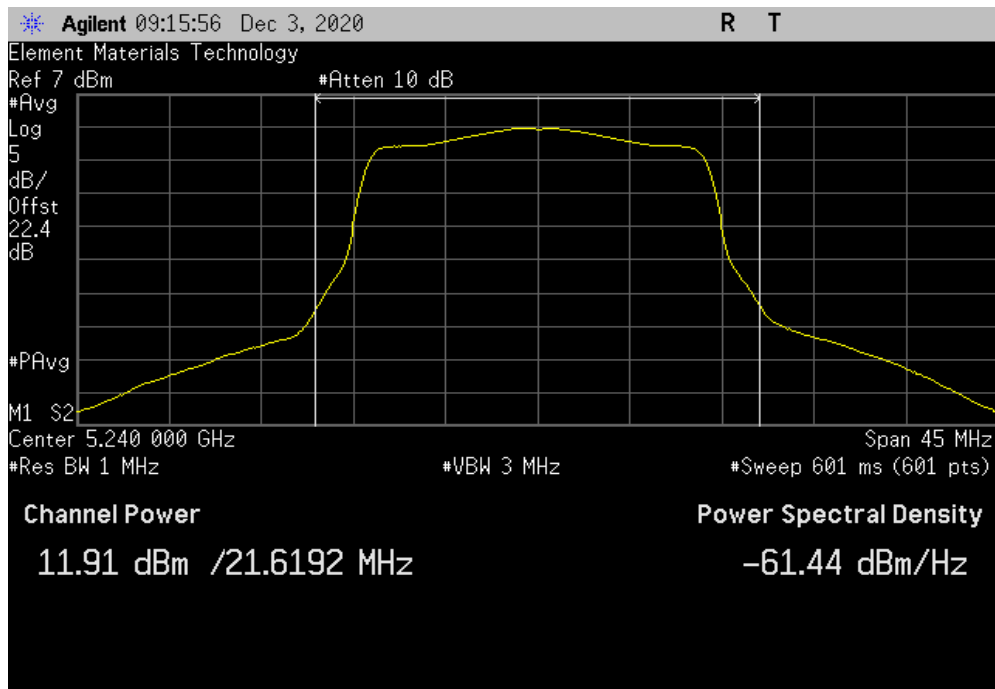


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
11.461	0.1	11.5	5.2	16.7	30	Pass



20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
11.912	0.1	12	5.2	17.2	30	Pass

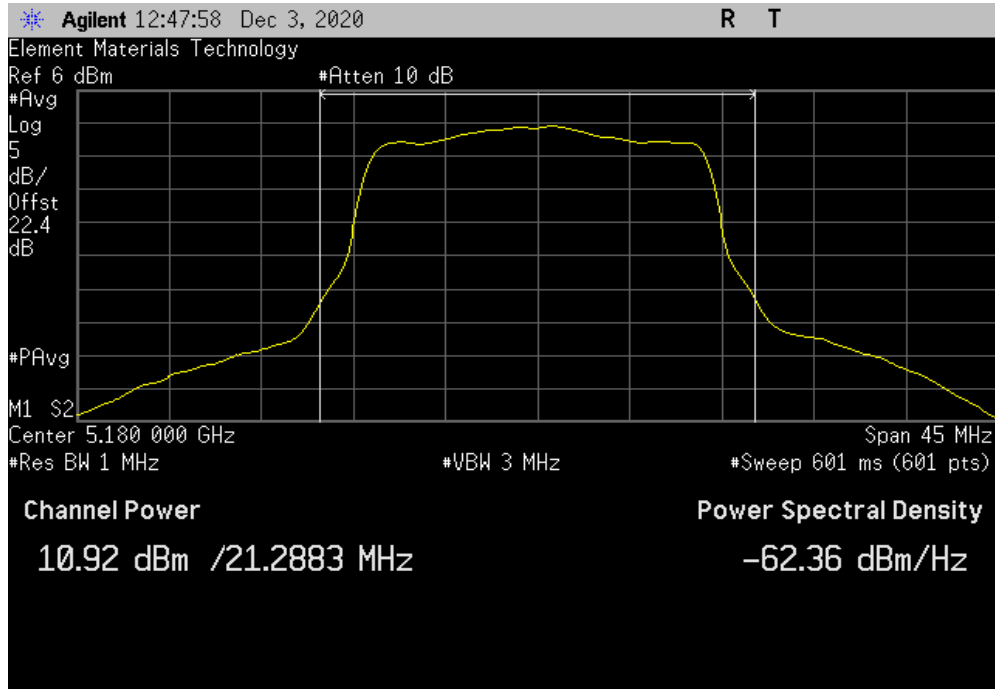


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

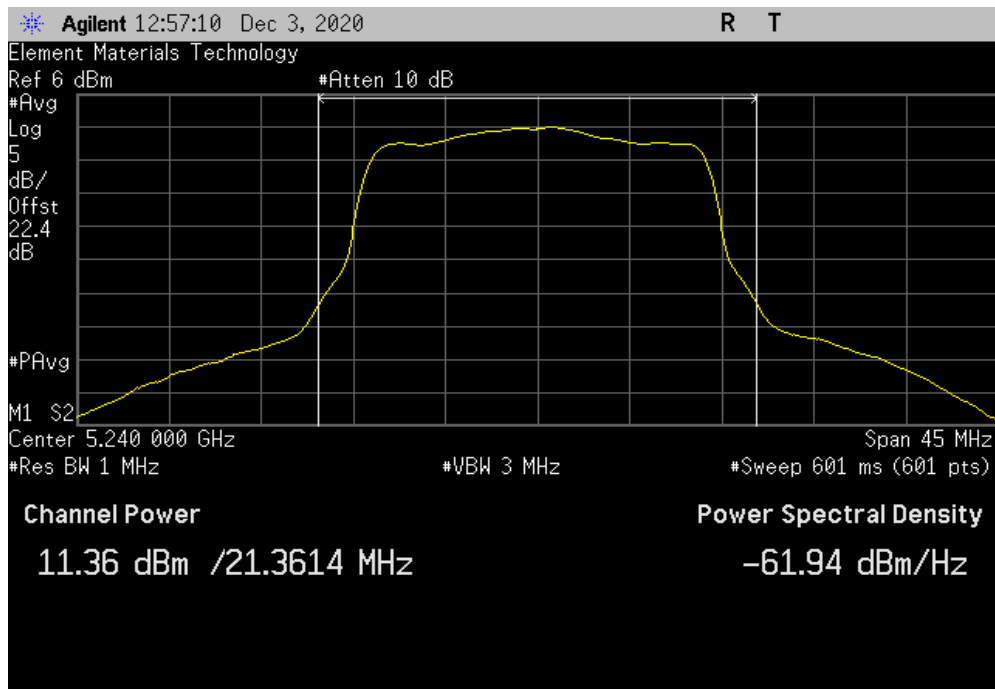


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
10.924	0.3	11.3	5.2	16.5	30	Pass



20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
11.359	0.3	11.7	5.2	16.9	30	Pass

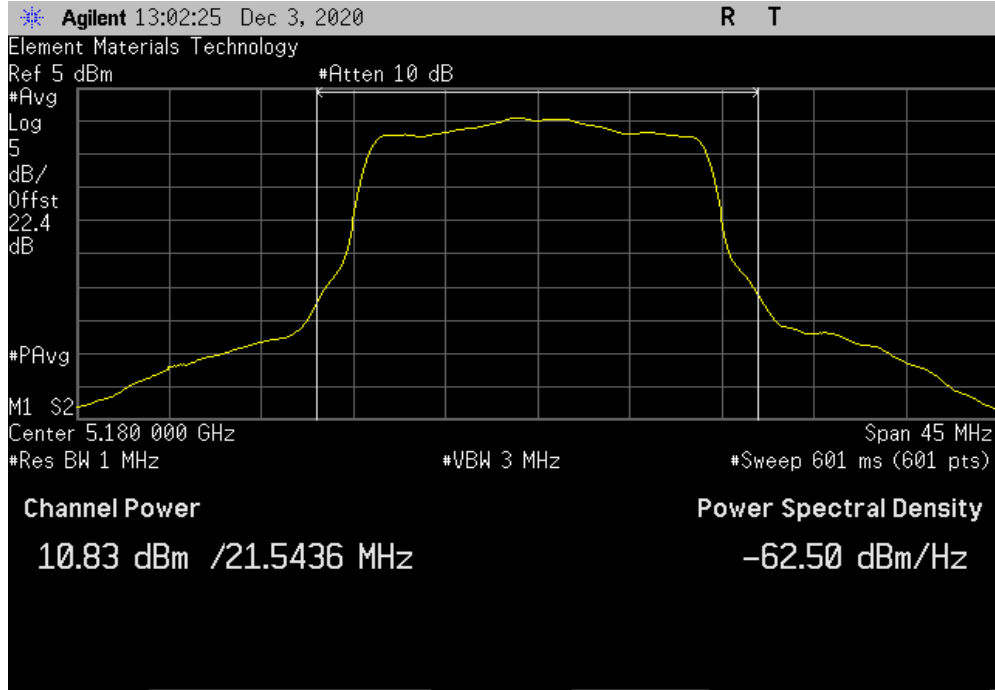


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

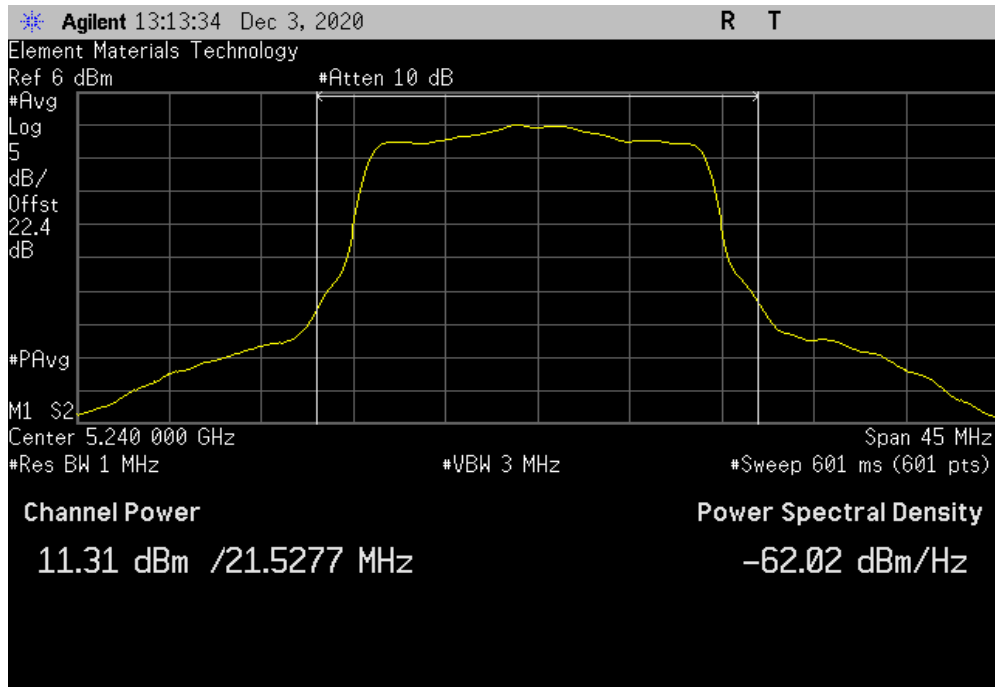


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
10.835	0.5	11.3	5.2	16.5	30	Pass



20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
11.314	0.5	11.8	5.2	17	30	Pass

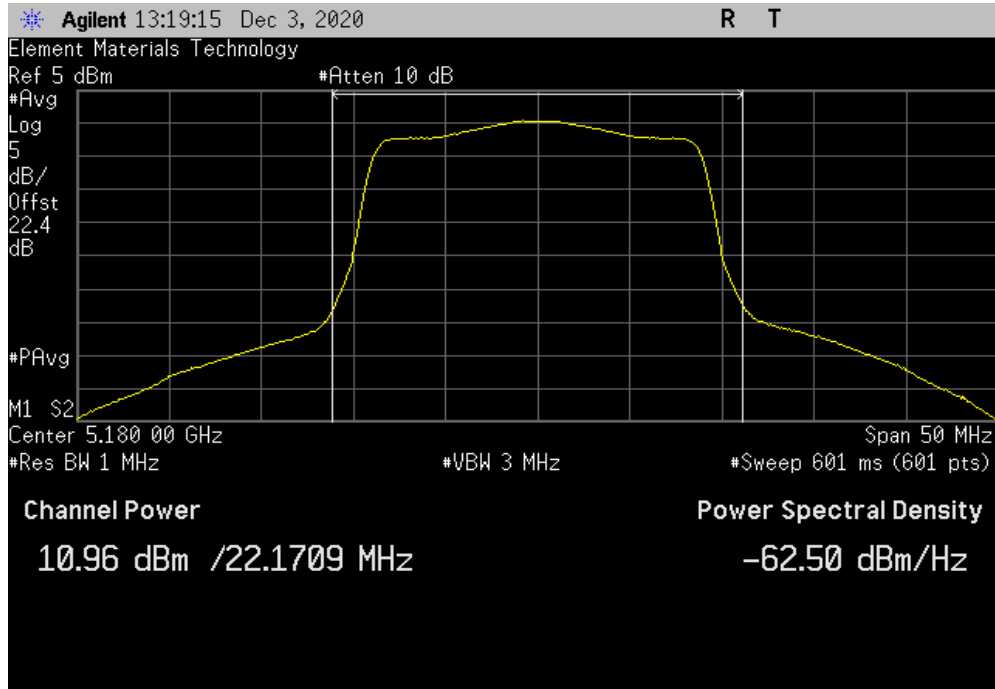


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

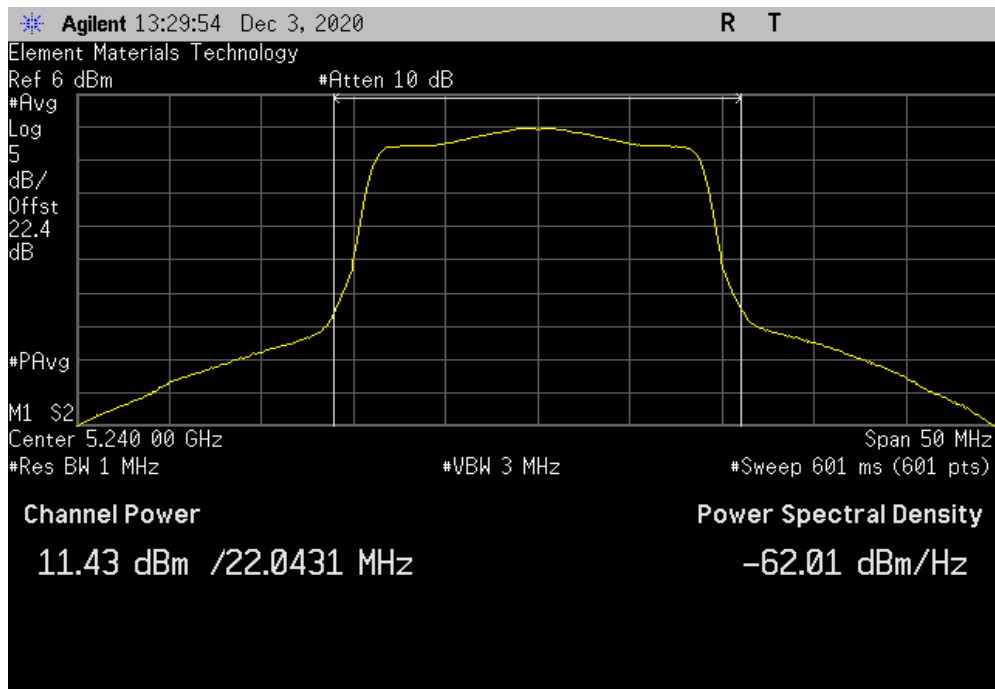


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
10.956	0.1	11	5.2	16.2	30	Pass



20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
11.428	0.1	11.5	5.2	16.7	30	Pass

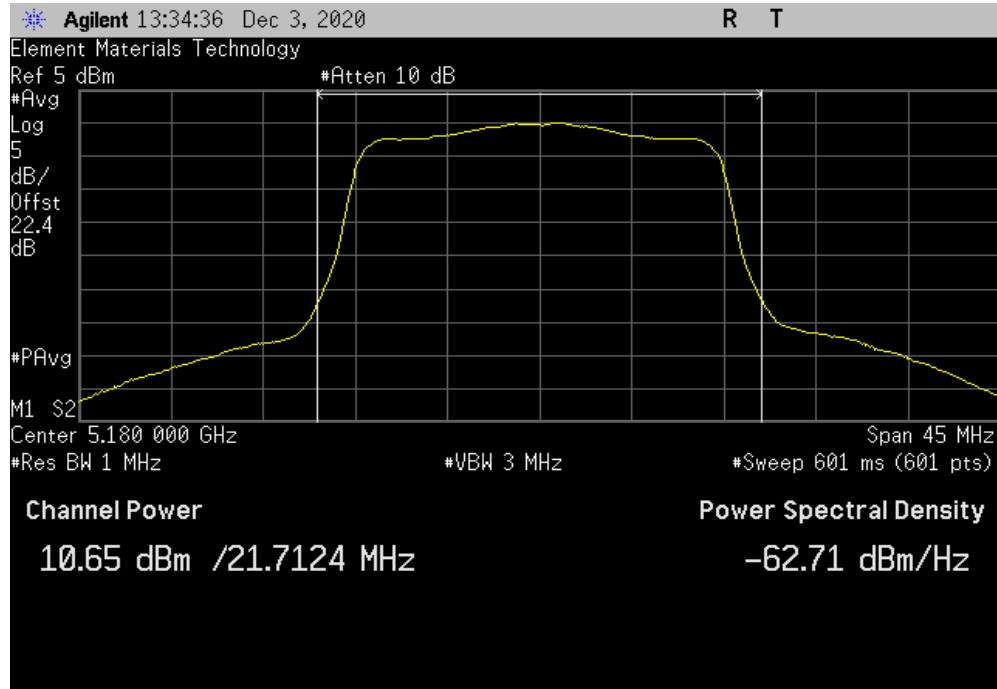


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

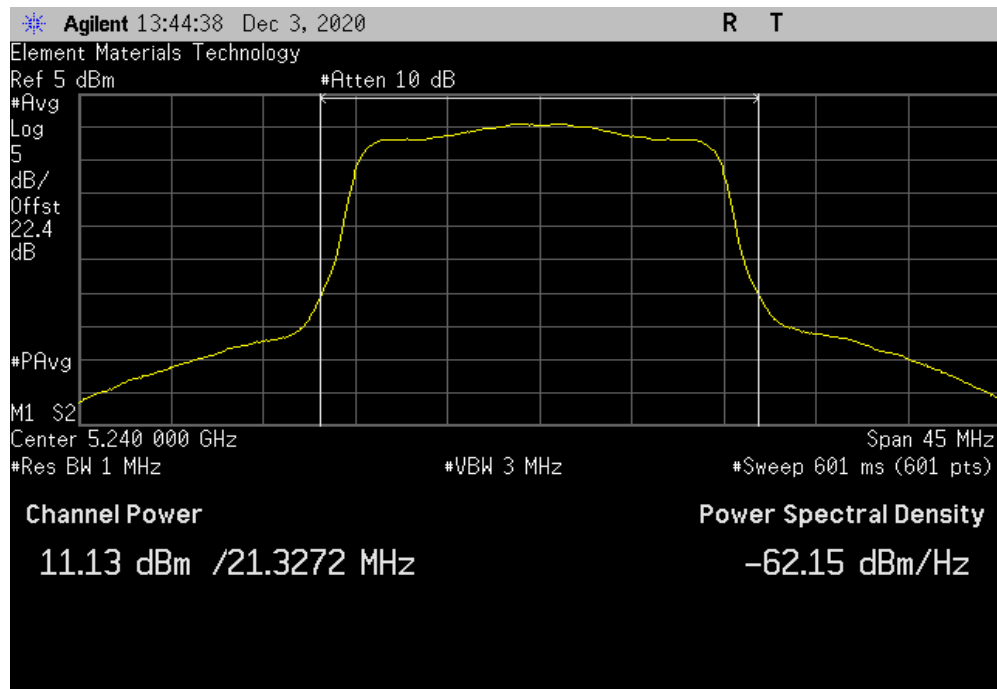


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
10.655	0.5	11.2	5.2	16.4	30	Pass



20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
11.135	0.5	11.6	5.2	16.8	30	Pass

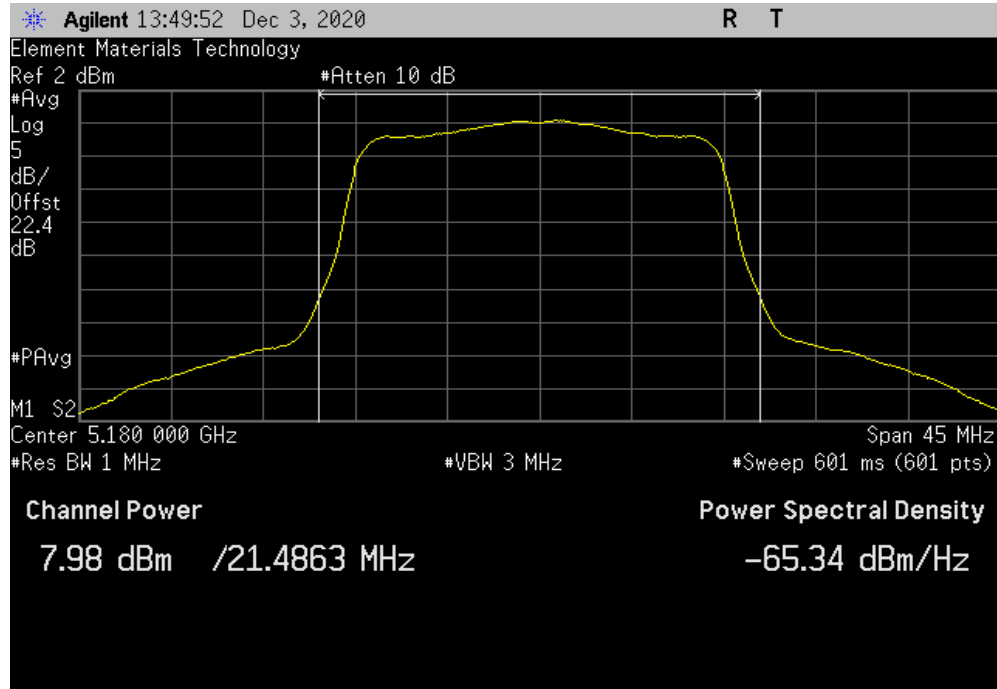


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

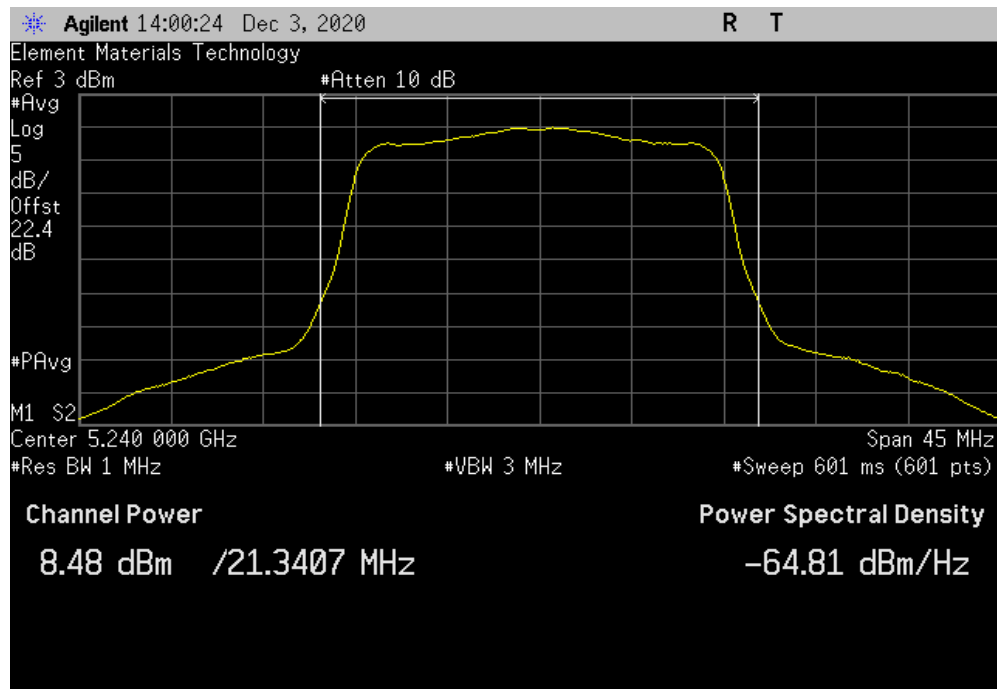


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 36, Low Channel 5180 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
7.979	0.6	8.5	5.2	13.7	30	Pass



20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 48, High Channel 5240 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
8.48	0.6	9	5.2	14.2	30	Pass

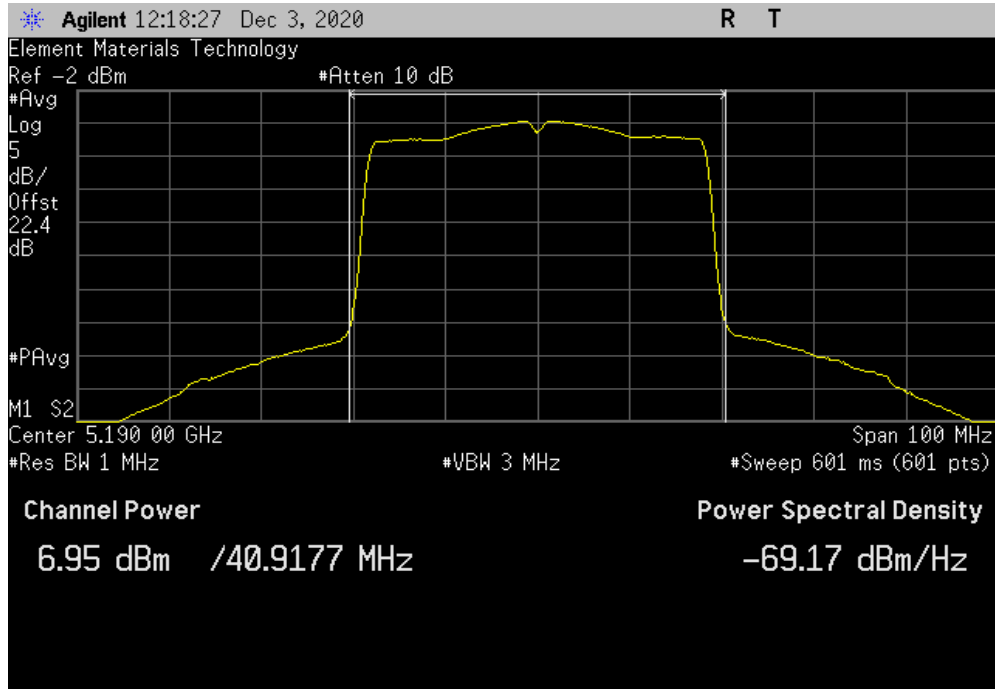


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

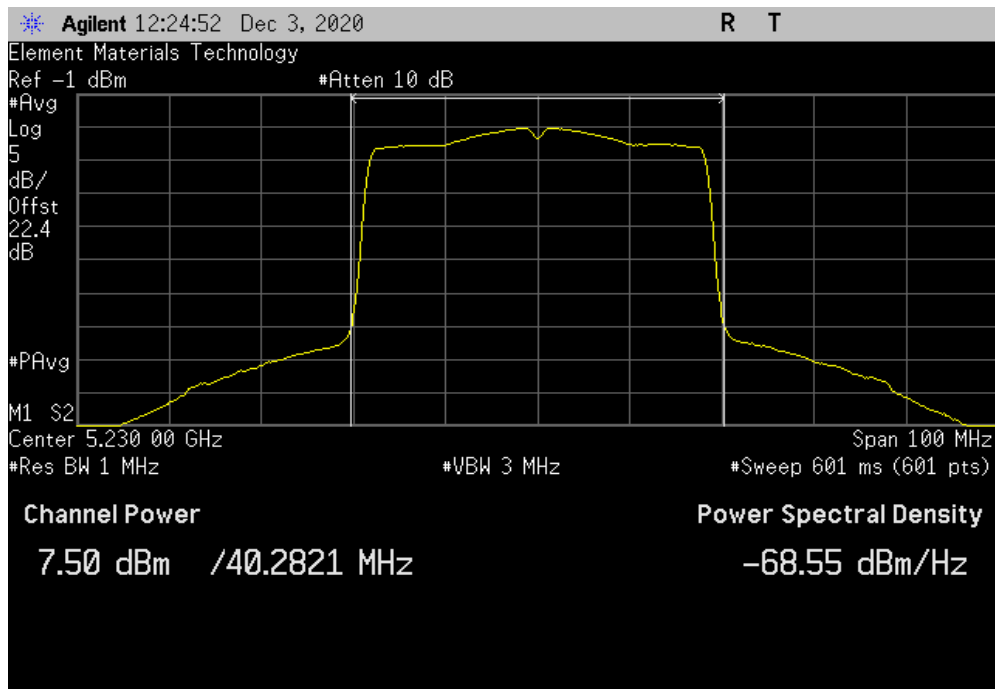


TUTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
6.95	0.1	7.1	5.2	12.3	30	Pass



40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
7.499	0.1	7.6	5.2	12.8	30	Pass

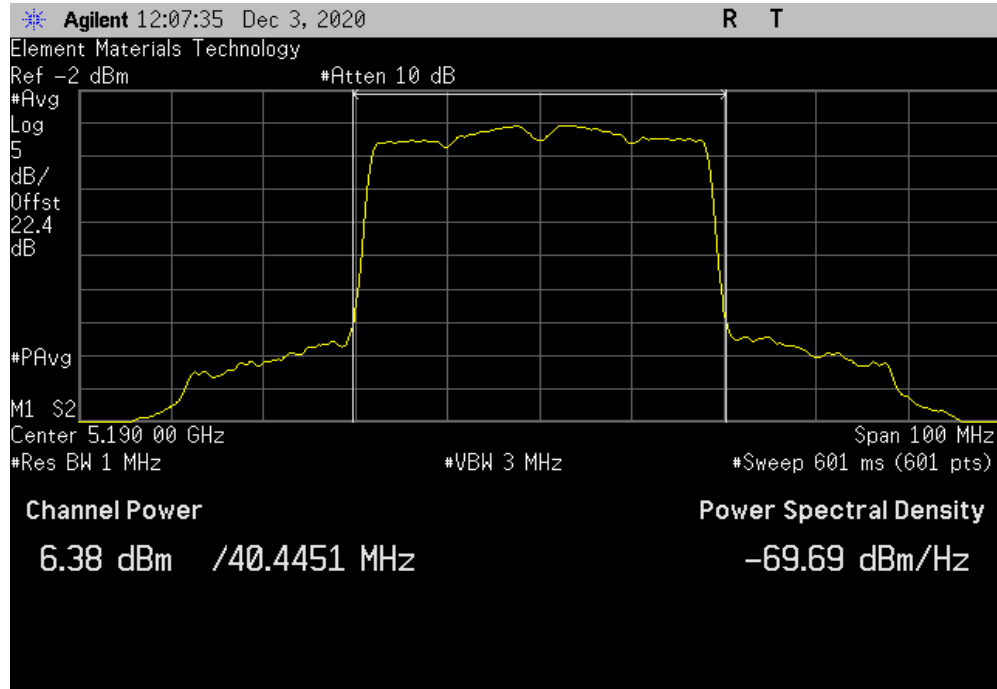


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

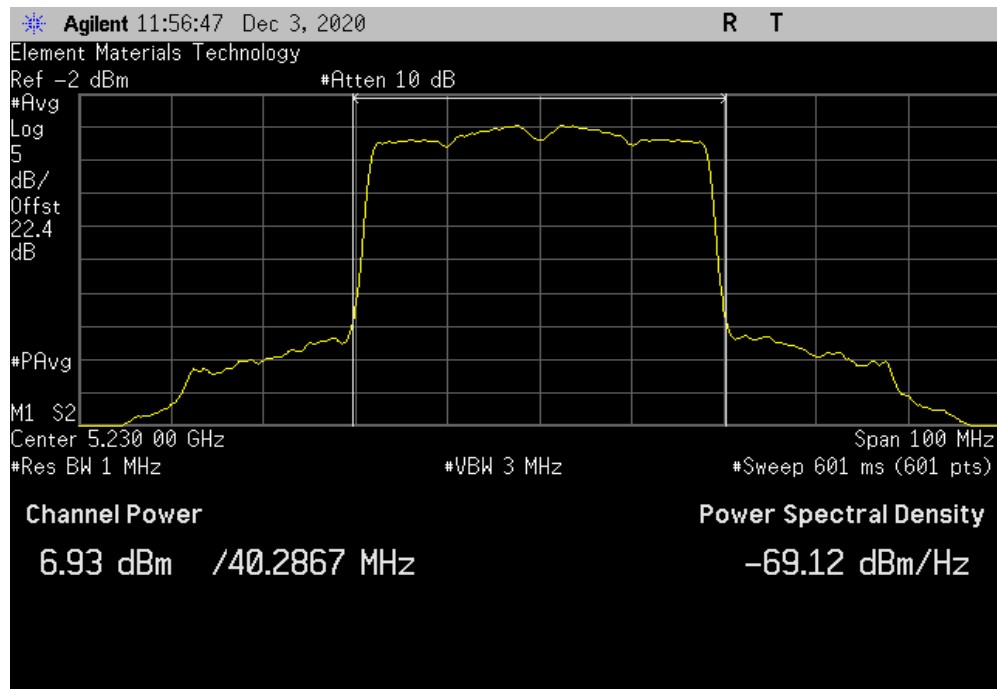


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
6.382	0.7	7.1	5.2	12.3	30	Pass



40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
6.928	0.7	7.7	5.2	12.9	30	Pass

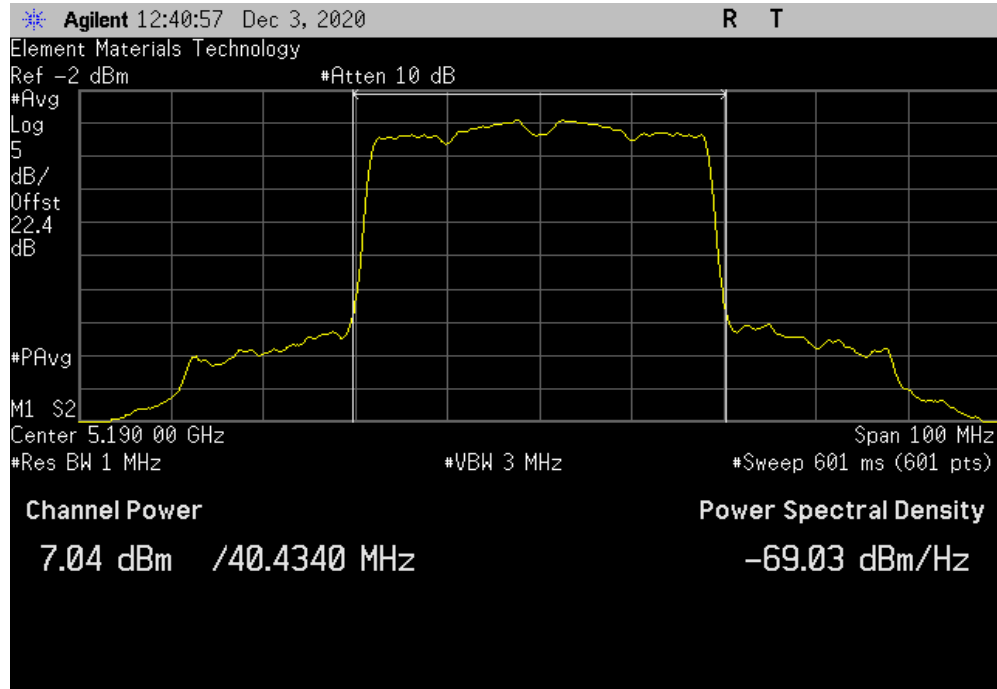


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

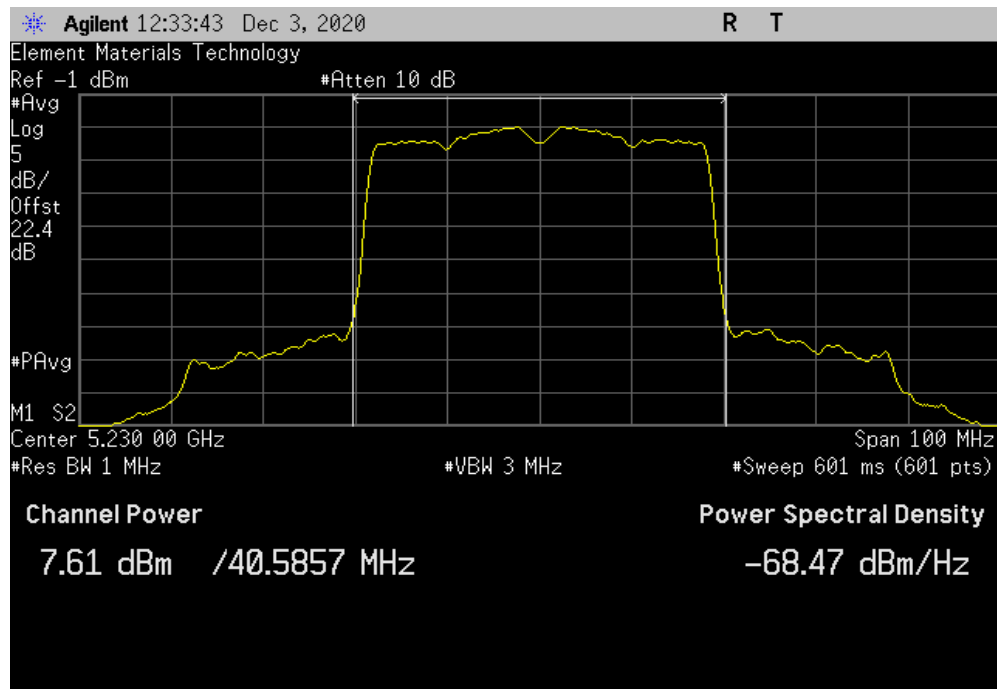


TUTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36/40, Low Channel 5190 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
7.036	0.9	7.9	5.2	13.1	30	Pass



40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 44/48, High Channel 5230 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
7.612	0.9	8.5	5.2	13.7	30	Pass

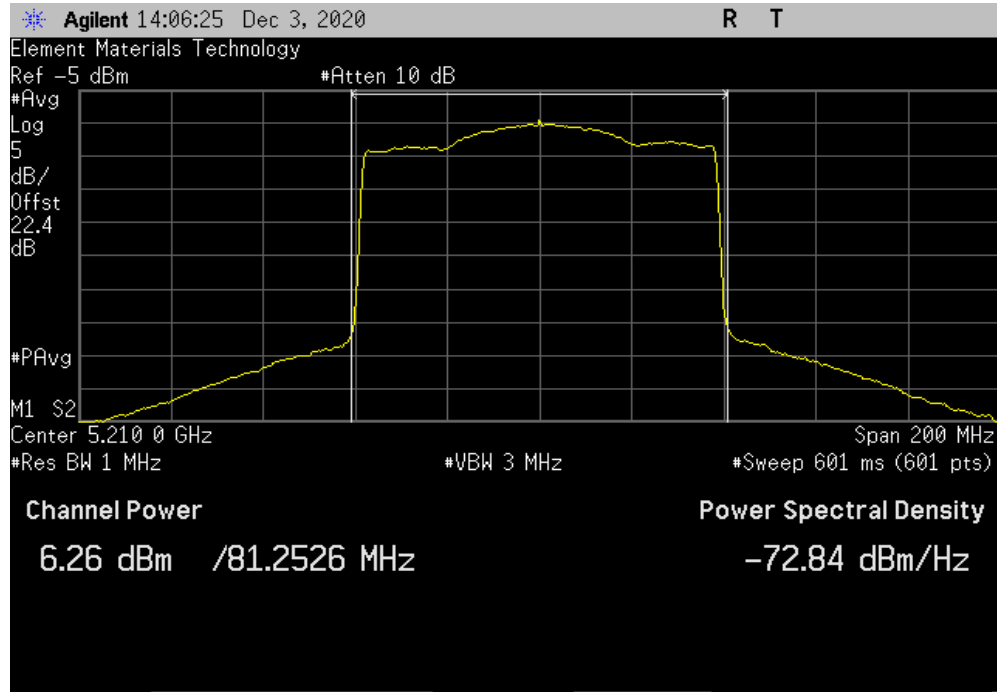


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

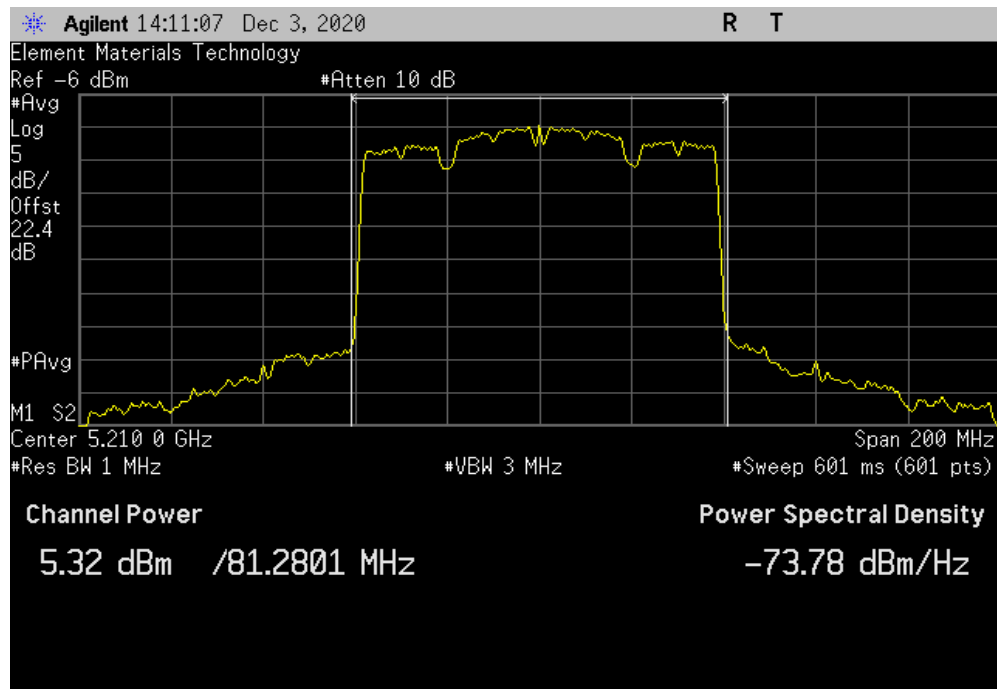


TMTx 2019.08.30.0 XMR 2020.03.25.0

80 MHz, 802.11(ac) MCS0, Ch 36-48, Low Channel 5210 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
6.259	0.2	6.5	5.2	11.7	30	Pass



80 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36-48, Low Channel 5210 MHz						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
5.324	1.1	6.4	5.2	11.6	30	Pass



EMISSION BANDWIDTH

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5183A	TID	26-Apr-19	26-Apr-21
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	13-Mar-20	13-Mar-21
Attenuator	S.M. Electronics	SA26B-20	AUY	13-Mar-20	13-Mar-21
Block - DC	Fairview Microwave	SD3379	AMW	13-Mar-20	13-Mar-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	28-Oct-20	28-Oct-21

TEST DESCRIPTION

The transmit frequencies and data rates listed in the datasheet were measured in each band utilized by the radio. The transmit power was set to its default maximum.

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

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

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

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

EMISSION BANDWIDTH



TSTx 2019.08.30.0 XMR 2020.03.25.0

EUT: A-dec Gateway

Serial Number: 5210041984

Customer: A-dec, Inc.

Attendees: Spencer Warneke

Project: None

Tested by: Jeff Alcoke

Power: 110VAC/60Hz

Work Order: A-DE0149

Date: 3-Dec-20

Temperature: 23 °C

Humidity: 30.4% RH

Barometric Pres.: 1030 mbar

Job Site: EV06

TEST SPECIFICATIONS

FCC 15.407:2020

ANSI C63.10:2013

COMMENTS

Reference level offset includes: DC Block, 20 dB attenuator, and measurement cable.

DEVIATIONS FROM TEST STANDARD

None

Configuration #

1

Signature



Value (%)

Value (dB)

Limit

Result

20 MHz

802.11(a) 6 Mbps

Ch 36, Low Channel 5180 MHz

Ch 48, High Channel 5240 MHz

802.11(a) 36 Mbps

Ch 36, Low Channel 5180 MHz

Ch 48, High Channel 5240 MHz

802.11(a) 54 Mbps

Ch 36, Low Channel 5180 MHz

Ch 48, High Channel 5240 MHz

802.11(n) MCS0

Ch 36, Low Channel 5180 MHz

Ch 48, High Channel 5240 MHz

802.11(n) MCS7

Ch 36, Low Channel 5180 MHz

Ch 48, High Channel 5240 MHz

802.11(ac) MCS8 (256-QAM)

Ch 36, Low Channel 5180 MHz

Ch 48, High Channel 5240 MHz

16.999 MHz

21.974 MHz

N/A

N/A

17.048 MHz

21.619 MHz

N/A

N/A

16.799 MHz

21.288 MHz

N/A

N/A

16.808 MHz

21.361 MHz

N/A

N/A

16.682 MHz

21.544 MHz

N/A

N/A

16.717 MHz

21.528 MHz

N/A

N/A

17.988 MHz

22.171 MHz

N/A

N/A

18.026 MHz

22.043 MHz

N/A

N/A

17.929 MHz

21.712 MHz

N/A

N/A

17.933 MHz

21.327 MHz

N/A

N/A

17.884 MHz

21.486 MHz

N/A

N/A

17.875 MHz

21.341 MHz

N/A

N/A

40 MHz

802.11(n) MCS0

Ch 36/40, Low Channel 5190 MHz

Ch 44/48, High Channel 5230 MHz

802.11(n) MCS7

Ch 36/40, Low Channel 5190 MHz

Ch 44/48, High Channel 5230 MHz

802.11(ac) MCS9 (256-QAM)

Ch 36/40, Low Channel 5190 MHz

Ch 44/48, High Channel 5230 MHz

36.372 MHz

40.918 MHz

N/A

N/A

36.393 MHz

40.282 MHz

N/A

N/A

36.457 MHz

40.445 MHz

N/A

N/A

36.459 MHz

40.287 MHz

N/A

N/A

36.662 MHz

40.434 MHz

N/A

N/A

36.717 MHz

40.586 MHz

N/A

N/A

80 MHz

802.11(ac) MCS0

Ch 36-48, Low Channel 5210 MHz

802.11(ac) MCS9 (256-QAM)

Ch 36-48, Low Channel 5210 MHz

75.585 MHz

81.253 MHz

N/A

N/A

75.651 MHz

81.28 MHz

N/A

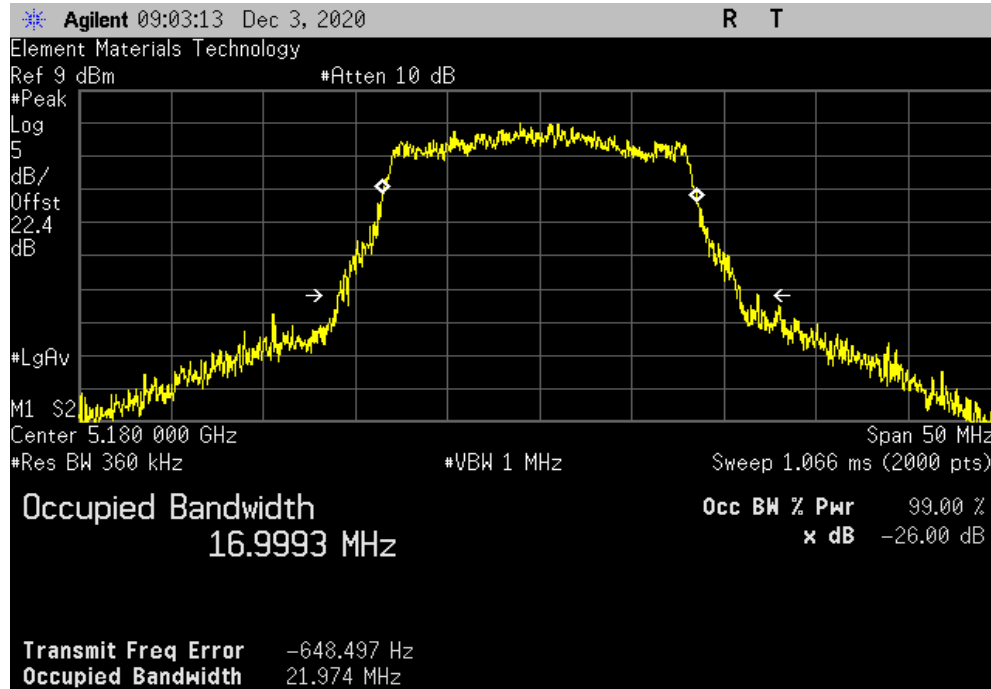
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EMISSION BANDWIDTH

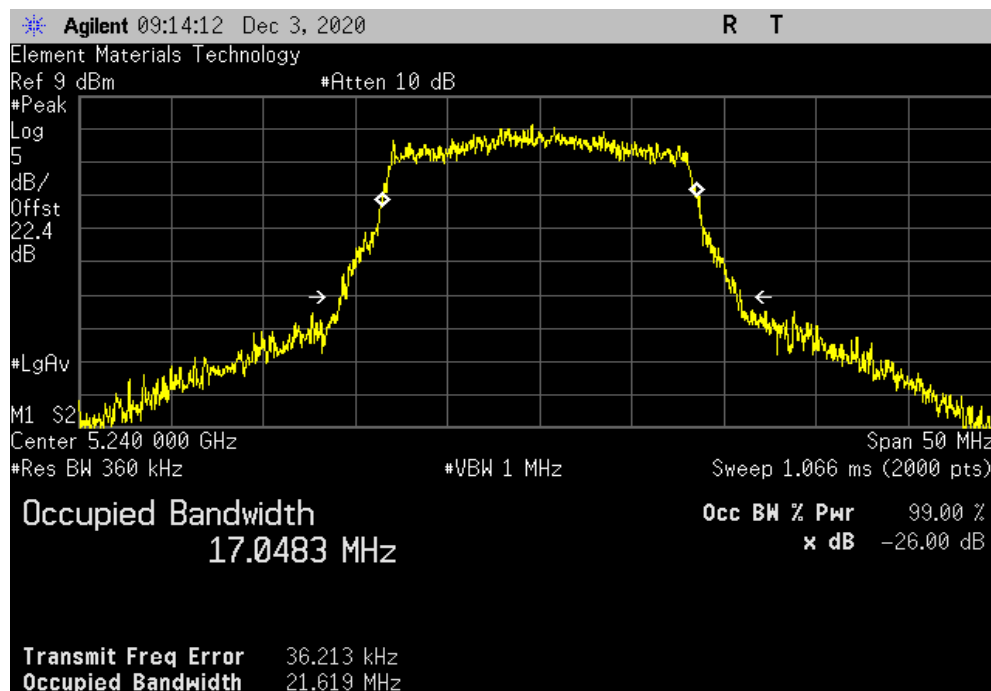


TIMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz						
			Value (%)	Value (dB)	Limit	Result
			16.999 MHz	21.974 MHz	N/A	N/A



20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz						
			Value (%)	Value (dB)	Limit	Result
			17.048 MHz	21.619 MHz	N/A	N/A

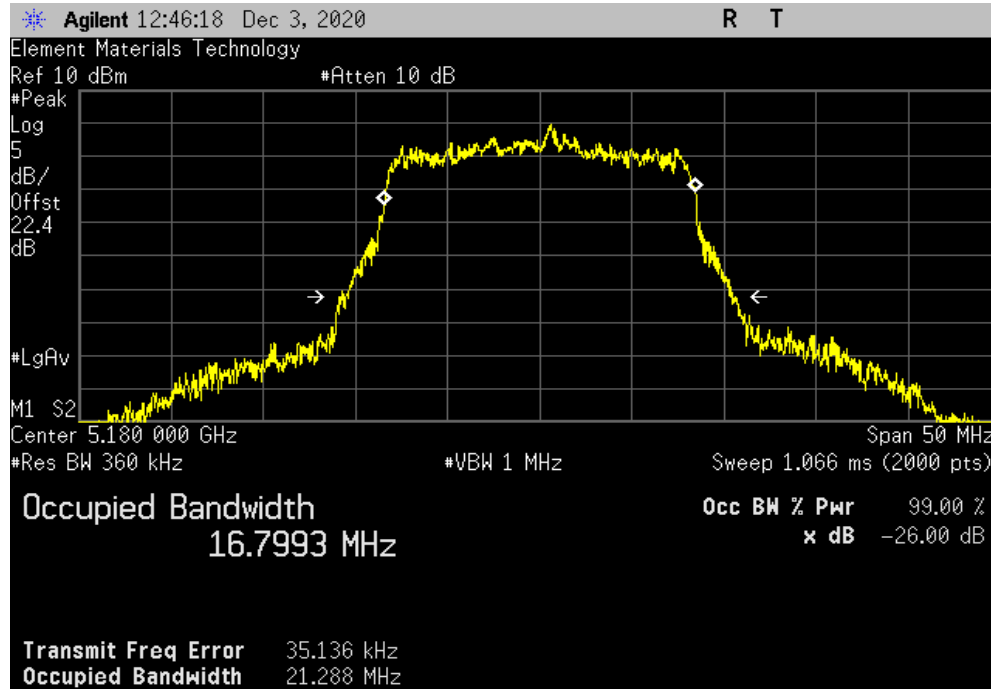


EMISSION BANDWIDTH

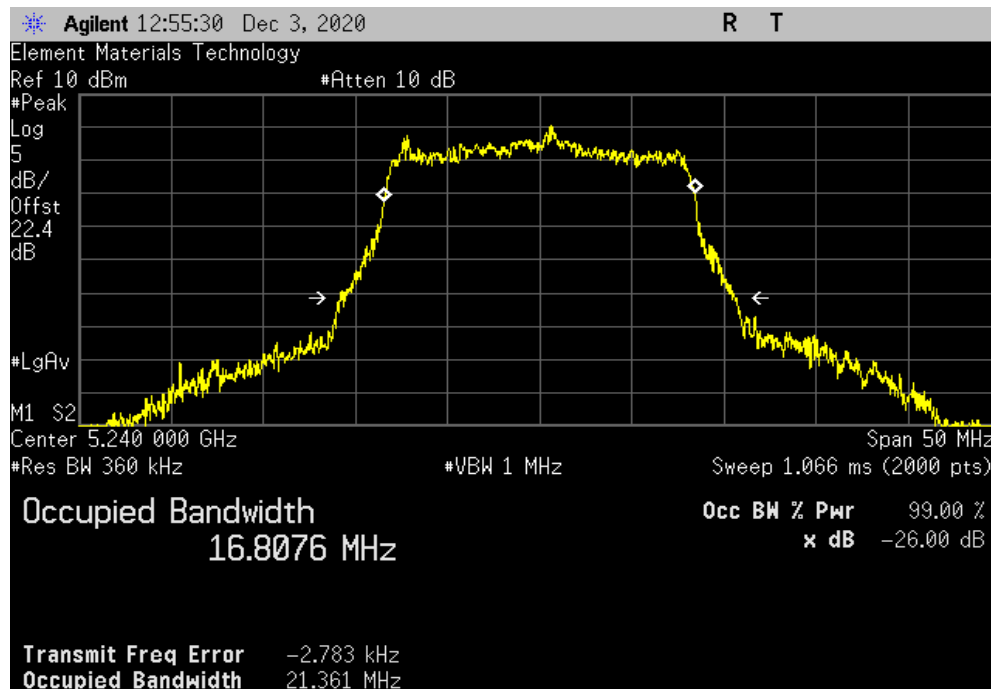


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz						
			Value (%)	Value (dB)	Limit	Result
			16.799 MHz	21.288 MHz	N/A	N/A



20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz						
			Value (%)	Value (dB)	Limit	Result
			16.808 MHz	21.361 MHz	N/A	N/A

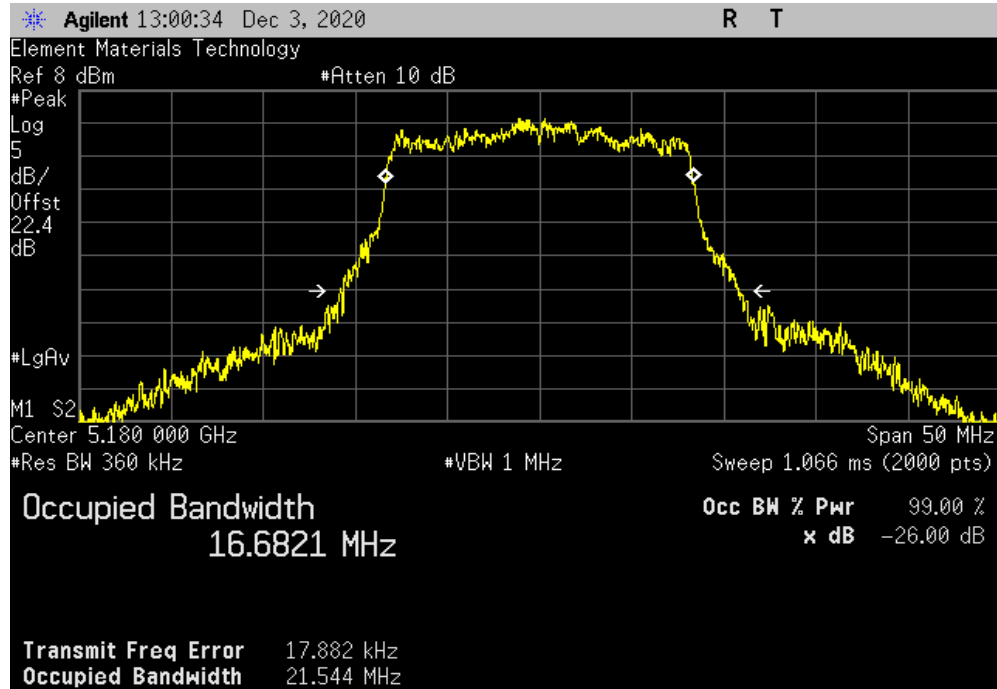


EMISSION BANDWIDTH

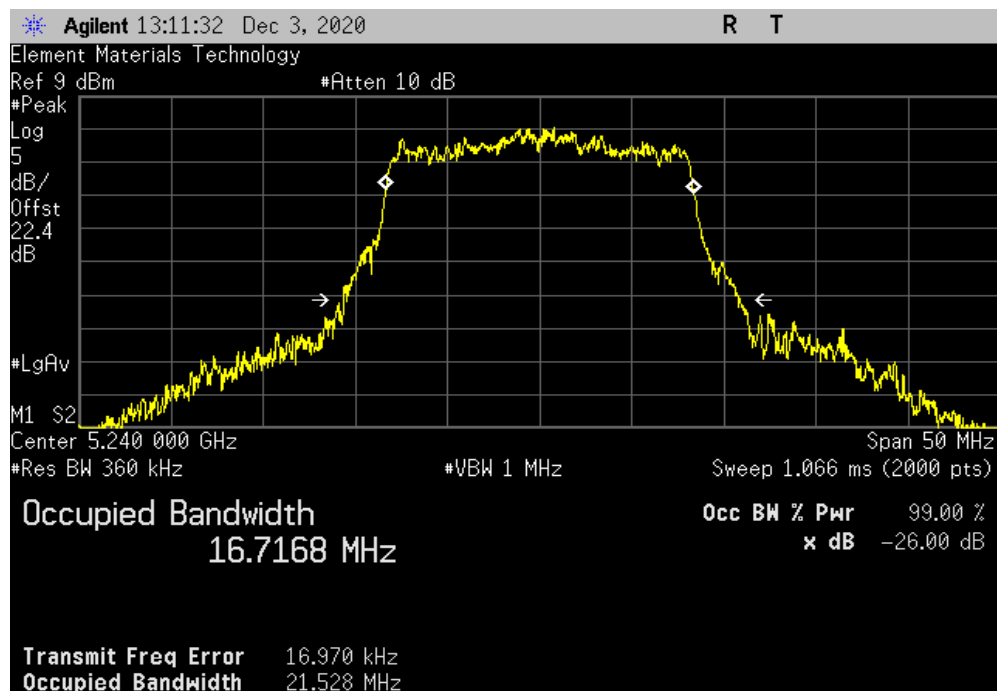


TIMx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz						
			Value (%)	Value (dB)	Limit	Result
			16.682 MHz	21.544 MHz	N/A	N/A



20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz						
			Value (%)	Value (dB)	Limit	Result
			16.717 MHz	21.528 MHz	N/A	N/A

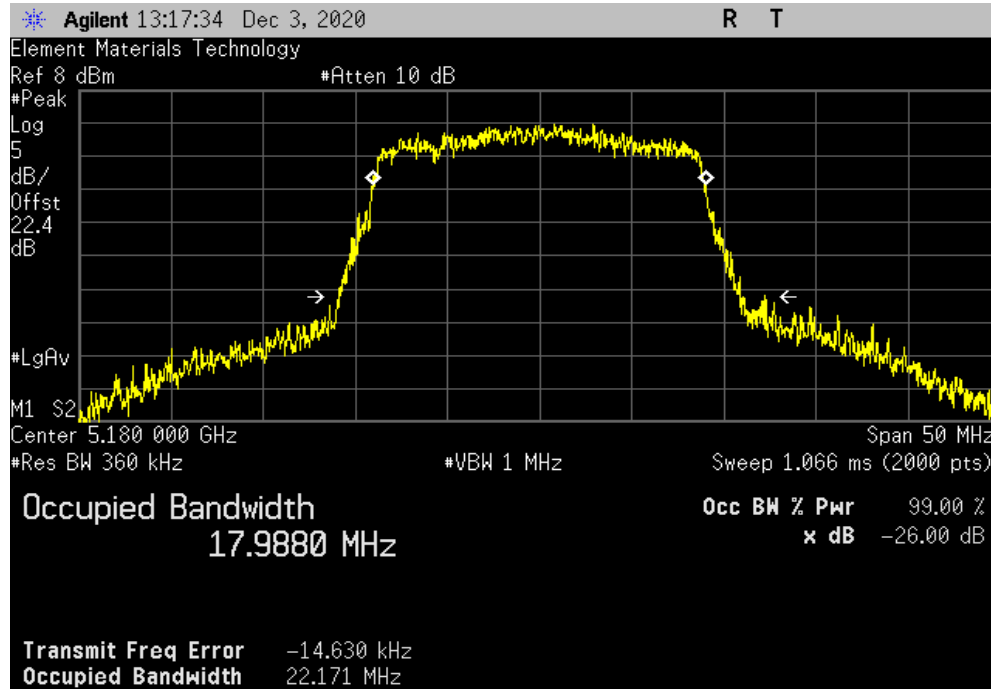


EMISSION BANDWIDTH

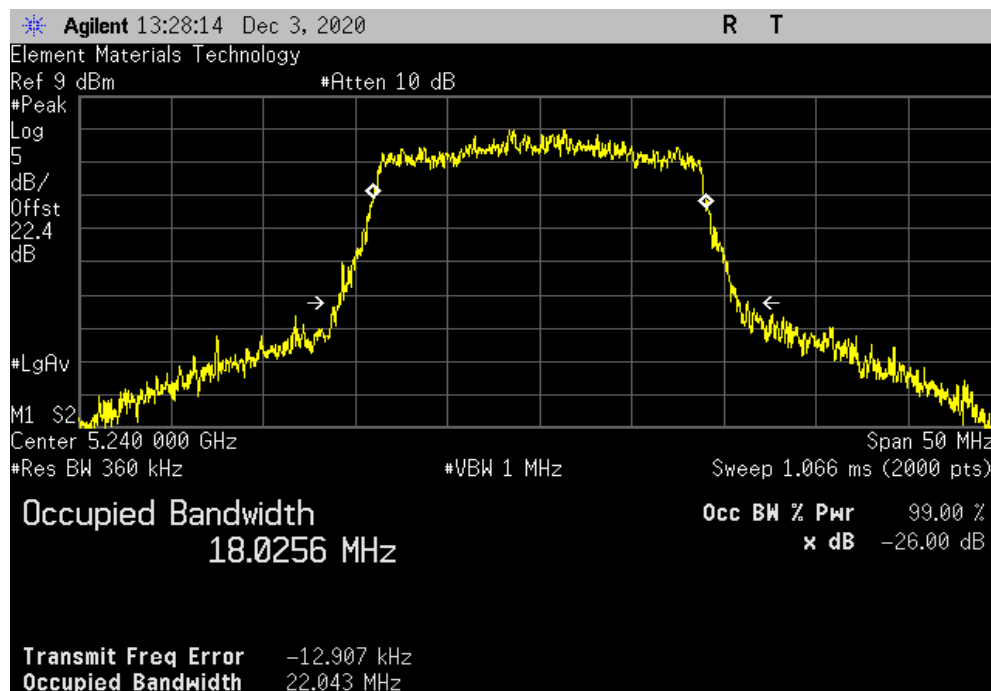


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz						
			Value (%)	Value (dB)	Limit	Result
			17.988 MHz	22.171 MHz	N/A	N/A



20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz						
			Value (%)	Value (dB)	Limit	Result
			18.026 MHz	22.043 MHz	N/A	N/A

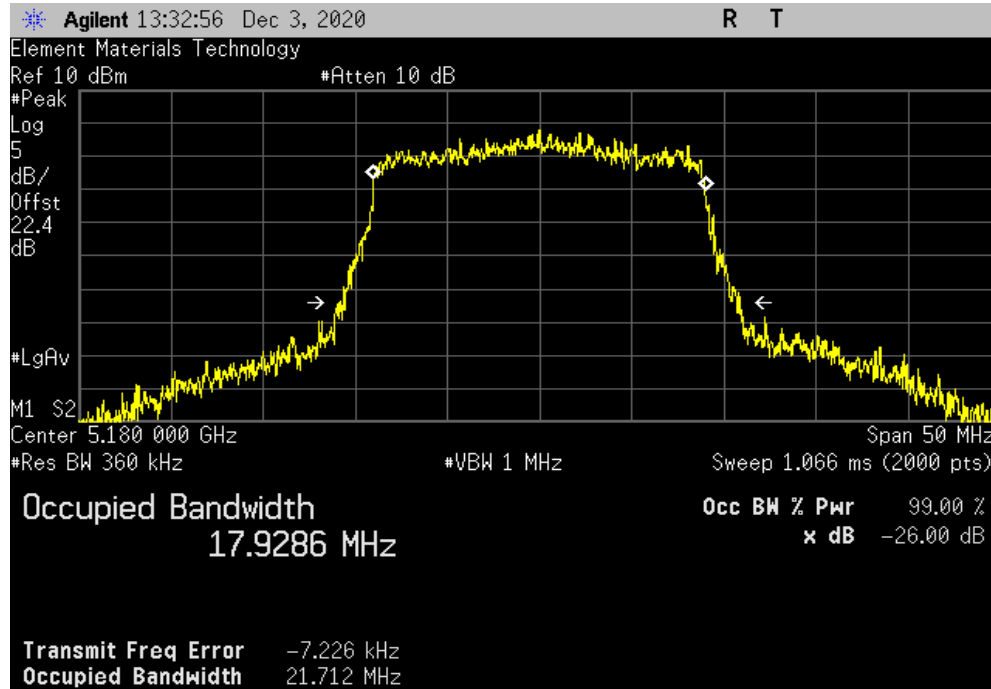


EMISSION BANDWIDTH

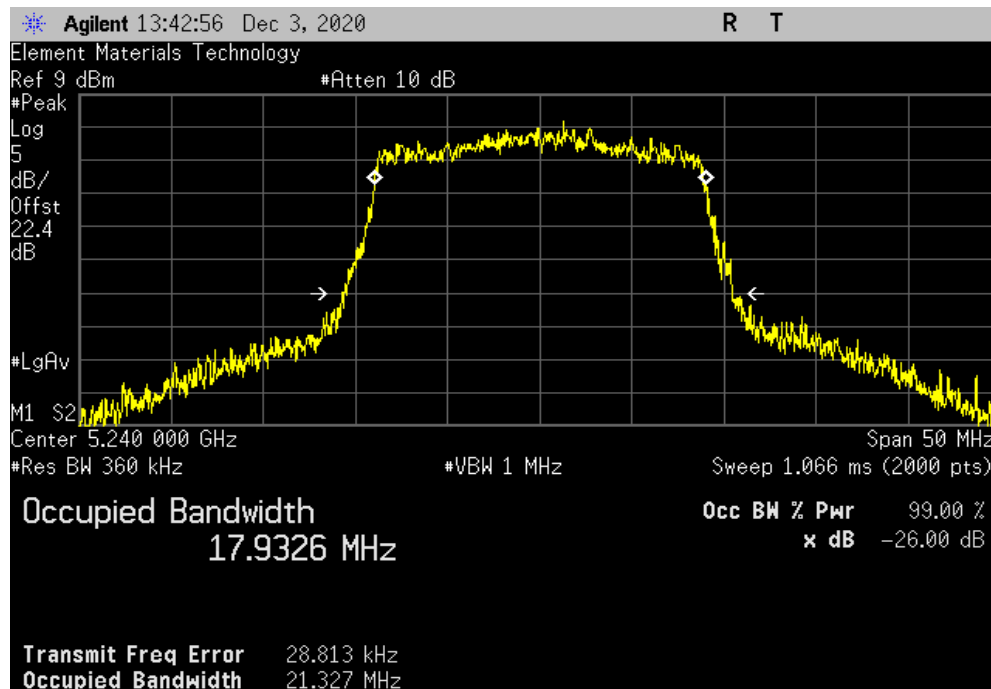


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz						
			Value (%)	Value (dB)	Limit	Result
			17.929 MHz	21.712 MHz	N/A	N/A



20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz						
			Value (%)	Value (dB)	Limit	Result
			17.933 MHz	21.327 MHz	N/A	N/A

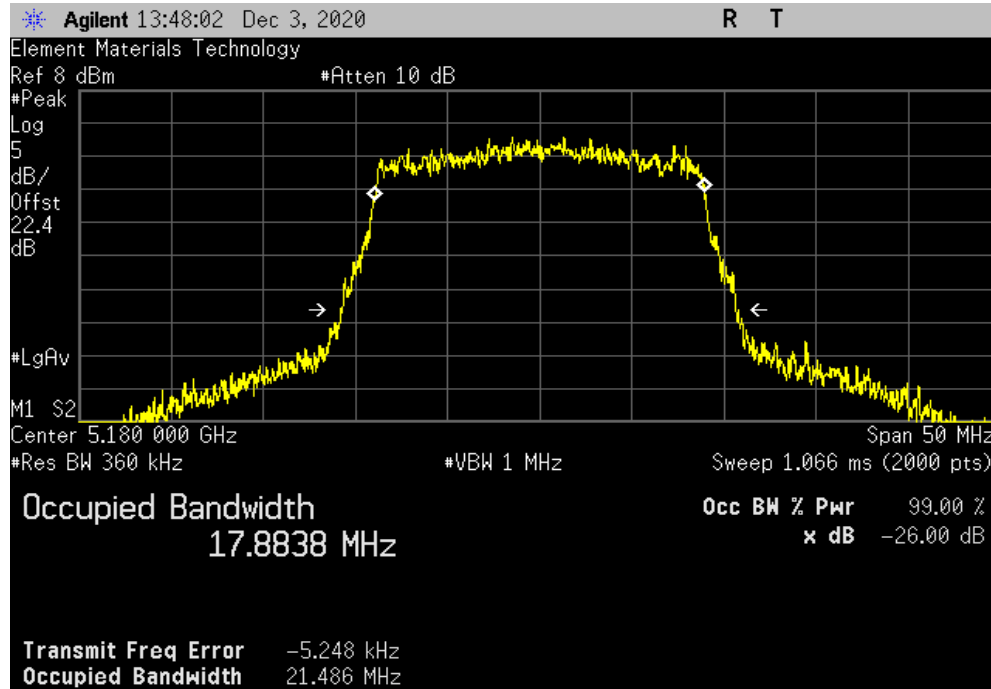


EMISSION BANDWIDTH

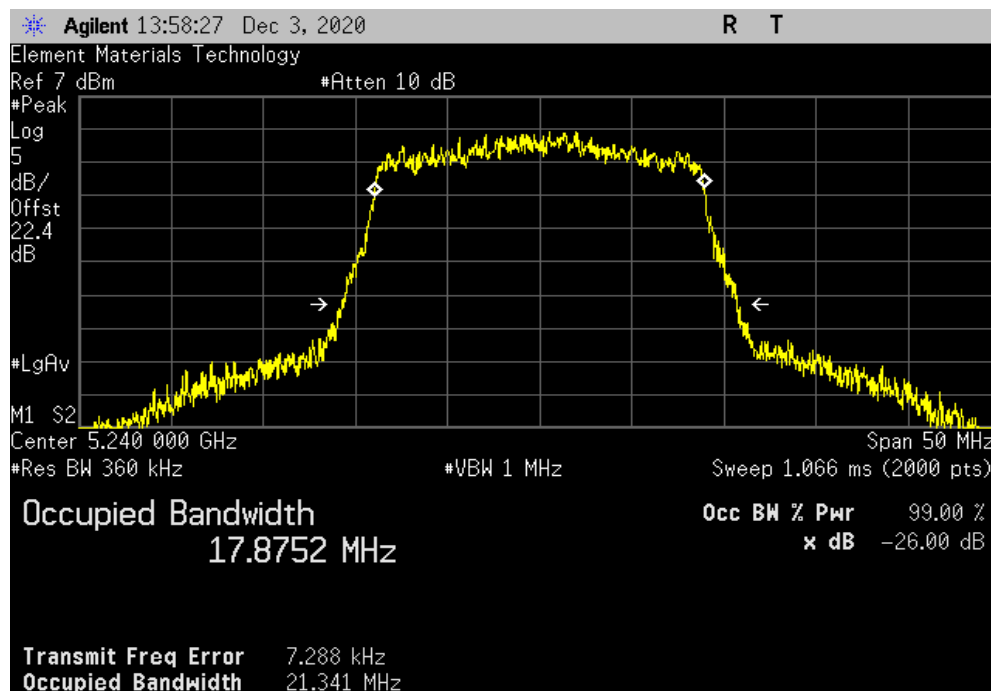


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 36, Low Channel 5180 MHz						
			Value (%)	Value (dB)	Limit	Result
			17.884 MHz	21.486 MHz	N/A	N/A



20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 48, High Channel 5240 MHz						
			Value (%)	Value (dB)	Limit	Result
			17.875 MHz	21.341 MHz	N/A	N/A

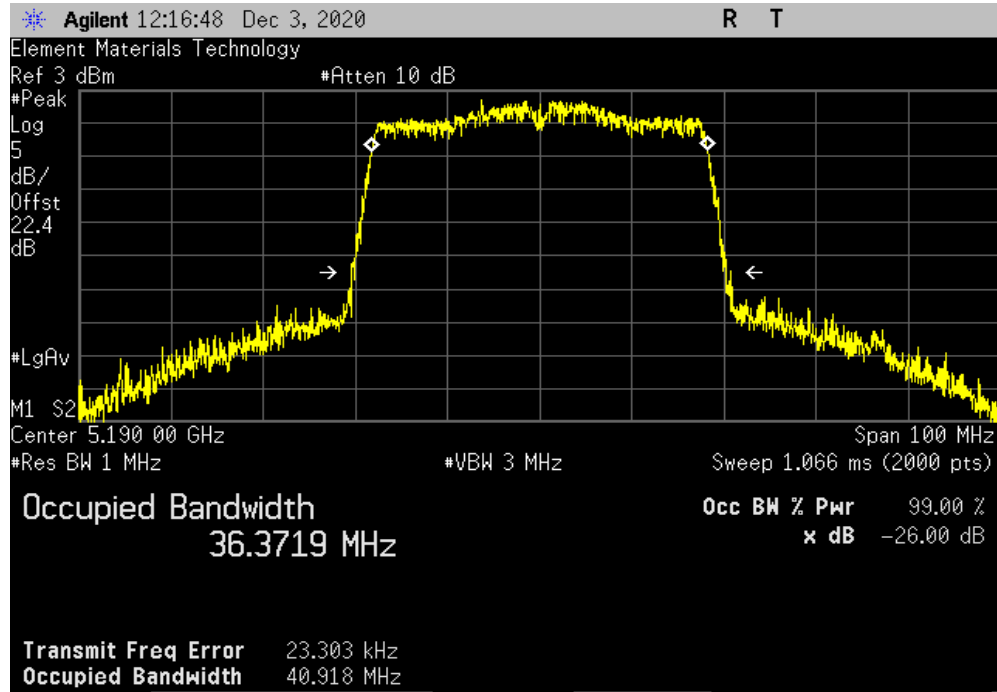


EMISSION BANDWIDTH

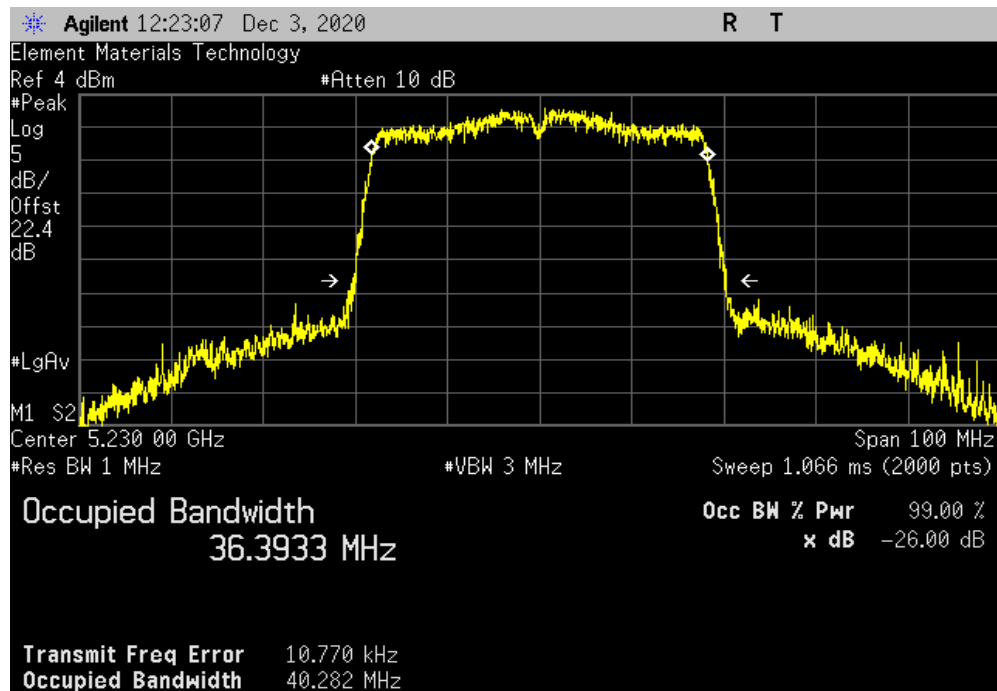


TbTtx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz						
			Value (%)	Value (dB)	Limit	Result
			36.372 MHz	40.918 MHz	N/A	N/A



40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz						
			Value (%)	Value (dB)	Limit	Result
			36.393 MHz	40.282 MHz	N/A	N/A

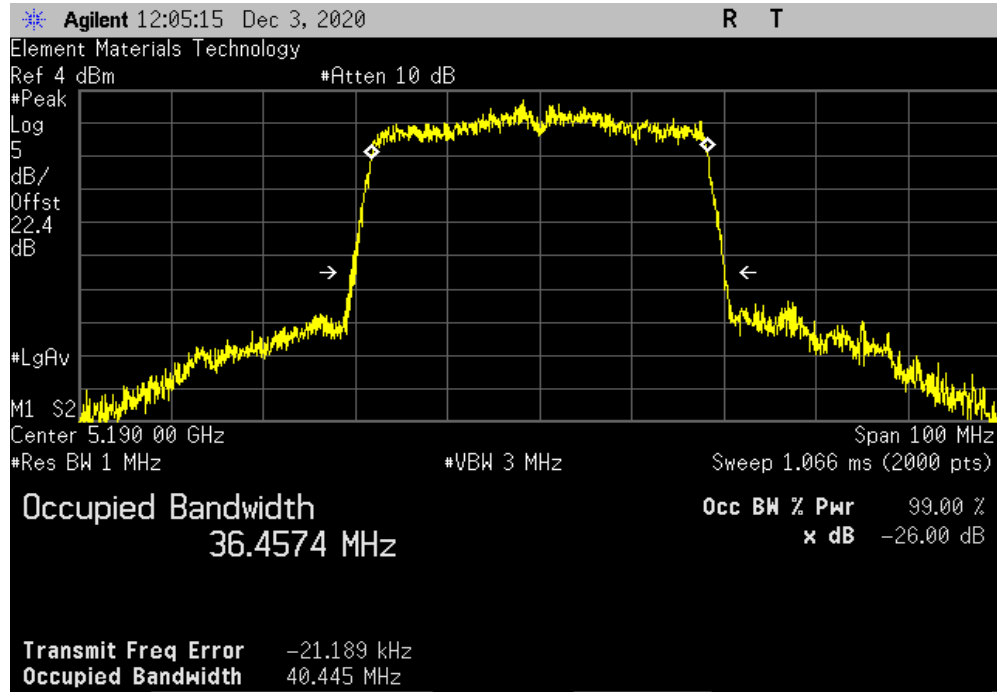


EMISSION BANDWIDTH

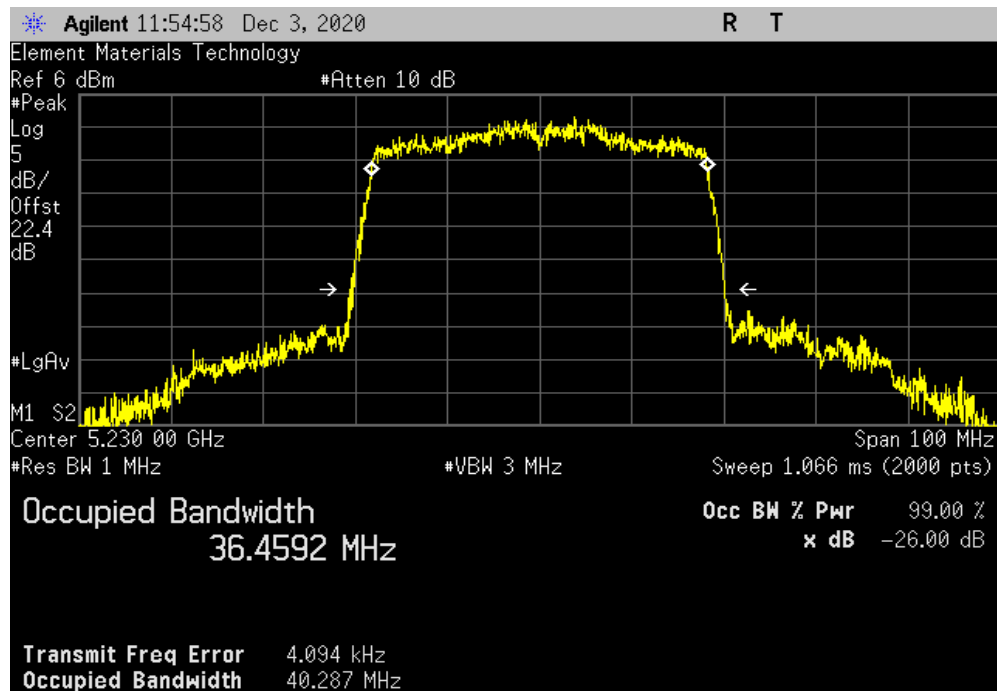


TbTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz						
			Value (%)	Value (dB)	Limit	Result
			36.457 MHz	40.445 MHz	N/A	N/A



40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz						
			Value (%)	Value (dB)	Limit	Result
			36.459 MHz	40.287 MHz	N/A	N/A

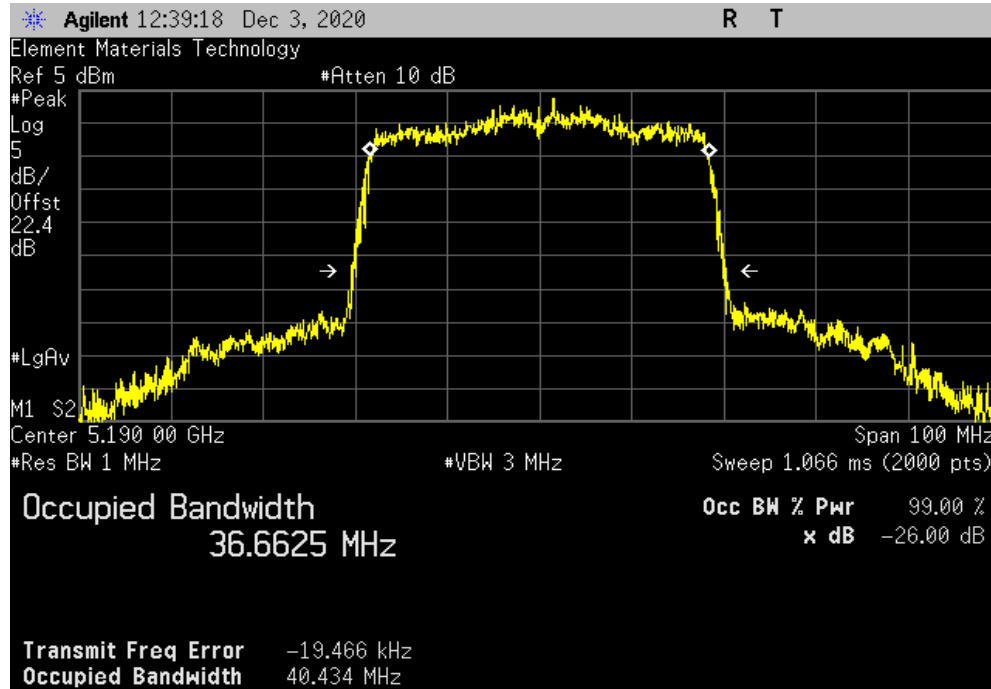


EMISSION BANDWIDTH

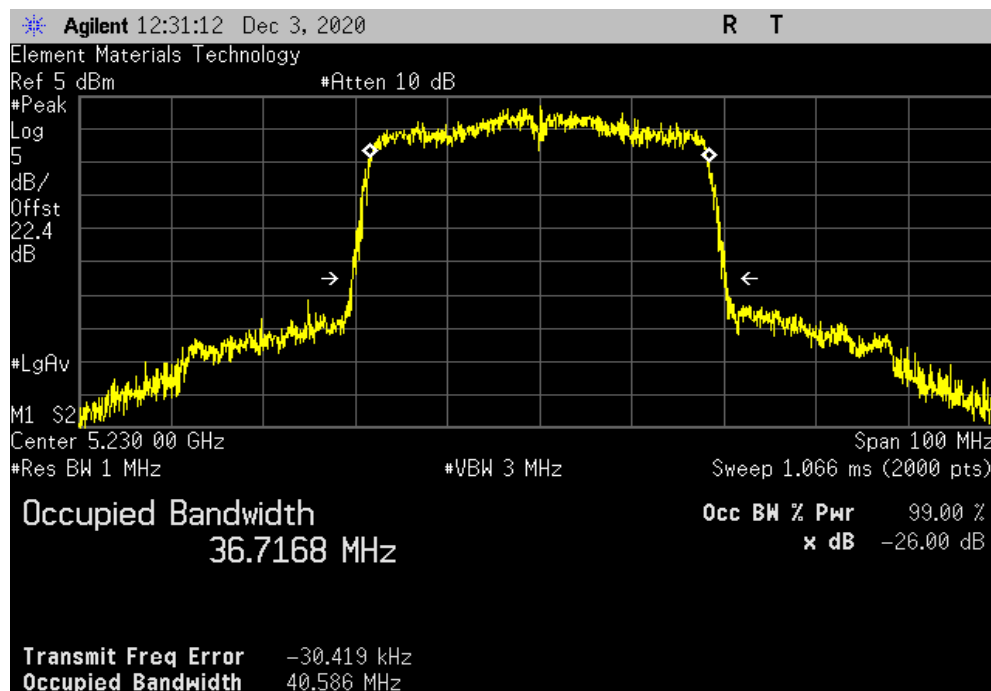


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36/40, Low Channel 5190 MHz						
			Value (%)	Value (dB)	Limit	Result
			36.662 MHz	40.434 MHz	N/A	N/A



40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 44/48, High Channel 5230 MHz						
			Value (%)	Value (dB)	Limit	Result
			36.717 MHz	40.586 MHz	N/A	N/A

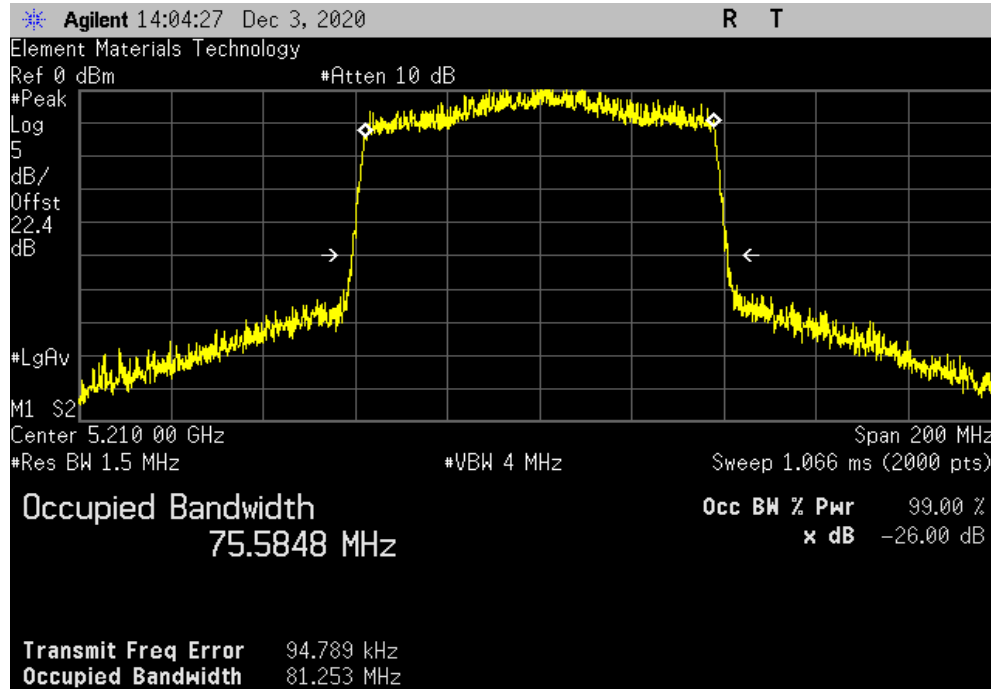


EMISSION BANDWIDTH

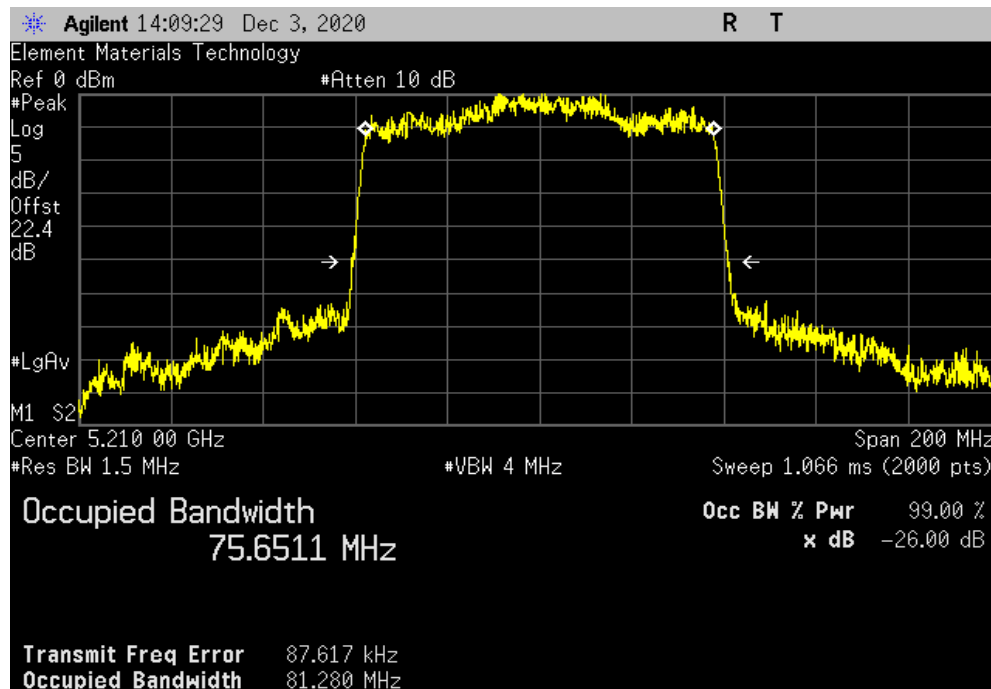


TMTx 2019.08.30.0 XMR 2020.03.25.0

80 MHz, 802.11(ac) MCS0, Ch 36-48, Low Channel 5210 MHz						
			Value (%)	Value (dB)	Limit	Result
			75.585 MHz	81.253 MHz	N/A	N/A



80 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36-48, Low Channel 5210 MHz						
			Value (%)	Value (dB)	Limit	Result
			75.651 MHz	81.28 MHz	N/A	N/A



BAND EDGE



XMIT 2020.03.25.0

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	EVH	13-Mar-20	13-Mar-21
Attenuator	S.M. Electronics	SA26B-20	AUY	13-Mar-20	13-Mar-21
Block - DC	Fairview Microwave	SD3379	AMW	13-Mar-20	13-Mar-21
Generator - Signal	Agilent	N5183A	TID	26-Apr-19	26-Apr-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	28-Oct-20	28-Oct-21

TEST DESCRIPTION

The 99% emission bandwidth of the carrier was measured using the occupied bandwidth function of the spectrum analyzer. The markers of the 99% emission bandwidth measurement were evaluated to ensure that no part of the carrier operating in a non-DFS band was operating in a band where DFS testing is required.

This test is done with the U-NII-1 band (5.2 GHz band) to ensure no portion of the carrier is contained within the U-NII-2A band and with the U-NII-3 band (5.8 GHz band) to ensure no portion of the carrier is contained in the U-NII-2C band.

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

The transmit power was set to its default maximum.

BAND EDGE



TSTx 2019.08.30.0 XMR 2020.03.25.0

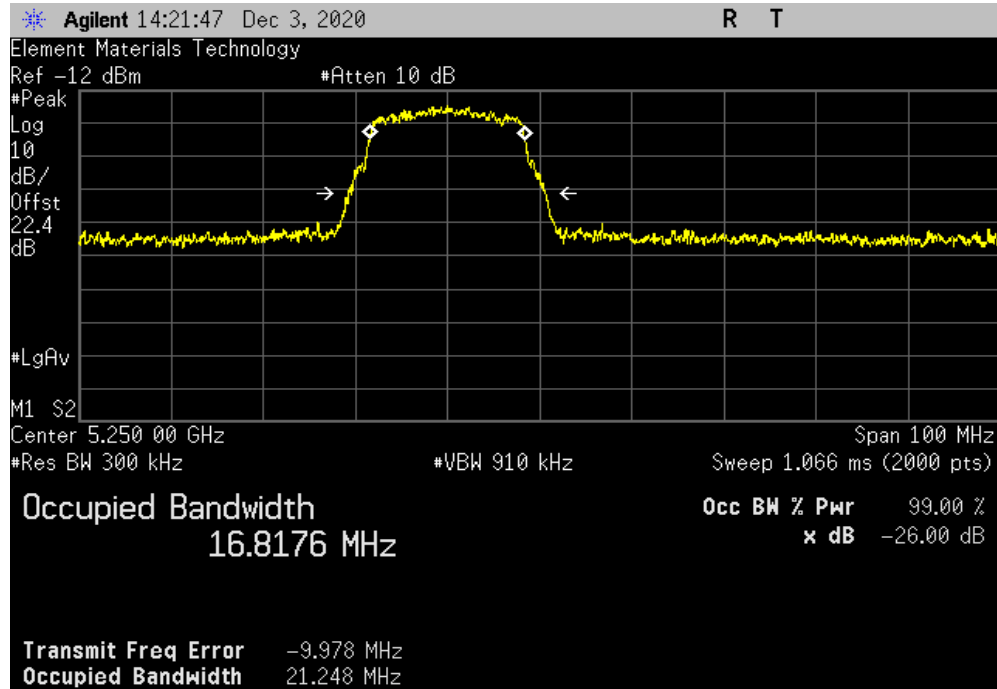
EUT: A-dec Gateway		Work Order: A-DE0149	
Serial Number: 5210041984		Date: 3-Dec-20	
Customer: A-dec, Inc.		Temperature: 23 °C	
Attendees: Spencer Warneke		Humidity: 30.6% RH	
Project: None		Barometric Pres.: 1030 mbar	
Tested by: Jeff Alcoke		Power: 110VAC/60Hz	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.407:2020		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes: DC Block, 20 dB attenuator, and measurement cable.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature	
		OBW Within Band	Band Edge (MHz)
			Result
20 MHz			
	802.11(a) 6 Mbps		
	Ch 48, High Channel 5240 MHz	Yes	5250 Pass
	802.11(a) 36 Mbps		
	Ch 48, High Channel 5240 MHz	Yes	5250 Pass
	802.11(a) 54 Mbps		
	Ch 48, High Channel 5240 MHz	Yes	5250 Pass
	802.11(n) MCS0		
	Ch 48, High Channel 5240 MHz	Yes	5250 Pass
	802.11(n) MCS7		
	Ch 48, High Channel 5240 MHz	Yes	5250 Pass
	802.11(ac) MCS8 (256-QAM)		
	Ch 48, High Channel 5240 MHz	Yes	5250 Pass
40 MHz			
	802.11(n) MCS0		
	Ch 44/48, High Channel 5230 MHz	Yes	5250 Pass
	802.11(n) MCS7		
	Ch 44/48, High Channel 5230 MHz	Yes	5250 Pass
	802.11(ac) MCS9 (256-QAM)		
	Ch 44/48, High Channel 5230 MHz	Yes	5250 Pass
80 MHz			
	802.11(ac) MCS0		
	Ch 36-48, Low Channel 5210 MHz	Yes	5250 Pass
	802.11(ac) MCS9 (256-QAM)		
	Ch 36-48, Low Channel 5210 MHz	Yes	5250 Pass

BAND EDGE

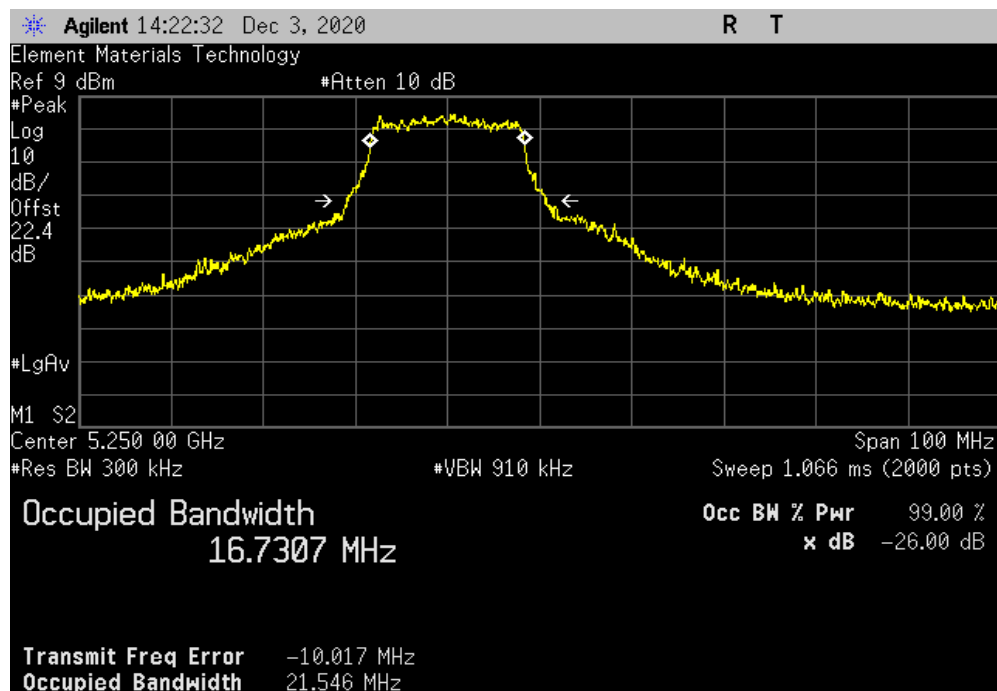


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz						
	OBW	Band Edge				
	Within Band	(MHz)	Result			
	Yes	5250	Pass			



20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz						
	OBW	Band Edge				
	Within Band	(MHz)	Result			
	Yes	5250	Pass			

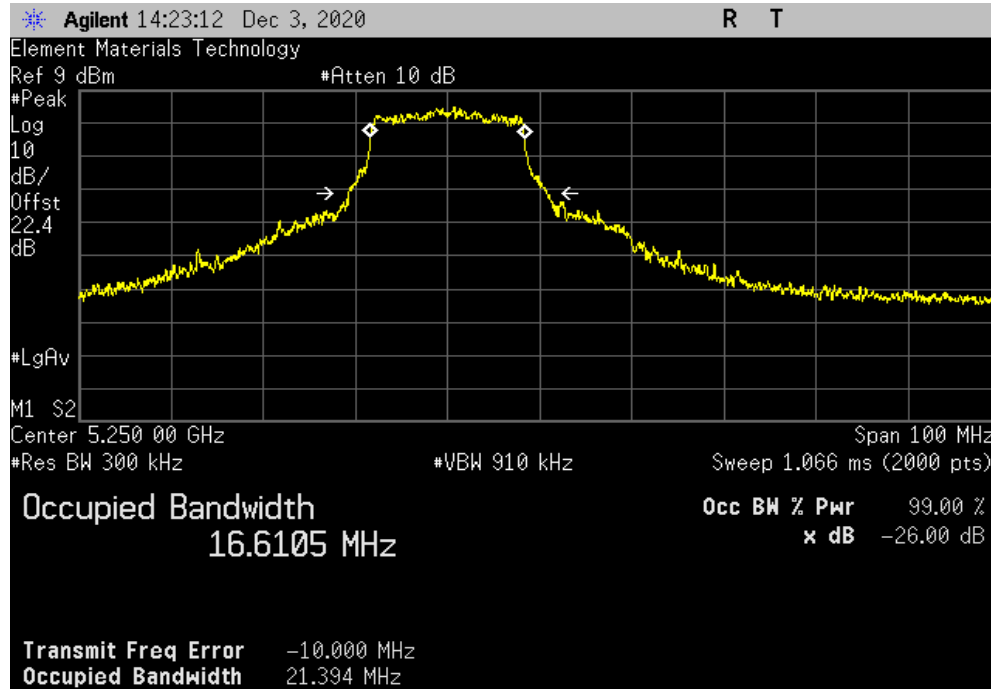


BAND EDGE

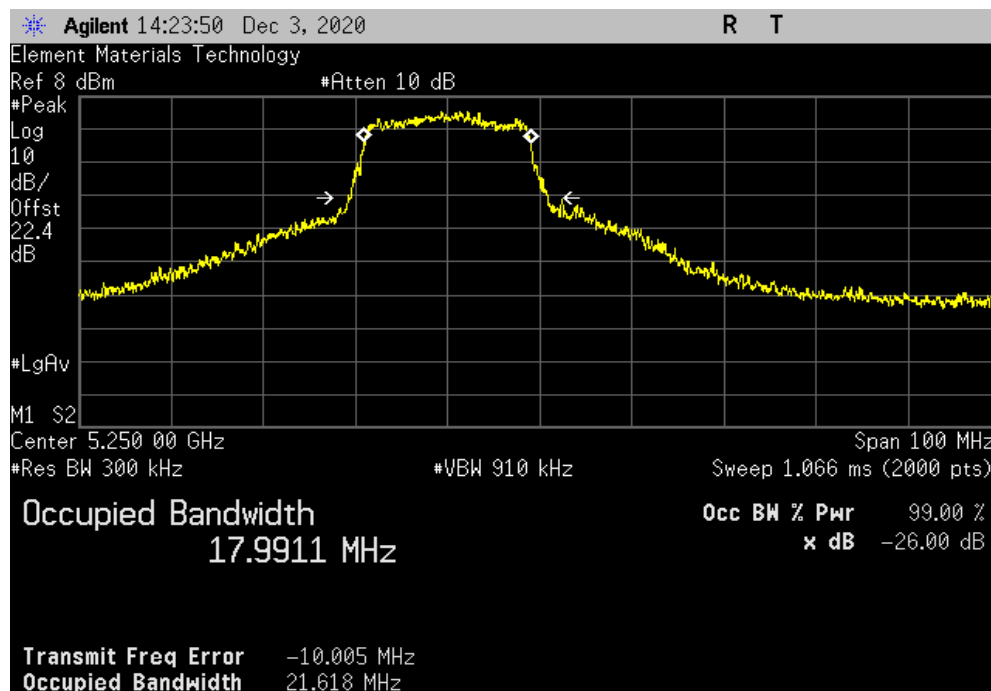


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz						
				OBW Within Band	Band Edge (MHz)	Result
				Yes	5250	Pass



20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz						
				OBW Within Band	Band Edge (MHz)	Result
				Yes	5250	Pass

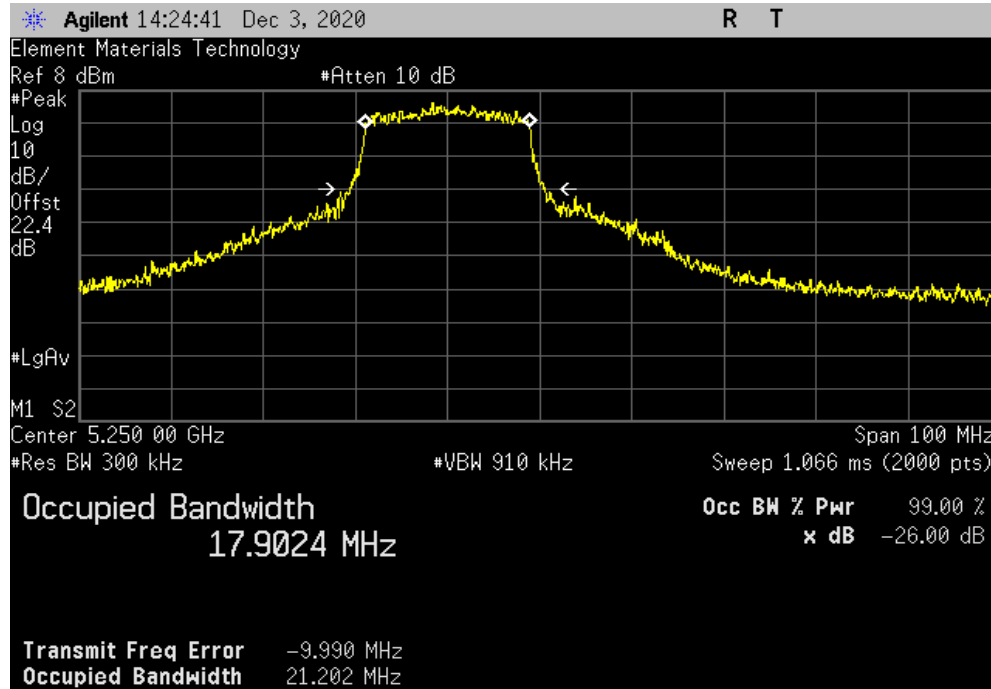


BAND EDGE

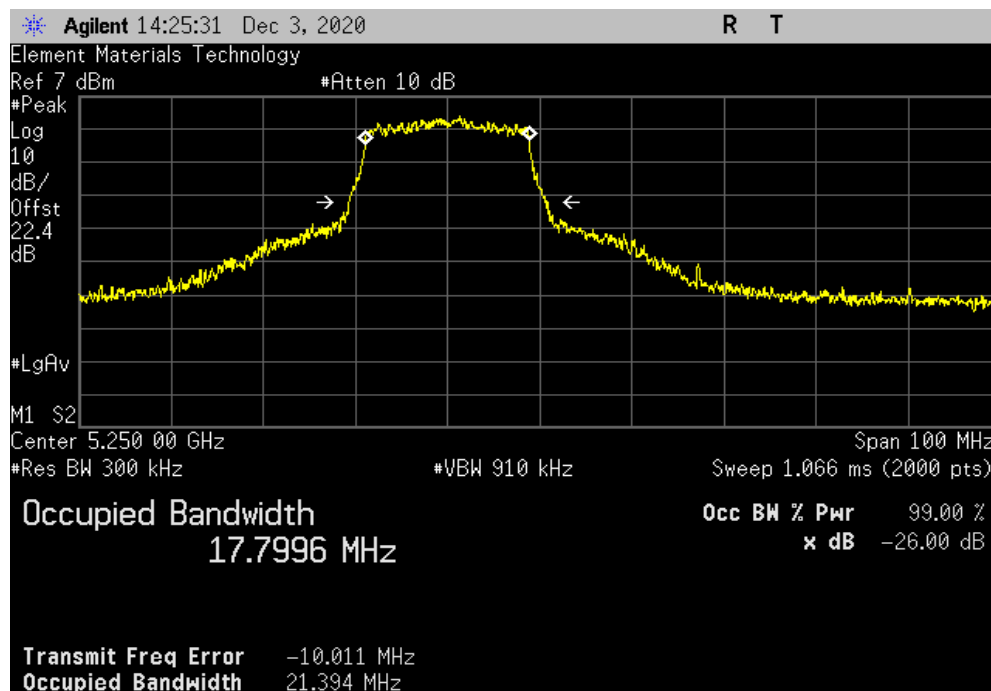


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz						
	OBW	Band Edge	Result			
	Within Band	(MHz)				
	Yes	5250	Pass			



20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 48, High Channel 5240 MHz						
	OBW	Band Edge	Result			
	Within Band	(MHz)				
	Yes	5250	Pass			

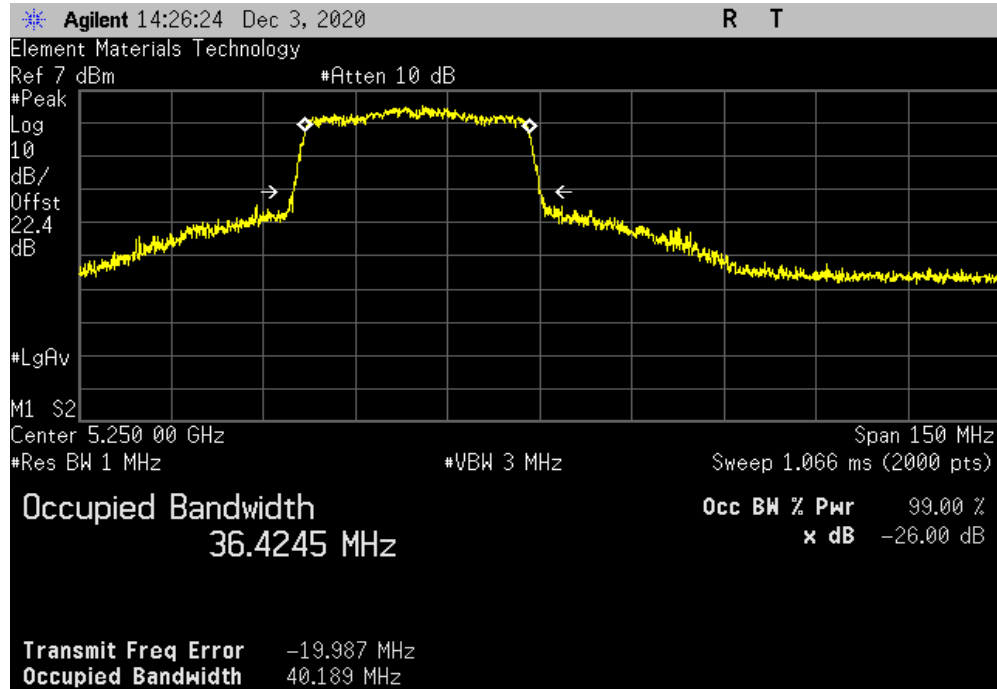


BAND EDGE

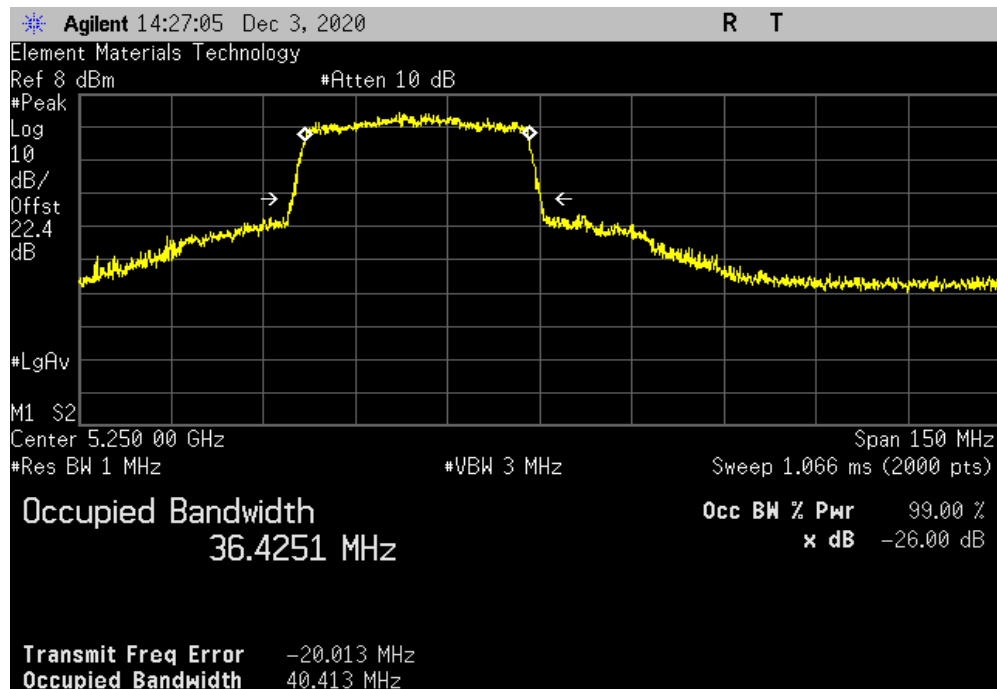


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz						
	OBW	Band Edge				
	Within Band	(MHz)	Result			
	Yes	5250	Pass			



40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz						
	OBW	Band Edge				
	Within Band	(MHz)	Result			
	Yes	5250	Pass			

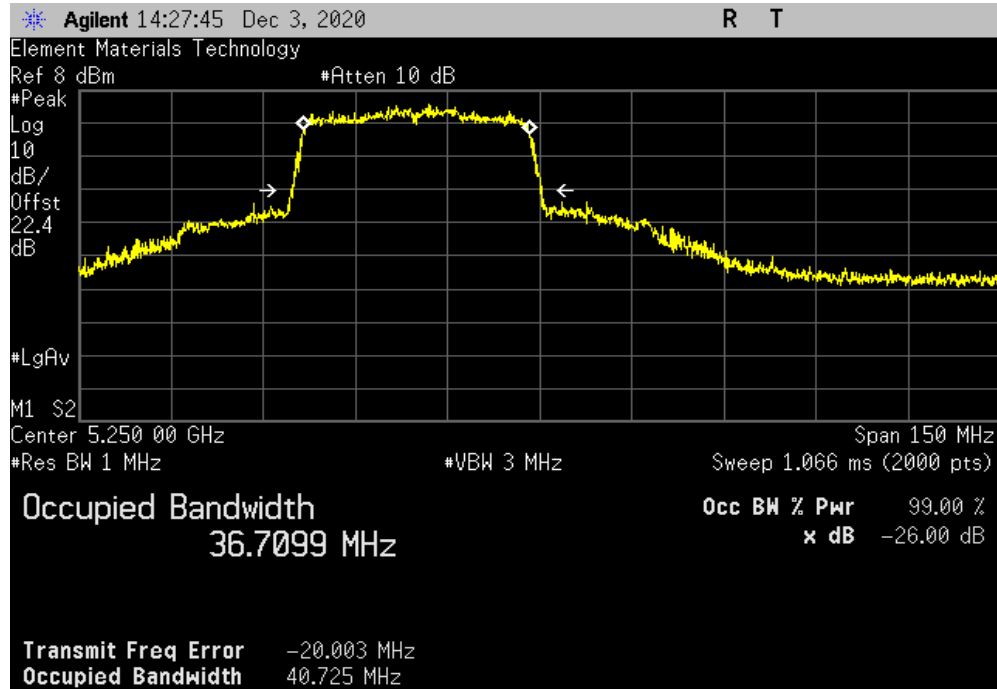


BAND EDGE

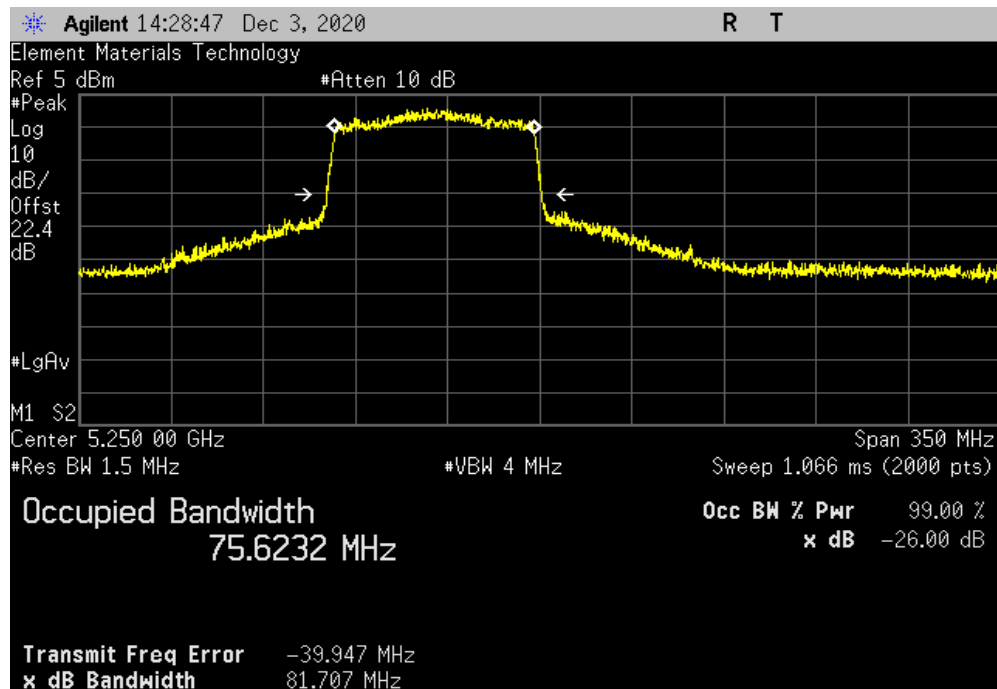


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 44/48, High Channel 5230 MHz						
	OBW	Band Edge				
	Within Band	(MHz)	Result			
	Yes	5250	Pass			



80 MHz, 802.11(ac) MCS0, Ch 36-48, Low Channel 5210 MHz						
	OBW	Band Edge				
	Within Band	(MHz)	Result			
	Yes	5250	Pass			

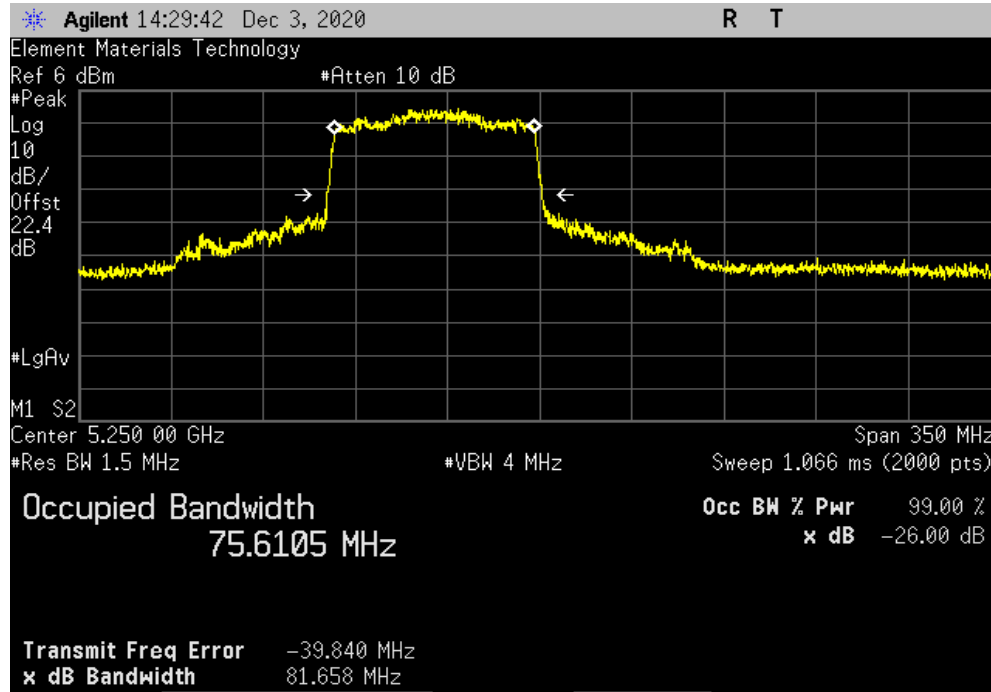


BAND EDGE



TbTx 2019.08.30.0 XMR 2020.03.25.0

80 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36-48, Low Channel 5210 MHz							
OBW					Band Edge		Result
Within Band					(MHz)		
				Yes	5250	Pass	



MAXIMUM POWER SPECTRAL DENSITY

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	EVK	13-Mar-20	13-Mar-21
Attenuator	S.M. Electronics	SA26B-20	AUY	13-Mar-20	13-Mar-21
Block - DC	Fairview Microwave	SD3379	AMW	13-Mar-20	13-Mar-21
Generator - Signal	Agilent	N5182A	TIF	29-Aug-20	29-Aug-23
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	28-Oct-20	28-Oct-21

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

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

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

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

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

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

MAXIMUM POWER SPECTRAL DENSITY



TSTx 2019.08.30.0 XMR 2020.03.25.0

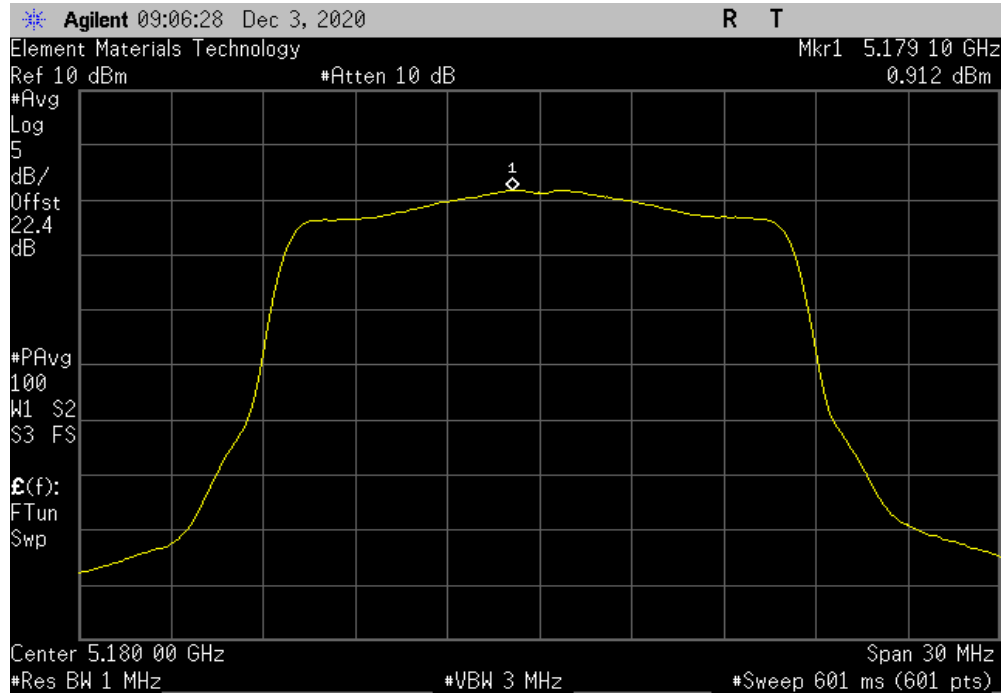
EUT: A-dec Gateway			Work Order: A-DE0149			
Serial Number: 5210041984			Date: 15-Dec-20			
Customer: A-dec, Inc.			Temperature: 21.7 °C			
Attendees: Spencer Warneke			Humidity: 37% RH			
Project: None			Barometric Pres.: 1020 mbar			
Tested by: Jeff Alcock		Power: 110VAC/60Hz	Job Site: EV06			
TEST SPECIFICATIONS			Test Method			
FCC 15.407:2020		ANSI C63.10:2013				
COMMENTS						
Reference level offset includes: DC Block, 20 dB attenuator and measurement cable.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1	Signature 				
		Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results
20 MHz						
802.11(a) 6 Mbps						
		Ch 36, Low Channel 5180 MHz	0.912	0.1	1	Pass
		Ch 48, High Channel 5240 MHz	1.449	0.1	1.5	Pass
802.11(a) 36 Mbps						
		Ch 36, Low Channel 5180 MHz	0.386	0.3	0.7	Pass
		Ch 48, High Channel 5240 MHz	0.862	0.3	1.2	Pass
802.11(a) 54 Mbps						
		Ch 36, Low Channel 5180 MHz	0.408	0.5	0.9	Pass
		Ch 48, High Channel 5240 MHz	0.924	0.5	1.4	Pass
802.11(n) MCS0						
		Ch 36, Low Channel 5180 MHz	0.147	0.1	0.2	Pass
		Ch 48, High Channel 5240 MHz	0.636	0.1	0.7	Pass
802.11(n) MCS7						
		Ch 36, Low Channel 5180 MHz	-0.191	0.5	0.3	Pass
		Ch 48, High Channel 5240 MHz	0.276	0.5	0.8	Pass
802.11(ac) MCS8 (256-QAM)						
		Ch 36, Low Channel 5180 MHz	-2.807	0.6	-2.3	Pass
		Ch 48, High Channel 5240 MHz	-2.282	0.6	-1.7	Pass
40 MHz						
802.11(n) MCS0						
		Ch 36/40, Low Channel 5190 MHz	-6.849	0.1	-6.7	Pass
		Ch 44/48, High Channel 5230 MHz	-6.338	0.1	-6.2	Pass
802.11(n) MCS7						
		Ch 36/40, Low Channel 5190 MHz	-7.482	0.7	-6.7	Pass
		Ch 44/48, High Channel 5230 MHz	-6.953	0.7	-6.2	Pass
802.11(ac) MCS9 (256-QAM)						
		Ch 36/40, Low Channel 5190 MHz	-6.737	0.9	-5.9	Pass
		Ch 44/48, High Channel 5230 MHz	-6.223	0.9	-5.4	Pass
80 MHz						
802.11(ac) MCS0						
		Ch 36-48, Low Channel 5210 MHz	-9.718	0.2	-9.5	Pass
802.11(ac) MCS9 (256-QAM)						
		Ch 36-48, Low Channel 5210 MHz	-10.879	1.1	-9.8	Pass

MAXIMUM POWER SPECTRAL DENSITY

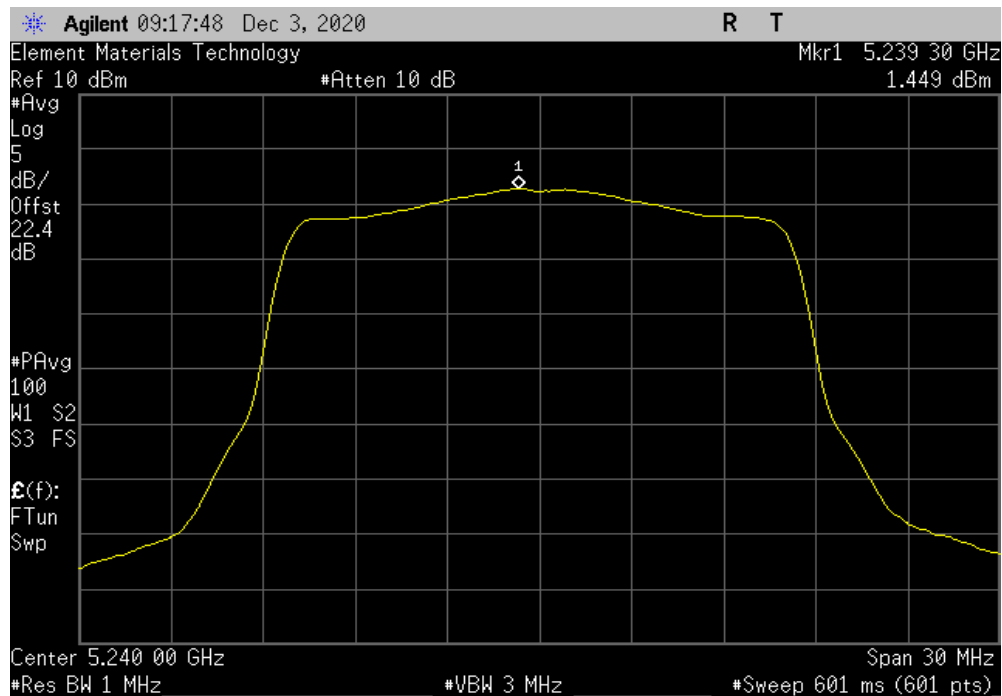


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
0.912	0.1	1	11	Pass		



20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
1.449	0.1	1.5	11	Pass		

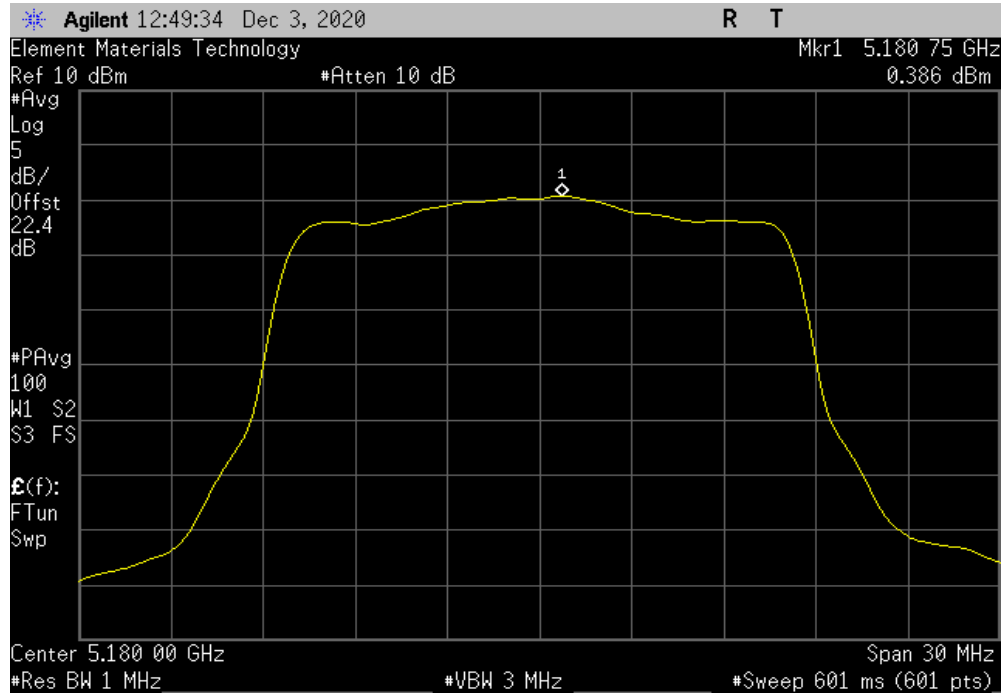


MAXIMUM POWER SPECTRAL DENSITY

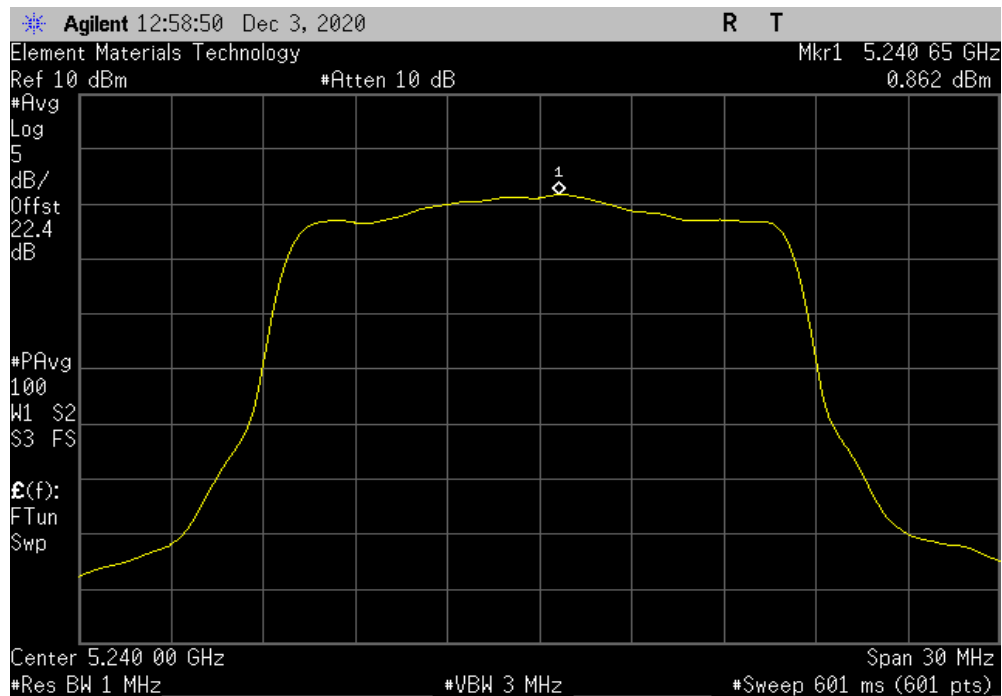


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
0.386	0.3	0.7	11	Pass		



20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
0.862	0.3	1.2	11	Pass		

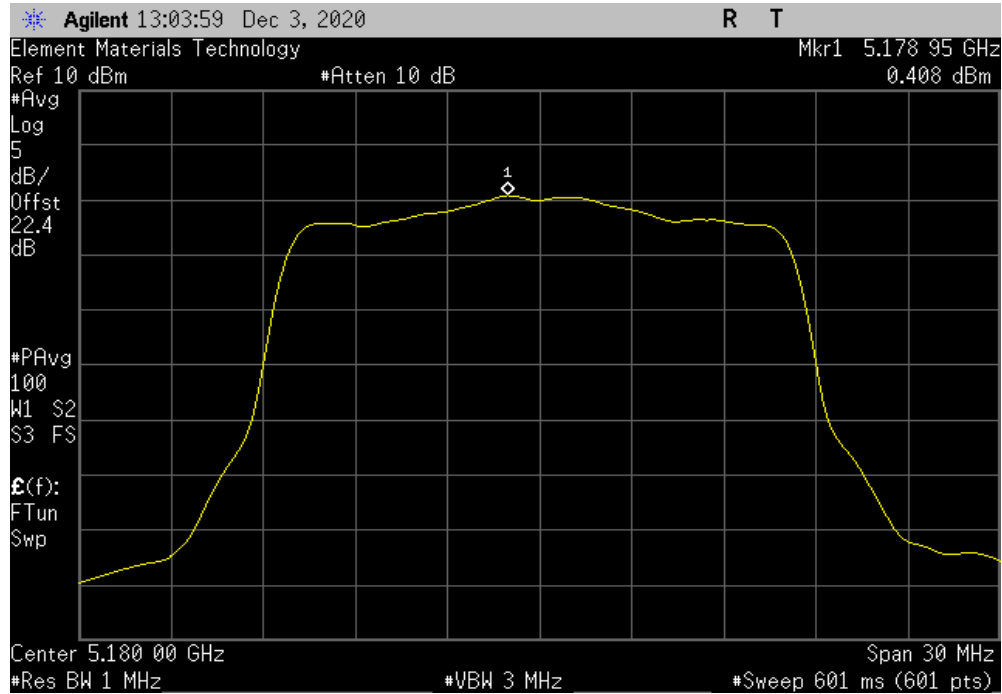


MAXIMUM POWER SPECTRAL DENSITY

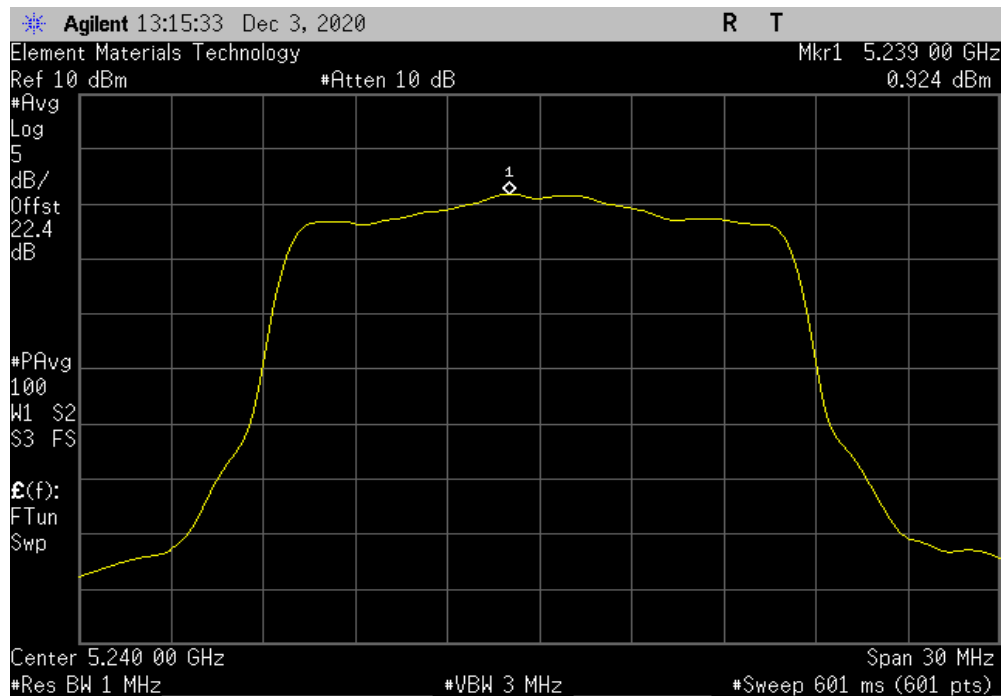


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
0.408	0.5	0.9	11	Pass		



20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
0.924	0.5	1.4	11	Pass		

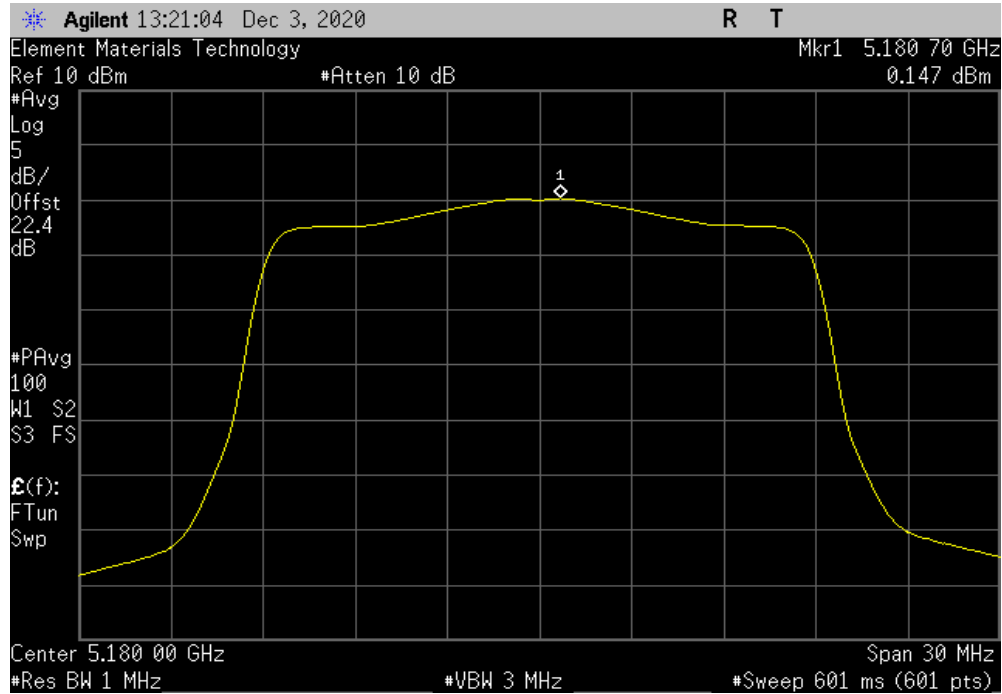


MAXIMUM POWER SPECTRAL DENSITY

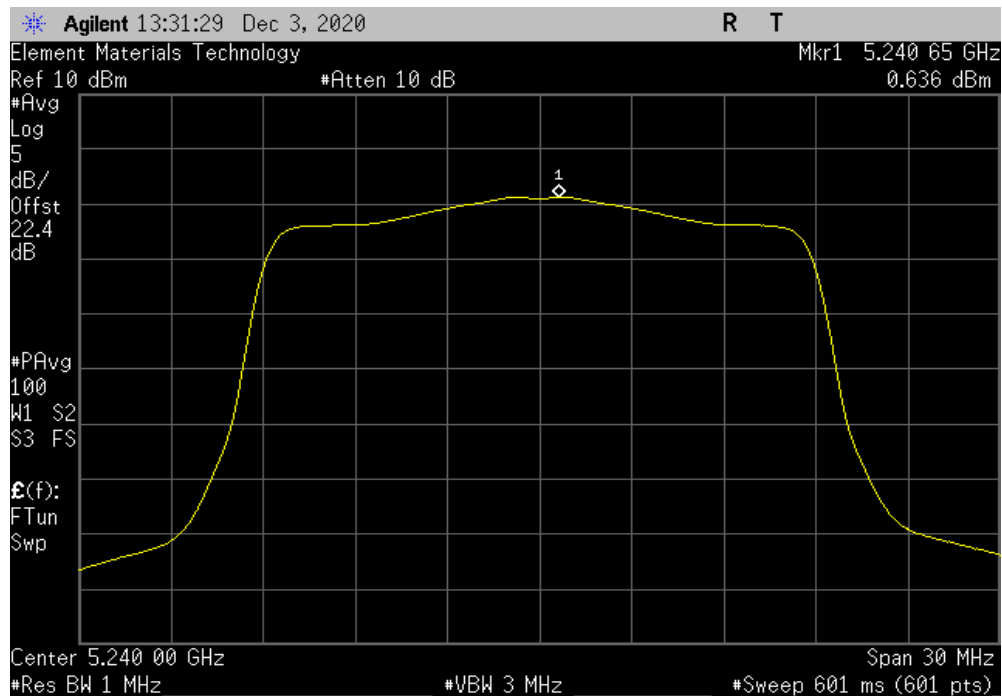


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
0.147	0.1	0.2	11	Pass		



20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
0.636	0.1	0.7	11	Pass		

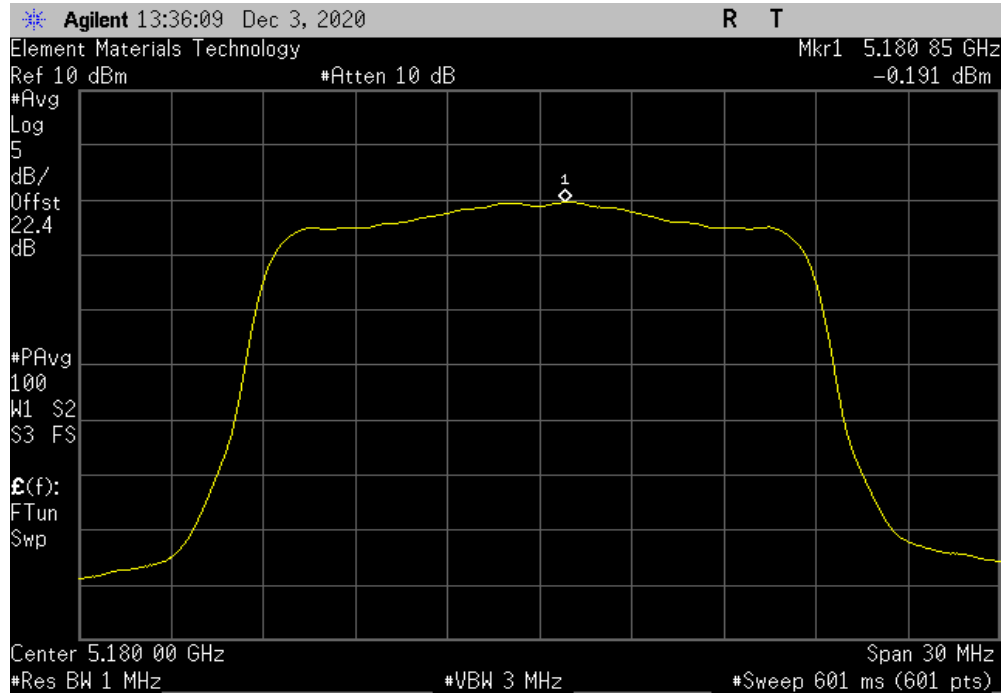


MAXIMUM POWER SPECTRAL DENSITY

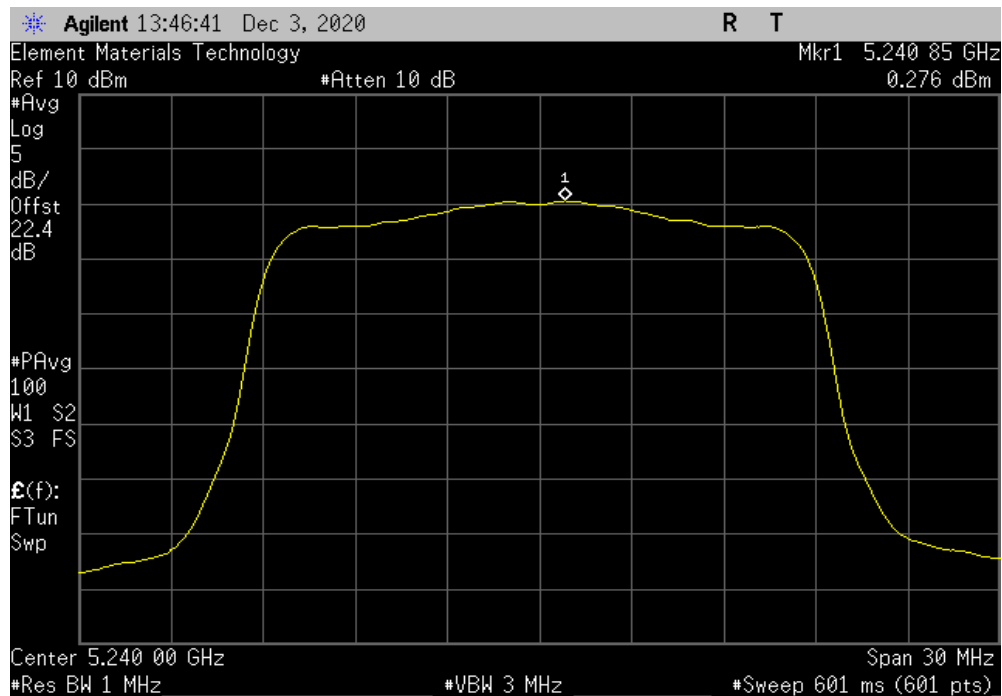


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-0.191	0.5	0.3	11	Pass		



20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
0.276	0.5	0.8	11	Pass		

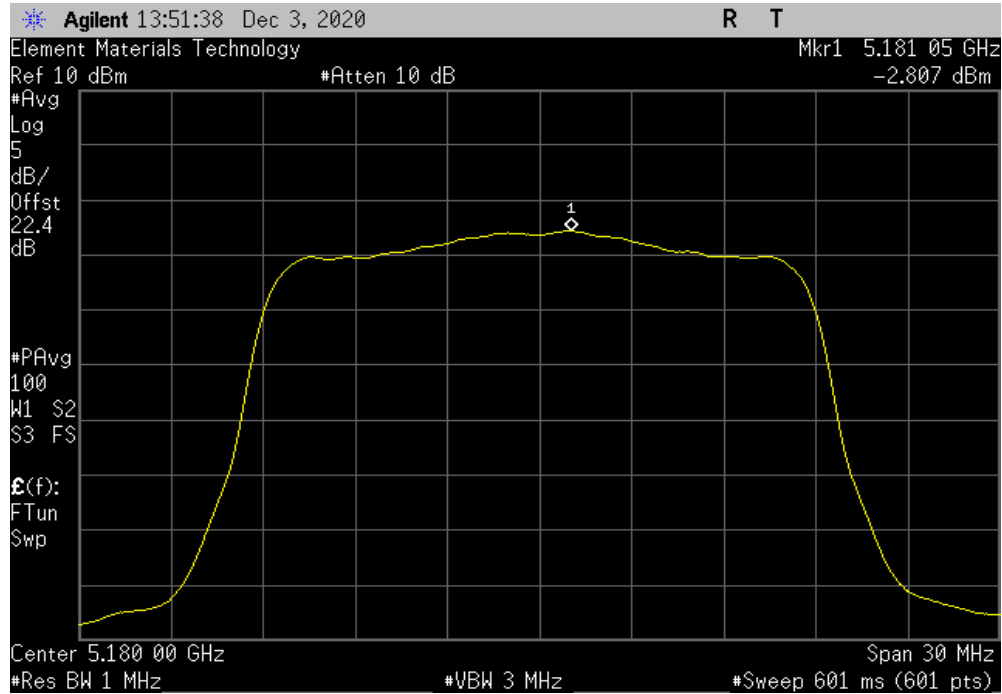


MAXIMUM POWER SPECTRAL DENSITY

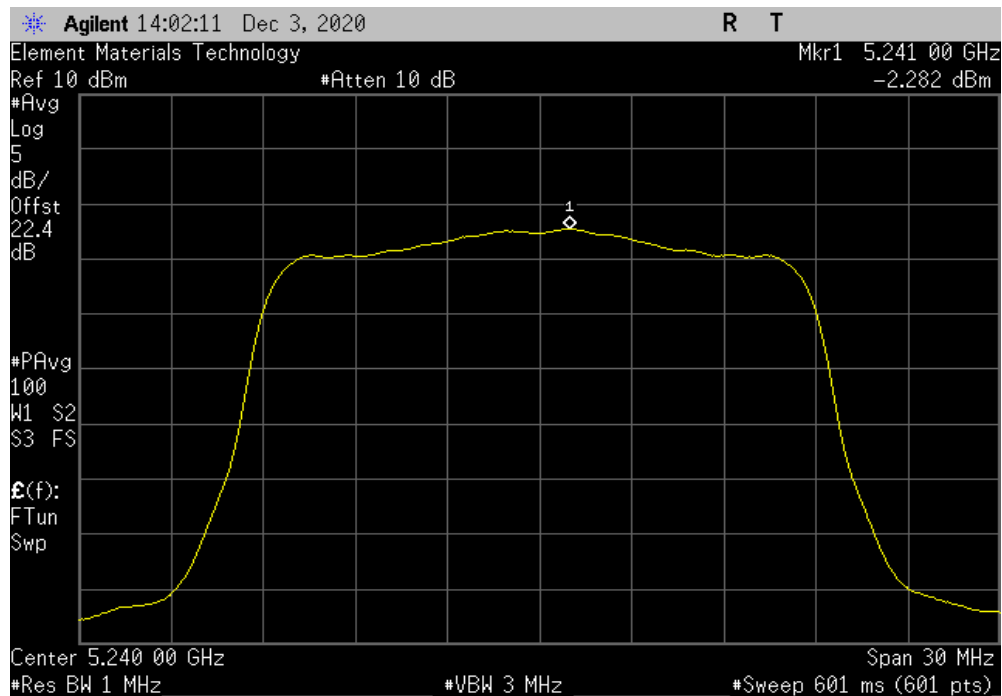


TMTx 2019.08.30.0 XMR 2020.03.25.0

20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 36, Low Channel 5180 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-2.807	0.6	-2.3	11	Pass		



20 MHz, 802.11(ac) MCS8 (256-QAM), Ch 48, High Channel 5240 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-2.282	0.6	-1.7	11	Pass		

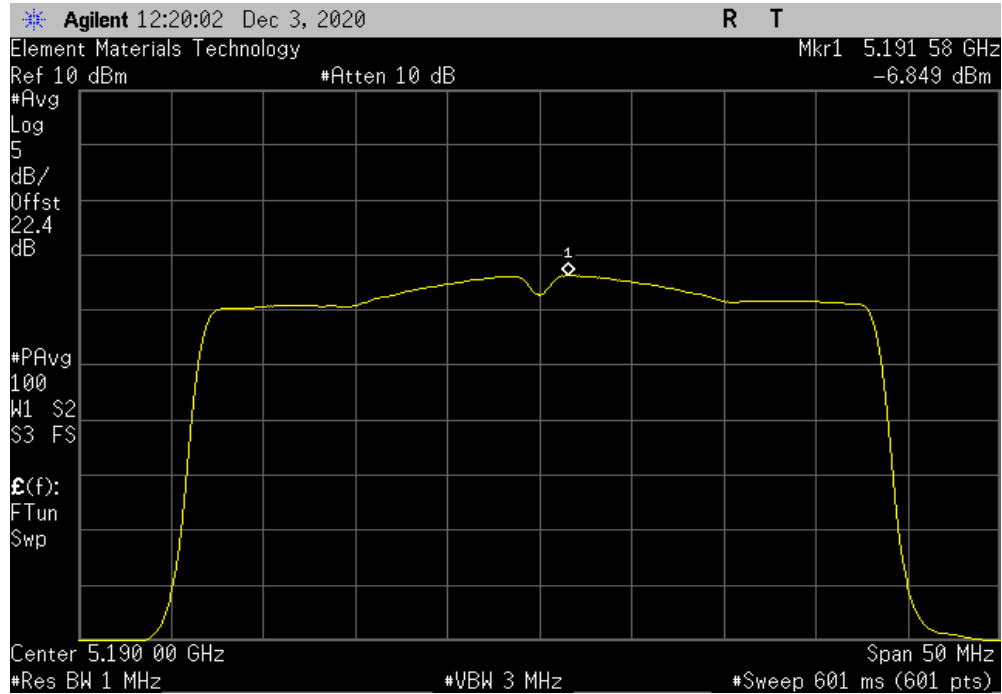


MAXIMUM POWER SPECTRAL DENSITY

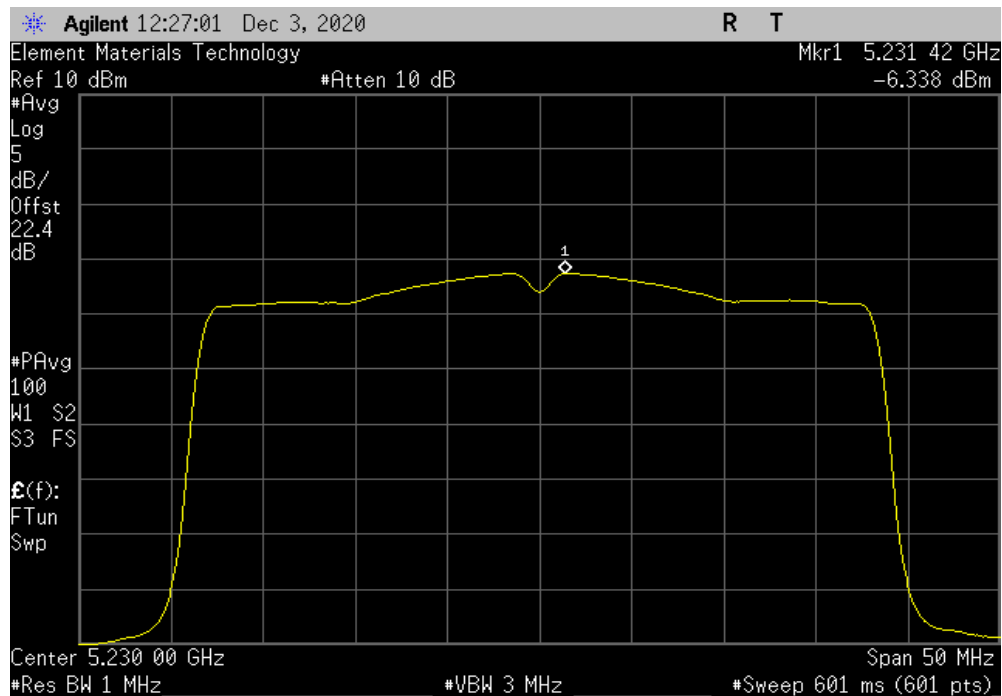


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-6.849	0.1	-6.7	11	Pass		



40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-6.338	0.1	-6.2	11	Pass		

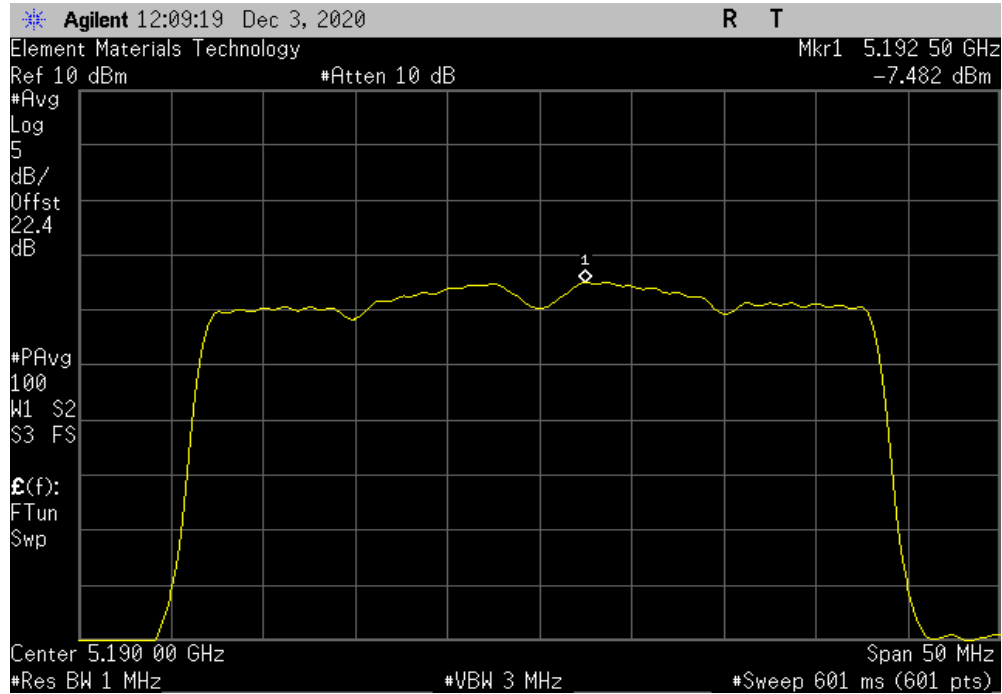


MAXIMUM POWER SPECTRAL DENSITY

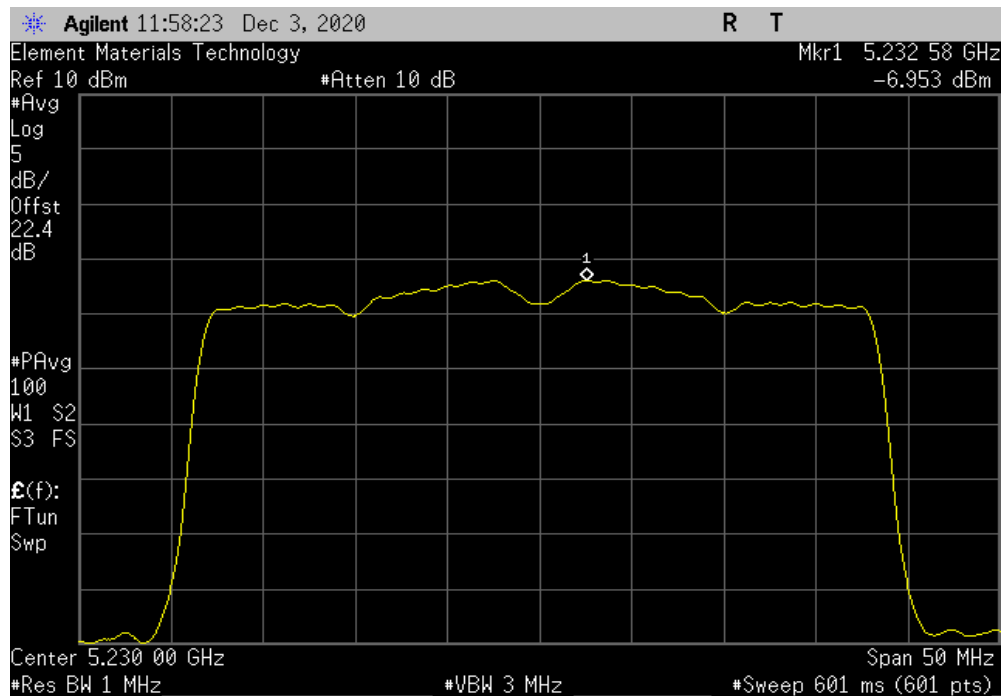


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-7.482	0.7	-6.7	11	Pass		



40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-6.953	0.7	-6.2	11	Pass		

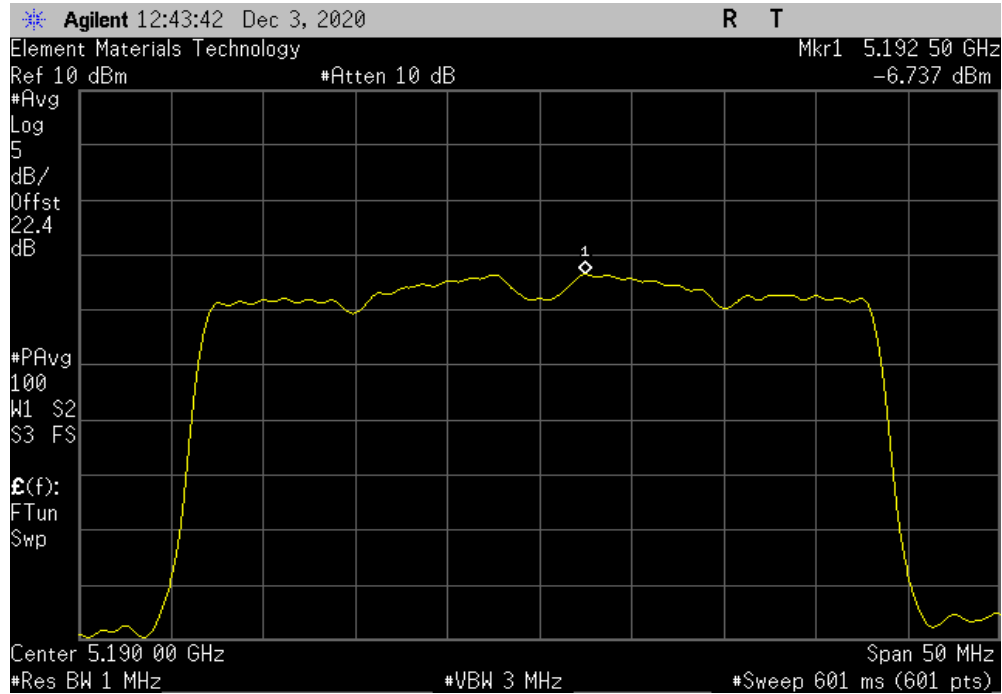


MAXIMUM POWER SPECTRAL DENSITY

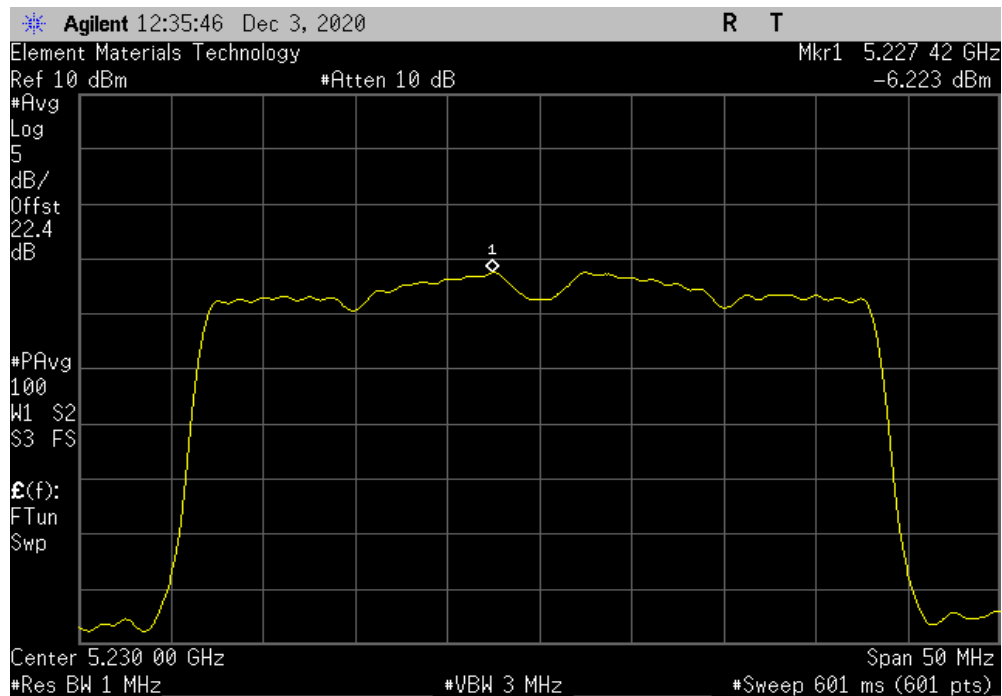


TMTx 2019.08.30.0 XMR 2020.03.25.0

40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36/40, Low Channel 5190 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-6.737	0.9	-5.9	11	Pass		



40 MHz, 802.11(ac) MCS9 (256-QAM), Ch 44/48, High Channel 5230 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-6.223	0.9	-5.4	11	Pass		

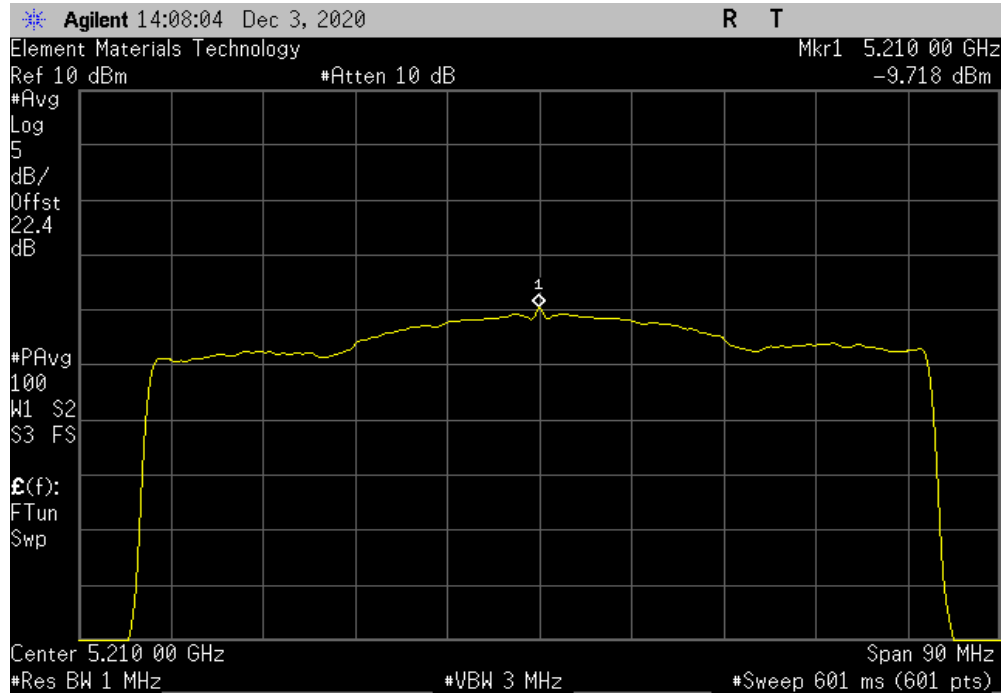


MAXIMUM POWER SPECTRAL DENSITY

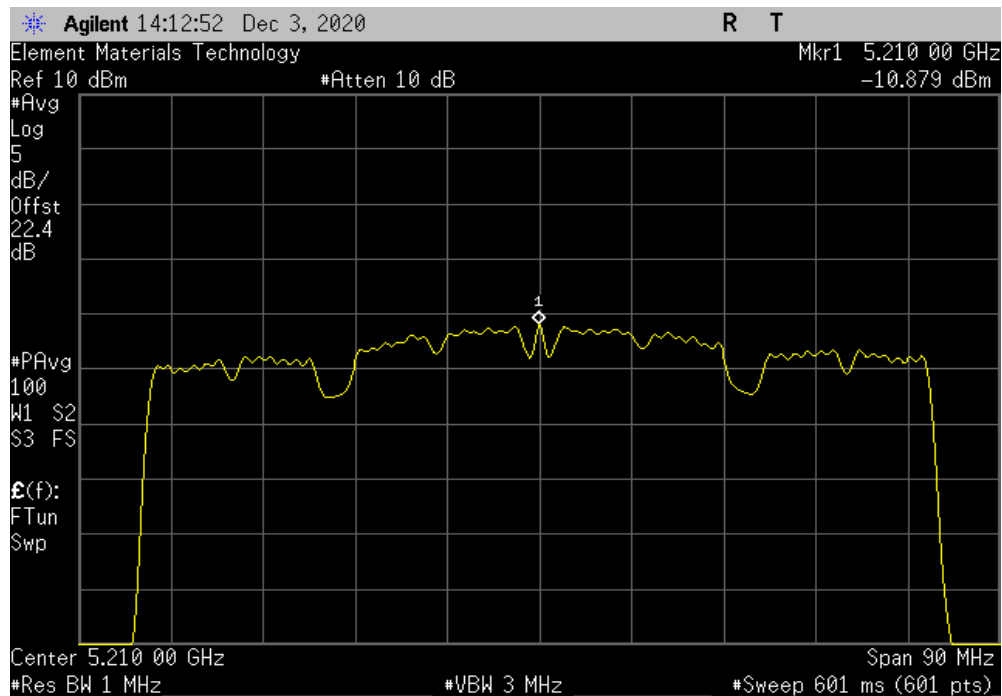


TMTx 2019.08.30.0 XMR 2020.03.25.0

80 MHz, 802.11(ac) MCS0, Ch 36-48, Low Channel 5210 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-9.718	0.2	-9.5	11	Pass		



80 MHz, 802.11(ac) MCS9 (256-QAM), Ch 36-48, Low Channel 5210 MHz						
Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results		
-10.879	1.1	-9.8	11	Pass		



SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

802.11ac - Ch. 36 = 5180 MHz, Ch 46. = 5240 MHz, Ch. 36/40 = 5190 MHz, and Ch. 36-48 = 5210 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

A-DE0149 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40 GHz
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SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	2020-02-15	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50703	HHJ	2020-11-09	12 mo
Cable	Micro-Coax	UFD150A-1-0720-200200	EVK	2020-03-13	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2020-02-25	24 mo
Cable	ESM Cable Corp.	KNKN-72 SMA Cable	EVZ	2020-04-24	12 mo
Cable	ESM Cable Corp.	TTBJ141-KMKM-72	EVY	2020-07-25	12 mo
Cable	None	Standard Gain Horns Cable	EVF	2020-11-18	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2020-11-17	12 mo
Cable	N/A	Bilog Cables	EVA	2020-11-17	12 mo
Amplifier - Pre-Amplifier	Miteq	JSW45-26004000-40-5P	PAE	2020-04-24	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	2020-07-25	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2020-11-18	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2020-11-18	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2020-11-17	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2020-11-17	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-10	AIW	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	24 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	2020-10-13	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	2019-12-13	12 mo

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies in each operational band and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

Where the radio test software does not provide for a duty cycle (dc) at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of $10 \cdot \log(1/dc)$.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented using the integration method as provided by FCC KDB 789033, 3(d)(ii).

SPURIOUS RADIATED EMISSIONS

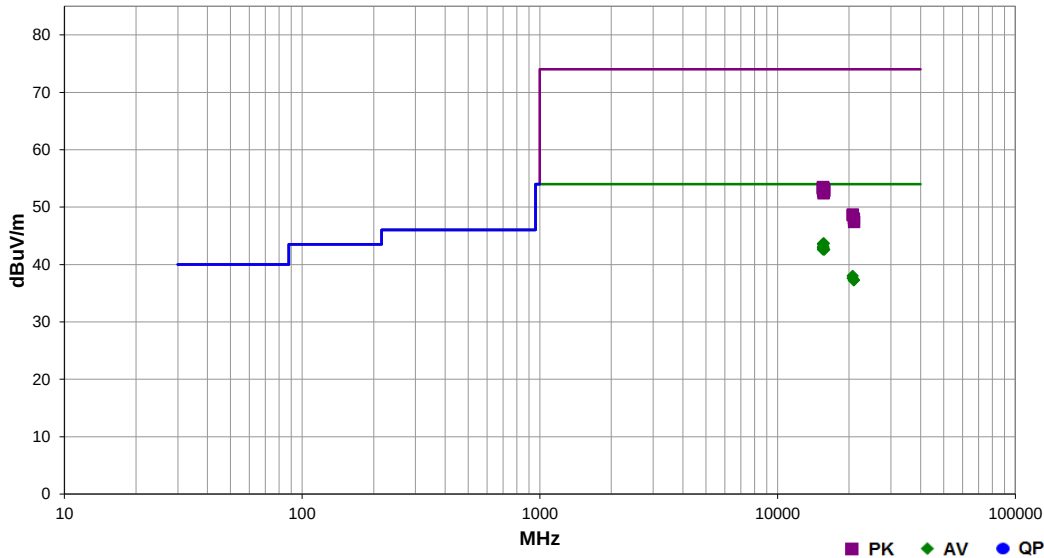


EmIRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

Work Order:	A-DE0149	Date:	2020-11-30	
Project:	None	Temperature:	23 °C	
Job Site:	EV01	Humidity:	31.5% RH	
Serial Number:	5210041985	Barometric Pres.:	1038 mbar	
		Tested by:		Jeff Alcock
EUT:	A-dec Gateway			
Configuration:	2			
Customer:	A-dec, Inc.			
Attendees:	Spencer Warneke			
EUT Power:	110VAC/60Hz			
Operating Mode:	802.11ac - Ch. 36 = 5180 MHz, Ch 46. = 5240 MHz, Ch. 36/40 = 5190 MHz, and Ch. 36-48 = 5210 MHz.			
Deviations:	None			
Comments:	See data comments below for: Channel, Bandwidth, Data rate, and EUT orientation.			

Test Specifications	Test Method
FCC 15.407:2020	ANSI C63.10:2013

Run #	134	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15657.470	25.6	17.0	1.5	226.0	1.1	0.0	Horz	AV	0.0	43.7	54.0	-10.3	Ch. 36-48, 80 MHz BW, MCS9 (256-Q), EUT Horz
15562.200	25.6	17.1	1.5	226.0	0.9	0.0	Horz	AV	0.0	43.6	54.0	-10.4	Ch. 36/40, 40 MHz BW, MCS9 (256-Q), EUT Horz
15526.050	25.9	17.1	1.5	226.0	0.6	0.0	Horz	AV	0.0	43.6	54.0	-10.4	Ch. 36, 20 MHz BW, MCS8 (256-Q), EUT Horz
15582.930	25.6	17.1	1.5	226.0	0.8	0.0	Horz	AV	0.0	43.5	54.0	-10.5	Ch. 36/40, 40 MHz BW, MCS7, EUT Horz
15533.650	25.9	17.1	1.5	226.0	0.5	0.0	Horz	AV	0.0	43.5	54.0	-10.5	Ch. 36, 20 MHz BW, MCS7, EUT Horz
15566.000	25.8	17.1	1.5	226.0	0.2	0.0	Horz	AV	0.0	43.1	54.0	-10.9	Ch. 36/40, 40 MHz BW, MCS0, EUT Horz
15623.330	25.6	17.1	1.5	226.0	0.3	0.0	Horz	AV	0.0	43.0	54.0	-11.0	Ch. 36-48, 80 MHz BW, MCS0, EUT Horz
15529.750	25.9	17.1	1.5	226.0	0.0	0.0	Horz	AV	0.0	43.0	54.0	-11.0	Ch. 36, 20 MHz BW, MCS0, EUT Horz
15533.600	25.9	17.1	1.5	226.0	0.0	0.0	Horz	AV	0.0	43.0	54.0	-11.0	Ch. 36, 20 MHz BW, 54 Mbps, EUT Horz
15528.100	25.9	17.1	1.5	226.0	0.0	0.0	Horz	AV	0.0	43.0	54.0	-11.0	Ch. 36, 20 MHz BW, 36 Mbps, EUT Horz
15527.650	25.6	17.1	1.5	13.0	0.0	0.0	Horz	AV	0.0	42.7	54.0	-11.3	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
15716.600	25.6	17.0	1.5	176.0	0.0	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Ch. 48, 20 MHz BW, 6 Mbps, EUT on Side
15717.100	25.6	17.0	2.7	21.0	0.0	0.0	Horz	AV	0.0	42.6	54.0	-11.4	Ch. 48, 20 MHz BW, 6 Mbps, EUT Horz
15536.650	25.5	17.1	1.5	193.0	0.0	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
20719.980	33.0	5.0	1.7	98.0	0.0	0.0	Vert	AV	0.0	38.0	54.0	-16.0	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
20720.010	32.6	5.0	1.5	81.0	0.0	0.0	Horz	AV	0.0	37.6	54.0	-16.4	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
20960.150	32.2	5.1	1.5	118.0	0.0	0.0	Vert	AV	0.0	37.3	54.0	-16.7	Ch. 48, 20 MHz BW, 6 Mbps, EUT on Side
20951.400	32.1	5.1	1.5	75.0	0.0	0.0	Horz	AV	0.0	37.2	54.0	-16.8	Ch. 48, 20 MHz BW, 6 Mbps, EUT Horz
15527.000	36.4	17.1	1.5	226.0	0.0	0.0	Horz	PK	0.0	53.5	74.0	-20.5	Ch. 36, 20 MHz BW, MCS8 (256-Q), EUT Horz
15538.500	36.3	17.1	1.5	226.0	0.0	0.0	Horz	PK	0.0	53.4	74.0	-20.6	Ch. 36, 20 MHz BW, 54 Mbps, EUT Horz
15525.550	36.2	17.1	1.5	193.0	0.0	0.0	Vert	PK	0.0	53.3	74.0	-20.7	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
15549.250	36.2	17.1	1.5	226.0	0.0	0.0	Horz	PK	0.0	53.3	74.0	-20.7	Ch. 36, 20 MHz BW, 36 Mbps, EUT Horz
15546.500	36.2	17.1	1.5	226.0	0.0	0.0	Horz	PK	0.0	53.3	74.0	-20.7	Ch. 36, 20 MHz BW, MCS0, EUT Horz
15608.530	36.0	17.2	1.5	226.0	0.0	0.0	Horz	PK	0.0	53.2	74.0	-20.8	Ch. 36-48, 80 MHz BW, MCS9 (256-Q), EUT Horz
15541.050	36.0	17.1	1.5	13.0	0.0	0.0	Horz	PK	0.0	53.1	74.0	-20.9	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
15719.450	36.0	17.0	1.5	176.0	0.0	0.0	Vert	PK	0.0	53.0	74.0	-21.0	Ch. 48, 20 MHz BW, 6 Mbps, EUT on Side
15548.550	35.9	17.1	1.5	226.0	0.0	0.0	Horz	PK	0.0	53.0	74.0	-21.0	Ch. 36, 20 MHz BW, MCS7, EUT Horz
15715.400	35.8	17.0	2.7	21.0	0.0	0.0	Horz	PK	0.0	52.8	74.0	-21.2	Ch. 48, 20 MHz BW, 6 Mbps, EUT Horz
15578.870	35.7	17.1	1.5	226.0	0.0	0.0	Horz	PK	0.0	52.8	74.0	-21.2	Ch. 36/40, 40 MHz BW, MCS0, EUT Horz
15559.330	35.7	17.1	1.5	226.0	0.0	0.0	Horz	PK	0.0	52.8	74.0	-21.2	Ch. 36/40, 40 MHz BW, MCS7, EUT Horz
15580.270	35.7	17.1	1.5	226.0	0.0	0.0	Horz	PK	0.0	52.8	74.0	-21.2	Ch. 36/40, 40 MHz BW, MCS9 (256-Q), EUT Horz

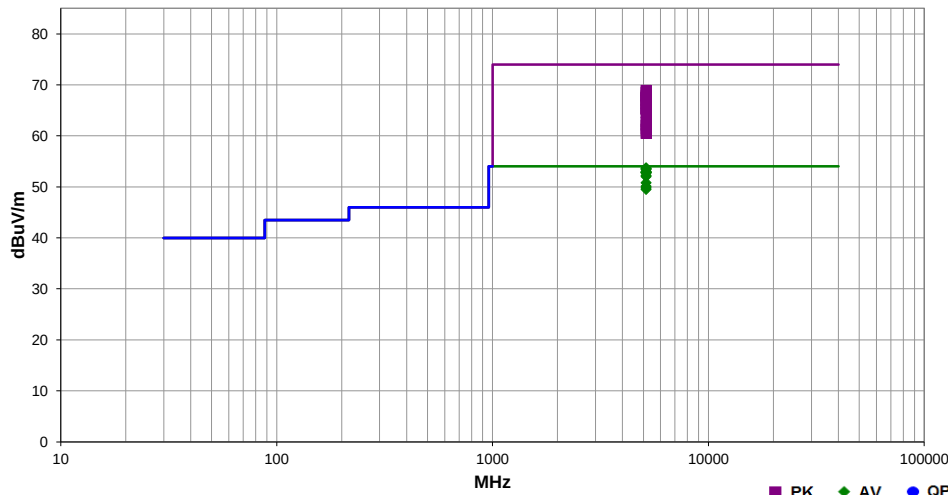
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15608.270	35.2	17.2	1.5	226.0	0.0	0.0	Horz	PK	0.0	52.4	74.0	-21.6	Ch. 36-48, 80 MHz BW, MCS0, EUT Horz
20719.650	43.7	5.0	1.5	81.0	0.0	0.0	Horz	PK	0.0	48.7	74.0	-25.3	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
20719.630	43.6	5.0	1.7	98.0	0.0	0.0	Vert	PK	0.0	48.6	74.0	-25.4	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
20958.850	42.9	5.1	1.5	75.0	0.0	0.0	Horz	PK	0.0	48.0	74.0	-26.0	Ch. 48, 20 MHz BW, 6 Mbps, EUT Horz
20971.900	42.3	5.1	1.5	118.0	0.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	Ch. 48, 20 MHz BW, 6 Mbps, EUT on Side

SPURIOUS RADIATED EMISSIONS



Work Order:	A-DE0149	Date:	2020-11-30	
Project:	None	Temperature:	23 °C	
Job Site:	EV01	Humidity:	31.5% RH	
Serial Number:	5210041985	Barometric Pres.:	1038 mbar	
EUT:	A-dec Gateway			Tested by: Jeff Alcock
Configuration:	2			
Customer:	A-dec, Inc.			
Attendees:	Spencer Warneke			
EUT Power:	110VAC/60Hz			
Operating Mode:	802.11ac - Ch. 36 = 5180 MHz, Ch 46 = 5240 MHz, Ch. 36/40 = 5190 MHz, and Ch. 36-48 = 5210 MHz			
Deviations:	None			
Comments:	See data comments below for: Channel, Bandwidth, Data rate, and EUT orientation.			

Test Specifications				Test Method			
FCC 15.407:2020				ANSI C63.10:2013			
Run #	139	Test Distance (m)	1	Antenna Height(s)	1 to 4(m)	Results	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5149.967	28.7	34.0	1.25	294.0	0.5	0.0	Vert	AV	-9.5	53.7	54.0	-0.3	Ch. 36, 20 MHz BW, MCS7, EUT on Side
5149.000	28.8	34.0	1.25	294.0	0.3	0.0	Vert	AV	-9.5	53.6	54.0	-0.4	Ch. 36-48, 80 MHz BW, MCS0, EUT on Side. Integration method
5149.783	29.0	34.0	1.25	294.0	0.0	0.0	Vert	AV	-9.5	53.5	54.0	-0.5	Ch. 36, 20 MHz BW, MCS0, EUT on Side
5149.000	28.0	34.0	1.25	294.0	0.9	0.0	Vert	AV	-9.5	53.4	54.0	-0.6	Ch. 36/40, 40 MHz BW, MCS9 (256-Q), EUT on Side. Integration method
5149.967	28.5	34.0	1.25	294.0	0.0	0.0	Vert	AV	-9.5	53.0	54.0	-1.0	Ch. 36, 20 MHz BW, 54 Mbps, EUT on Side
5149.000	27.3	34.0	1.25	294.0	1.1	0.0	Vert	AV	-9.5	52.9	54.0	-1.1	Ch. 36-48, 80 MHz BW, MCS9 (256-Q), EUT on Side. Integration method
5149.000	28.1	34.0	1.25	294.0	0.2	0.0	Vert	AV	-9.5	52.8	54.0	-1.2	Ch. 36/40, 40 MHz BW, MCS0, EUT on Side. Integration method
5149.933	28.3	34.0	1.25	308.0	0.0	0.0	Vert	AV	-9.5	52.8	54.0	-1.2	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
5149.783	28.3	34.0	1.25	294.0	0.0	0.0	Vert	AV	-9.5	52.8	54.0	-1.2	Ch. 36, 20 MHz BW, 36 Mbps, EUT on Side
5149.000	27.4	34.0	1.25	294.0	0.8	0.0	Vert	AV	-9.5	52.7	54.0	-1.3	Ch. 36/40, 40 MHz BW, MCS7, EUT on Side. Integration method
5149.900	27.7	34.0	1.25	325.0	0.0	0.0	Horz	AV	-9.5	52.2	54.0	-1.8	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
5149.917	26.9	34.0	1.3	247.0	0.6	0.0	Vert	AV	-9.5	52.0	54.0	-2.0	Ch. 36, 20 MHz BW, MCS8 (256-Q), EUT on Side
5149.883	26.3	34.0	1.25	287.0	0.0	0.0	Horz	AV	-9.5	50.8	54.0	-3.2	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
5149.575	25.6	34.0	1.55	202.0	0.0	0.0	Vert	AV	-9.5	50.1	54.0	-3.9	Ch. 36, 20 MHz BW, 6 Mbps, EUT Vert
5149.375	25.3	34.0	1.5	184.0	0.0	0.0	Horz	AV	-9.5	49.8	54.0	-4.2	Ch. 36, 20 MHz BW, 6 Mbps, EUT Vert
5145.425	25.0	34.0	1.5	254.0	0.0	0.0	Vert	AV	-9.5	49.5	54.0	-4.5	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
5149.642	44.4	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	68.9	74.0	-5.1	Ch. 36, 20 MHz BW, MCS0, EUT on Side
5149.658	44.0	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	68.5	74.0	-5.5	Ch. 36/40, 40 MHz BW, MCS0, EUT on Side
5149.892	43.4	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	67.9	74.0	-6.1	Ch. 36-48, 80 MHz BW, MCS0, EUT on Side
5148.867	43.1	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	67.6	74.0	-6.4	Ch. 36, 20 MHz BW, MCS7, EUT on Side
5149.608	43.0	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	67.5	74.0	-6.5	Ch. 36/40, 40 MHz BW, MCS9 (256-Q), EUT on Side
5149.250	42.8	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	67.3	74.0	-6.7	Ch. 36/40, 40 MHz BW, MCS7, EUT on Side
5149.600	42.4	34.0	1.25	308.0	0.0	0.0	Vert	PK	-9.5	66.9	74.0	-7.1	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
5149.442	41.8	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	66.3	74.0	-7.7	Ch. 36-48, 80 MHz BW, MCS9 (256-Q), EUT on Side
5149.483	40.8	34.0	1.25	325.0	0.0	0.0	Horz	PK	-9.5	65.3	74.0	-8.7	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
5149.017	40.8	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	65.3	74.0	-8.7	Ch. 36, 20 MHz BW, 36 Mbps, EUT on Side
5149.942	40.7	34.0	1.25	294.0	0.0	0.0	Vert	PK	-9.5	65.2	74.0	-8.8	Ch. 36, 20 MHz BW, 54 Mbps, EUT on Side
5149.092	40.0	34.0	1.3	247.0	0.0	0.0	Vert	PK	-9.5	64.5	74.0	-9.5	Ch. 36, 20 MHz BW, MCS8 (256-Q), EUT on Side
5149.108	38.2	34.0	1.25	287.0	0.0	0.0	Horz	PK	-9.5	62.7	74.0	-11.3	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
5149.242	37.6	34.0	1.55	202.0	0.0	0.0	Vert	PK	-9.5	62.1	74.0	-11.9	Ch. 36, 20 MHz BW, 6 Mbps, EUT Vert
5146.075	36.8	34.0	1.5	184.0	0.0	0.0	Horz	PK	-9.5	61.3	74.0	-12.7	Ch. 36, 20 MHz BW, 6 Mbps, EUT Vert
5145.042	36.0	34.0	1.5	254.0	0.0	0.0	Vert	PK	-9.5	60.5	74.0	-13.5	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz

SPURIOUS RADIATED EMISSIONS



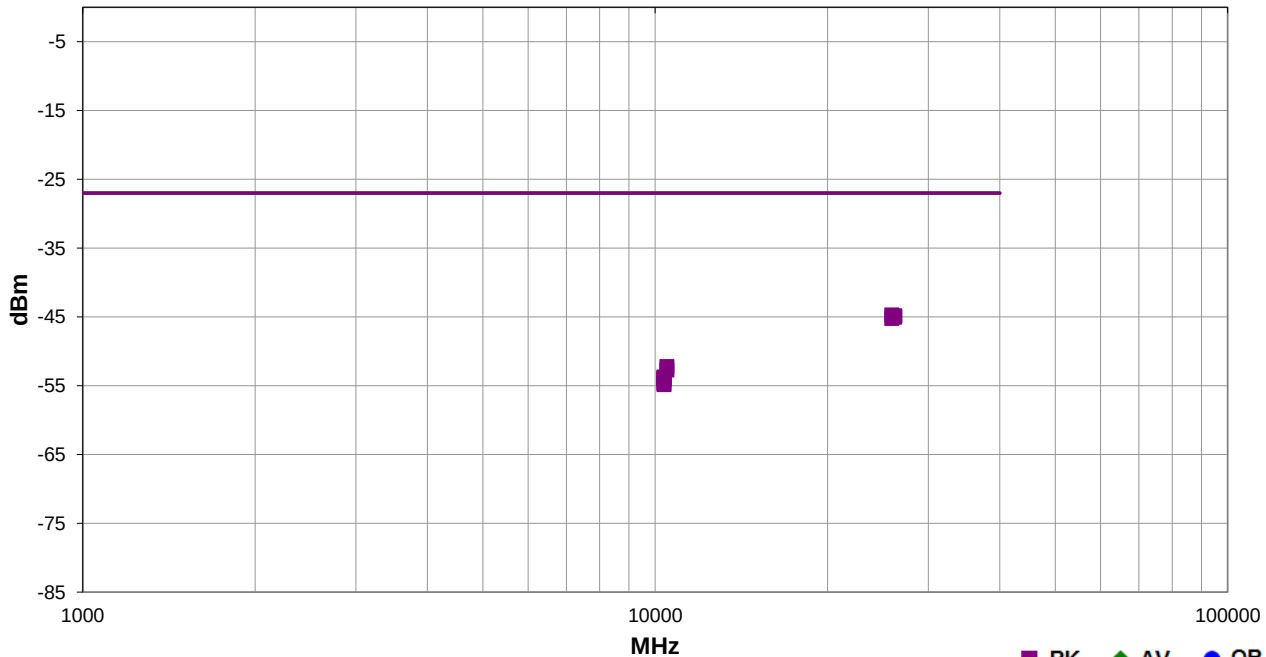
EmiR5 2020.06.24.4

PSA-ESCI 2020.06.24.2

Work Order:	A-DE0149	Date:	2020-11-30	
Project:	None	Temperature:	23 °C	
Job Site:	EV01	Humidity:	31.5% RH	
Serial Number:	5210041985	Barometric Pres.:	1038 mbar	Tested by: Jeff Alcock
EUT:	A-dec Gateway			
Configuration:	2			
Customer:	A-dec, Inc.			
Attendees:	Spencer Warneke			
EUT Power:	110VAC/60Hz			
Operating Mode:	802.11ac - Ch. 36 = 5180 MHz, Ch 46. = 5240 MHz, Ch. 36/40 = 5190 MHz, and Ch. 36-48 = 5210 MHz			
Deviations:	None			
Comments:	See data comments below for: Channel, Bandwidth, Data rate, and EUT orientation.			

Test Specifications	Test Method
FCC 15.407:2020	ANSI C63.10:2013

Run #	133	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
10481.080	1.82	272.0	Vert	PK	6.0E-9	-52.2	-27.0	-25.2	Ch. 48, 20 MHz BW, 6 Mbps, EUT on Side
10479.920	2.6	242.0	Horz	PK	5.3E-9	-52.7	-27.0	-25.7	Ch. 48, 20 MHz BW, 6 Mbps, EUT Horz
10359.830	1.5	92.0	Horz	PK	4.2E-9	-53.7	-27.0	-26.7	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
10356.080	1.5	101.0	Horz	PK	4.1E-9	-53.8	-27.0	-26.8	Ch. 36, 20 MHz BW, 6 Mbps, EUT Vert
10362.630	2.29	198.0	Vert	PK	4.0E-9	-53.9	-27.0	-26.9	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
10361.790	1.5	251.0	Horz	PK	3.9E-9	-54.1	-27.0	-27.1	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side
10351.540	1.5	67.0	Vert	PK	3.4E-9	-54.6	-27.0	-27.6	Ch. 36, 20 MHz BW, 6 Mbps, EUT Vert
10364.830	1.5	142.0	Vert	PK	3.3E-9	-54.8	-27.0	-27.8	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
26211.850	1.5	209.0	Horz	PK	32.9E-9	-44.8	-27.0	-17.8	Ch. 48, 20 MHz BW, 6 Mbps, EUT Horz
26202.650	1.5	88.0	Vert	PK	31.4E-9	-45.0	-27.0	-18.0	Ch. 48, 20 MHz BW, 6 Mbps, EUT on Side
25902.090	1.5	169.0	Horz	PK	30.0E-9	-45.2	-27.0	-18.2	Ch. 36, 20 MHz BW, 6 Mbps, EUT Horz
25900.720	1.5	286.0	Vert	PK	33.7E-9	-44.7	-27.0	-17.7	Ch. 36, 20 MHz BW, 6 Mbps, EUT on Side