



Logic PD, Inc.

SOMA3703-32-1780AKIR-A / 1027255 Rev B

FCC 15.407:2021

802.11 an SISO Radio

Report: LGPD0256.2 Rev. 1, Issue Date: June 15, 2021



NVLAP LAB CODE: 200881-0



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CERTIFICATE OF TEST



Last Date of Test: May 17, 2021
Logic PD, Inc.
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B

Radio Equipment Testing

Standards

Specification	Method
FCC 15.205:2021 FCC 15.407:2021	ANSI C63.10:2013, KDB 789033

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a C2PC related to part substitution of an oscillator
6.8	Frequency Stability	No	N/A	Not required for a C2PC related to part substitution of an oscillator
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	Yes	Pass	
12.4.2	Band Edge	No	N/A	Not required for a C2PC related to part substitution of an oscillator
12.5	Maximum Power Spectral Density	No	N/A	Not required for a C2PC related to part substitution of an oscillator
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:

David Schaefer, 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
01	Corrected testing objective	2021-06-15	9
	Added path loss in EIRP calculations to the power settings table and EIRP module	2021-06-15	14, 69-85
	Corrected header	2021-06-15	23, 59-68, 76-85, 105-115
	Removed DCCF for the OP and EIRP modules using the average for the following measurements: Ch 36 6Mbps, ch 157 6Mbps, ch 165 6Mbps. Added a comment to the data sheets saying the DC >= 98% for these modes. Modified the test description for all OP and EIRP to say the DCCF is only applied when the DC is less than 98%.	2021-06-15	41
	Removed the reference to the 'DTS' bandwidth from the test description - this is an NII device.	2021-06-15	47
	Removed EIRP modules using the peak method	2021-06-15	N/A
	Comment added to SRE data sheets containing different power settings	2021-06-15	116

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 – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

United Kingdom

BEIS – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

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.

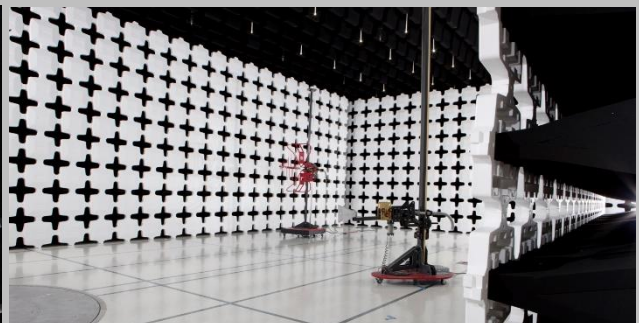
SCOPE

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.

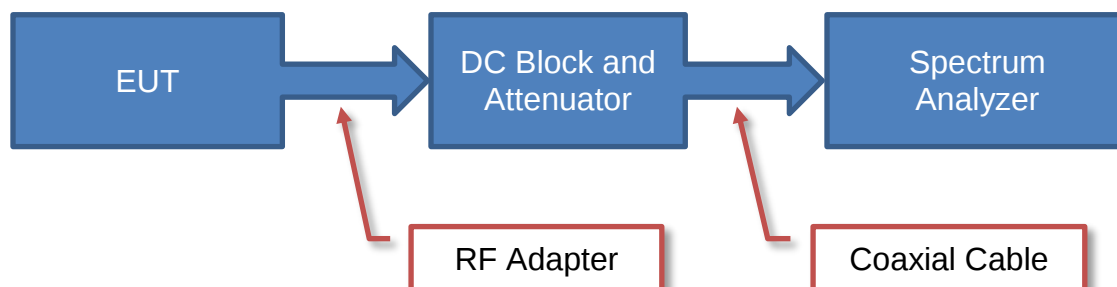
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found in the table below. A lab specific value may also be found in the applicable test description section. 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

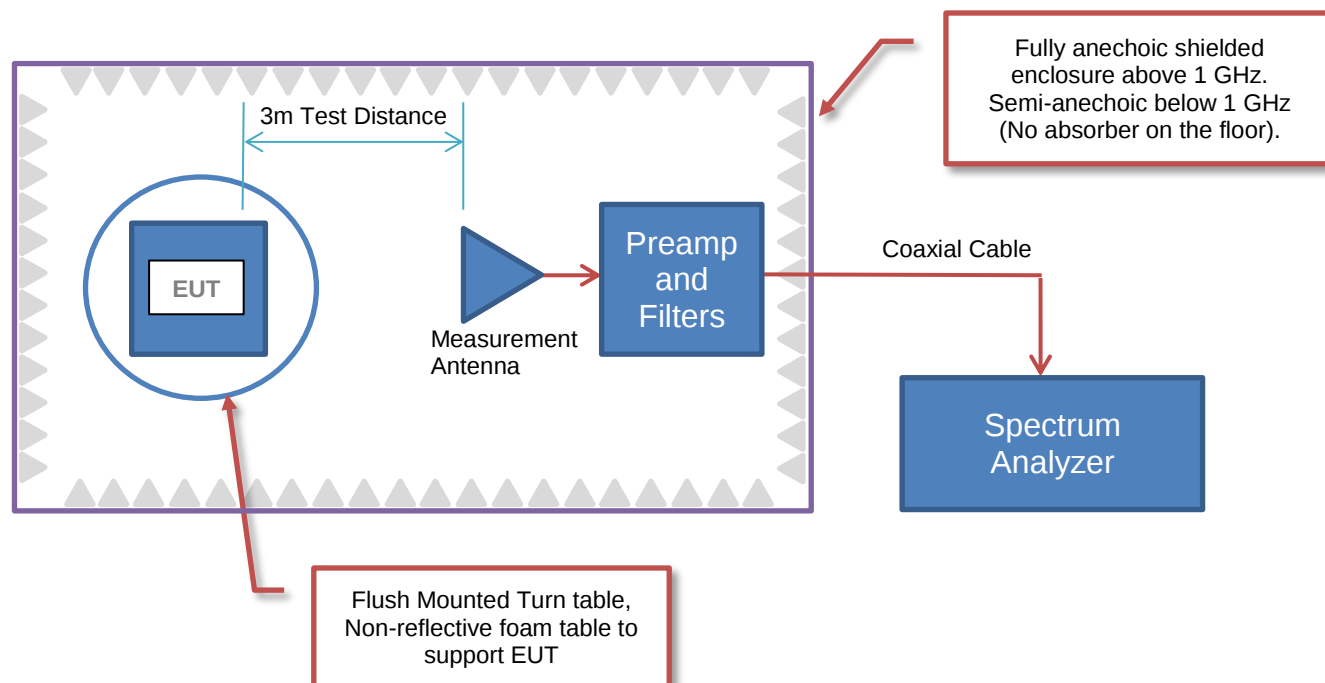
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



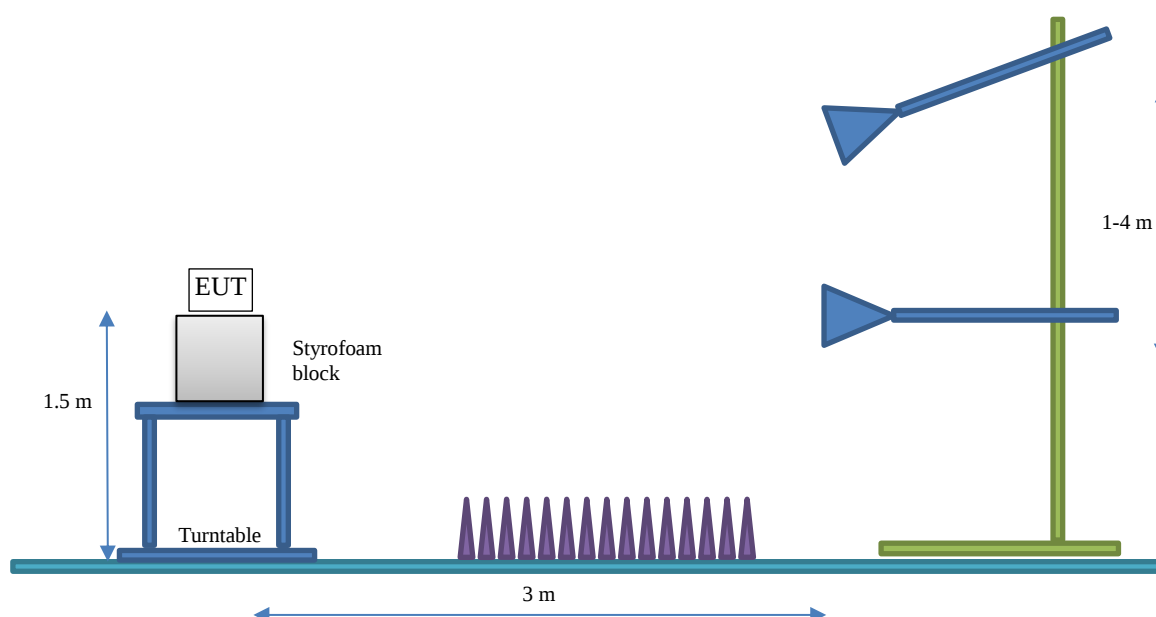
Spurious Radiated Emissions



Test Setup Block Diagrams

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Logic PD, Inc.
Address:	5602 105th Ave N
City, State, Zip:	Brooklyn Park, MN 55443
Test Requested By:	Nathan Kro
EUT:	SOMA3703-32-1780AKIR-A / 1027255 Rev B
First Date of Test:	March 15, 2021
Last Date of Test:	May 17, 2021
Receipt Date of Samples:	March 10, 2021
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Torpedo+WIFI SOM (System on Module) - C2PC due to EOL oscillator change
Testing Objective:
To demonstrate compliance of the 802.11 radio under FCC 15.407 for operation in the 5.2 GHz, 5.3 GHz, 5.6 GHz and 5.8 GHz band(s).

CONFIGURATIONS

Configuration LGPD0256- 1

Software/Firmware Running during test	
Description	Version
Linux OS	3.0.101-BSP-dm37x-2.4-4
Wifi Radio Firmware	PLT 7.3.10.0.137
Bluetooth Radio Firmware	Logic_TIIinit_tw32_10.6.15.bts

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
BT/2.4 GHz Wifi Antenna	Ethertronics	1000418	None
5 GHz Wifi Antenna	Ethertronics	1000418	None
Torpedo + Wireless SOM	Beason Embedded Works / Logic PD	SOMA3703-32-1780AKIR-A / 1027255 REV B	2420M00120

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
ITE Power Supply	Globtek, Inc	GT-46200-2005-T3	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Acer	NAV50	LUSAL0B137011586B91601
Laptop Power Supply	Delta Electronics	N17908	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
RF Cable (Ethertronics 5G Wifi Antenna)	No	0.11 m	No	5 GHz Wifi Antenna	Torpedo + Wireless SOM
RF Cable (Ethertronics BT Antenna)	No	0.05 m	No	Bluetooth Antenna	Torpedo + Wireless SOM
DC Cable (ITE power supply)	No	0.9 m	Yes	ITE Power Supply	Torpedo + Wireless SOM
AC Cable (ITE power supply)	No	1.9 m	No	ITE Power Supply	AC Mains
Serial Cable	No	>3 m	No	Torpedo + Wireless SOM	Laptop
DC Cable (Laptop power supply)	No	2.2 m	Yes	Laptop Power Supply	Laptop

CONFIGURATIONS

Configuration LGPD0256- 3

Software/Firmware Running during test	
Description	Version
Linux OS	3.0.101-BSP-dm37x-2.4-4
Wifi Radio Firmware	PLT 7.3.10.0.137
Bluetooth Radio Firmware	Logic_TIIinit_tw32_10.6.15.bts

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Torpedo + Wireless SOM	Beason Embedded Works / Logic PD	SOMA3703-32-1780AKIR-A / 1027255 REV B	2420M00120

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
ITE Power Supply	Globtek, Inc	GT-46200-2005-T3	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Acer	NAV50	LUSAL0B137011586B91601

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Cable (ITE power supply)	No	0.9 m	Yes	ITE Power Supply	Torpedo + Wireless SOM
AC Cable (ITE power supply)	No	1.9 m	No	ITE Power Supply	AC Mains
Serial Cable	No	1.8 m	No	Torpedo + Wireless SOM	Laptop

CONFIGURATIONS



Configuration LGPD0256- 4

Software/Firmware Running during test	
Description	Version
Linux OS	3.0.101-BSP-dm37x-2.4-4
Wifi Radio Firmware	PLT 7.3.10.0.137
Bluetooth Radio Firmware	Logic_TIIinit_tw32_10.6.15.bts

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Torpedo + Wireless SOM	Beason Embedded Works / Logic PD	SOMA3703-32-1780AKIR-A / 1027255 REV B	2420M00120
BT/2.4 GHz Wifi Antenna	Pulse Electronics	W3006	None
5GHz Wifi Antenna	Pulse Electronics	W3006	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
ITE Power Supply	Globtek, Inc	GT-46200-2005-T3	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Acer	NAV50	LUSAL0B137011586B91601
Laptop Power Supply	Delta Electronics	N17908	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Cable (ITE power supply)	No	0.9 m	Yes	ITE Power Supply	Torpedo + Wireless SOM
AC Cable (ITE power supply)	No	1.9 m	No	ITE Power Supply	AC Mains
Serial Cable	No	>3 m	No	Torpedo + Wireless SOM	Laptop
DC Cable (Laptop power supply)	No	2.2 m	Yes	Laptop Power Supply	Laptop
RF Cable (Pulse 5GHz Wifi Antenna)	No	.05 m	No	5 GHz Wifi Antenna	Torpedo + Wireless SOM
RF Cable (Pulse BT/2.4 GHz Antenna)	No	.05 m	No	Bluetooth Antenna	Torpedo + Wireless SOM

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2021-03-15	Emissions 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.
2	2021-03-31	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.
3	2021-04-06	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.
4	2021-05-17	Equivalent Isotropic Radiated Power (EIRP)	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	2021-05-17	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.
6	2021-05-17	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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) AND CABLE LOSS (dB)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)	Cable Loss (dB)
WiFi Dual Band Stamp Metal Embedded Antenna, PN 1000418	Ethertronics	2400-2485	4.0	0.5
		5150-5825	4.2	0.8
WLAN Dualband Ceramic PN W3006	Pulse Electronics	2400-2485	3.2 (peak)	0.2
		5150-5825	4.2 (peak)	0.3

POWER SETTINGS

Radio	Modulation	Channel	Power Setting (hex)
802.11(an)	6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7	36 (5180 MHz)	15 (Ethertronics Antenna)
			15 (Pulse Electronics Antenna)
802.11(an)	6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7	48 (5240 MHz)	18 (Ethertronics Antenna)
			17 (Pulse Electronics Antenna)
802.11(an)	6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7	149 (5745 MHz)	1F (Ethertronics Antenna)
			1C (Pulse Electronics Antenna)
802.11(an)	6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7	157 (5785 MHz)	50 (Ethertronics Antenna)
			50 (Pulse Electronics Antenna)
802.11(an)	6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7	165 (5825 MHz)	50 (Ethertronics Antenna)
			50 (Pulse Electronics Antenna)

DUTY CYCLE



XMIT 2020.12.30.0

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 3-15-2021

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07

TEST EQUIPMENT 4-6-2021

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2020-07-14	2021-07-14
Generator - Signal	Agilent	E4422B	TGQ	2021-03-24	2024-03-24
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14

TEST DESCRIPTION

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

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

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

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

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

Where D is duty cycle of the radio transmissions

DUTY CYCLE



XMH 2020.12.30.0

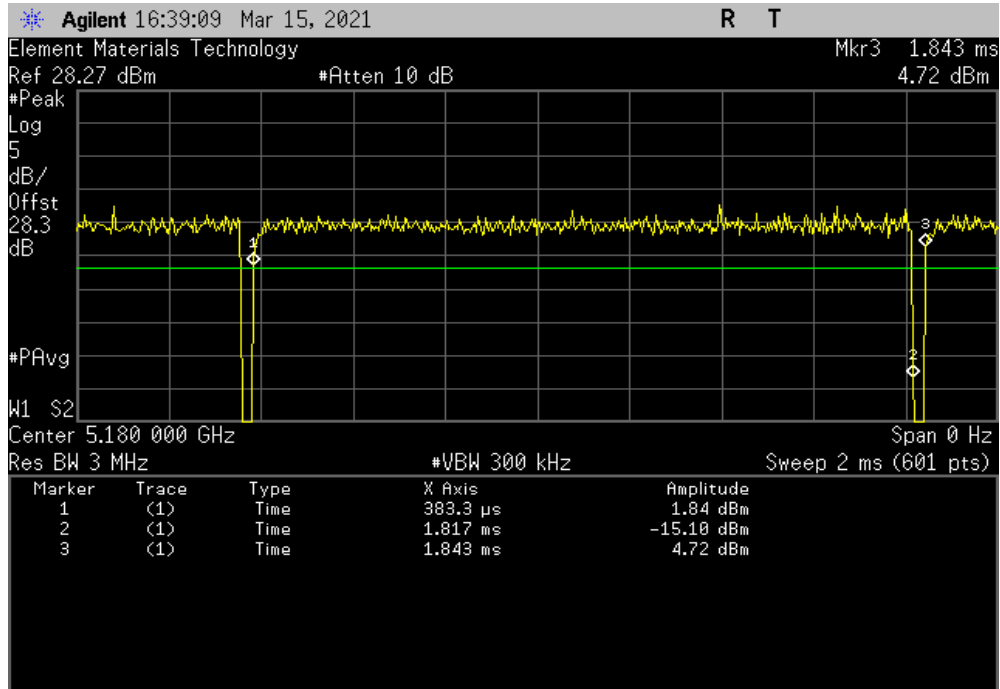
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B		Work Order: LGPD0256			
Serial Number: 2420M00120		Date: 6-Apr-21			
Customer: Logic PD, Inc.		Temperature: 21.3 °C			
Attendees: Eric Fritz		Humidity: 40.7% RH			
Project: None		Barometric Pres.: 1009 mbar			
Tested by: Andrew Rogstad		Power: 5VDC via 120VAC/60Hz			
TEST SPECIFICATIONS		Test Method			
FCC 15.407:2021		ANSI C63.10:2013			
COMMENTS					
Reference level includes measurement cable, attenuator, and DC block.					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	3	Signature <i>Andrew Rogstad</i>			
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result
5150 - 5250 MHz Band					
Low Channel, Ch 36 - 5180 MHz					
802.11(a) 6 Mbps	1.43	1.46	98.22	N/A	N/A
802.11(a) 36 Mbps	0.26	0.29	89.36	N/A	N/A
802.11(a) 54 Mbps	0.18	0.21	85.22	N/A	N/A
802.11(n) MCS0	1.34	1.37	97.73	N/A	N/A
802.11(n) MCS7	0.17	0.20	84.06	N/A	N/A
High Channel, Ch 48 - 5240 MHz					
802.11(a) 6 Mbps	1.43	1.47	97.61	N/A	N/A
802.11(a) 36 Mbps	0.25	0.29	86.71	N/A	N/A
802.11(a) 54 Mbps	0.17	0.21	82.03	N/A	N/A
802.11(n) MCS0	1.33	1.37	97.66	N/A	N/A
802.11(n) MCS7	0.16	0.20	80.65	N/A	N/A

DUTY CYCLE

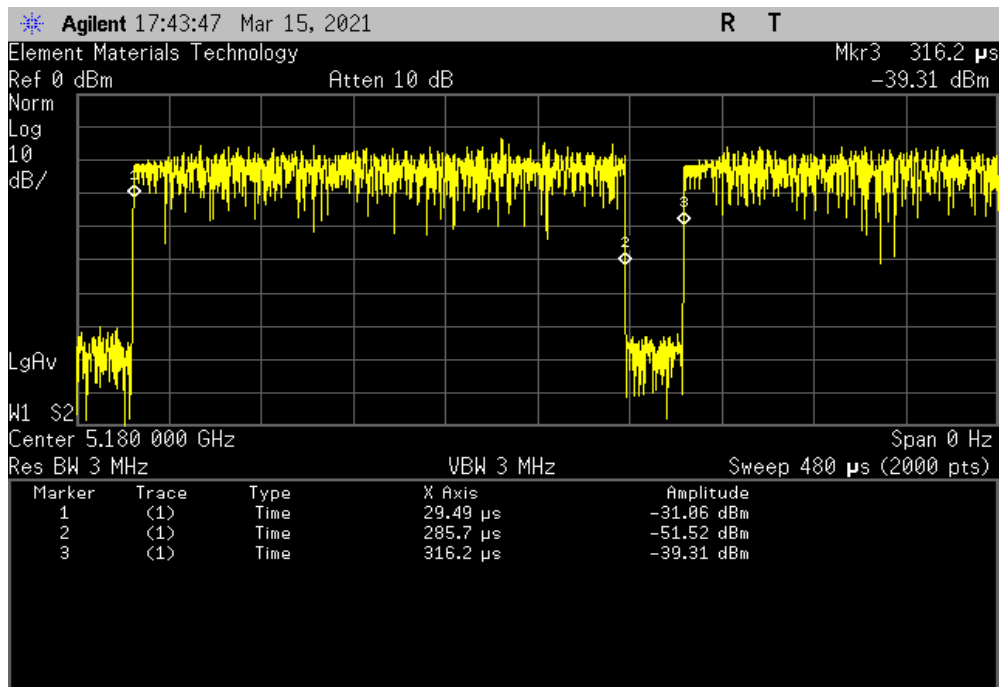


XMR 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 6 Mbps						
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result	
	1.43	1.46	98.22	N/A	N/A	



5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 36 Mbps						
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result	
	0.26	0.29	89.36	N/A	N/A	

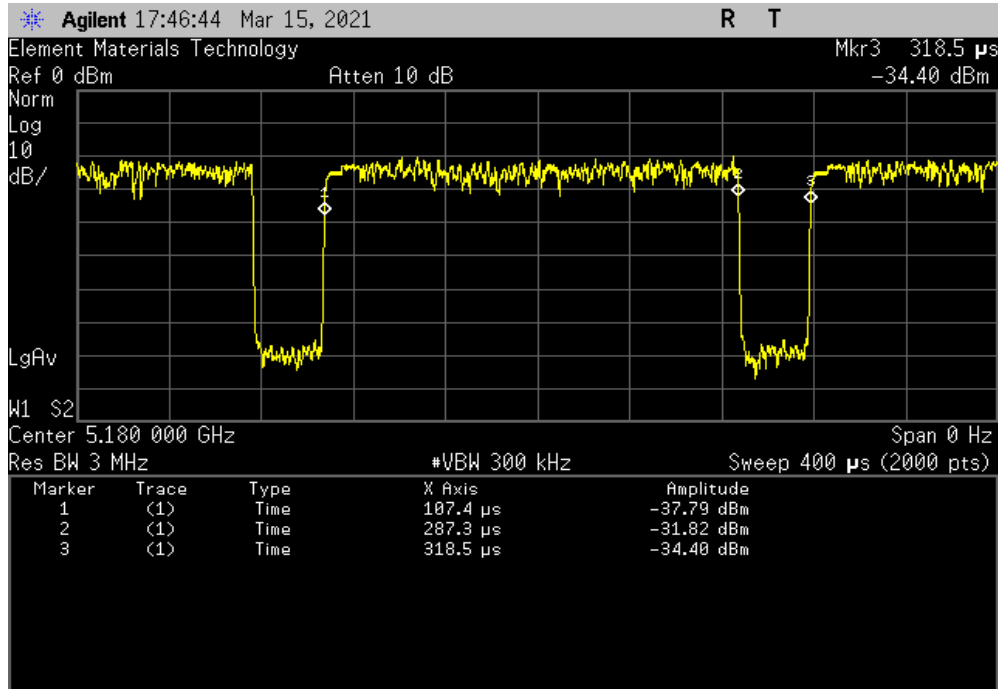


DUTY CYCLE

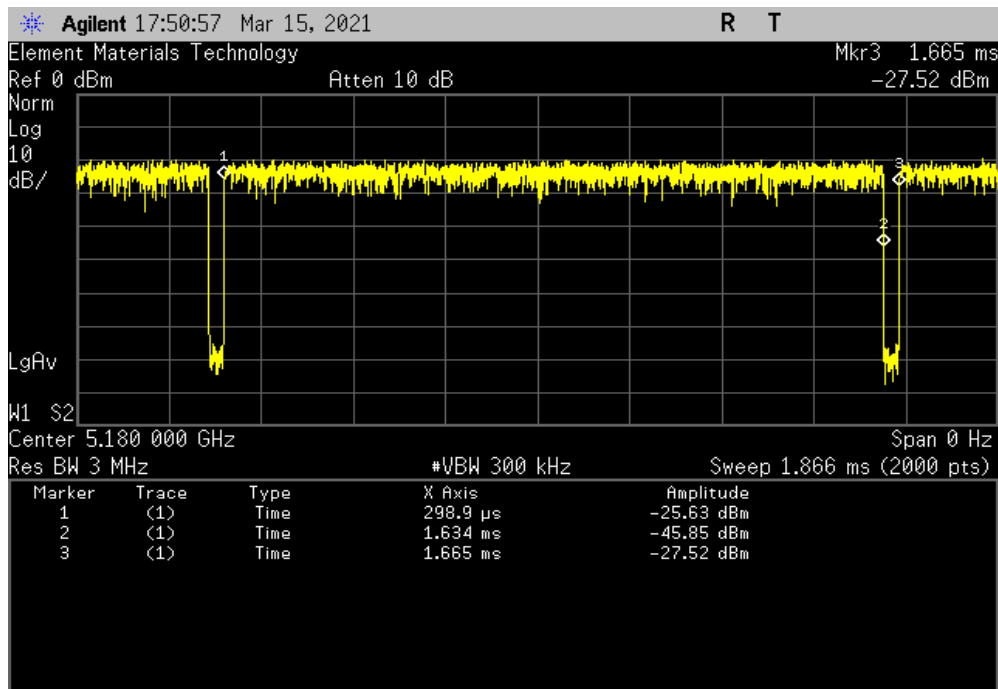


XMR 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 54 Mbps						
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result	
	0.18	0.21	85.22	N/A	N/A	



5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(n) MCS0						
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result	
	1.34	1.37	97.73	N/A	N/A	

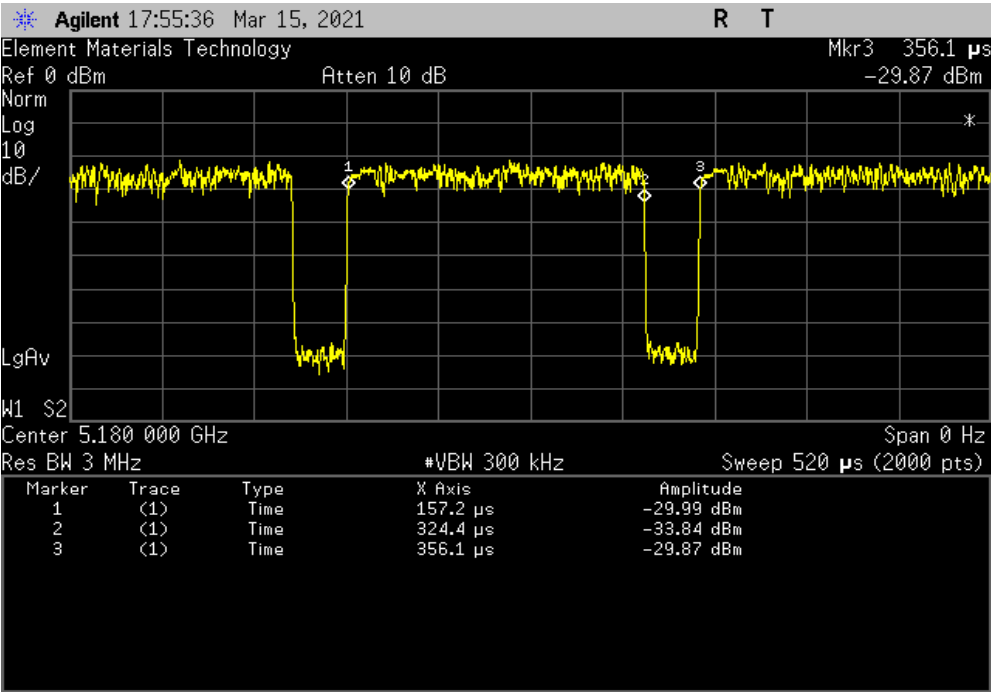


DUTY CYCLE



XM8 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(n) MCS7						
Pulse Length		Pulse Period	Duty Cycle		Limit	Result
(ms)		(ms)	(%)			
0.17		0.20	84.06		N/A	N/A



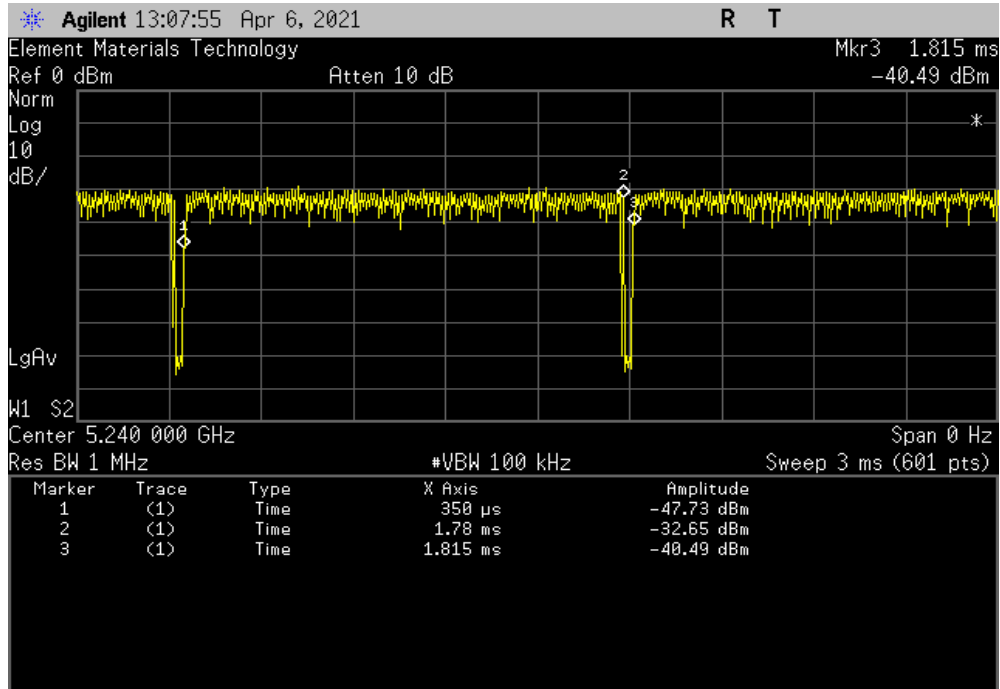
N/A

DUTY CYCLE

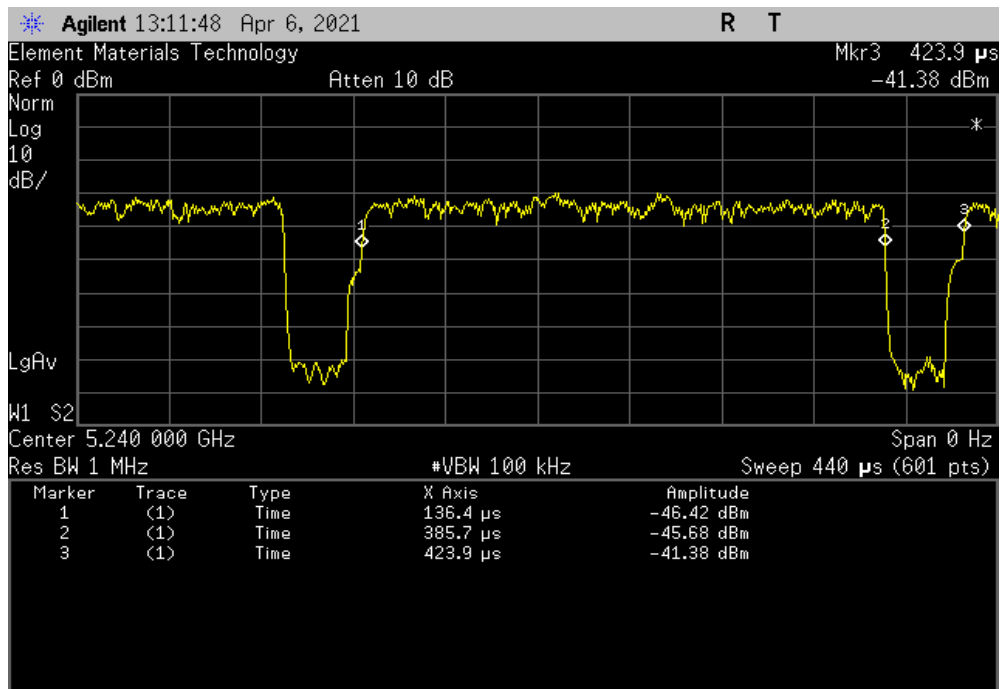


XM8 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 6 Mbps						
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result	
	1.43	1.47	97.61	N/A	N/A	



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 36 Mbps						
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result	
	0.25	0.29	86.71	N/A	N/A	

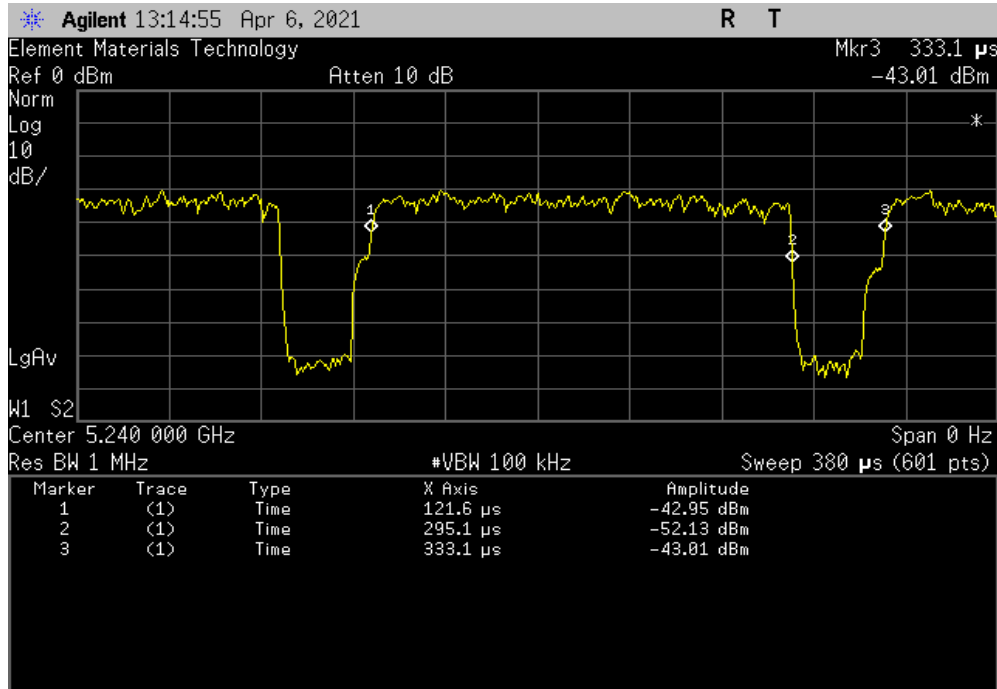


DUTY CYCLE

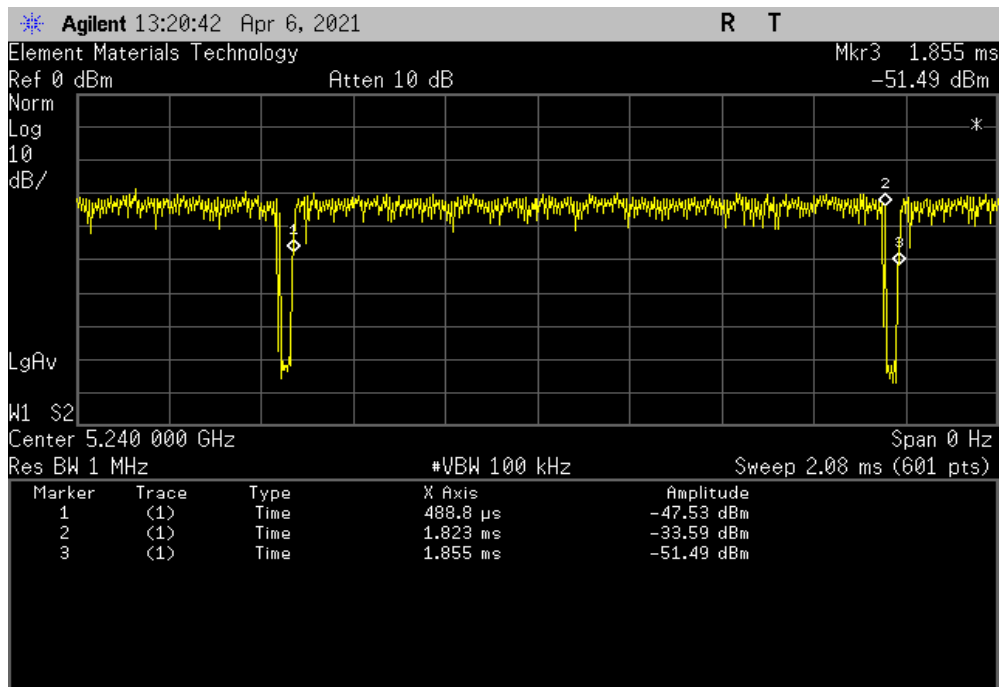


XMR 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 54 Mbps						
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result	
	0.17	0.21	82.03	N/A	N/A	



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS0						
	Pulse Length (ms)	Pulse Period (ms)	Duty Cycle (%)	Limit	Result	
	1.33	1.37	97.66	N/A	N/A	

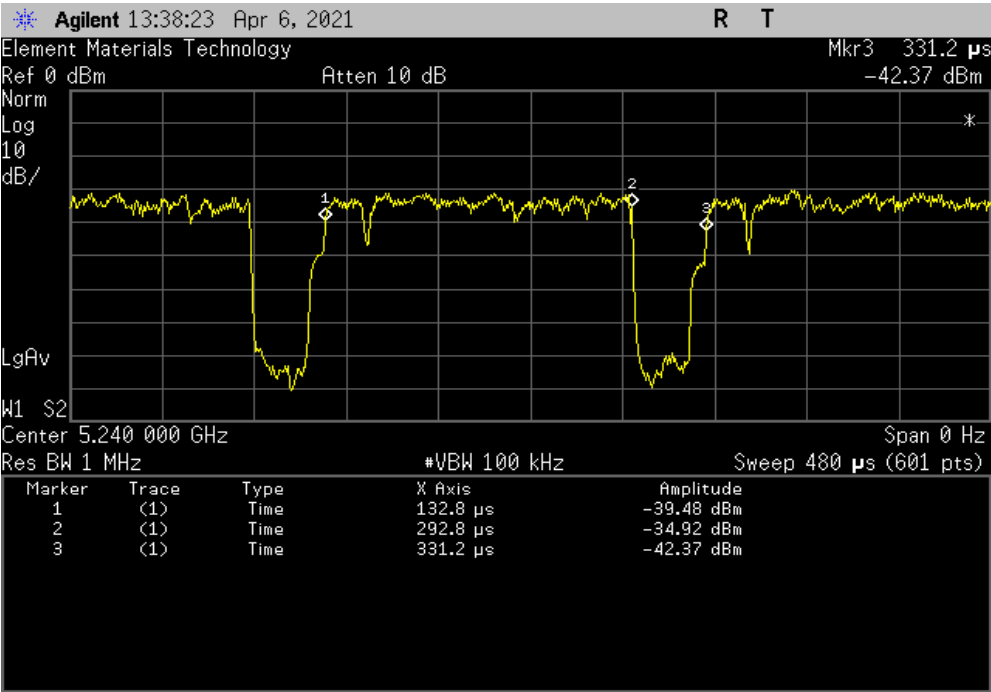


DUTY CYCLE



XM8 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS7						
	Pulse Length	Pulse Period	Duty Cycle	Limit	Result	
	(ms)	(ms)	(%)			
	0.16	0.20	80.65	N/A	N/A	



DUTY CYCLE 5.8 GHz Band



XMM 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Block - DC	Fairview Microwave	SD3379	AMI	2020-08-05	2021-08-05
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	2020-05-20	2021-05-20
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-03-10	2022-03-10

TEST DESCRIPTION

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

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

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

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

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

Where D is duty cycle of the radio transmissions

DUTY CYCLE 5.8 GHz Band



TWtTx 2021.03.19.1 XMt 2020.12.30.0

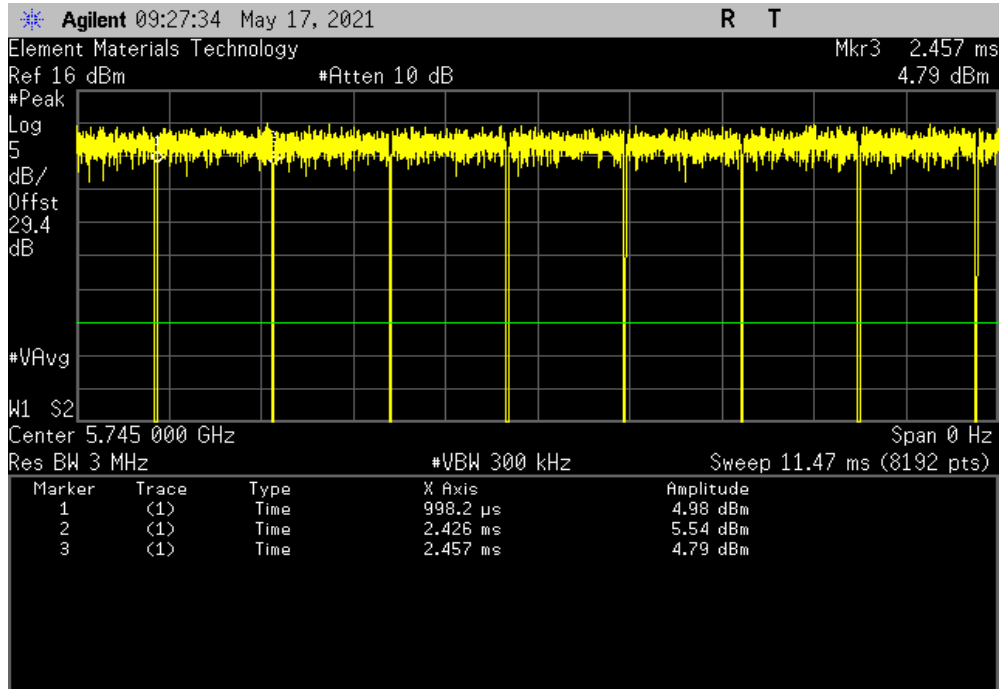
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B			Work Order: LGPD0256				
Serial Number: 2420M00120			Date: 17-May-21				
Customer: Logic PD, Inc.			Temperature: 22.3 °C				
Attendees: Eric Fritz			Humidity: 45.1% RH				
Project: None			Barometric Pres.: 1023 mbar				
Tested by: Dan Haas		Power: 5VDC via 120VAC/60Hz	Job Site: MN09				
TEST SPECIFICATIONS		Test Method					
FCC 15.407:2021		ANSI C63.10:2013					
COMMENTS							
Reference level includes measurement cable, attenuator, and DC block.							
DEVIATIONS FROM TEST STANDARD							
None							
Configuration #	5	Signature 					
		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
5725 - 5785 MHz Band							
Low Channel, Ch 149 - 5745 MHz							
	802.11(a) 6 Mbps	1.428 ms	1.459 ms	1	97.9	N/A	N/A
	802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(a) 36 Mbps	256.5 us	286.9 us	1	89.4	N/A	N/A
	802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(a) 54 Mbps	180.3 us	210.9 us	1	85.5	N/A	N/A
	802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS0	1.337 ms	1.368 ms	1	97.7	N/A	N/A
	802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS7	168.5 us	198.9 us	1	84.7	N/A	N/A
	802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, Ch 157 - 5785 MHz							
	802.11(a) 6 Mbps	1.429 ms	1.459 ms	1	98	N/A	N/A
	802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(a) 36 Mbps	256.6 us	286.8 us	1	89.5	N/A	N/A
	802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(a) 54 Mbps	180.6 us	210.8 us	1	85.7	N/A	N/A
	802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS0	1.336 ms	1.366 ms	1	97.7	N/A	N/A
	802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS7	168.6 us	198.9 us	1	84.8	N/A	N/A
	802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
High Channel, Ch 165 - 5825 MHz							
	802.11(a) 6 Mbps	1.429 ms	1.459 ms	1	98	N/A	N/A
	802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(a) 36 Mbps	256.3 us	286.9 us	1	89.3	N/A	N/A
	802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(a) 54 Mbps	180.6 us	210.9 us	1	85.6	N/A	N/A
	802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS0	1.337 ms	1.368 ms	1	97.7	N/A	N/A
	802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS7	168.6 us	198.9 us	1	84.8	N/A	N/A
	802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE 5.8 GHz Band

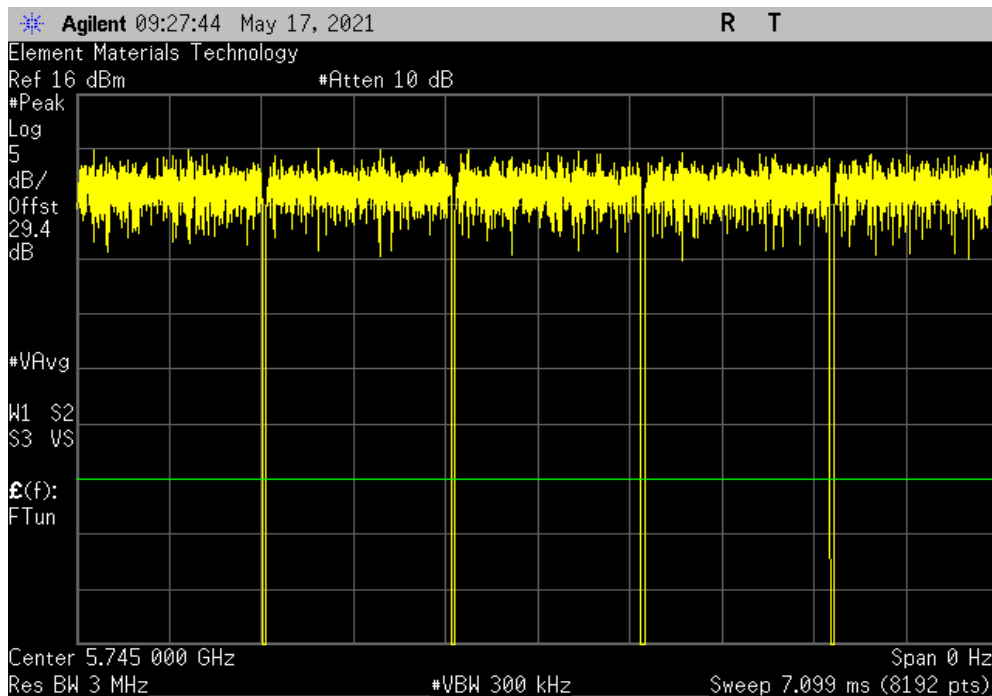


TbTx 2021.03.19.1 XMt 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.428 ms	1.459 ms	1	97.9	N/A	N/A



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

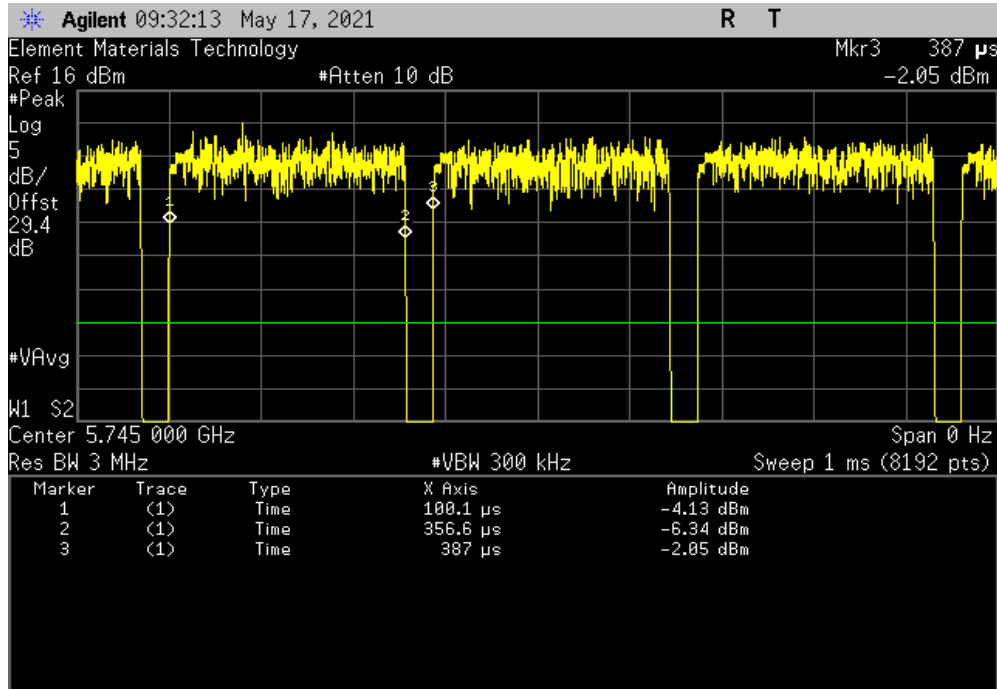


DUTY CYCLE 5.8 GHz Band

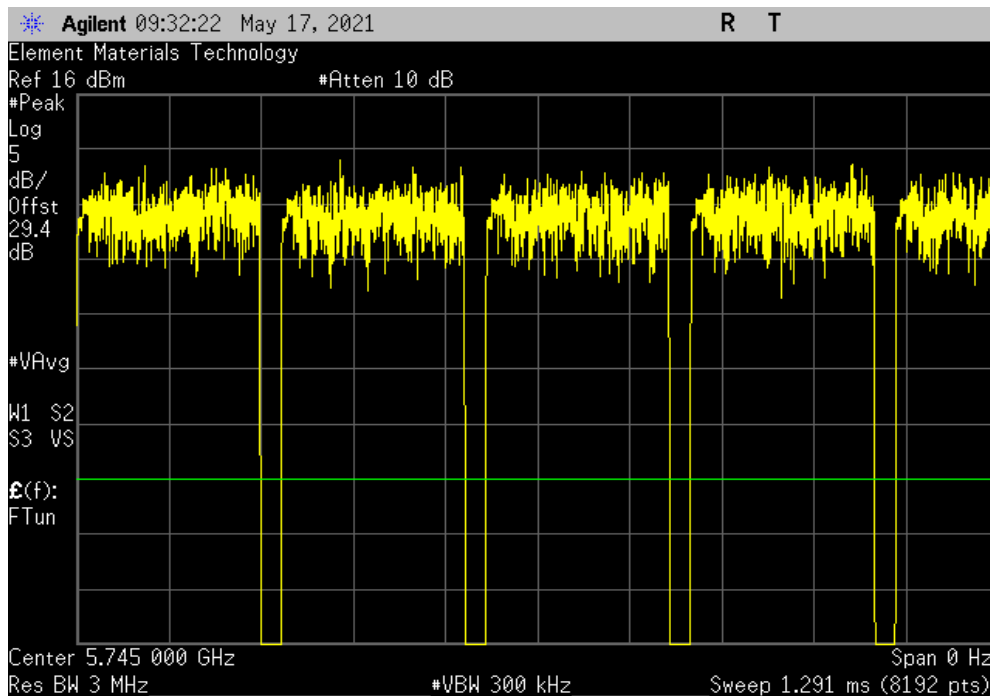


TbTx 2021.03.19.1 XMt 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
256.5 us	286.9 us	1	89.4	N/A	N/A	



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

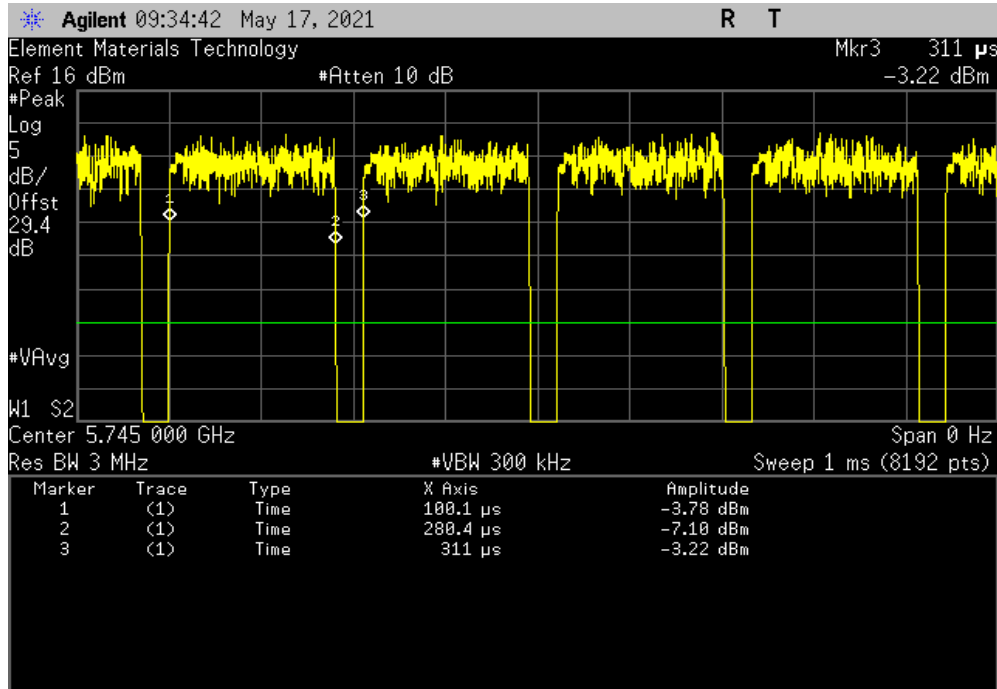


DUTY CYCLE 5.8 GHz Band

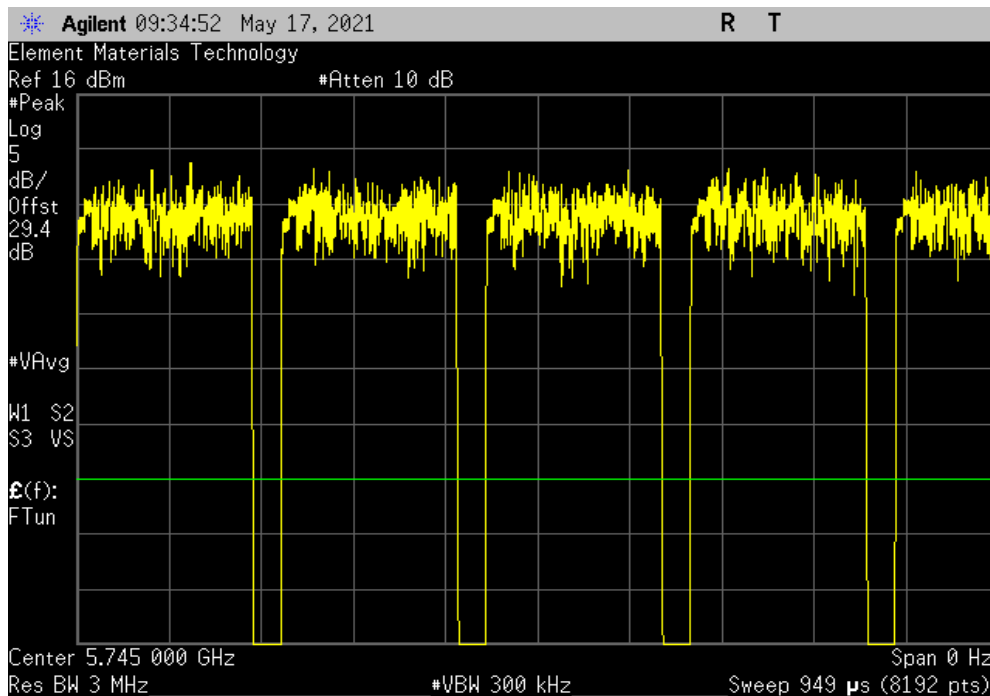


TbTx 2021.03.19.1 XMt 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
180.3 us	210.9 us	1	85.5	N/A	N/A	



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

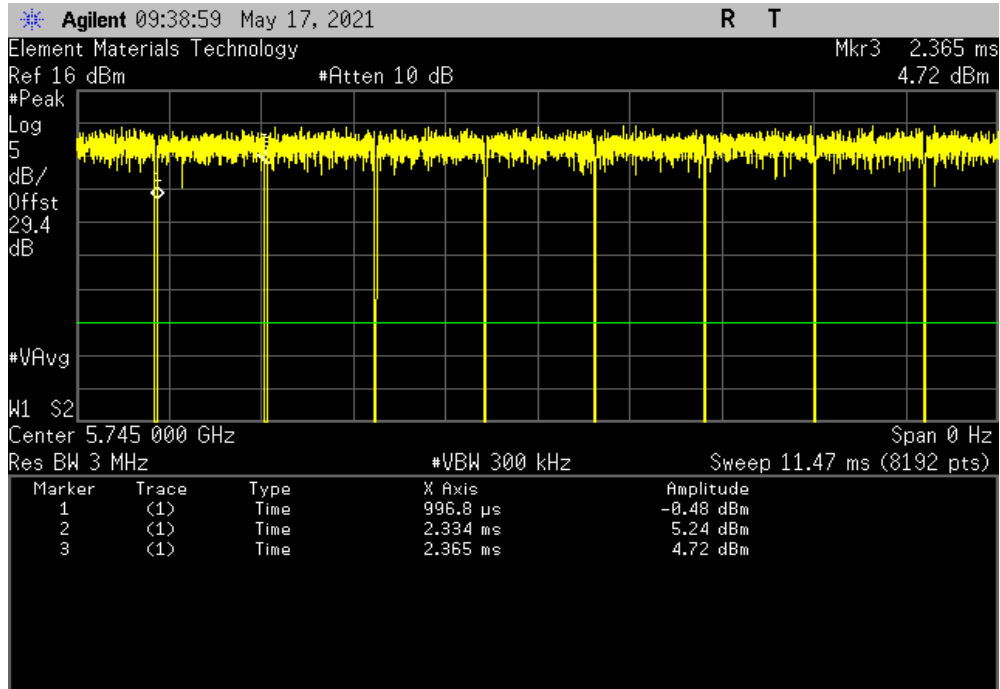


DUTY CYCLE 5.8 GHz Band

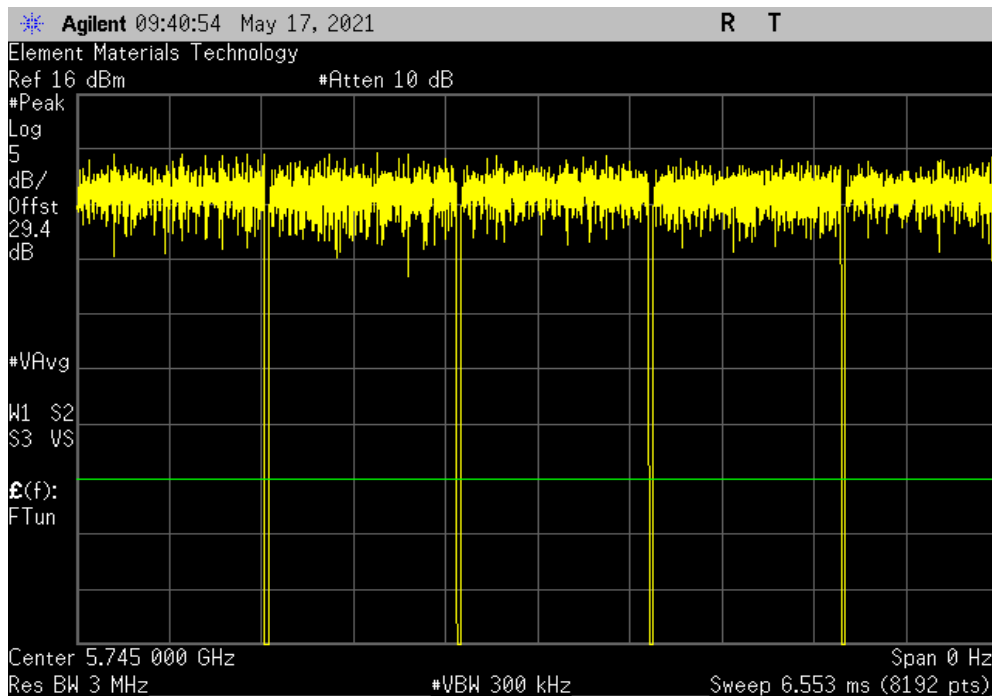


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.337 ms	1.368 ms	1	97.7	N/A	N/A	



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

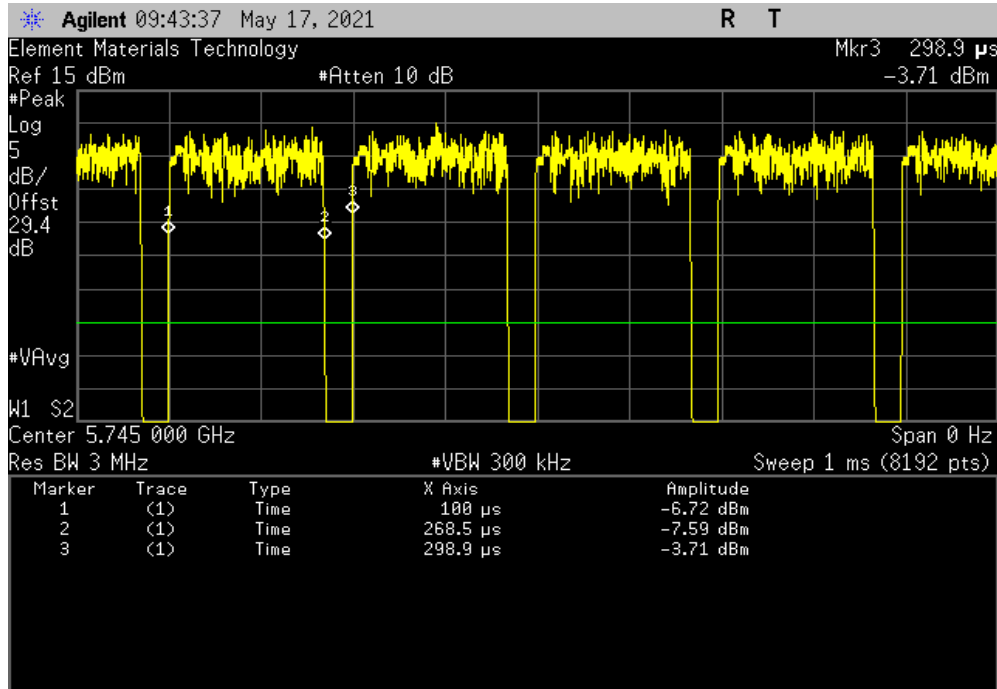


DUTY CYCLE 5.8 GHz Band

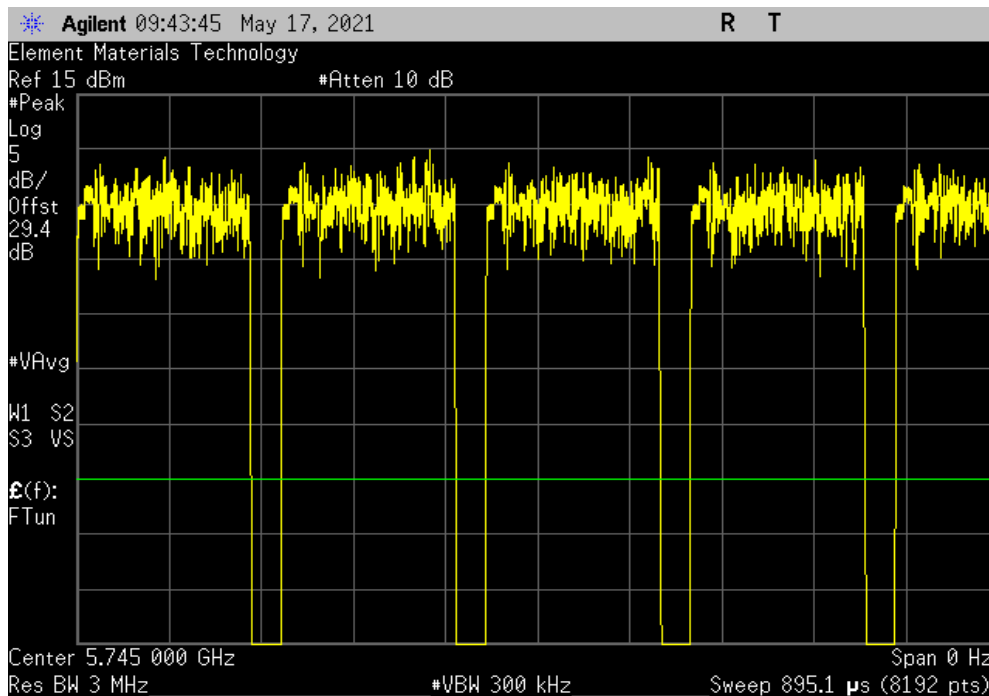


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
168.5 us	198.9 us	1	84.7	N/A	N/A	



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

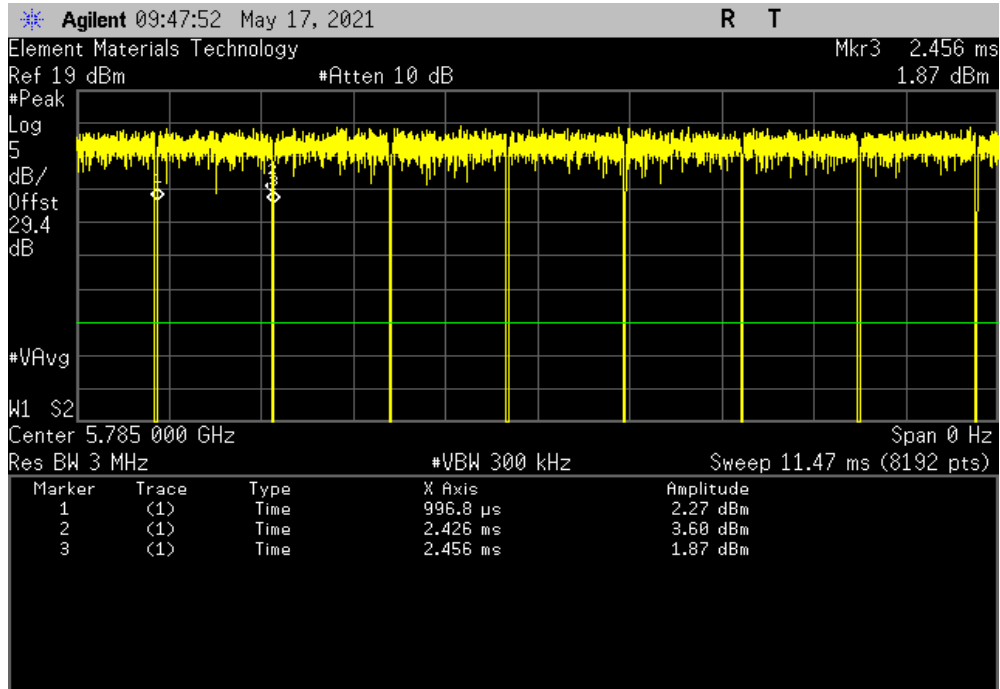


DUTY CYCLE 5.8 GHz Band

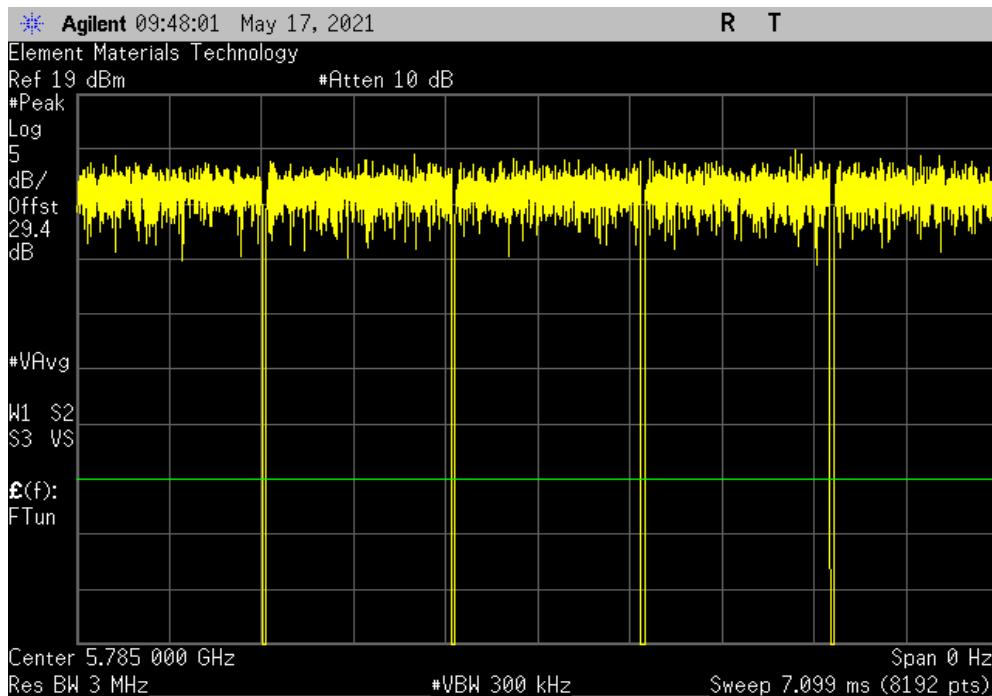


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.429 ms	1.459 ms	1	98	N/A	N/A	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

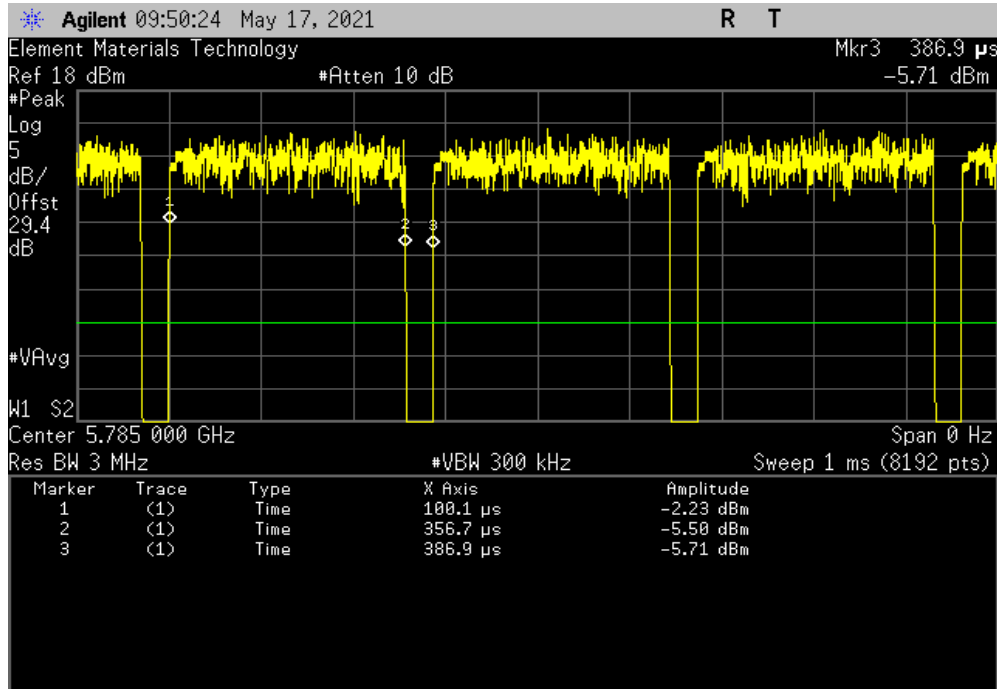


DUTY CYCLE 5.8 GHz Band

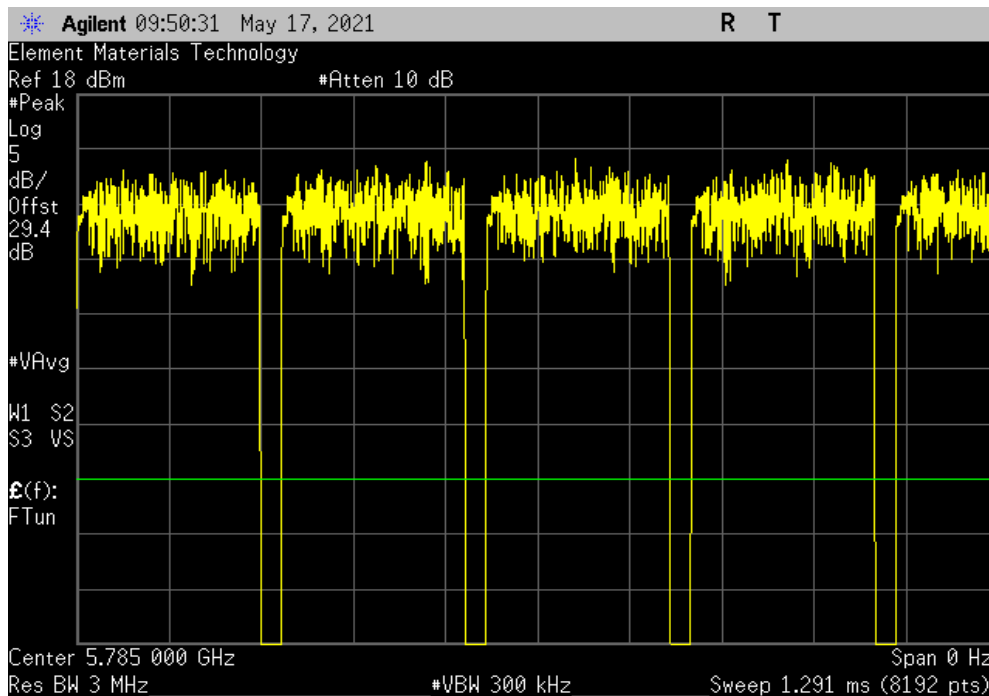


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
256.6 us	286.8 us	1	89.5	N/A	N/A	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

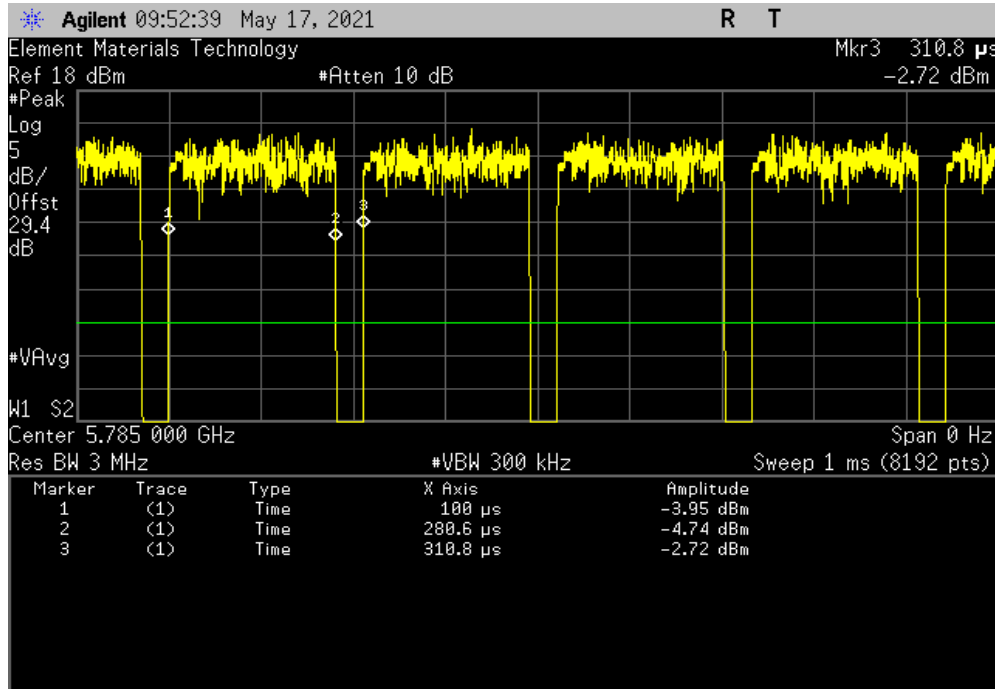


DUTY CYCLE 5.8 GHz Band

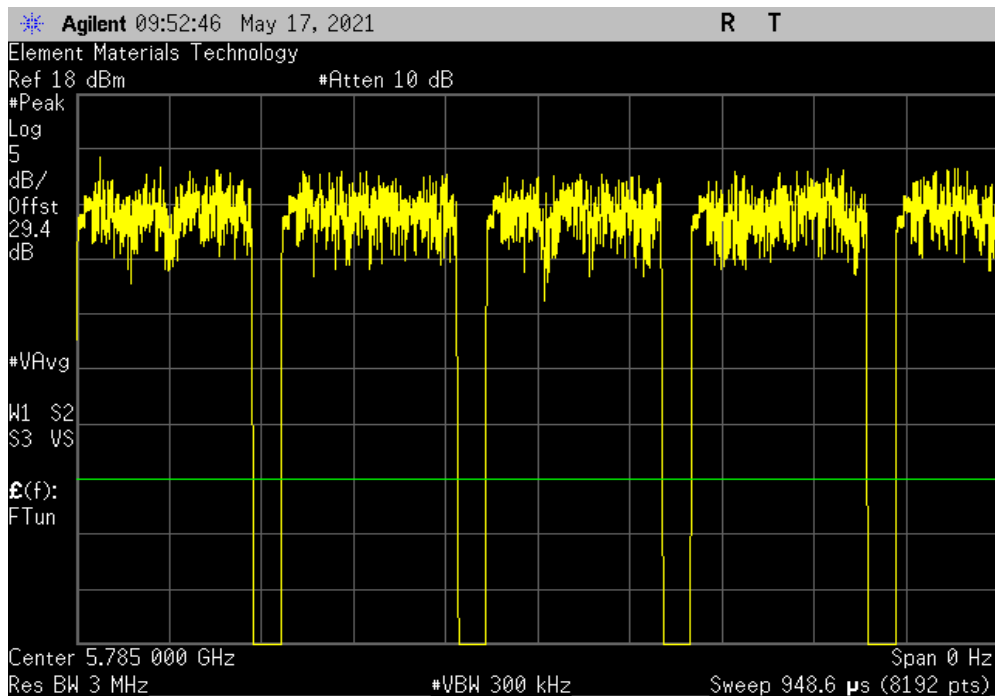


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
180.6 us	210.8 us	1	85.7	N/A	N/A	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

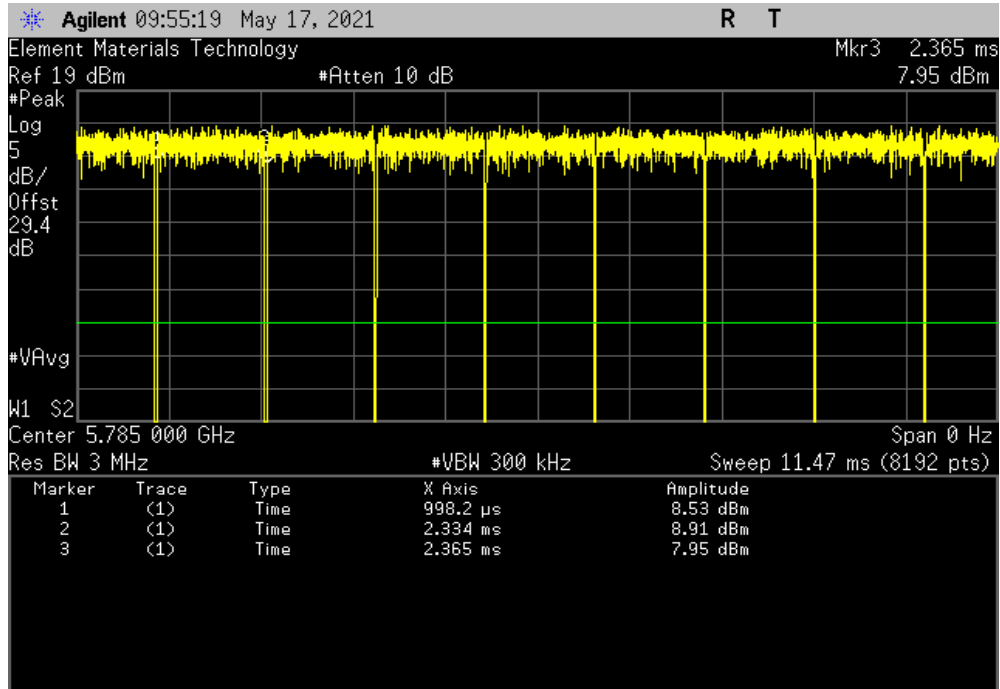


DUTY CYCLE 5.8 GHz Band

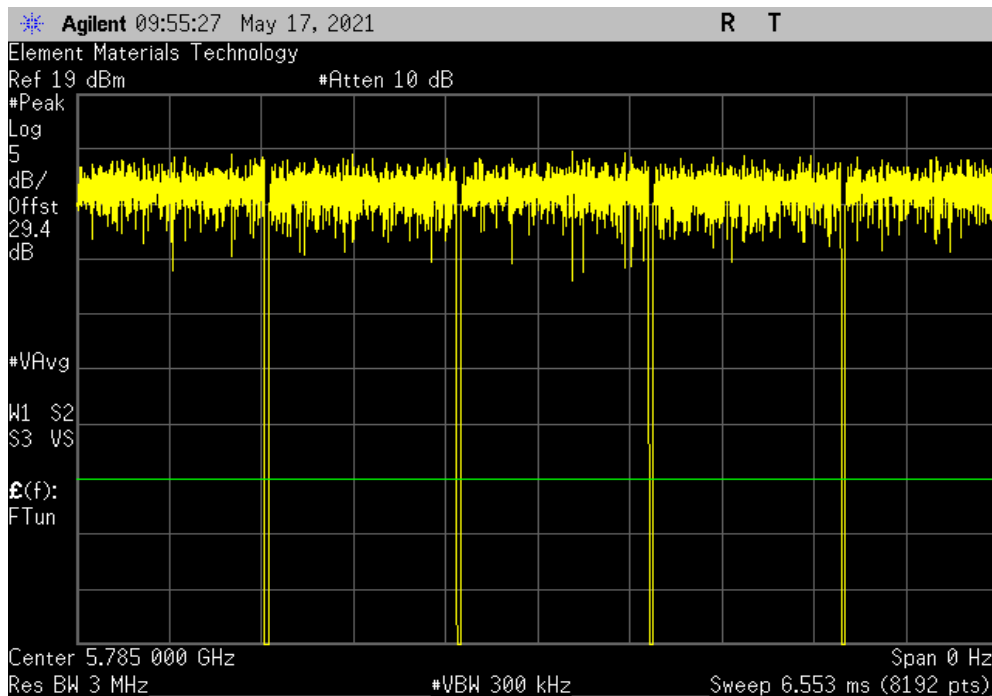


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.336 ms	1.366 ms	1	97.7	N/A	N/A	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

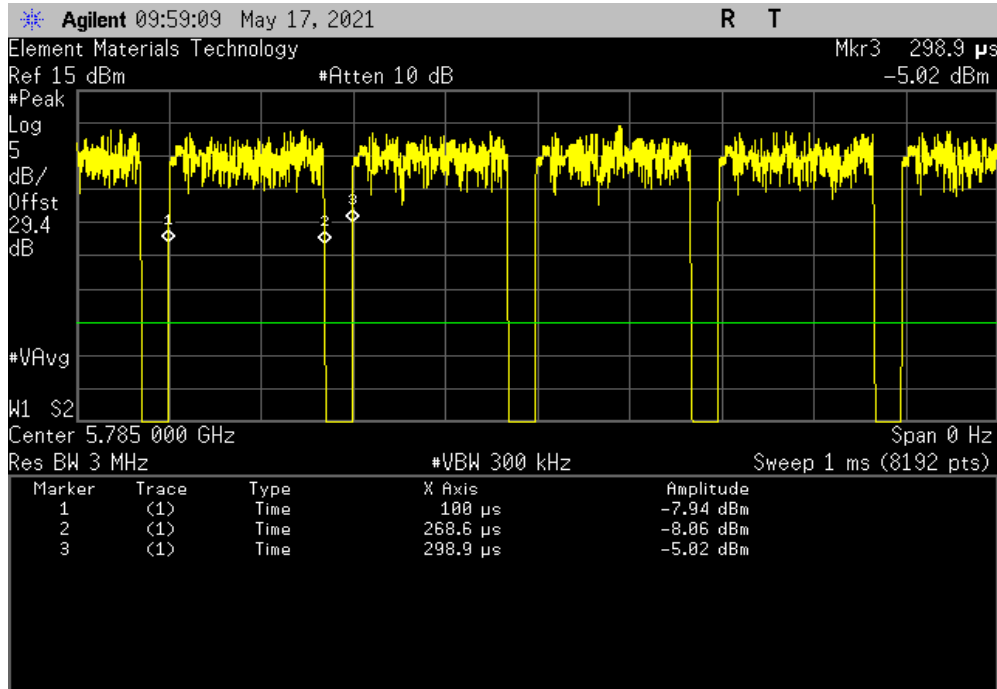


DUTY CYCLE 5.8 GHz Band

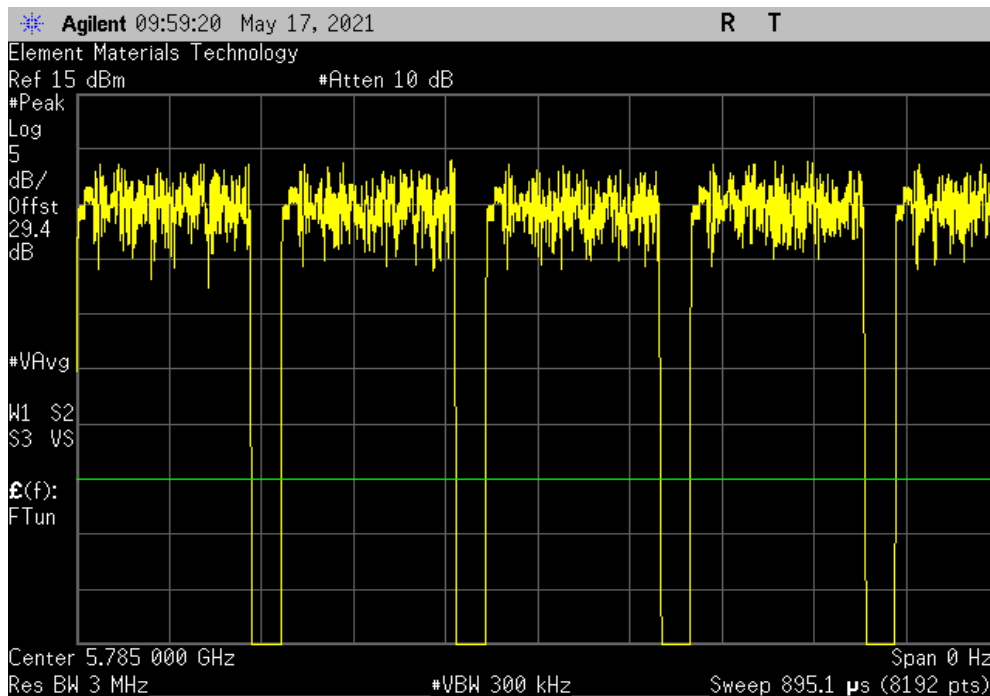


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
168.6 μ s	198.9 μ s	1	84.8	N/A	N/A	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

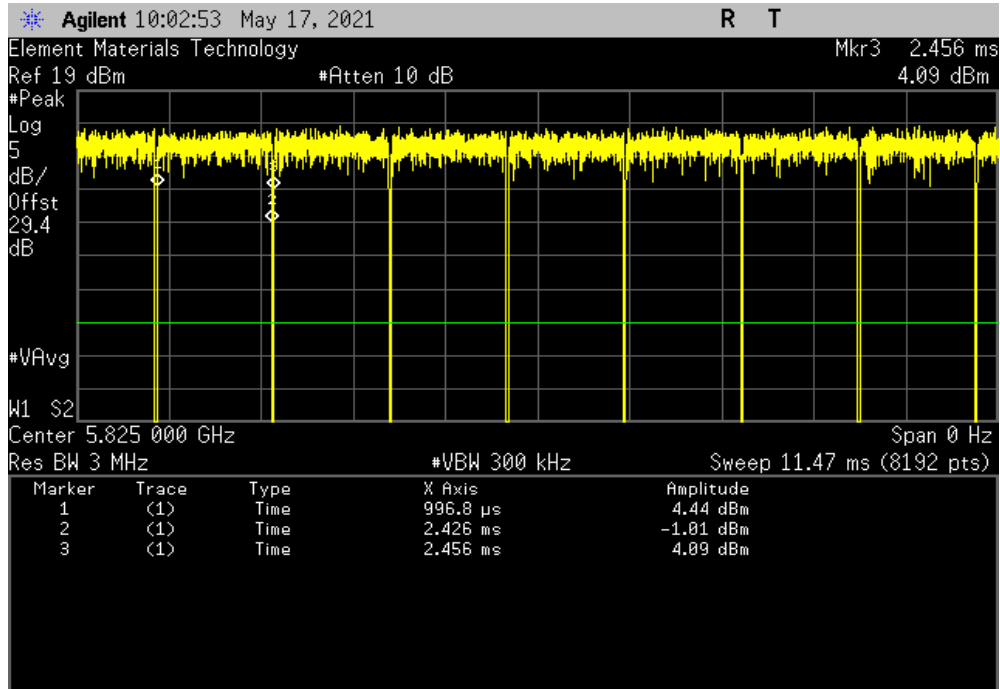


DUTY CYCLE 5.8 GHz Band

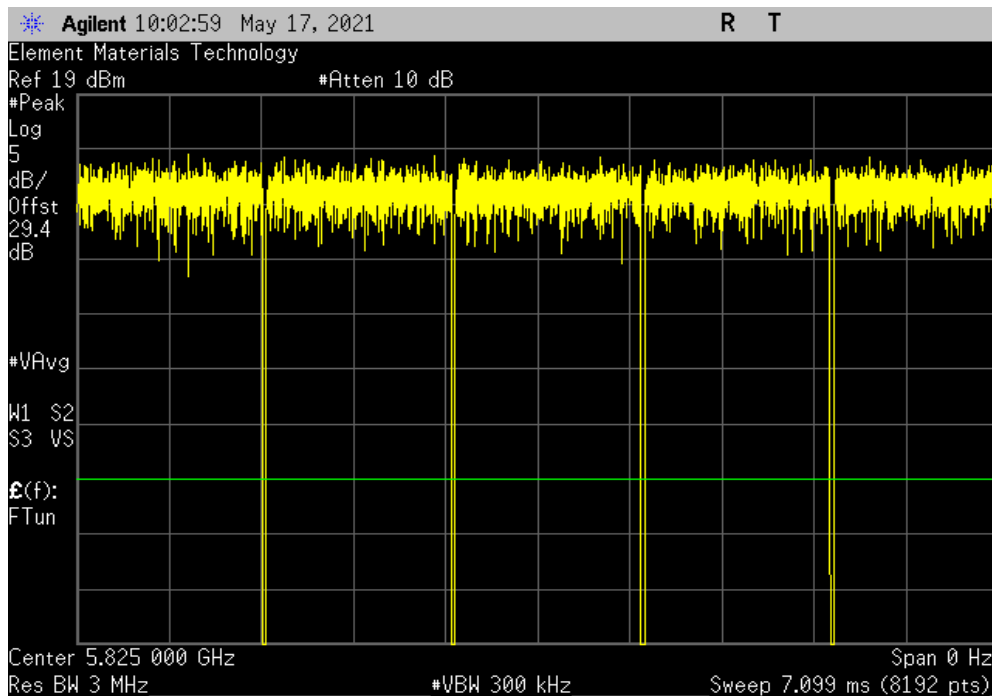


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.429 ms	1.459 ms	1	98	N/A	N/A



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

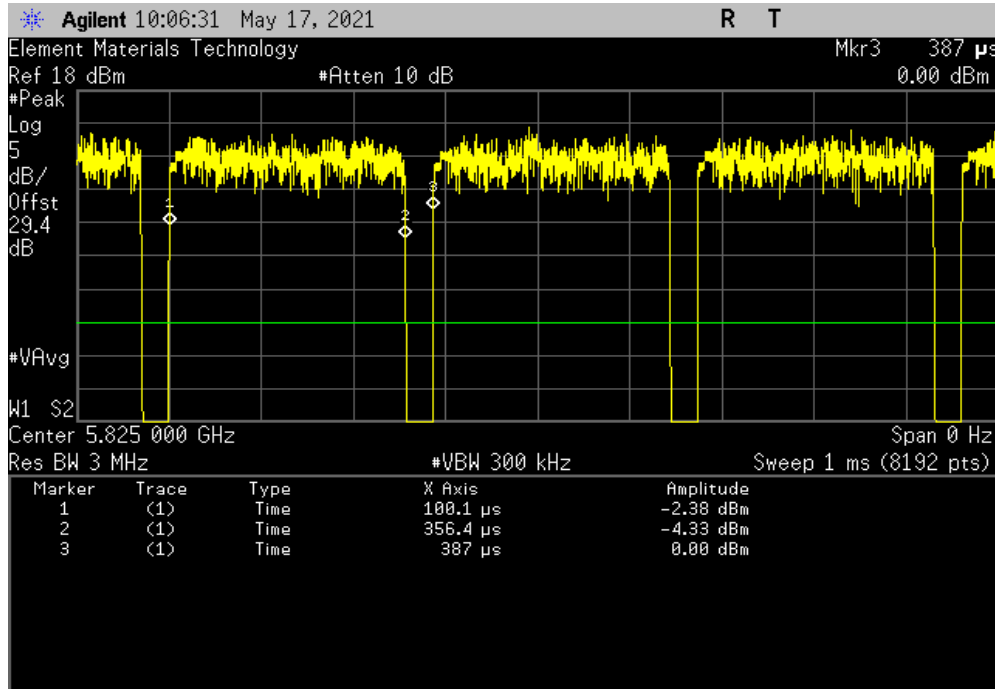


DUTY CYCLE 5.8 GHz Band

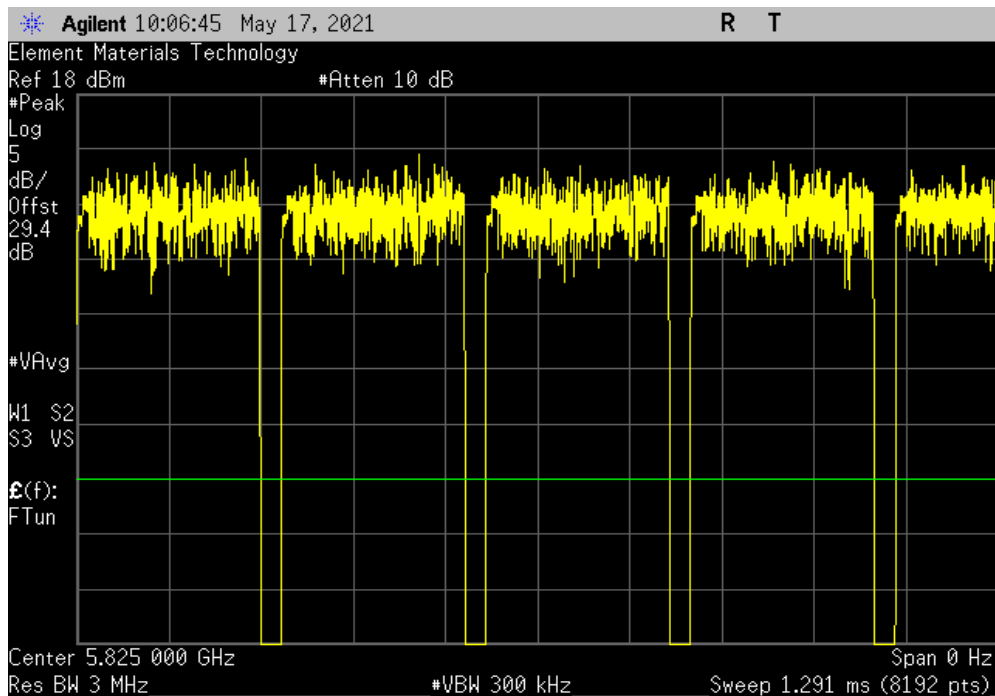


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
256.3 us	286.9 us	1	89.3	N/A	N/A	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

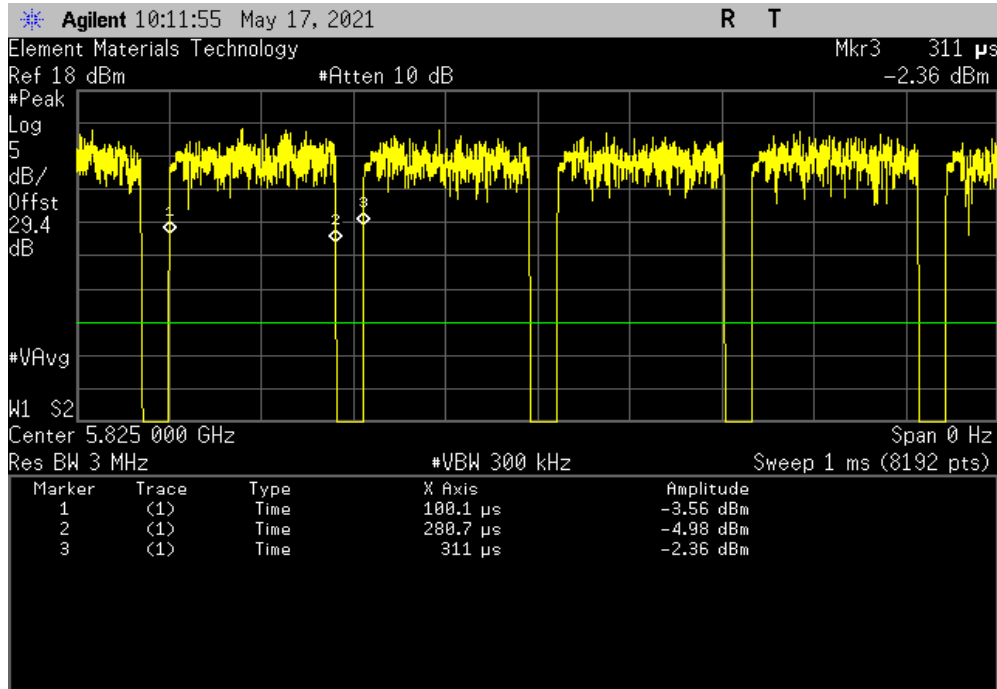


DUTY CYCLE 5.8 GHz Band

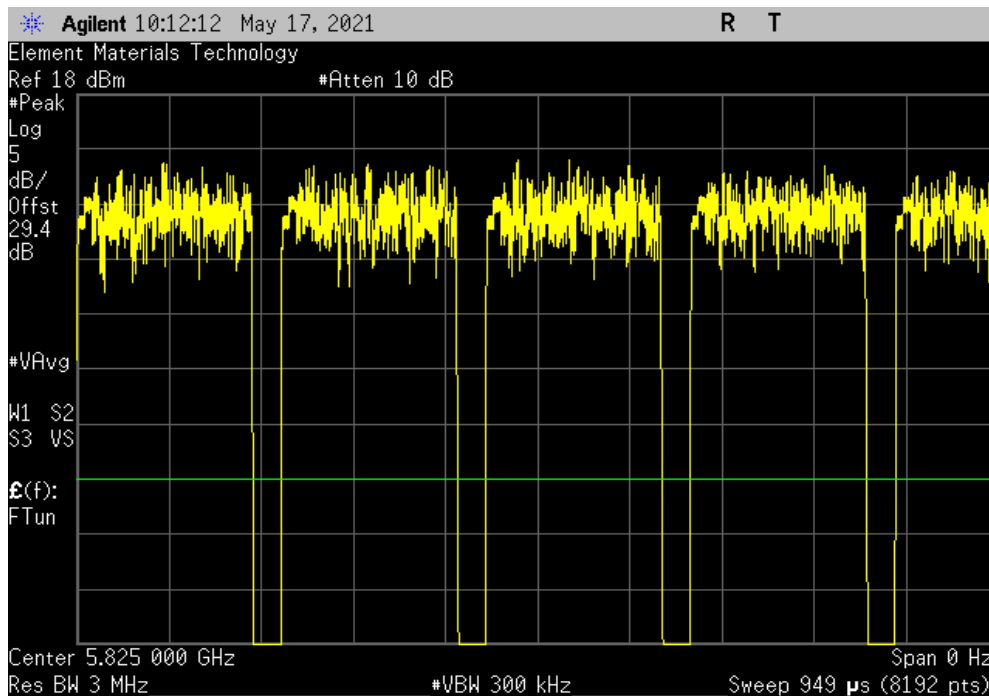


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
180.6 us	210.9 us	1	85.6	N/A	N/A	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

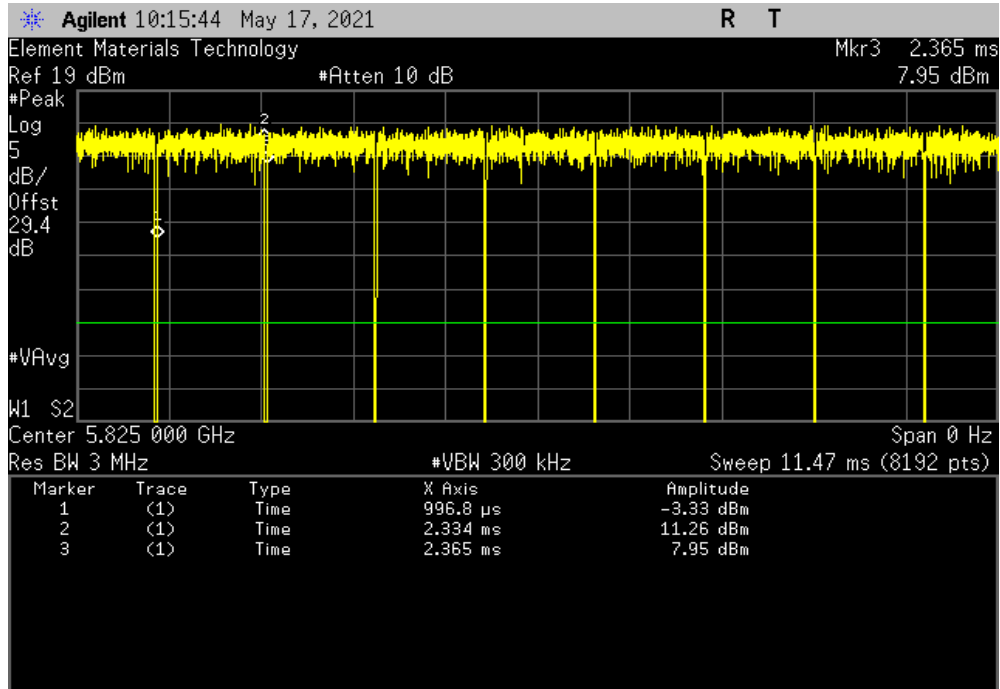


DUTY CYCLE 5.8 GHz Band

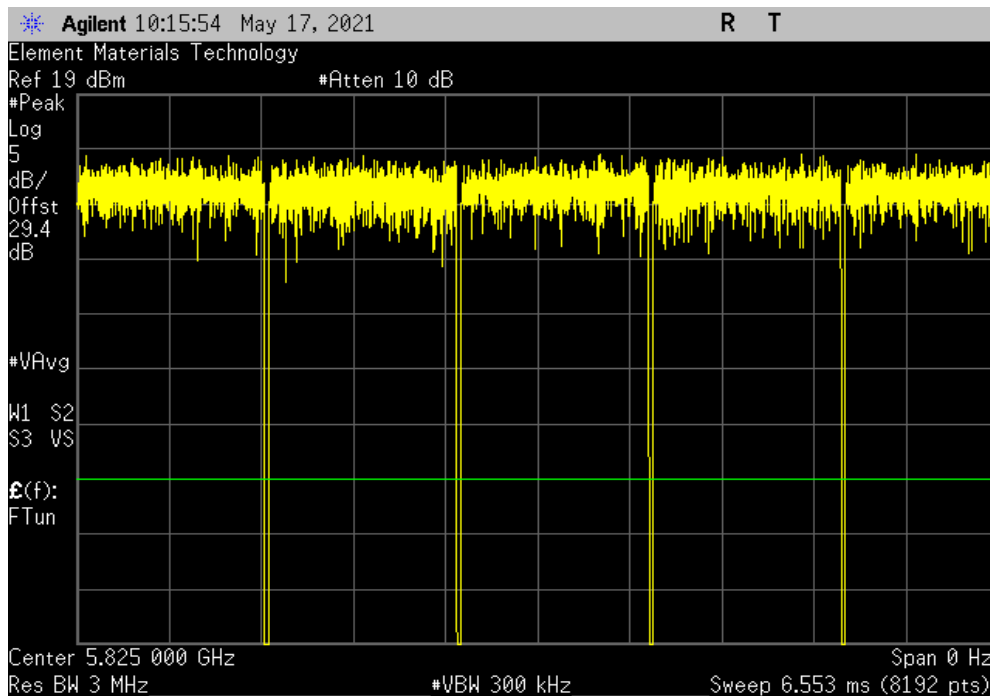


TMTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.337 ms	1.368 ms	1	97.7	N/A	N/A	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

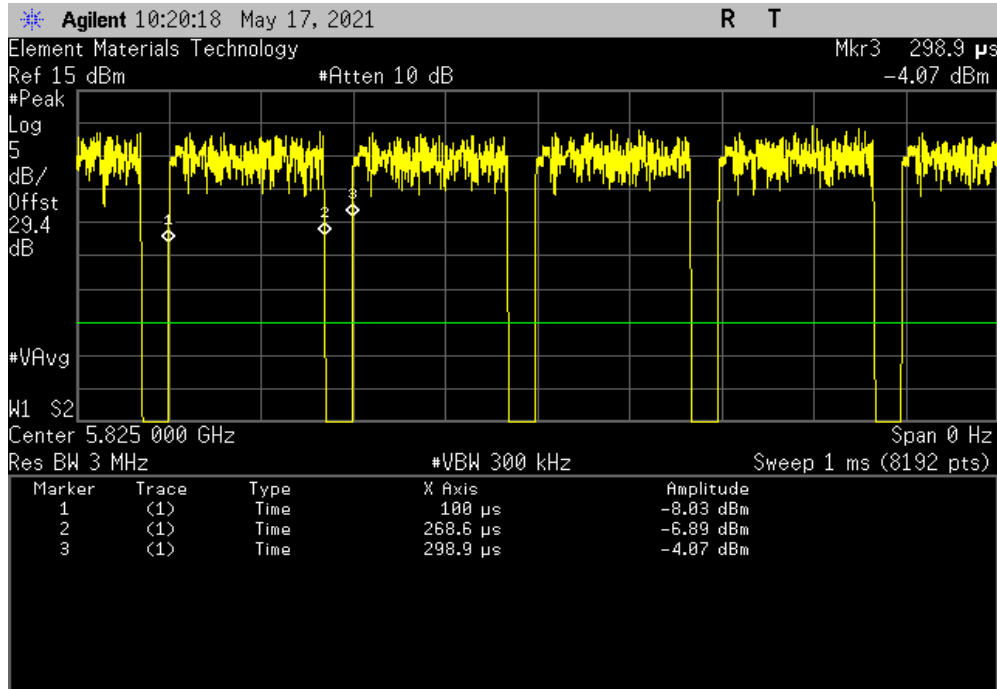


DUTY CYCLE 5.8 GHz Band

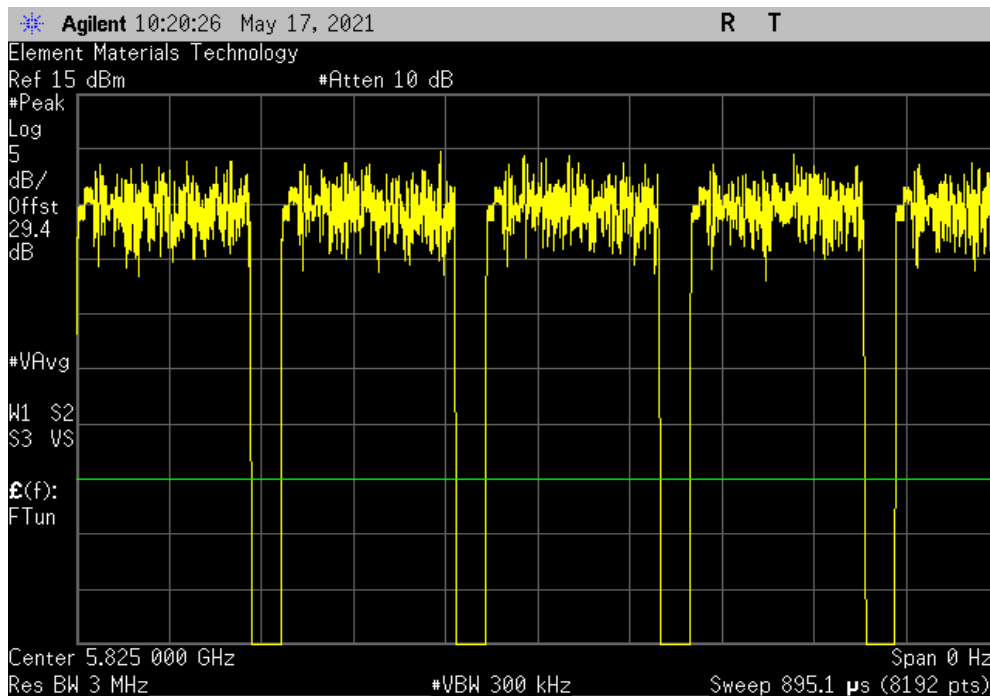


TbTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
168.6 us	198.9 us	1	84.8	N/A	N/A	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	



MAXIMUM CONDUCTED OUTPUT POWER 5.2 GHz BAND



XMIT 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07

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:

- Sample Detector

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 when the duty cycle is less than 98%.

MAXIMUM CONDUCTED OUTPUT POWER 5.2 GHz BAND



TSTx 2019.08.30.0 XMR 2020.12.30.0

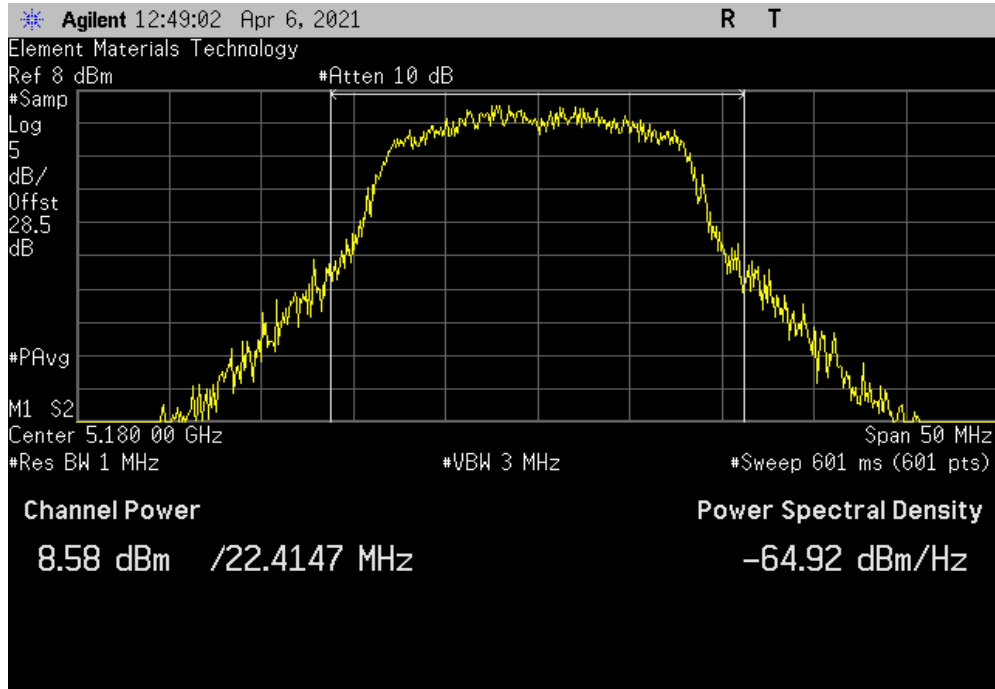
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B		Work Order: LGPD0256	
Serial Number: 2420M00120		Date: 6-Apr-21	
Customer: Logic PD, Inc.		Temperature: 21.3 °C	
Attendees: Eric Fritz		Humidity: 40.7% RH	
Project: None		Barometric Pres.: 1009 mbar	
Tested by: Andrew Rogstad		Power: 5VDC via 120VAC/60Hz	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.407:2021		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, attenuator, and DC block. Ch 36 802.11(a) 6 Mbps has a duty cycle of at least 98%, therefore no Duty Cycle Factor is applied.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Andrew Rogstad</i>	
		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)
		Out Pwr (dBm)	Limit (dBm)
			Result
5150 - 5250 MHz Band			
Low Channel, Ch 36 - 5180 MHz			
	802.11(a) 6 Mbps	8.582	0
	802.11(a) 36 Mbps	8.077	0.488
	802.11(a) 54 Mbps	7.852	0.695
	802.11(n) MCS0	8.492	0.099
	802.11(n) MCS7	8.05	0.754
High Channel, Ch 48 - 5240 MHz			
	802.11(a) 6 Mbps	9.336	0.105
	802.11(a) 36 Mbps	8.928	0.619
	802.11(a) 54 Mbps	8.733	0.86
	802.11(n) MCS0	9.193	0.103
	802.11(n) MCS7	8.759	0.934

MAXIMUM CONDUCTED OUTPUT POWER 5.2 GHz BAND

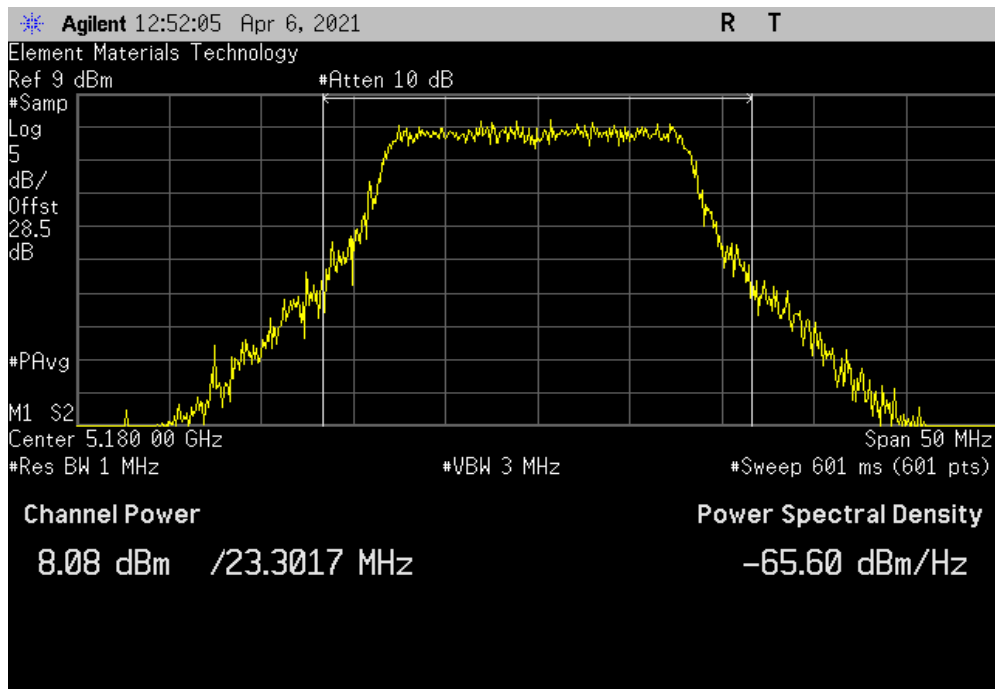


TUTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 6 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.582	0	8.582	24	Pass	



5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 36 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.077	0.488	8.565	24	Pass	

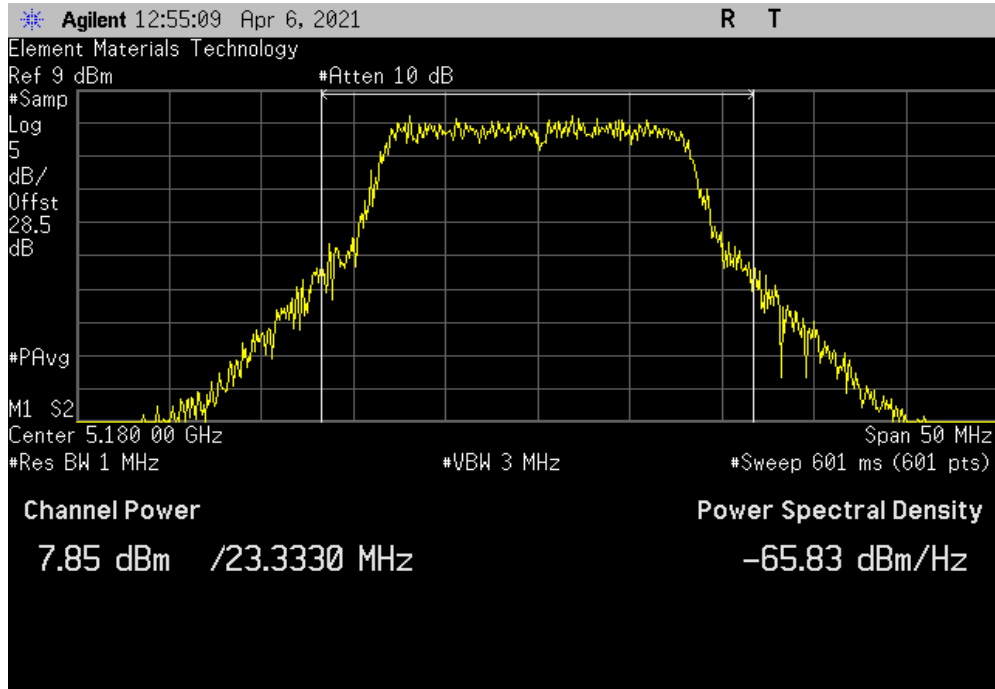


MAXIMUM CONDUCTED OUTPUT POWER 5.2 GHz BAND

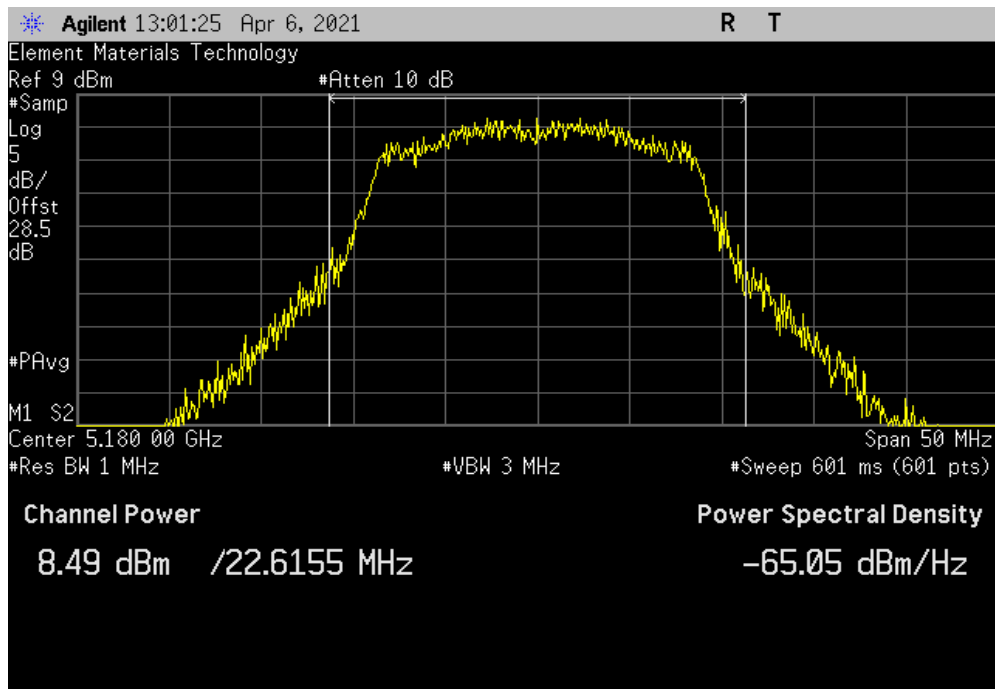


TUTTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 54 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	7.852	0.695	8.547	24	Pass	



5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(n) MCS0						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.492	0.099	8.591	24	Pass	

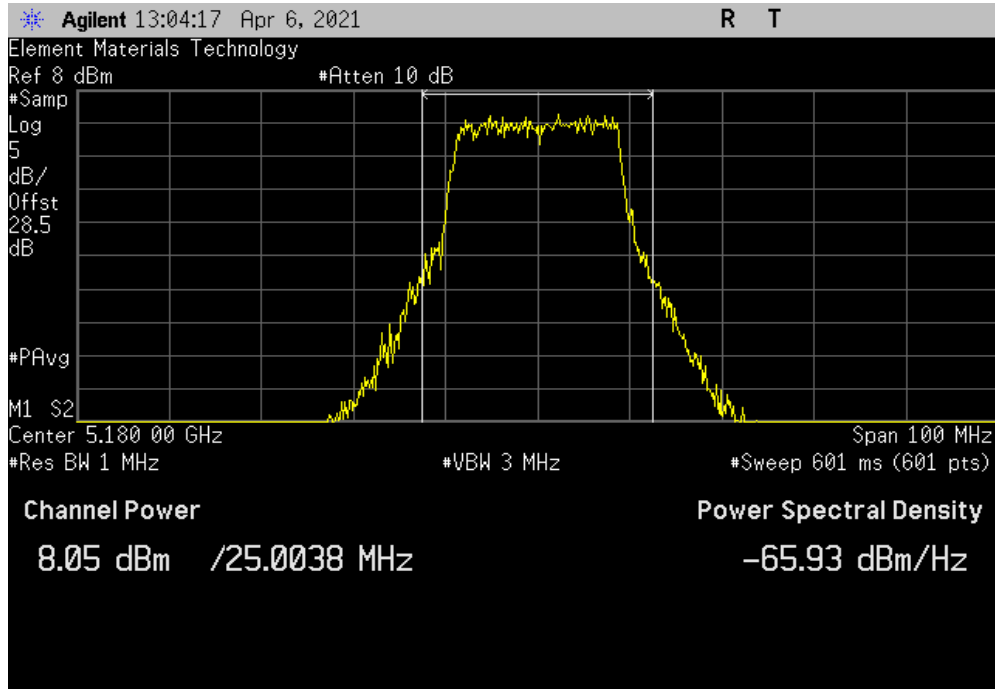


MAXIMUM CONDUCTED OUTPUT POWER 5.2 GHz BAND

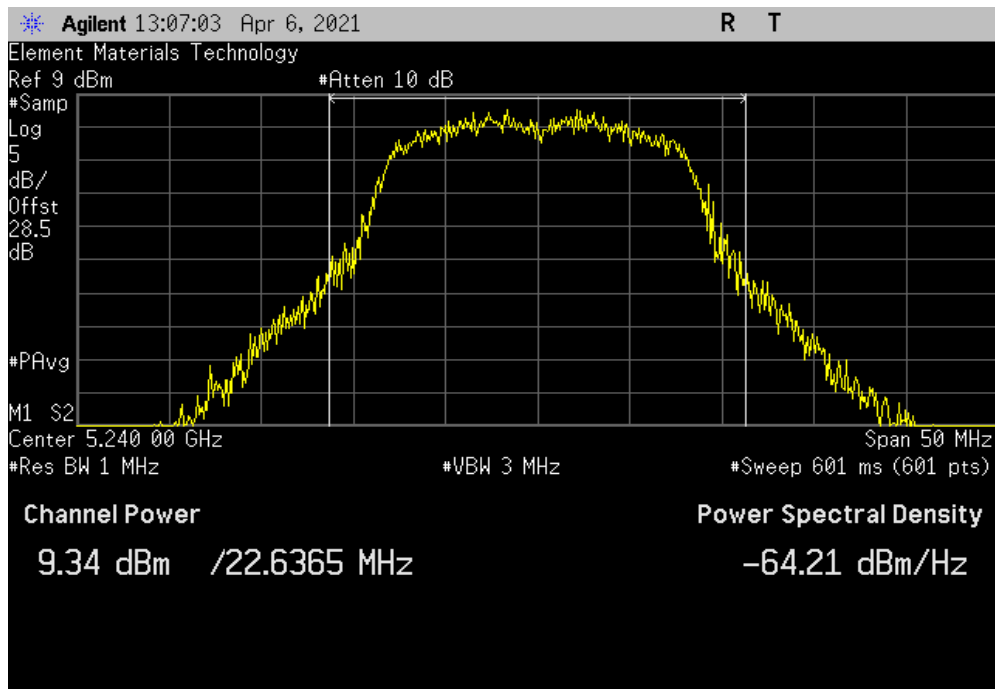


TMTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(n) MCS7						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.05	0.754	8.804	24	Pass	



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 6 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	9.336	0.105	9.441	24	Pass	

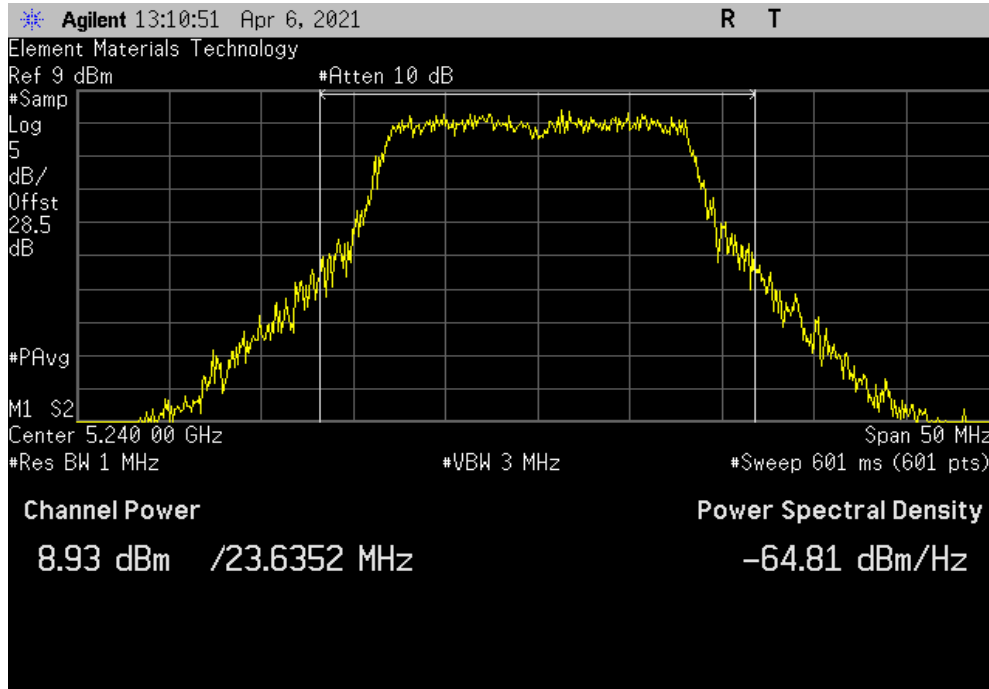


MAXIMUM CONDUCTED OUTPUT POWER 5.2 GHz BAND

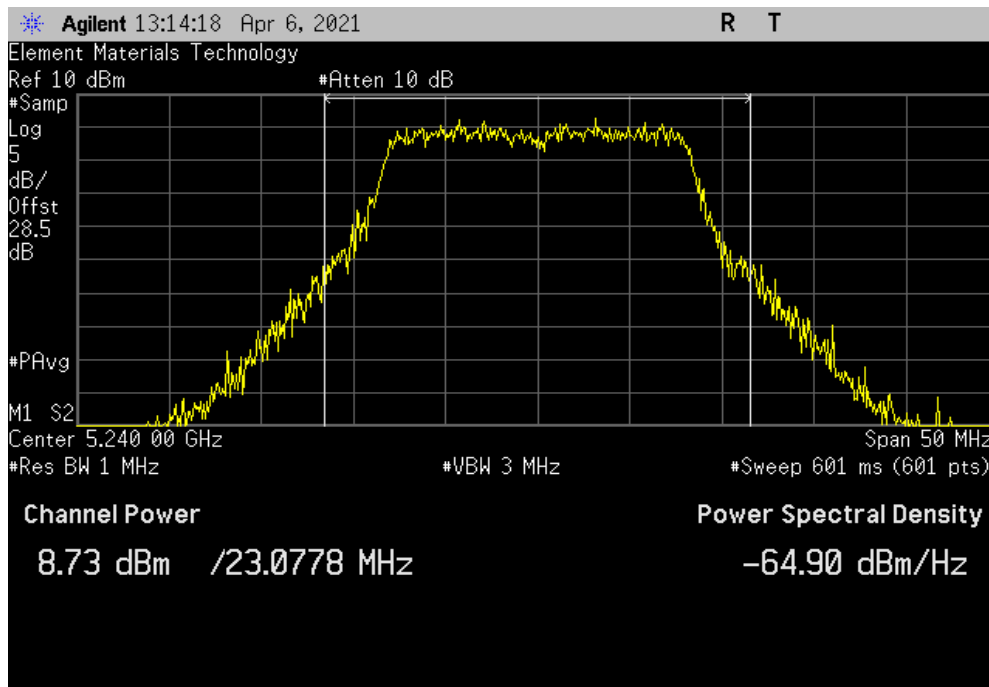


TUTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 36 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.928	0.619	9.547	24	Pass	



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 54 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.733	0.86	9.593	24	Pass	

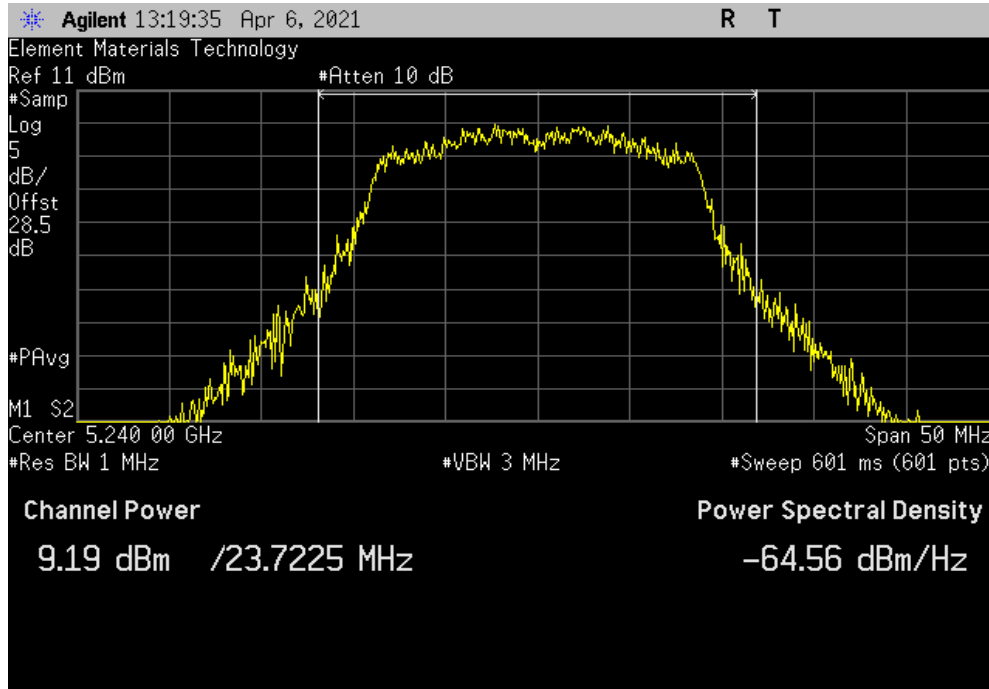


MAXIMUM CONDUCTED OUTPUT POWER 5.2 GHz BAND

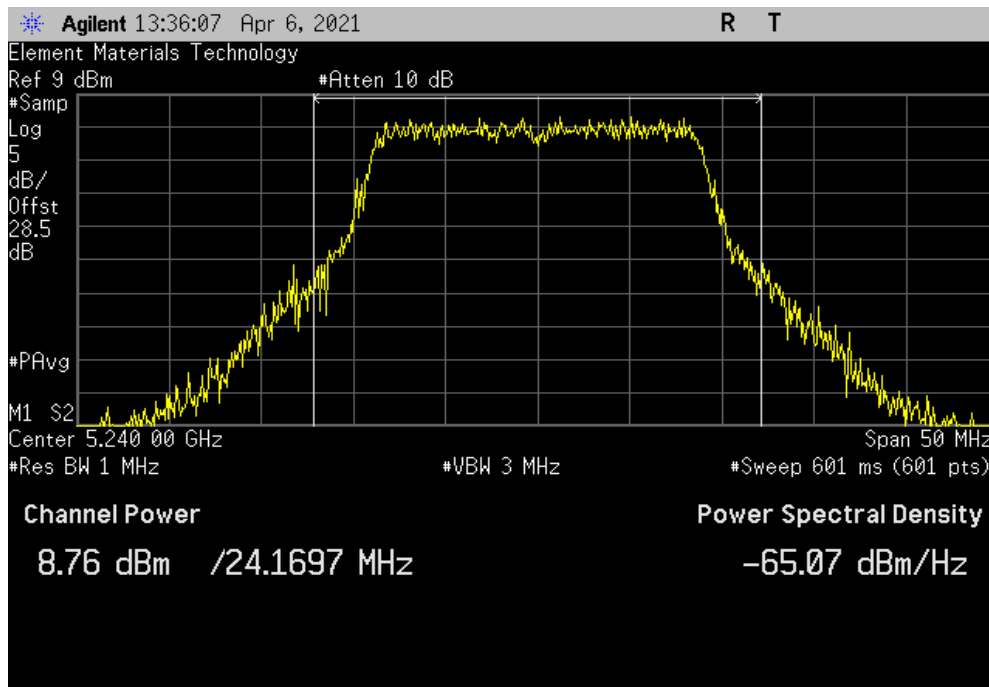


TUTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS0						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	9.193	0.103	9.2	24	Pass	



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS7						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	8.759	0.934	9.693	24	Pass	



MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 149



XMit 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07

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 peak transmit power the bandwidth (B) was measured. Power was integrated across "B", by using the channel power function of the analyzer. 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 peak conducted output power was measured. The spectrum analyzer settings were set per the guidance as well as the following specifics:

- Peak Detector
- RBW = 1 MHz
- VBW = 3 MHz

MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 149



TSTx 2019.08.30.0 XMR 2020.12.30.0

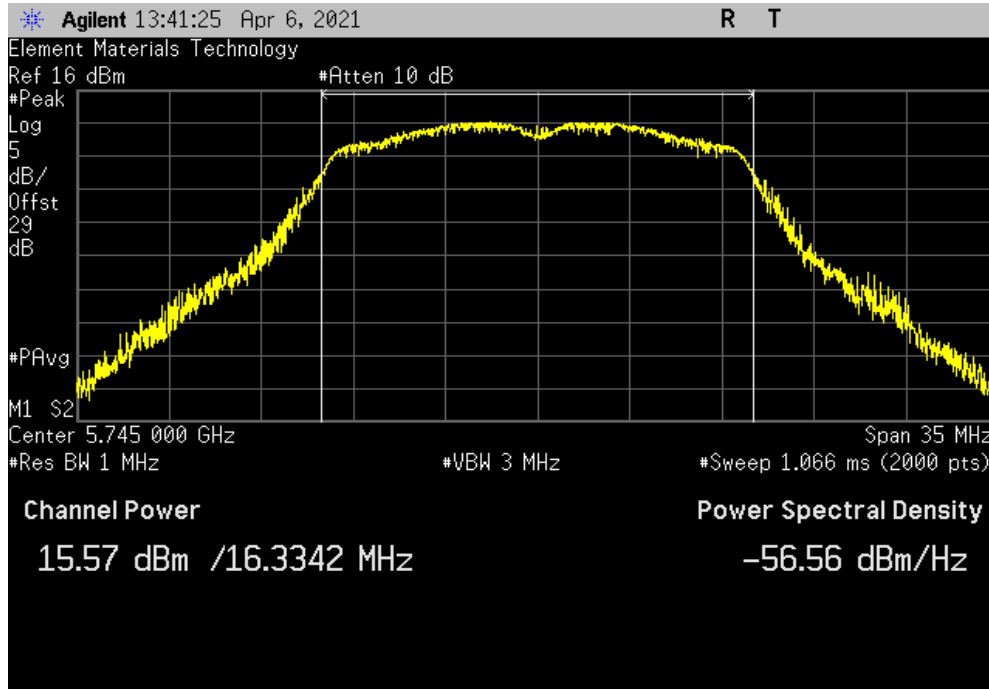
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B		Work Order: LGPD0256	
Serial Number: 2420M00120		Date: 6-Apr-21	
Customer: Logic PD, Inc.		Temperature: 21.4 °C	
Attendees: Eric Fritz		Humidity: 41.1% RH	
Project: None		Barometric Pres.: 1009 mbar	
Tested by: Andrew Rogstad		Power: 5VDC via 120VAC/60Hz	
		Job Site: MN08	
TEST SPECIFICATIONS			
FCC 15.407:2021		Test Method	
		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, attenuator, and DC block.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Andrew Rogstad</i>	
		Out Pwr (dBm)	Limit (dBm)
5725 - 5785 MHz Band			Result
Low Channel, Ch 149 - 5745 MHz			
802.11(a) 6 Mbps		15.572	30 Pass
802.11(a) 36 Mbps		15.11	30 Pass
802.11(a) 54 Mbps		14.802	30 Pass
802.11(n) MCS0		15.489	30 Pass
802.11(n) MCS7		15.016	30 Pass

MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 149

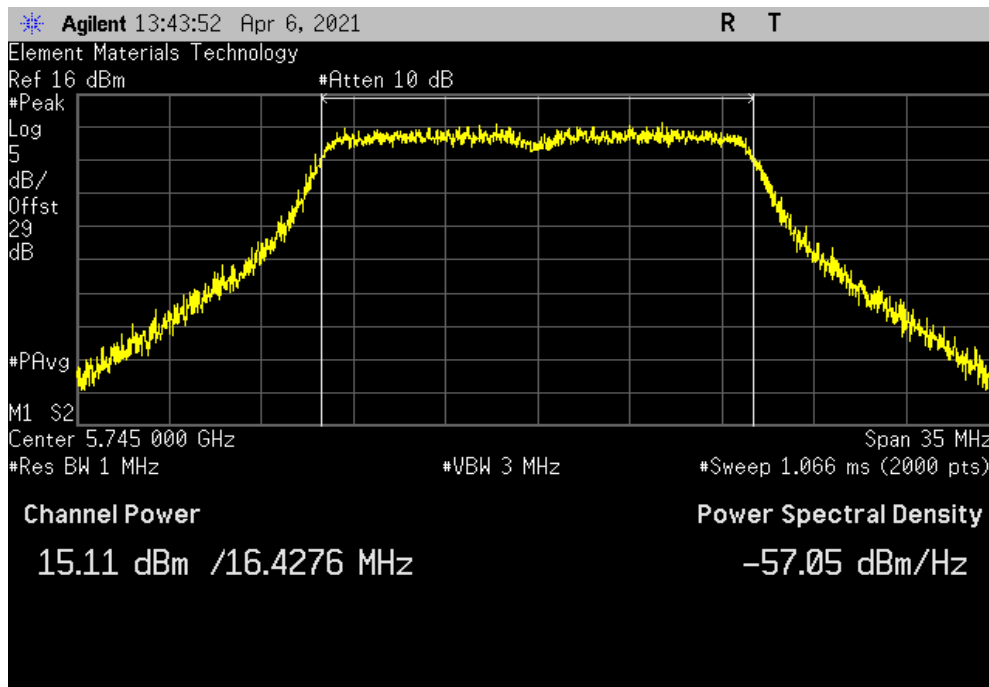


TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
				Out Pwr (dBm)	Limit (dBm)	Result
				15.572	30	Pass



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
				Out Pwr (dBm)	Limit (dBm)	Result
				15.11	30	Pass

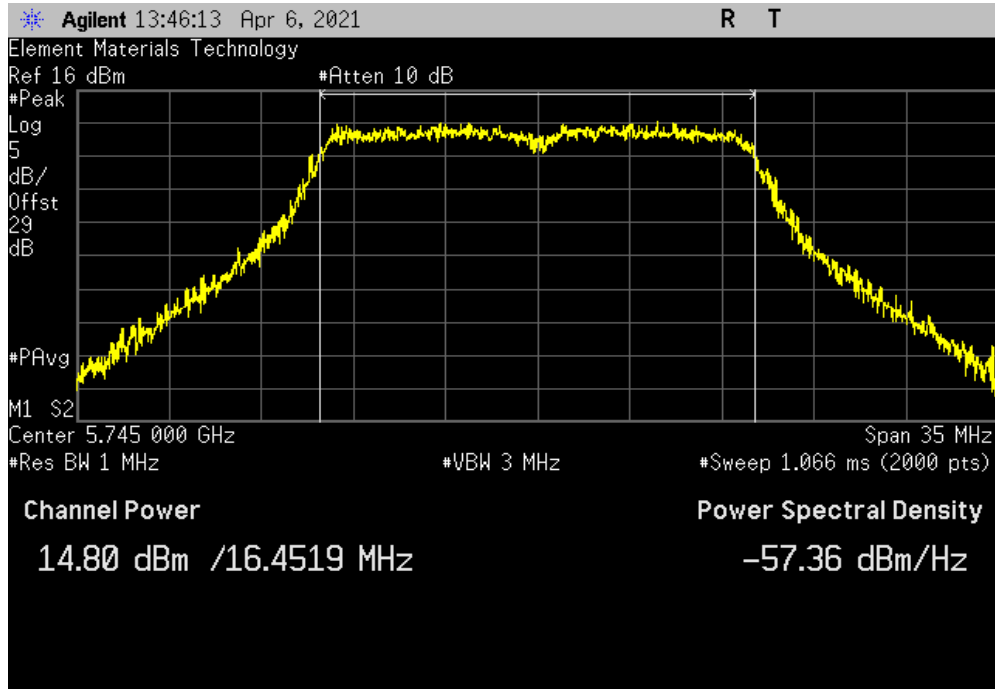


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 149

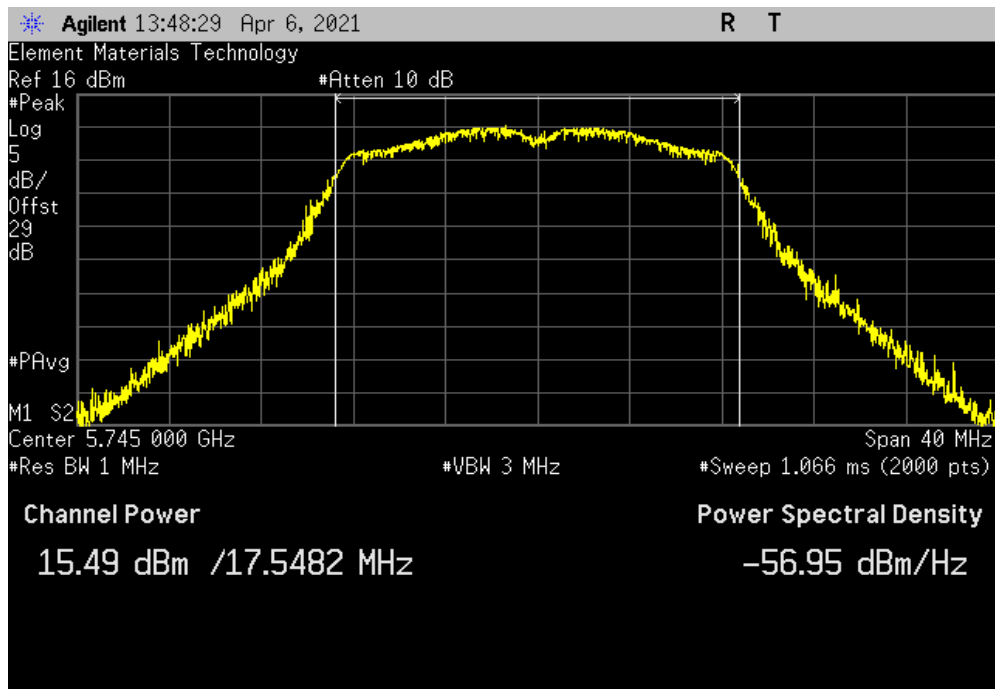


TUTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
				Out Pwr (dBm)	Limit (dBm)	Result
				14.802	30	Pass



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
				Out Pwr (dBm)	Limit (dBm)	Result
				15.489	30	Pass

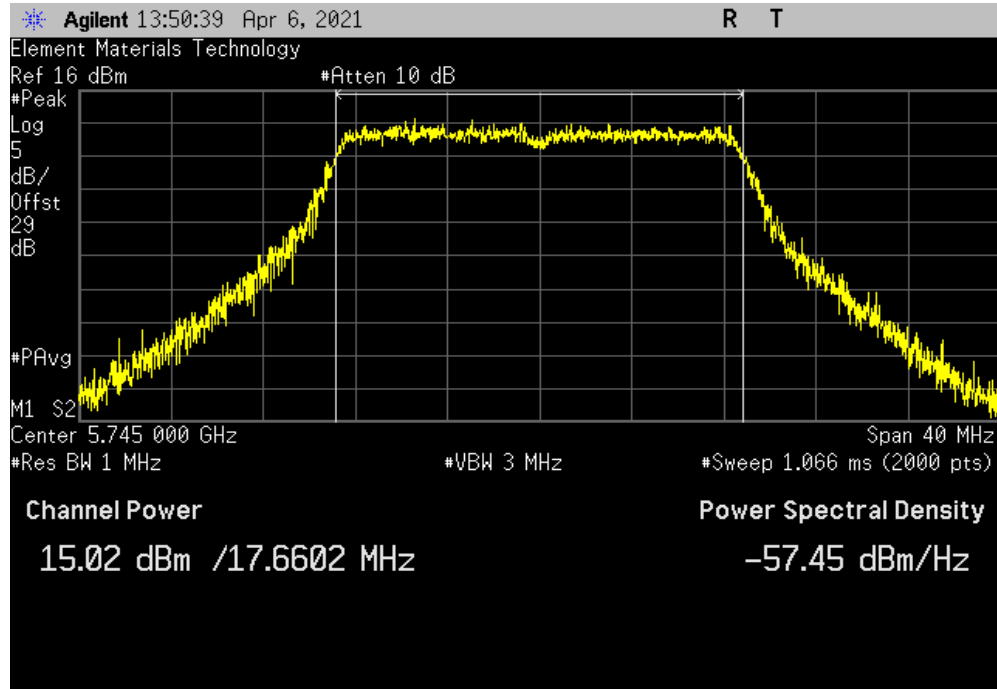


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 149



TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
				Out Pwr (dBm)	Limit (dBm)	Result
				15.016	30	Pass



MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 157 and 165



XMIT 2020.12.30.0

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
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Generator - Signal	Agilent	N5183A	TIK	2019-04-30	2022-04-30
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07

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 peak transmit power the bandwidth (B) was measured. Power was integrated across "B", by using the channel power function of the analyzer. 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 peak conducted output power was measured. The spectrum analyzer settings were set per the guidance as well as the following specifics:

- Peak Detector
- RBW = 1 MHz
- VBW = 3 MHz

MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 157 and 165



TSTx 2019.08.30.0 XMR 2020.12.30.0

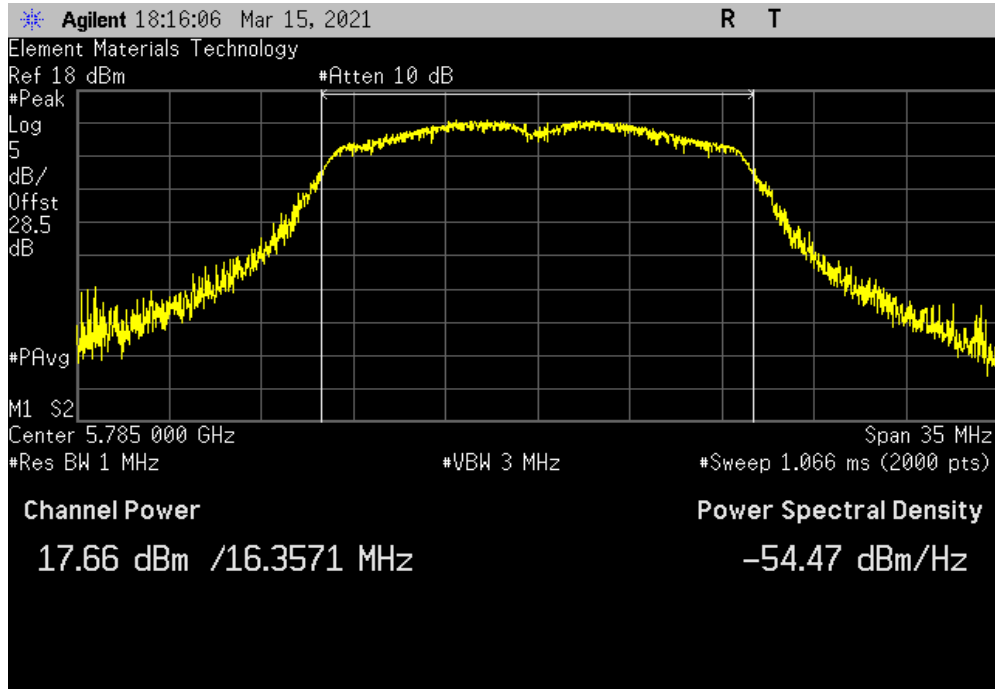
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B		Work Order: LGPD0256	
Serial Number: 2420M00120		Date: 15-Mar-21	
Customer: Logic PD, Inc.		Temperature: 22.6 °C	
Attendees: Eric Fritz		Humidity: 24.8% RH	
Project: None		Barometric Pres.: 1019 mbar	
Tested by: Andrew Rogstad		Power: 5VDC via 120VAC/60Hz	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.407:2021		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, attenuator, and DC block. Data is intended to compare to the original testing only.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Andrew Rogstad</i>	
		Out Pwr (dBm)	Limit (S) Result
5725 - 5785 MHz Band			
Mid Channel, Ch 157 - 5785 MHz			
	802.11(a) 6 Mbps	17.664	30 Pass
	802.11(a) 36 Mbps	16.79	30 Pass
	802.11(a) 54 Mbps	16.611	30 Pass
	802.11(n) MCS0	18.095	30 Pass
	802.11(n) MCS7	14.311	30 Pass
High Channel, Ch 165 - 5825 MHz			
	802.11(a) 6 Mbps	17.738	30 Pass
	802.11(a) 36 Mbps	16.791	30 Pass
	802.11(a) 54 Mbps	16.627	30 Pass
	802.11(n) MCS0	18.049	30 Pass
	802.11(n) MCS7	14.28	30 Pass

MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 157 and 165

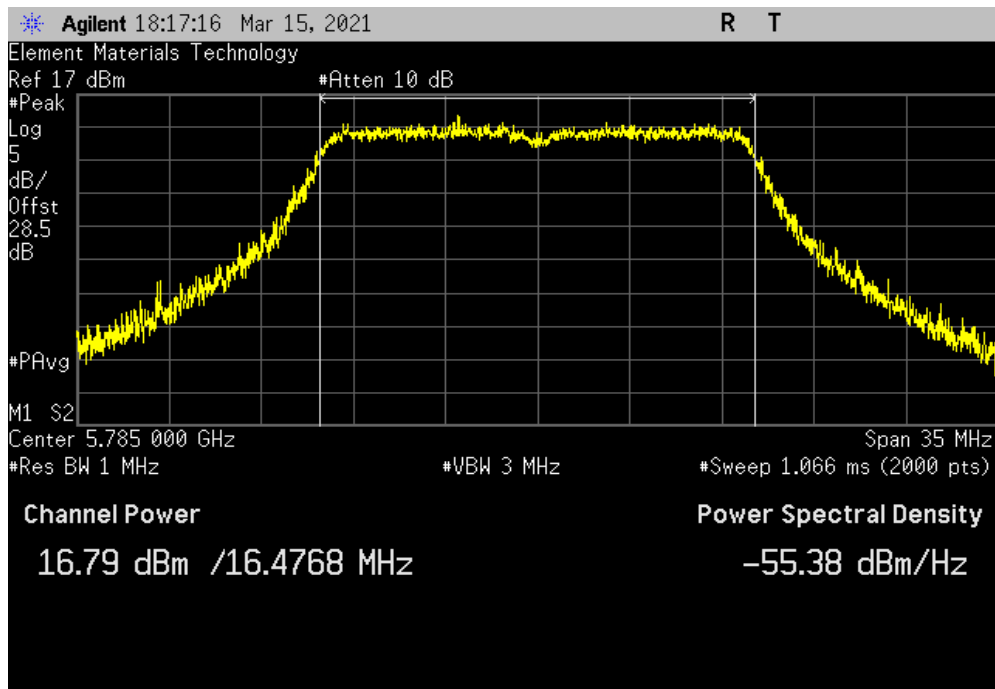


TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
				Out Pwr (dBm)	Limit (S)	Result
				17.664	30	Pass



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
				Out Pwr (dBm)	Limit (S)	Result
				16.79	30	Pass

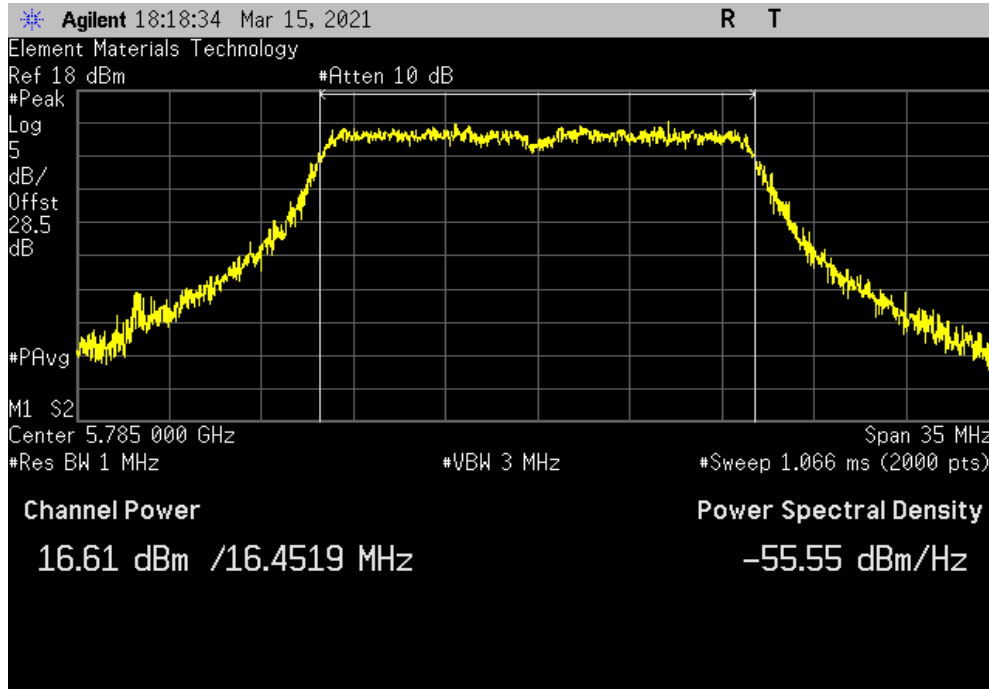


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 157 and 165

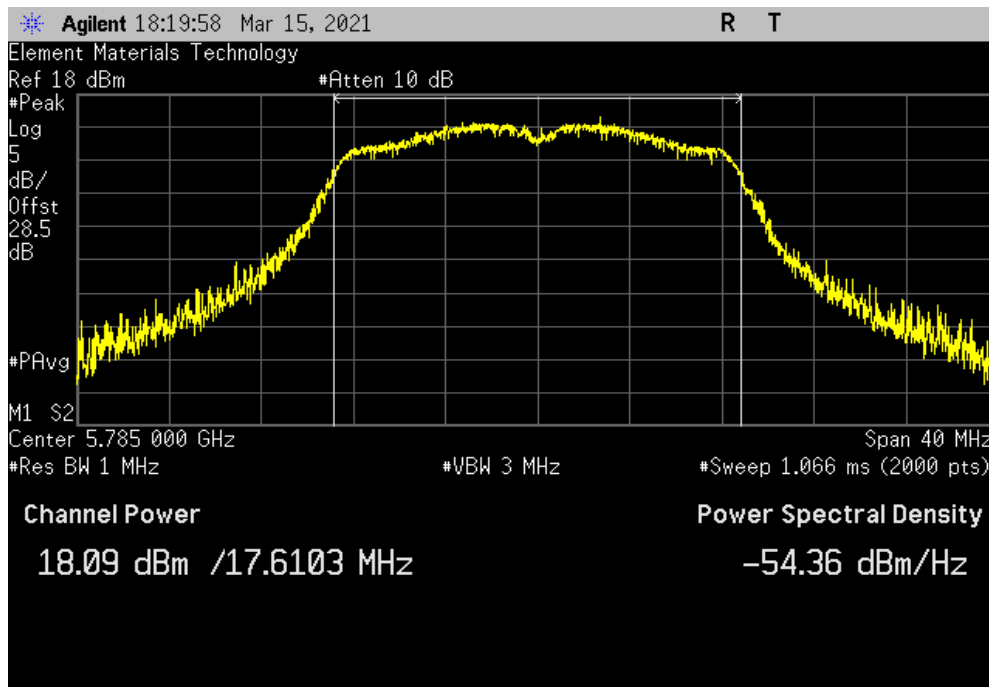


TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
				Out Pwr (dBm)	Limit (S)	Result
				16.611	30	Pass



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
				Out Pwr (dBm)	Limit (S)	Result
				18.095	30	Pass

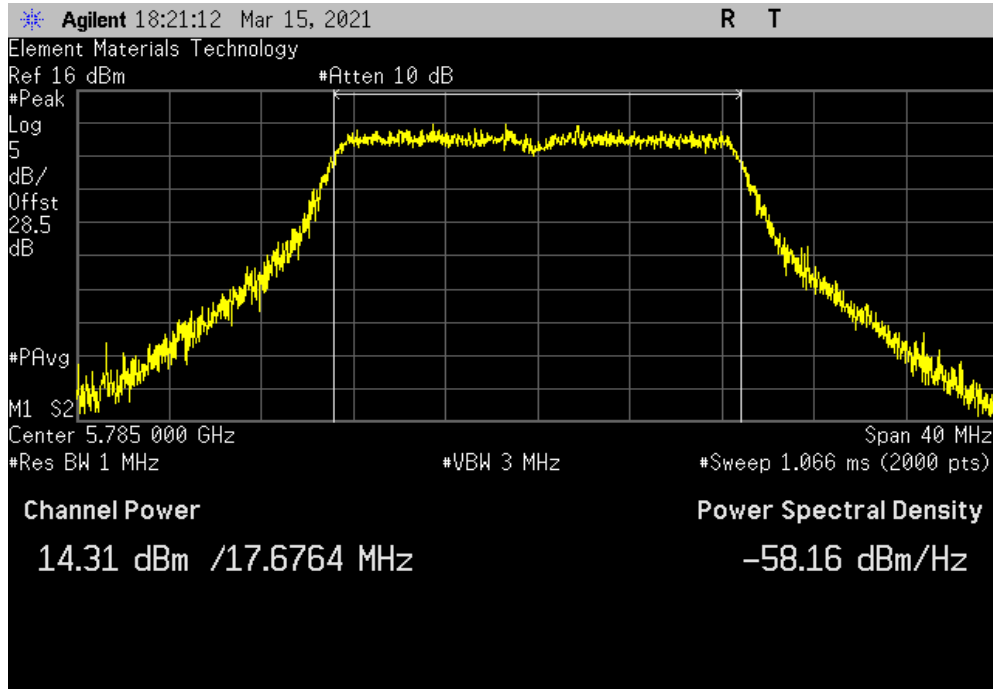


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 157 and 165

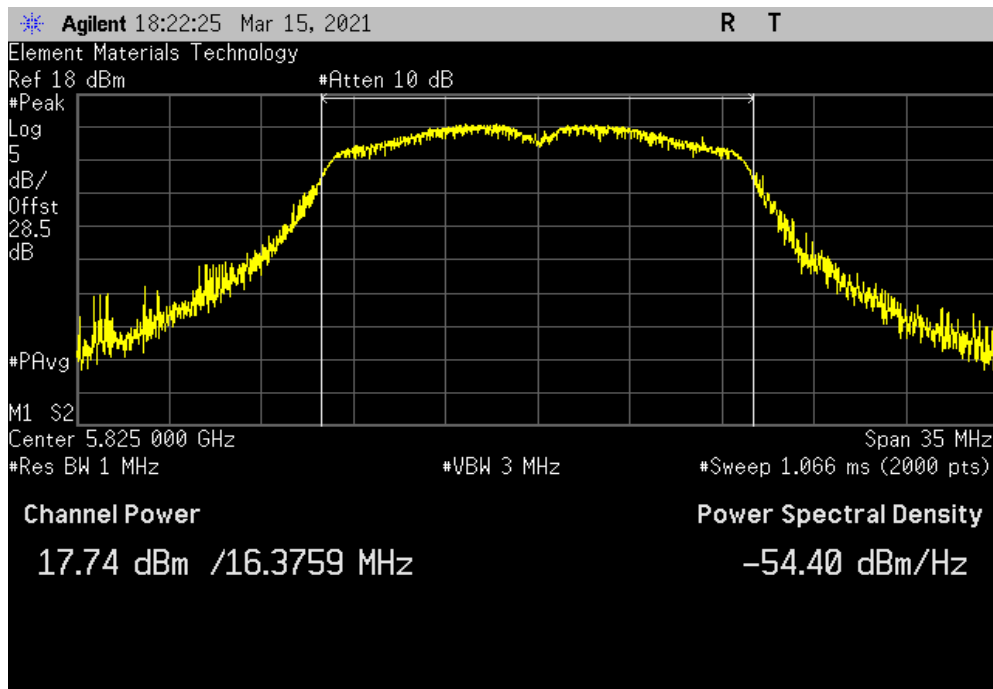


TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
				Out Pwr (dBm)	Limit (S)	Result
				14.311	30	Pass



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
				Out Pwr (dBm)	Limit (S)	Result
				17.738	30	Pass

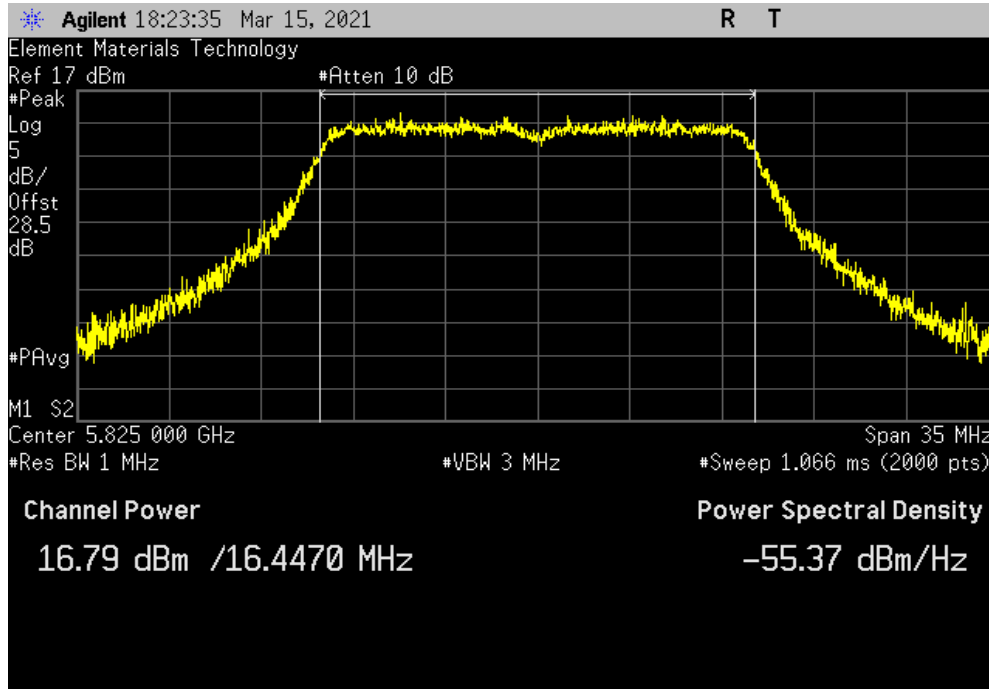


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 157 and 165

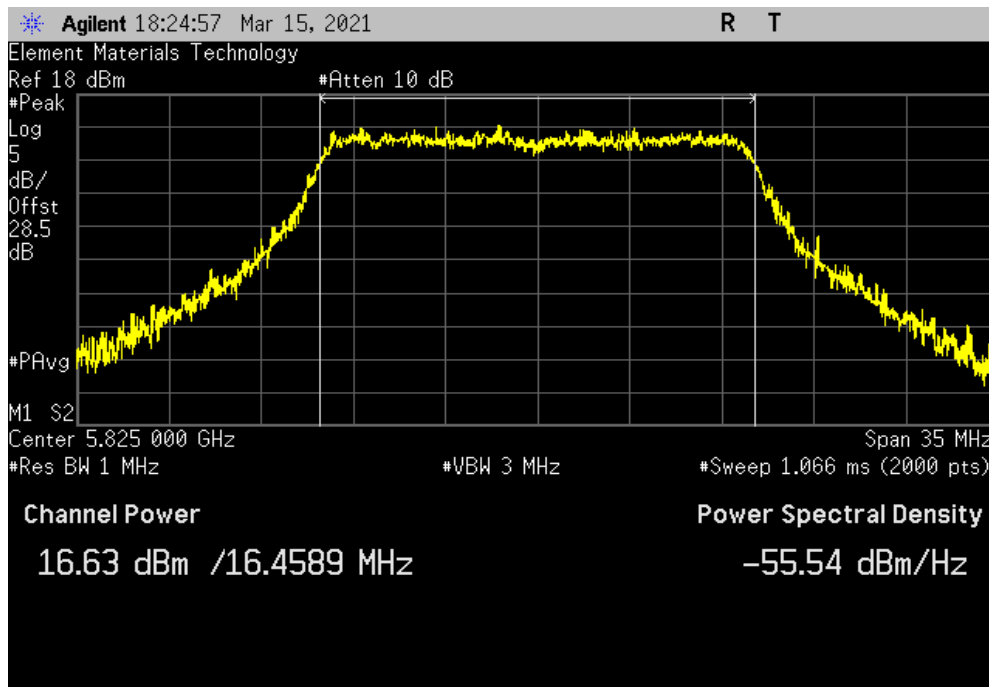


TUTx 2019.08.30.0 XMI 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
				Out Pwr (dBm)	Limit (S)	Result
				16.791	30	Pass



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
				Out Pwr (dBm)	Limit (S)	Result
				16.627	30	Pass

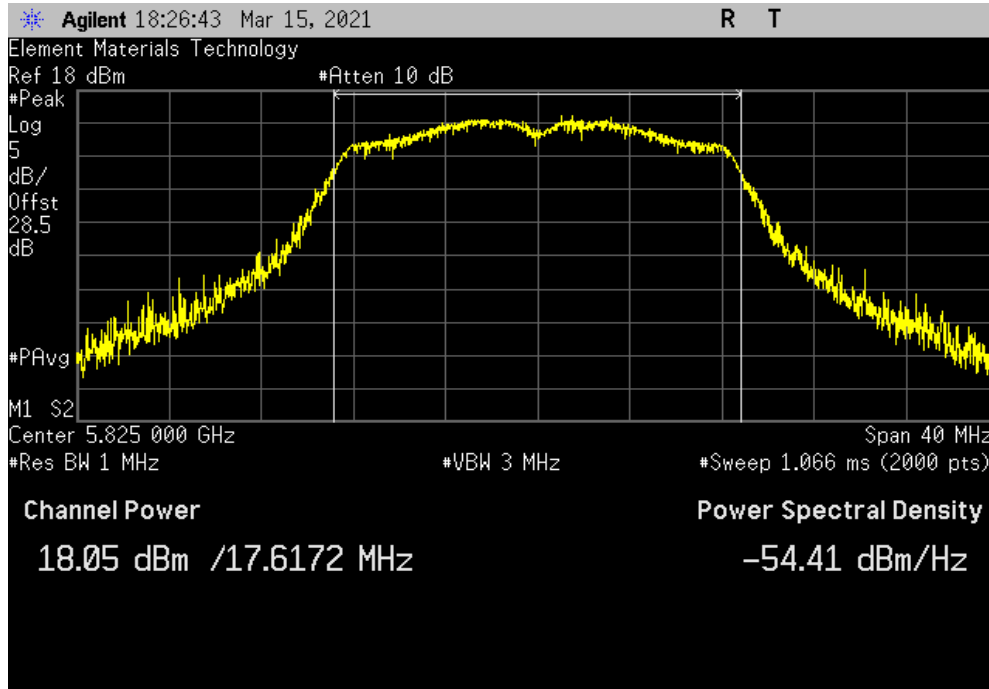


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND CH 157 and 165

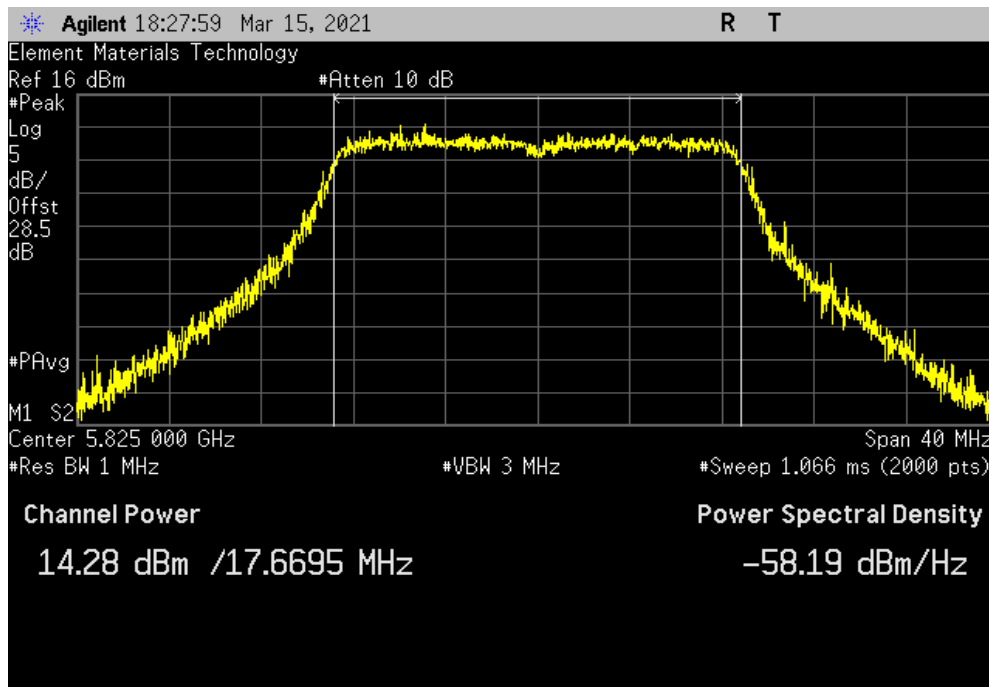


TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
				Out Pwr (dBm)	Limit (S)	Result
				18.049	30	Pass



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
				Out Pwr (dBm)	Limit (S)	Result
				14.28	30	Pass



MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD



XMit 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Block - DC	Fairview Microwave	SD3379	AMI	2020-08-05	2021-08-05
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	2020-05-20	2021-05-20
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-03-10	2022-03-10

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 when the duty cycle is less than 98%.

MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD



TMTx 2021.03.19.1 XMR 2020.12.30.0

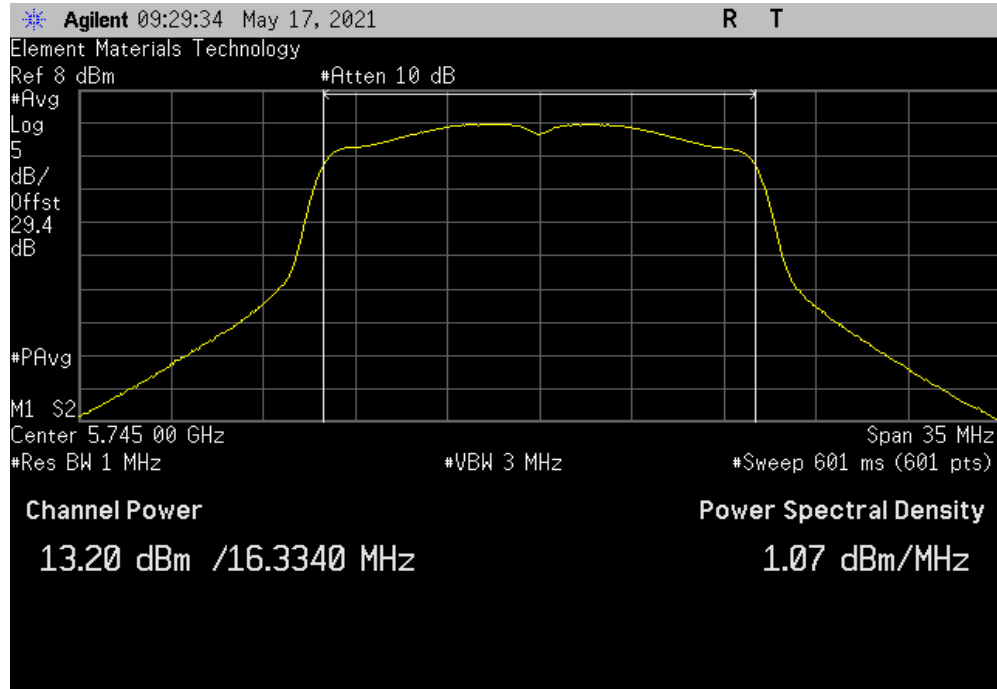
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B		Work Order: LGPD0256	
Serial Number: 2420M00120		Date: 17-May-21	
Customer: Logic PD, Inc.		Temperature: 21.9 °C	
Attendees: Eric Fritz		Humidity: 44.8% RH	
Project: None		Barometric Pres.: 1023 mbar	
Tested by: Dan Haas		Power: 5VDC via 120VAC/60Hz	
		Job Site: MN09	
TEST SPECIFICATIONS			
FCC 15.407:2021		Test Method	
		ANSI C63.10:2013	
COMMENTS			
Reference level includes measurement cable, attenuator, and DC block. Ch 157 802.11(a) 6 Mbps and ch 165 802.11(a) 6Mbps both have a duty cycle of at least 98%, therefore no Duty Cycle Factor is applied for these measurements.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)
		Out Pwr (dBm)	Limit (dBm)
			Result
5725 - 5785 MHz Band			
Low Channel, Ch 149 - 5745 MHz			
	802.11(a) 6 Mbps	13.198	0.1
	802.11(a) 36 Mbps	12.701	0.5
	802.11(a) 54 Mbps	12.646	0.7
	802.11(n) MCS0	13.163	0.1
	802.11(n) MCS7	12.705	0.7
Mid Channel, Ch 157 - 5785 MHz			
	802.11(a) 6 Mbps	15.92	0
	802.11(a) 36 Mbps	15.031	0.5
	802.11(a) 54 Mbps	14.876	0.7
	802.11(n) MCS0	16.342	0.1
	802.11(n) MCS7	12.589	0.7
High Channel, Ch 165 - 5825 MHz			
	802.11(a) 6 Mbps	15.952	0
	802.11(a) 36 Mbps	15.055	0.5
	802.11(a) 54 Mbps	14.839	0.7
	802.11(n) MCS0	16.339	0.1
	802.11(n) MCS7	12.628	0.7

MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD

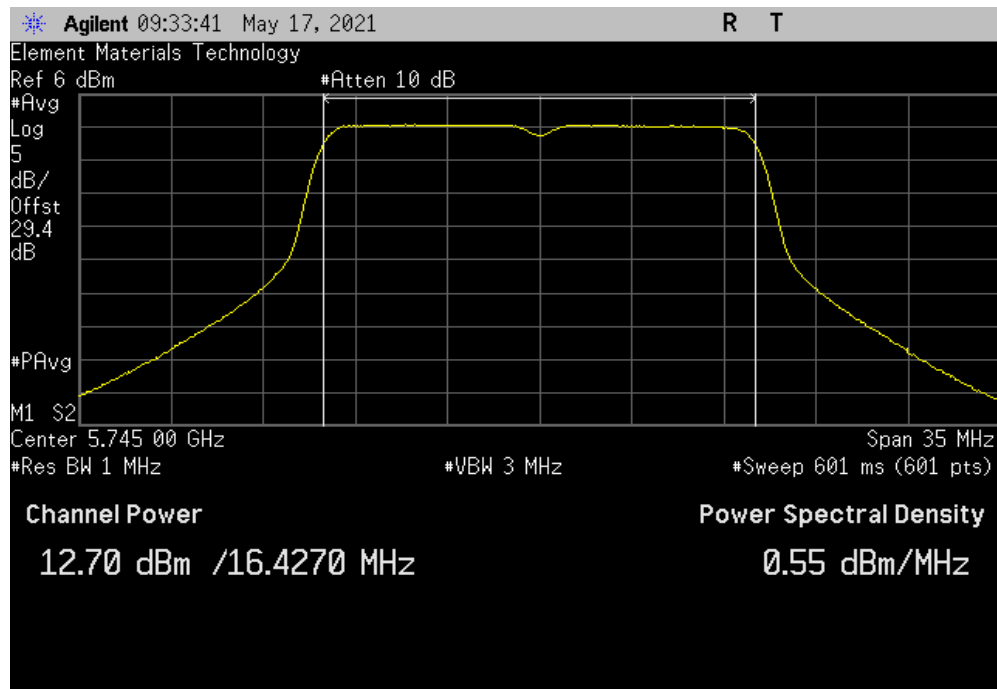


TUTx 2021.03.10.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.198	0.1	13.3	30	Pass	



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.701	0.5	13.2	30	Pass	

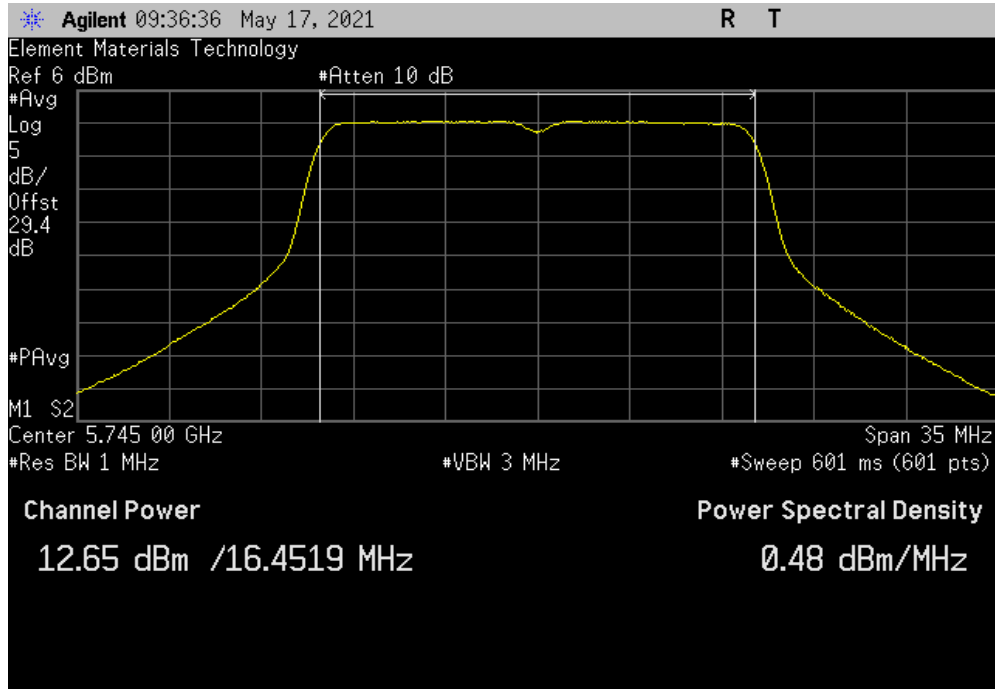


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD

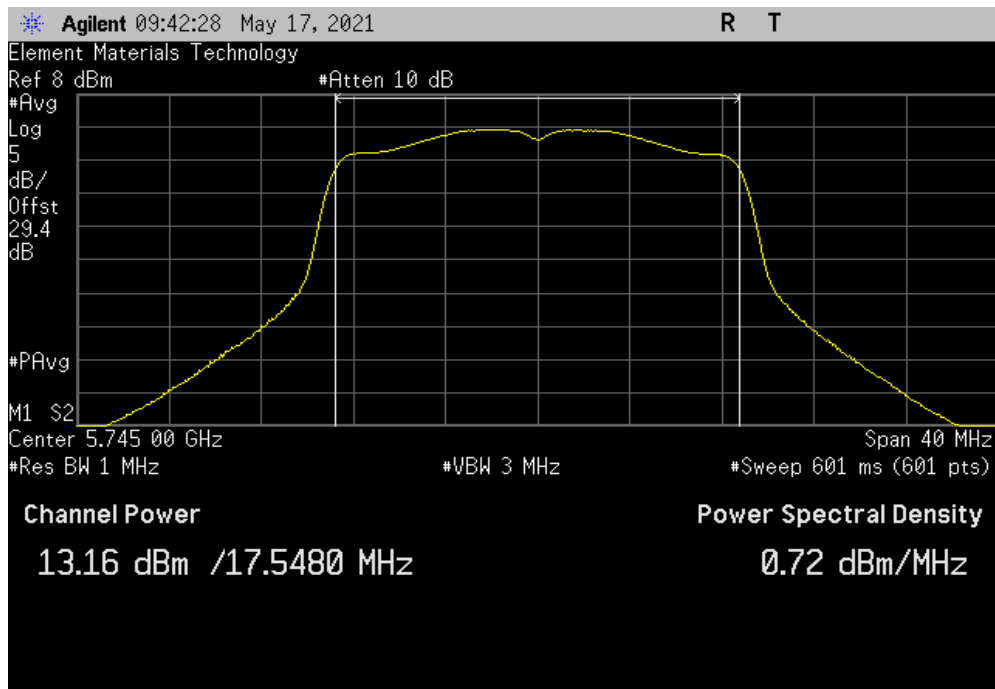


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.646	0.7	13.3	30	Pass	



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	13.163	0.1	13.3	30	Pass	

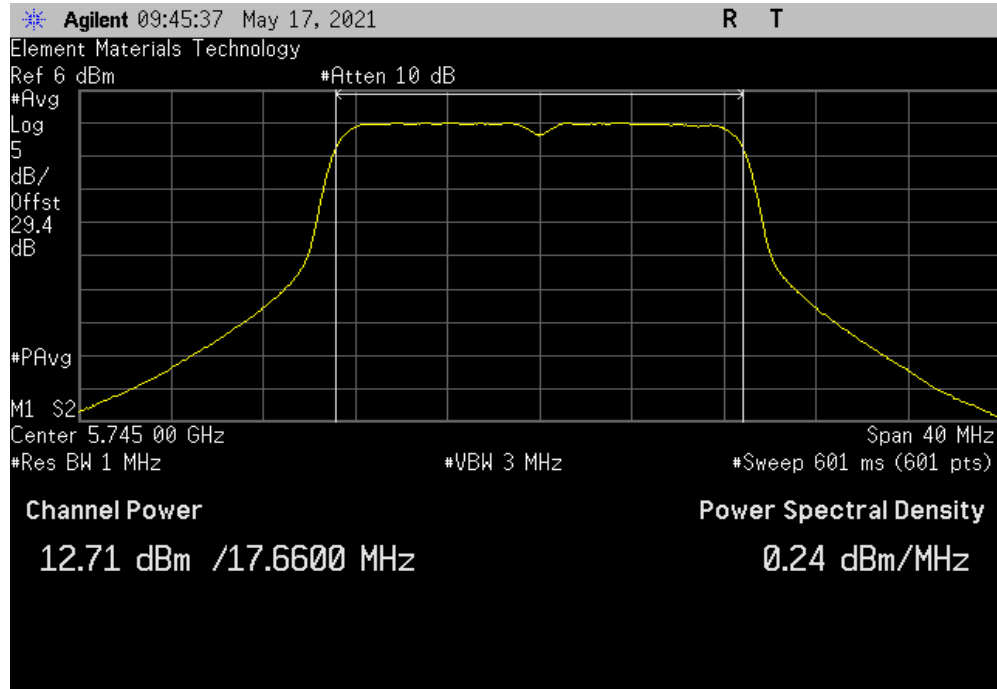


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD

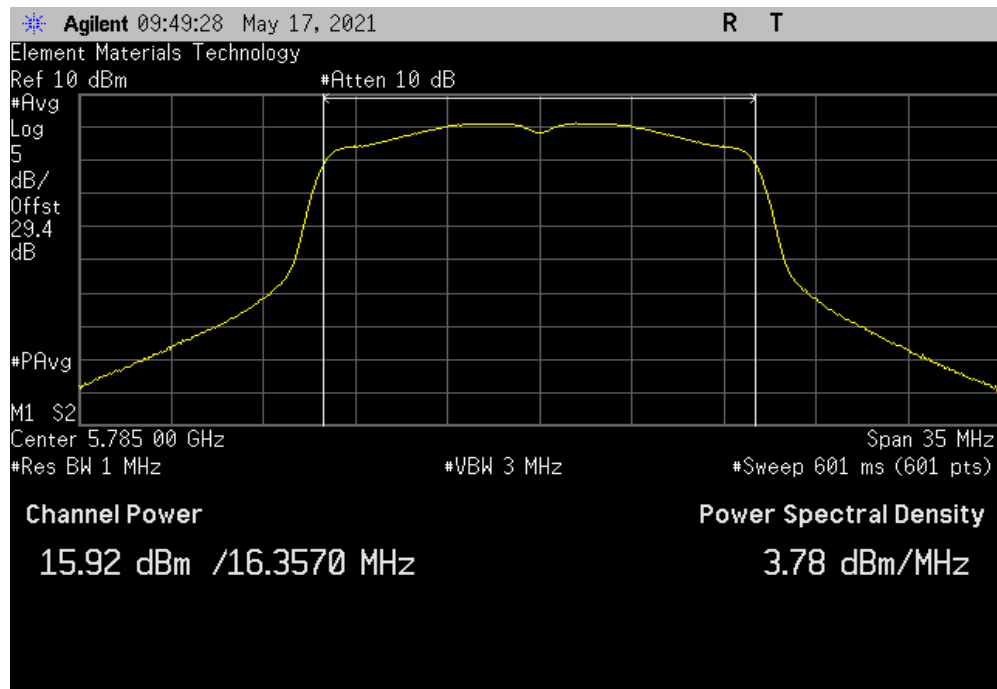


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.705	0.7	13.4	30	Pass	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	15.92	0	15.9	30	Pass	

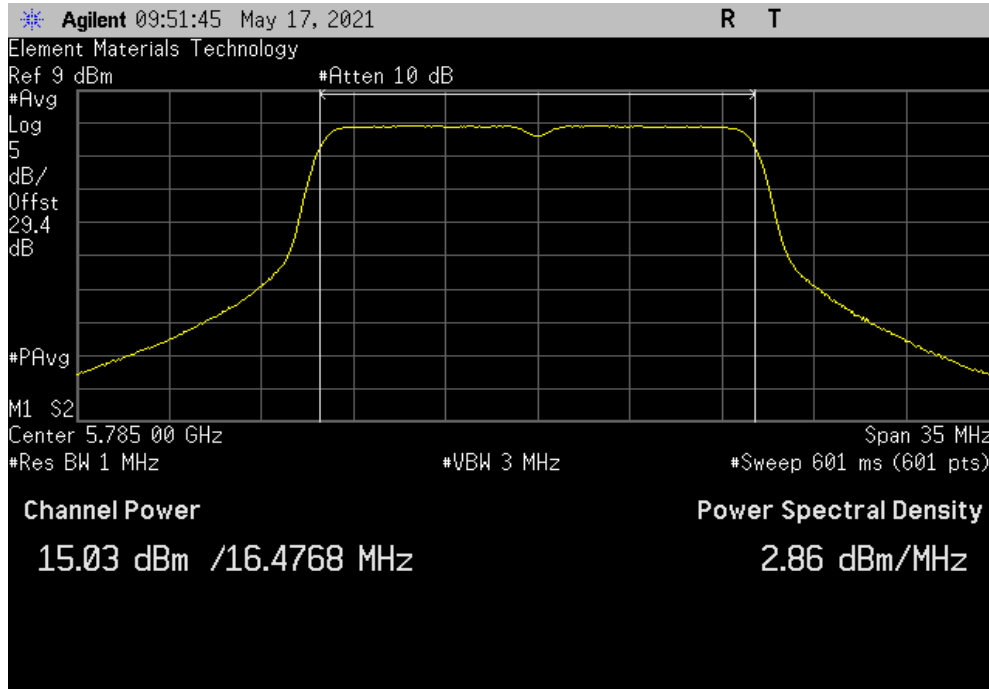


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD

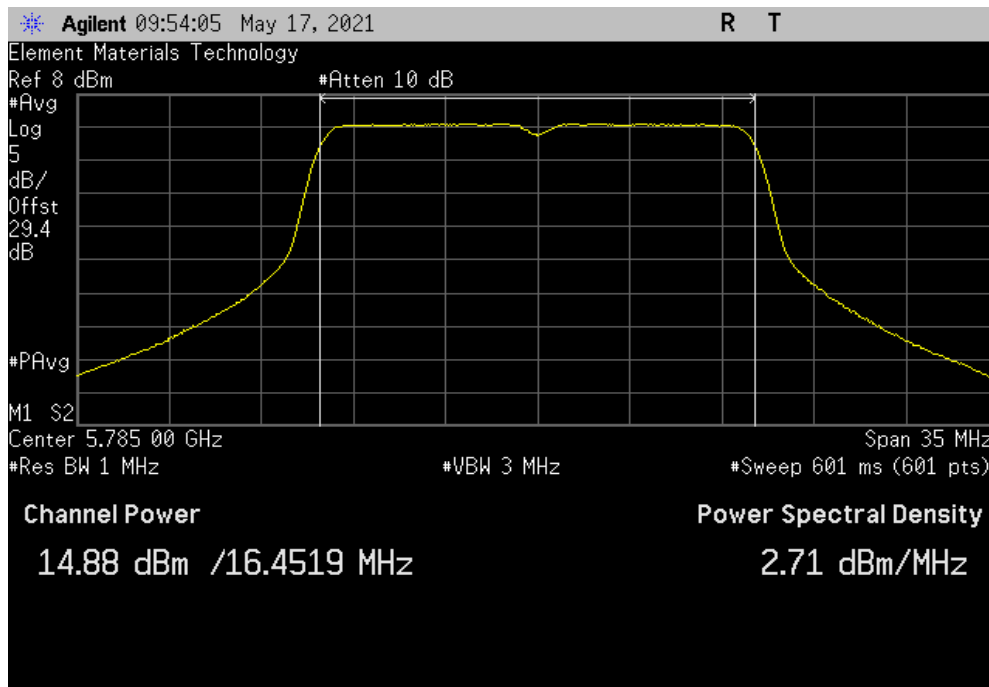


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	15.031	0.5	15.5	30	Pass	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	14.876	0.7	15.5	30	Pass	

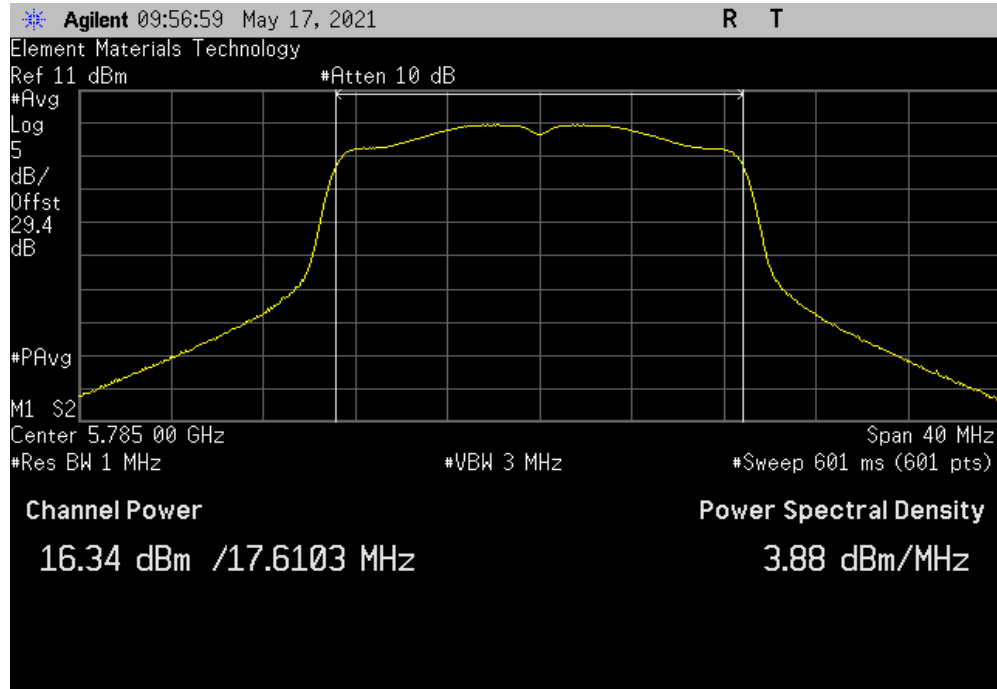


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD

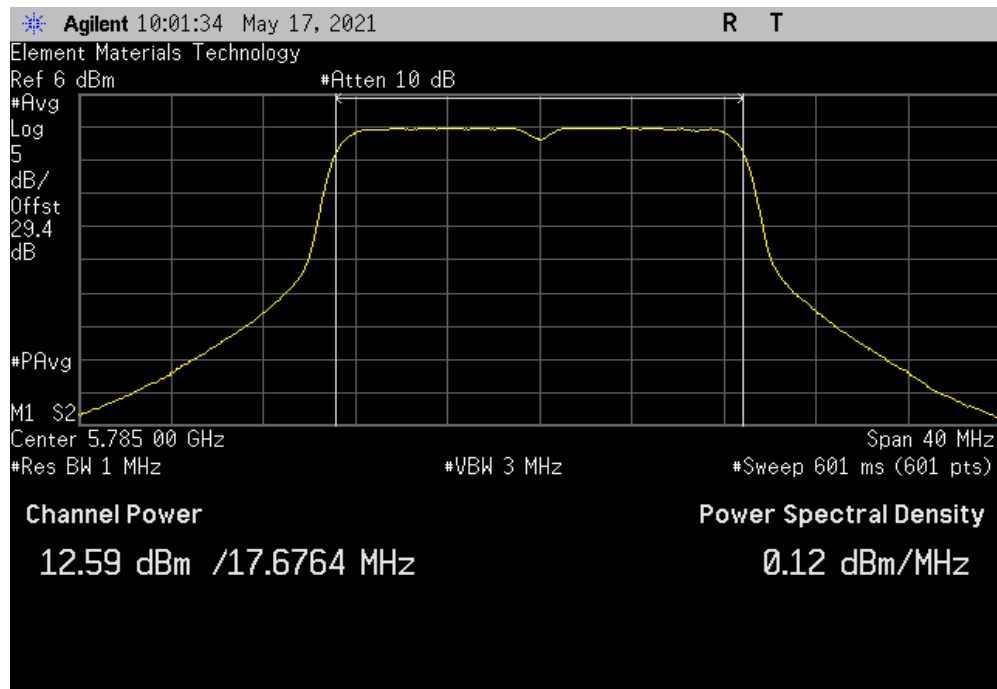


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	16.342	0.1	16.4	30	Pass	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.589	0.7	13.3	30	Pass	

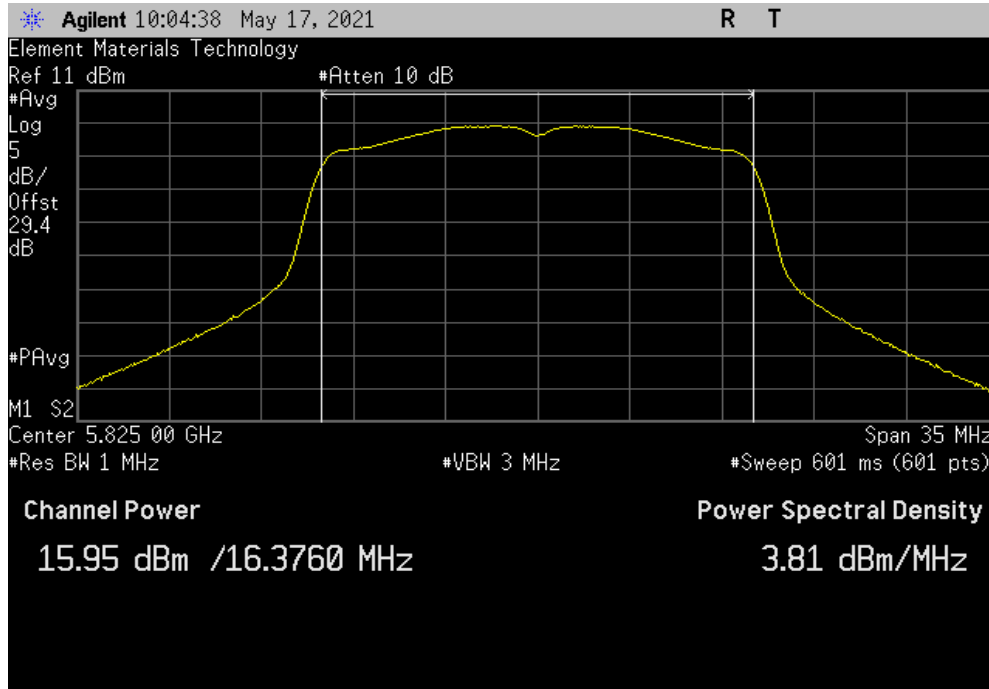


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD

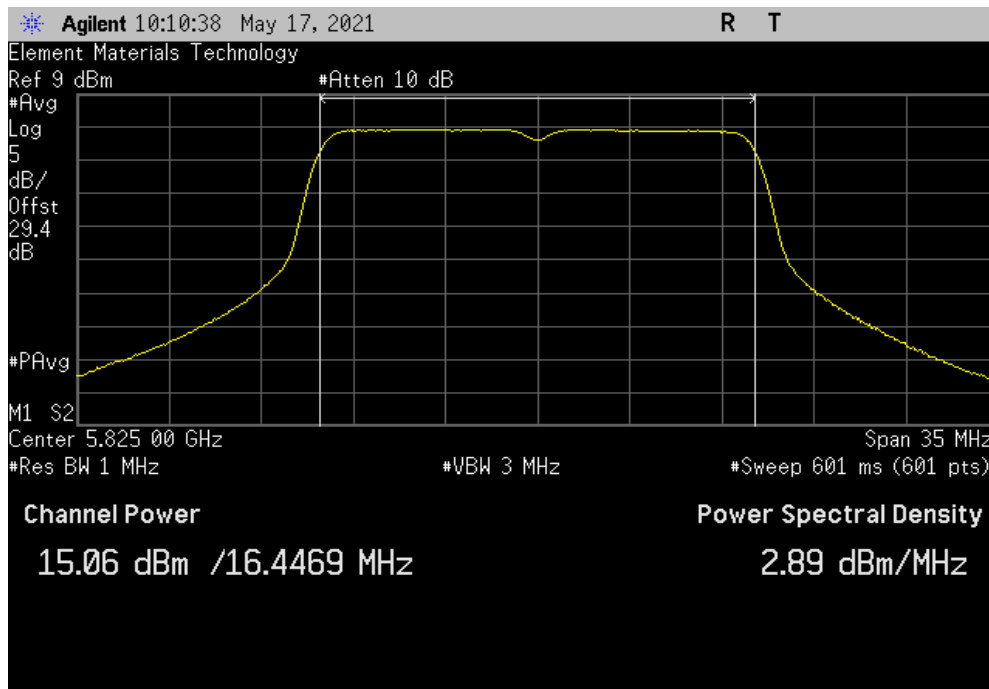


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	15.952	0	16	30	Pass	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	15.055	0.5	15.5	30	Pass	

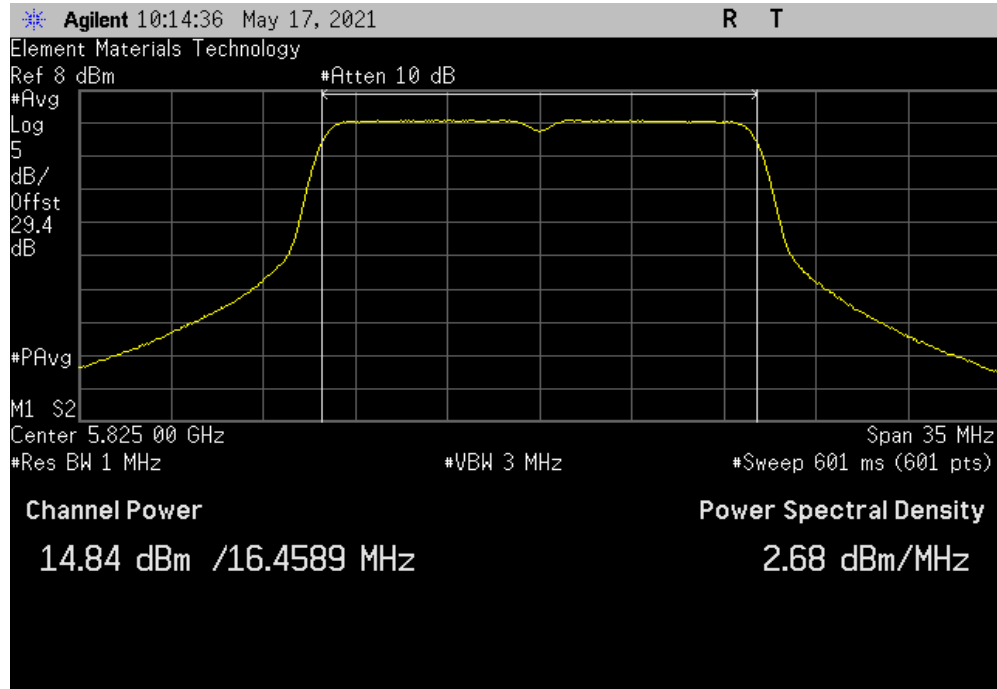


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD

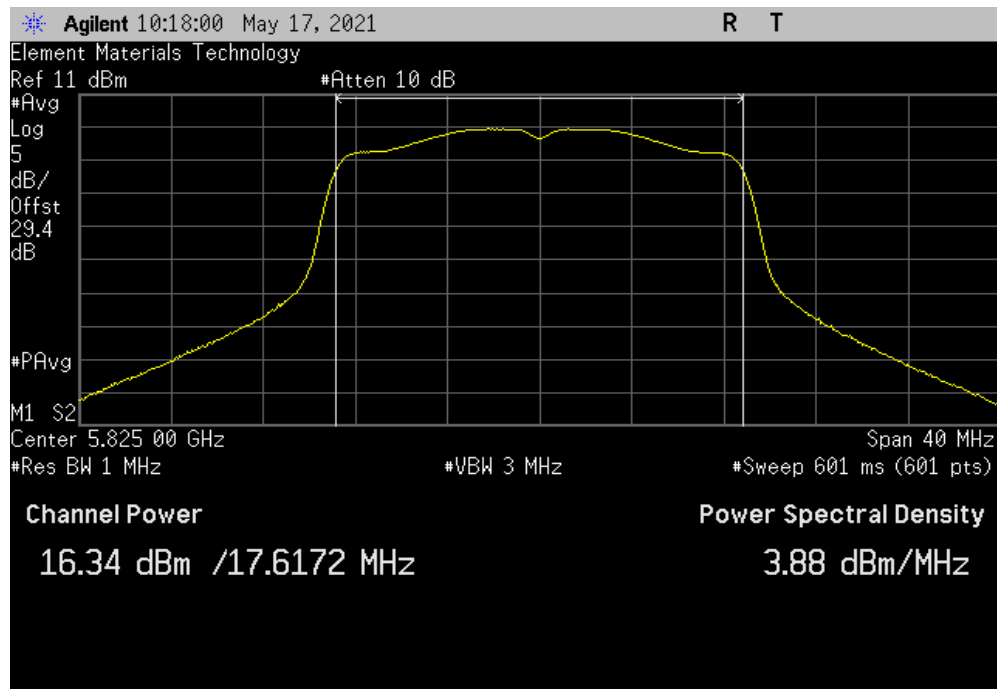


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	14.839	0.7	15.5	30	Pass	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	16.339	0.1	16.4	30	Pass	

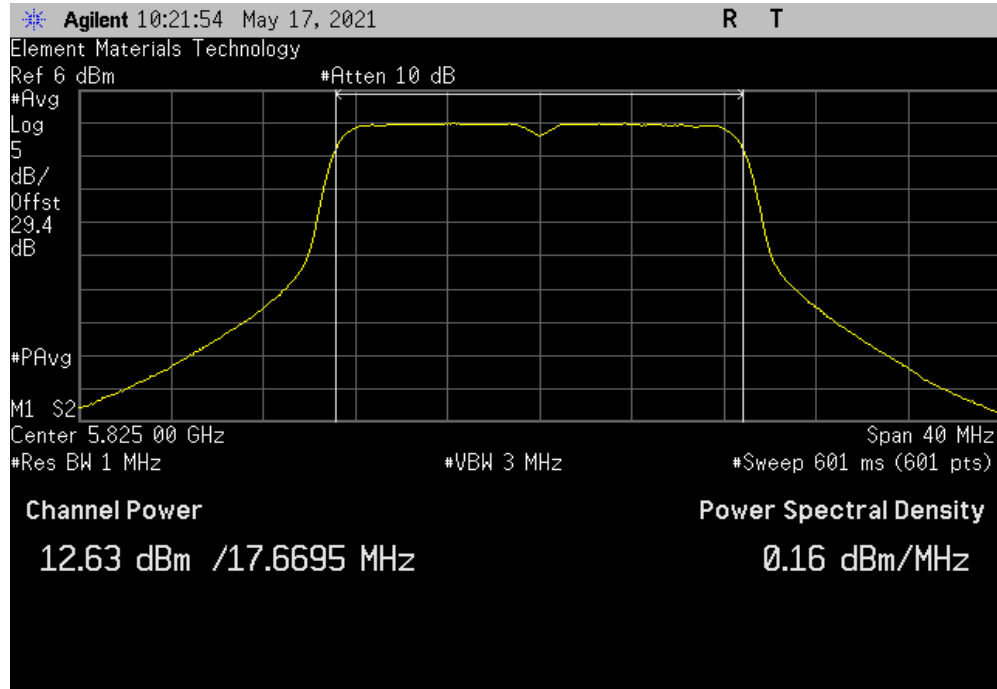


MAXIMUM CONDUCTED OUTPUT POWER 5.8 GHz BAND, LOW, MID, HIGH, AVE METHOD



TbTx 2021.03.19.1 XMt 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Out Pwr (dBm)	Limit (dBm)	Result	
	12.628	0.7	13.3	30	Pass	



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.2 GHz BAND



XMIT 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07

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:

- Sample Detector

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.

The antenna gain (G) and path loss (PL) was added to the conducted output power to derive the Equivalent Isotropic Radiated Power (EIRP).

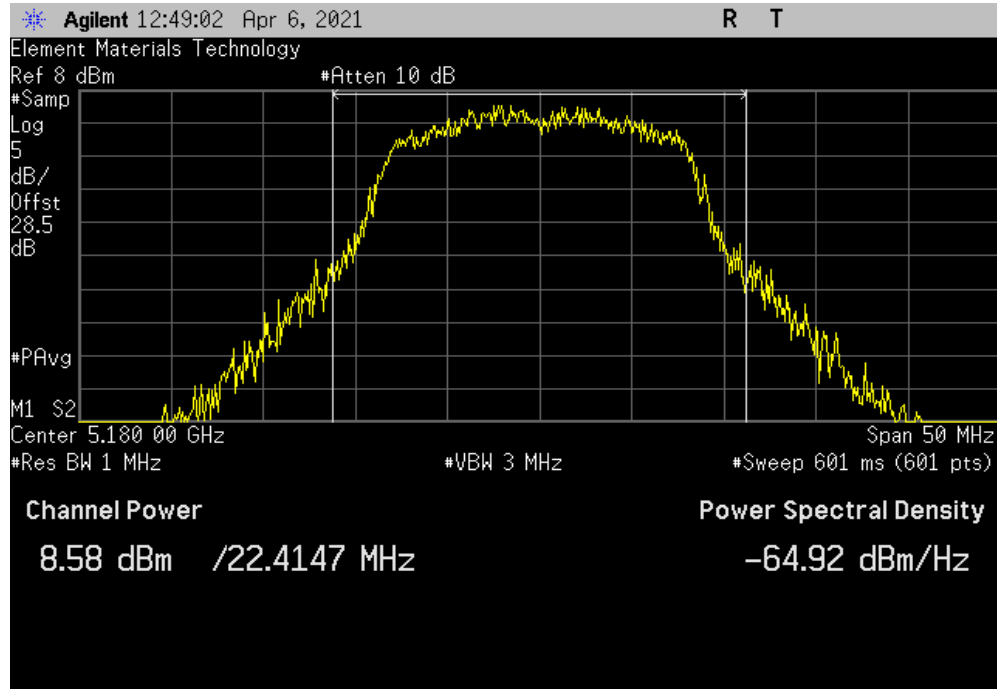
ThiTx 2019.08.30.0 XMIT 2020.12.30.0

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.2 GHz BAND

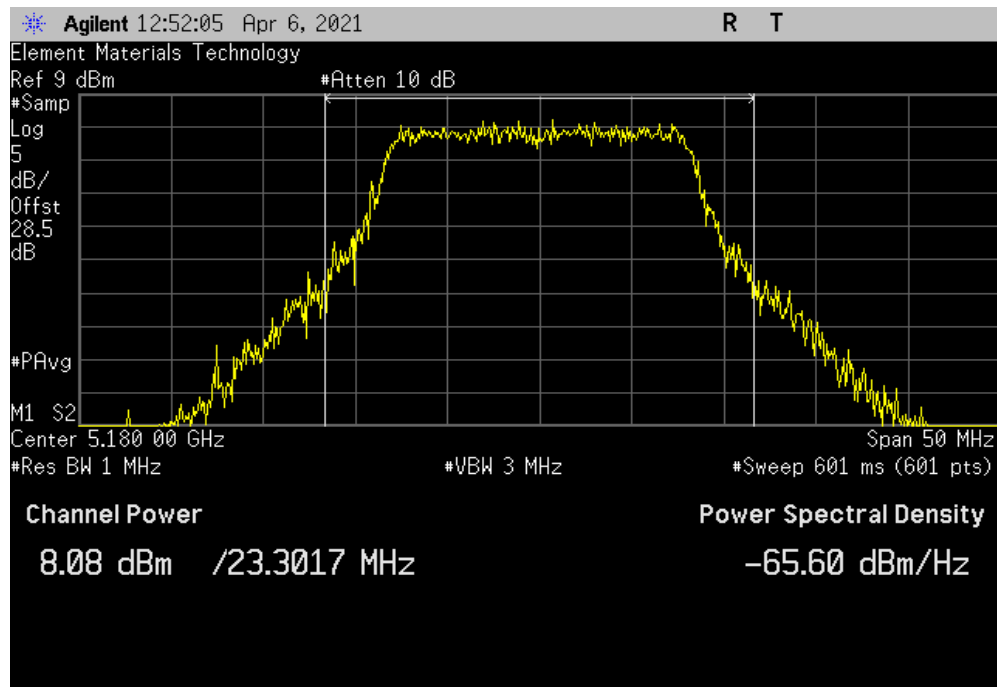


TUTTx 2019.08.30.0 XMt 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 6 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
8.582	0	0.3	4.2	12.5	30	Pass



5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 36 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
8.077	0.488	0.3	4.2	12.5	30	Pass

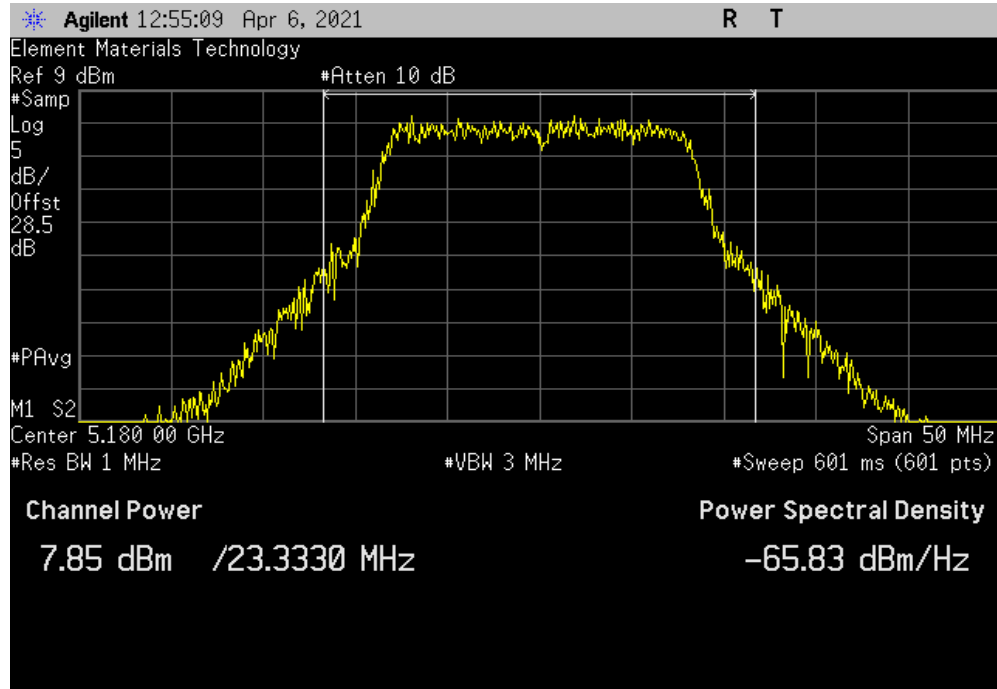


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.2 GHz BAND

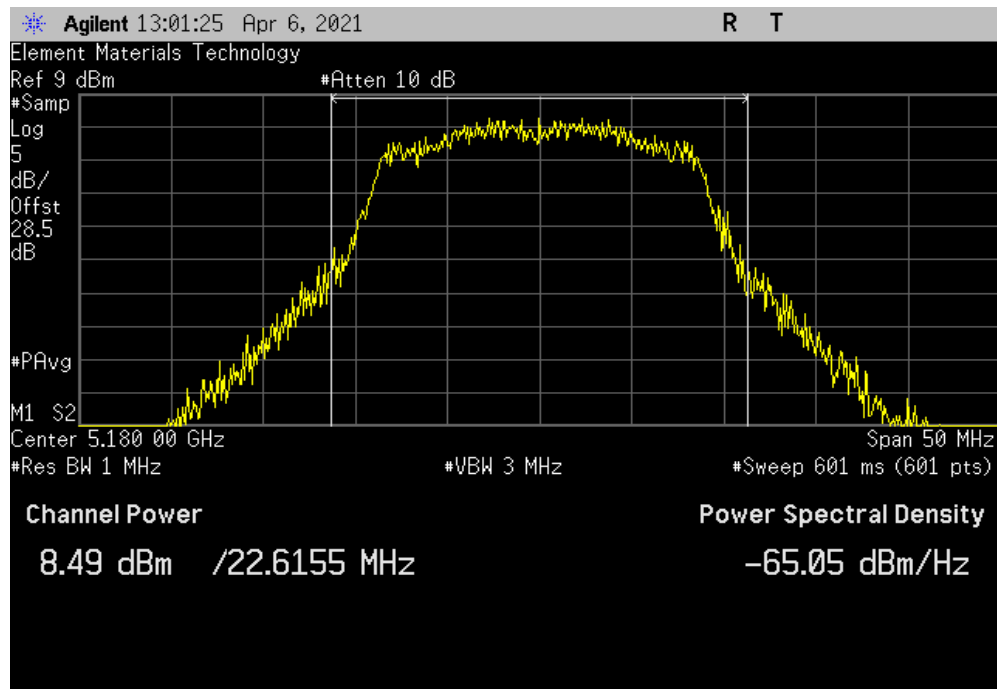


TbTx 2019.08.30.0 XMt 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 54 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
7.852	0.695	0.3	4.2	12.4	30	Pass



5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(n) MCS0						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
8.492	0.099	0.3	4.2	12.5	30	Pass

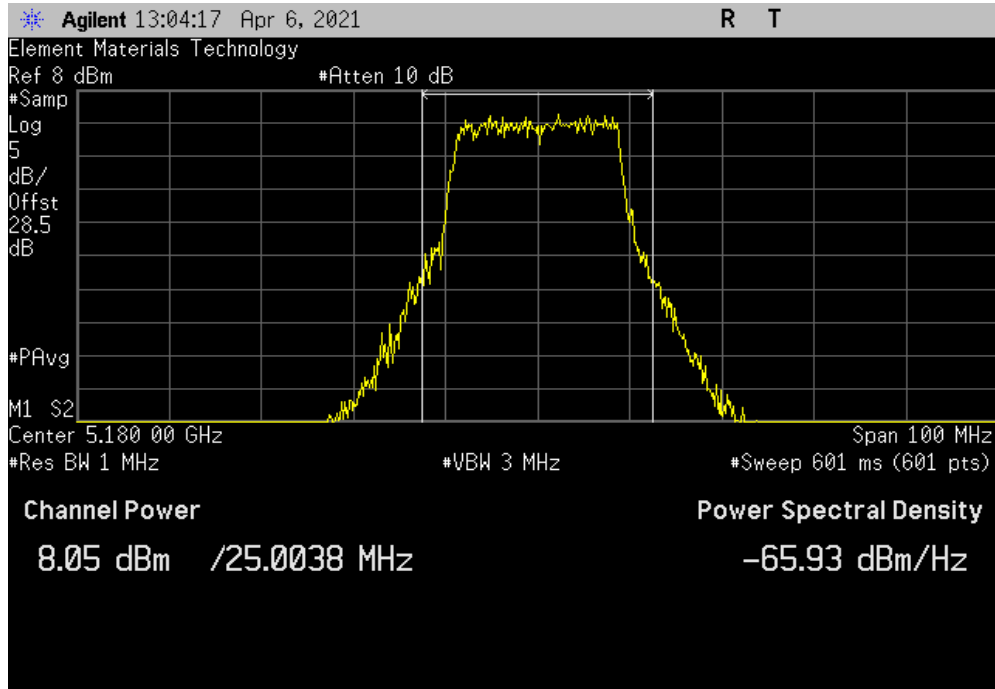


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.2 GHz BAND

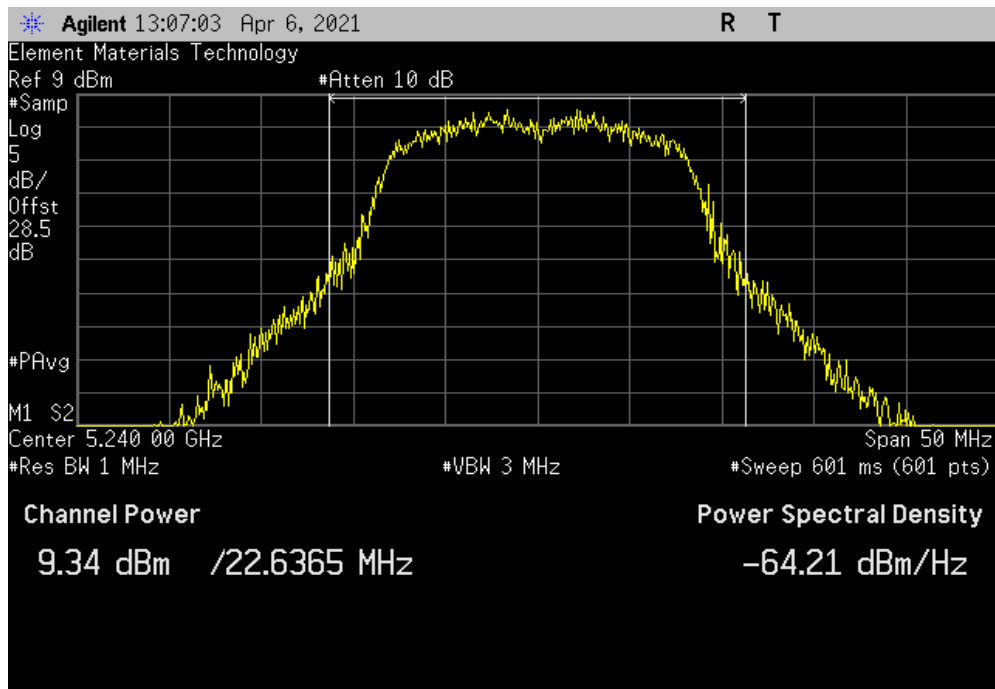


TbTx 2019.08.30.0 XMt 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(n) MCS7						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
8.05	0.754	0.3	4.2	12.7	30	Pass



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 6 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
9.336	0.105	0.3	4.2	13.3	30	Pass

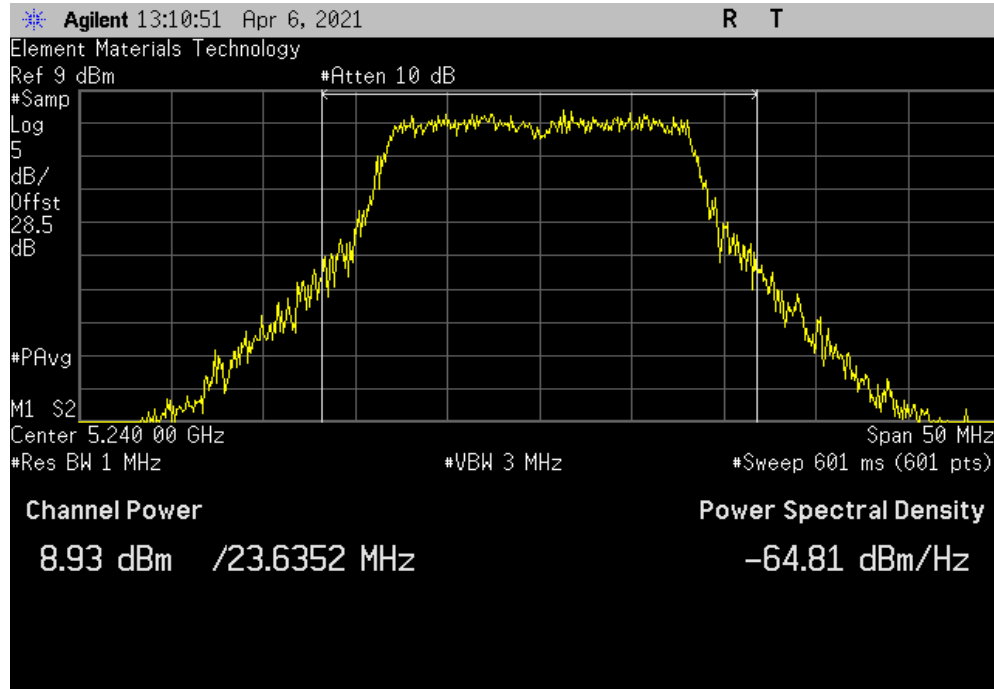


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.2 GHz BAND

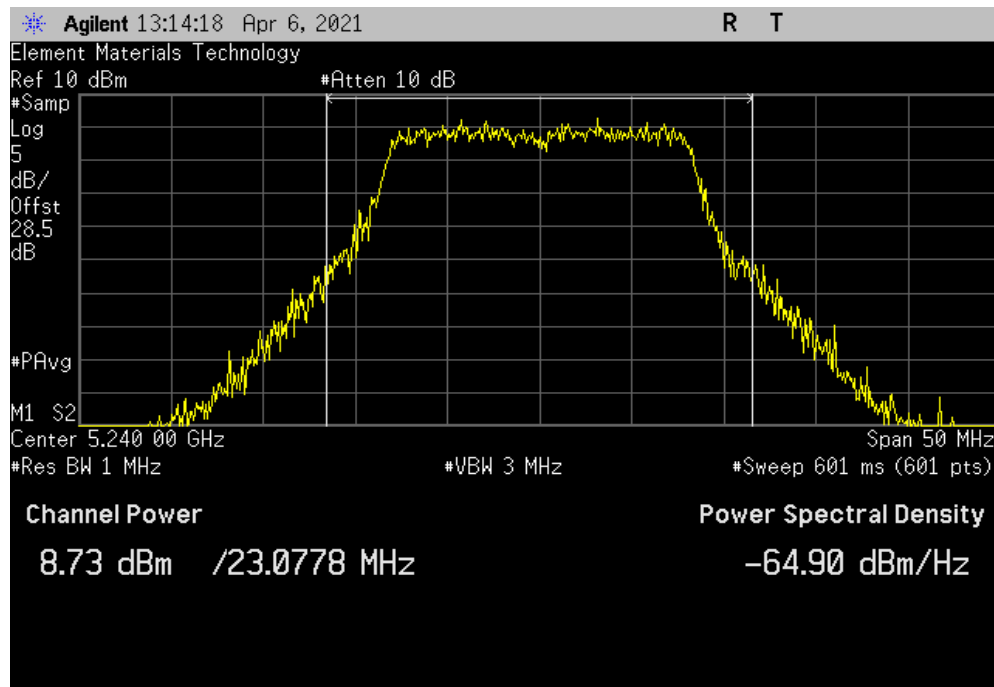


TUTTx 2019.08.30.0 XMt 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 36 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
8.928	0.619	0.3	4.2	13.4	30	Pass



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 54 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
8.733	0.86	0.3	4.2	13.5	30	Pass

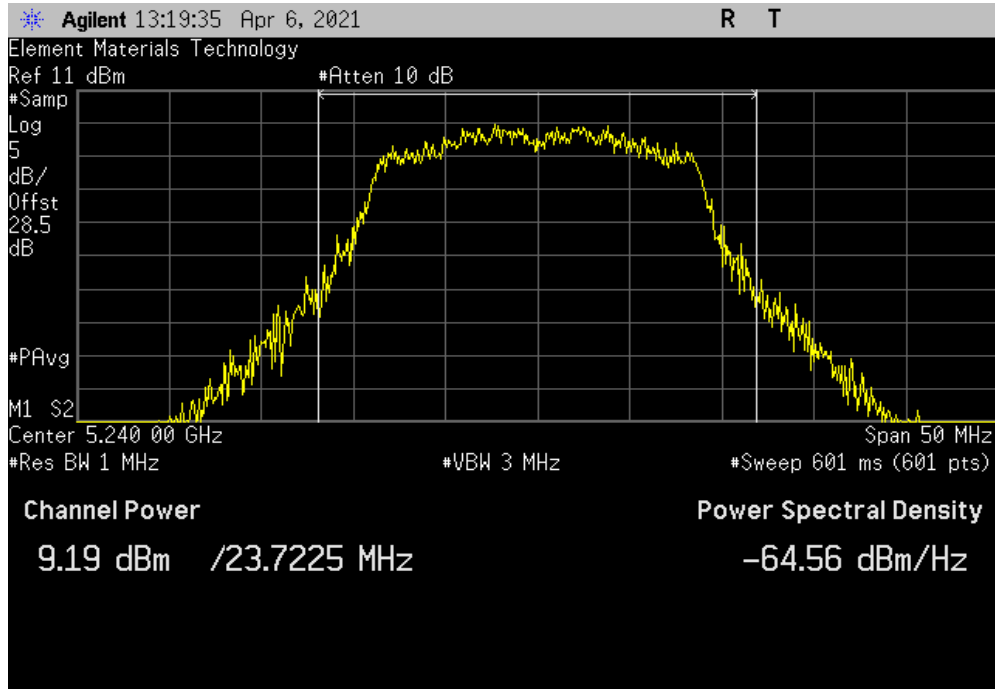


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.2 GHz BAND

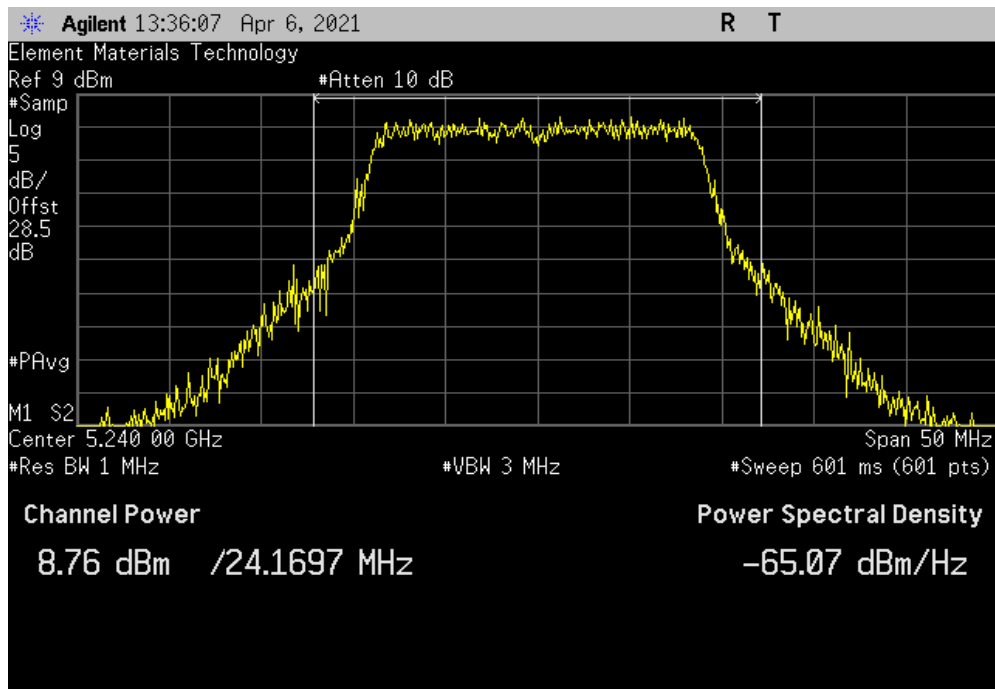


TMTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS0						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
9.193	0.103	0.3	4.2	13.2	30	Pass



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS7						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
8.759	0.934	0.3	4.2	13.6	30	Pass



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMI	2020-08-05	2021-08-05
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	2020-05-20	2021-05-20
Generator - Signal	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2021-03-10	2022-03-10

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.

The EIRP was calculated by adding the antenna gain in dBi to the conducted output power measurement.

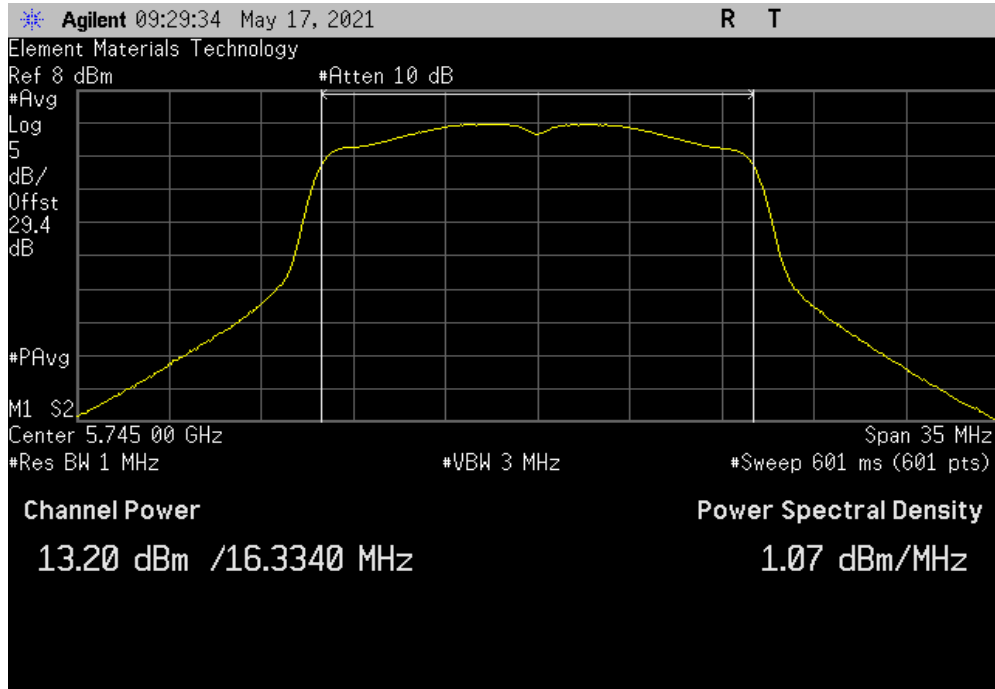
ThiTx 2021.03.19.1 XMIT 2020.12.30.0

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD

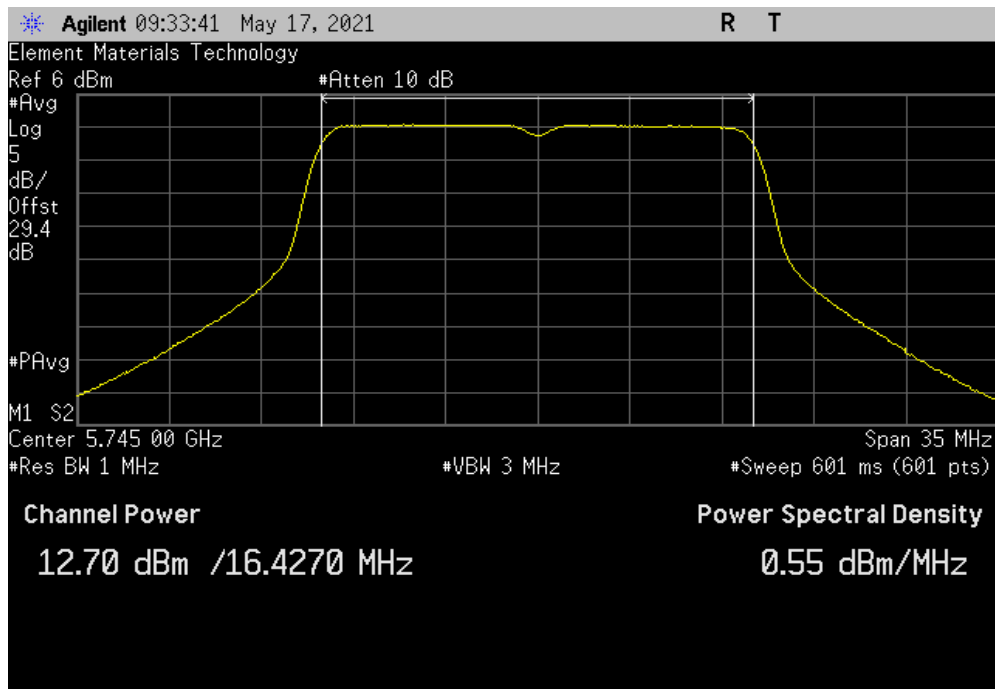


TUTx 2021.03.10.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
13.198	0.1	0.3	4.2	17.2	36	Pass



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
12.701	0.5	0.3	4.2	17.1	36	Pass

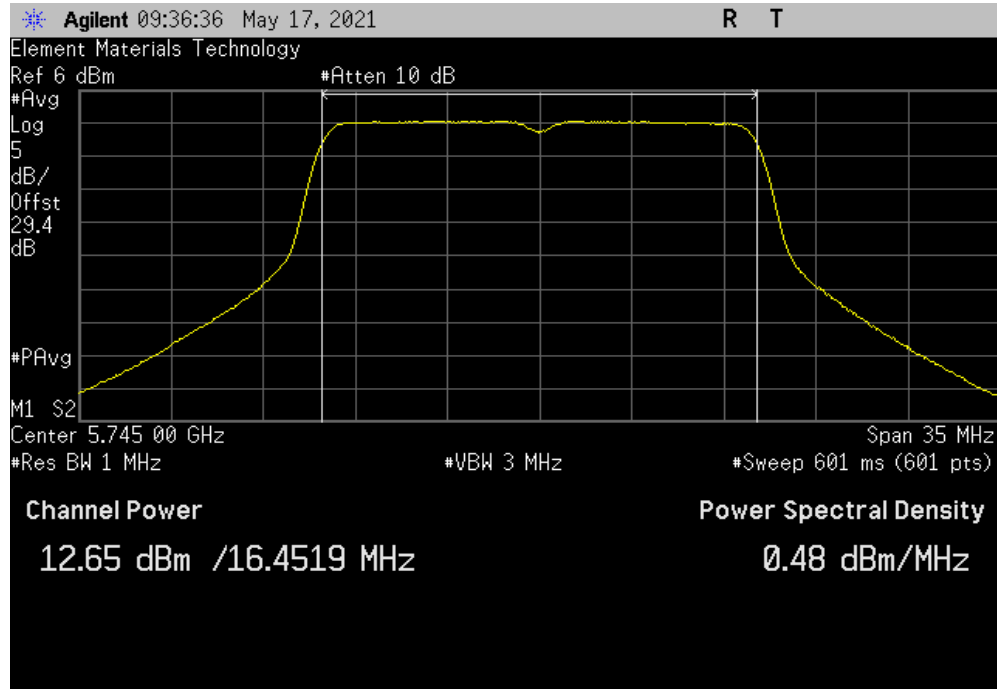


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD

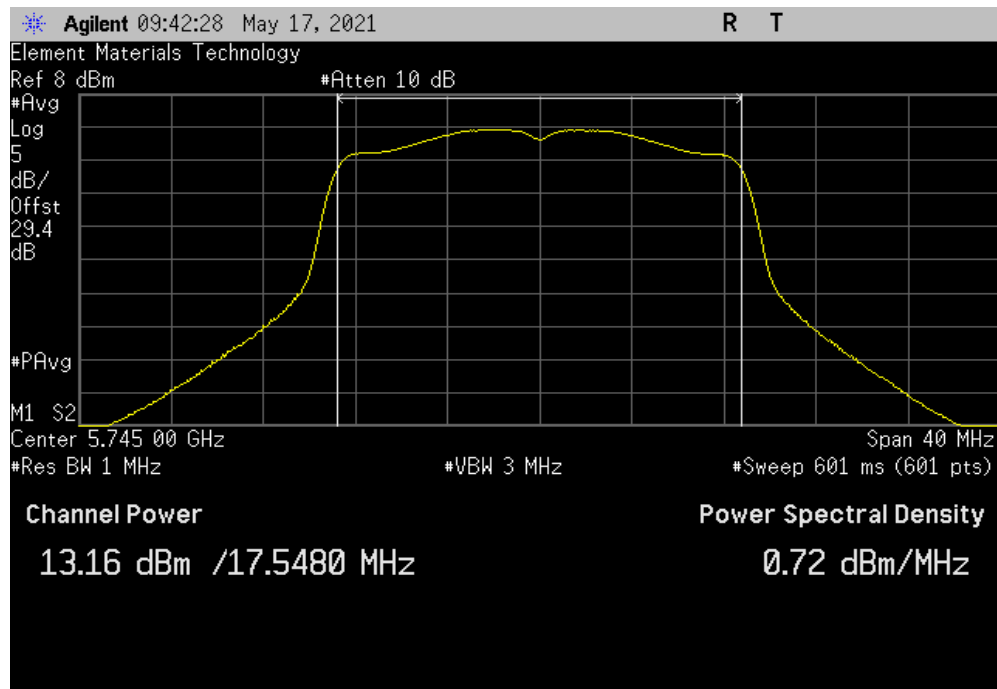


TUTTx 2021.03.19.1 XMt 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
12.646	0.7	0.3	4.2	17.2	36	Pass



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
13.163	0.1	0.3	4.2	17.2	36	Pass

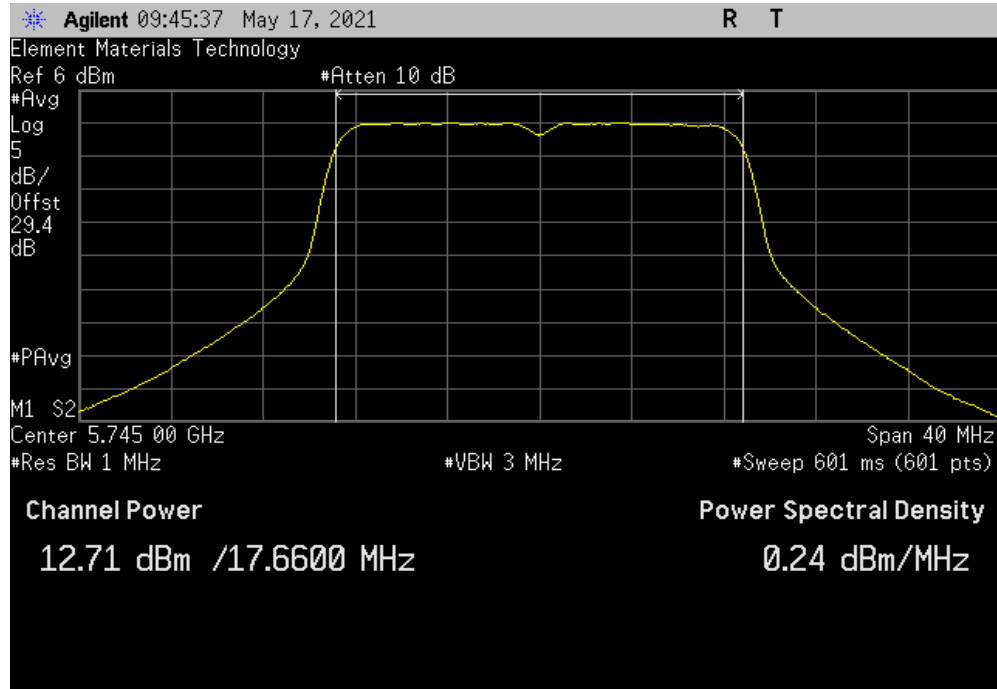


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD

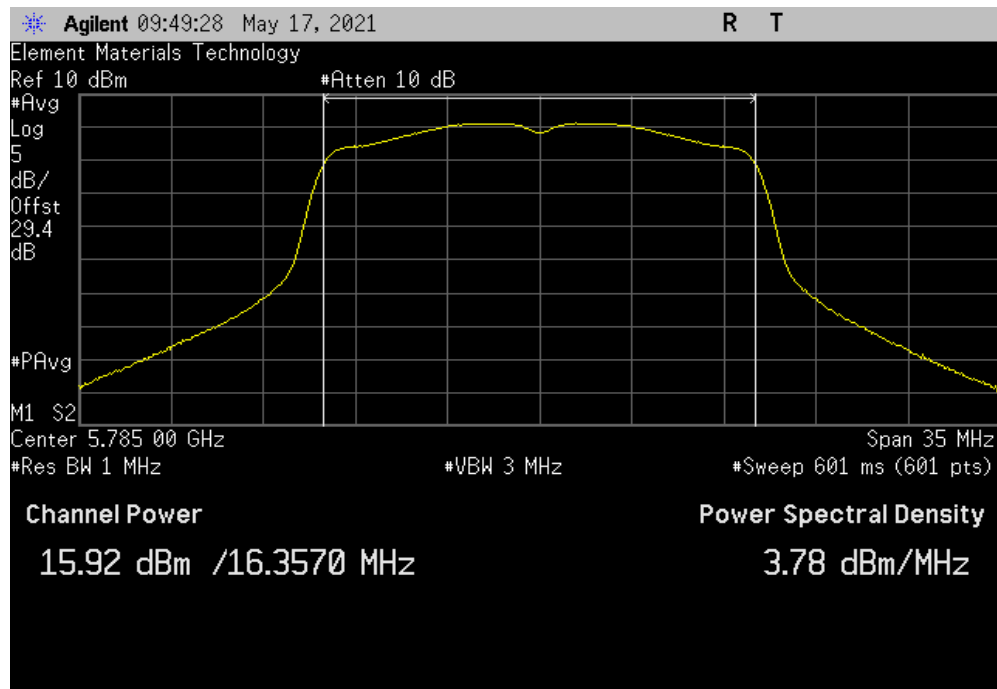


TUTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
12.705	0.7	0.3	4.2	17.3	36	Pass



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
15.92	0	0.3	4.2	19.8	36	Pass

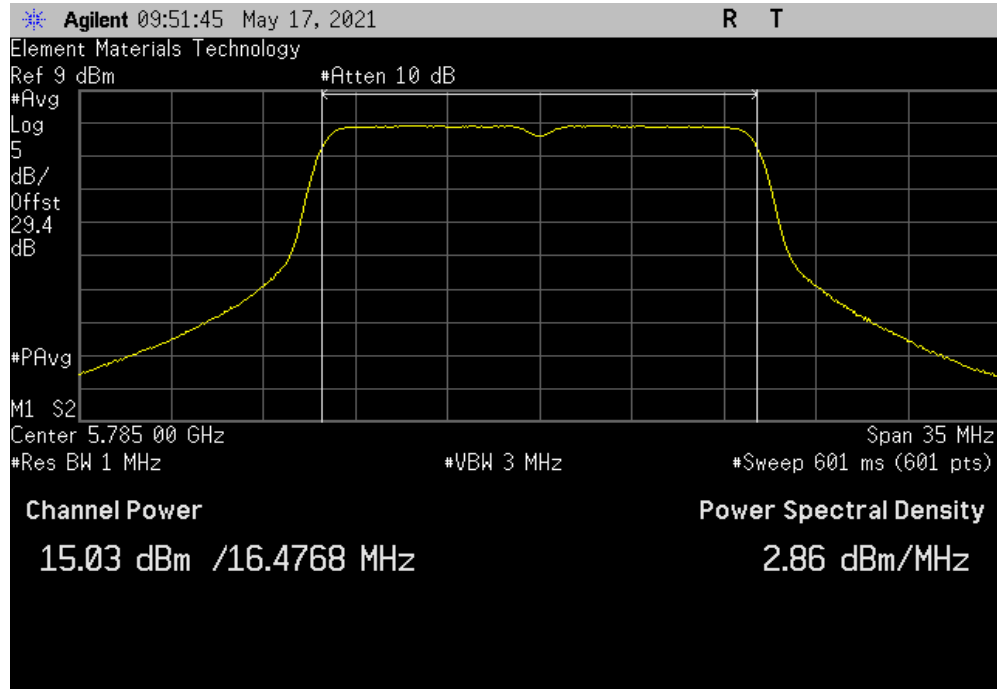


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD

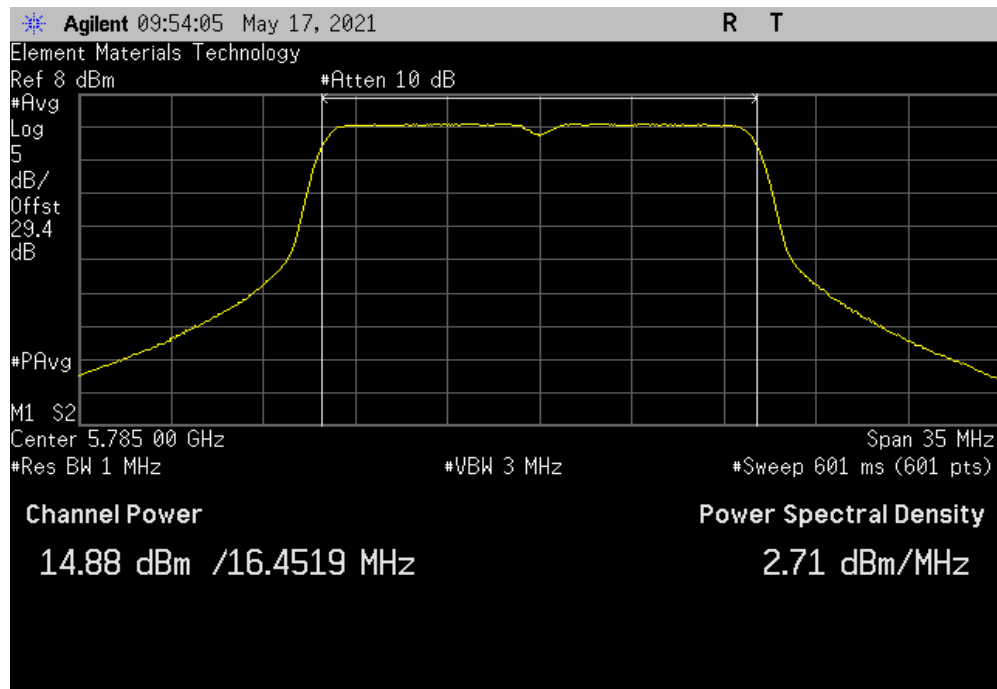


TUTx 2021.03.19.1 XM8 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
15.031	0.5	0.3	4.2	19.4	36	Pass



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
14.876	0.7	0.3	4.2	19.5	36	Pass

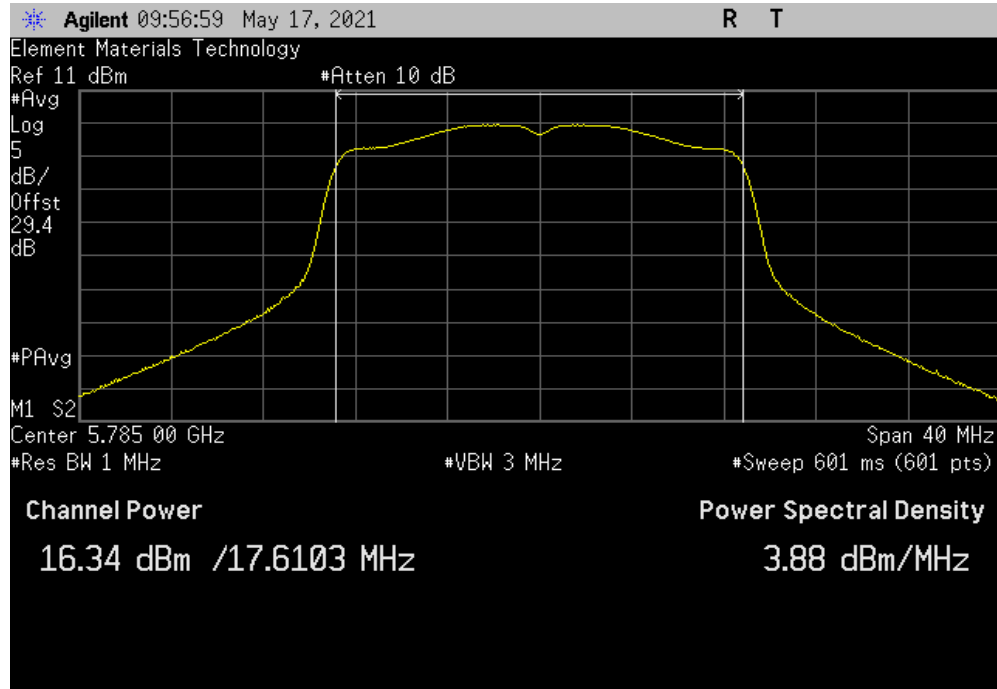


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD

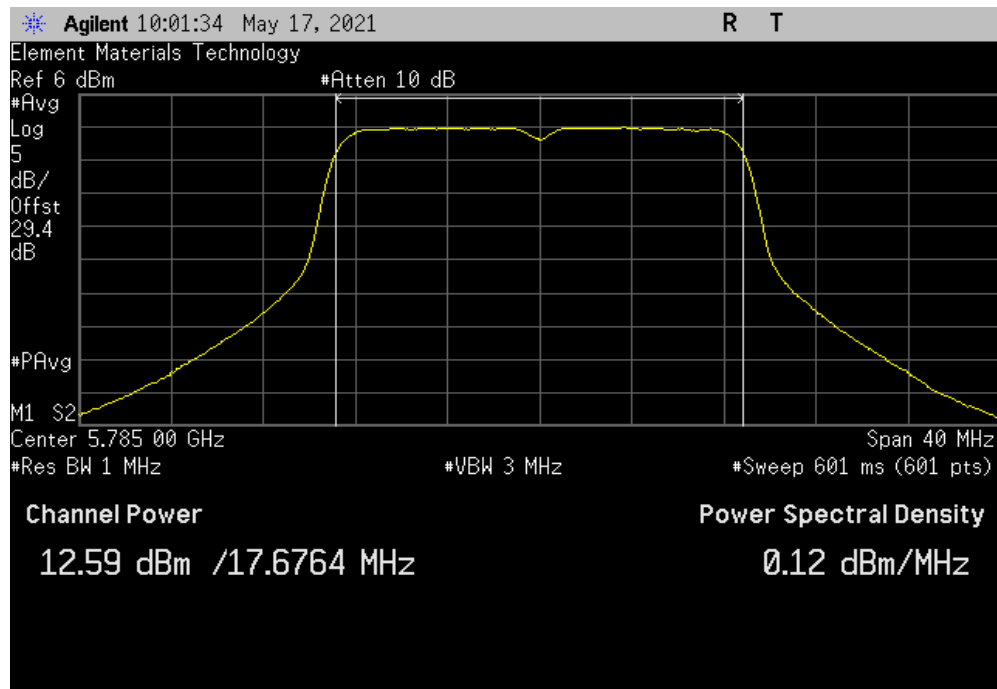


TUTx 2021.03.10.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
16.342	0.1	0.3	4.2	20.3	36	Pass



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
12.589	0.7	0.3	4.2	17.2	36	Pass

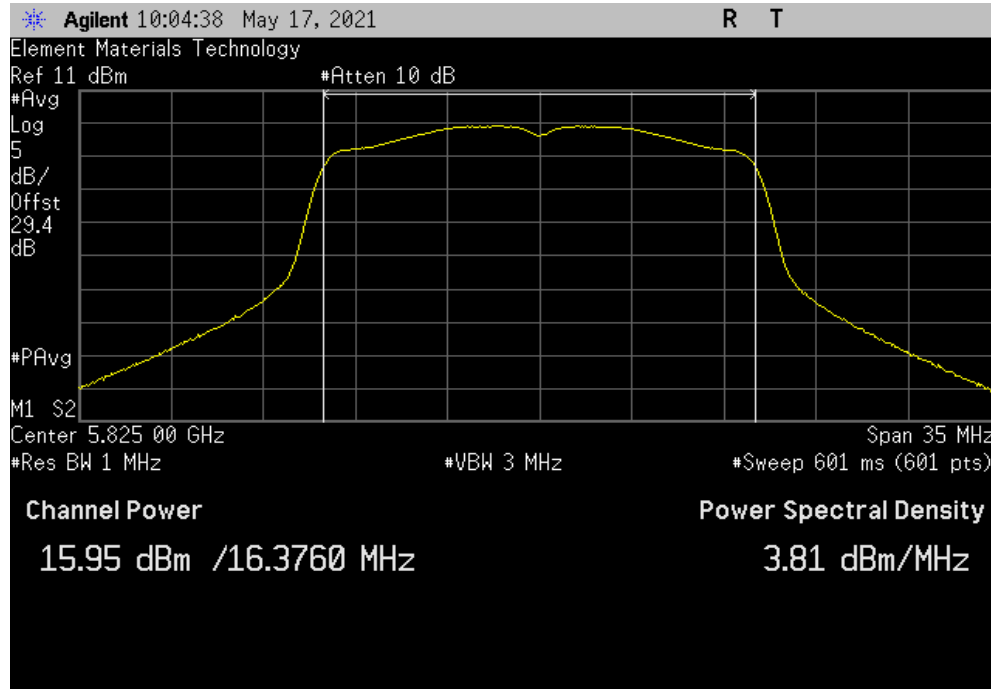


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD

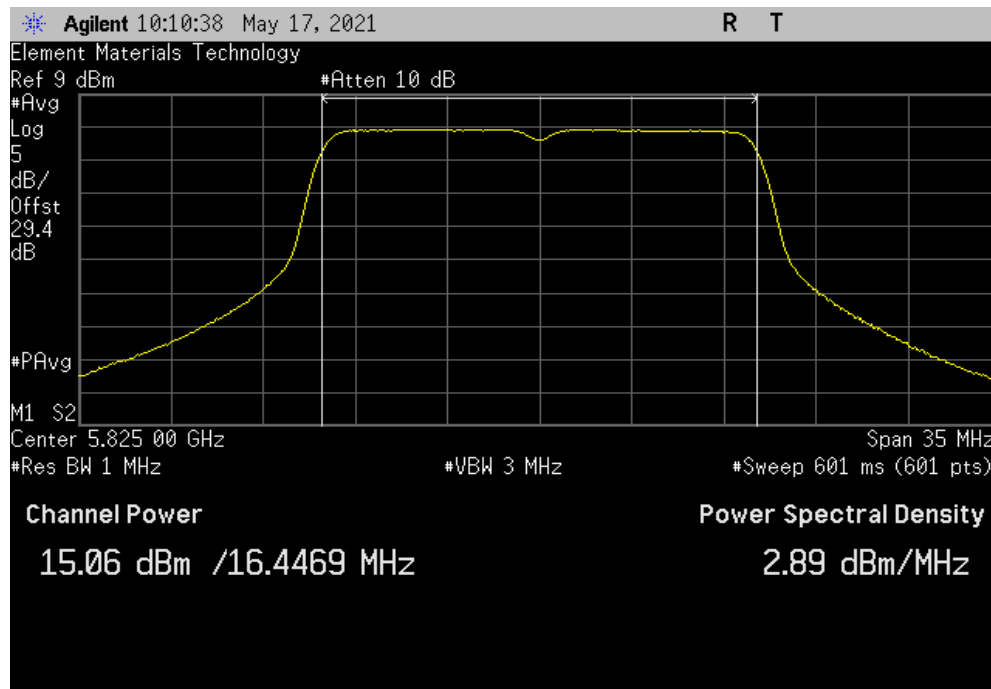


TbTx 2021.03.19.1 XMt 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
15.952	0	0.3	4.2	19.9	36	Pass



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
15.055	0.5	0.3	4.2	19.5	36	Pass

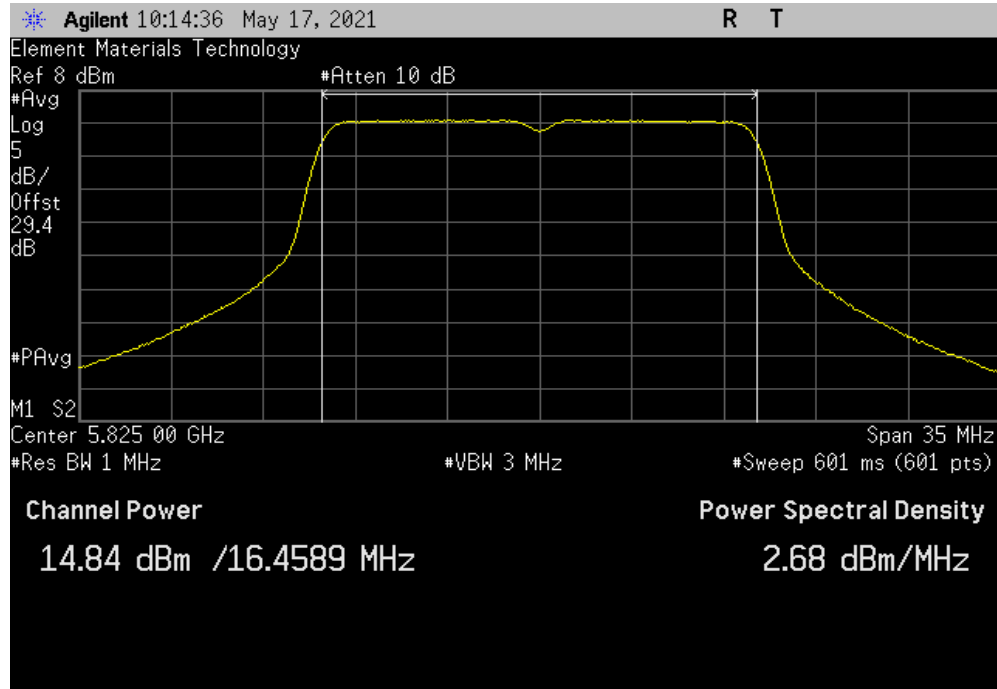


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD

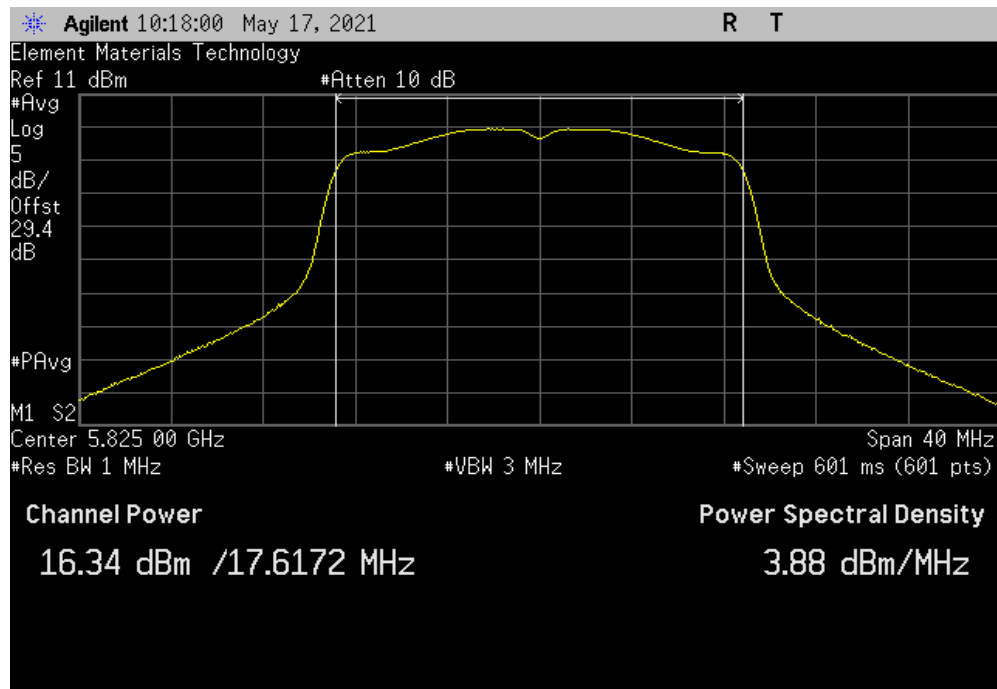


TUTTx 2021.03.19.1 XMR 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
14.839	0.7	0.3	4.2	19.4	36	Pass



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
16.339	0.1	0.3	4.2	20.3	36	Pass

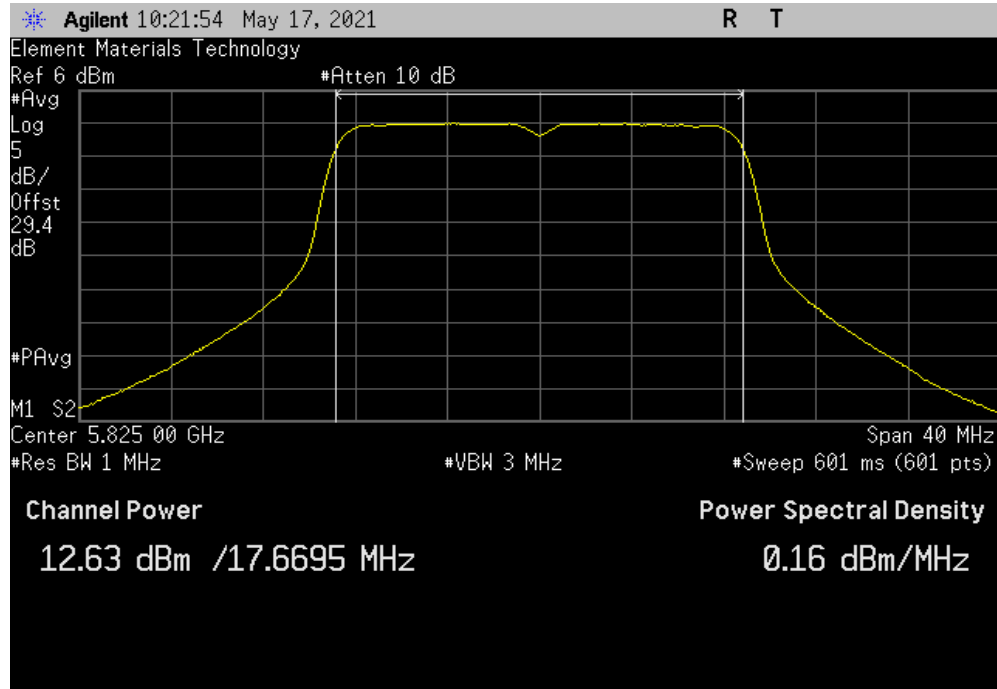


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP) 5.8 GHz BAND, LOW, MID HIGH AVE METHOD



TbTx 2021.03.19.1 XMt 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
12.628	0.7	0.3	4.2	17.2	36	Pass



EMISSION BANDWIDTH



XMit 2020.12.30.0

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07

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



TMTx 2019.08.30.0 XMR 2020.12.30.0

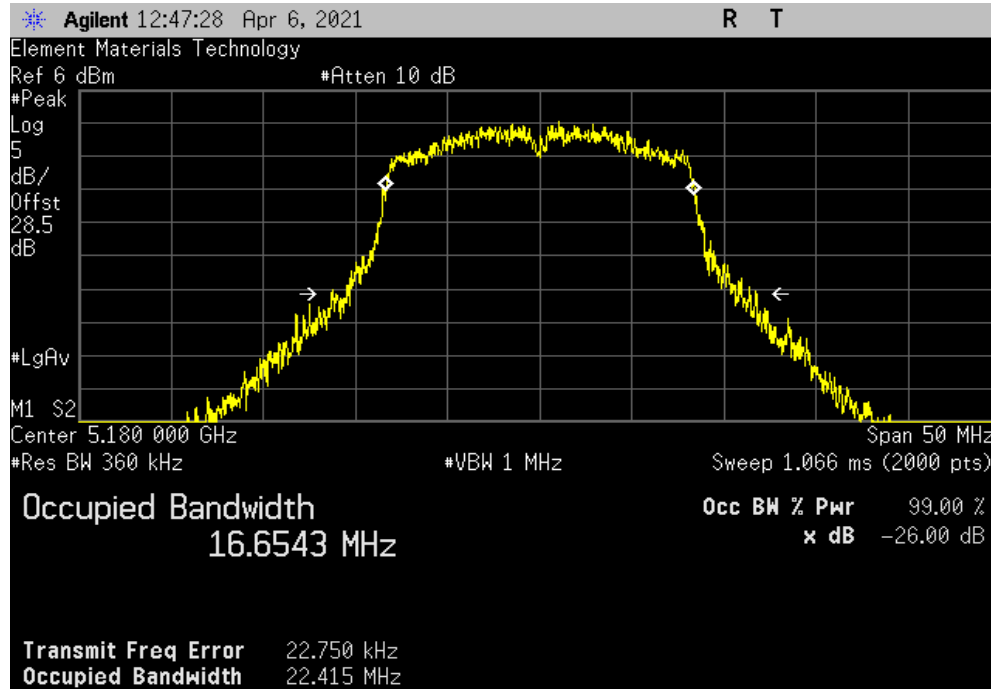
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B		Work Order: LGPD0256	
Serial Number: 2420M00120		Date: 6-Apr-21	
Customer: Logic PD, Inc.		Temperature: 21.4 °C	
Attendees: Eric Fritz		Humidity: 41.1% RH	
Project: None		Barometric Pres.: 1009 mbar	
Tested by: Andrew Rogstad		Power: 5VDC via 120VAC/60Hz	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.407:2021		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, attenuator, and DC block.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Andrew Rogstad</i>	
		Value (dB)	Limit
5150 - 5250 MHz Band			
Low Channel, Ch 36 - 5180 MHz			
	802.11(a) 6 Mbps	22.415 MHz	N/A
	802.11(a) 36 Mbps	23.302 MHz	N/A
	802.11(a) 54 Mbps	23.333 MHz	N/A
	802.11(n) MCS0	22.616 MHz	N/A
	802.11(n) MCS7	25.004 MHz	N/A
High Channel, Ch 48 - 5240 MHz			
	802.11(a) 6 Mbps	22.636 MHz	N/A
	802.11(a) 36 Mbps	23.635 MHz	N/A
	802.11(a) 54 Mbps	23.078 MHz	N/A
	802.11(n) MCS0	23.723 MHz	N/A
	802.11(n) MCS7	24.17 MHz	N/A
			Result
			Pass
			Pass
			Pass
			Pass
			Pass
			Pass
			Pass
			Pass

EMISSION BANDWIDTH

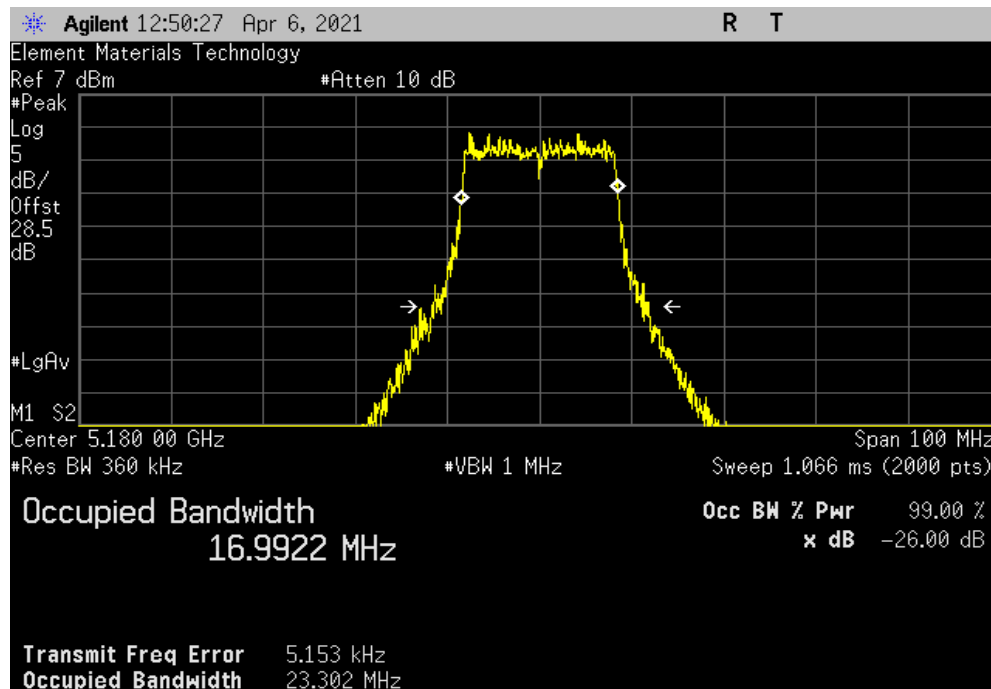


TUTX 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 6 Mbps						
				Value (dB)	Limit	Result
				22.415 MHz	N/A	Pass



5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 36 Mbps						
				Value (dB)	Limit	Result
				23.302 MHz	N/A	Pass

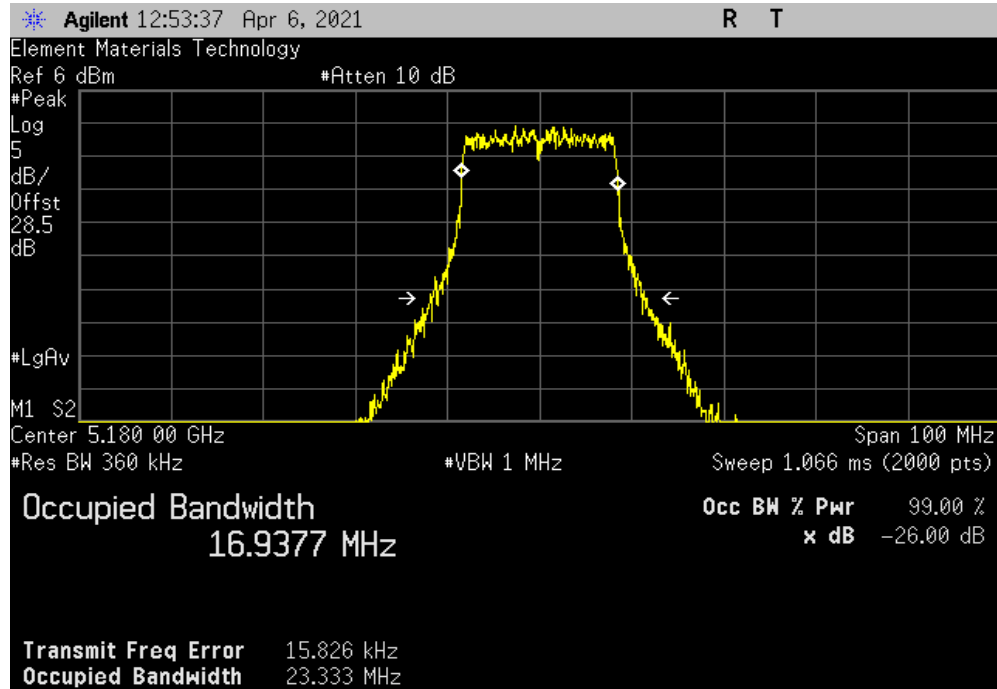


EMISSION BANDWIDTH

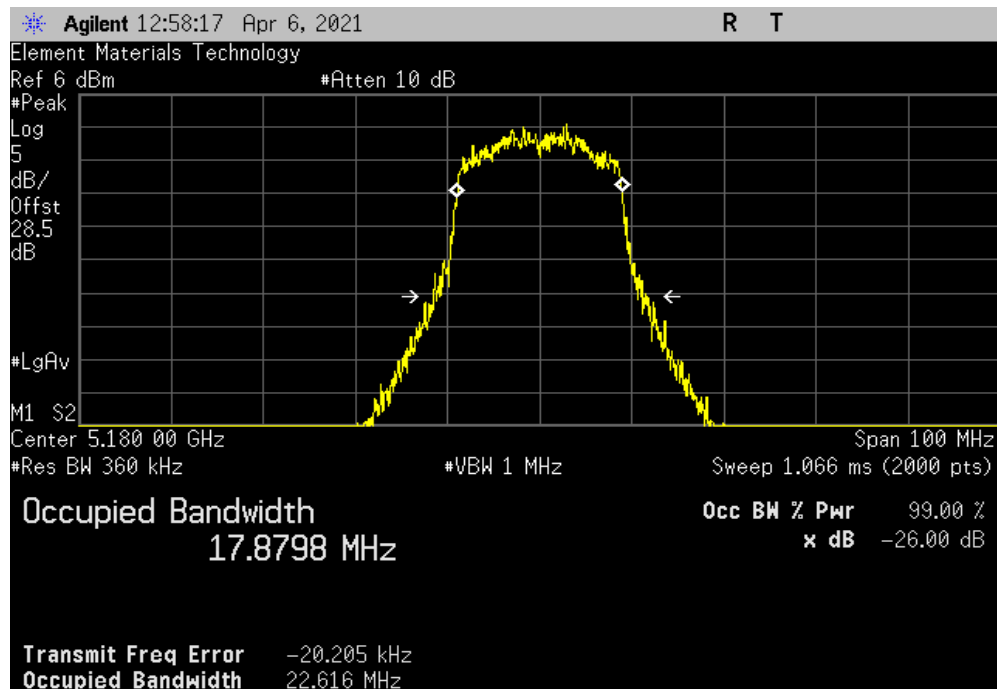


TMTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(a) 54 Mbps						
				Value (dB)	Limit	Result
				23.333 MHz	N/A	Pass



5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(n) MCS0						
				Value (dB)	Limit	Result
				22.616 MHz	N/A	Pass

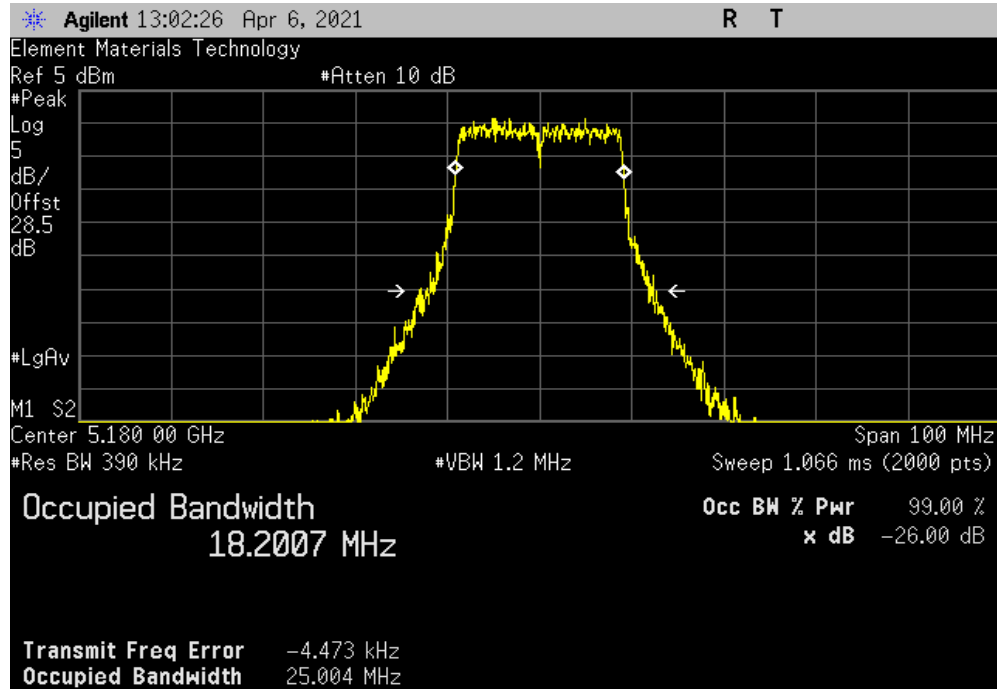


EMISSION BANDWIDTH

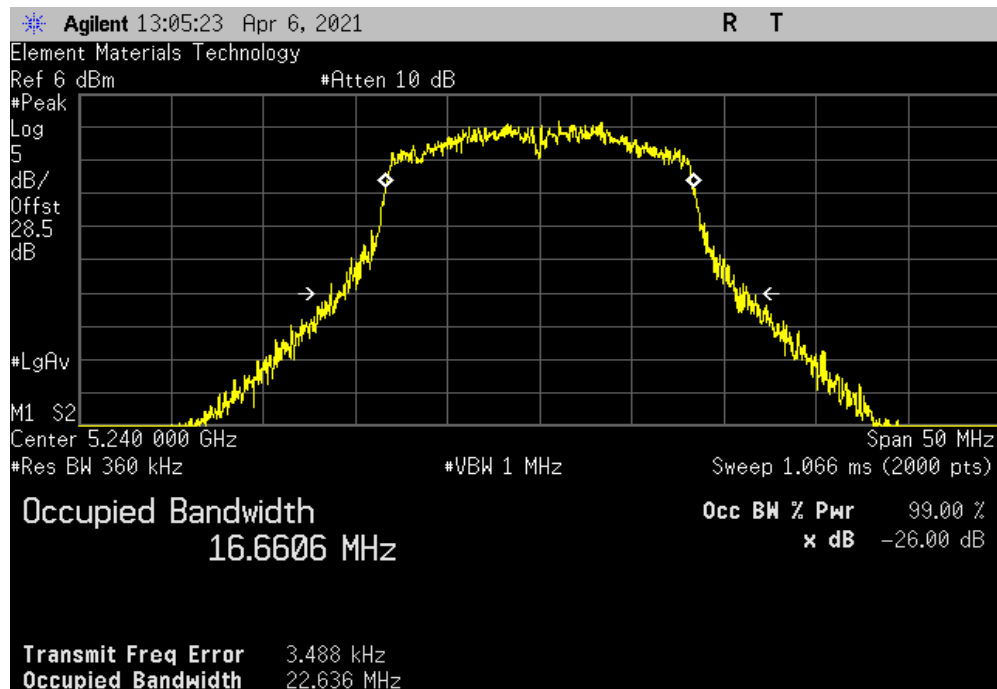


TMTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, Low Channel, Ch 36 - 5180 MHz, 802.11(n) MCS7						
				Value (dB)	Limit	Result
				25.004 MHz	N/A	Pass



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 6 Mbps						
				Value (dB)	Limit	Result
				22.636 MHz	N/A	Pass

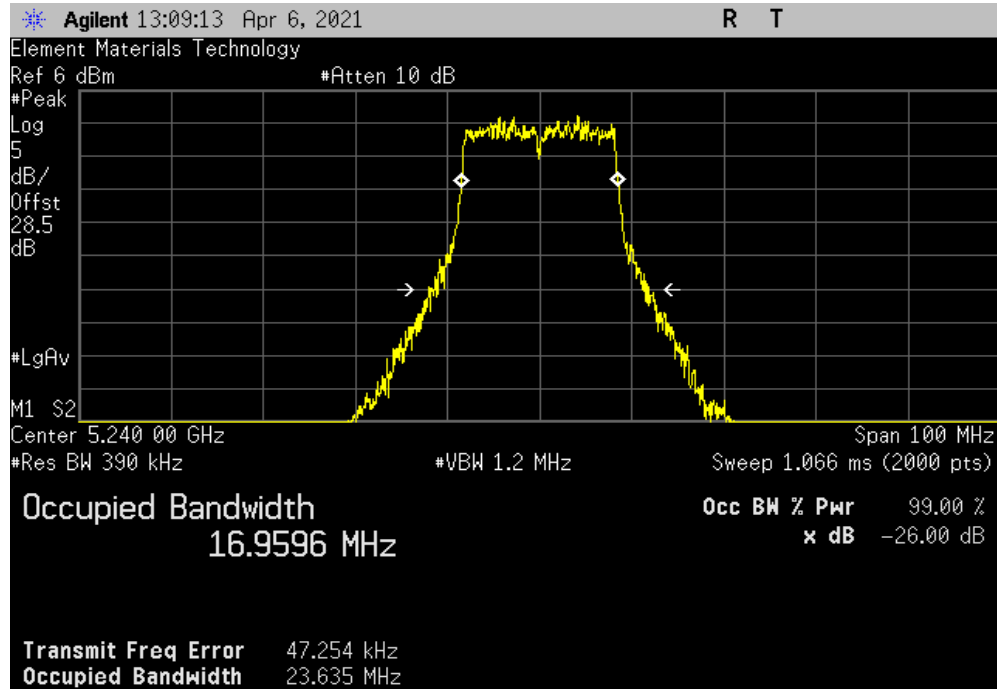


EMISSION BANDWIDTH

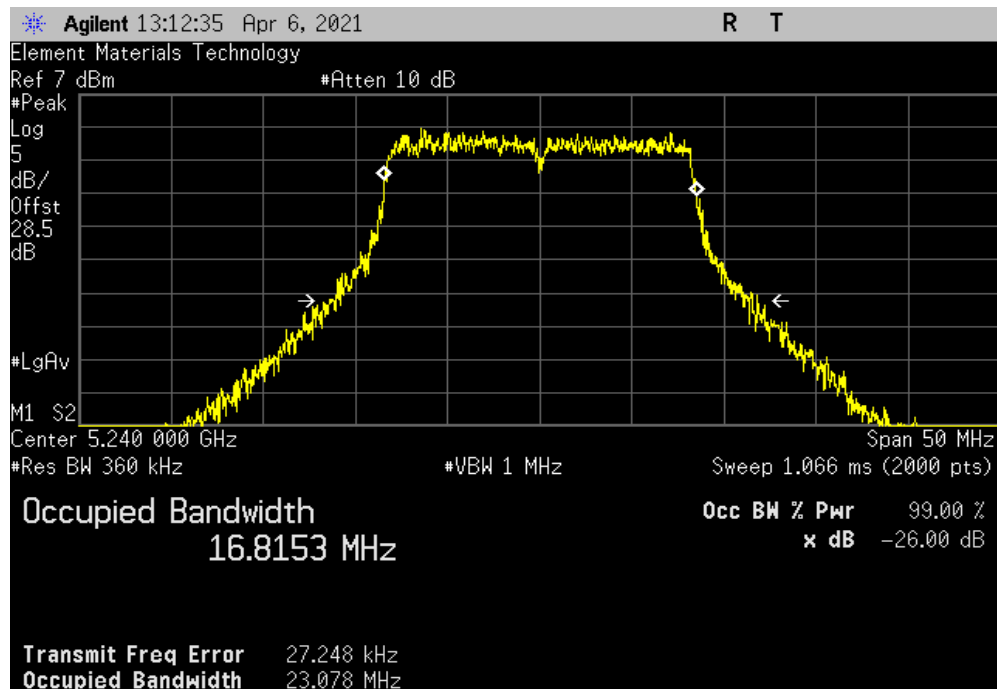


TMTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 36 Mbps						
				Value (dB)	Limit	Result
				23.635 MHz	N/A	Pass



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 54 Mbps						
				Value (dB)	Limit	Result
				23.078 MHz	N/A	Pass

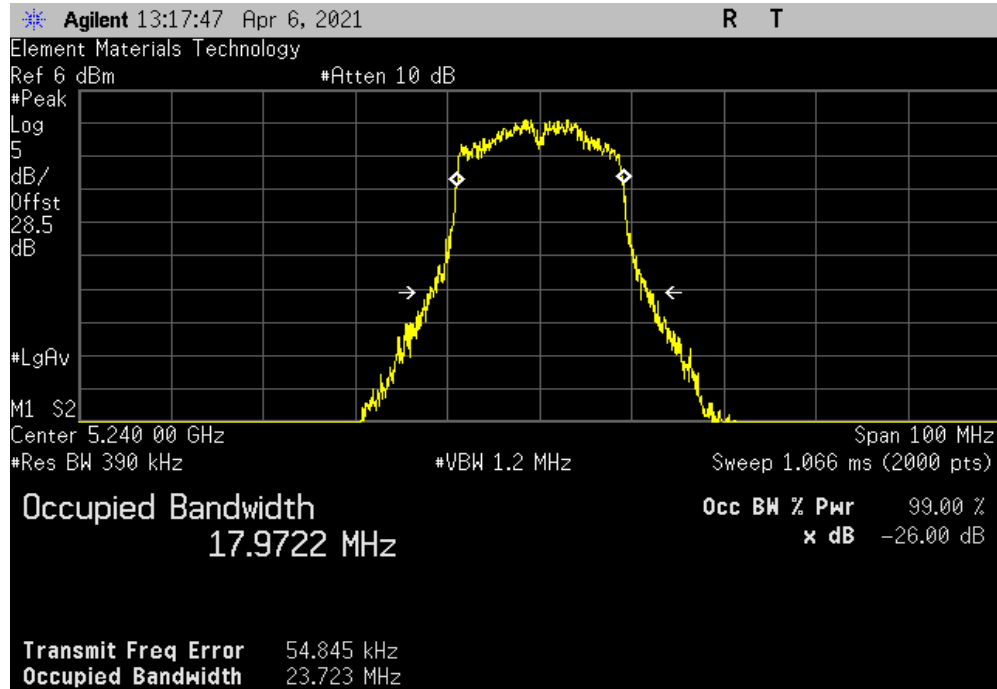


EMISSION BANDWIDTH

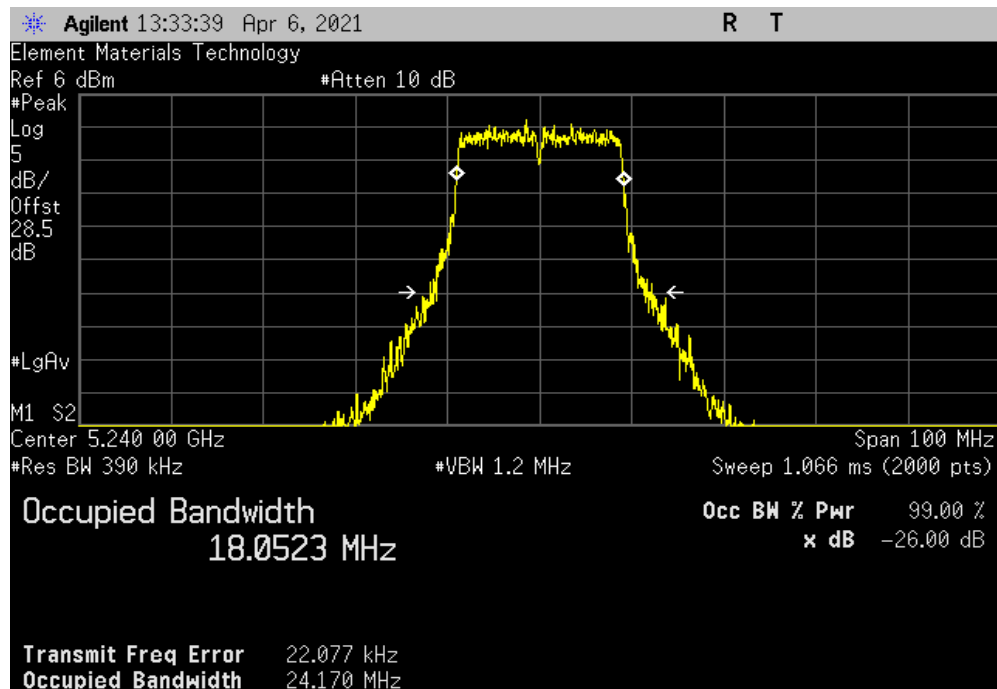


TMTx 2019.08.30.0 XMR 2020.12.30.0

5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS0						
				Value (dB)	Limit	Result
				23.723 MHz	N/A	Pass



5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS7						
				Value (dB)	Limit	Result
				24.17 MHz	N/A	Pass



OCCUPIED BANDWIDTH 5.8 GHz CH 149

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	Keysight	N5171B (EXG)	TEY	2019-12-31	2022-12-31
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07

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 FCC KDB 789033 D02 UNII Test Procedures, the spectrum analyzer settings were as follows:

- RBW = 100 kHz
- VBW = $\geq 3 \times$ RBW
- Detector = Peak
- Trace mode = max hold
- Sweep = auto couple

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

OCCUPIED BANDWIDTH 5.8 GHz CH 149



TSTx 2019.08.30.0 XMR 2020.12.30.0

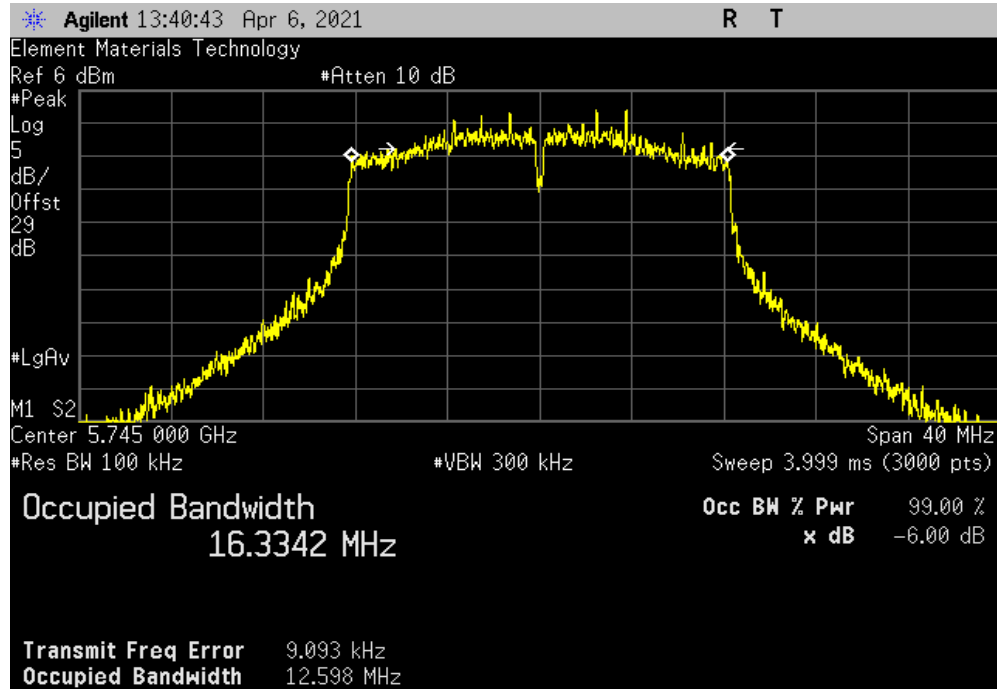
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B		Work Order: LGPD0256	
Serial Number: 2420M00120		Date: 6-Apr-21	
Customer: Logic PD, Inc.		Temperature: 21.4 °C	
Attendees: Eric Fritz		Humidity: 41.5% RH	
Project: None		Barometric Pres.: 1008 mbar	
Tested by: Andrew Rogstad	Power: 5VDC via 120VAC/60Hz	Job Site: MN08	
TEST SPECIFICATIONS			
FCC 15.247:2021		Test Method: ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, attenuator, and DC block.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Andrew Rogstad</i>	
		Value	Limit (>) Result
5725 - 5785 MHz Band			
Low Channel, Ch 149 - 5745 MHz			
	802.11(a) 6 Mbps	12.598 MHz	500 kHz Pass
	802.11(a) 36 Mbps	16.386 MHz	500 kHz Pass
	802.11(a) 54 Mbps	16.394 MHz	500 kHz Pass
	802.11(n) MCS0	13.4 MHz	500 kHz Pass
	802.11(n) MCS7	17.548 MHz	500 kHz Pass

OCCUPIED BANDWIDTH 5.8 GHz CH 149

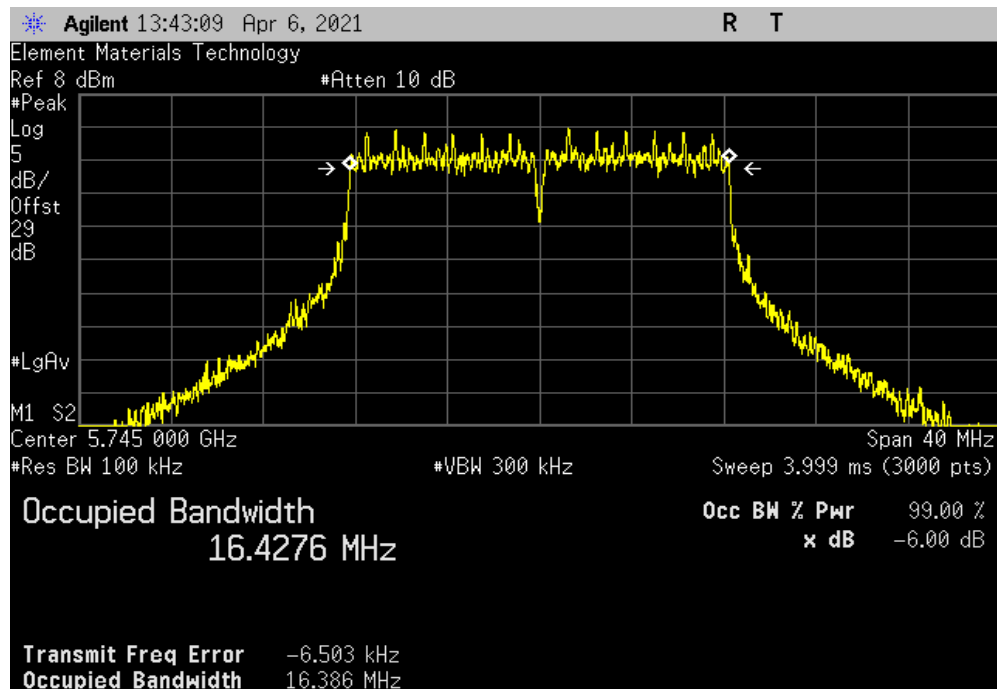


TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
				Value	Limit	Result
				12.598 MHz	500 kHz	Pass



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
				Value	Limit	Result
				16.386 MHz	500 kHz	Pass

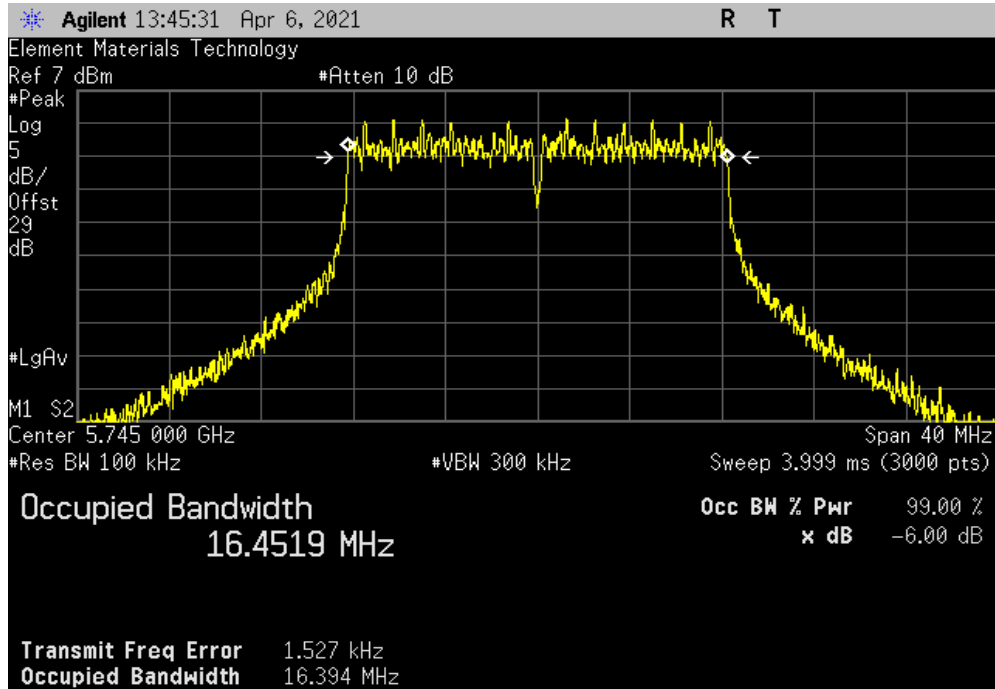


OCCUPIED BANDWIDTH 5.8 GHz CH 149

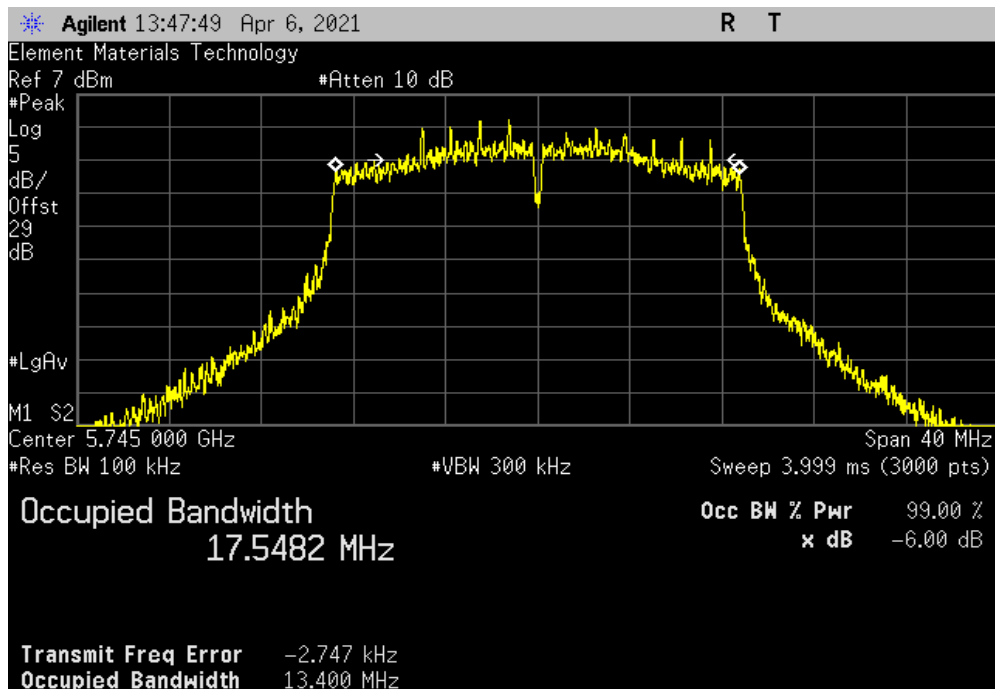


TUTX 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
Value				Limit	Result	
				(>)		
			16.394 MHz	500 kHz	Pass	



5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
Value				Limit	Result	
				(>)		
			13.4 MHz	500 kHz	Pass	

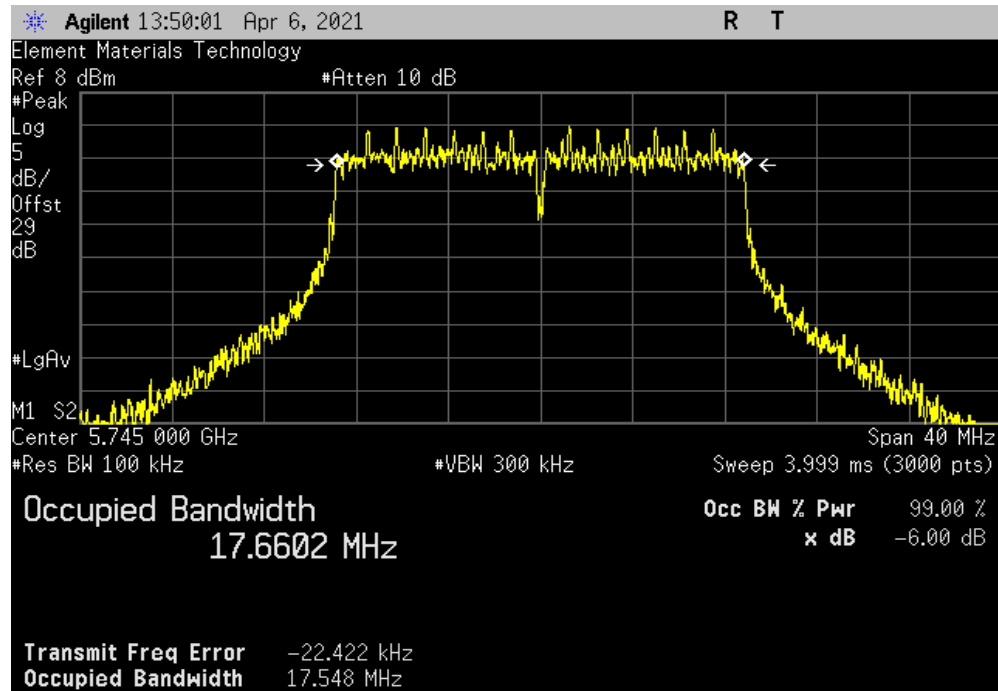


OCCUPIED BANDWIDTH 5.8 GHz CH 149



TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
Value				Limit	Result	
				(>)		
			17.548 MHz	500 kHz	Pass	



OCCUPIED BANDWIDTH 5.8 GHz CH 157 and 165



XMit 2020.12.30.0

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
Attenuator	Fairview Microwave	18B5W-26	RFY	2020-06-03	2021-06-03
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Generator - Signal	Agilent	N5183A	TIK	2019-04-30	2022-04-30
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07

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 FCC KDB 789033 D02 UNII Test Procedures, the spectrum analyzer settings were as follows:

- RBW = 100 kHz
- VBW = $\geq 3 \times$ RBW
- Detector = Peak
- Trace mode = max hold
- Sweep = auto couple

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

OCCUPIED BANDWIDTH 5.8 GHz CH 157 and 165



TSTx 2019.08.30.0 XMR 2020.12.30.0

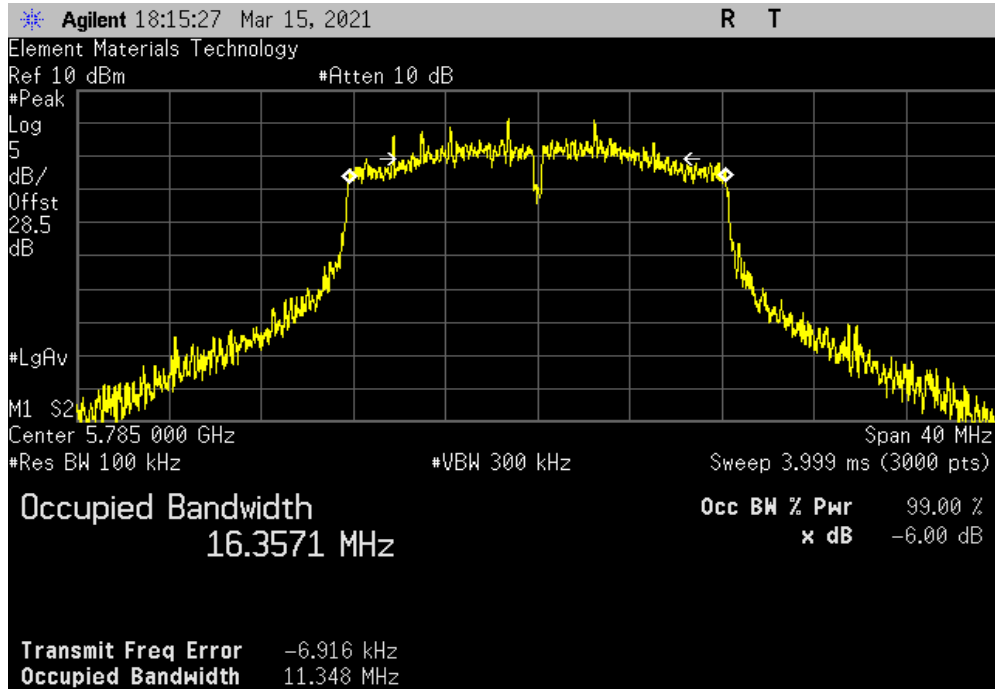
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B		Work Order: LGPD0256	
Serial Number: 2420M00120		Date: 15-Mar-21	
Customer: Logic PD, Inc.		Temperature: 22.6 °C	
Attendees: Eric Fritz		Humidity: 24.8% RH	
Project: None		Barometric Pres.: 1019 mbar	
Tested by: Andrew Rogstad		Power: 5VDC via 120VAC/60Hz	
		Job Site: MN08	
TEST SPECIFICATIONS			
FCC 15.247:2021		Test Method	
		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes measurement cable, attenuator, and DC block.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Andrew Rogstad</i>	
		Value	Limit (>)
5725 - 5785 MHz Band			
Mid Channel, Ch 157 - 5785 MHz			
	802.11(a) 6 Mbps	11.348 MHz	500 kHz
	802.11(a) 36 Mbps	16.463 MHz	500 kHz
	802.11(a) 54 Mbps	16.393 MHz	500 kHz
	802.11(n) MCS0	14.532 MHz	500 kHz
	802.11(n) MCS7	17.629 MHz	500 kHz
High Channel, Ch 165 - 5825 MHz			
	802.11(a) 6 Mbps	15.098 MHz	500 kHz
	802.11(a) 36 Mbps	16.382 MHz	500 kHz
	802.11(a) 54 Mbps	16.397 MHz	500 kHz
	802.11(n) MCS0	14.5 MHz	500 kHz
	802.11(n) MCS7	17.53 MHz	500 kHz
			Result
			Pass
			Pass
			Pass
			Pass
			Pass
			Pass
			Pass
			Pass

OCCUPIED BANDWIDTH 5.8 GHz CH 157 and 165

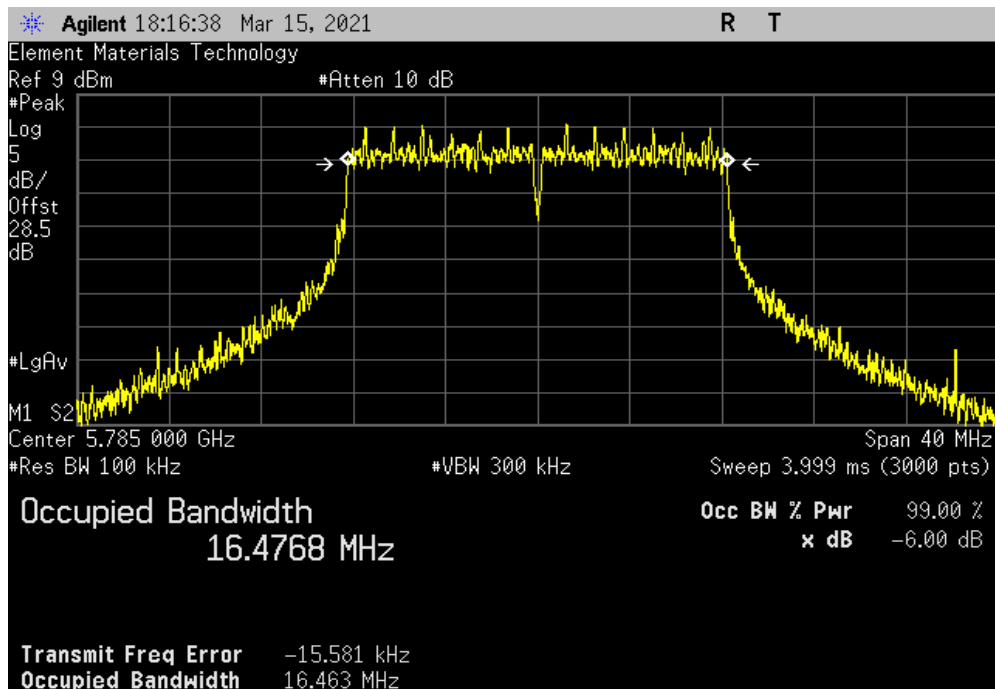


TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
Value				Limit	Result	
				(>)		
			11.348 MHz	500 kHz	Pass	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
Value				Limit	Result	
				(>)		
			16.463 MHz	500 kHz	Pass	

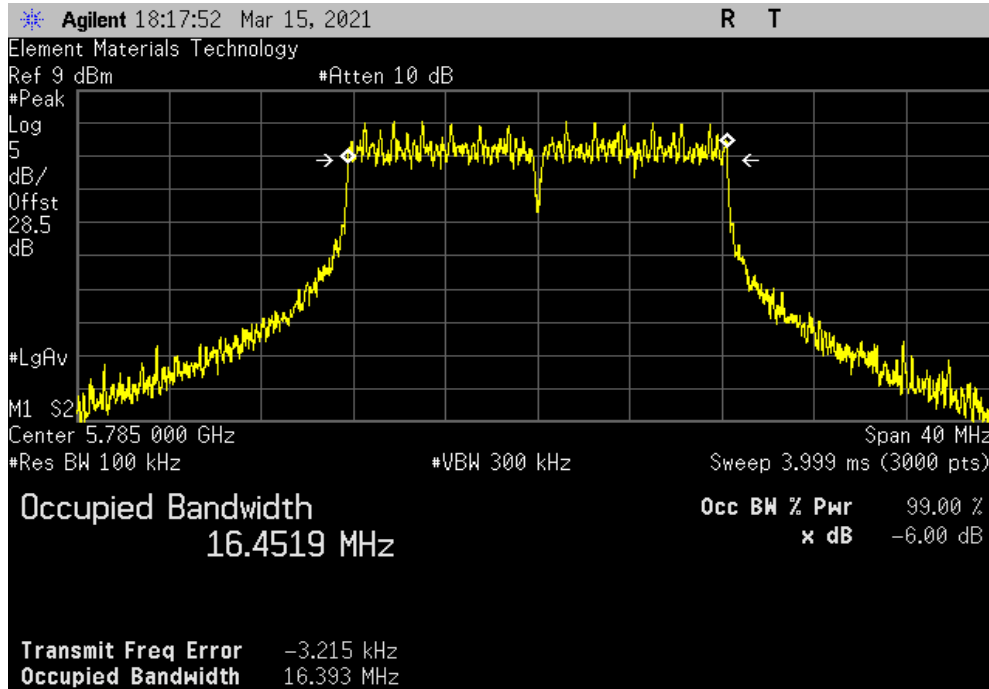


OCCUPIED BANDWIDTH 5.8 GHz CH 157 and 165

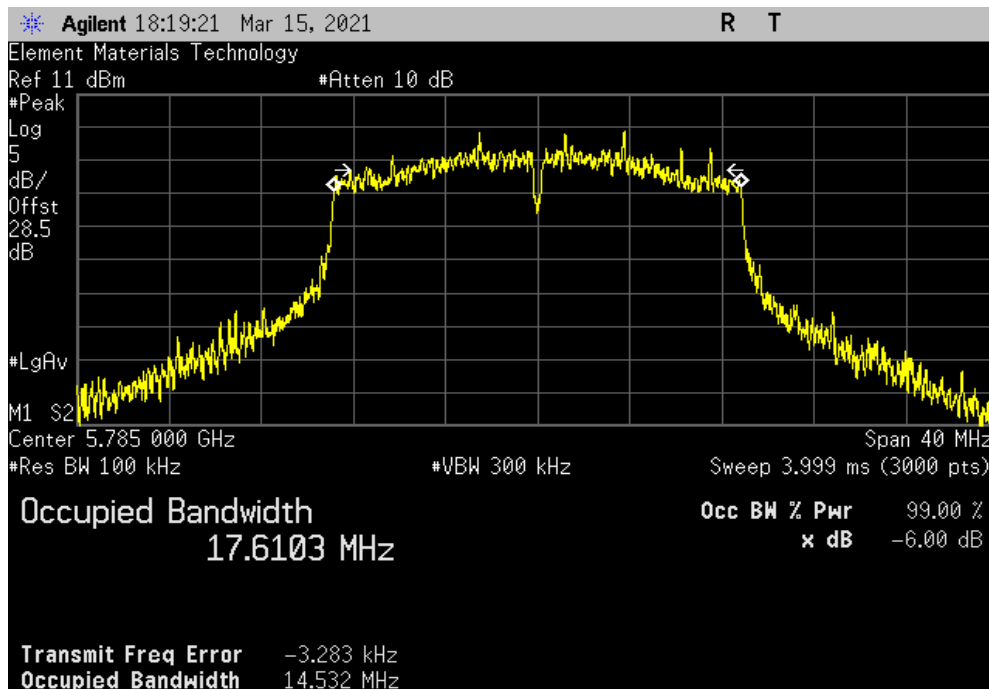


TUTX 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
Value				Limit	Result	
				(>)		
			16.393 MHz	500 kHz	Pass	



5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
Value				Limit	Result	
				(>)		
			14.532 MHz	500 kHz	Pass	

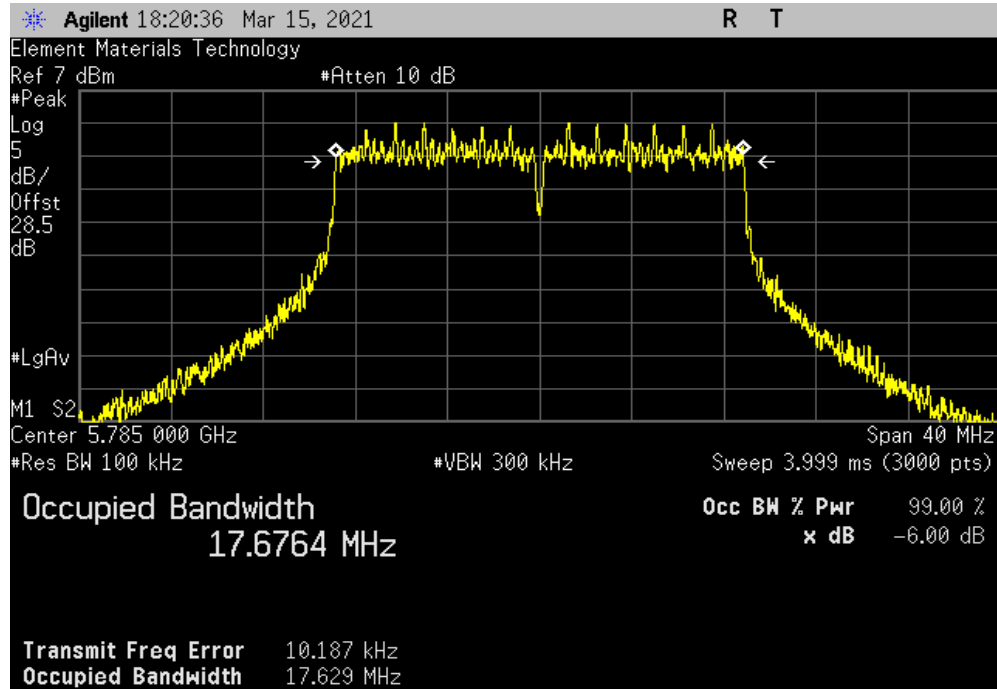


OCCUPIED BANDWIDTH 5.8 GHz CH 157 and 165

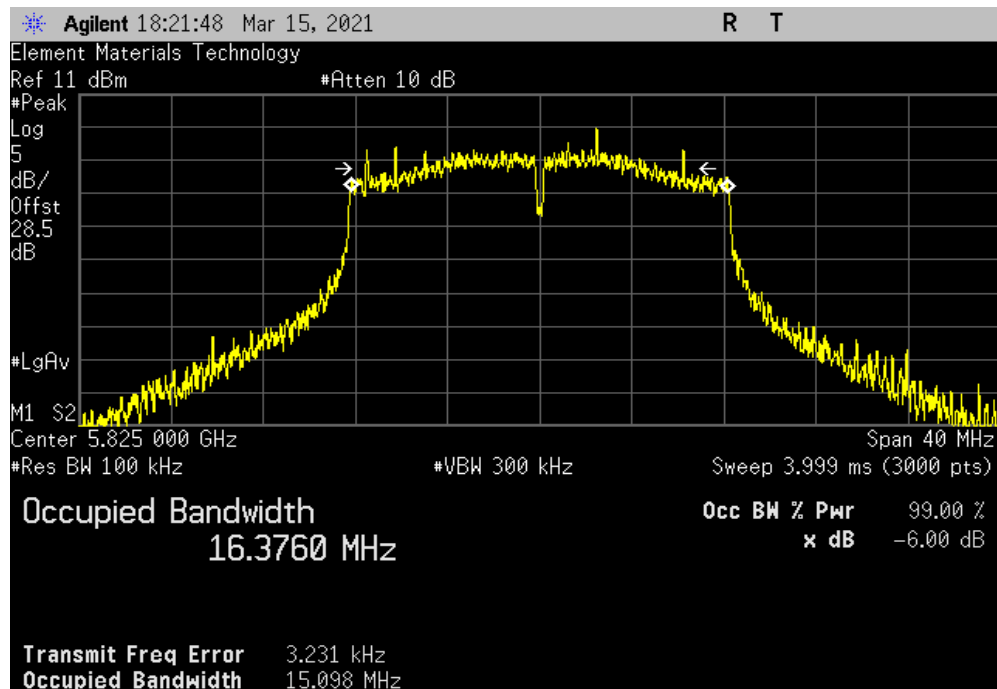


TMTx 2019.08.30.0 XMR 2020.12.30.0

5725 - 5785 MHz Band, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
Value				Limit	Result	
				(>)		
			17.629 MHz	500 kHz	Pass	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
Value				Limit	Result	
				(>)		
			15.098 MHz	500 kHz	Pass	

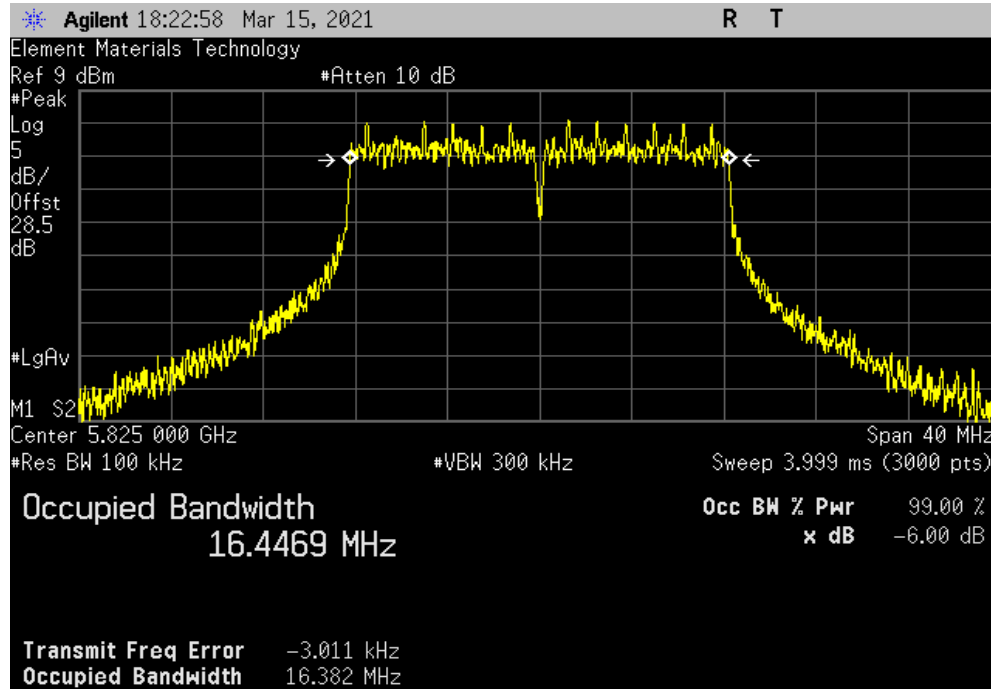


OCCUPIED BANDWIDTH 5.8 GHz CH 157 and 165

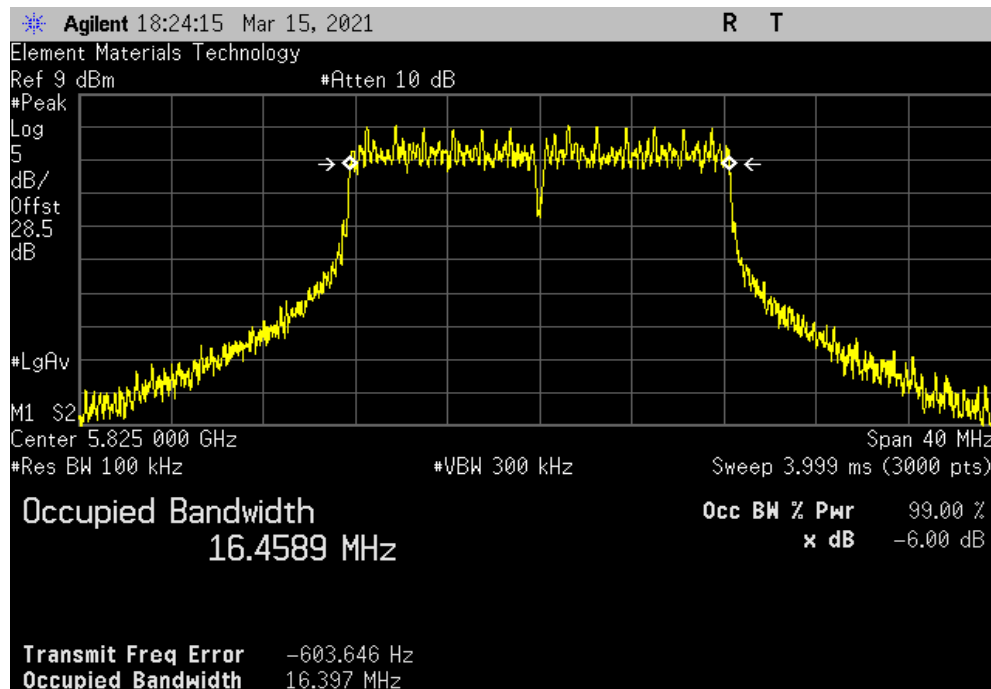


TUTX 2019.08.30.0 XM8 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
Value				Limit	Result	
				(>)		
			16.382 MHz	500 kHz	Pass	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
Value				Limit	Result	
				(>)		
			16.397 MHz	500 kHz	Pass	

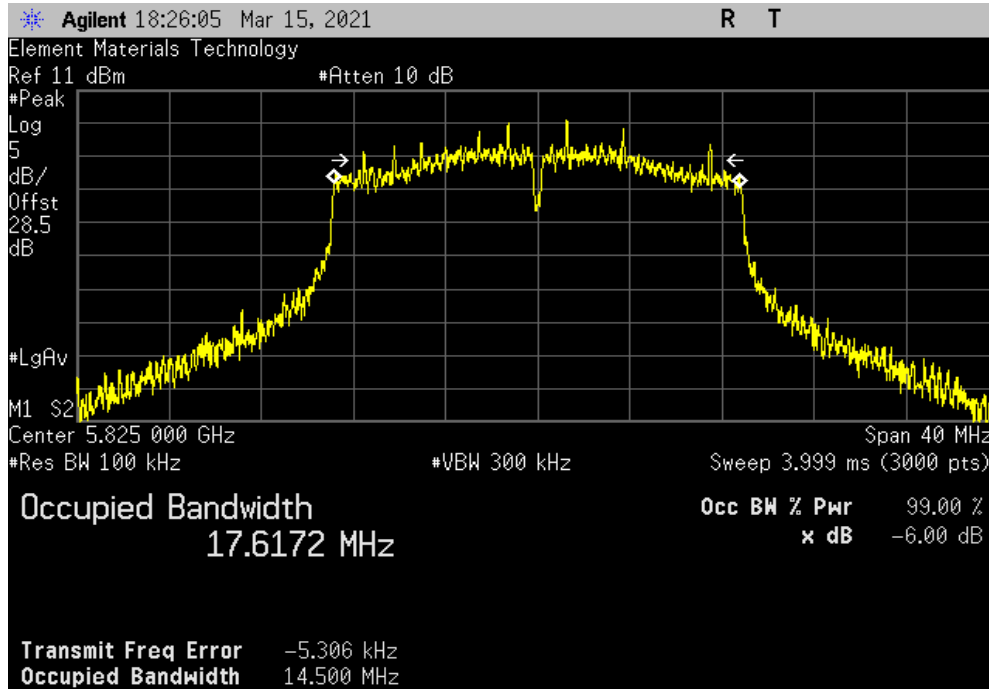


OCCUPIED BANDWIDTH 5.8 GHz CH 157 and 165

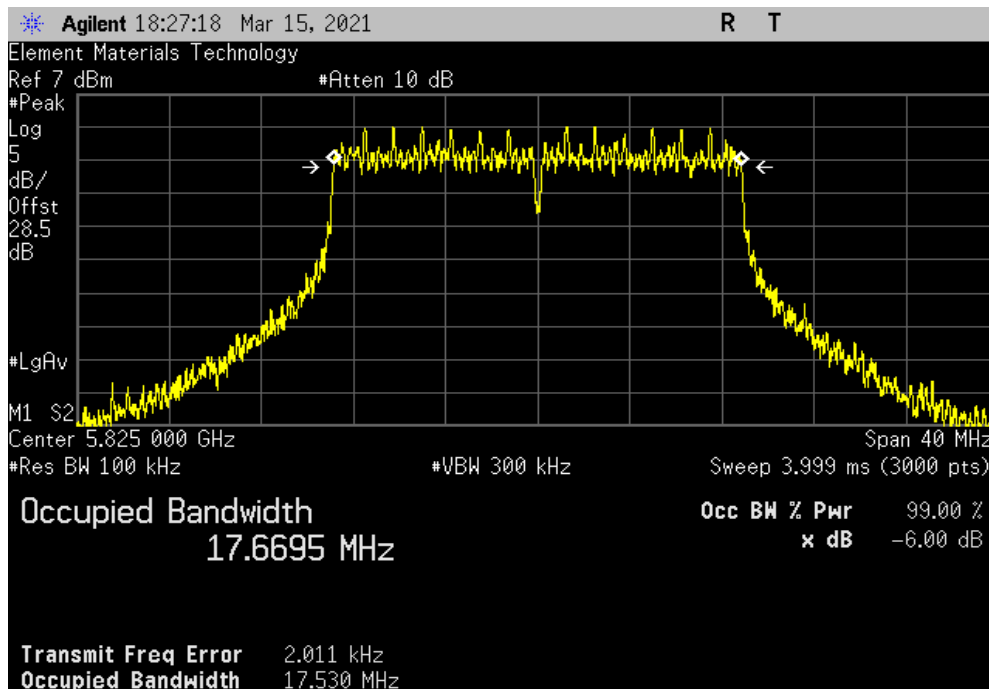


TMTx 2019.08.30.0 XMTx 2020.12.30.0

5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
Value				Limit	Result	
				(>)		
			14.5 MHz	500 kHz	Pass	



5725 - 5785 MHz Band, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
Value				Limit	Result	
				(>)		
			17.53 MHz	500 kHz	Pass	



SPURIOUS RADIATED EMISSIONS ETHERTRONICS ANTENNA



PSA-ESCI 2021.01.22.0

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

MODES OF OPERATION

Transmitting UNII Ch 165 (5825 MHz), 6 Mbps, 20 MHz BW
Transmitting UNII Ch 149 (5745 MHz), 6 Mbps, 20 MHz BW
Transmitting UNII Ch 36 (5180 MHz), Ch 48 (5240 MHz), Ch 149 (5745 MHz), Ch 157 (5785 MHz), Ch 165 (5825 MHz), 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7, 20 MHz BW

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

LGPD0256 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40000 MHz
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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.	Cal. Due
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2020-09-11	2021-09-11
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	NCR
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNP	2020-09-11	2021-09-11
Cable	Fairview Microwave	FMCA1975-200CM	MN1	2020-08-10	2021-08-10
Amplifier - Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	2020-08-10	2021-08-10
Antenna	A.H. Systems, Inc.	SAS-588	AJO	NCR	NCR
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-12001800-30-10P	PAP	2021-02-01	2022-02-01
Cable	Element	Biconilog Cable	MNX	2021-02-01	2022-02-01
Cable	Element	Standard Gain Cable	MNW	2021-02-01	2022-02-01
Cable	Element	Double Ridge Guide Horn Cables	MNV	2021-02-01	2022-02-01
Filter - Band Reject	Micro-Tronics	BRC50705	LFS	2020-09-21	2021-09-21
Filter - Band Reject	Micro-Tronics	BRC50704	LFR	2020-09-21	2021-09-21
Filter - Band Reject	Micro-Tronics	BRC50703	LFQ	2020-09-21	2021-09-21
Filter - High Pass	Micro-Tronics	HPM50111	HFM	2020-09-14	2021-09-14
Antenna - Biconilog	Teseq	CBL 6141B	AYD	2020-02-05	2022-02-05
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	2021-02-01	2022-02-01
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2021-02-01	2022-02-01
Amplifier - Pre-Amplifier	Miteq	AM-1064-9079 and SA18E-10	AOO	2021-02-01	2022-02-01
Antenna - Standard Gain	ETS-Lindgren	3160-08	AJP	NCR	NCR
Antenna - Standard Gain	ETS-Lindgren	3160-07	AJJ	NCR	NCR
Antenna - Double Ridge	ETS Lindgren	3115	AIB	2020-09-03	2022-09-03
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2020-05-07	2021-05-07
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2020-07-14	2021-07-14
Antenna - Double Ridge	ETS-Lindgren	3115	AJQ	2021-01-25	2023-01-25
Attenuator	Fairview Microwave	SA18E-20	TWZ	2020-09-14	2021-09-14
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2021-01-15	2022-01-15
Filter - Band Pass/Notch	Micro-Tronics	BRC50705	LFI	2020-09-14	2021-09-14
Filter - Band Pass/Notch	Micro-Tronics	BRC50704	LFH	2020-09-14	2021-09-14
Filter - Band Pass/Notch	Micro-Tronics	BRC50703	LFG	2020-09-14	2021-09-14
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	2020-12-27	2021-12-27

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2

0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

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.

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 in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

SPURIOUS RADIATED EMISSIONS ETHERTRONICS ANTENNA



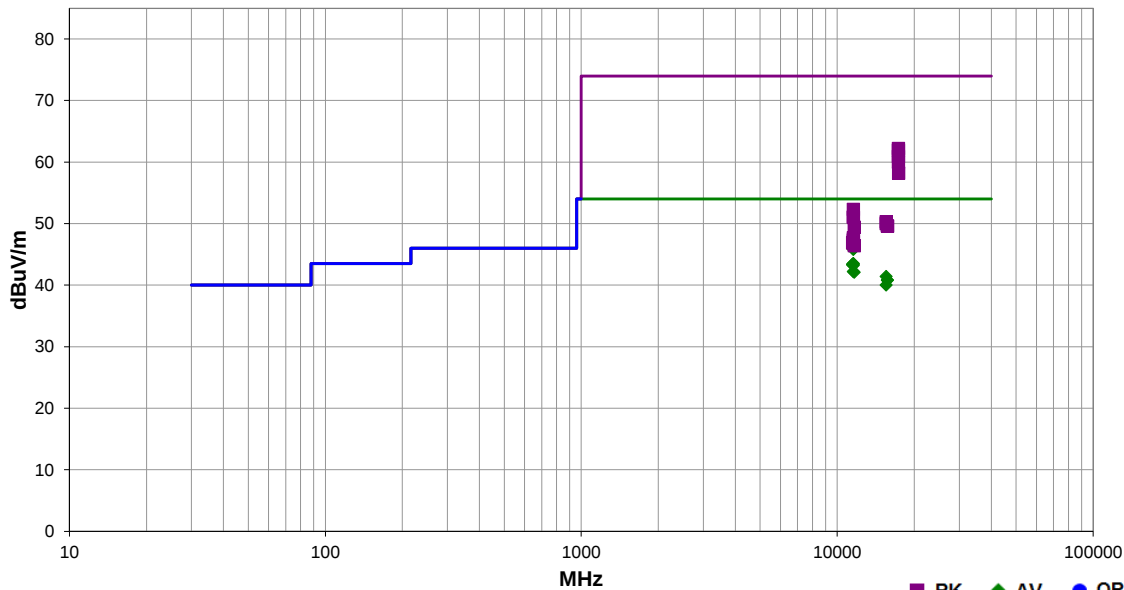
EmiRS 2021.01.08.0

PSA-ESCI 2021.01.22.0

Work Order:	LGPD0256	Date:	2021-03-18	 
Project:	None	Temperature:	22.8 °C	
Job Site:	MN05	Humidity:	26.6% RH	
Serial Number:	2420M00120	Barometric Pres.:	1028 mbar	
		Tested by: Christopher Heintzelman, Eric Brandon		
EUT:	SOMA3703-32-1780AKIR-A / 1027255 Rev B			
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting UNII Ch 36 (5180 MHz), Ch 48 (5240 MHz), Ch 149 (5745 MHz), Ch 157 (5785 MHz), Ch 165 (5825 MHz), 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7, 20 MHz BW			
Deviations:	None			
Comments:	Antenna located off the board. Ethertronics antenna. See comments for channel and data rate.			

Test Specifications	FCC 15.407:2021	Test Method	ANSI C63.10:2013
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Run #	116	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
11649.980	47.6	-0.8	1.9	181.0	0.1	0.0	Horz	AV	0.0	46.9	54.0	-7.1	EUT On Side, Ch 165, 6 Mbps
11569.970	47.4	-0.6	1.9	180.0	0.1	0.0	Horz	AV	0.0	46.9	54.0	-7.1	EUT On Side, Ch 157, 6 Mbps
11570.020	46.4	-0.6	2.0	144.0	0.1	0.0	Vert	AV	0.0	45.9	54.0	-8.1	EUT Vert, Ch 157, 6 Mbps
11569.990	46.3	-0.6	1.9	137.0	0.1	0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT On Side, Ch 157, 6 Mbps
11570.030	44.0	-0.6	1.8	42.9	0.1	0.0	Vert	AV	0.0	43.5	54.0	-10.5	EUT Horz, Ch 157, 6 Mbps
11489.980	44.6	-1.3	2.4	166.0	0.1	0.0	Vert	AV	0.0	43.4	54.0	-10.6	EUT Vert, Ch 149, 6 Mbps
11569.990	43.9	-0.6	1.8	42.9	0.1	0.0	Vert	AV	0.0	43.4	54.0	-10.6	EUT Horz, Ch 157, 6 Mbps
11489.990	44.5	-1.3	1.1	181.0	0.1	0.0	Horz	AV	0.0	43.3	54.0	-10.7	EUT On Side, Ch 149, 6 Mbps
11570.030	43.7	-0.6	1.6	227.0	0.1	0.0	Horz	AV	0.0	43.2	54.0	-10.8	EUT Vert, Ch 157, 6 Mbps
17353.290	49.8	12.4	1.9	106.0	0.0	0.0	Vert	PK	0.0	62.2	74.0	-11.8	EUT Vert, Ch 157, 6 Mbps
11569.960	42.7	-0.6	2.9	123.0	0.1	0.0	Horz	AV	0.0	42.2	54.0	-11.8	EUT Horz, Ch 157, 6 Mbps
11650.010	42.8	-0.8	1.6	175.9	0.1	0.0	Vert	AV	0.0	42.1	54.0	-11.9	EUT Vert, Ch 165, 6 Mbps
17353.230	49.5	12.4	1.8	102.0	0.0	0.0	Vert	PK	0.0	61.9	74.0	-12.1	EUT On Side, Ch 157, 6 Mbps
15539.910	30.6	10.7	1.5	156.9	0.1	0.0	Horz	AV	0.0	41.4	54.0	-12.6	EUT On Side, Ch 36, 6 Mbps
17352.830	48.5	12.4	1.8	102.0	0.0	0.0	Vert	PK	0.0	60.9	74.0	-13.1	EUT Vert, Ch 157, 6 Mbps
15720.030	30.7	10.0	1.6	221.9	0.1	0.0	Vert	AV	0.0	40.8	54.0	-13.2	EUT Vert, Ch 48, 6 Mbps
15720.010	30.7	10.0	2.3	171.9	0.1	0.0	Horz	AV	0.0	40.8	54.0	-13.2	EUT On Side, Ch 48, 6 Mbps
17353.130	47.6	12.4	1.9	150.9	0.0	0.0	Horz	PK	0.0	60.0	74.0	-14.0	EUT On Side, Ch 157, 6 Mbps
15539.880	29.2	10.7	2.1	228.9	0.1	0.0	Vert	AV	0.0	40.0	54.0	-14.0	EUT Vert, Ch 36, 6 Mbps
17355.740	45.7	12.5	1.8	102.0	0.0	0.0	Vert	PK	0.0	58.2	74.0	-15.8	EUT Vert, Ch 157, 36 Mbps
11570.040	52.9	-0.6	1.9	180.0	0.0	0.0	Horz	PK	0.0	52.3	74.0	-21.7	EUT On Side, Ch 157, 6 Mbps
11569.970	51.7	-0.6	1.9	137.0	0.0	0.0	Vert	PK	0.0	51.1	74.0	-22.9	EUT On Side, Ch 157, 6 Mbps
11569.870	51.6	-0.6	2.0	144.0	0.0	0.0	Vert	PK	0.0	51.0	74.0	-23.0	EUT Vert, Ch 157, 6 Mbps

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
15540.400	39.6	10.7	2.1	228.9		0.0	Vert	PK	0.0	50.3	74.0	-23.7	EUT Vert, Ch 36, 6 Mbps
15540.130	39.3	10.7	1.5	156.9		0.0	Horz	PK	0.0	50.0	74.0	-24.0	EUT On Side, Ch 36, 6 Mbps
15719.810	39.6	10.0	1.6	221.9		0.0	Vert	PK	0.0	49.6	74.0	-24.4	EUT Vert, Ch 48, 6 Mbps
15719.910	39.6	10.0	2.3	171.9		0.0	Horz	PK	0.0	49.6	74.0	-24.4	EUT On Side, Ch 48, 6 Mbps
11650.050	50.2	-0.8	1.9	181.0		0.0	Horz	PK	0.0	49.4	74.0	-24.6	EUT On Side, Ch 165, 6 Mbps
11570.030	48.3	-0.6	1.8	42.9		0.0	Vert	PK	0.0	47.7	74.0	-26.3	EUT Horz, Ch 157, 6 Mbps
11570.000	48.0	-0.6	1.6	227.0		0.0	Horz	PK	0.0	47.4	74.0	-26.6	EUT Vert, Ch 157, 6 Mbps
11569.920	47.8	-0.6	2.9	123.0		0.0	Horz	PK	0.0	47.2	74.0	-26.8	EUT Horz, Ch 157, 6 Mbps
11490.060	48.2	-1.3	1.1	181.0		0.0	Horz	PK	0.0	46.9	74.0	-27.1	EUT On Side, Ch 149, 6 Mbps
11490.160	48.2	-1.3	2.4	166.0		0.0	Vert	PK	0.0	46.9	74.0	-27.1	EUT Vert, Ch 149, 6 Mbps
11649.830	47.2	-0.8	1.6	175.9		0.0	Vert	PK	0.0	46.4	74.0	-27.6	EUT Vert, Ch 165, 6 Mbps

SPURIOUS RADIATED EMISSIONS ETHERTRONICS ANTENNA



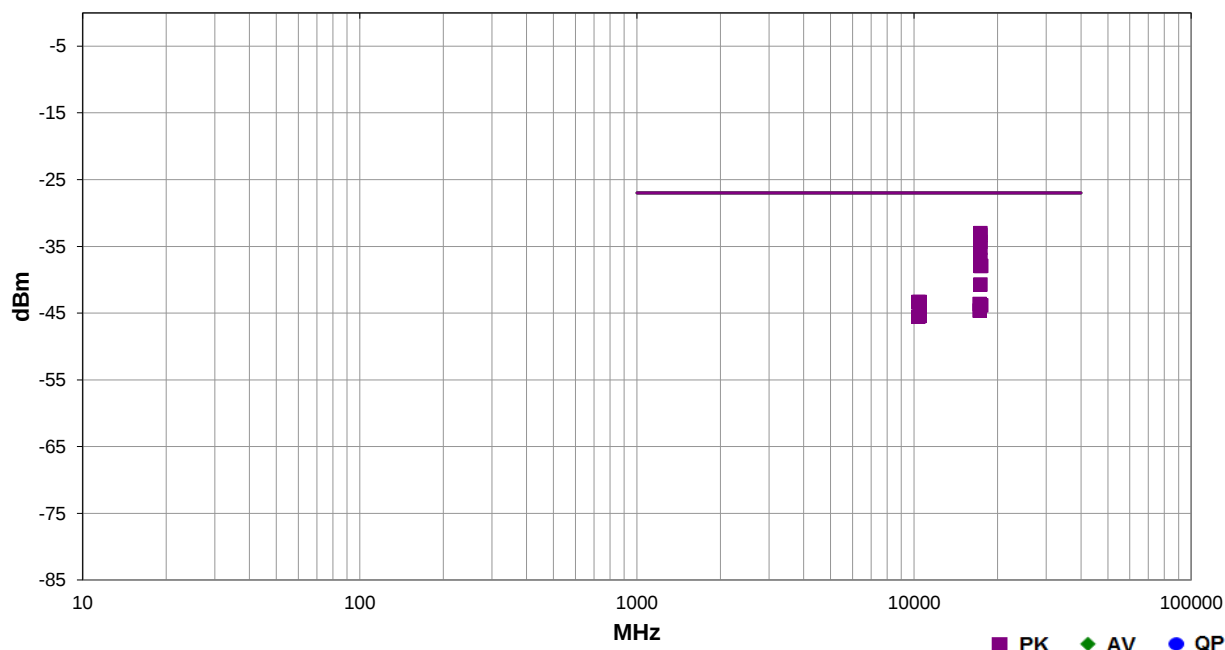
EmiR5 2021.01.08.0

PSA-ESCI 2021.01.22.0

Work Order:	LGPD0256	Date:	2021-03-18	
Project:	None	Temperature:	22.8 °C	
Job Site:	MN05	Humidity:	26.6% RH	
Serial Number:	2420M00120	Barometric Pres.:	1028 mbar	
EUT:	SOMA3703-32-1780AKIR-A / 1027255 Rev B			Tested by: Christopher Heintzelman, Eric Brandon
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting UNII Ch 36 (5180 MHz), Ch 48 (5240 MHz), Ch 149 (5745 MHz), Ch 157 (5785 MHz), Ch 165 (5825 MHz), 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7, 20 MHz BW			
Deviations:	None			
Comments:	Antenna located off the board. Ethertronics antenna. See comments for channel and data rate.			

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	116	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
17353.290	1.9	106.0	Vert	PK	497.9E-9	-33.0	-27.0	-6.0	EUT Vert, Ch 157, 6 Mbps
17353.230	1.8	102.0	Vert	PK	464.6E-9	-33.3	-27.0	-6.3	EUT Vert, Ch 157, MCS0
17352.830	1.8	102.0	Vert	PK	369.1E-9	-34.3	-27.0	-7.3	EUT Vert, Ch 157, 6 Mbps
17353.130	1.9	150.9	Horz	PK	300.0E-9	-35.2	-27.0	-8.2	EUT On Side, Ch 157, 6 Mbps
17355.740	1.8	102.0	Vert	PK	198.2E-9	-37.0	-27.0	-10.0	EUT Vert, Ch 157, 36 Mbps
17476.330	1.5	138.9	Horz	PK	161.1E-9	-37.9	-27.0	-10.9	EUT On Side, Ch 165, 6 Mbps
17355.700	1.8	102.0	Vert	PK	161.1E-9	-37.9	-27.0	-10.9	EUT Vert, Ch 157, 54 Mbps
17355.050	1.8	102.0	Vert	PK	84.6E-9	-40.7	-27.0	-13.7	EUT Vert, Ch 157, MCS7
10481.890	2.9	127.0	Vert	PK	46.5E-9	-43.3	-27.0	-16.3	EUT Vert, Ch 48, 6 Mbps
10361.970	2.3	180.0	Vert	PK	46.5E-9	-43.3	-27.0	-16.3	EUT Vert, Ch 36, 6 Mbps
17234.680	1.5	218.9	Vert	PK	43.4E-9	-43.6	-27.0	-16.6	EUT Vert, Ch 149, 6 Mbps
17475.030	1.9	102.9	Vert	PK	41.4E-9	-43.8	-27.0	-16.8	EUT Vert, Ch 165, 6 Mbps
17235.150	3.0	106.9	Horz	PK	34.4E-9	-44.6	-27.0	-17.6	EUT On Side, Ch 149, 6 Mbps
10480.040	2.0	181.9	Horz	PK	28.6E-9	-45.4	-27.0	-18.4	EUT On Side, Ch 48, 6 Mbps
10359.860	2.0	177.0	Horz	PK	28.0E-9	-45.5	-27.0	-18.5	EUT On Side, Ch 36, 6 Mbps

SPURIOUS RADIATED EMISSIONS ETHERTRONICS ANTENNA

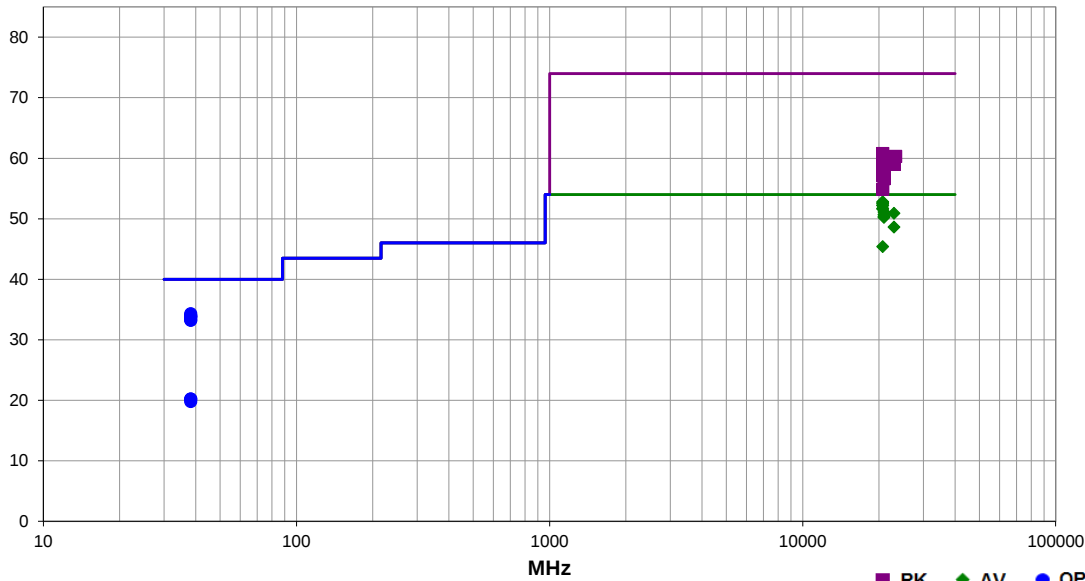


EmiRS 2021.01.08.0 PSA-ESCI 2021.03.17.0

Work Order:	LGPD0256	Date:	2021-03-22	 
Project:	None	Temperature:	22.7 °C	
Job Site:	MN09	Humidity:	30.9% RH	
Serial Number:	2420M00120	Barometric Pres.:	1019 mbar	
EUT:	SOMA3703-32-1780AKIR-A / 1027255 Rev B			
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting UNII Ch 36 (5180 MHz), Ch 48 (5240 MHz), Ch 149 (5745 MHz), Ch 157 (5785 MHz), Ch 165 (5825 MHz), 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7, 20 MHz BW			
Deviations:	None			
Comments:	Antenna located off the board. Ethertronics antenna. See comments for channel and data rate. All power settings used for testing are at or above the level specified for use in the field.			

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	119	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	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
20720.000	35.2	16.8	1.5	99.0	0.8	0.0	Horz	AV	0.0	52.8	54.0	-1.2	EUT On Side, Ch 36, MCS7
20720.040	35.1	16.8	1.5	99.0	0.7	0.0	Horz	AV	0.0	52.6	54.0	-1.4	EUT On Side, Ch 36, 54 Mbps
20719.980	35.6	16.8	1.5	77.0	0.1	0.0	Horz	AV	0.0	52.5	54.0	-1.5	PWR 15, EUT On Side, Ch 36, 6 Mbps
20719.930	35.2	16.8	1.5	99.0	0.2	0.0	Horz	AV	0.0	52.2	54.0	-1.8	EUT On Side, Ch 36, MCS0
20719.970	34.9	16.8	1.5	99.0	0.5	0.0	Horz	AV	0.0	52.2	54.0	-1.8	EUT On Side, Ch 36, 36 Mbps
20719.980	34.8	16.8	1.5	99.0	0.1	0.0	Horz	AV	0.0	51.7	54.0	-2.3	EUT On Side, Ch 36, 6 Mbps
20720.050	34.7	16.8	1.5	124.0	0.1	0.0	Vert	AV	0.0	51.6	54.0	-2.4	EUT Vert, Ch 36, 6 Mbps
20960.000	33.9	17.1	1.5	188.0	0.1	0.0	Horz	AV	0.0	51.1	54.0	-2.9	PWR 18, EUT On Side, Ch 48, 6 Mbps
22979.980	32.4	18.4	1.5	194.0	0.1	0.0	Horz	AV	0.0	50.9	54.0	-3.1	EUT On Side, Ch 149, 6 Mbps
20960.050	33.5	17.1	1.5	97.0	0.1	0.0	Horz	AV	0.0	50.7	54.0	-3.3	PWR 18, EUT On Side, Ch 48, 6 Mbps
20959.990	33.2	17.1	1.5	125.0	0.1	0.0	Vert	AV	0.0	50.4	54.0	-3.6	EUT Vert, Ch 48, 6 Mbps
20959.980	33.0	17.1	1.5	139.0	0.1	0.0	Vert	AV	0.0	50.2	54.0	-3.8	PWR 18, EUT Vert, Ch 48, 6 Mbps
22979.950	30.1	18.4	1.5	90.0	0.1	0.0	Vert	AV	0.0	48.6	54.0	-5.4	EUT Vert, Ch 149, 6 Mbps
38.229	32.6	1.7	1.0	360.0	0.0	0.0	Vert	QP	0.0	34.3	40.0	-5.7	EUT Horz, Ch 165, 6 Mbps
38.233	32.3	1.7	1.0	203.0	0.0	0.0	Vert	QP	0.0	34.0	40.0	-6.0	EUT Horz, Ch 36, 6 Mbps
38.250	32.2	1.7	1.0	83.0	0.0	0.0	Vert	QP	0.0	33.9	40.0	-6.1	EUT Vert, Ch 36, 6 Mbps
38.250	32.1	1.7	1.0	312.0	0.0	0.0	Vert	QP	0.0	33.8	40.0	-6.2	EUT Horz, Ch 157, 6 Mbps
38.250	32.0	1.7	1.0	0.0	0.0	0.0	Vert	QP	0.0	33.7	40.0	-6.3	EUT Horz, Ch 149, 6 Mbps
38.250	31.6	1.7	1.0	120.0	0.0	0.0	Vert	QP	0.0	33.3	40.0	-6.7	EUT Horz, Ch 48, 6 Mbps
38.248	31.5	1.7	1.0	49.0	0.0	0.0	Vert	QP	0.0	33.2	40.0	-6.8	EUT On Side, Ch 36, 6 Mbps
20719.980	28.5	16.8	1.5	191.0	0.1	0.0	Vert	AV	0.0	45.4	54.0	-8.6	PWR 15, EUT Vert, Ch 36, 6 Mbps
20720.100	44.0	16.8	1.5	78.0	0.0	0.0	Horz	PK	0.0	60.8	74.0	-13.2	EUT On Side, Ch 36, 6 Mbps
23299.790	41.7	18.6	1.5	194.0	0.0	0.0	Horz	PK	0.0	60.3	74.0	-13.7	EUT On Side, Ch 165, 6 Mbps
20959.920	42.9	17.1	1.5	185.0	0.0	0.0	Horz	PK	0.0	60.0	74.0	-14.0	EUT On Side, Ch 48, 6 Mbps
20960.190	42.8	17.1	1.5	96.0	0.0	0.0	Horz	PK	0.0	59.9	74.0	-14.1	EUT On Side, Ch 48, 6 Mbps

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	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
20719.930	42.6	16.8	1.5	99.0		0.0	Horz	PK	0.0	59.4	74.0	-14.6	EUT On Side, Ch 36, 54 Mbps
20720.230	42.5	16.8	1.5	99.0		0.0	Horz	PK	0.0	59.3	74.0	-14.7	EUT On Side, Ch 36, 36 Mbps
20960.130	42.0	17.1	1.5	97.0		0.0	Horz	PK	0.0	59.1	74.0	-14.9	EUT On Side, Ch 48, 6 Mbps
22980.940	40.6	18.4	1.5	194.0		0.0	Horz	PK	0.0	59.0	74.0	-15.0	EUT On Side, Ch 149, 6 Mbps
20720.130	42.1	16.8	1.5	99.0		0.0	Horz	PK	0.0	58.9	74.0	-15.1	EUT On Side, Ch 36, MCS7
20720.210	41.4	16.8	1.5	77.0		0.0	Horz	PK	0.0	58.2	74.0	-15.8	PWR 15, EUT On Side, Ch 36, 6 Mbps
20719.980	41.2	16.8	1.5	99.0		0.0	Horz	PK	0.0	58.0	74.0	-16.0	EUT On Side, Ch 36, MCS0
20959.800	40.8	17.1	1.5	125.0		0.0	Vert	PK	0.0	57.9	74.0	-16.1	EUT Vert, Ch 48, 6 Mbps
20719.880	41.1	16.8	1.5	124.0		0.0	Vert	PK	0.0	57.9	74.0	-16.1	EUT Vert, Ch 36, 6 Mbps
20959.830	40.4	17.1	1.5	188.0		0.0	Horz	PK	0.0	57.5	74.0	-16.5	PWR 18, EUT On Side, Ch 48, 6 Mbps
20960.070	40.1	17.1	1.5	97.0		0.0	Horz	PK	0.0	57.2	74.0	-16.8	PWR 18, EUT On Side, Ch 48, 6 Mbps
20720.130	40.4	16.8	1.5	99.0		0.0	Horz	PK	0.0	57.2	74.0	-16.8	EUT On Side, Ch 36, 6 Mbps
20959.780	39.5	17.1	1.5	139.0		0.0	Vert	PK	0.0	56.6	74.0	-17.4	PWR 18, EUT Vert, Ch 48, 6 Mbps
20720.130	38.1	16.8	1.5	191.0		0.0	Vert	PK	0.0	54.9	74.0	-19.1	PWR 15, EUT Vert, Ch 36, 6 Mbps
38.233	18.5	1.7	1.0	224.0		0.0	Horz	QP	0.0	20.2	40.0	-19.8	EUT Horz, Ch 36, 6 Mbps
38.230	18.5	1.7	1.0	95.0		0.0	Horz	QP	0.0	20.2	40.0	-19.8	EUT Vert, Ch 36, 6 Mbps
38.249	18.1	1.7	3.8	34.0		0.0	Horz	QP	0.0	19.8	40.0	-20.2	EUT On Side, Ch 36, 6 Mbps

SPURIOUS RADIATED EMISSIONS ETHERTRONICS ANTENNA



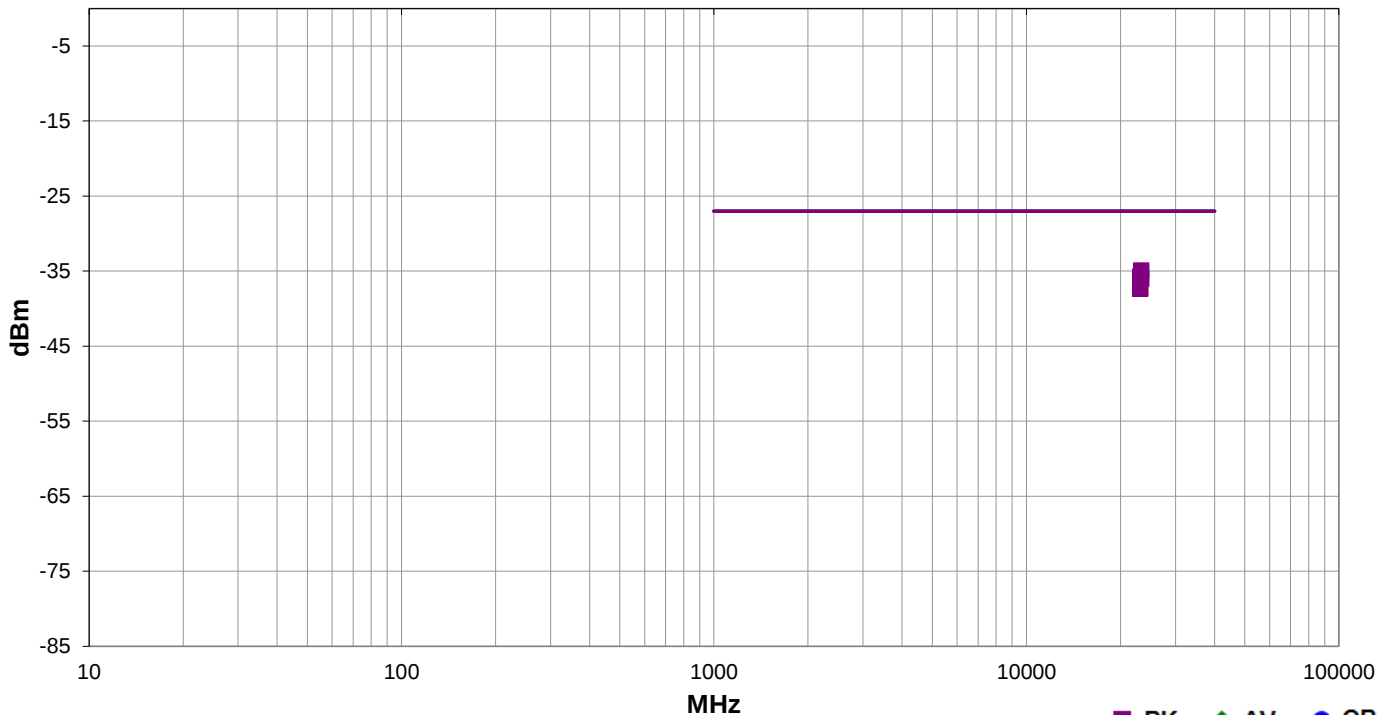
EmiR5 2021.01.08.0

PSA-ESCI 2021.03.17.0

Work Order:	LGPD0256	Date:	2021-03-22	 	
Project:	None	Temperature:	22.7 °C		
Job Site:	MN09	Humidity:	30.9% RH		
Serial Number:	2420M00120	Barometric Pres.:	1019 mbar	Tested by:	Christopher Heintzelman, Eric Brandon
EUT:	SOMA3703-32-1780AKIR-A / 1027255 Rev B				
Configuration:	1				
Customer:	Logic PD, Inc.				
Attendees:	Eric Fritz				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmitting UNII Ch 157 (5785 MHz), Ch 165 (5825 MHz), 6 Mbps, 20 MHz BW				
Deviations:	None				
Comments:	Antenna located off the board. Ethertronics antenna. See comments for channel and data rate.				

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	119	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
23299.790	1.5	194.0	Horz	PK	321.5E-9	-34.9	-27.0	-7.9	EUT On Side, Ch 165, 6 Mbps
23140.090	1.5	196.0	Horz	PK	267.4E-9	-35.7	-27.0	-8.7	EUT On Side, Ch 157, 6 Mbps
23299.810	1.5	139.0	Vert	PK	249.5E-9	-36.0	-27.0	-9.0	EUT Vert, Ch 165, 6 Mbps
23140.500	1.5	173.0	Vert	PK	185.0E-9	-37.3	-27.0	-10.3	EUT Vert, Ch 157, 6 Mbps

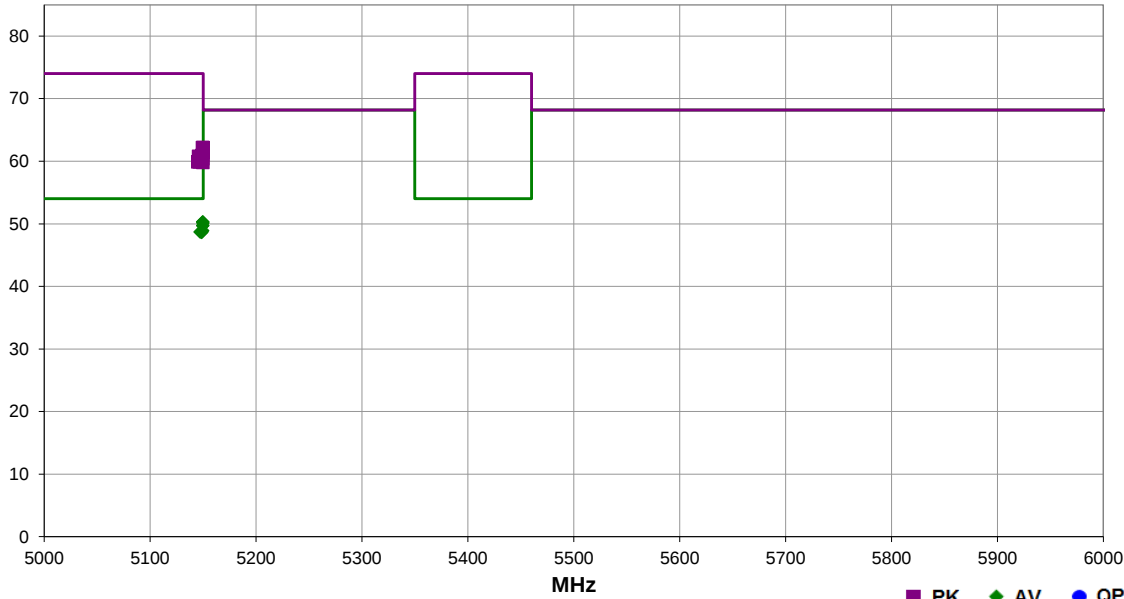
SPURIOUS RADIATED EMISSIONS ETHERTRONICS ANTENNA



Work Order:	LGPD0256	Date:	2021-03-18	 
Project:	None	Temperature:	22.8 °C	
Job Site:	MN05	Humidity:	26.6% RH	
Serial Number:	2420M00120	Barometric Pres.:	1028 mbar	
EUT:		SOMA3703-32-1780AKIR-A / 1027255 Rev B		
Configuration: 1				
Customer:		Logic PD, Inc.		
Attendees:		Eric Fritz		
EUT Power:		120VAC/60Hz		
Operating Mode:		Transmitting UNII Ch 36 (5180 MHz), 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7, 20 MHz BW		
Deviations:		None		
Comments:		Antenna located off the board. Ethertronics antenna. See comments for EUT orientation.		

Test Specifications	Test Method
FCC 15.407:2021, FCC 15.205:2021	ANSI C63.10:2013

Run #	133	Test Distance (m)	0.7	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
5149.983	27.1	35.0	1.5	358.9	0.8	0.0	Vert	AV	-12.6	50.3	54.0	-3.7	EUT Vert, Ch 36, MCS7
5149.500	27.2	35.0	1.5	358.9	0.7	0.0	Vert	AV	-12.6	50.3	54.0	-3.7	EUT Vert, Ch 36, 54 Mbps
5149.900	27.2	35.0	1.5	358.9	0.5	0.0	Vert	AV	-12.6	50.1	54.0	-3.9	EUT Vert, Ch 36, 36 Mbps
5149.708	27.2	35.0	1.5	358.9	0.1	0.0	Vert	AV	-12.6	49.7	54.0	-4.3	EUT Vert, Ch 36, 6 Mbps
5149.750	27.1	35.0	1.5	358.9	0.2	0.0	Vert	AV	-12.6	49.7	54.0	-4.3	EUT Vert, Ch 36, MCS0
5149.667	26.4	35.0	1.5	239.9	0.1	0.0	Horz	AV	-12.6	48.9	54.0	-5.1	EUT Horz, Ch 36, 6 Mbps
5148.333	26.2	35.0	1.5	210.9	0.1	0.0	Horz	AV	-12.6	48.7	54.0	-5.3	EUT Vert, Ch 36, 6 Mbps
5149.042	26.2	35.0	1.5	247.9	0.1	0.0	Horz	AV	-12.6	48.7	54.0	-5.3	EUT On Side, Ch 36, 6 Mbps
5147.108	26.2	35.0	1.5	26.0	0.1	0.0	Vert	AV	-12.6	48.7	54.0	-5.3	EUT Horz, Ch 36, 6 Mbps
5148.583	26.1	35.0	1.5	279.9	0.1	0.0	Vert	AV	-12.6	48.6	54.0	-5.4	EUT On Side, Ch 36, 6 Mbps
5149.942	39.8	35.0	1.5	358.9	0.0	0.0	Vert	PK	-12.6	62.2	74.0	-11.8	EUT Vert, Ch 36, 6 Mbps
5149.408	39.8	35.0	1.5	358.9	0.0	0.0	Vert	PK	-12.6	62.2	74.0	-11.8	EUT Vert, Ch 36, MCS0
5149.892	39.0	35.0	1.5	358.9	0.0	0.0	Vert	PK	-12.6	61.4	74.0	-12.6	EUT Vert, Ch 36, 54 Mbps
5149.592	38.6	35.0	1.5	358.9	0.0	0.0	Vert	PK	-12.6	61.0	74.0	-13.0	EUT Vert, Ch 36, MCS7
5148.817	38.5	35.0	1.5	358.9	0.0	0.0	Vert	PK	-12.6	60.9	74.0	-13.1	EUT Vert, Ch 36, 36 Mbps
5145.642	38.4	35.0	1.5	210.9	0.0	0.0	Horz	PK	-12.6	60.8	74.0	-13.2	EUT Vert, Ch 36, 6 Mbps
5149.767	38.0	35.0	1.5	239.9	0.0	0.0	Horz	PK	-12.6	60.4	74.0	-13.6	EUT Horz, Ch 36, 6 Mbps
5146.725	37.5	35.0	1.5	247.9	0.0	0.0	Horz	PK	-12.6	59.9	74.0	-14.1	EUT On Side, Ch 36, 6 Mbps
5145.100	37.5	35.0	1.5	279.9	0.0	0.0	Vert	PK	-12.6	59.9	74.0	-14.1	EUT On Side, Ch 36, 6 Mbps
5149.725	37.4	35.0	1.5	26.0	0.0	0.0	Vert	PK	-12.6	59.8	74.0	-14.2	EUT Horz, Ch 36, 6 Mbps

SPURIOUS RADIATED EMISSIONS ETHERTRONICS ANTENNA



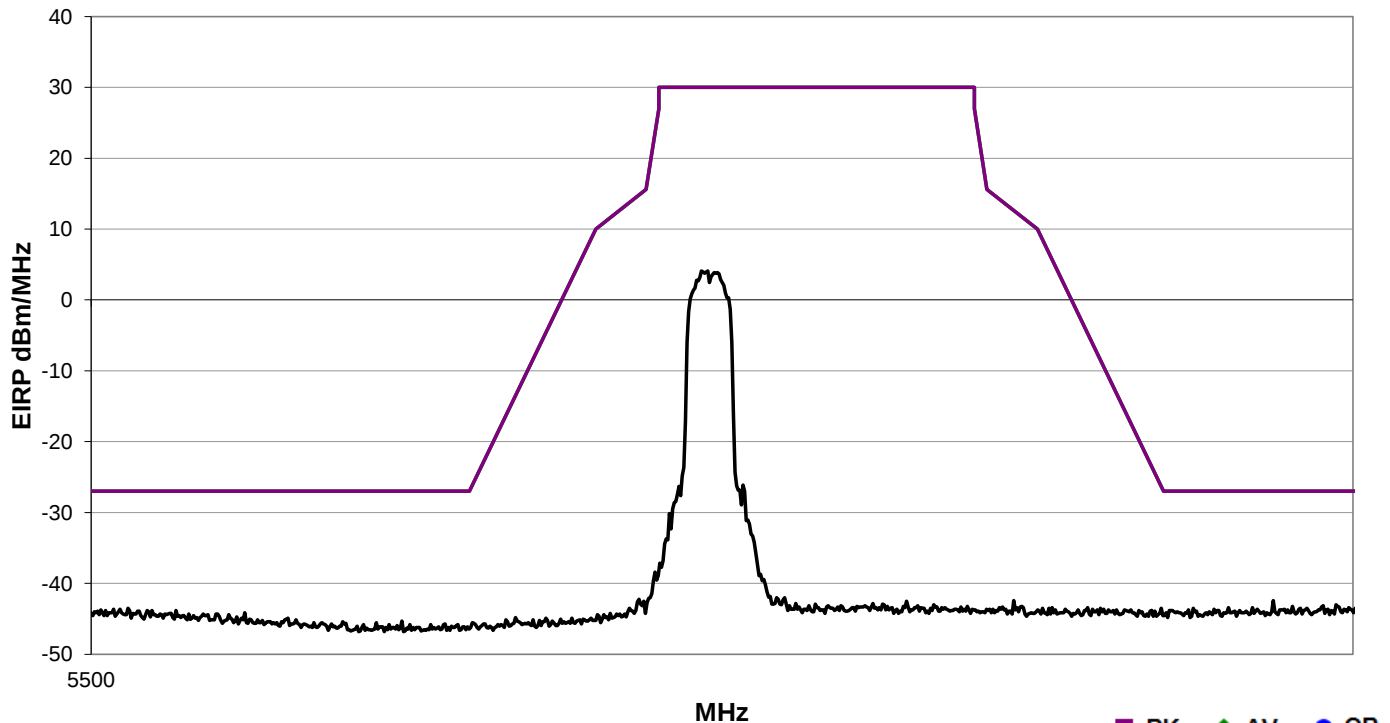
EmiR5 2021.01.08.0

PSA-ESCI 2021.01.22.0

Work Order:	LGPD0256	Date:	2021-03-18	 	
Project:	None	Temperature:	22.8 °C		
Job Site:	MN05	Humidity:	26.6% RH		
Serial Number:	2420M00120	Barometric Pres.:	1028 mbar	Tested by:	Christopher Heintzelman, Eric Brandon
EUT:	SOMA3703-32-1780AKIR-A / 1027255 Rev B				
Configuration:	1				
Customer:	Logic PD, Inc.				
Attendees:	Eric Fritz				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmitting UNII Ch 149 (5745 MHz), 6 Mbps, 20 MHz BW				
Deviations:	None				
Comments:	Antenna located off the board. Ethertronics antenna.				

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	134	Test Distance (m)	0.7	Antenna Height(s)	1.25 (m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Transducer (dB)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
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All emissions were below the limit (see graph above).

SPURIOUS RADIATED EMISSIONS ETHERTRONICS ANTENNA



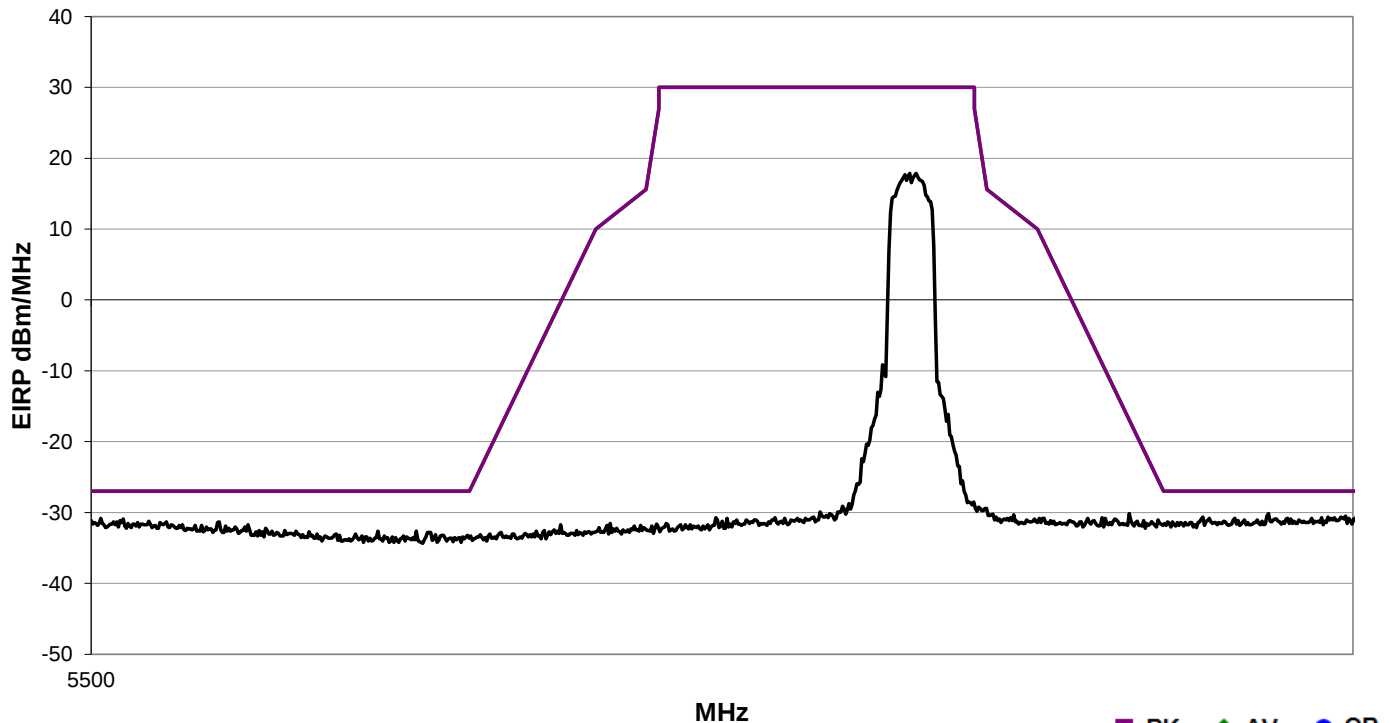
EmiR5 2021.01.08.0

PSA-ESCI 2021.01.22.0

Work Order:	LGPD0256	Date:	2021-03-18	 
Project:	None	Temperature:	22.8 °C	
Job Site:	MN05	Humidity:	26.6% RH	
Serial Number:	2420M00120	Barometric Pres.:	1028 mbar	
EUT:		SOMA3703-32-1780AKIR-A / 1027255 Rev B		
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting UNII Ch 165 (5825 MHz), 6 Mbps, 20 MHz BW			
Deviations:	None			
Comments:	Antenna located off the board. Ethertronics antenna.			

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	135	Test Distance (m)	0.7	Antenna Height(s)	1.25 (m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Transducer (dB)	Polarity/Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
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All emissions were below the limit (see graph above).

SPURIOUS RADIATED EMISSIONS PULSE ELECTRONICS ANTENNA



PSA-ESCI 2021.03.17.0

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

MODES OF OPERATION

Transmitting WiFi Ch 149 (5745 MHz), 6 Mbps, 20 MHz BW
Transmitting WiFi Ch 165 (5825 MHz), 6 Mbps, 20 MHz BW
Transmitting WiFi Ch 36 (5180 MHz) at 6, 36, 54 Mbps, MCS0, MCS7. 20 MHz BW
Transmitting WiFi Ch 157 (5785 MHz) and Ch 165 (5825 MHz) at 6 Mbps. 20 MHz BW
Transmitting WiFi Ch 165 (5825 MHz), 157 (5785 MHz), 149 (5745 MHz), 48 (5240 MHz), 36 (5180 MHz) at 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7. 20 MHz BW

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

LGPD0256 - 4

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40000 MHz
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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.	Cal. Due
Antenna	A.H. Systems, Inc.	SAS-588	AJO	NCR	NCR
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNP	2020-09-11	2021-09-11
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2020-09-11	2021-09-11
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	NCR
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-12001800-30-10P	PAP	2021-02-01	2022-02-01
Cable	Element	Biconilog Cable	MNX	2021-02-01	2022-02-01
Cable	Element	Standard Gain Cable	MNW	2021-02-01	2022-02-01
Cable	Element	Double Ridge Guide Horn Cables	MNV	2021-02-01	2022-02-01
Filter - Low Pass	Micro-Tronics	LPM50004	HGG	2020-09-14	2021-09-14
Antenna - Biconilog	Teseq	CBL 6141B	AYD	2020-02-05	2022-02-05
Attenuator	Fairview Microwave	SA18E-20	TWZ	2020-09-14	2021-09-14
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	2021-03-07	2022-03-07
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2021-01-15	2022-01-15
Cable	ESM Cable Corp.	Bilog Cables	MNH	2020-10-06	2021-10-06
Cable	Fairview Microwave	FMCA1975-200CM	MN1	2020-08-10	2021-08-10
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	2020-09-24	2021-09-24
Filter - Band Pass/Notch	Micro-Tronics	BRC50705	LFI	2020-09-14	2021-09-14
Filter - Band Pass/Notch	Micro-Tronics	BRC50704	LFH	2020-09-14	2021-09-14
Filter - Band Pass/Notch	Micro-Tronics	BRC50703	LFG	2020-09-14	2021-09-14
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	NCR
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2019-09-03	2021-09-03
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2021-01-15	2022-01-15
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	2021-01-15	2022-01-15
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2021-01-15	2022-01-15
Amplifier - Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	2020-08-10	2021-08-10
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2020-10-06	2021-10-06
Antenna - Double Ridge	ETS-Lindgren	3115	AJQ	2021-01-25	2023-01-25
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2020-07-14	2021-07-14

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
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0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

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.

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 in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

SPURIOUS RADIATED EMISSIONS PULSE ELECTRONICS ANTENNA



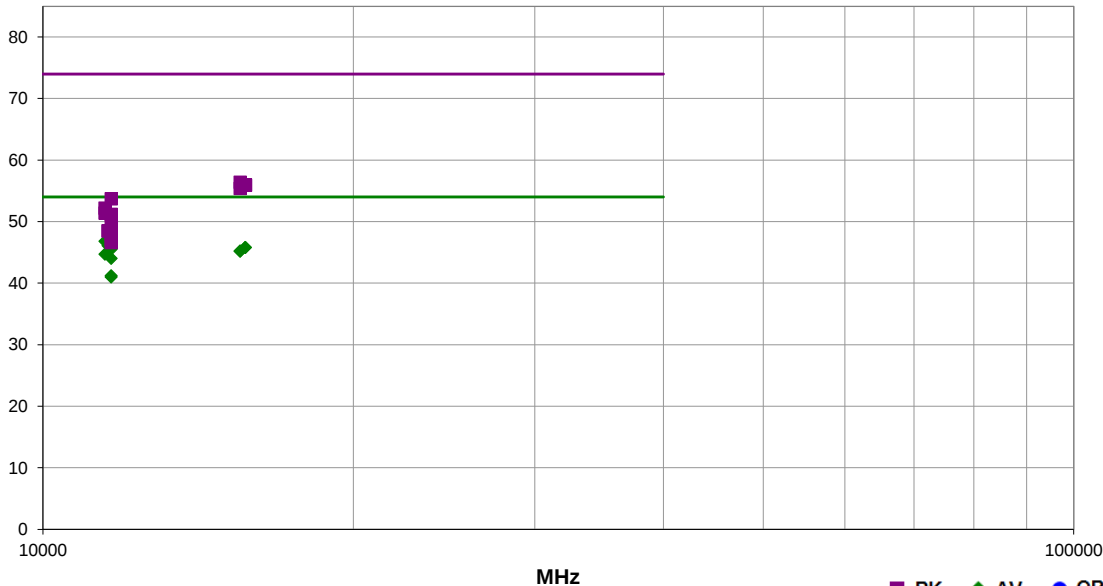
EmiR5 2021.01.08.0

PSA-ESCI 2021.03.17.0

Work Order:	LGPD0256	Date:	2021-03-23	 
Project:	None	Temperature:	22.2 °C	
Job Site:	MN09	Humidity:	35.3% RH	
Serial Number:	2420M00120	Barometric Pres.:	1012 mbar	
EUT:		SOMA3703-32-1780AKIR-A / 1027255 Rev B		
Configuration:	4			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting WiFi Ch 165 (5825 MHz), 157 (5785 MHz), 149 (5745 MHz), 48 (5240 MHz), 36 (5180 MHz) at 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7. 20 MHz BW			
Deviations:	None			
Comments:	Pulse Electronics antenna located off the board. See comments for EUT orientation, channel, and data rate.			

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	29	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	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
11649.980	52.1	-3.3	2.1	90.0	0.1	0.0	Horz	AV	0.0	48.9	54.0	-5.1	EUT Vert, Ch 165, 6 Mbps
11649.970	50.7	-3.3	2.0	163.0	0.1	0.0	Horz	AV	0.0	47.5	54.0	-6.5	EUT On Side, Ch 165, 6 Mbps
11490.020	51.6	-4.9	2.0	86.0	0.1	0.0	Horz	AV	0.0	46.8	54.0	-7.2	EUT Vert, Ch 149, 6 Mbps
11569.990	50.7	-4.2	2.0	113.0	0.1	0.0	Vert	AV	0.0	46.6	54.0	-7.4	EUT On Side, Ch 157, 6 Mbps
11570.010	50.2	-4.2	2.1	79.0	0.1	0.0	Horz	AV	0.0	46.1	54.0	-7.9	EUT Vert, Ch 157, 6 Mbps
15719.700	27.2	18.5	2.6	110.0	0.1	0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT On Side, Ch 48, 6 Mbps
15718.190	27.2	18.5	3.4	254.0	0.1	0.0	Horz	AV	0.0	45.8	54.0	-8.2	EUT Vert, Ch 48, 6 Mbps
11649.980	48.7	-3.3	1.9	143.0	0.1	0.0	Vert	AV	0.0	45.5	54.0	-8.5	EUT On Side, Ch 165, 6 Mbps
15540.140	27.8	17.3	1.5	257.0	0.1	0.0	Horz	AV	0.0	45.2	54.0	-8.8	EUT Vert, Ch 36, 6 Mbps
15539.730	27.8	17.3	1.5	81.0	0.1	0.0	Vert	AV	0.0	45.2	54.0	-8.8	EUT On Side, Ch 36, 6 Mbps
11489.970	49.5	-4.9	2.0	114.0	0.1	0.0	Vert	AV	0.0	44.7	54.0	-9.3	EUT On Side, Ch 149, 6 Mbps
11649.960	47.2	-3.3	2.7	202.0	0.1	0.0	Vert	AV	0.0	44.0	54.0	-10.0	EUT Horz, Ch 165, 6 Mbps
11649.990	44.4	-3.3	1.7	142.0	0.1	0.0	Vert	AV	0.0	41.2	54.0	-12.8	EUT Vert, Ch 165, 6 Mbps
11650.000	44.2	-3.3	2.2	123.0	0.1	0.0	Horz	AV	0.0	41.0	54.0	-13.0	EUT Horz, Ch 165, 6 Mbps
15540.200	39.1	17.3	1.5	257.0	0.0	0.0	Horz	PK	0.0	56.4	74.0	-17.6	EUT Vert, Ch 36, 6 Mbps
15722.130	37.5	18.5	3.4	254.0	0.0	0.0	Horz	PK	0.0	56.0	74.0	-18.0	EUT Vert, Ch 48, 6 Mbps
15719.440	37.4	18.5	2.6	110.0	0.0	0.0	Vert	PK	0.0	55.9	74.0	-18.1	EUT On Side, Ch 48, 6 Mbps
15538.900	38.1	17.3	1.5	81.0	0.0	0.0	Vert	PK	0.0	55.4	74.0	-18.6	EUT On Side, Ch 36, 6 Mbps
11650.130	56.9	-3.2	2.1	90.0	0.0	0.0	Horz	PK	0.0	53.7	74.0	-20.3	EUT Vert, Ch 165, 6 Mbps
11490.060	57.1	-4.9	2.0	86.0	0.0	0.0	Horz	PK	0.0	52.2	74.0	-21.8	EUT Vert, Ch 149, 6 Mbps
11489.980	56.3	-4.9	2.0	114.0	0.0	0.0	Vert	PK	0.0	51.4	74.0	-22.6	EUT On Side, Ch 149, 6 Mbps
11650.070	54.4	-3.2	1.9	143.0	0.0	0.0	Vert	PK	0.0	51.2	74.0	-22.8	EUT On Side, Ch 165, 6 Mbps
11650.040	53.0	-3.2	2.0	163.0	0.0	0.0	Horz	PK	0.0	49.8	74.0	-24.2	EUT On Side, Ch 165, 6 Mbps

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	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
11569.930	52.7	-4.2	2.0	113.0		0.0	Vert	PK	0.0	48.5	74.0	-25.5	EUT On Side, Ch 157, 6 Mbps
11569.880	52.7	-4.2	2.1	79.0		0.0	Horz	PK	0.0	48.5	74.0	-25.5	EUT Vert, Ch 157, 6 Mbps
11649.910	51.2	-3.3	2.7	202.0		0.0	Vert	PK	0.0	47.9	74.0	-26.1	EUT Horz, Ch 165, 6 Mbps
11650.320	50.2	-3.2	2.2	123.0		0.0	Horz	PK	0.0	47.0	74.0	-27.0	EUT Horz, Ch 165, 6 Mbps
11650.050	49.8	-3.2	1.7	142.0		0.0	Vert	PK	0.0	46.6	74.0	-27.4	EUT Vert, Ch 165, 6 Mbps

SPURIOUS RADIATED EMISSIONS PULSE ELECTRONICS ANTENNA



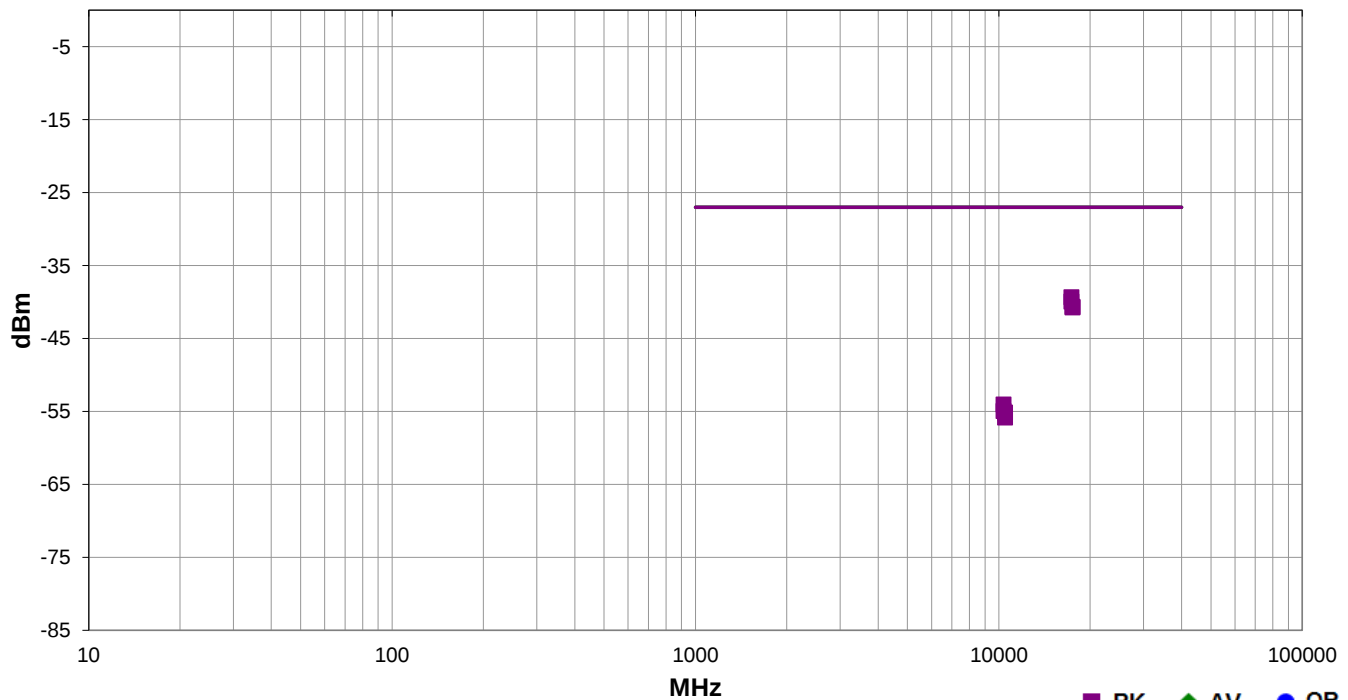
EmiR5 2021.01.08.0

PSA-ESCI 2021.03.17.0

Work Order:	LGPD0256	Date:	2021-03-23	
Project:	None	Temperature:	22.2 °C	
Job Site:	MN09	Humidity:	35.3% RH	
Serial Number:	2420M00120	Barometric Pres.:	1012 mbar	
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B				Tested by: Christopher Heintzelman, Eric Brandon
Configuration:	4			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting WiFi Ch 165 (5825 MHz), 157 (5785 MHz), 48 (5240 MHz), 36 (5180 MHz) at 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7. 20 MHz BW			
Deviations:	None			
Comments:	Pulse Electronics antenna located off the board. See comments for EUT orientation, channel, and data rate.			

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	29	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
17354.510	1.5	37.0	Horz	PK	116.7E-9	-39.3	-27.0	-12.3	EUT Vert, Ch 157, 6 Mbps
17355.030	1.5	41.0	Vert	PK	101.7E-9	-39.9	-27.0	-12.9	EUT On Side, Ch 157, 6 Mbps
17476.380	1.5	158.0	Horz	PK	86.5E-9	-40.6	-27.0	-13.6	EUT Vert, Ch 165, 6 Mbps
17476.600	3.0	126.0	Vert	PK	84.6E-9	-40.7	-27.0	-13.7	EUT On Side, Ch 165, 6 Mbps
10360.030	2.0	84.0	Horz	PK	4.0E-9	-54.0	-27.0	-27.0	EUT Vert, Ch 36, 6 Mbps
10359.770	2.0	49.0	Vert	PK	3.2E-9	-54.9	-27.0	-27.9	EUT Horz, Ch 36, 6 Mbps
10480.160	2.0	116.0	Horz	PK	3.1E-9	-55.1	-27.0	-28.1	EUT Vert, Ch 48, 6 Mbps
10480.020	1.5	141.0	Vert	PK	2.6E-9	-55.8	-27.0	-28.8	EUT On Side, Ch 48, 6 Mbps

SPURIOUS RADIATED EMISSIONS PULSE ELECTRONICS ANTENNA

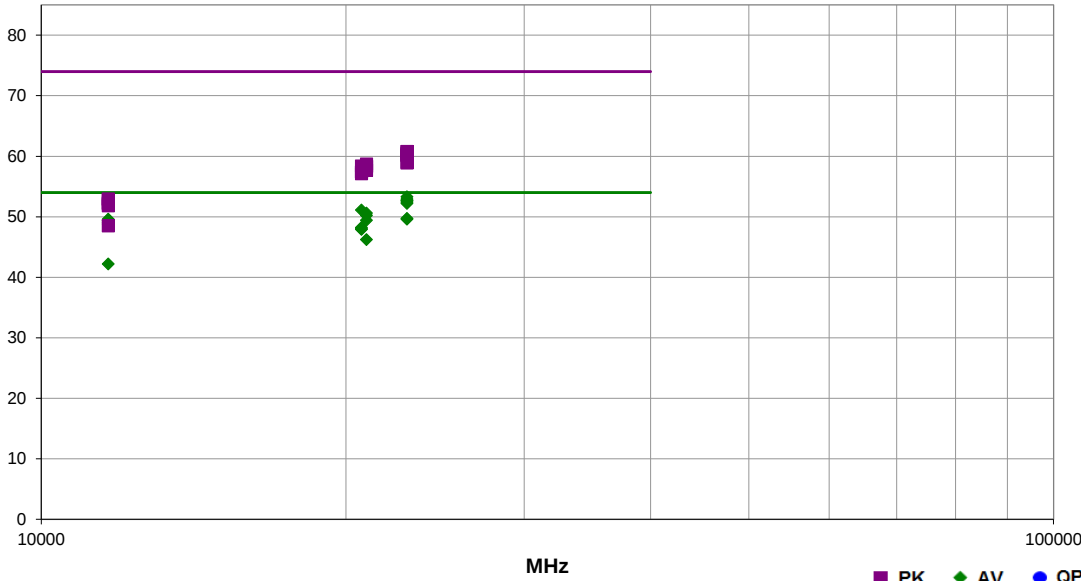


EmiRS 2021.01.08.0 PSA-ESCI 2021.03.17.0

Work Order:	LGPLD0256	Date:	2021-03-31	 
Project:	None	Temperature:	21.5 °C	
Job Site:	MN05	Humidity:	22.7% RH	
Serial Number:	2420M00120	Barometric Pres.:	1026 mbar	
EUT:		SOMA3703-32-1780AKIR-A / 1027255 Rev B		
Configuration:	4			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting WiFi Ch 36 (5180 MHz), Ch 48 (5240 MHz), Ch 149 (5745 MHz), Ch 165 (5825 MHz) at 6 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7. 20 MHz BW			
Deviations:	None			
Comments:	Pulse Electronics antenna located off the board. Ch 48 pwr 18 unless specified. Ch 149 at pwr 20 unless specified. See comments for EUT orientation and data rate. All power settings used for testing are at or above the level specified for use in the field.			

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	208	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	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
22979.980	34.1	18.4	1.5	360.0	0.8	0.0	Horz	AV	0.0	53.3	54.0	-0.7	PWR 1C, EUT On Side, Ch 149, MCS7
22979.980	34.0	18.4	1.5	360.0	0.5	0.0	Horz	AV	0.0	52.9	54.0	-1.1	PWR 1C, EUT On Side, Ch 149, 36 Mbps
22979.970	34.1	18.4	1.5	360.0	0.2	0.0	Horz	AV	0.0	52.7	54.0	-1.3	PWR 1C EUT On Side, Ch 149, MCS0
22980.020	34.1	18.4	1.5	360.0	0.1	0.0	Horz	AV	0.0	52.6	54.0	-1.4	PWR 1C, EUT On Side, Ch 149, 6 Mbps
22979.960	33.9	18.4	1.5	303.0	0.1	0.0	Horz	AV	0.0	52.4	54.0	-1.6	PWR 1C, EUT On Side, Ch 149, 6 Mbps
22980.030	33.7	18.4	1.5	311.0	0.1	0.0	Vert	AV	0.0	52.2	54.0	-1.8	PWR 1C, EUT Vert, Ch 149, 6 Mbps
20720.040	34.2	16.8	1.5	16.0	0.1	0.0	Horz	AV	0.0	51.1	54.0	-2.9	EUT On Side, Ch 36, 6 Mbps
20959.960	33.4	17.1	1.5	360.0	0.1	0.0	Horz	AV	0.0	50.6	54.0	-3.4	PWR 17, EUT On Side, Ch 48, 6 Mbps
20959.960	33.0	17.1	1.5	36.0	0.1	0.0	Vert	AV	0.0	50.2	54.0	-3.8	PWR 17, EUT Vert, Ch 48, 6 Mbps
22979.940	31.2	18.4	1.5	296.0	0.1	0.0	Vert	AV	0.0	49.7	54.0	-4.3	PWR 1C, EUT On Side, Ch 149, 6 Mbps
11650.040	49.6	-0.8	1.9	202.0	0.8	0.0	Horz	AV	0.0	49.6	54.0	-4.4	EUT Vert, Ch 165, MCS7
22979.990	31.1	18.4	1.5	23.0	0.1	0.0	Horz	AV	0.0	49.6	54.0	-4.4	PWR 1C, EUT Vert, Ch 149, 6 Mbps
20960.030	32.2	17.1	1.5	41.0	0.1	0.0	Horz	AV	0.0	49.4	54.0	-4.6	PWR 17, EUT Vert, Ch 48, 6 Mbps
11649.980	49.7	-0.8	1.9	202.0	0.5	0.0	Horz	AV	0.0	49.4	54.0	-4.6	EUT Vert, Ch 165, 36 Mbps
11650.030	49.5	-0.8	1.9	202.0	0.7	0.0	Horz	AV	0.0	49.4	54.0	-4.6	EUT Vert, Ch 165, 54 Mbps
11649.990	49.7	-0.8	1.9	202.0	0.2	0.0	Horz	AV	0.0	49.1	54.0	-4.9	EUT Vert, Ch 165, MCS0
11650.020	49.5	-0.8	1.9	202.0	0.1	0.0	Horz	AV	0.0	48.8	54.0	-5.2	EUT Vert, Ch 165, 6 Mbps
20719.960	31.3	16.8	1.5	41.0	0.1	0.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT Vert, Ch 36, 6 Mbps
20720.060	31.1	16.8	1.5	49.9	0.1	0.0	Vert	AV	0.0	48.0	54.0	-6.0	EUT On Side, Ch 36, 6 Mbps
20719.930	31.0	16.8	1.5	16.9	0.1	0.0	Vert	AV	0.0	47.9	54.0	-6.1	EUT Vert, Ch 36, 6 Mbps
20960.020	29.0	17.1	1.5	322.9	0.1	0.0	Vert	AV	0.0	46.2	54.0	-7.8	PWR 17, EUT On Side, Ch 48, 6 Mbps
11649.990	42.5	-0.8	1.5	239.0	0.5	0.0	Vert	AV	0.0	42.2	54.0	-11.8	EUT Vert, Ch 165, 36 Mbps
22980.050	42.4	18.4	1.5	360.0	0.0	0.0	Horz	PK	0.0	60.8	74.0	-13.2	PWR 1C, EUT On Side, Ch 149, 6 Mbps
22980.020	42.4	18.4	1.5	303.0	0.0	0.0	Horz	PK	0.0	60.8	74.0	-13.2	PWR 1C, EUT On Side, Ch 149, 6 Mbps
22980.190	42.1	18.4	1.5	360.0	0.0	0.0	Horz	PK	0.0	60.5	74.0	-13.5	PWR 1C, EUT On Side, Ch 149, MCS7

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	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
22979.870	41.9	18.4	1.5	360.0		0.0	Horz	PK	0.0	60.3	74.0	-13.7	PWR 1C EUT On Side, Ch 149, MCS0
22980.130	41.8	18.4	1.5	311.0		0.0	Vert	PK	0.0	60.2	74.0	-13.8	PWR 1C, EUT Vert, Ch 149, 6 Mbps
22979.930	41.7	18.4	1.5	360.0		0.0	Horz	PK	0.0	60.1	74.0	-13.9	PWR 1C, EUT On Side, Ch 149, 36 Mbps
22979.980	40.6	18.4	1.5	296.0		0.0	Vert	PK	0.0	59.0	74.0	-15.0	PWR 1C, EUT On Side, Ch 149, 6 Mbps
22979.980	40.5	18.4	1.5	23.0		0.0	Horz	PK	0.0	58.9	74.0	-15.1	PWR 1C, EUT Vert, Ch 149, 6 Mbps
20959.830	41.6	17.1	1.5	322.9		0.0	Vert	PK	0.0	58.7	74.0	-15.3	PWR 17, EUT On Side, Ch 48, 6 Mbps
20960.200	41.3	17.1	1.5	360.0		0.0	Horz	PK	0.0	58.4	74.0	-15.6	PWR 17, EUT On Side, Ch 48, 6 Mbps
20720.020	41.6	16.8	1.5	16.0		0.0	Horz	PK	0.0	58.4	74.0	-15.6	EUT On Side, Ch 36, 6 Mbps
20959.750	41.2	17.1	1.5	36.0		0.0	Vert	PK	0.0	58.3	74.0	-15.7	PWR 17, EUT Vert, Ch 48, 6 Mbps
20960.430	40.6	17.1	1.5	41.0		0.0	Horz	PK	0.0	57.7	74.0	-16.3	PWR 17, EUT Vert, Ch 48, 6 Mbps
20719.980	40.6	16.8	1.5	49.9		0.0	Vert	PK	0.0	57.4	74.0	-16.6	EUT On Side, Ch 36, 6 Mbps
20719.900	40.6	16.8	1.5	41.0		0.0	Horz	PK	0.0	57.4	74.0	-16.6	EUT Vert, Ch 36, 6 Mbps
20720.330	40.3	16.8	1.5	16.9		0.0	Vert	PK	0.0	57.1	74.0	-16.9	EUT Vert, Ch 36, 6 Mbps
11650.010	53.7	-0.8	1.9	202.0		0.0	Horz	PK	0.0	52.9	74.0	-21.1	EUT Vert, Ch 165, MCS0
11649.960	53.7	-0.8	1.9	202.0		0.0	Horz	PK	0.0	52.9	74.0	-21.1	EUT Vert, Ch 165, 6 Mbps
11650.090	53.1	-0.8	1.9	202.0		0.0	Horz	PK	0.0	52.3	74.0	-21.7	EUT Vert, Ch 165, 36 Mbps
11650.020	52.9	-0.8	1.9	202.0		0.0	Horz	PK	0.0	52.1	74.0	-21.9	EUT Vert, Ch 165, 54 Mbps
11649.980	52.6	-0.8	1.9	202.0		0.0	Horz	PK	0.0	51.8	74.0	-22.2	EUT Vert, Ch 165, MCS7
11650.100	49.3	-0.8	1.5	239.0		0.0	Vert	PK	0.0	48.5	74.0	-25.5	EUT Vert, Ch 165, 36 Mbps

SPURIOUS RADIATED EMISSIONS PULSE ELECTRONICS ANTENNA



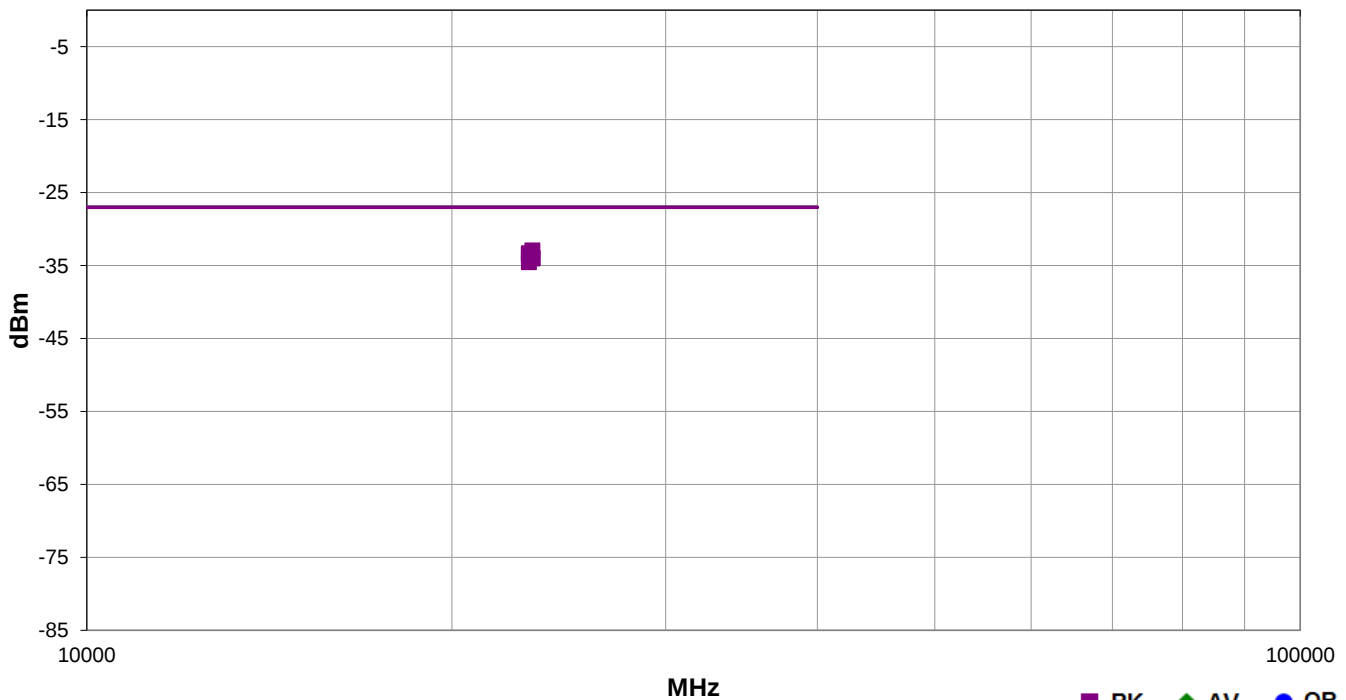
EmiR5 2021.01.08.0

PSA-ESCI 2021.03.17.0

Work Order:	LGPD0256	Date:	2021-03-31		
Project:	None	Temperature:	21.5 °C		
Job Site:	MN05	Humidity:	22.7% RH		
Serial Number:	2420M00120	Barometric Pres.:	1026 mbar	Tested by:	Christopher Heintzelman, Eric Brandon
EUT:	SOMA3703-32-1780AKIR-A / 1027255 Rev B				
Configuration:	4				
Customer:	Logic PD, Inc.				
Attendees:	Eric Fritz				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmitting WiFi Ch 157 (5785 MHz) and Ch 165 (5825 MHz) at 6 Mbps. 20 MHz BW				
Deviations:	None				
Comments:	Pulse Electronics antenna located off the board. Ch 48 pwr 18 unless specified. Ch 149 at pwr 20 unless specified. See comments for EUT orientation and data rate. All power settings used for testing are at or above the level specified for use in the field.				

Test Specifications	Test Method
FCC 15.407:2021	ANSI C63.10:2013

Run #	208	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
23299.910	1.5	306.0	Horz	PK	509.5E-9	-32.9	-27.0	-5.9	EUT On Side, Ch 165, 6 Mbps
23140.100	1.5	307.9	Horz	PK	464.6E-9	-33.3	-27.0	-6.3	EUT On Side, Ch 157, 6 Mbps
23139.870	1.5	311.0	Vert	PK	464.6E-9	-33.3	-27.0	-6.3	EUT Vert, Ch 157, 6 Mbps
23140.050	1.5	310.0	Vert	PK	423.8E-9	-33.7	-27.0	-6.7	EUT On Side, Ch 157, 6 Mbps
23299.930	1.5	340.9	Vert	PK	404.7E-9	-33.9	-27.0	-6.9	EUT Vert, Ch 165, 6 Mbps
23299.850	1.5	314.0	Vert	PK	404.7E-9	-33.9	-27.0	-6.9	EUT On Side, Ch 157, 6 Mbps
23299.850	1.5	314.0	Horz	PK	395.5E-9	-34.0	-27.0	-7.0	EUT Vert, Ch 165, 6 Mbps
23140.430	1.5	311.0	Horz	PK	352.5E-9	-34.5	-27.0	-7.5	EUT Vert, Ch 157, 6 Mbps

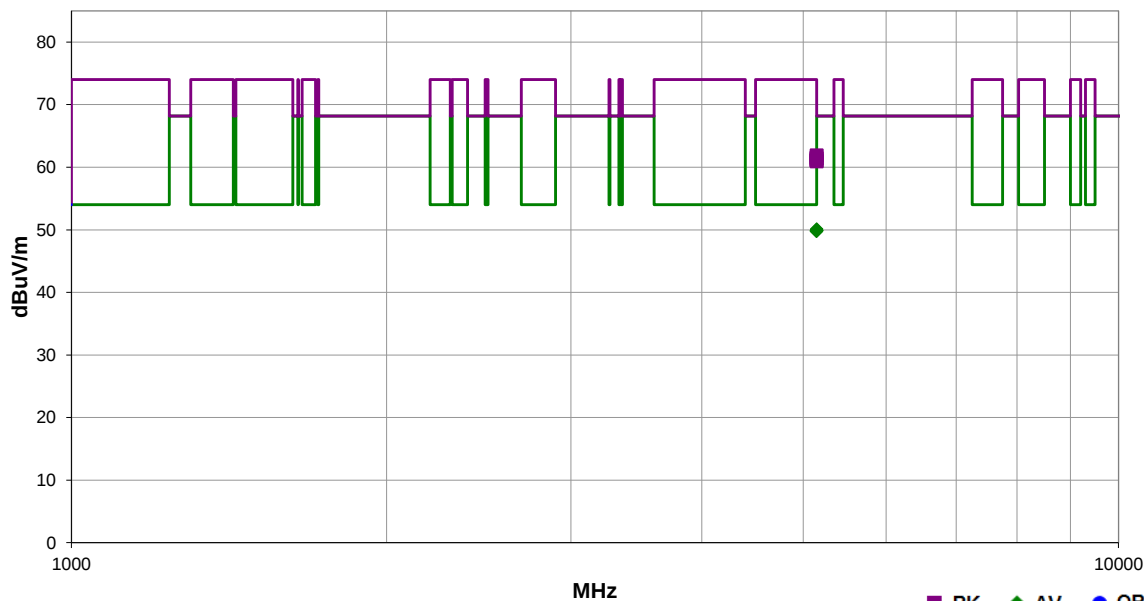
SPURIOUS RADIATED EMISSIONS PULSE ELECTRONICS ANTENNA



Work Order:	LGPD0256	Date:	2021-03-31	EmiR5 2021.01.08.0 PSA-ESCI 2021.03.17.0
Project:	None	Temperature:	21.5 °C	
Job Site:	MN05	Humidity:	22.7% RH	
Serial Number:	2420M00120	Barometric Pres.:	1026 mbar	
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B				Tested by: Christopher Heintzelman
Configuration:	4			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting WiFi Ch 36 (5180 MHz) at 6, 36, 54 Mbps, MCS0, MCS7. 20 MHz BW			
Deviations:	None			
Comments:	Pulse Electronics antenna located off the board.			

Test Specifications	Test Method
FCC 15.407:2021, FCC 15.205:2021	ANSI C63.10:2013

Run #	198	Test Distance (m)	0.8	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5149.842	26.3	35.3	1.5	109.0	0.8	0.0	Horz	AV	-11.5	50.1	54.0	-3.9	EUT On Side, Ch 36, 6 Mbps
5147.833	26.1	35.3	1.5	258.9	0.8	0.0	Vert	AV	-11.5	49.9	54.0	-4.1	EUT Vert, Ch 36, 6 Mbps
5147.983	26.1	35.3	1.5	173.0	0.8	0.0	Horz	AV	-11.5	49.9	54.0	-4.1	EUT Vert, Ch 36, 6 Mbps
5148.942	26.1	35.3	1.5	307.9	0.8	0.0	Vert	AV	-11.5	49.9	54.0	-4.1	EUT On Side, Ch 36, 6 Mbps
5149.842	26.1	35.3	1.5	293.0	0.8	0.0	Vert	AV	-11.5	49.9	54.0	-4.1	EUT Horz, Ch 36, 6 Mbps
5149.217	26.1	35.3	1.5	109.0	0.8	0.0	Horz	AV	-11.5	49.9	54.0	-4.1	EUT On Side, Ch 36, 36 Mbps
5148.033	26.0	35.3	1.5	199.0	0.8	0.0	Horz	AV	-11.5	49.8	54.0	-4.2	EUT Horz, Ch 36, 6 Mbps
5147.875	26.0	35.3	1.5	109.0	0.8	0.0	Horz	AV	-11.5	49.8	54.0	-4.2	EUT On Side, Ch 36, 54 Mbps
5148.033	26.0	35.3	1.5	109.0	0.8	0.0	Horz	AV	-11.5	49.8	54.0	-4.2	EUT On Side, Ch 36, MCS0
5149.200	26.0	35.3	1.5	109.0	0.8	0.0	Horz	AV	-11.5	49.8	54.0	-4.2	EUT On Side, Ch 36, MCS7
5150.000	37.1	35.3	1.5	173.0	0.8	0.0	Horz	PK	-11.5	60.9	68.2	-7.3	EUT Vert, Ch 36, 6 Mbps
5149.875	38.1	35.3	1.5	109.0	0.8	0.0	Horz	PK	-11.5	61.9	74.0	-12.1	EUT On Side, Ch 36, 6 Mbps
5147.850	38.1	35.3	1.5	109.0	0.8	0.0	Horz	PK	-11.5	61.9	74.0	-12.1	EUT On Side, Ch 36, MCS0
5146.192	37.8	35.3	1.5	293.0	0.8	0.0	Vert	PK	-11.5	61.6	74.0	-12.4	EUT Horz, Ch 36, 6 Mbps
5147.742	37.6	35.3	1.5	109.0	0.8	0.0	Horz	PK	-11.5	61.4	74.0	-12.6	EUT On Side, Ch 36, 54 Mbps
5149.575	37.6	35.3	1.5	109.0	0.8	0.0	Horz	PK	-11.5	61.4	74.0	-12.6	EUT On Side, Ch 36, MCS7
5145.517	37.5	35.3	1.5	109.0	0.8	0.0	Horz	PK	-11.5	61.3	74.0	-12.7	EUT On Side, Ch 36, 36 Mbps
5145.508	37.3	35.3	1.5	307.9	0.8	0.0	Vert	PK	-11.5	61.1	74.0	-12.9	EUT On Side, Ch 36, 6 Mbps
5148.392	37.3	35.3	1.5	199.0	0.8	0.0	Horz	PK	-11.5	61.1	74.0	-12.9	EUT Horz, Ch 36, 6 Mbps
5147.550	37.2	35.3	1.5	258.9	0.8	0.0	Vert	PK	-11.5	61.0	74.0	-13.0	EUT Vert, Ch 36, 6 Mbps

SPURIOUS RADIATED EMISSIONS PULSE ELECTRONICS ANTENNA

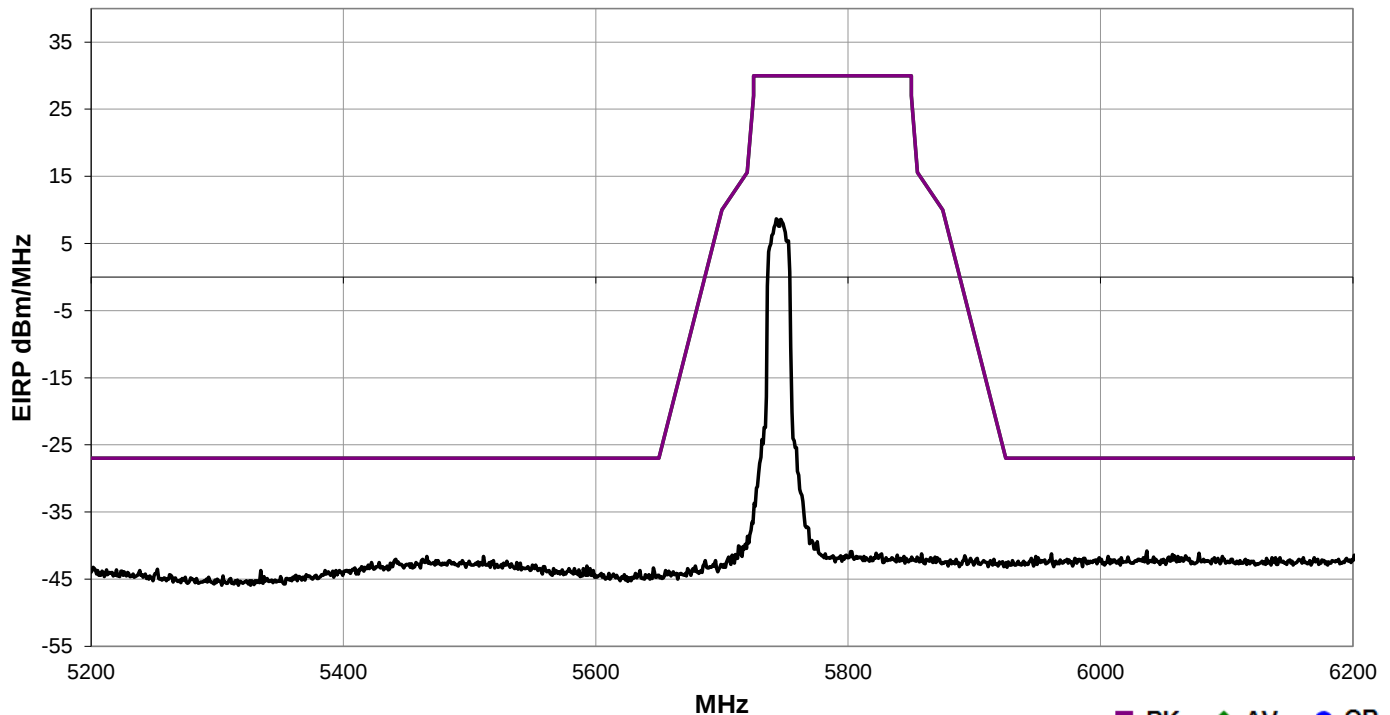


EmiR5 2021.01.08.0

PSA-ESCI 2021.03.17.0

Work Order:	LGPD0256	Date:	2021-03-31	
Project:	None	Temperature:	21.5 °C	
Job Site:	MN05	Humidity:	22.7% RH	
Serial Number:	2420M00120	Barometric Pres.:	1026 mbar	
EUT: SOMA3703-32-1780AKIR-A / 1027255 Rev B				Tested by: Christopher Heintzelman
Configuration:	4			
Customer:	Logic PD, Inc.			
Attendees:	Eric Fritz			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting WiFi Ch 149 (5745 MHz), 6 Mbps, 20 MHz BW			
Deviations:	None			
Comments:	Pulse Electronics antenna located off the board. EUT On Side			

Test Specifications					Test Method		
FCC 15.407:2021					ANSI C63.10:2013		
Run #	200	Test Distance (m)	0.8	Antenna Height(s)	1.5 (m)	Results	Pass



Freq (MHz)	Antenna Height (meters)	Transducer (dB/m)	Polarity/Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
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All emissions were below the limit (see graph above).

SPURIOUS RADIATED EMISSIONS PULSE ELECTRONICS ANTENNA

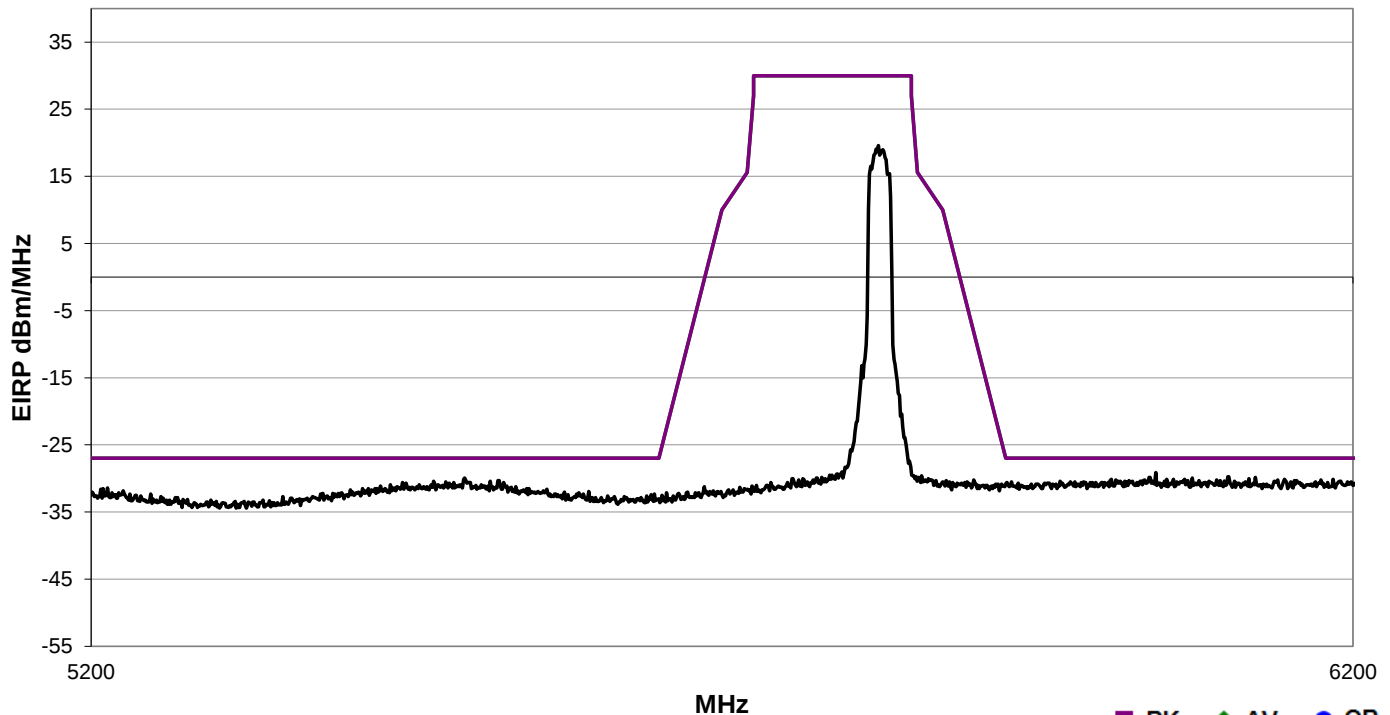


EmiR5 2021.01.08.0

PSA-ESCI 2021.03.17.0

Work Order:	LGPD0256	Date:	2021-03-31		
Project:	None	Temperature:	21.5 °C		
Job Site:	MN05	Humidity:	22.7% RH		
Serial Number:	2420M00120	Barometric Pres.:	1026 mbar	Tested by:	Christopher Heintzelman
EUT:	SOMA3703-32-1780AKIR-A / 1027255 Rev B				
Configuration:	4				
Customer:	Logic PD, Inc.				
Attendees:	Eric Fritz				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmitting WiFi Ch 165 (5825 MHz), 6 Mbps, 20 MHz BW				
Deviations:	None				
Comments:	Pulse Electronics antenna located off the board. EUT On Side				

Test Specifications					Test Method		
FCC 15.407:2021					ANSI C63.10:2013		
Run #	202	Test Distance (m)	0.8	Antenna Height(s)	1.25 (m)	Results	Pass



Freq (MHz)	Antenna Height (meters)	Transducer (dB/m)	Polarity/Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments
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All emissions were below the limit (see graph above).

End of Test Report