



Motorola Solutions, Inc.

V700

FCC 15.247:2022

RSS-247 Issue 2:2017

Wi-Fi 802.11 b/g/n SISO Radio

Report: WTVD0085.4 Rev. 3, Issue Date: June 27, 2023



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CERTIFICATE OF TEST

Last Date of Test: April 26, 2023
Motorola Solutions, Inc.
EUT: V700

Test Lab Location:

Labs TX01-09
 3801 E Plano Pkwy
 Plano, TX 75074
 FCC Designated Number: US1294, Location Registration Number: 561783
 ISED Designated number: 2834G-1

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2023	ANSI C63.10:2013, FCC KDB 558074 v05r02:2019
RSS-247 Issue 2:2017, RSS-Gen Issue 5:2018+A1:2019+A2:2021	

Results

Test Description	Result	FCC Section(s)	RSS Section(s)	ANSI C63.10 Section(s)	Comments
Powerline Conducted Emissions	N/A	15.207	RSS-Gen 8.8	6.2	Not required for a battery powered EUT.
Occupied Bandwidth	Pass	KDB 558074 -2.1	RSS-Gen 6.7	6.9.3	
Duty Cycle	Pass	KDB 558074 -6.0	RSS-Gen 3.2	11.6	
DTS Bandwidth	Pass	15.247(a)(2), KDB 558074 -8.2	RSS-247 5.2(a)	11.8.2	
Output Power	Pass	15.247(b)(3), KDB 558074 -8.3.2	RSS-247 5.4(d, f), RSS-Gen 6.12	11.9.2.2.4	
Equivalent Isotropic Radiated Power (EIRP)	Pass	15.247(b)(3), KDB 558074 -8.3.2	RSS-247 5.4(d, f), RSS-Gen 6.12	11.9.2.2.4	
Power Spectral Density	Pass	15.247(e), KDB 558074 -8.4	RSS-247 5.2(b)	11.10.2	
Band Edge Compliance	Pass	15.247(d), KDB 558074 -8.5	RSS-247 5.5	11.11	
Spurious Conducted Emissions	Pass	15.247(d), KDB 558074 -8.5	RSS-247 5.5	11.11	
Spurious Radiated Emissions	Pass	15.247(d), KDB 558074 - 8.6, 8.7	RSS-247 5.5, RSS-Gen 6.13, 8.10	11.12.1, 11.13.2, 6.5, 6.6	

Deviations From Test Standards

None

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.

CERTIFICATE OF TEST



Approved By:

Adam Bruno, Operations Manager

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REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Updated configurations.	2023-06-13	14, 15
	Updated power settings and antennas table.	2023-06-13	12
02	Added FCC ID, IC ID, applicant address to Product Description page.	2023-06-26	11
03	Updated IC ID to just IC.	2023-06-27	11
	Added model number table to Product Description page.	2023-06-27	12
	Added test lab information to certificate of test.	2023-06-27	2

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 - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

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:

[California](#)

[Minnesota](#)

[Oregon](#)

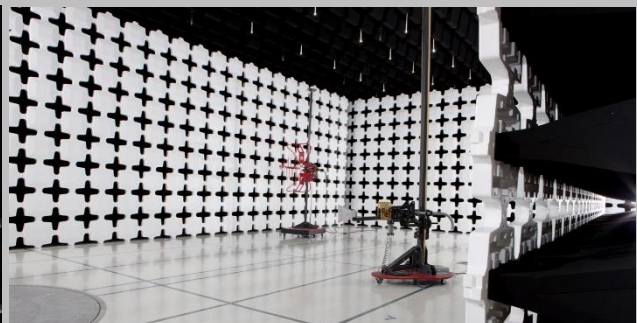
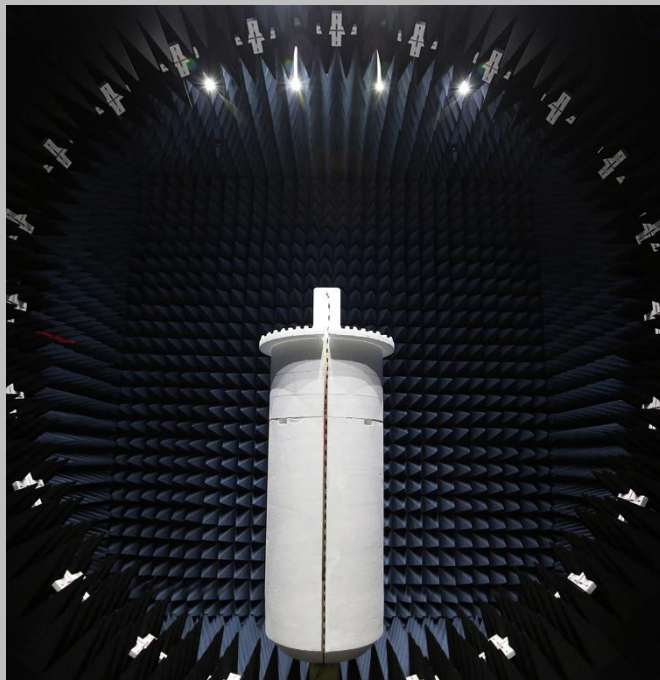
[Texas](#)

[Washington](#)

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
A2LA				
Lab Code: 3310.04	Lab Code: 3310.05	Lab Code: 3310.02	Lab Code: 3310.03	Lab Code: 3310.06
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)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	3.1 dB	-3.1 dB

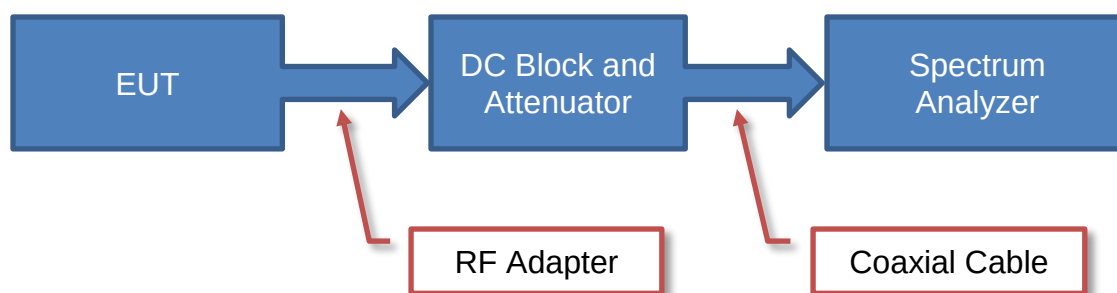
TEST SETUP BLOCK DIAGRAMS

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

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

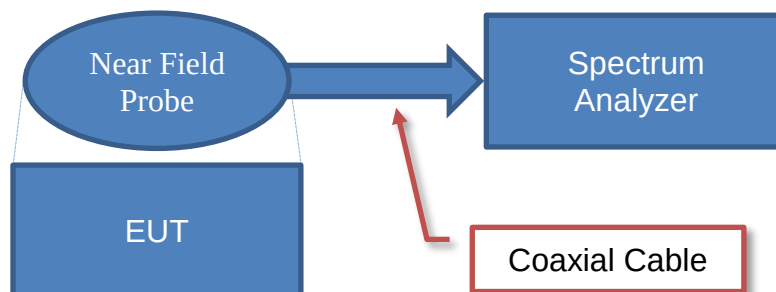
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

Near Field Test Fixture Measurements

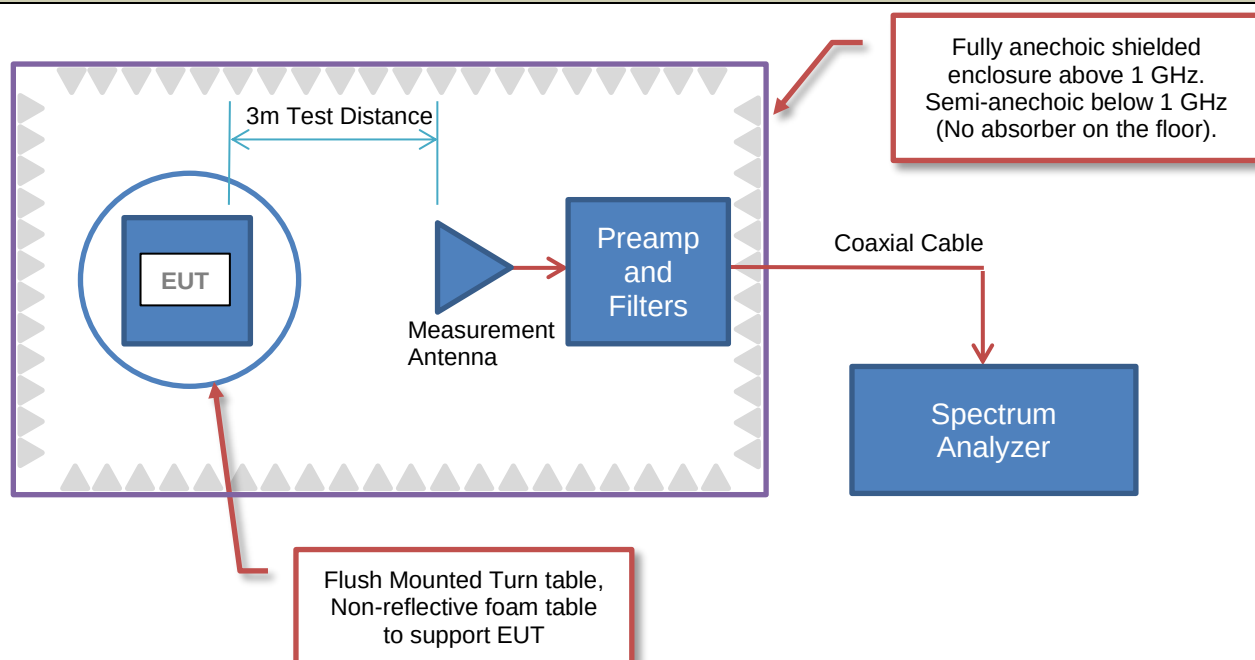


Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)	Factor			Distance Adjustment Factor	External Attenuation	Field Strength
	Antenna Factor	Cable Factor	Amplifier Gain			
42.6	28.6	3.1	40.8	0.0	0.0	33.5

Conducted Emissions:

Measured Level (Amplitude)	Factor		External Attenuation	Adjusted Level
	Transducer Factor	Cable Factor		
26.7	0.3	0.1	20.0	47.1

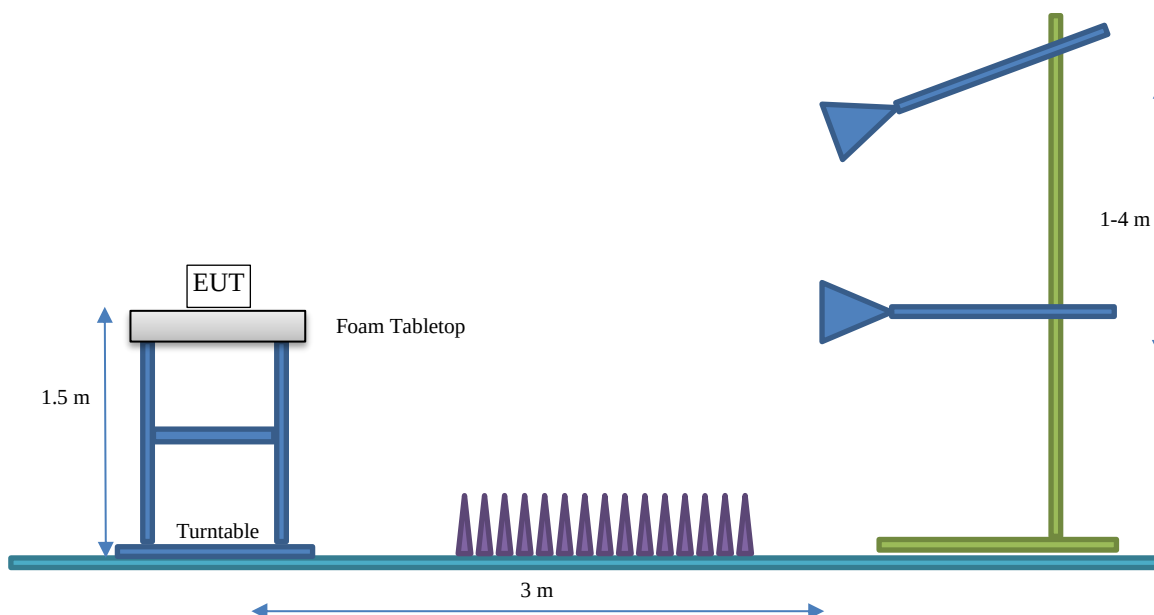
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)	Substitution Antenna Factor (dBi)	EIRP to ERP (if applicable)	Measured power (dBm ERP/EIRP)
10.0	6.0	2.15	13.9/16.0

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:	Motorola Solutions, Inc.
Manufacturer Address:	415 East Exchange Parkway
City, State, Zip:	Allen, TX 75002
Applicant Name:	Motorola Solutions, Inc.
Applicant Address:	8000 W. Sunrise Blvd
City, State, Zip:	Plantation, FL 33322
Test Requested By:	Navaid Karimi
EUT:	V700
First Date of Test:	December 21, 2022
Last Date of Test:	April 26, 2023
Receipt Date of Samples:	December 21, 2022
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Body Worn Camera with BT/BLE, Wi-Fi and LTE
Testing Objective:
To demonstrate compliance of the Wi-Fi 802.11 b/g/n SISO radio under FCC 15.247 for operation in the 2.4 GHz band. To demonstrate compliance of the Wi-Fi 802.11 b/g/n SISO radio under RSS-247 for operation in the 2.4 GHz band(s).
FCC ID:
AZ499FT7164
IC:
109U-99FT7164

PRODUCT DESCRIPTION



Models and Descriptions:

FCC/ISED details for common reports – Please note tested one highlighted in yellow

FCC Model Number	ISED Model Number (HVIN)	Product Name (PMN)	Description
WGA00735	NA	V700	V700, BWC, 1080P, FN LTE, W/Rem Batt
WGA00725	NA	V700	V700, BWC, 1080P, VzW LTE, W/Rem Batt - USA (Verizon)
NA	WGA00745	V700	V700, BWC, 1080P, BELL LTE, W/Rem Batt Canada (Bell)
WGA00755	WGA00755	V700	BWC, 1080P, WIFI ONLY
NA	WGA00825	V700	V700, BWC, 1080P, BELL READY, W/Rem BATT- Canada (Bell)
WGA00925	NA	V700	V700, BWC, 1080P, FN LTE, W/Rem Batt - USA (AT&T-first net)
WGA01025	NA	V700	V700, BWC, 1080P, FN READY, W/Rem BATT - USA (AT&T-first net)

Note:

All Models are the same the only difference in the label. No hardware, mechanical or software change.

The difference is due to offering to different customers. The model can be selected by configuration.

All models (except WGA00755) are different by Carrier's which require the Carrier's SIM card.

WGA00755 – includes only the WIFI and BT, no SIM and no Carrier

WIFI 2.4GHz and BT do not transmit at the same time.

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. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

ANTENNA GAIN (dBi)

Antenna Label	Provided by:	Frequency Range	Gain (dBi)
ILA Type Metal Internal Antenna	Motorola Solutions Inc.	2402 – 2480 MHz	2.7

The EUT was tested using the power settings provided by the manufacturer which were based upon:

- ☐ Test software settings Test software/firmware installed on EUT: _____
- ☐ Rated power settings

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Channel Bandwidths (MHz)	20 MHz Channels	Channel Position*	Frequency Range (MHz)	Power Setting
1 Mbps, 11 Mbps	20	1, 6, 11	Low, Mid, High	2400-2483.5	
6 Mbps, 36 Mbps, 54 Mbps	20	1, 6, 11	Low, Mid, High	2400-2483.5	
MCS0, MCS7	20, 40	1, 6, 11	Low, Mid, High	2400-2483.5	

CONFIGURATIONS

Configuration WTVD0085-1

Software/Firmware Running During Test	
Description	Version
V700 WiFi FCC Test Firmware	20221215205940
V700 BLE and BT Test Firmware	20221201210101
FVIN	1.0.0.56

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
V700 Conducted Unit (LTE)	Motorola Solutions, Inc.	V700	BWL7-000968

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	HP	HP ZBOOK POWER G7	5CD145HL94
Laptop Brick	HP	TPN-CA11	9900000005084
USB Serial Board	Motorola Solutions, Inc.	WGA0707	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB 2.0 A to B Cable	Yes	1.8m	No	Laptop	V700 Dock
USB 2.0 A to DB9 Cable	Yes	1.8m	No	Laptop	USB to Serial Board
Ribbon Cable	No	0.15m	No	V700 Conducted Unit	USB Serial Board

CONFIGURATIONS



Configuration WTVD0086- 1

Software/Firmware Running During Test	
Description	Version
V700 WiFi FCC Test Firmware	20221215205940
V700 BLE and BT Test Firmware	20221201210101
FVIN	1.0.0.56

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
V700 Radiated Unit	Motorola Solutions, Inc.	V700	BWL7-000539

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
V700 Dock	Motorola Solutions, Inc.	UB02	UB02-028046
Laptop	HP	HP ZBOOK POWER G7	5CD145HL94
Laptop Brick	HP	TPN-CA11	9900000005084
USB Serial Board	Motorola Solutions, Inc.	WGA0707	None
V700 Power Supply	GlobTek, Inc.	GT-21089-1512-W3	708845150/21

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB 2.0 A to B Cable	Yes	1.8m	No	Laptop	V700 Dock

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2022-12-21	Spurious Radiated Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	2022-12-21
2	2023-04-25	Duty Cycle	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2023-04-26	DTS 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	2023-04-26	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.
5	2023-04-26	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	2023-04-26	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.
7	2023-04-26	Power Spectral Density	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2023-04-26	Band Edge Compliance	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	2023-04-26	Spurious Conducted Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

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	SA4018-20	TYE	2022-09-13	2023-09-13
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

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

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

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

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

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE



TRF7x 2022.06.03.0 XMR 2023.02.14.0

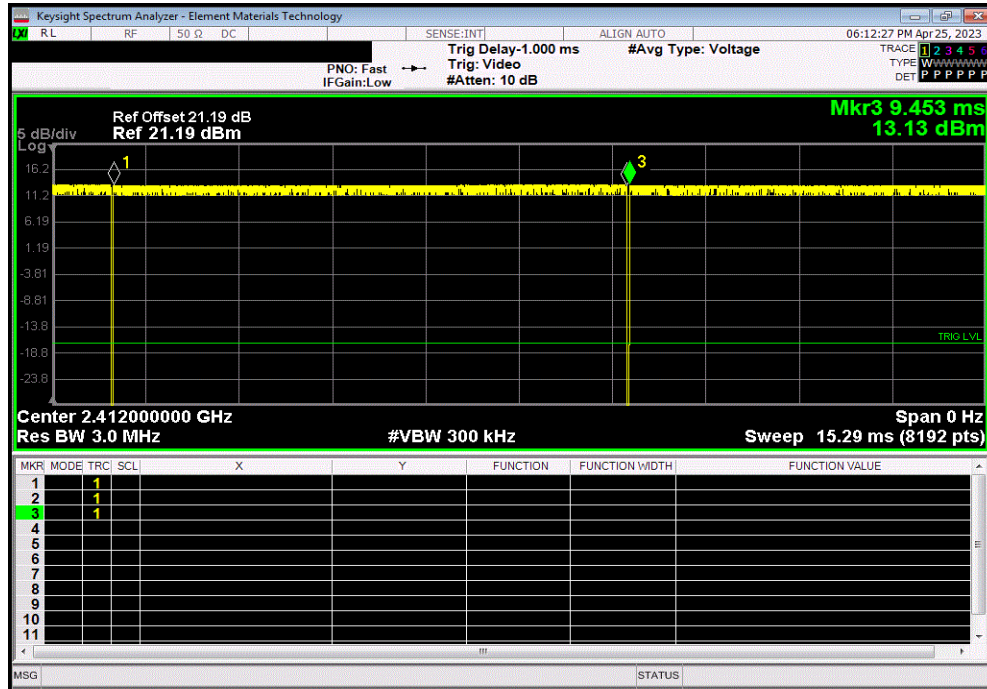
EUT: V700			Work Order: WTVD0085				
Serial Number: BWL7-000968			Date: 04/25/2023				
Customer: Motorola Solutions, Inc.			Temperature: 22.9°C				
Attendees: Navaid Karimi			Humidity: 41.3%				
Project: None			Barometric Pres.: 1011 mbar				
Tested by: Marty Martin		Power: 4.2VDC via Battery	Job Site: TX07				
TEST SPECIFICATIONS			Test Method				
FCC 15.247:2023		ANSI C63.10:2013					
RSS-Gen Issue 5:2018+A1:2019+A2:2021		ANSI C63.10:2013					
COMMENTS							
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.							
DEVIATIONS FROM TEST STANDARD							
None							
Configuration #	WTVD0085-1	Signature 					
		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
2400 MHz - 2483.5 MHz Band							
802.11(b) 1 Mbps							
Low Channel 1, 2412 MHz		8.407 ms	8.45 ms	1	99.5	N/A	N/A
Low Channel 1, 2412 MHz		N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz		8.391 ms	8.454 ms	1	99.2	N/A	N/A
Mid Channel 6, 2437 MHz		N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz		8.41 ms	8.453 ms	1	99.5	N/A	N/A
High Channel 11, 2462 MHz		N/A	N/A	5	N/A	N/A	N/A
802.11(b) 11 Mbps							
Low Channel 1, 2412 MHz		840.505 us	881.5 us	1	95.3	N/A	N/A
Low Channel 1, 2412 MHz		N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz		840.16 us	881.4 us	1	95.3	N/A	N/A
Mid Channel 6, 2437 MHz		N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz		839.916 us	881.4 us	1	95.3	N/A	N/A
High Channel 11, 2462 MHz		N/A	N/A	5	N/A	N/A	N/A
802.11(g) 6 Mbps							
Low Channel 1, 2412 MHz		1.386 ms	1.436 ms	1	96.5	N/A	N/A
Low Channel 1, 2412 MHz		N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz		1.386 ms	1.438 ms	1	96.4	N/A	N/A
Mid Channel 6, 2437 MHz		N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz		1.388 ms	1.438 ms	1	96.5	N/A	N/A
High Channel 11, 2462 MHz		N/A	N/A	5	N/A	N/A	N/A
802.11(g) 36 Mbps							
Low Channel 1, 2412 MHz		250.358 us	293.978 us	1	85.2	N/A	N/A
Low Channel 1, 2412 MHz		N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz		248.593 us	293.878 us	1	84.6	N/A	N/A
Mid Channel 6, 2437 MHz		N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz		249.67 us	293.512 us	1	85.1	N/A	N/A
High Channel 11, 2462 MHz		N/A	N/A	5	N/A	N/A	N/A
802.11(g) 54 Mbps							
Low Channel 1, 2412 MHz		174.036 us	216.766 us	1	80.3	N/A	N/A
Low Channel 1, 2412 MHz		N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz		174.036 us	216.134 us	1	80.5	N/A	N/A
Mid Channel 6, 2437 MHz		N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz		174.646 us	216.988 us	1	80.5	N/A	N/A
High Channel 11, 2462 MHz		N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0							
Low Channel 1, 2412 MHz		1.305 ms	1.351 ms	1	96.6	N/A	N/A
Low Channel 1, 2412 MHz		N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz		1.304 ms	1.351 ms	1	96.5	N/A	N/A
Mid Channel 6, 2437 MHz		N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz		1.304 ms	1.353 ms	1	96.4	N/A	N/A
High Channel 11, 2462 MHz		N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7							
Low Channel 1, 2412 MHz		162.28 us	205.644 us	1	78.9	N/A	N/A
Low Channel 1, 2412 MHz		N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz		161.914 us	205.888 us	1	78.6	N/A	N/A
Mid Channel 6, 2437 MHz		N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz		162.036 us	205.888 us	1	78.7	N/A	N/A
High Channel 11, 2462 MHz		N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

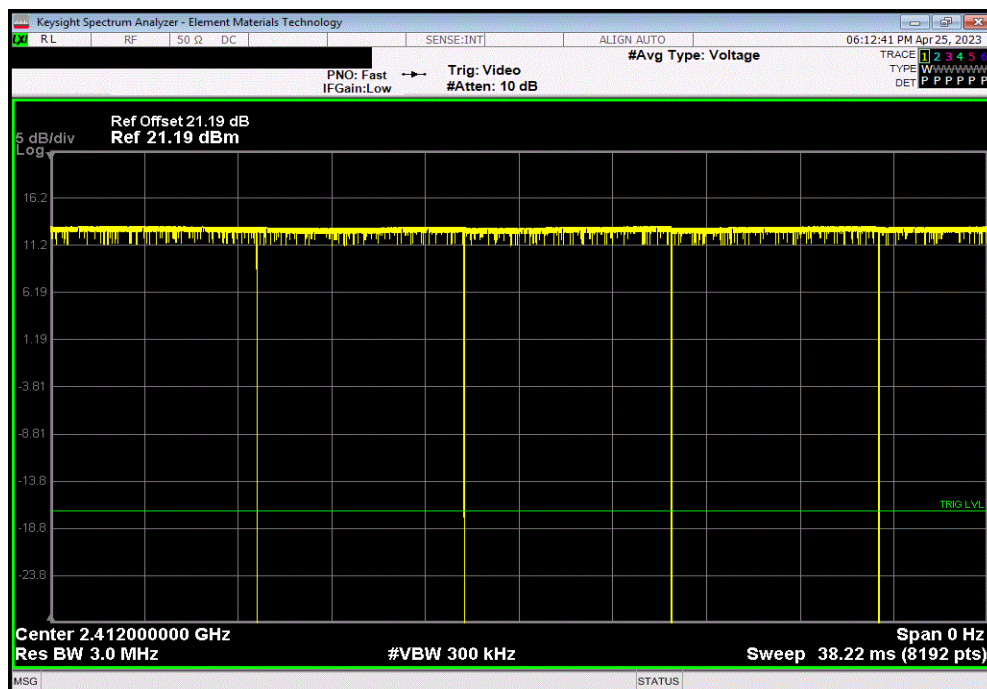


TbTx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
8.407 ms	8.45 ms	1	99.5	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

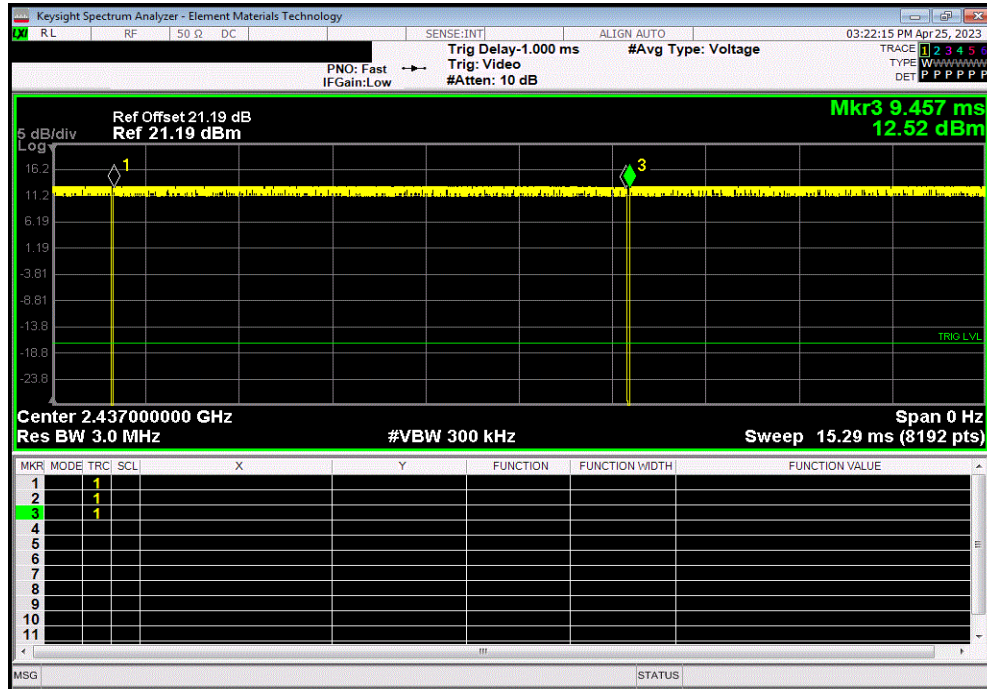


DUTY CYCLE

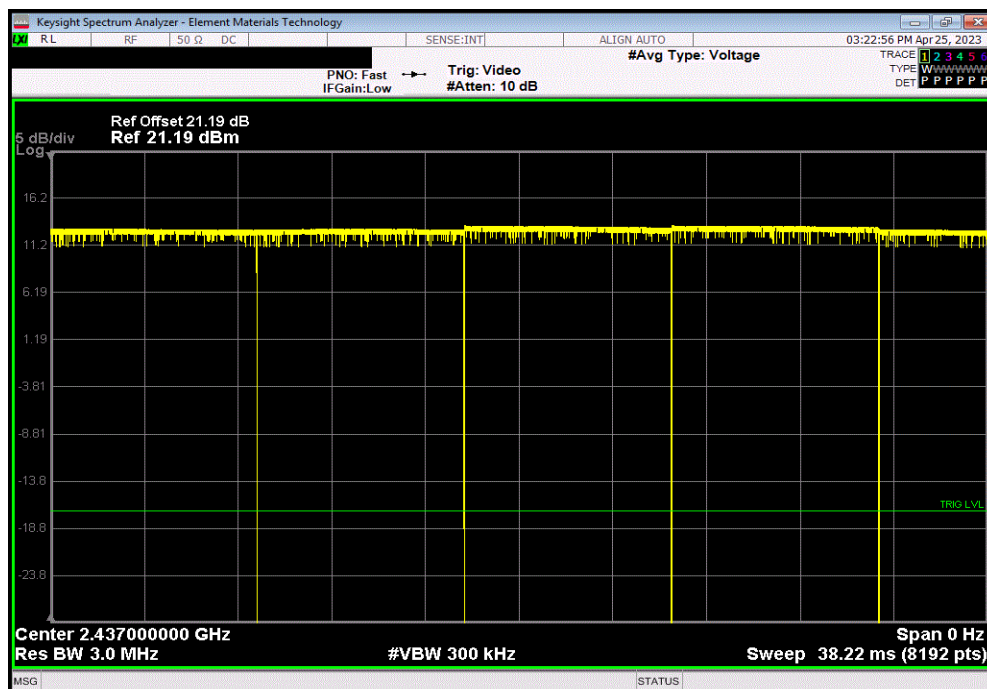


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
8.391 ms	8.454 ms	1	99.2	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

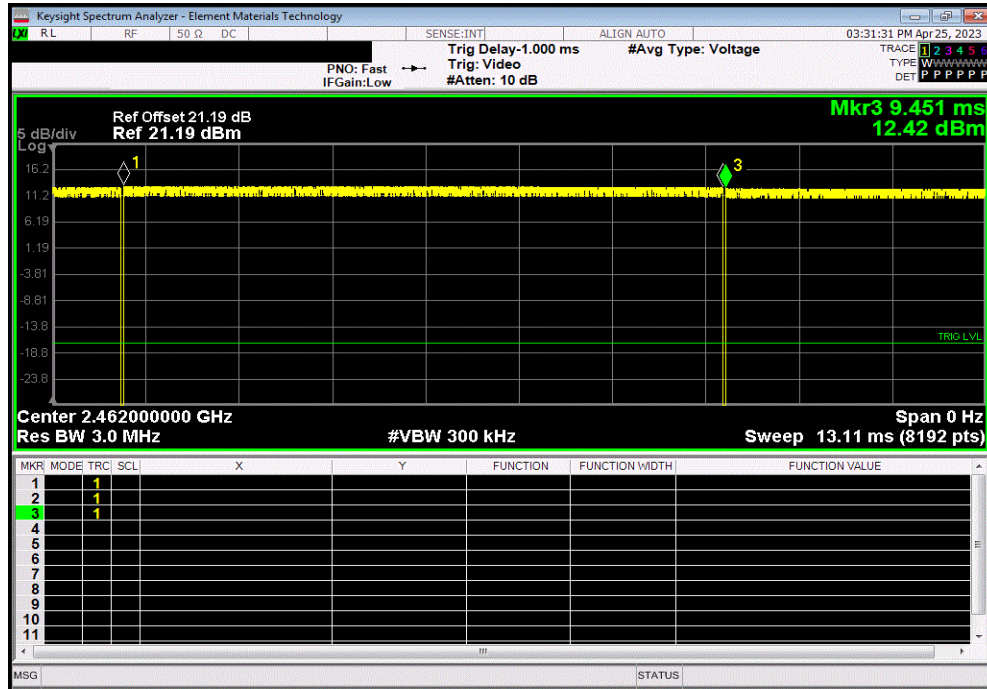


DUTY CYCLE

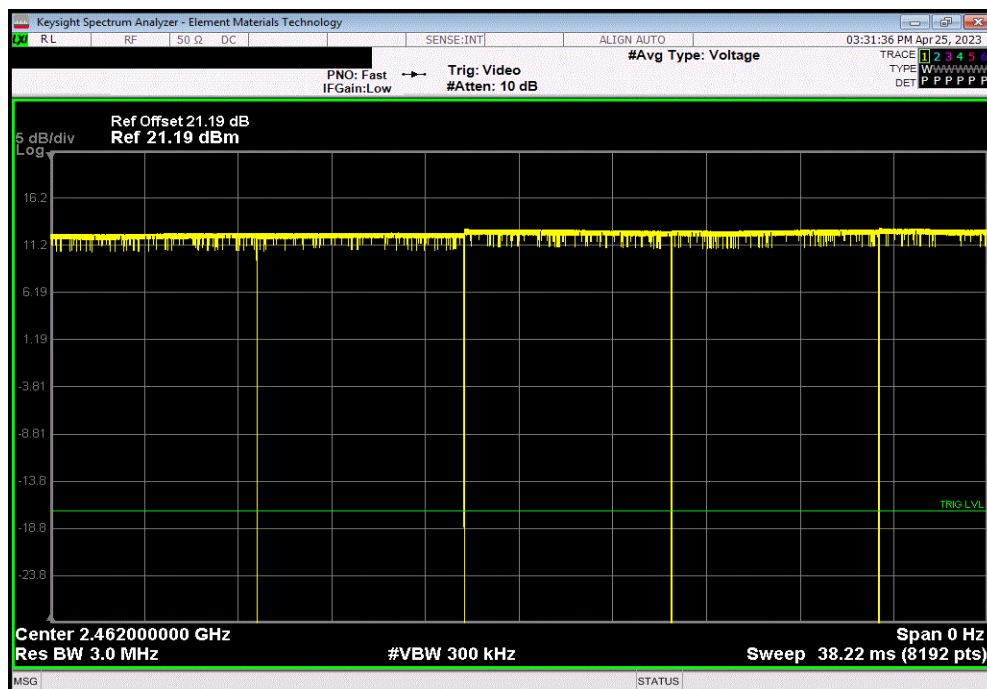


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
8.41 ms	8.453 ms	1	99.5	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

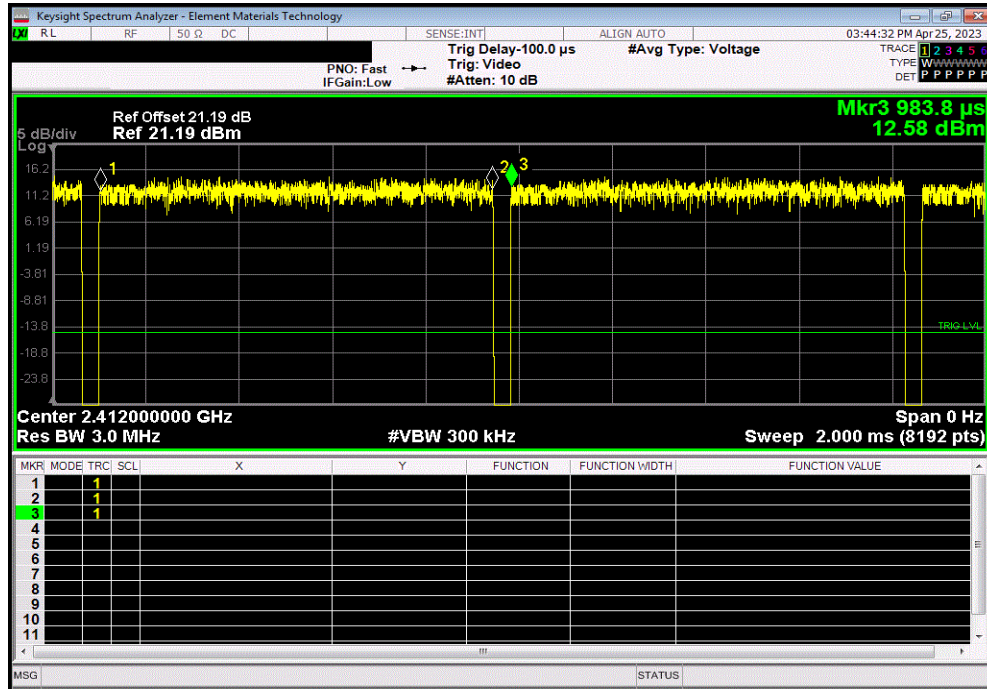


DUTY CYCLE

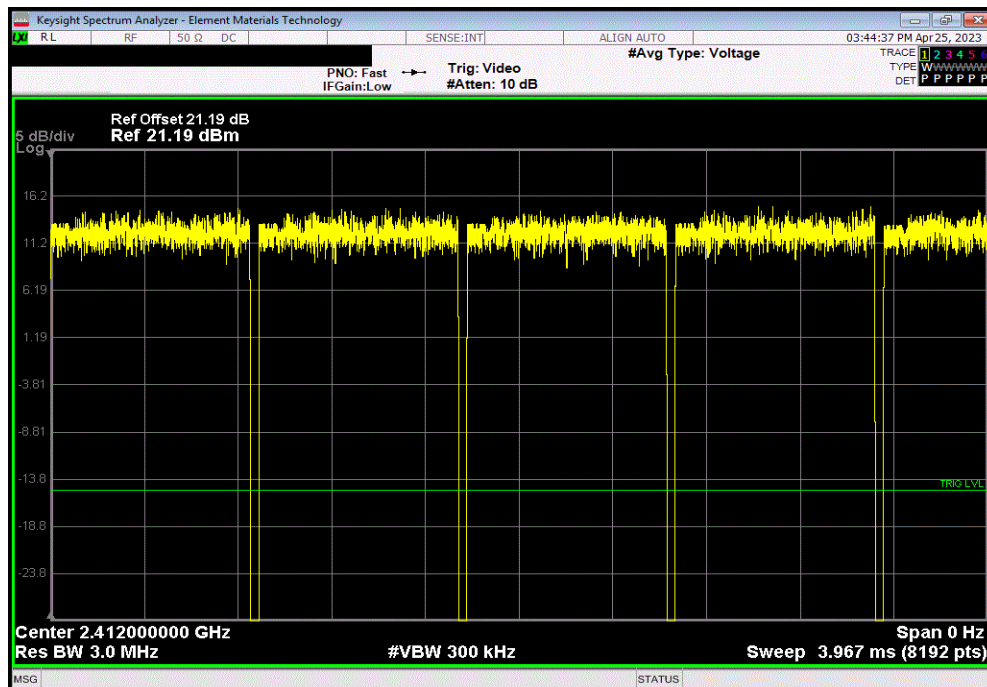


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
840.505 us	881.5 us	1	95.3	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

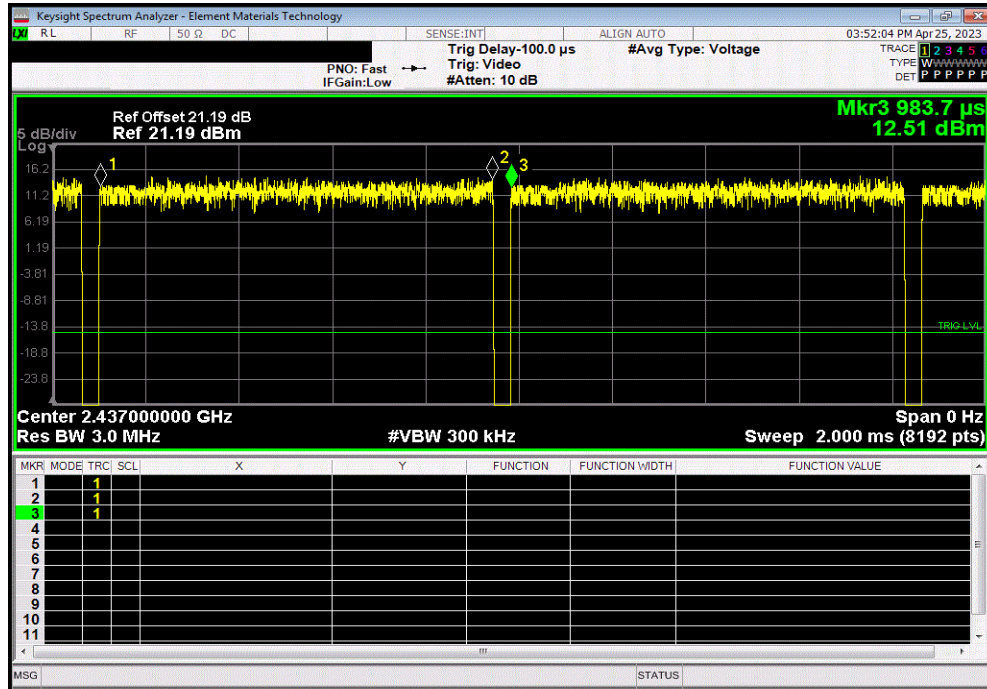


DUTY CYCLE

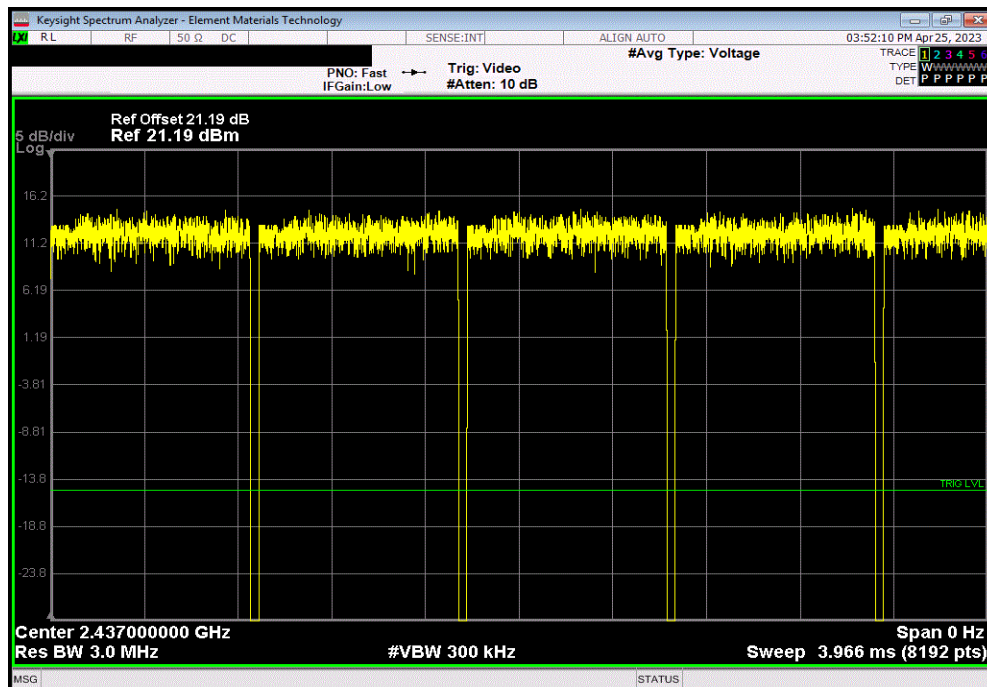


TbTx 2022.06.03.0 XM8 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
840.16 us	881.4 us	1	95.3	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

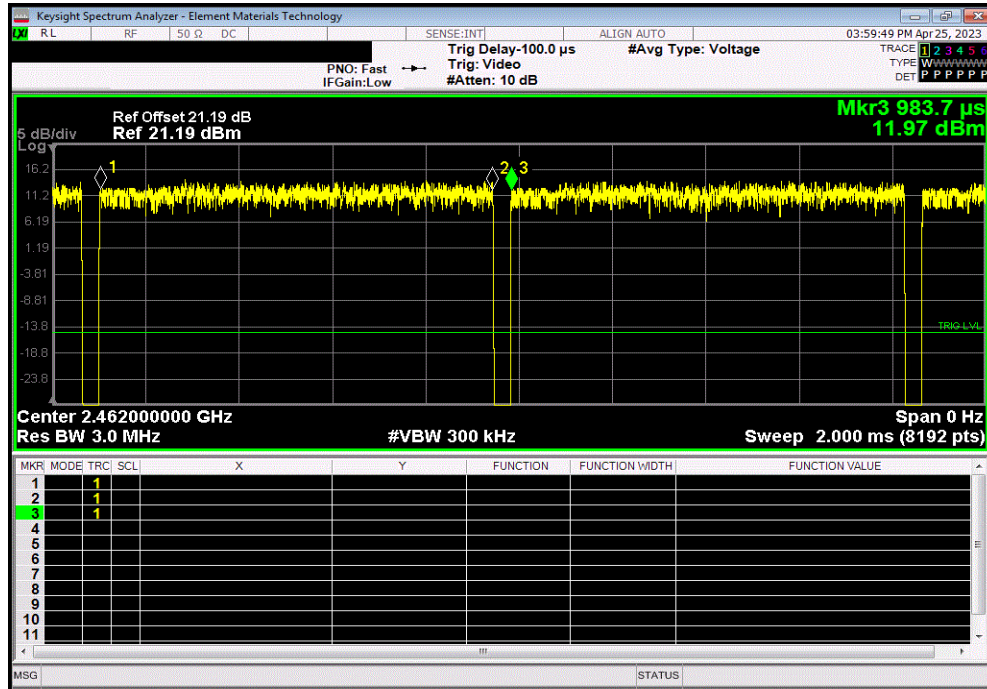


DUTY CYCLE

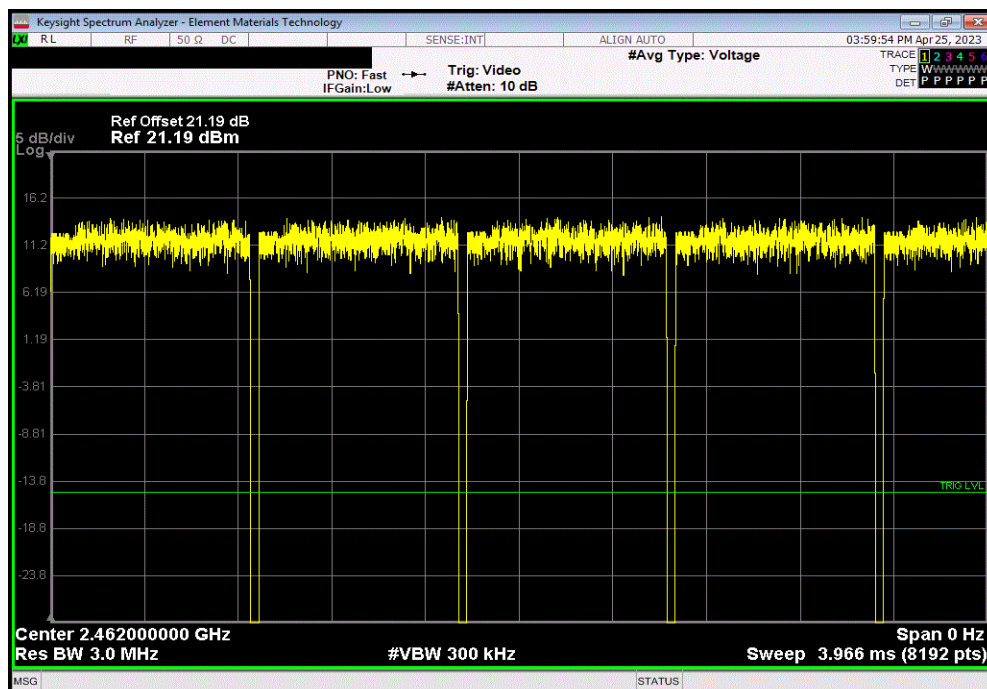


TbTx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
839.916 us	881.4 us	1	95.3	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

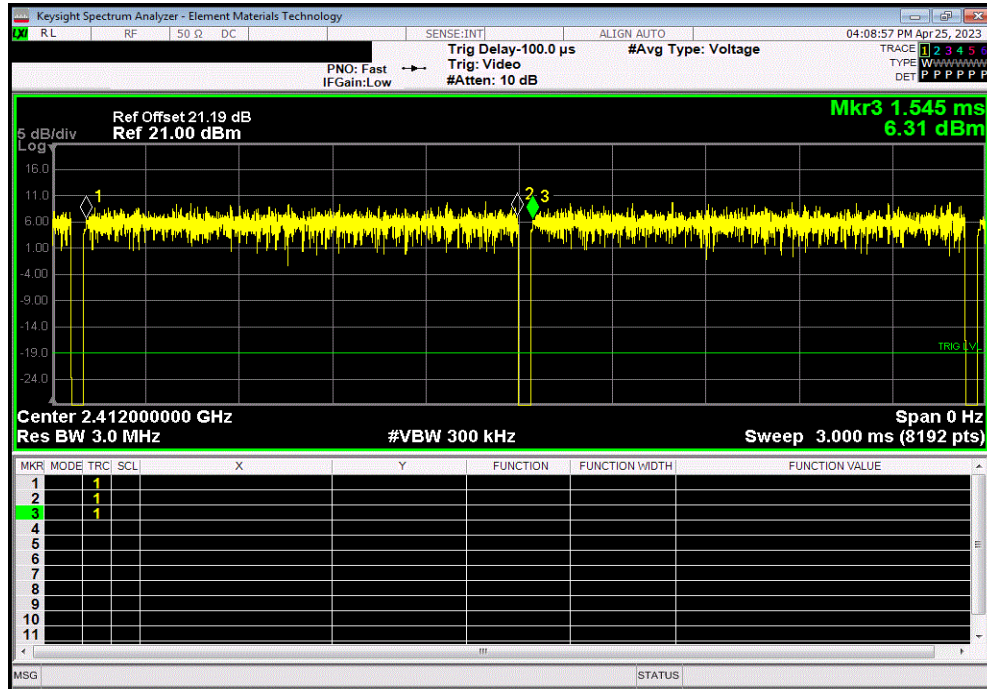


DUTY CYCLE

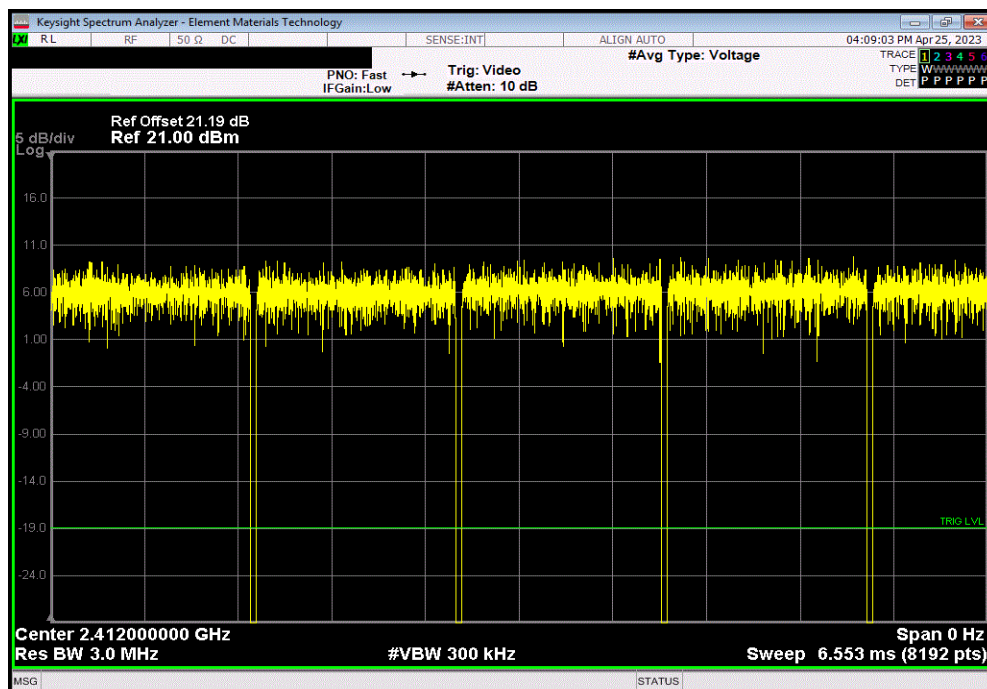


TbTx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.386 ms	1.436 ms	1	96.5	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

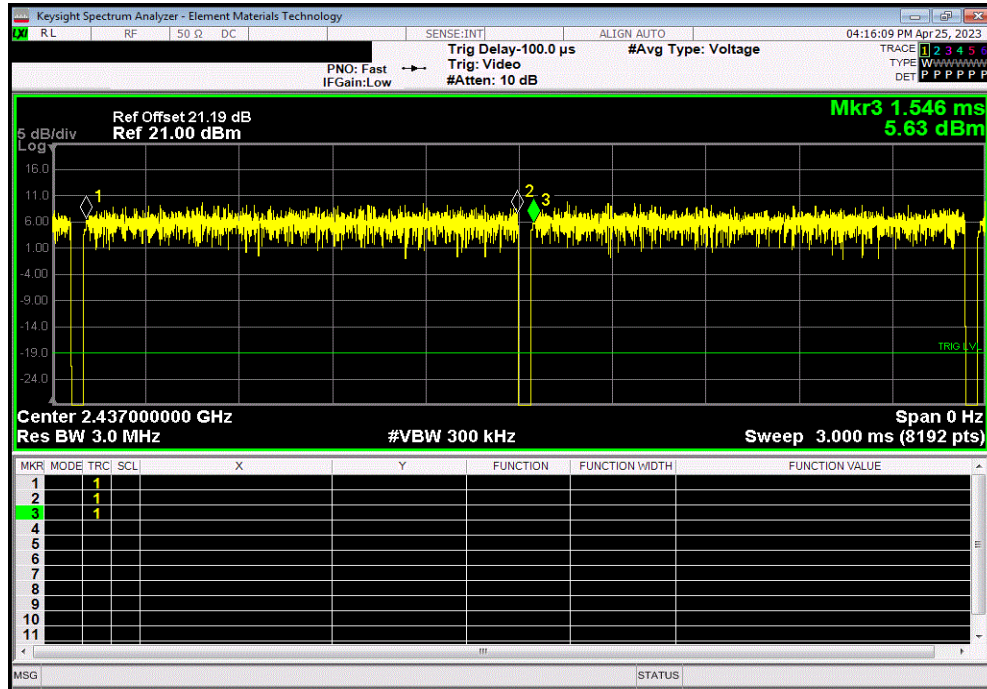


DUTY CYCLE

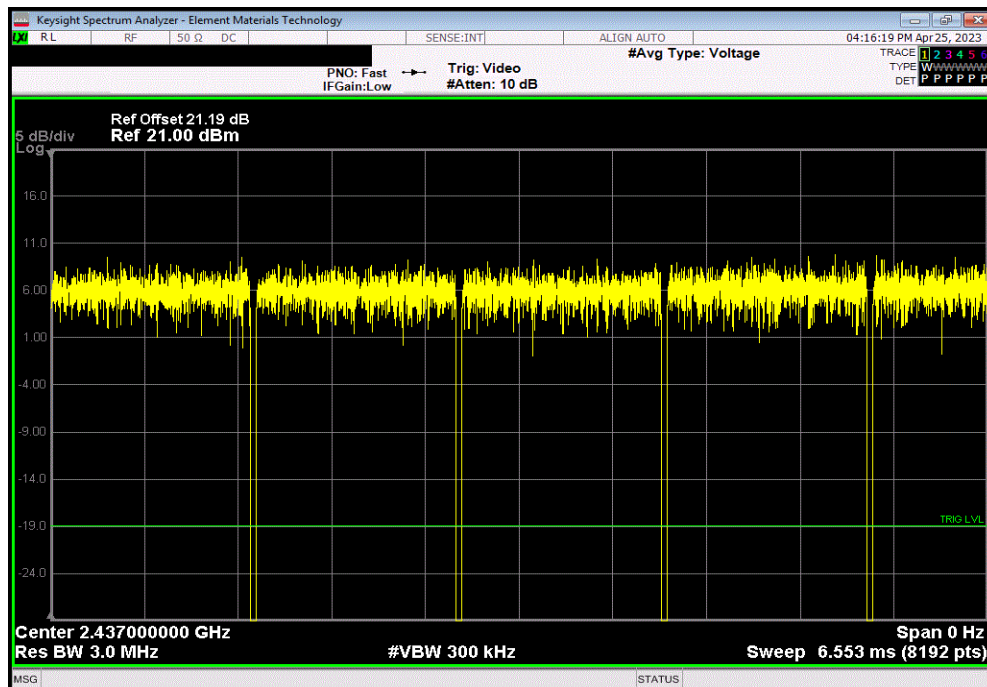


TbTx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.386 ms	1.438 ms	1	96.4	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

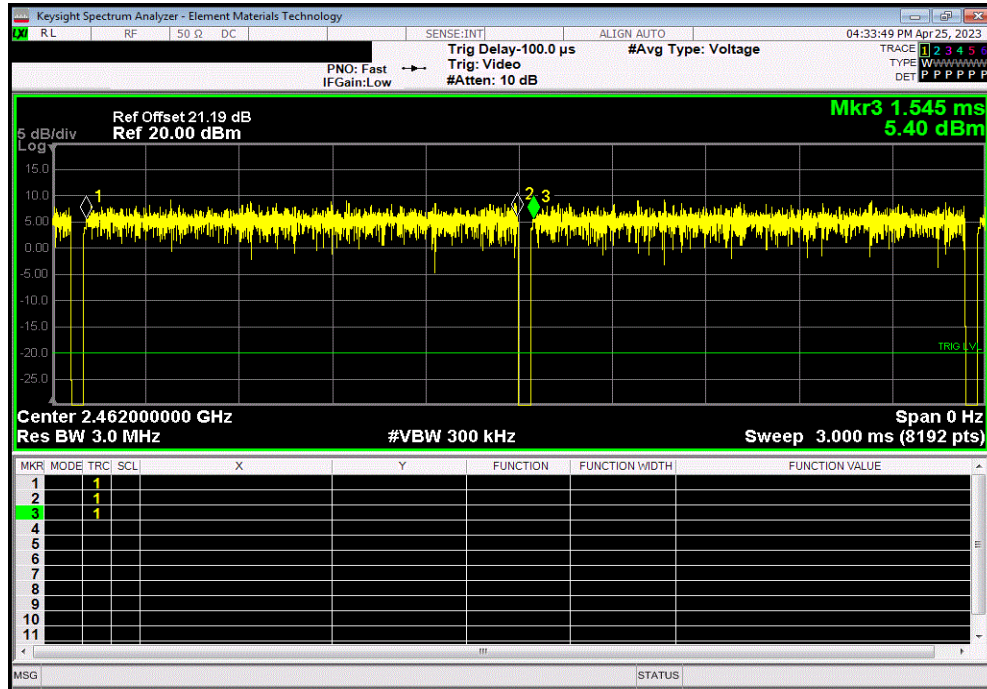


DUTY CYCLE

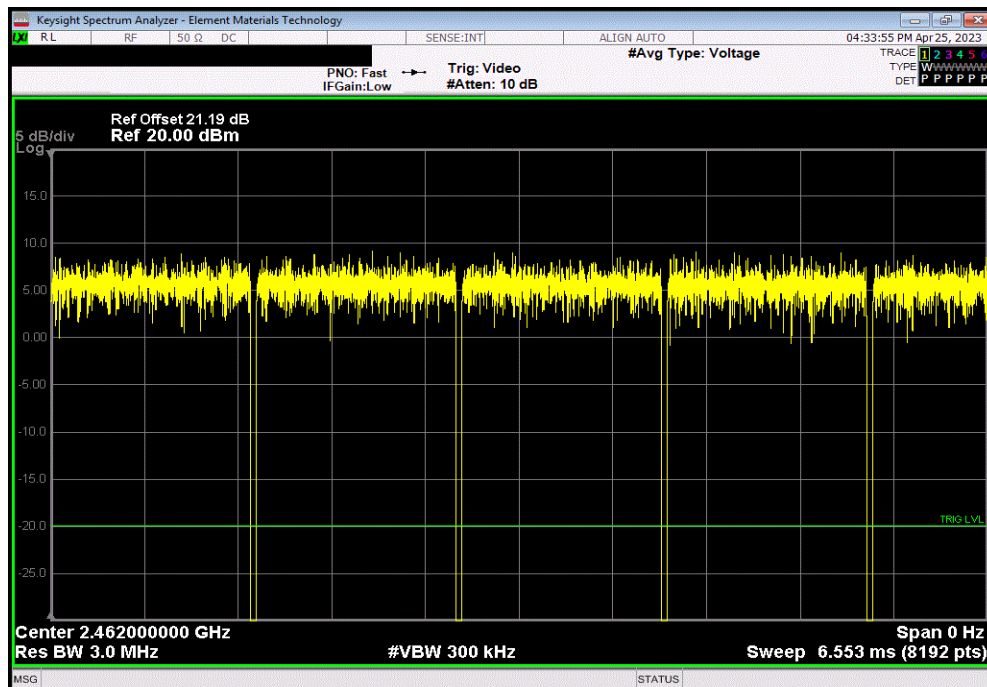


TbTx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.388 ms	1.438 ms	1	96.5	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

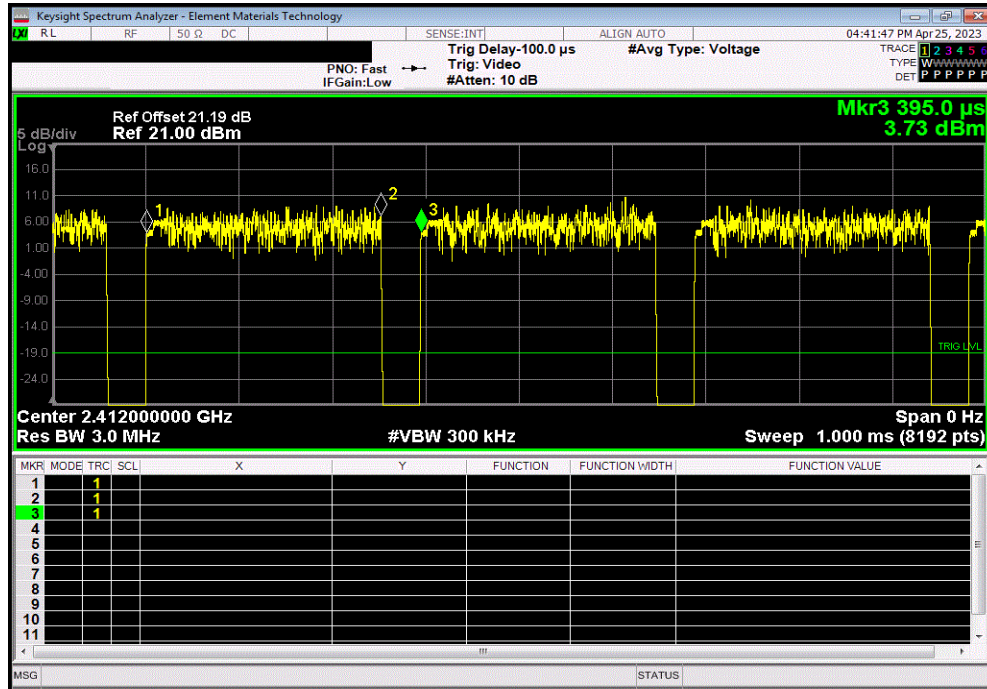


DUTY CYCLE

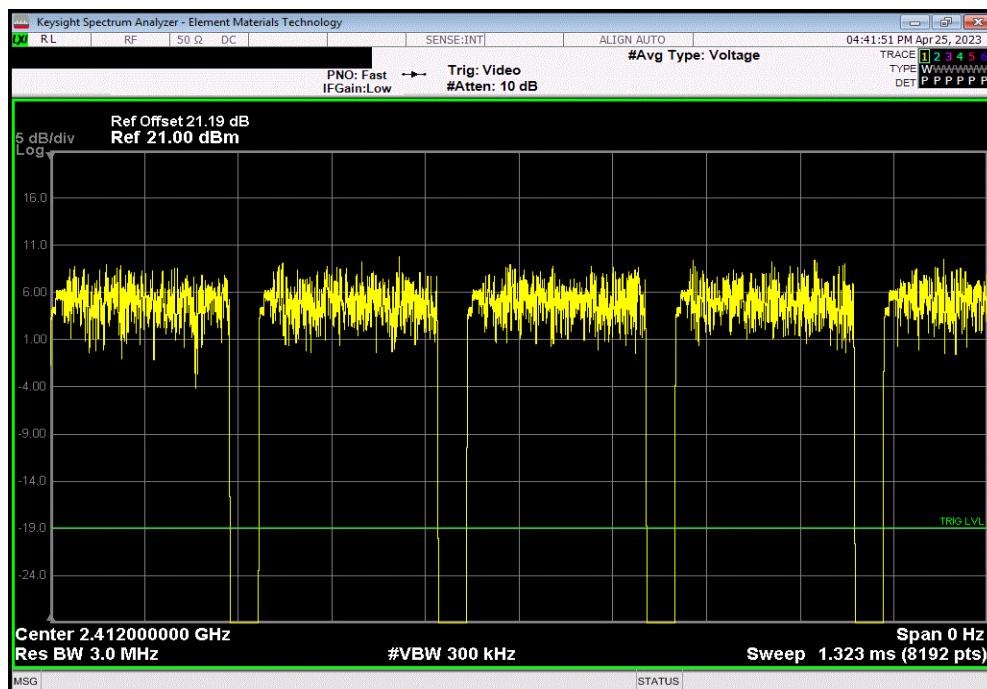


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
250.358 us	293.978 us	1	85.2	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

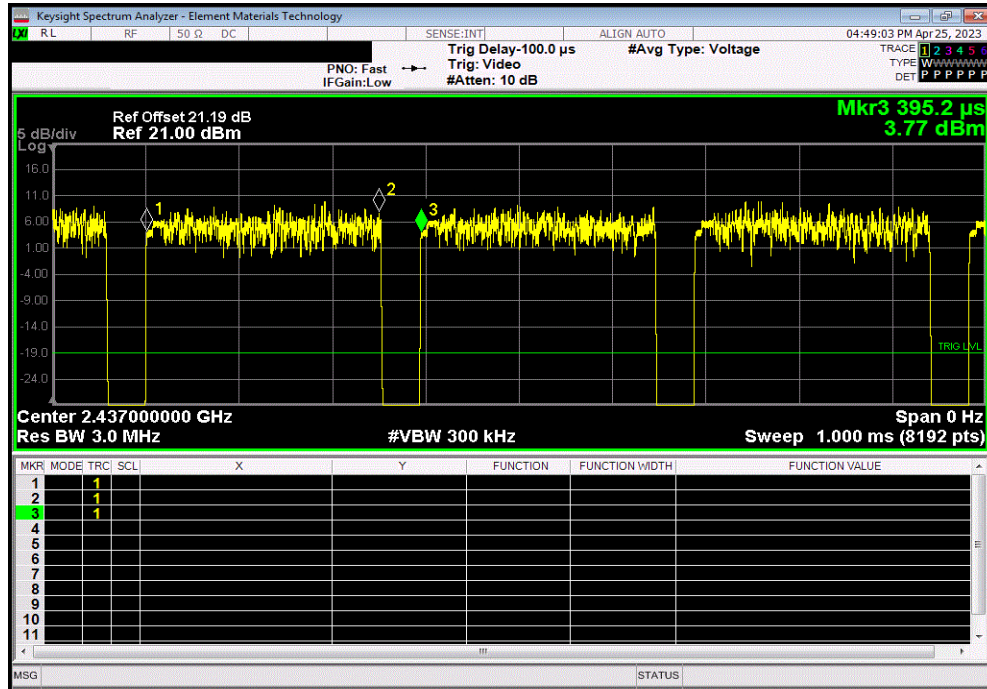


DUTY CYCLE

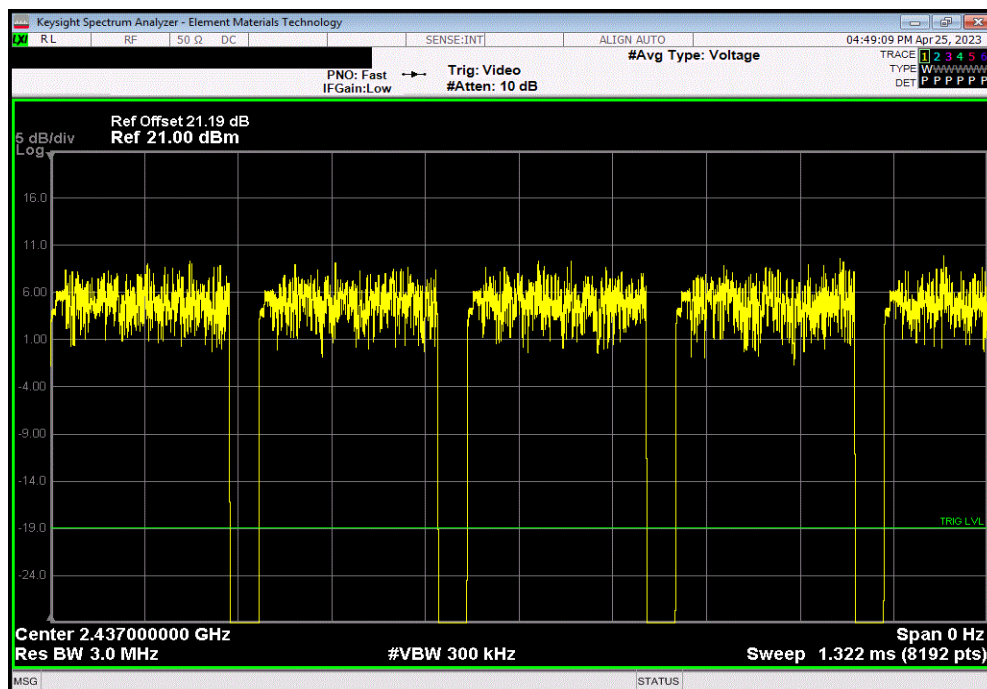


TbTx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
248.593 us	293.878 us	1	84.6	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

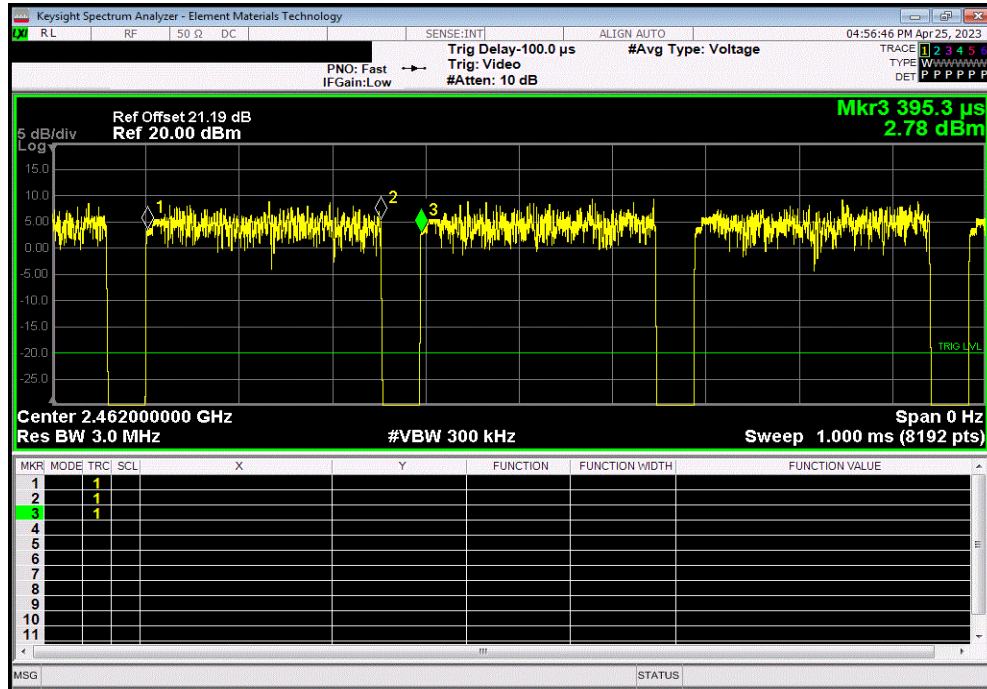


DUTY CYCLE

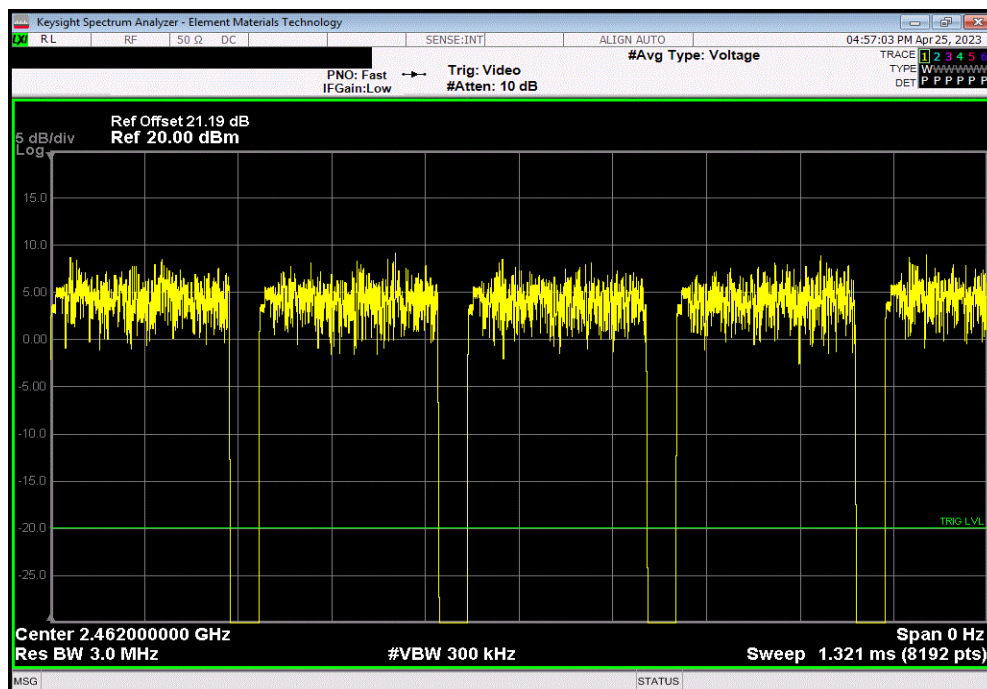


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
249.67 us	293.512 us	1	85.1	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

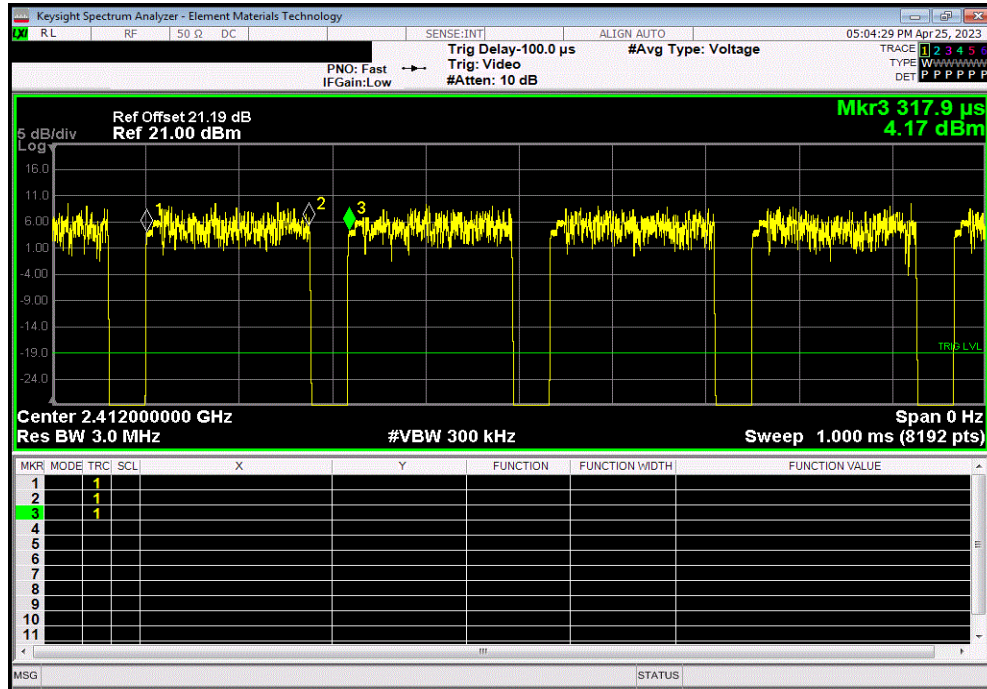


DUTY CYCLE

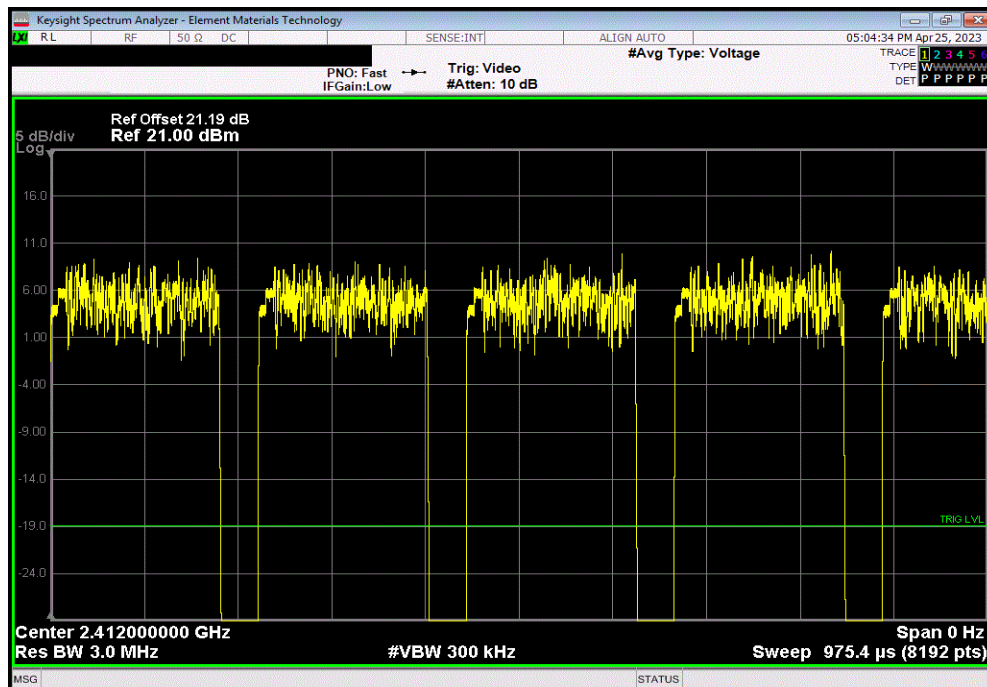


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
174.036 us	216.766 us	1	80.3	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

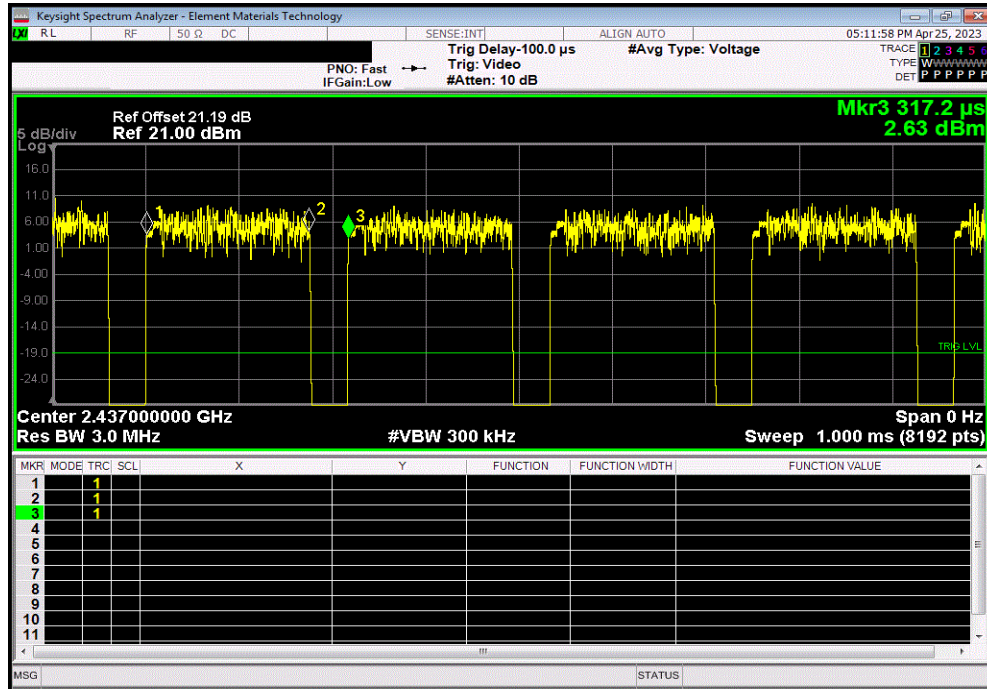


DUTY CYCLE

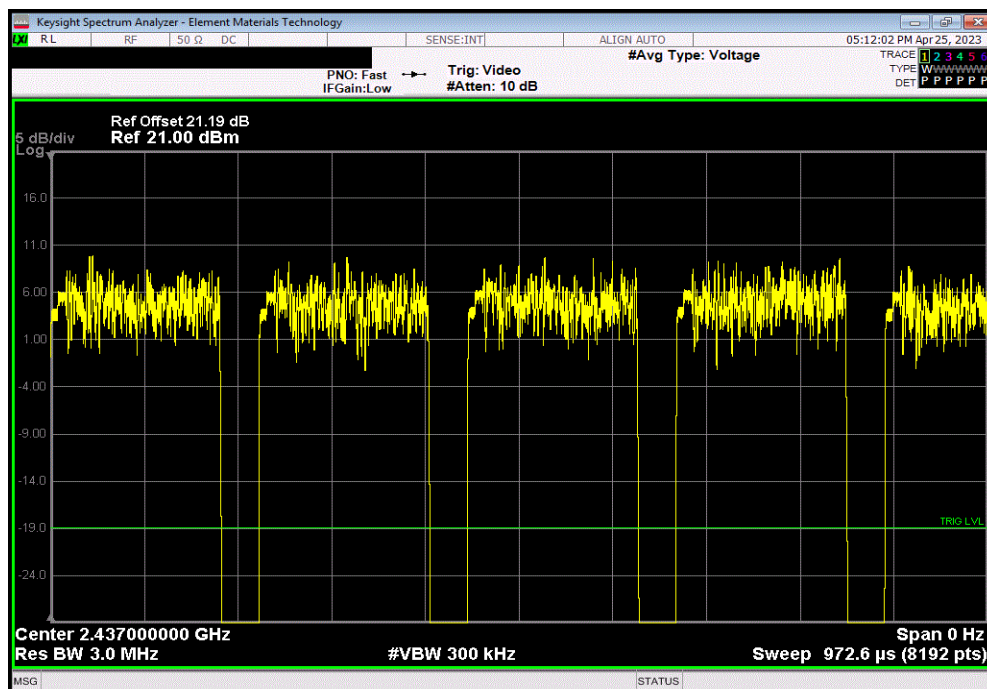


TbTtx 2022.06.03.0 XM8 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
174.036 us	216.134 us	1	80.5	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	



[illegible]

Keysight Spectrum Analyzer - Element Materials Technology

05:21:03 PM Apr 25, 2023

R L 50 Ω DC SENSE:INT ALIGN AUTO

#Avg Type: Voltage

PNO: Fast IFGain:Low Trig: Video #Atten: 10 dB

TRACE 1 2 3 4 5
TYPE W W W W W W W W
DET P P P P P P P

Ref Offset 21.19 dB
Ref 20.00 dBm

5 dB/div
Log

Center 2.462000000 GHz
Res BW 3.0 MHz
Span 0 Hz
#VBW 300 kHz
Sweep 976.4 μ s (8192 pts)

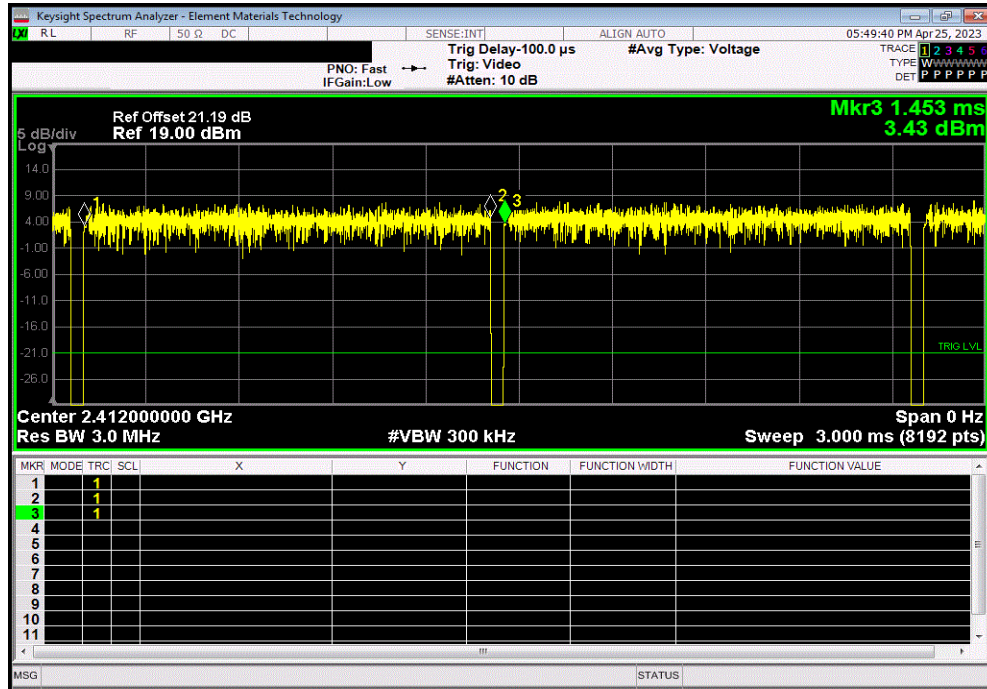
The figure shows a Keysight Spectrum Analyzer interface. The main display area shows a spectrum plot with a yellow trace. The trace is noisy and has a peak at 2.462 GHz. The y-axis is labeled '5 dB/div Log' and ranges from -25.0 to 15.0. The x-axis is labeled 'Center 2.462000000 GHz' and 'Span 0 Hz'. The plot area has a grid. The top of the screen shows the device name 'Keysight Spectrum Analyzer - Element Materials Technology' and the date/time '05:21:03 PM Apr 25, 2023'. The top right shows the 'TRACE' button and a list of traces. The top center shows the 'PNO: Fast IFGain:Low' and 'Trig: Video #Atten: 10 dB' settings. The top left shows the 'R L 50 Ω DC SENSE:INT ALIGN AUTO' settings. The bottom of the screen shows the 'Ref Offset 21.19 dB' and 'Ref 20.00 dBm' settings. The bottom right shows the 'Sweep 976.4 μ s (8192 pts)' setting.

DUTY CYCLE

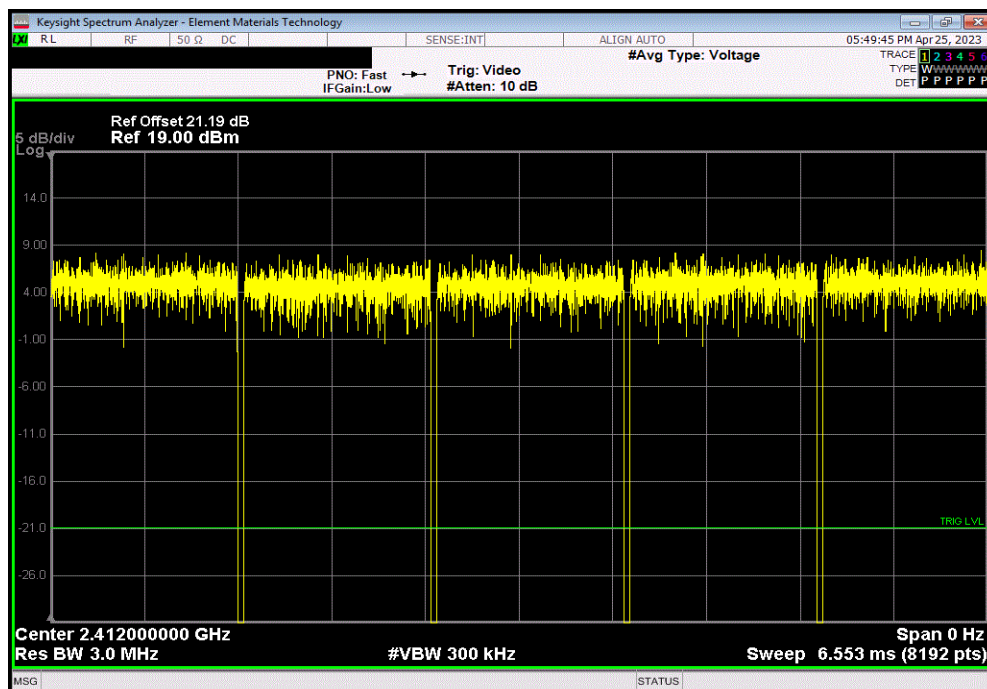


TbTx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.305 ms	1.351 ms	1	96.6	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

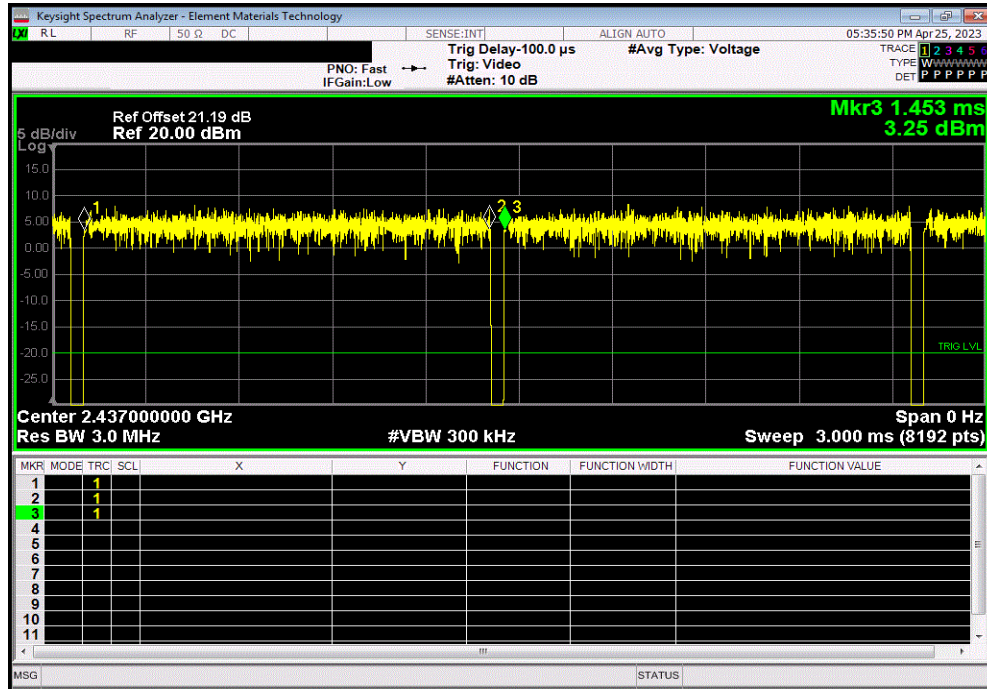


DUTY CYCLE

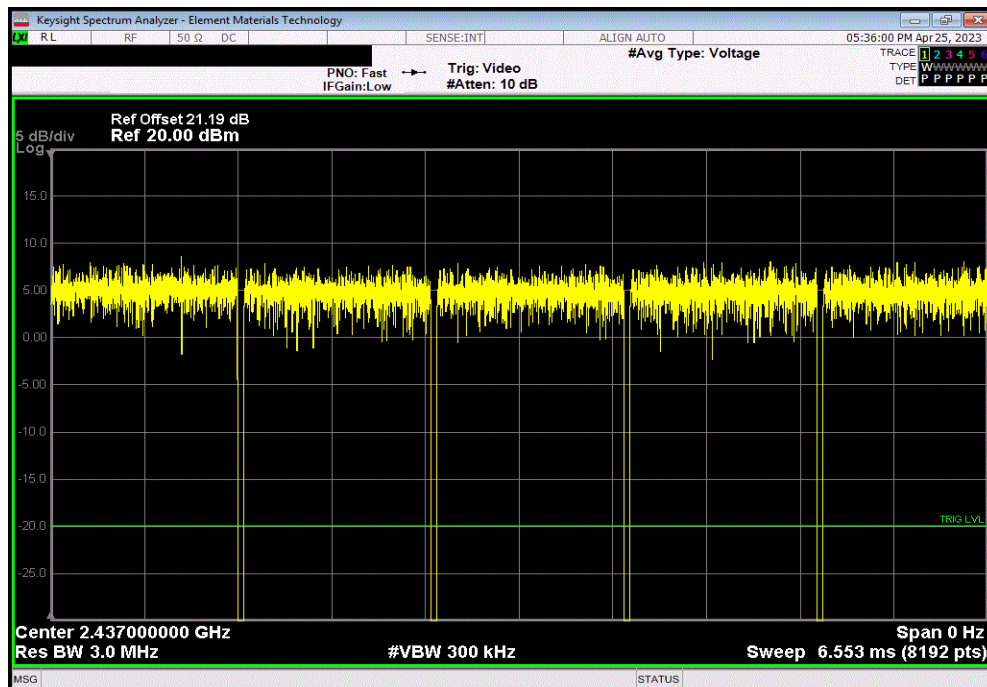


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.304 ms	1.351 ms	1	96.5	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

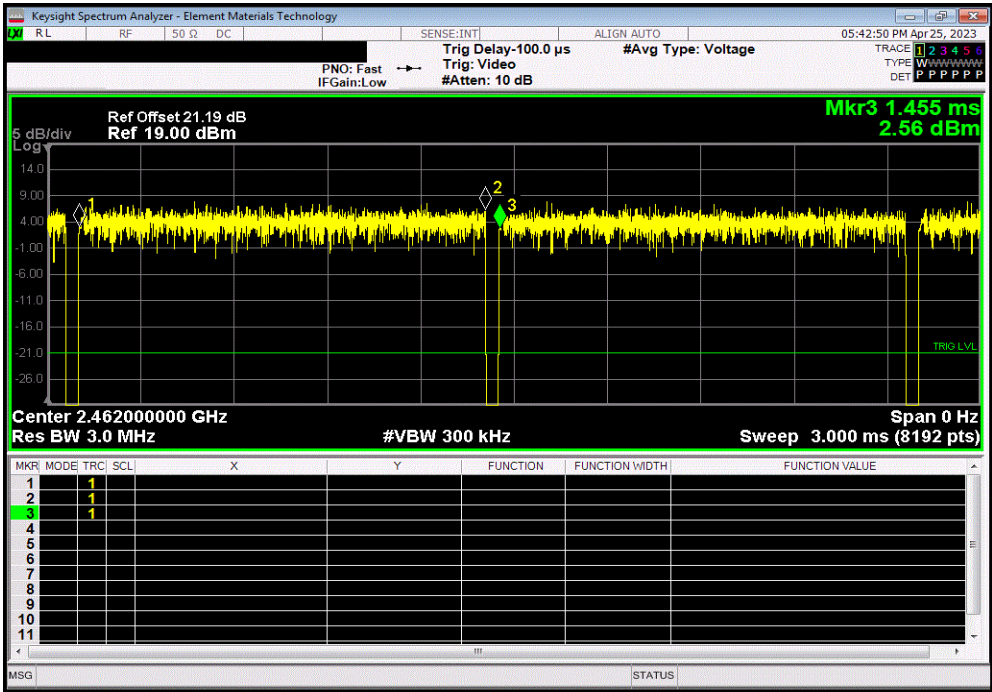


DUTY CYCLE

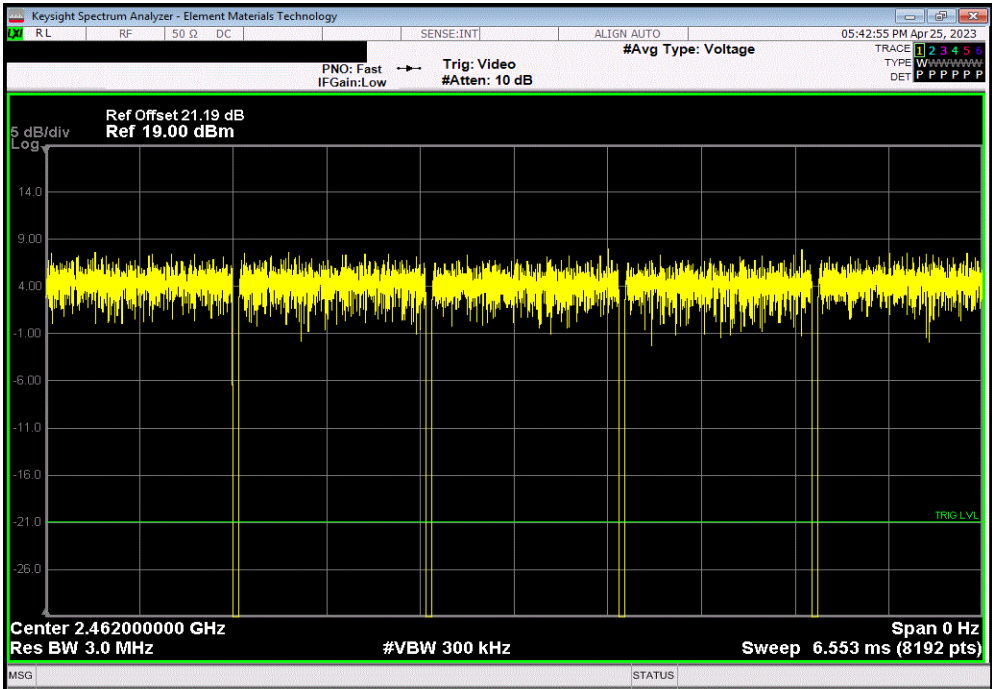


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
1.304 ms	1.353 ms	1	96.4	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

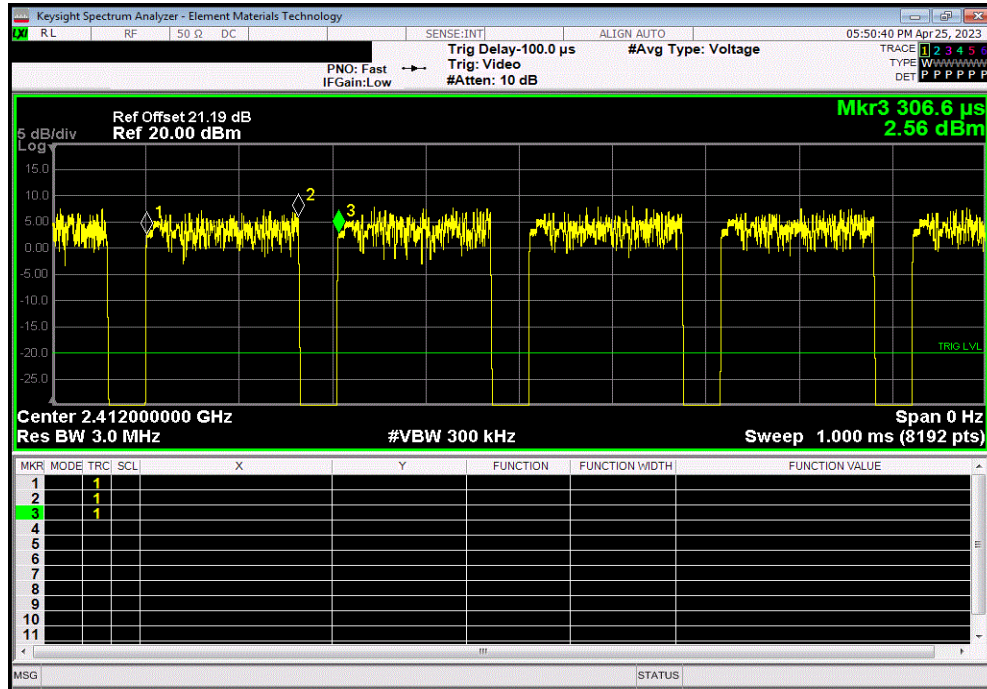


DUTY CYCLE

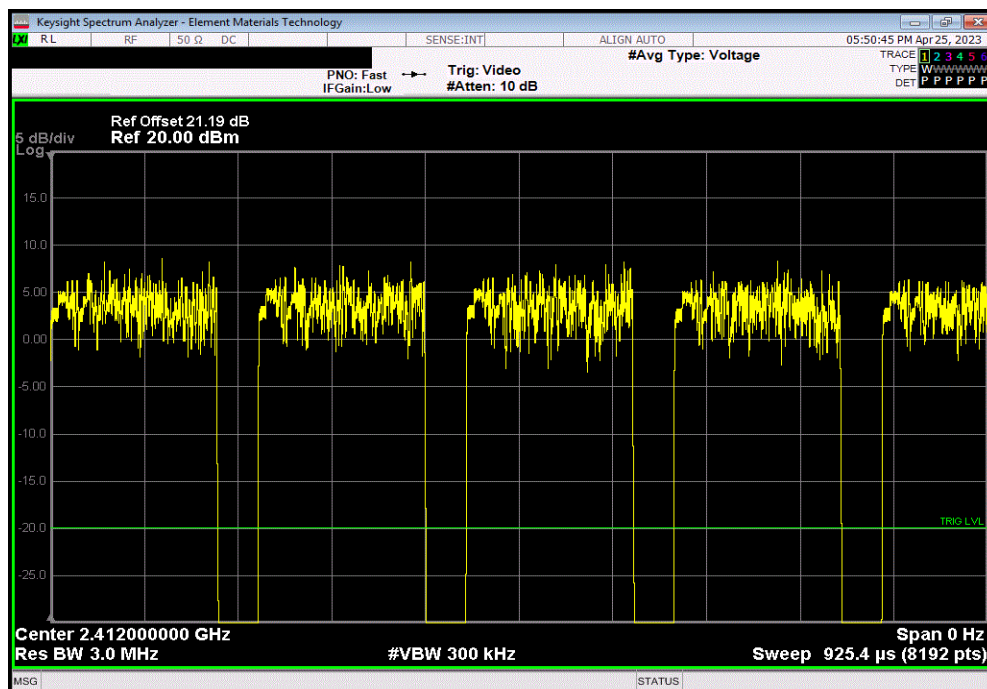


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
162.28 us	205.644 us	1	78.9	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

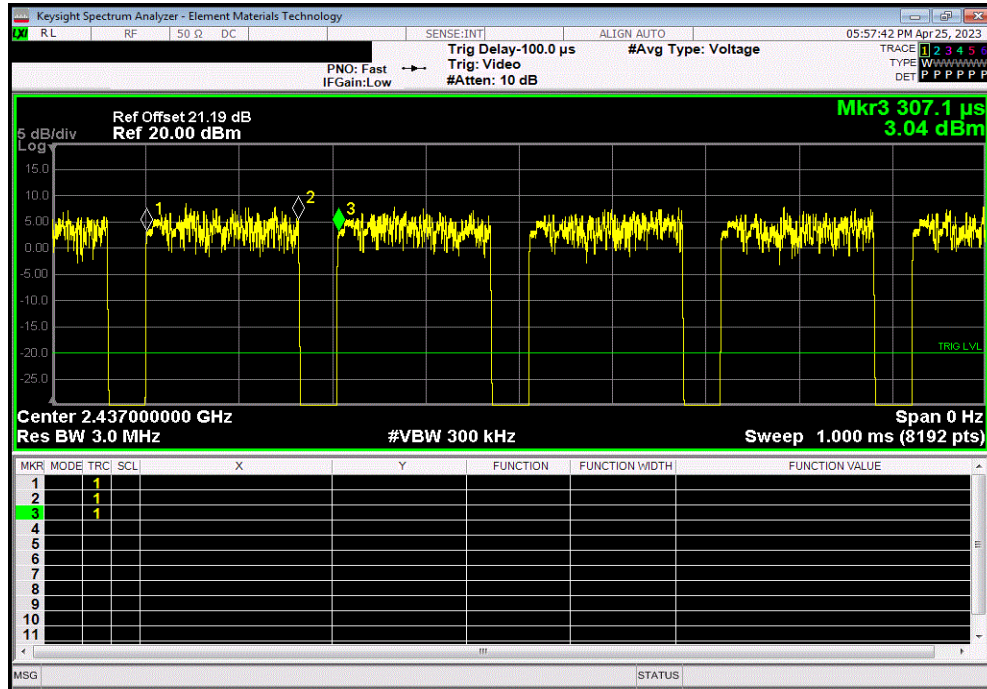


DUTY CYCLE

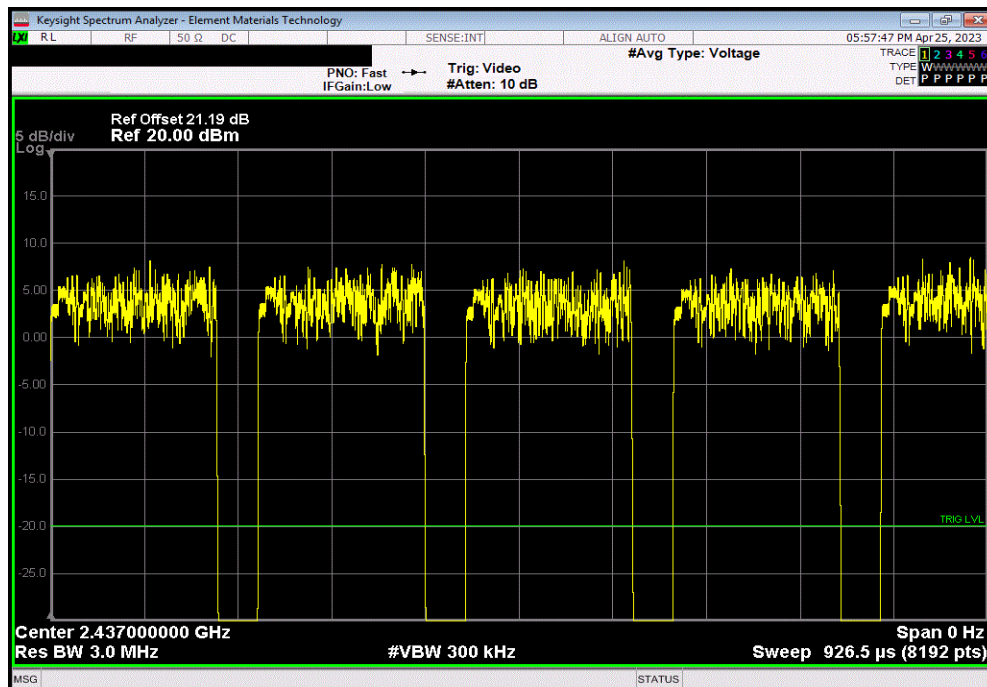


TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
161.914 us	205.888 us	1	78.6	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

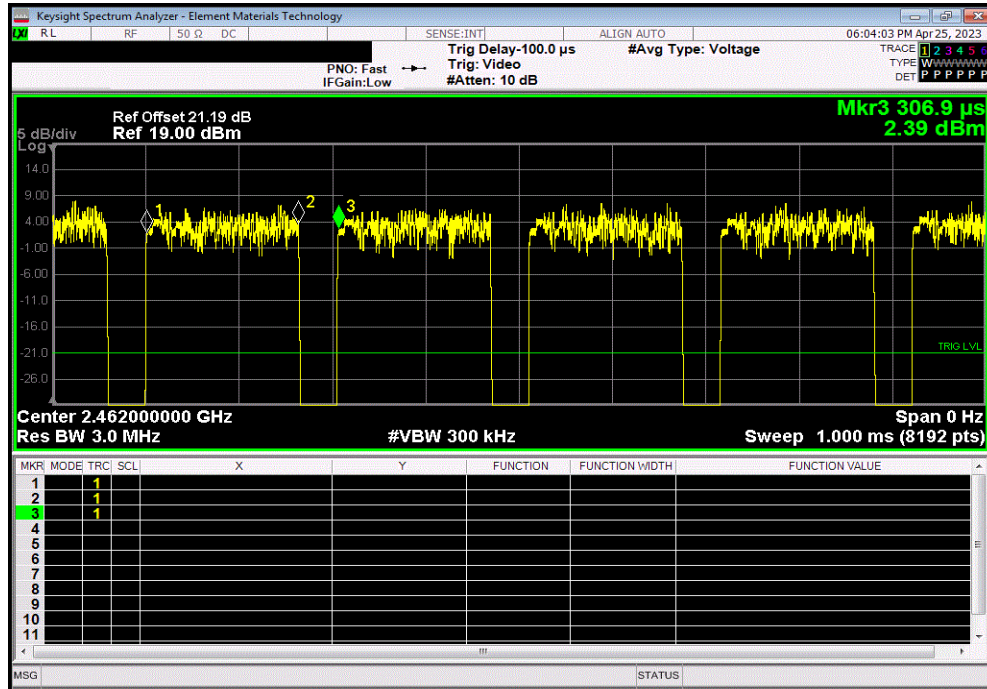


DUTY CYCLE



TbTtx 2022.06.03.0 XMt 2023.02.14.0

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
162.036 us	205.888 us	1	78.7	N/A	N/A	



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

