



# element

## WatchGuard Video

V300

FCC 15.247:2019

Bluetooth Radio

Report # WTVD0027.4



**NVLAP**<sup>®</sup>  
TESTING

NVLAP LAB CODE: 201049-0



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# CERTIFICATE OF TEST



Last Date of Test: November 8, 2019  
WatchGuard Video  
EUT: V300

## Radio Equipment Testing

### Standards

Specification	Method
FCC 15.247:2019	ANSI C63.10:2013

### Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT.
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
7.5	Duty Cycle	Yes	Pass	
7.8.2	Carrier Frequency Separation	Yes	Pass	
7.8.3	Number of Hopping Frequencies	Yes	Pass	
7.8.4	Dwell Time	Yes	Pass	
7.8.5	Output Power	Yes	Pass	
7.8.5	Equivalent Isotropic Radiated Power	Yes	Pass	
7.8.6	Band Edge Compliance	Yes	Pass	
7.8.6	Band Edge Compliance - Hopping Mode	Yes	Pass	
7.8.7	Occupied Bandwidth	Yes	Pass	
7.8.8	Spurious Conducted Emissions	Yes	Pass	

### Deviations From Test Standards

None

### Approved By:

Jeremiah Darden, Operations Manager

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

# REVISION HISTORY



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

# ACCREDITATIONS AND AUTHORIZATIONS



## United States

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

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

**NVLAP** - Each laboratory is accredited by NVLAP to ISO 17025

## Canada

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

## European Union

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

## Australia/New Zealand

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

## Korea

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

## Japan

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

## Taiwan

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

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

## Singapore

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

## Israel

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

## Hong Kong

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

## Vietnam

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

## SCOPE

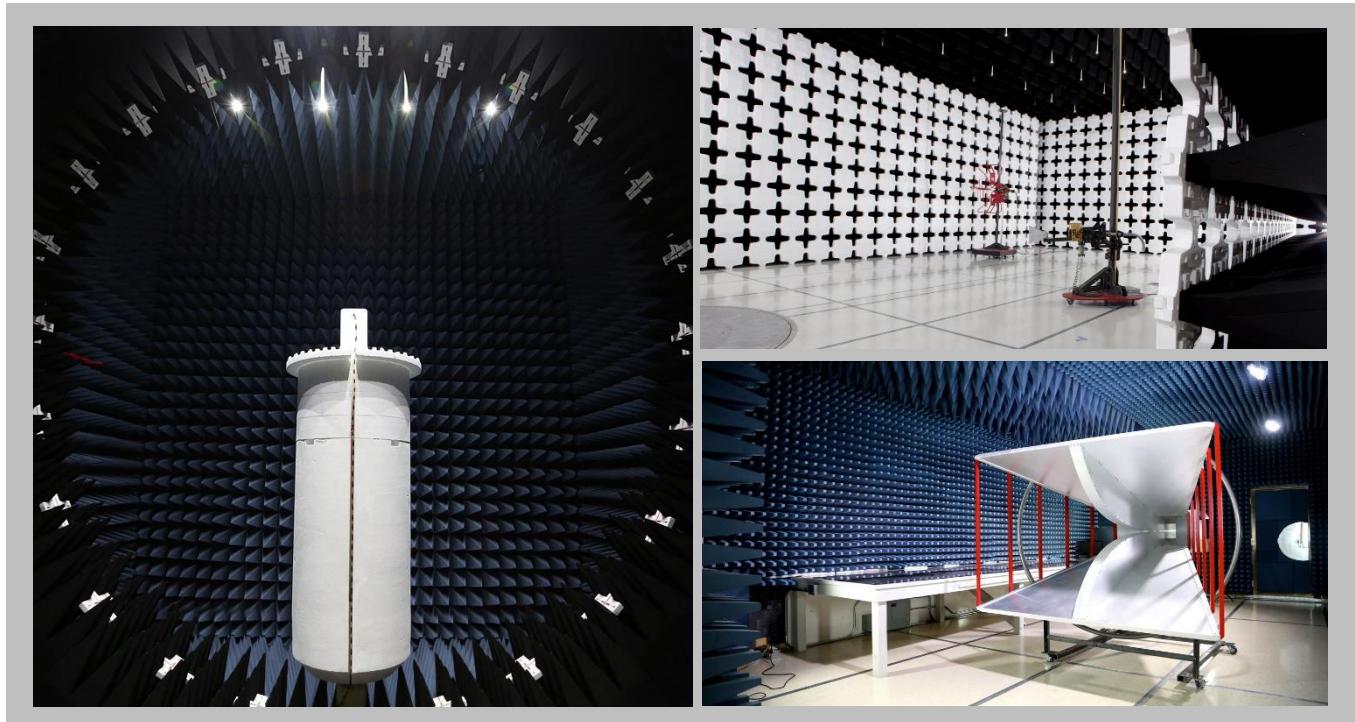
For details on the Scopes of our Accreditations, please visit:

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

# FACILITIES



<b>California</b> Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	<b>Minnesota</b> Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	<b>Oregon</b> Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	<b>Texas</b> Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	<b>Washington</b> Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425) 984-6600
<b>NVLAP</b>				
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
<b>Innovation, Science and Economic Development Canada</b>				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
<b>BSMI</b>				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
<b>VCCI</b>				
A-0029	A-0109	A-0108	A-0201	A-0110
<b>Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA</b>				
US0158	US0175	US0017	US0191	US0157



# MEASUREMENT UNCERTAINTY



## Measurement Uncertainty

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

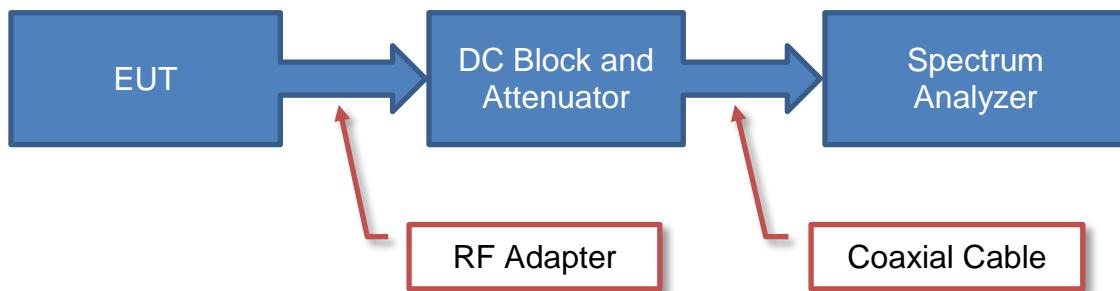
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

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

Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

# Test Setup Block Diagrams

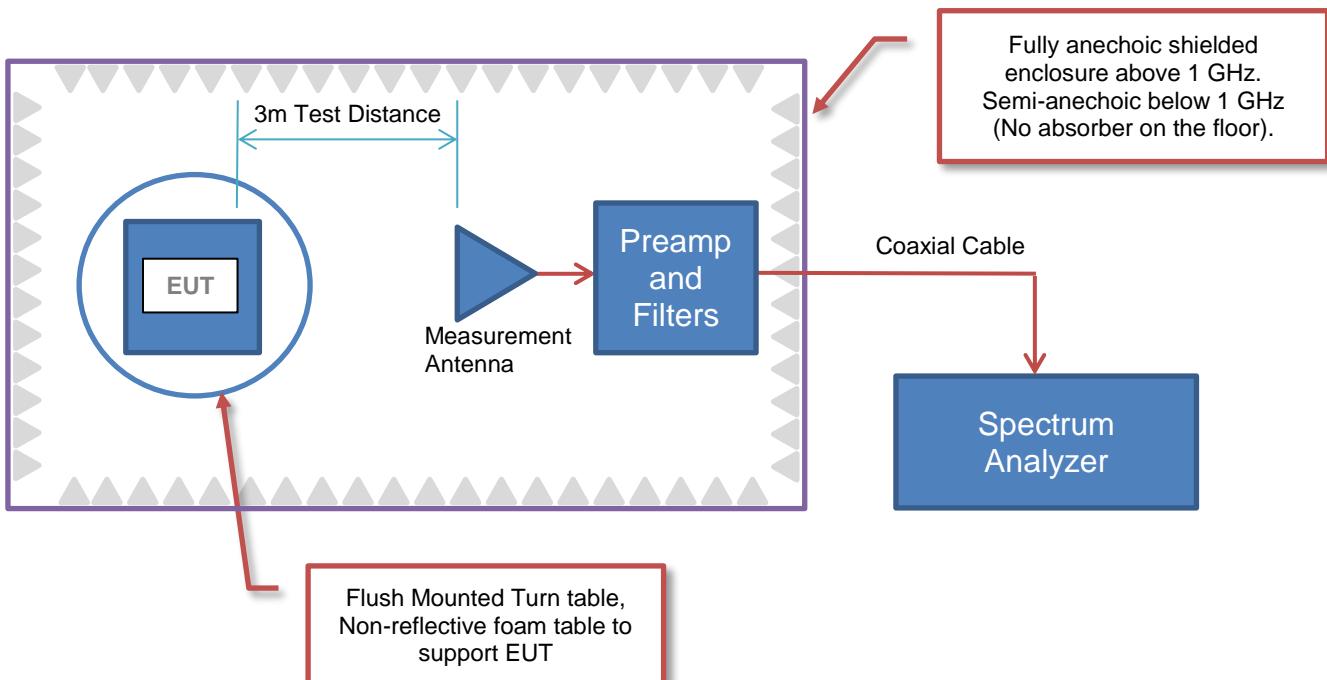
## Antenna Port Conducted Measurements



## Near Field Test Fixture Measurements



## Spurious Radiated Emissions



# PRODUCT DESCRIPTION



## Client and Equipment Under Test (EUT) Information

<b>Company Name:</b>	WatchGuard Video
<b>Address:</b>	415 East Exchange Pkwy
<b>City, State, Zip:</b>	Allen, TX 75002
<b>Test Requested By:</b>	Navaid Karimi
<b>EUT:</b>	V300
<b>First Date of Test:</b>	November 5, 2019
<b>Last Date of Test:</b>	November 8, 2019
<b>Receipt Date of Samples:</b>	November 4, 2019
<b>Equipment Design Stage:</b>	Production
<b>Equipment Condition:</b>	No Damage
<b>Purchase Authorization:</b>	Verified

## Information Provided by the Party Requesting the Test

<b>Functional Description of the EUT:</b>
Body Worn Camera
<b>Testing Objective:</b>
To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements.

# CONFIGURATIONS



## Configuration WTVD0027- 1

Software/Firmware Running during test	
Description	Version
WiFi Test Firmware	20190829161925

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Body Camera (Radiated Unit)	WatchGuard Video	V300	55

## Configuration WTVD0027- 4

Software/Firmware Running during test	
Description	Version
BT Test Firmware	20190925000146

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Body Camera (Direct Connect)	WatchGuard Video	V300	63

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Charging Base	WatchGuard Video	V300 USB Base	None

Remote Equipment Outside of Test Setup Boundary				
Description	Manufacturer	Model/Part Number	Serial Number	
AC Adapter (Base)	GlobeTek, Inc.	GT-21089-1512-W3	931657108-11	
Laptop Computer	Dell	Latitude E5570	3VX20G2	
AC/DC Power Adapter (Laptop)	Dell	DA130PE1-00	CN-0JU012-48661-136-JIMY-A04	

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power (Base)	No	1m	No	AC Adapter (Base)	Charging Base
AC Power (Laptop)	No	.6m	No	AC Mains	AC/DC Power Adapter (Laptop)
DC Power (Laptop)	No	1m	Yes	AC/DC Power Adapter (Laptop)	Laptop Computer
USB	Yes	1m	Yes	Laptop Computer	Charging Base

# MODIFICATIONS



## Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2019-11-05	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2019-11-08	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2019-11-08	Carrier Frequency Separation	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	2019-11-08	Number of Hopping Frequencies	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	2019-11-08	Dwell Time	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	2019-11-08	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.
7	2019-11-08	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2019-11-08	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	2019-11-08	Band Edge Compliance - Hopping Mode	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
10	2019-11-08	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.
11	2019-11-08	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.



# POWER SETTINGS

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

## SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Position	Frequency (MHz)	Power Setting
DH5	Low Channel	2402	13 (Max)
2-DH5	Low Channel	2402	13 (Max)
3-DH5	Low Channel	2402	13 (Max)
DH5	Mid Channel	2440	13 (Max)
2-DH5	Mid Channel	2440	13 (Max)
3-DH5	Mid Channel	2440	13 (Max)
DH5	High Channel	2480	13 (Max)
2-DH5	High Channel	2480	13 (Max)
3-DH5	High Channel	2480	13 (Max)

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2019.05.10

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 at Low Channel (2402 MHz), Mid Channel (2440 MHz), High Channel (2480 MHz)

Transmitting at Low Channel (2402 MHz), High Channel (2480 MHz)

## POWER SETTINGS INVESTIGATED

Battery

## CONFIGURATIONS INVESTIGATED

WTVD0027 - 1

## FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 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.	Interval
Attenuator	Weinschel Corp	4H-20	AWB	17-Mar-2019	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HGC	17-Mar-2019	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	1-Aug-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	JSDWK42-18004000-60-5P	PAM	20-Sep-2019	12 mo
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXW	21-Aug-2018	24 mo
Cable	Northwest EMC	18-40GHz	TXE	20-Sep-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	18-Sep-2019	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	18-Sep-2019	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Cable	Northwest EMC	8-18GHz	TXD	14-May-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	17-Mar-2019	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJL	11-Oct-2018	24 mo
Cable	Northwest EMC	1-8.2 GHz	TXC	14-May-2019	12 mo
Amplifier - Pre-Amplifier	Fairview Microwave	FMAM63001	PAS	24-Jan-2019	12 mo
Antenna - Biconilog	ETS Lindgren	3143B	AYF	10-May-2018	24 mo
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	1-Aug-2019	12 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	1-Nov-2019	12 mo

## 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 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.

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

# SPURIOUS RADIATED EMISSIONS

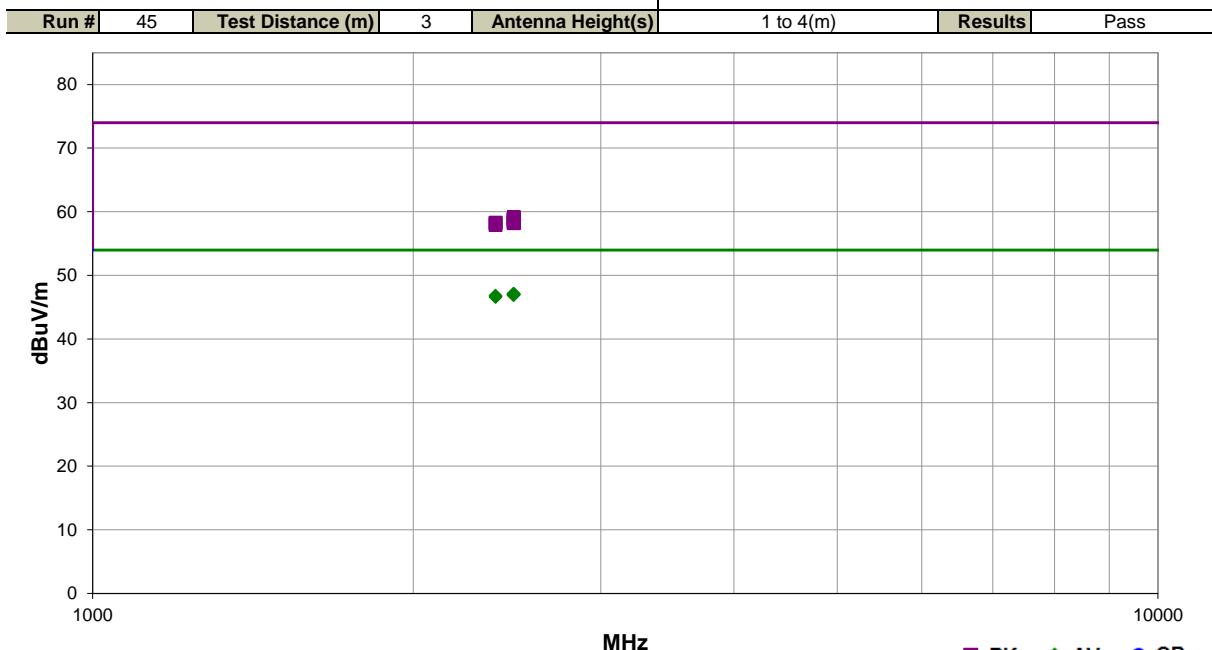


EmiR5 2019.08.15.1

PSA-ESCI 2019.05.10

Work Order:	WTVD0027	Date:	5-Nov-2019	
Project:	None	Temperature:	23.7 °C	
Job Site:	TX02	Humidity:	49.8% RH	
Serial Number:	55	Barometric Pres.:	1023 mbar	
EUT:	V300	Tested by:	Jonathan Kiefer, Willie Love	
Configuration:	1			
Customer:	WatchGuard Video			
Attendees:	Navaid Karimi			
EUT Power:	Battery			
Operating Mode:	Transmitting at Low Channel (2402 MHz), High Channel (2480 MHz)			
Deviations:	None			
Comments:	Transmit Band Edge. See the table comments for EUT orientation, channel and data rate information.			

Test Specifications	Test Method
FCC 15.247:2019	ANSI C63.10:2013



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	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
2484.390	32.1	-5.0	2.38	340.9	3.0	20.0	Horz	AV	0.0	47.1	54.0	-6.9	EUT Vert, High Ch, DH5
2484.463	32.1	-5.0	1.5	134.0	3.0	20.0	Horz	AV	0.0	47.1	54.0	-6.9	EUT Vert, High Ch, 3-DH5
2483.810	32.0	-5.0	1.5	177.0	3.0	20.0	Vert	AV	0.0	47.0	54.0	-7.0	EUT Vert, High Ch, DH5
2484.817	32.0	-5.0	1.5	229.0	3.0	20.0	Vert	AV	0.0	47.0	54.0	-7.0	EUT Horz, High Ch, DH5
2485.423	32.0	-5.0	1.5	24.0	3.0	20.0	Horz	AV	0.0	47.0	54.0	-7.0	EUT On Side, High Ch, DH5
2484.960	32.0	-5.0	1.5	180.0	3.0	20.0	Horz	AV	0.0	47.0	54.0	-7.0	EUT Vert, High Ch, 2-DH5
2484.857	31.9	-5.0	1.0	348.0	3.0	20.0	Horz	AV	0.0	46.9	54.0	-7.1	EUT Horz, High Ch, DH5
2483.923	31.9	-5.0	2.56	334.9	3.0	20.0	Vert	AV	0.0	46.9	54.0	-7.1	EUT On Side, High Ch, DH5
2388.793	32.2	-5.4	1.5	183.0	3.0	20.0	Horz	AV	0.0	46.8	54.0	-7.2	EUT Vert, Low Ch, 3-DH5
2388.723	32.0	-5.4	1.5	182.0	3.0	20.0	Horz	AV	0.0	46.6	54.0	-7.4	EUT Vert, Low Ch, DH5
2389.993	32.0	-5.4	1.5	0.0	3.0	20.0	Horz	AV	0.0	46.6	54.0	-7.4	EUT Vert, Low Ch 2-DH5
2485.127	44.2	-5.0	1.0	348.0	3.0	20.0	Horz	PK	0.0	59.2	74.0	-14.8	EUT Horz, High Ch, DH5
2484.447	43.9	-5.0	2.38	340.9	3.0	20.0	Horz	PK	0.0	58.9	74.0	-15.1	EUT Vert, High Ch, DH5
2483.553	43.9	-5.0	1.5	180.0	3.0	20.0	Horz	PK	0.0	58.9	74.0	-15.1	EUT Vert, High Ch, 2-DH5
2484.227	43.8	-5.0	1.5	24.0	3.0	20.0	Horz	PK	0.0	58.8	74.0	-15.2	EUT On Side, High Ch, DH5
2483.723	43.5	-5.0	2.56	334.9	3.0	20.0	Vert	PK	0.0	58.5	74.0	-15.5	EUT On Side, High Ch, DH5
2483.697	43.3	-5.0	1.5	229.0	3.0	20.0	Vert	PK	0.0	58.3	74.0	-15.7	EUT Horz, High Ch, DH5
2389.923	43.7	-5.4	1.5	182.0	3.0	20.0	Horz	PK	0.0	58.3	74.0	-15.7	EUT Vert, Low Ch, DH5
2485.367	43.2	-5.0	1.5	177.0	3.0	20.0	Vert	PK	0.0	58.2	74.0	-15.8	EUT Vert, High Ch, DH5
2485.100	43.2	-5.0	1.5	134.0	3.0	20.0	Horz	PK	0.0	58.2	74.0	-15.8	EUT Vert, High Ch, 3-DH5

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	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
2388.200	43.6	-5.4	1.5	183.0	3.0	20.0	Horz	PK	0.0	58.2	74.0	-15.8	EUT Vert, Low Ch, 3-DH5
2389.473	43.3	-5.4	1.5	0.0	3.0	20.0	Horz	PK	0.0	57.9	74.0	-16.1	EUT Vert, Low Ch 2-DH5

# SPURIOUS RADIATED EMISSIONS

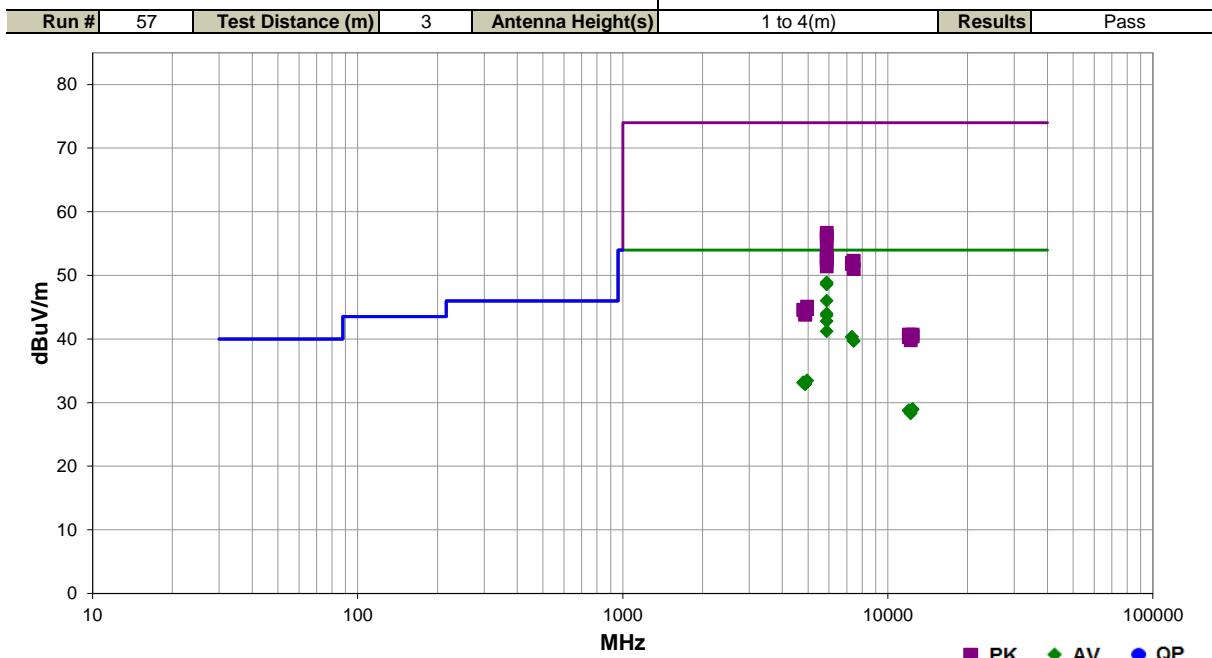


EmiR5 2019.08.15.1

PSA-ESCI 2019.05.10

Work Order:	WTVD0027	Date:	5-Nov-2019	
Project:	None	Temperature:	23.7 °C	
Job Site:	TX02	Humidity:	49.8% RH	
Serial Number:	55	Barometric Pres.:	1023 mbar	
EUT:	V300	Tested by:	Jonathan Kiefer, Willie Love	
Configuration:	1			
Customer:	WatchGuard Video			
Attendees:	Navaid Karimi			
EUT Power:	Battery			
Operating Mode:	Transmitting at Low Channel (2402 MHz), Mid Channel (2440 MHz), High Channel (2480 MHz)			
Deviations:	None			
Comments:	See the table comments for EUT orientation, channel and data rate information. All harmonics were below the measurement noise floor; therefore no upward correction factor was added to the average measurements.			

Test Specifications	Test Method
FCC 15.247:2019	ANSI C63.10:2013



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	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
5879.992	40.0	8.9	1.5	64.9	3.0	0.0	Horz	AV	0.0	48.9	54.0	-5.1	EUT Vert, High Ch, 2-DH5
5880.042	39.7	8.9	1.5	63.9	3.0	0.0	Horz	AV	0.0	48.6	54.0	-5.4	EUT Vert, High Ch, DH5
5880.225	39.7	8.9	1.5	63.9	3.0	0.0	Horz	AV	0.0	48.6	54.0	-5.4	EUT Vert, High Ch, 3-DH5
5880.008	37.1	8.9	1.5	90.0	3.0	0.0	Vert	AV	0.0	46.0	54.0	-8.0	EUT On Side, High Ch, DH5
5879.975	35.1	8.9	1.5	162.0	3.0	0.0	Horz	AV	0.0	44.0	54.0	-10.0	EUT On Side, High Ch, DH5
5880.117	34.8	8.9	3.7	134.0	3.0	0.0	Vert	AV	0.0	43.7	54.0	-10.3	EUT Horz, High Ch, DH5
5880.067	33.9	8.9	3.4	187.0	3.0	0.0	Horz	AV	0.0	42.8	54.0	-11.2	EUT Horz, High Ch, DH5
5880.067	32.3	8.9	1.5	34.9	3.0	0.0	Vert	AV	0.0	41.2	54.0	-12.8	EUT Vert, High Ch, DH5
7320.492	28.6	11.7	1.5	69.0	3.0	0.0	Horz	AV	0.0	40.3	54.0	-13.7	EUT Vert, Mid Ch, DH5
7320.825	28.6	11.7	1.5	273.9	3.0	0.0	Vert	AV	0.0	40.3	54.0	-13.7	EUT On Side, Mid Ch, DH5
7439.900	28.0	11.7	1.5	286.9	3.0	0.0	Vert	AV	0.0	39.7	54.0	-14.3	EUT On Side, High Ch, DH5
7441.383	28.0	11.7	1.5	360.0	3.0	0.0	Horz	AV	0.0	39.7	54.0	-14.3	EUT Vert, High Ch, DH5
5878.125	47.8	8.9	1.5	64.9	3.0	0.0	Horz	PK	0.0	56.7	74.0	-17.3	EUT Vert, High Ch, 2-DH5
5880.158	47.3	8.9	1.5	63.9	3.0	0.0	Horz	PK	0.0	56.2	74.0	-17.8	EUT Vert, High Ch, 3-DH5
5878.217	46.9	8.9	1.5	63.9	3.0	0.0	Horz	PK	0.0	55.8	74.0	-18.2	EUT Vert, High Ch, DH5
5879.983	45.0	8.9	1.5	90.0	3.0	0.0	Vert	PK	0.0	53.9	74.0	-20.1	EUT On Side, High Ch, DH5
4958.917	28.8	4.7	1.5	252.0	3.0	0.0	Vert	AV	0.0	33.5	54.0	-20.5	EUT On Side, High Ch, DH5
4958.292	28.7	4.7	4.0	108.0	3.0	0.0	Horz	AV	0.0	33.4	54.0	-20.6	EUT Vert, High Ch, DH5
4801.517	29.1	4.1	1.5	291.9	3.0	0.0	Horz	AV	0.0	33.2	54.0	-20.8	EUT Vert, Low Ch, DH5
4801.558	29.0	4.1	1.5	120.0	3.0	0.0	Vert	AV	0.0	33.1	54.0	-20.9	EUT Horz, Low Ch, DH5

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	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
4878.617	28.6	4.3	2.4	97.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	EUT Vert, Mid Ch, DH5
4878.250	28.6	4.3	1.5	98.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	EUT On Side, Mid Ch, DH5
5878.950	43.9	8.9	3.7	134.0	3.0	0.0	Vert	PK	0.0	52.8	74.0	-21.2	EUT Horz, High Ch, DH5
5880.567	43.7	8.9	1.5	162.0	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	EUT On Side, High Ch, DH5
5879.075	43.4	8.9	3.4	187.0	3.0	0.0	Horz	PK	0.0	52.3	74.0	-21.7	EUT Horz, High Ch, DH5
7441.492	40.6	11.7	1.5	286.9	3.0	0.0	Vert	PK	0.0	52.3	74.0	-21.7	EUT On Side, High Ch, DH5
7322.275	40.3	11.7	1.5	69.0	3.0	0.0	Horz	PK	0.0	52.0	74.0	-22.0	EUT Vert, Mid Ch, DH5
7320.100	40.1	11.7	1.5	273.9	3.0	0.0	Vert	PK	0.0	51.8	74.0	-22.2	EUT On Side, Mid Ch, DH5
5879.750	42.5	8.9	1.5	34.9	3.0	0.0	Vert	PK	0.0	51.4	74.0	-22.6	EUT Vert, High Ch, DH5
7441.267	39.3	11.7	1.5	360.0	3.0	0.0	Horz	PK	0.0	51.0	74.0	-23.0	EUT Vert, High Ch, DH5
12398.080	31.3	-2.3	1.5	25.0	3.0	0.0	Horz	AV	0.0	29.0	54.0	-25.0	EUT Vert, High Ch, DH5
12397.750	31.2	-2.3	1.5	187.0	3.0	0.0	Vert	AV	0.0	28.9	54.0	-25.1	EUT On Side, High Ch, DH5
12009.610	32.3	-3.5	1.5	81.9	3.0	0.0	Vert	AV	0.0	28.8	54.0	-25.2	EUT On Side, Low Ch, DH5
12008.380	32.2	-3.5	1.5	110.0	3.0	0.0	Horz	AV	0.0	28.7	54.0	-25.3	EUT Vert, Low Ch, DH5
12202.470	31.5	-3.1	1.5	177.0	3.0	0.0	Horz	AV	0.0	28.4	54.0	-25.6	EUT Vert, Mid Ch, DH5
12202.480	31.4	-3.1	1.8	267.9	3.0	0.0	Vert	AV	0.0	28.3	54.0	-25.7	EUT On Side, Mid Ch, DH5
4961.525	40.4	4.7	1.5	252.0	3.0	0.0	Vert	PK	0.0	45.1	74.0	-28.9	EUT On Side, High Ch, DH5
4962.225	40.0	4.7	4.0	108.0	3.0	0.0	Horz	PK	0.0	44.7	74.0	-29.3	EUT Vert, High Ch, DH5
4802.675	40.5	4.1	1.5	291.9	3.0	0.0	Horz	PK	0.0	44.6	74.0	-29.4	EUT Vert, Low Ch, DH5
4804.775	40.5	4.1	1.5	120.0	3.0	0.0	Vert	PK	0.0	44.6	74.0	-29.4	EUT Horz, Low Ch, DH5
4878.650	39.6	4.3	2.4	97.0	3.0	0.0	Horz	PK	0.0	43.9	74.0	-30.1	EUT Vert, Mid Ch, DH5
4877.692	39.5	4.3	1.5	98.0	3.0	0.0	Vert	PK	0.0	43.8	74.0	-30.2	EUT On Side, Mid Ch, DH5
12398.590	43.0	-2.3	1.5	187.0	3.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	EUT On Side, High Ch, DH5
12009.590	44.2	-3.5	1.5	110.0	3.0	0.0	Horz	PK	0.0	40.7	74.0	-33.3	EUT Vert, Low Ch, DH5
12399.440	42.7	-2.3	1.5	25.0	3.0	0.0	Horz	PK	0.0	40.4	74.0	-33.6	EUT Vert, High Ch, DH5
12202.500	43.4	-3.1	1.8	267.9	3.0	0.0	Vert	PK	0.0	40.3	74.0	-33.7	EUT On Side, Mid Ch, DH5
12008.210	43.8	-3.5	1.5	81.9	3.0	0.0	Vert	PK	0.0	40.3	74.0	-33.7	EUT On Side, Low Ch, DH5
12198.980	42.9	-3.1	1.5	177.0	3.0	0.0	Horz	PK	0.0	39.8	74.0	-34.2	EUT Vert, Mid Ch, DH5

# DUTY CYCLE



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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	18-Sep-19	18-Sep-20
Block - DC	Fairview Microwave	SD3379	AMT	18-Sep-19	18-Sep-20
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	18-Sep-19	18-Sep-20
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	5-May-19	5-May-20

## 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



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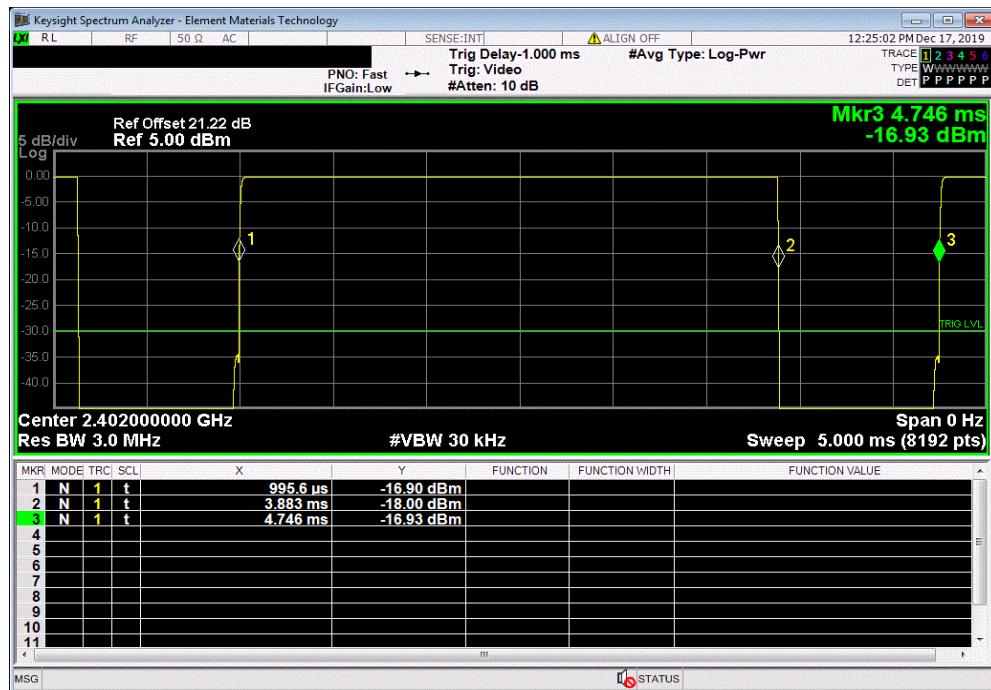
EUT:	V300	Work Order:	WTVD0027				
Serial Number:	63	Date:	8-Nov-19				
Customer:	WatchGuard Video	Temperature:	23.2 °C				
Attendees:	Navaid Karimi	Humidity:	26.2% RH				
Project:	None	Barometric Pres.:	1035 mbar				
Tested by:	Jonathan Kiefer	Power:	Battery				
TEST SPECIFICATIONS		Test Method	ANSI C63.10:2013				
FCC 15.247:2019							
COMMENTS	Low Ch 2402MHz, Mid Ch 2440MHz, High Ch 2480MHz. Reference Offset 21.22 dB (20dB attenuator+dc block+cable).						
DEVIATIONS FROM TEST STANDARD							
None							
Configuration #	4	Signature	<i>Jonathan Kiefer</i>				
		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
DH5, GFSK							
Low Channel		2.887 ms	3.751 ms	1	77	N/A	N/A
Low Channel		N/A	N/A	5	N/A	N/A	N/A
Mid Channel		2.887 ms	3.75 ms	1	77	N/A	N/A
Mid Channel		N/A	N/A	5	N/A	N/A	N/A
High Channel		2.888 ms	3.751 ms	1	77	N/A	N/A
High Channel		N/A	N/A	5	N/A	N/A	N/A
2DH5, pi/4-DQPSK							
Low Channel		2.89 ms	3.75 ms	1	77.1	N/A	N/A
Low Channel		N/A	N/A	5	N/A	N/A	N/A
Mid Channel		2.89 ms	3.751 ms	1	77.1	N/A	N/A
Mid Channel		N/A	N/A	5	N/A	N/A	N/A
High Channel		2.89 ms	3.75 ms	1	77.1	N/A	N/A
High Channel		N/A	N/A	5	N/A	N/A	N/A
3DH5, 8-DPSK							
Low Channel		2.892 ms	3.75 ms	1	77.1	N/A	N/A
Low Channel		N/A	N/A	5	N/A	N/A	N/A
Mid Channel		2.892 ms	3.75 ms	1	77.1	N/A	N/A
Mid Channel		N/A	N/A	5	N/A	N/A	N/A
High Channel		2.892 ms	3.75 ms	1	77.1	N/A	N/A
High Channel		N/A	N/A	5	N/A	N/A	N/A

# DUTY CYCLE

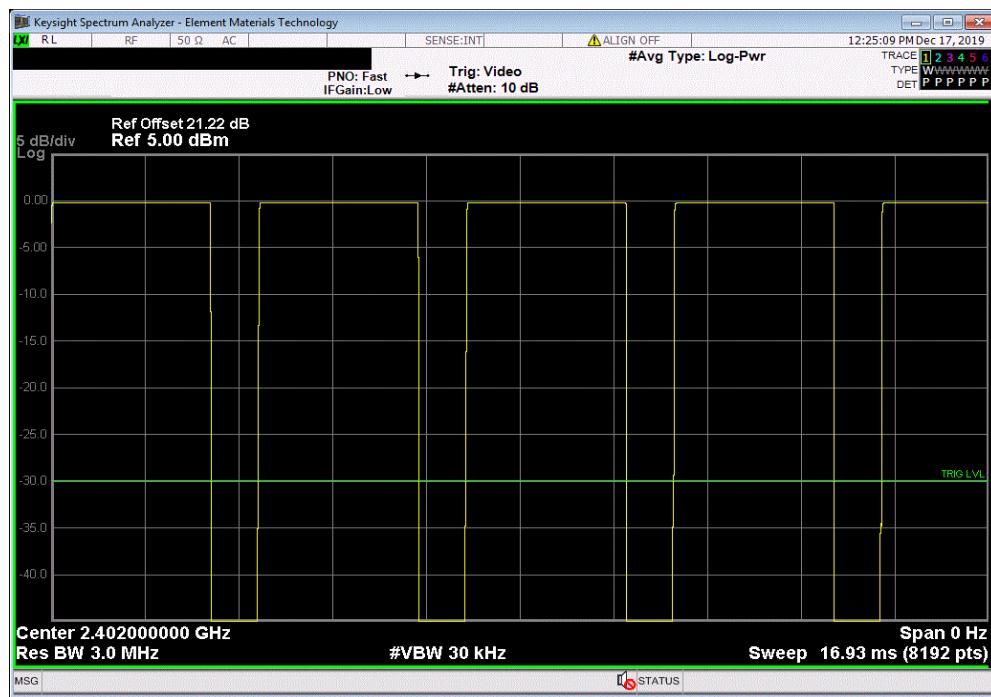


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DH5, GFSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.887 ms	3.751 ms	1	77	N/A	N/A



DH5, GFSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

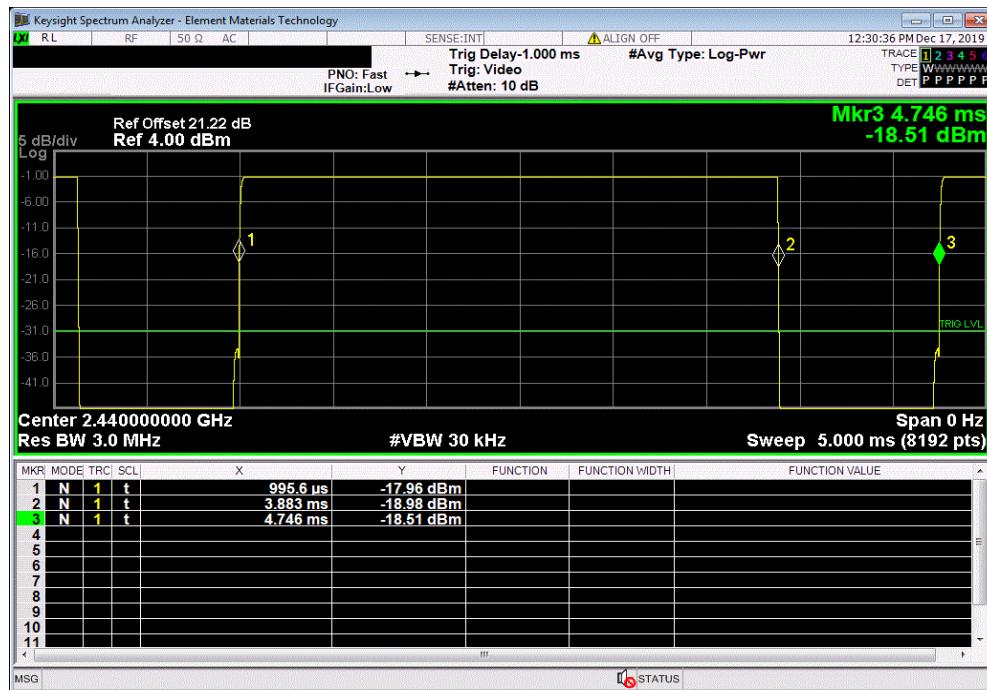


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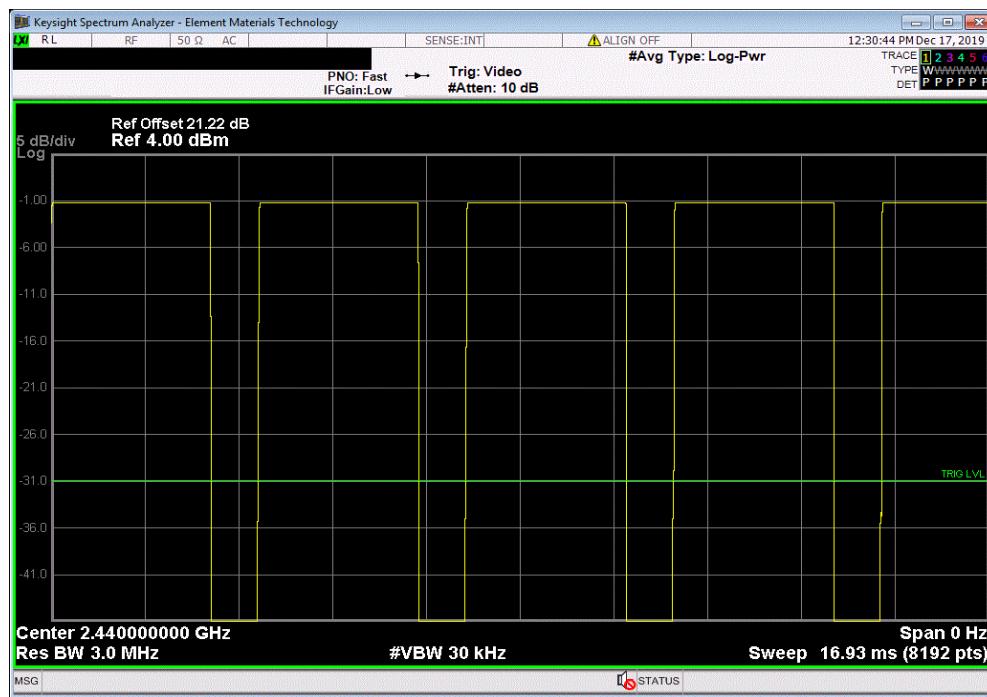


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DH5, GFSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.887 ms	3.75 ms	1	77	N/A	N/A



DH5, GFSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

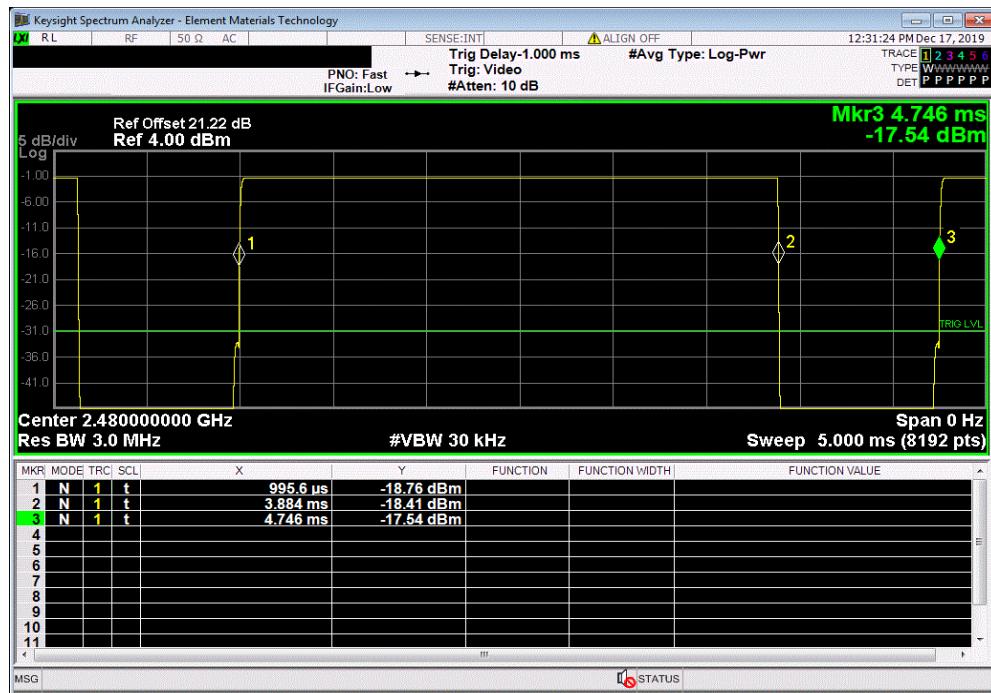


# DUTY CYCLE

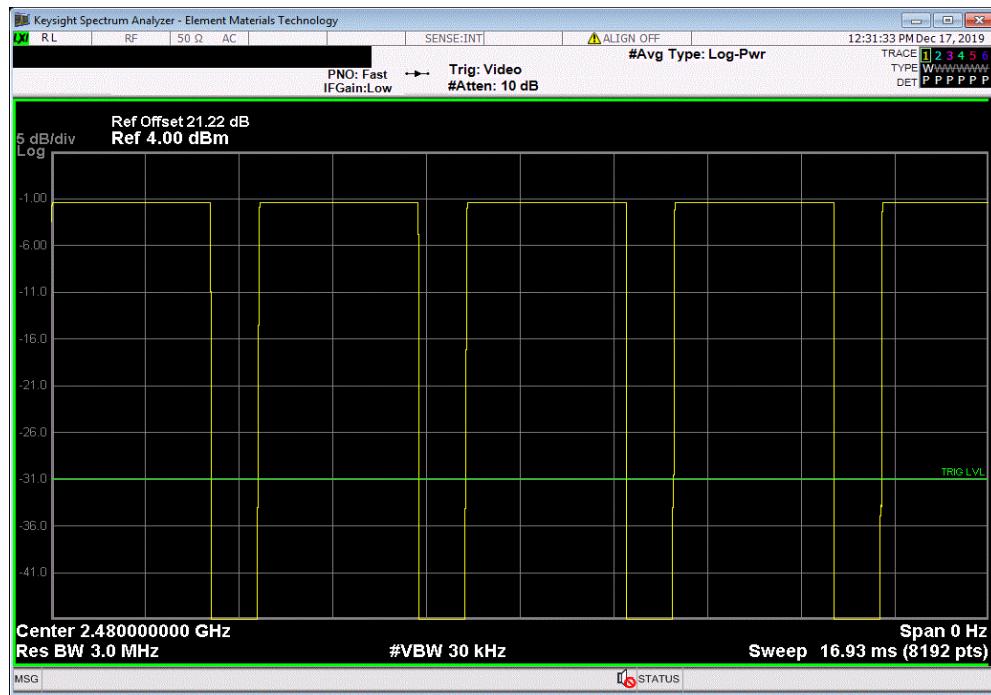


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DH5, GFSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.888 ms	3.751 ms	1	77	N/A	N/A



DH5, GFSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

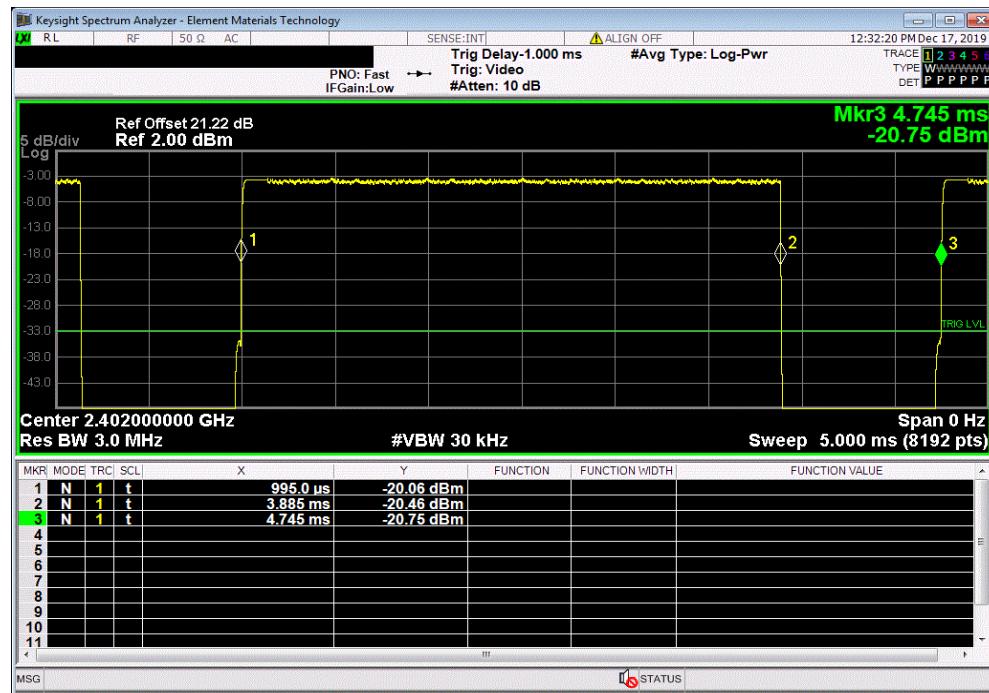


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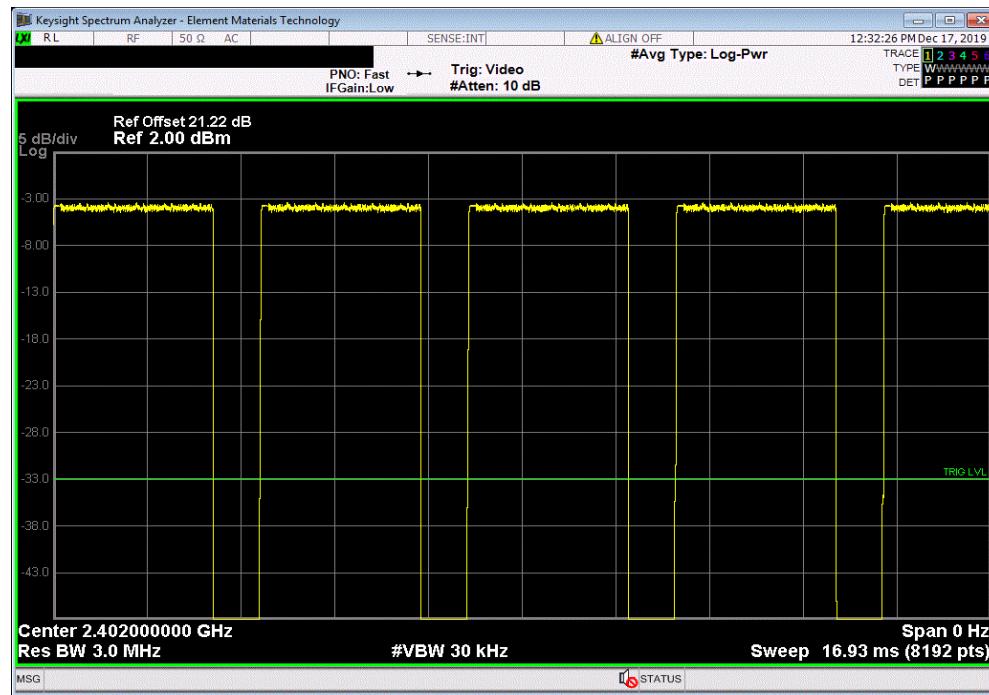


TbtTx 2019.08.30.0 XMT 2019.09.05

2DH5, pi/4-DQPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.89 ms	3.75 ms	1	77.1	N/A	N/A



2DH5, pi/4-DQPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

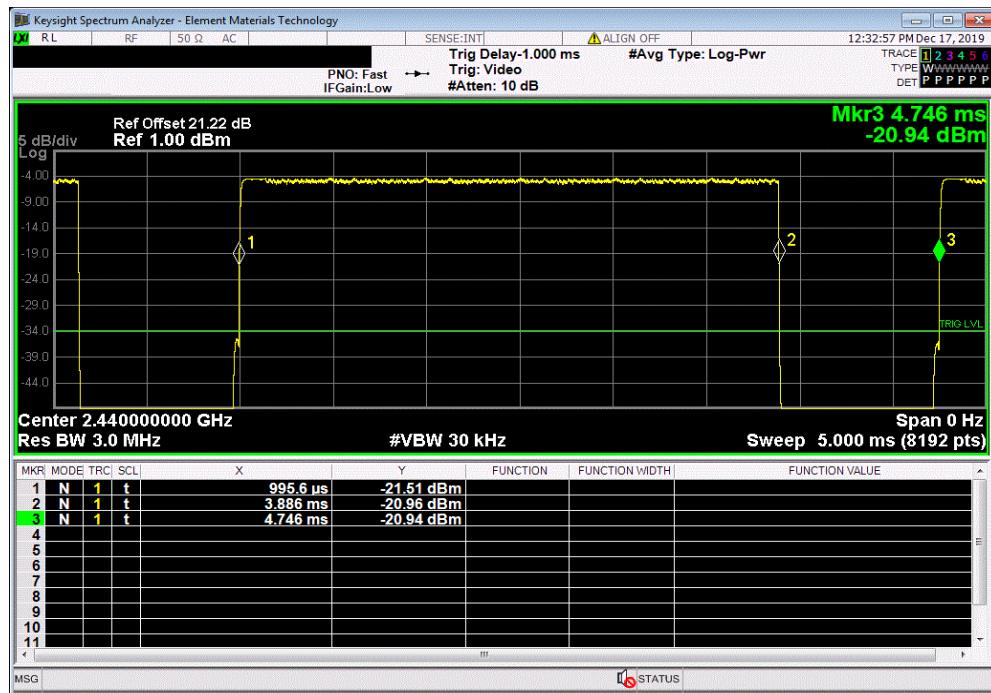


# DUTY CYCLE

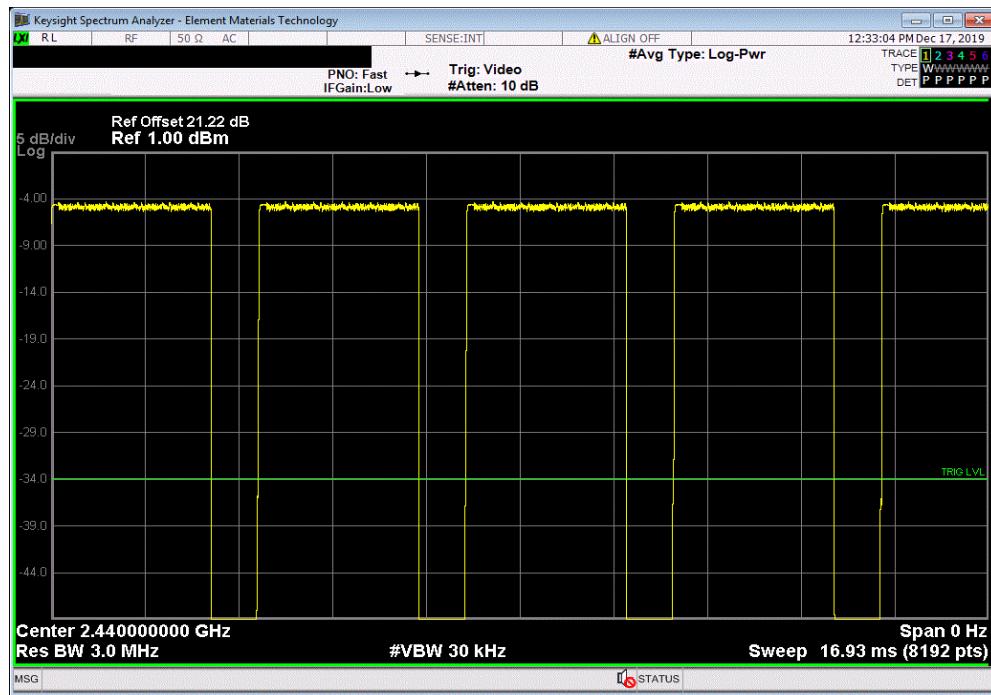


TbtTx 2019.08.30.0 XMT 2019.09.05

2DH5, pi/4-DQPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.89 ms	3.751 ms	1	77.1	N/A	N/A



2DH5, pi/4-DQPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

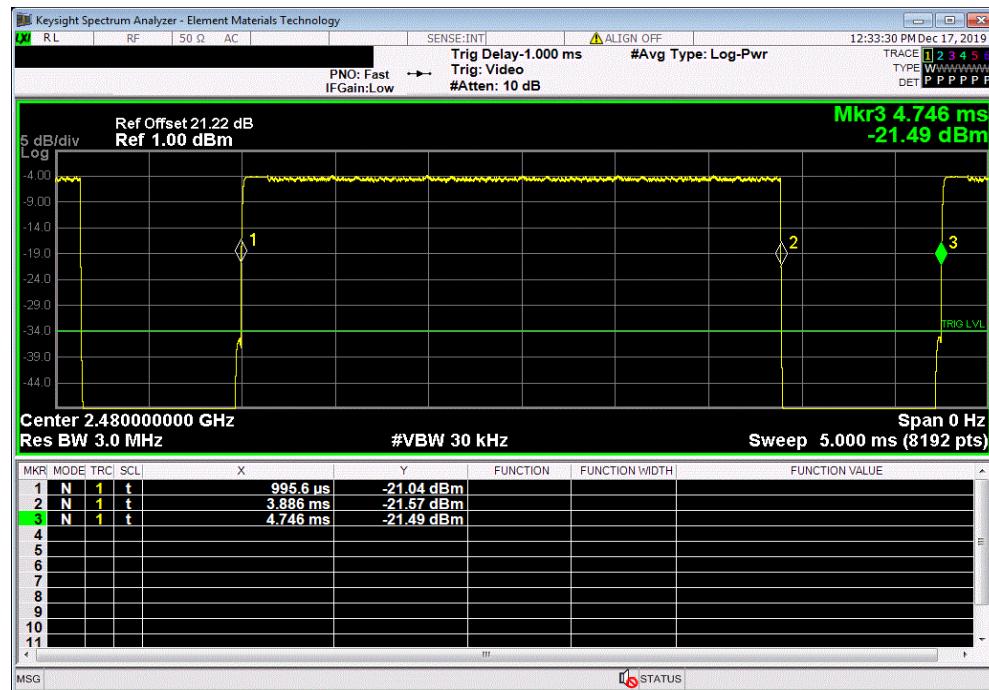


# DUTY CYCLE

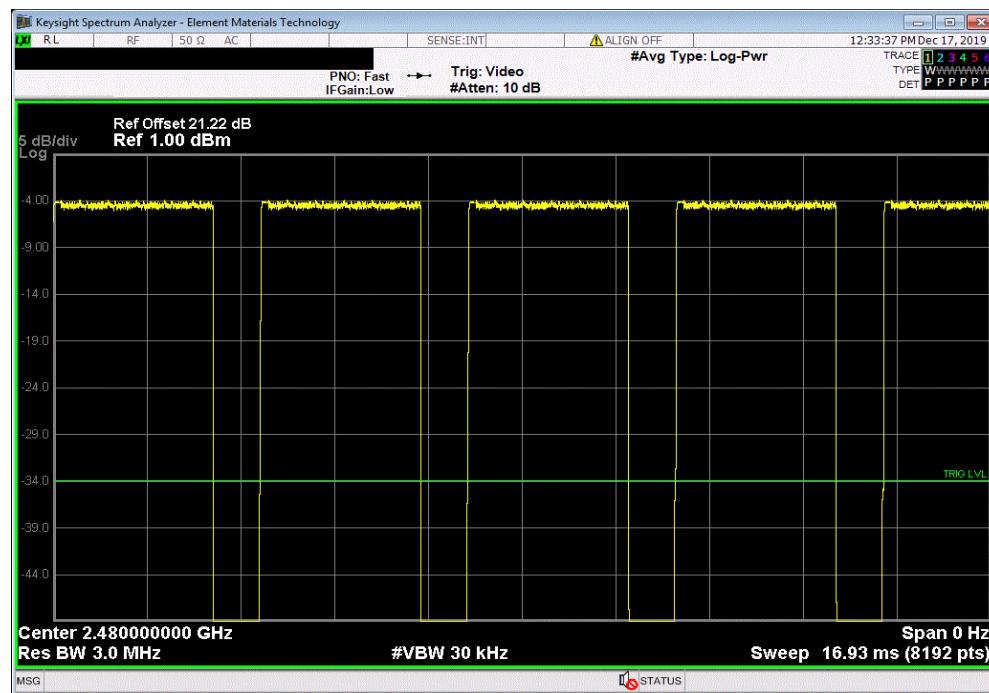


TbtTx 2019.08.30.0 XMT 2019.09.05

2DH5, pi/4-DQPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.89 ms	3.75 ms	1	77.1	N/A	N/A



2DH5, pi/4-DQPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



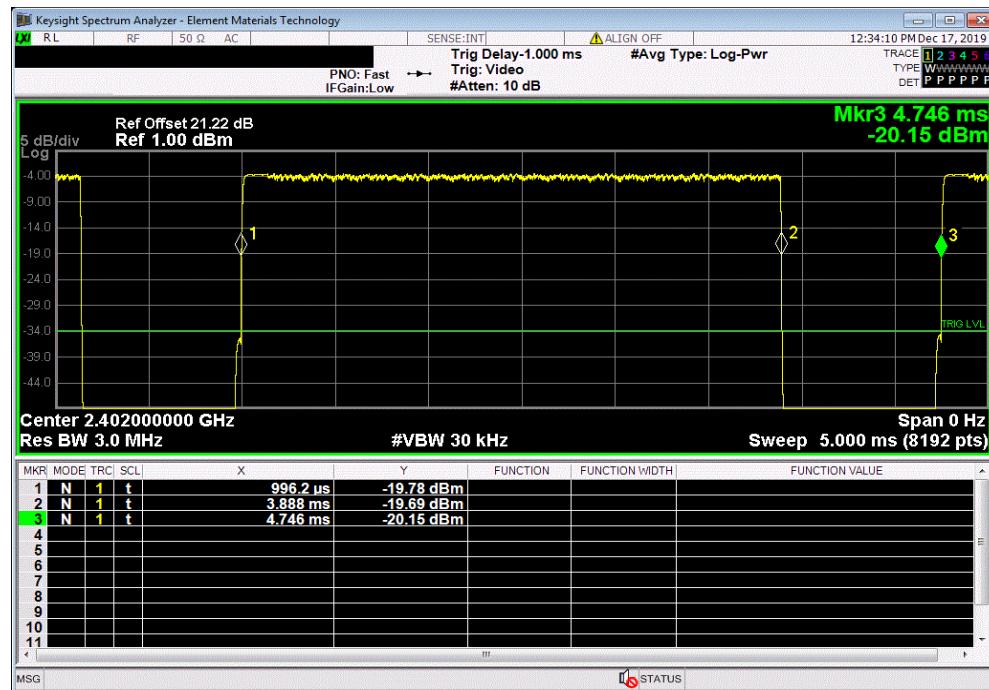
## DUTY CYCLE



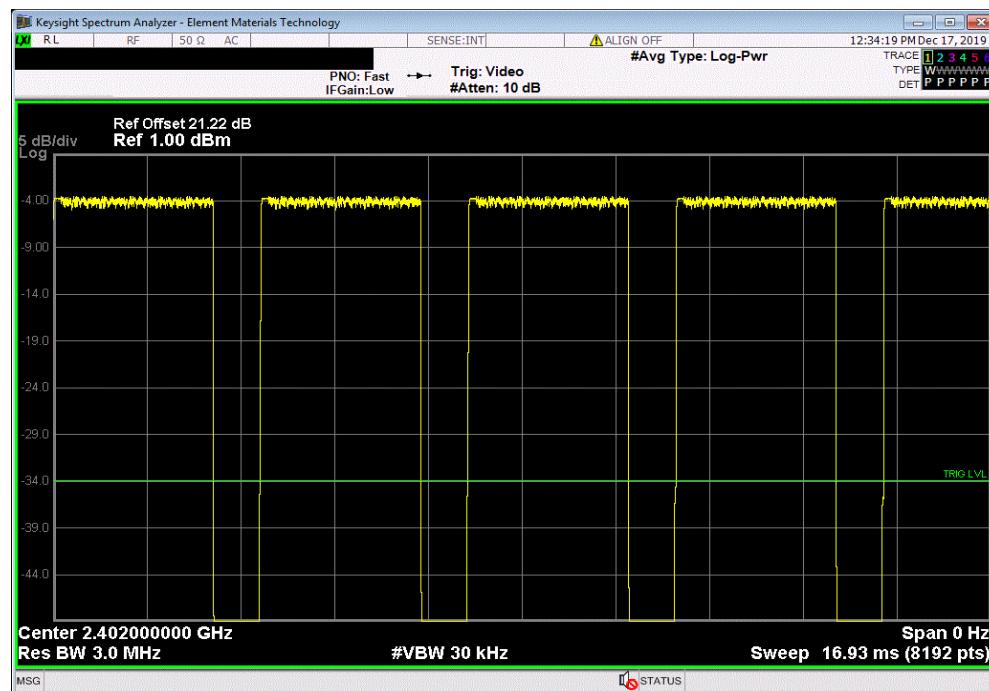
TbtTx 2019.08.30.0

XMit 2019.09.05

3DH5, 8-DPSK, Low Channel						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
2.892 ms	3.75 ms	1	77.1	N/A	N/A	



3DH5, 8-DPSK, Low Channel						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
	N/A	N/A	5	N/A	N/A	N/A

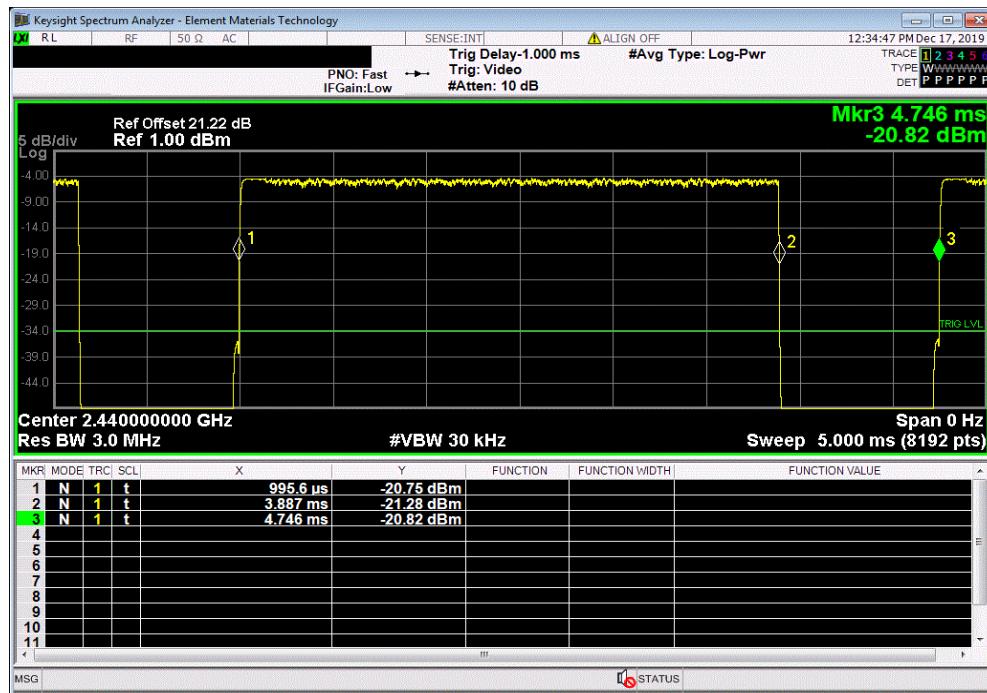


# DUTY CYCLE

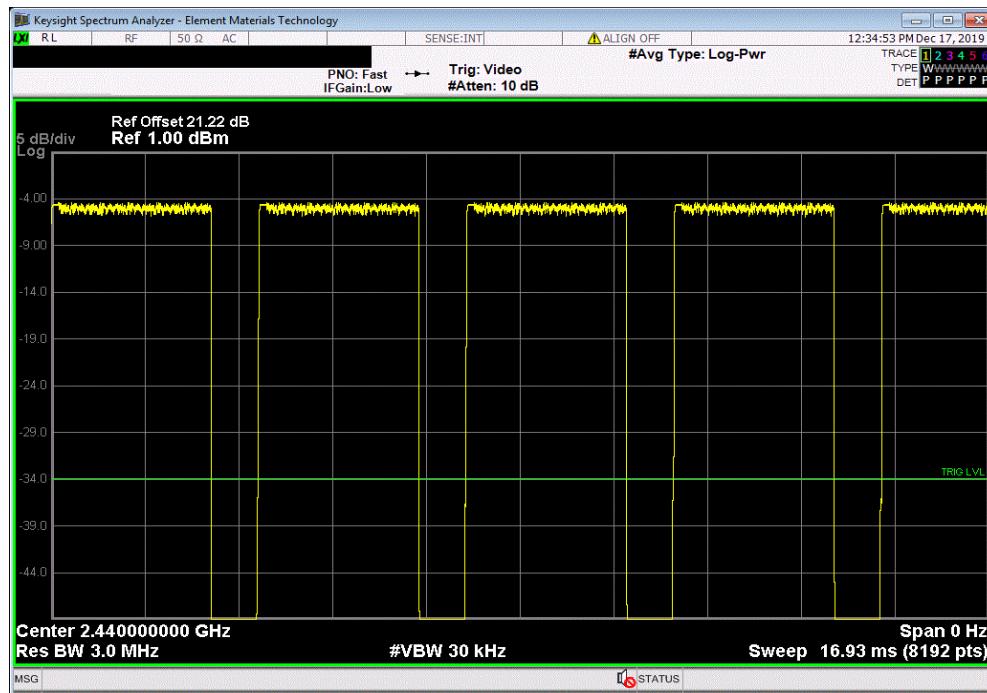


TbtTx 2019.08.30.0 XMT 2019.09.05

3DH5, 8-DPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.892 ms	3.75 ms	1	77.1	N/A	N/A



3DH5, 8-DPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

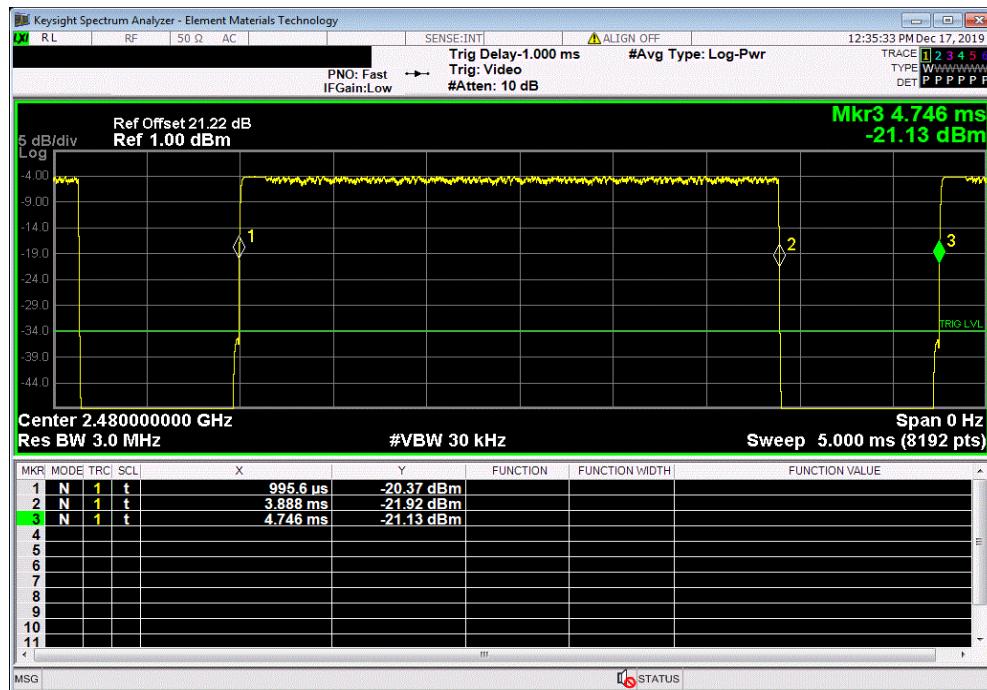


# DUTY CYCLE

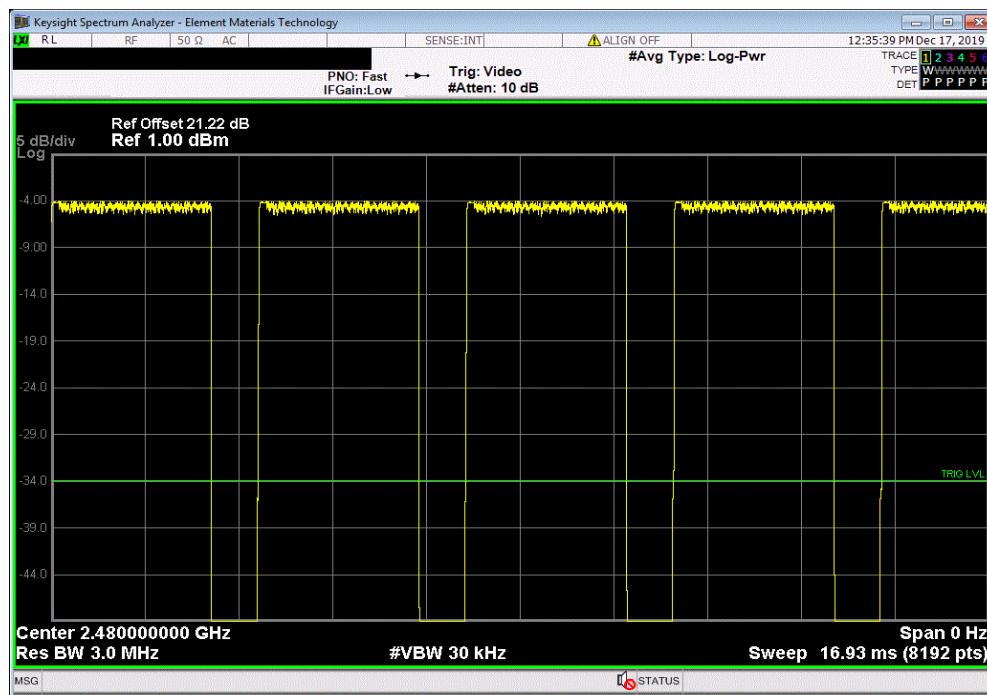


TbtTx 2019.08.30.0 XMT 2019.09.05

3DH5, 8-DPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.892 ms	3.75 ms	1	77.1	N/A	N/A



3DH5, 8-DPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



# CARRIER FREQUENCY SEPARATION



XMIT 2019.09.05

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	18-Sep-19	18-Sep-20
Block - DC	Fairview Microwave	SD3379	AMT	18-Sep-19	18-Sep-20
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	18-Sep-19	18-Sep-20
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	5-May-19	5-May-20

## TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The channel carrier frequencies in the 2400-2483.5MHz band must be separated by 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Or, if the output power is less than 125 mW, the channel separation can be 25 kHz or 2/3 of the 20dB bandwidth. The EUT was operated in pseudorandom hopping mode. The spectrum was scanned across two adjacent peaks. The separation between the peaks of these channels was measured.

# CARRIER FREQUENCY SEPARATION



TbTx 2019.08.30.0 XMII 2019.08.05

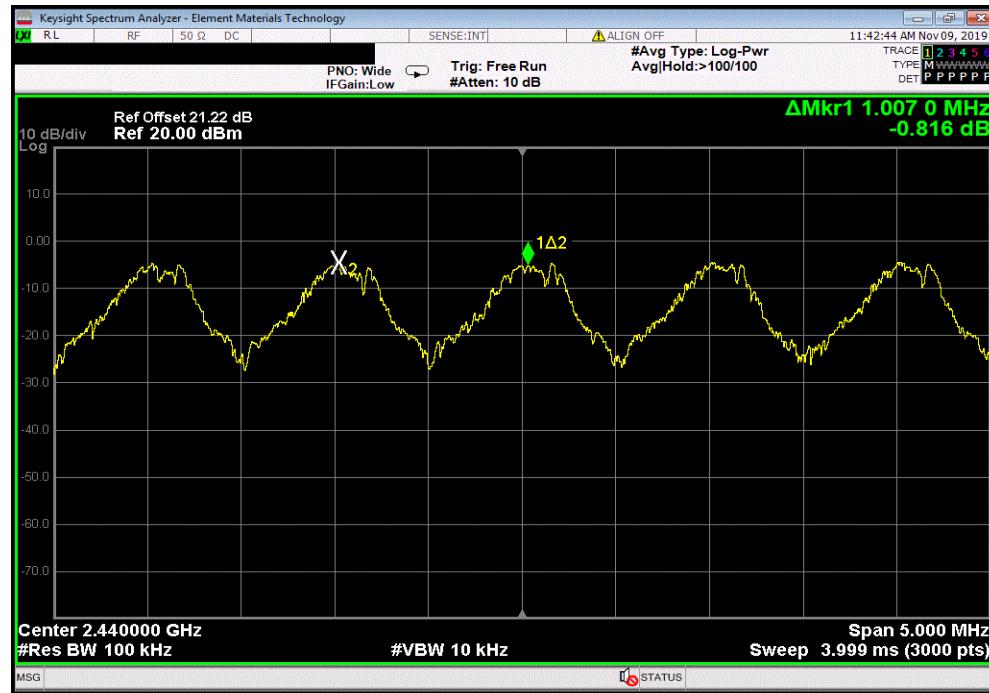
EUT:	V300		Work Order:	WTVD0027	
Serial Number:	63		Date:	8-Nov-19	
Customer:	WatchGuard Video		Temperature:	23.2 °C	
Attendees:	Navaid Karimi		Humidity:	26.2% RH	
Project:	None		Barometric Pres.:	1035 mbar	
Tested by:	Jonathan Kiefer	Power:	Battery	Job Site:	TX09
TEST SPECIFICATIONS			Test Method		
FCC 15.247:2019			ANSI C63.10:2013		
COMMENTS					
Reference Offset 21.22 dB (20dB attenuator+dc block+cable).					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	4	Signature			
			Value	Limit (±)	Results
Hopping Mode (All Channels)			1.0 MHz	1 MHz	Pass
DH5, GFSK			Mid Channel, 2440 MHz		

# CARRIER FREQUENCY SEPARATION



TbtTx 2019.08.30.0 XMI 2019.09.05

Hopping Mode (All Channels), DH5, GFSK, Mid Channel, 2440 MHz			Limit	
Value	(≥)	Results		
1.0 MHz	1 MHz	Pass		



# NUMBER OF HOPPING FREQUENCIES



XMIT 2019.09.05

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	18-Sep-19	18-Sep-20
Block - DC	Fairview Microwave	SD3379	AMT	18-Sep-19	18-Sep-20
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	18-Sep-19	18-Sep-20
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	5-May-19	5-May-20

## TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The number of hopping frequencies was measured across the authorized band. The hopping function of the EUT was enabled.

# NUMBER OF HOPPING FREQUENCIES



TbTx 2019.08.30.0

XMI 2019.08.05

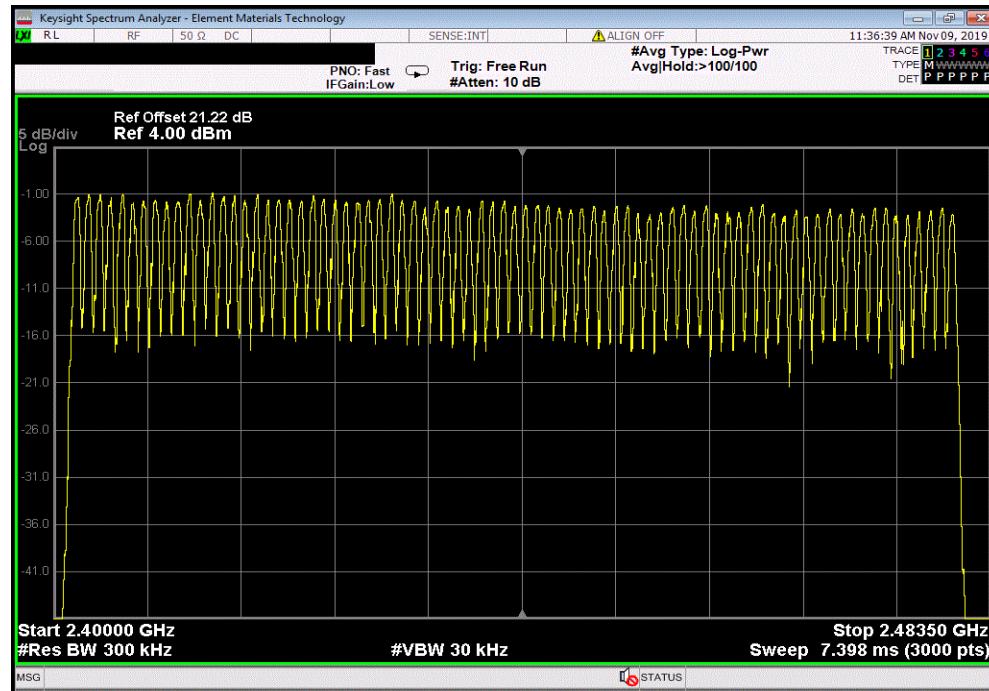
EUT:	V300		Work Order:	WTVD0027	
Serial Number:	63		Date:	8-Nov-19	
Customer:	WatchGuard Video		Temperature:	23.2 °C	
Attendees:	Navaid Karimi		Humidity:	26.2% RH	
Project:	None		Barometric Pres.:	1035 mbar	
Tested by:	Jonathan Kiefer	Power:	Battery	Job Site:	TX09
TEST SPECIFICATIONS			Test Method		
FCC 15.247:2019			ANSI C63.10:2013		
COMMENTS					
Reference Offset 21.22 dB (20dB attenuator+dc block+cable).					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	4	Signature			
		<i>Jonathan Kiefer</i>	Number of Channels	Limit (≥)	Results
Hopping Mode (All Channels) DH5, GFSK			79	15	Pass
Mid Channel, 2440 MHz					

# NUMBER OF HOPPING FREQUENCIES



TbtTx 2019.08.30.0 XMII 2019.09.05

Hopping Mode (All Channels), DH5, GFSK, Mid Channel, 2440 MHz			Number of Channels	Limit (≥)	Results
			79	15	Pass



# DWELL TIME



XMIT 2019.09.05

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	18-Sep-19	18-Sep-20
Block - DC	Fairview Microwave	SD3379	AMT	18-Sep-19	18-Sep-20
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	18-Sep-19	18-Sep-20
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	5-May-19	5-May-20

## TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The hopping function of the EUT was enabled.

The dwell time limit is based on the Number of Hopping Channels \* 400 mS. For Bluetooth this would be 79 Channels \* 400mS = 31.6 Sec.

On Time During 31.6 Sec = Pulse Width \* Average Number of Pulses \* Scale Factor

➤ Average Number of Pulses is based on 4 samples.

➤ Scale Factor = 31.6 Sec / Screen Capture Sweep Time = 31.6 Sec / 6.32 Sec = 5

# DWELL TIME



TbTx 2019.08.30.0

XMI 2019.08.05

EUT:	V300	Work Order:	WTVD0027					
Serial Number:	63	Date:	8-Nov-19					
Customer:	WatchGuard Video	Temperature:	23.2 °C					
Attendees:	Navaid Karimi	Humidity:	26.2% RH					
Project:	None	Barometric Pres.:	1035 mbar					
Tested by:	Jonathan Kiefer	Power:	Battery					
TEST SPECIFICATIONS		Test Method	ANSI C63.10:2013					
FCC 15.247:2019								
COMMENTS								
Reference Offset 21.22 dB (20dB attenuator+dc block+cable).								
DEVIATIONS FROM TEST STANDARD								
None								
Configuration #	4	Signature	<i>Jonathan Kiefer</i>					
		Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
Hopping Mode (All Channels)								
DH5, GFSK								
Mid Channel, 2440 MHz		2.959	N/A	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	21	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	17	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	18	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	18	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		2.959	N/A	18.5	5	273.71	400	Pass
2DH5, pi/4-DQPSK								
Mid Channel, 2440 MHz		2.893	N/A	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	21	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	22	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	19	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	18	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		2.893	N/A	20	5	289.3	400	Pass
3DH5, 8-DPSK								
Mid Channel, 2440 MHz		2.892	N/A	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	18	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	20	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	28	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		N/A	18	N/A	N/A	N/A	N/A	N/A
Mid Channel, 2440 MHz		2.892	N/A	21	5	303.66	400	Pass

## DWELL TIME



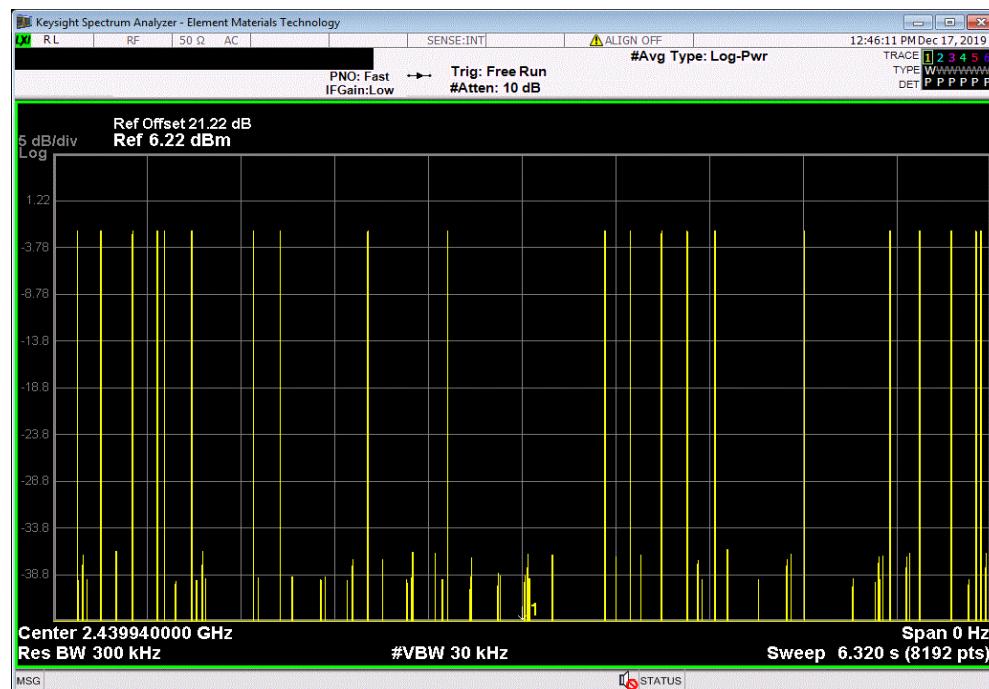
TbtTx 2019.08.30.0

XMit 2019.09.05

Hopping Mode (All Channels), DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.959	N/A	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	21	N/A	N/A	N/A	N/A	N/A

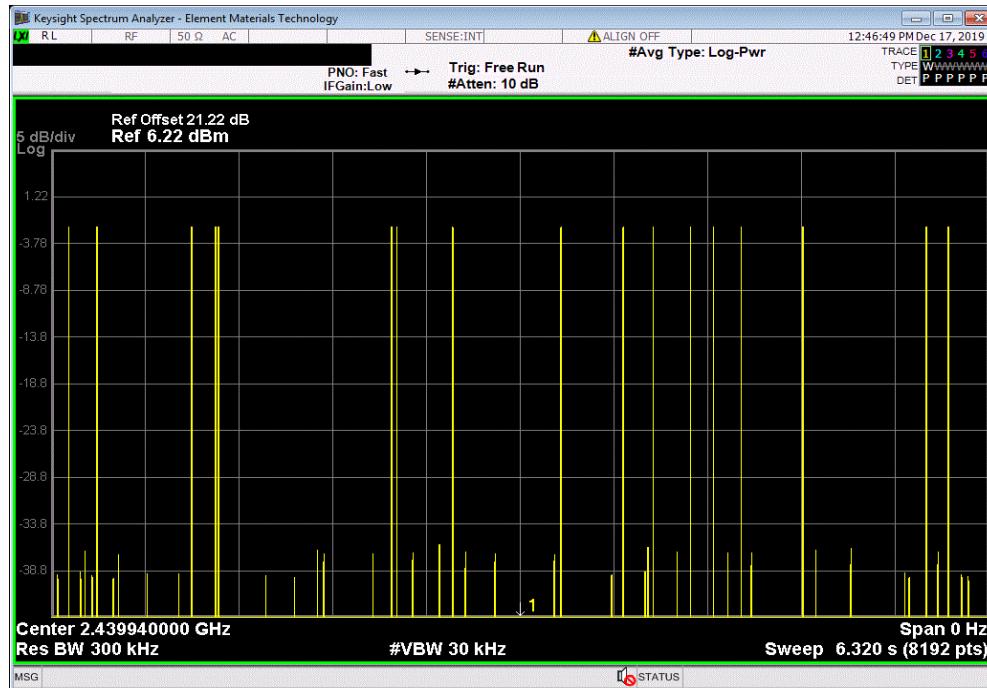


# DWELL TIME

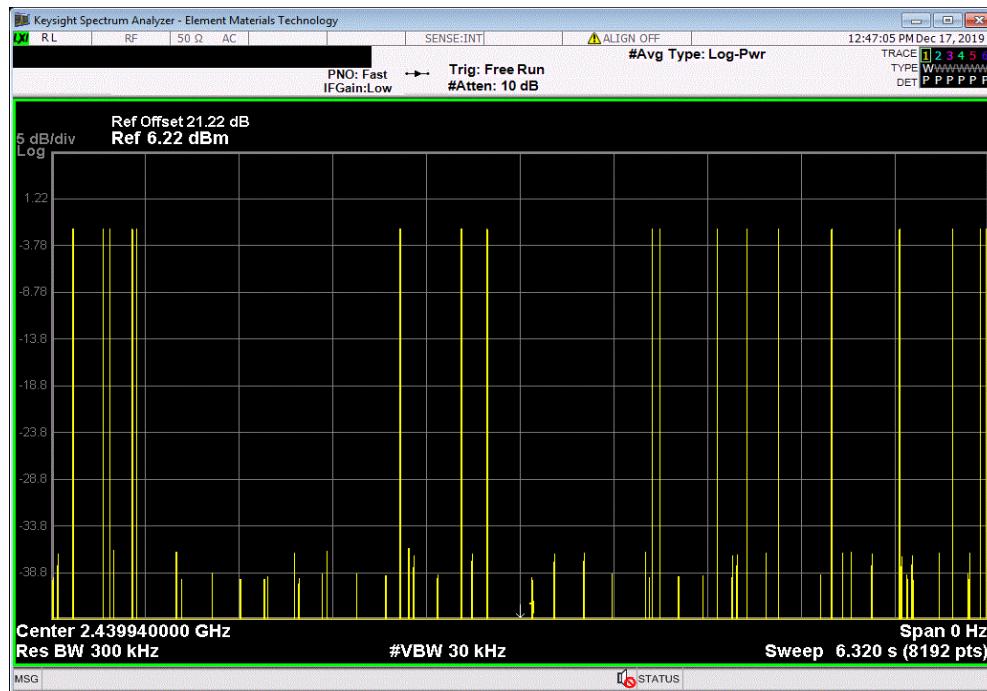


TbtTx 2019.08.30.0 XMI 2019.09.05

Hopping Mode (All Channels), DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	17	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	18	N/A	N/A	N/A	N/A	N/A

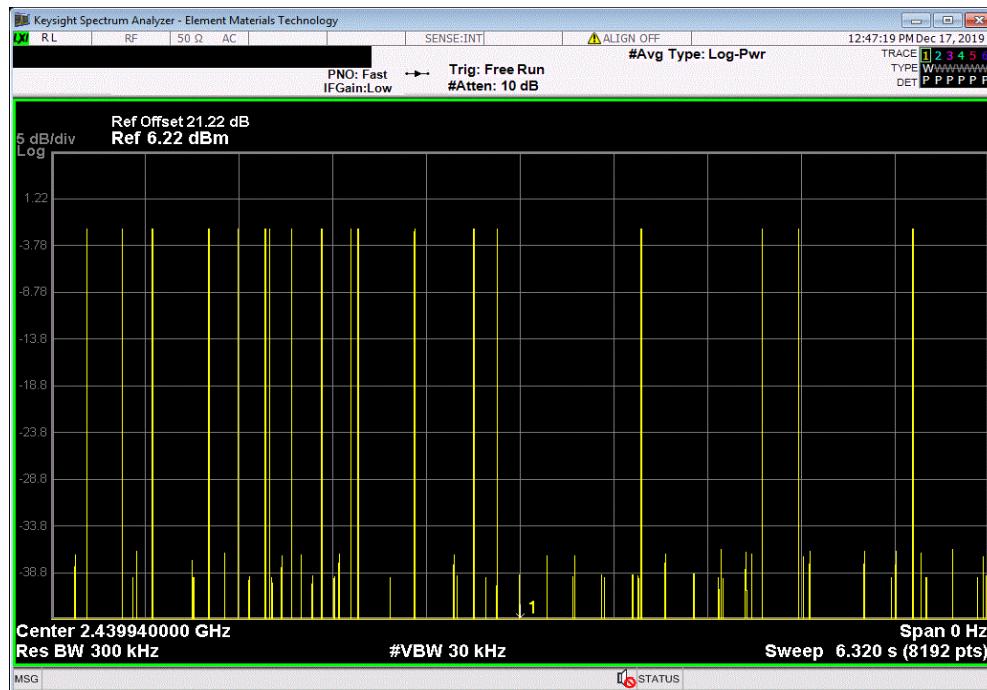


# DWELL TIME



TbTx 2019.08.30.0 XMI 2019.09.05

Hopping Mode (All Channels), DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	18	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.959	N/A	18.5	5	273.71	400	Pass

Calculation Only

No Screen Capture Required

# DWELL TIME

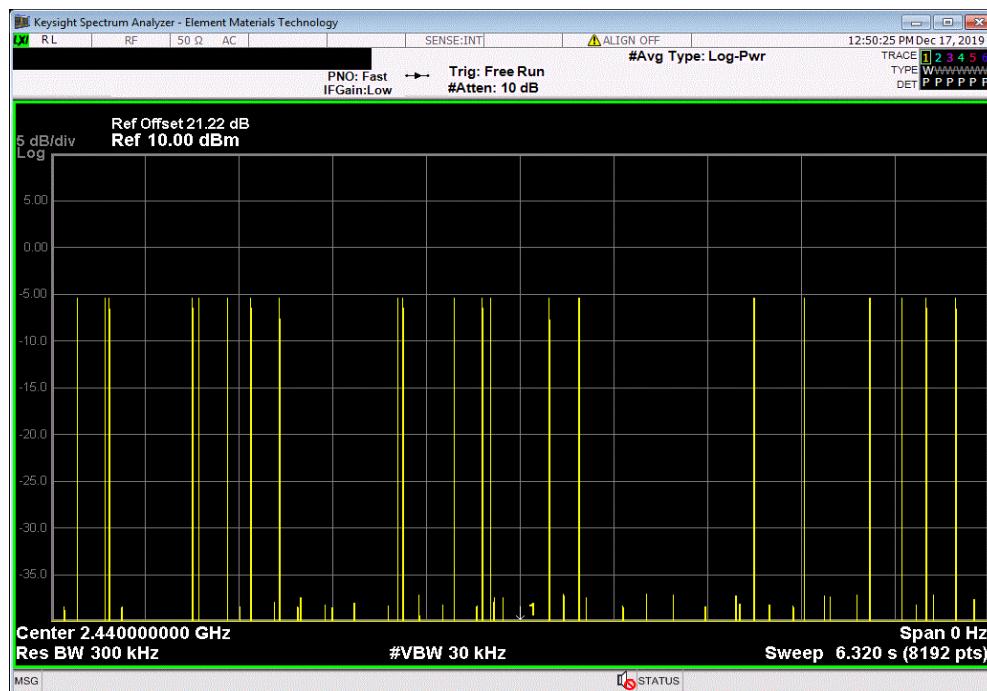


TbtTx 2019.08.30.0 XMI 2019.09.05

Hopping Mode (All Channels), 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.893	N/A	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	21	N/A	N/A	N/A	N/A	N/A

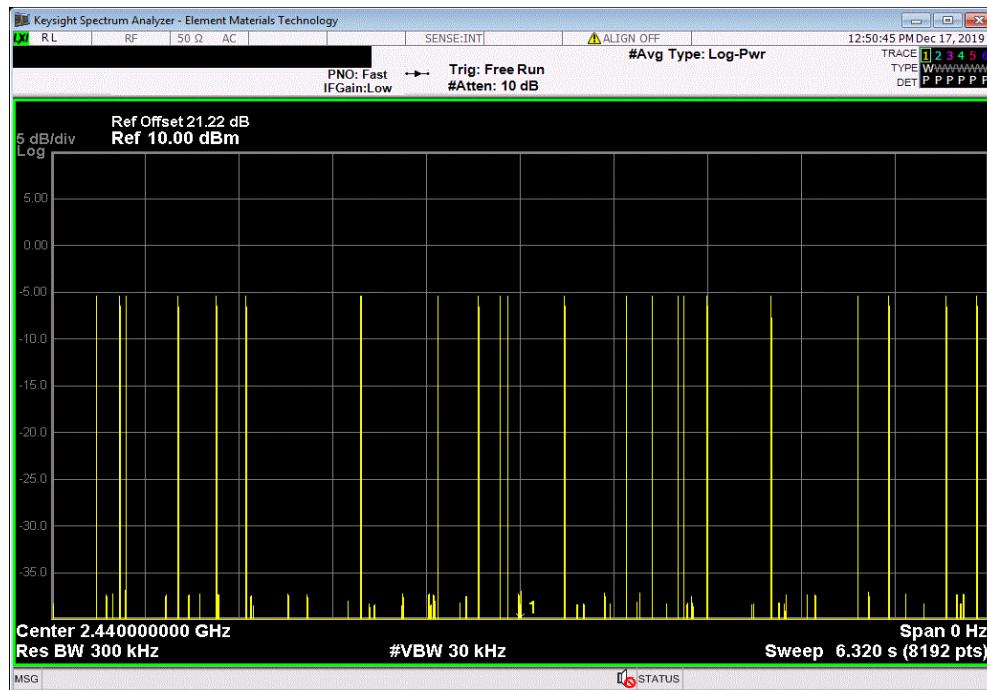


# DWELL TIME

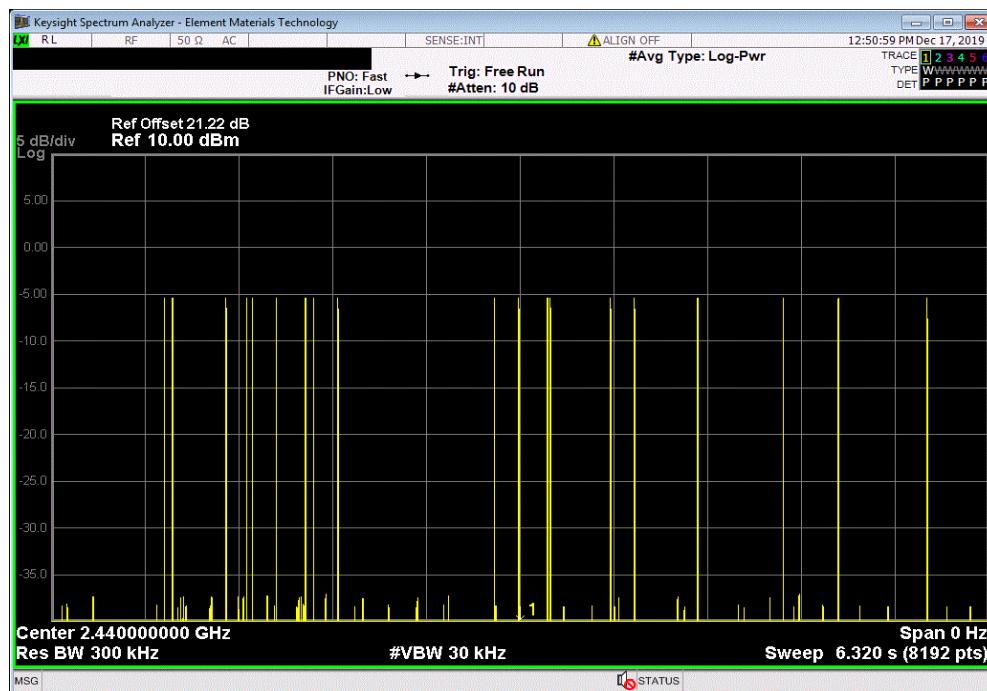


TbTx 2019.08.30.0 XM1 2019.09.05

Hopping Mode (All Channels), 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	19	N/A	N/A	N/A	N/A	N/A

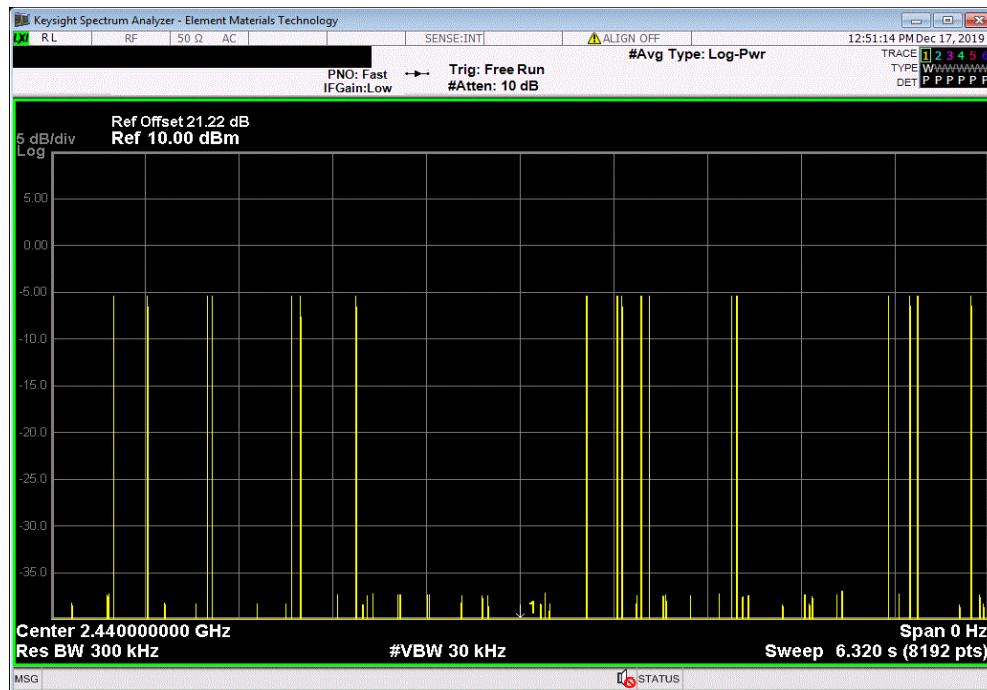


# DWELL TIME



TbTx 2019.08.30.0 XM1 2019.09.05

Hopping Mode (All Channels), 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	18	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.893	N/A	20	5	289.3	400	Pass

Calculation Only

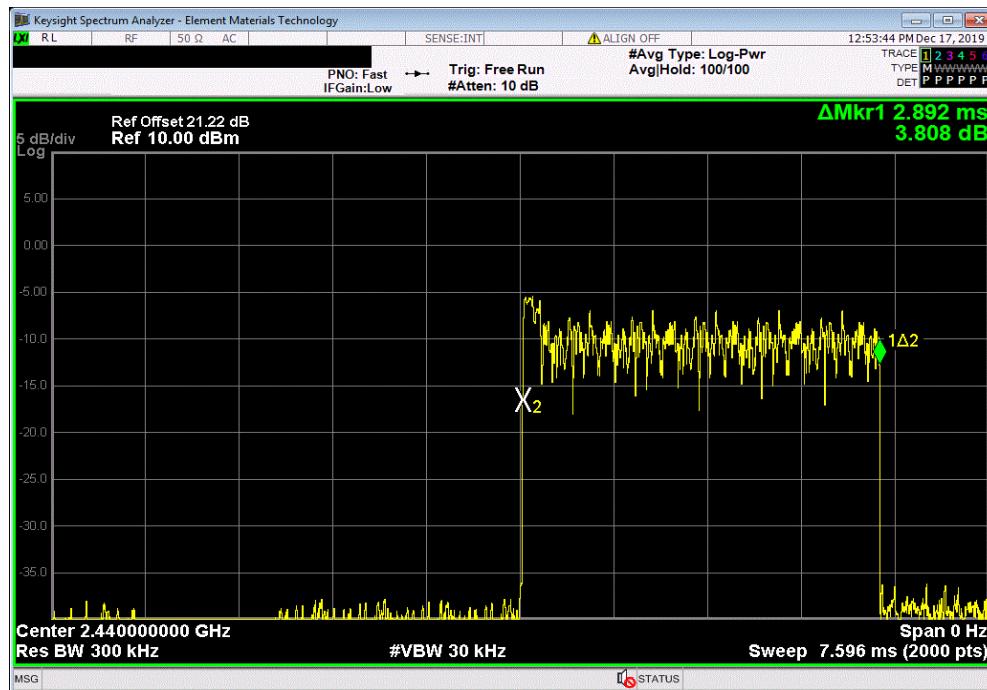
No Screen Capture Required

# DWELL TIME

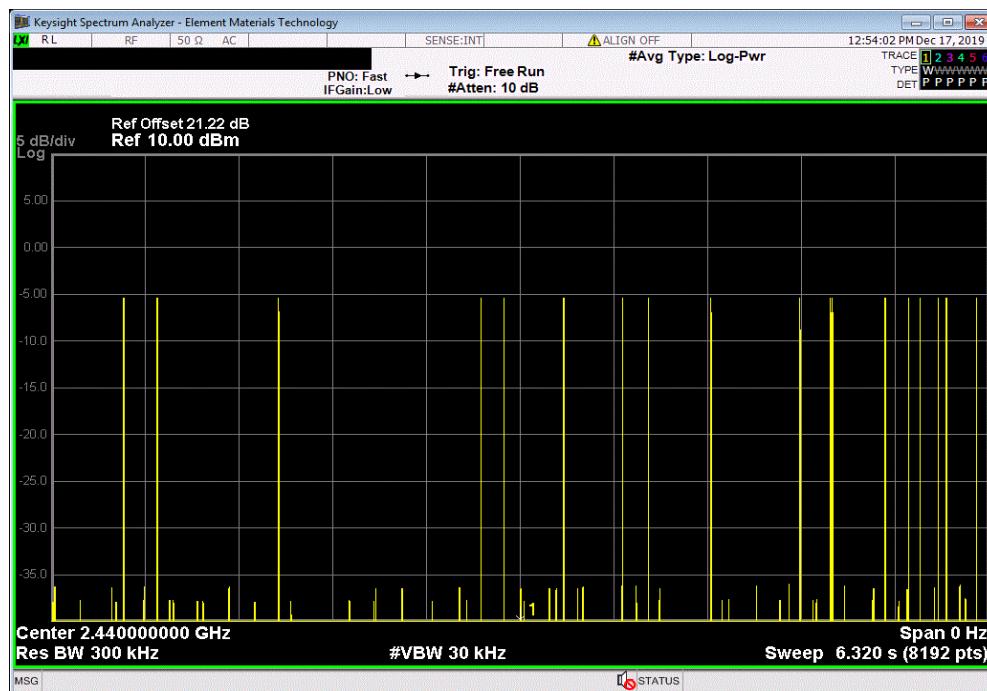


TbTx 2019.08.30.0 XMI 2019.09.05

Hopping Mode (All Channels), 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.892	N/A	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	18	N/A	N/A	N/A	N/A	N/A

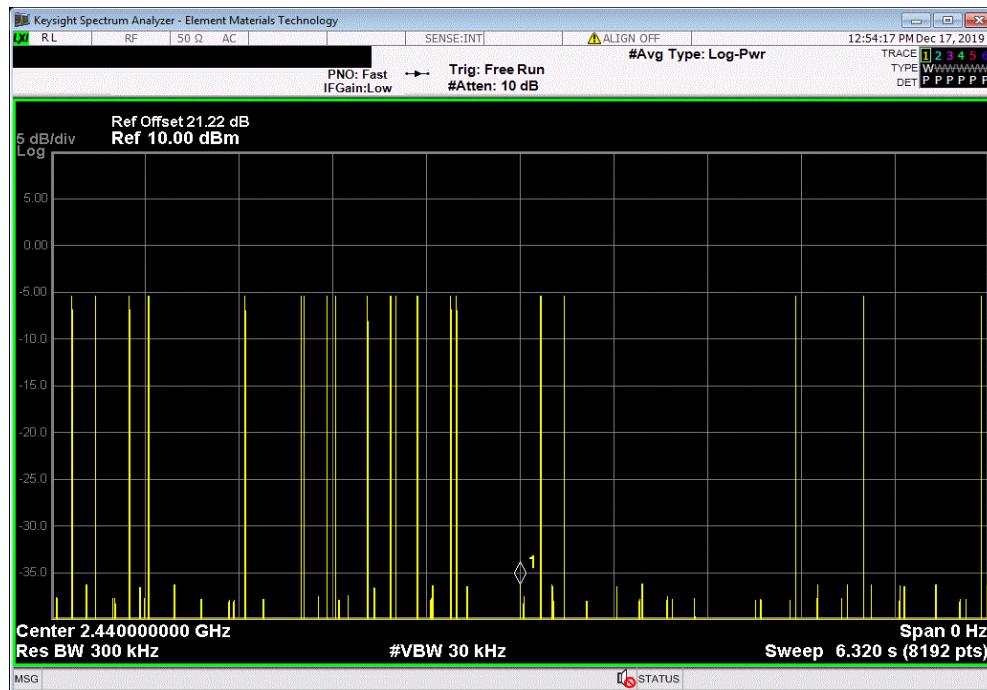


# DWELL TIME

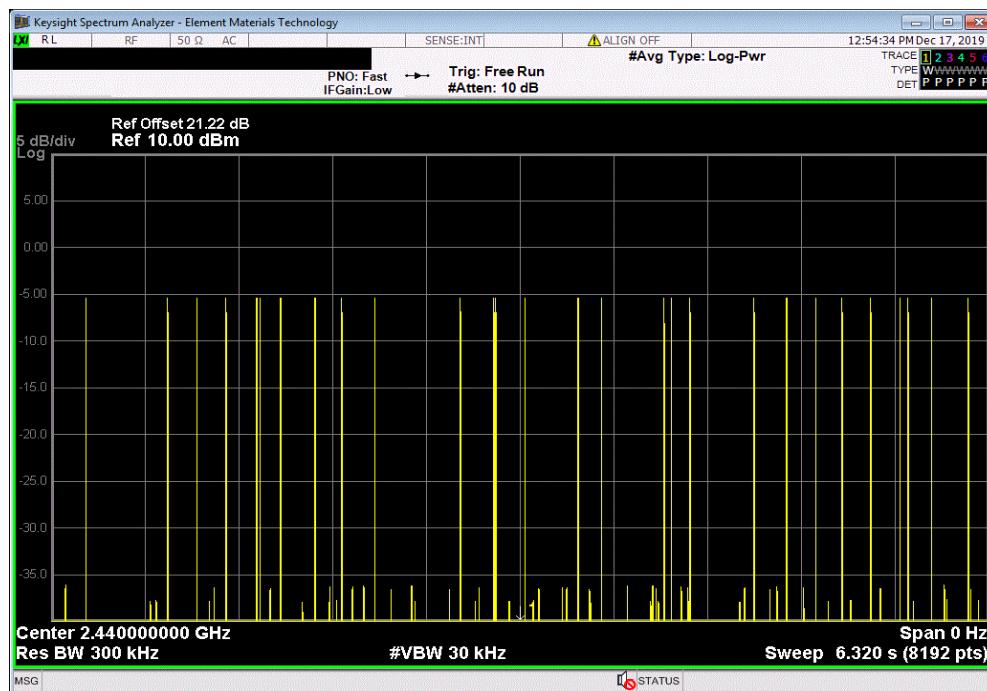


TbtTx 2019.08.30.0 XMI 2019.09.05

Hopping Mode (All Channels), 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	20	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	28	N/A	N/A	N/A	N/A	N/A

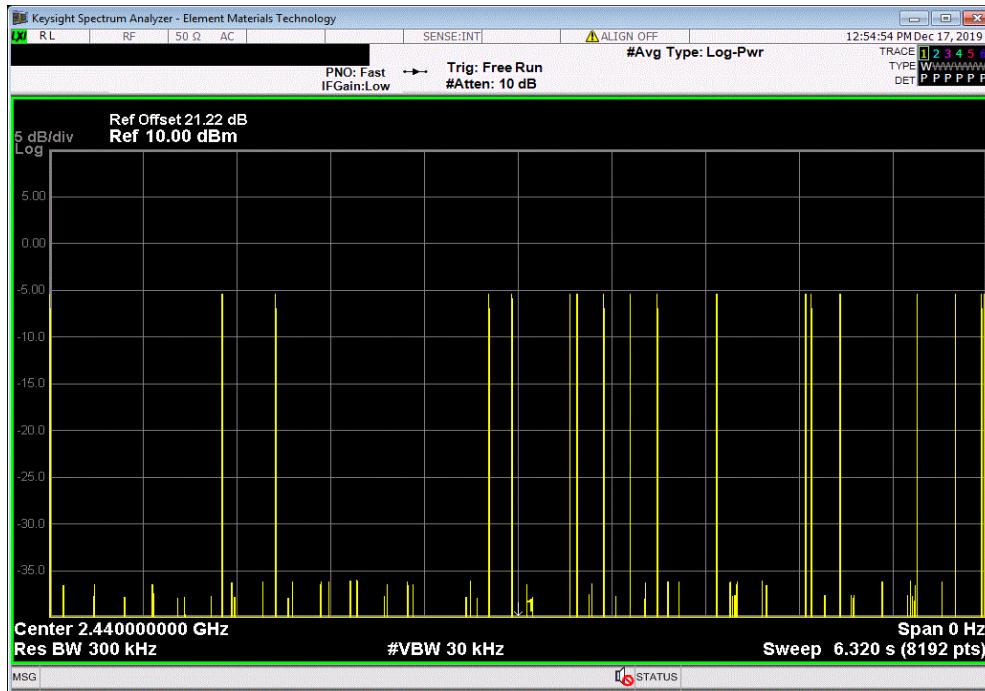


# DWELL TIME



TbTx 2019.08.30.0 XM1 2019.09.05

Hopping Mode (All Channels), 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	18	N/A	N/A	N/A	N/A	N/A



Hopping Mode (All Channels), 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.892	N/A	21	5	303.66	400	Pass

Calculation Only

No Screen Capture Required

# OUTPUT POWER



XMit 2019.09.05

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	18-Sep-19	18-Sep-20
Block - DC	Fairview Microwave	SD3379	AMT	18-Sep-19	18-Sep-20
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	18-Sep-19	18-Sep-20
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	5-May-19	5-May-20

## TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

The method found in ANSI C63.10:2013 Section 7.8.5 was used for a FHSS radio.

# OUTPUT POWER



TbTx 2019.08.30.0

XMI 2019.08.05

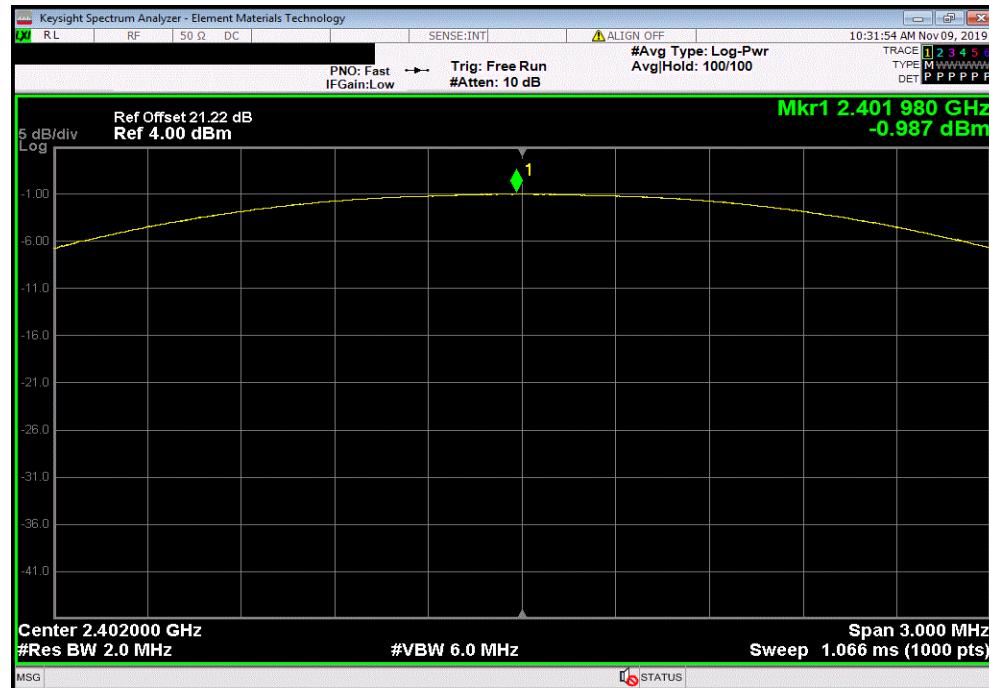
EUT:	V300		Work Order:	WTVD0027	
Serial Number:	63		Date:	8-Nov-19	
Customer:	WatchGuard Video		Temperature:	23.2 °C	
Attendees:	Navaid Karimi		Humidity:	26.2% RH	
Project:	None		Barometric Pres.:	1035 mbar	
Tested by:	Jonathan Kiefer	Power:	Battery	Job Site: TX09	
TEST SPECIFICATIONS		Test Method			
FCC 15.247:2019		ANSI C63.10:2013			
COMMENTS					
Low Ch 2402MHz, Mid Ch 2440MHz, High Ch 2480MHz. Reference Offset 21.22 dB (20dB attenuator+dc block+cable).					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	4	Signature	<i>Jonathan Kiefer</i>		
			Out Pwr (dBm)	Limit (dBm)	Result
DH5, GFSK			-0.987	21	Pass
	Low Channel		-1.486	21	Pass
	Mid Channel		-2.129	21	Pass
2DH5, pi/4-DQPSK	High Channel				
	Low Channel		-1.297	21	Pass
	Mid Channel		-2.14	21	Pass
	High Channel		-2.147	21	Pass
3DH5, 8-DPSK					
	Low Channel		-1.066	21	Pass
	Mid Channel		-1.925	21	Pass
	High Channel		-2.3	21	Pass

# OUTPUT POWER

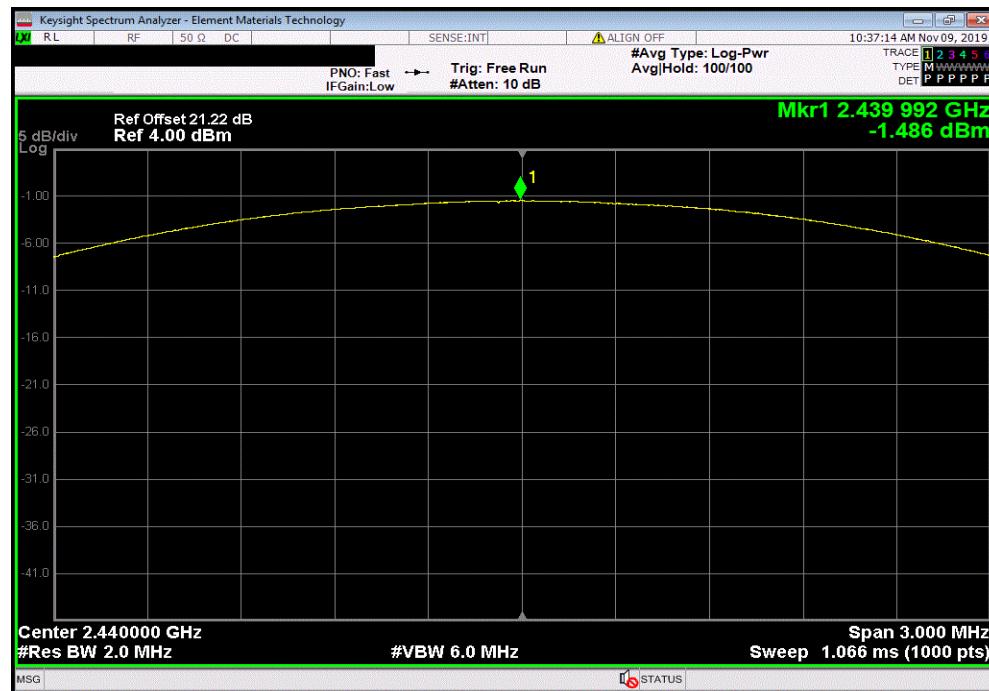


TbtTx 2019.08.30.0 XMT 2019.09.05

DH5, GFSK, Low Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-0.987	21	Pass



DH5, GFSK, Mid Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-1.486	21	Pass

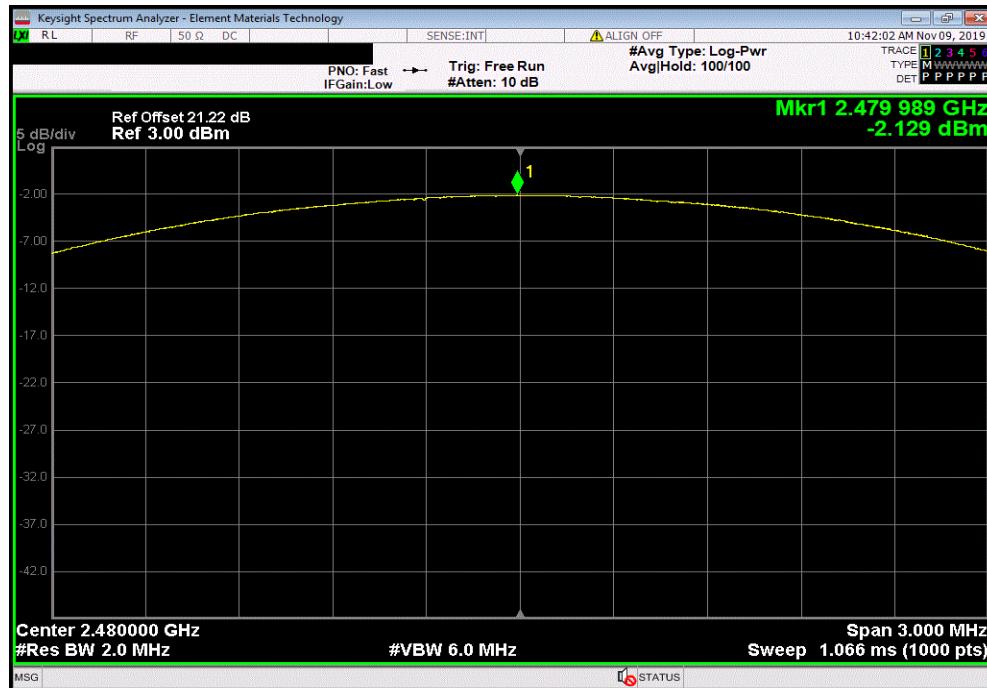


# OUTPUT POWER

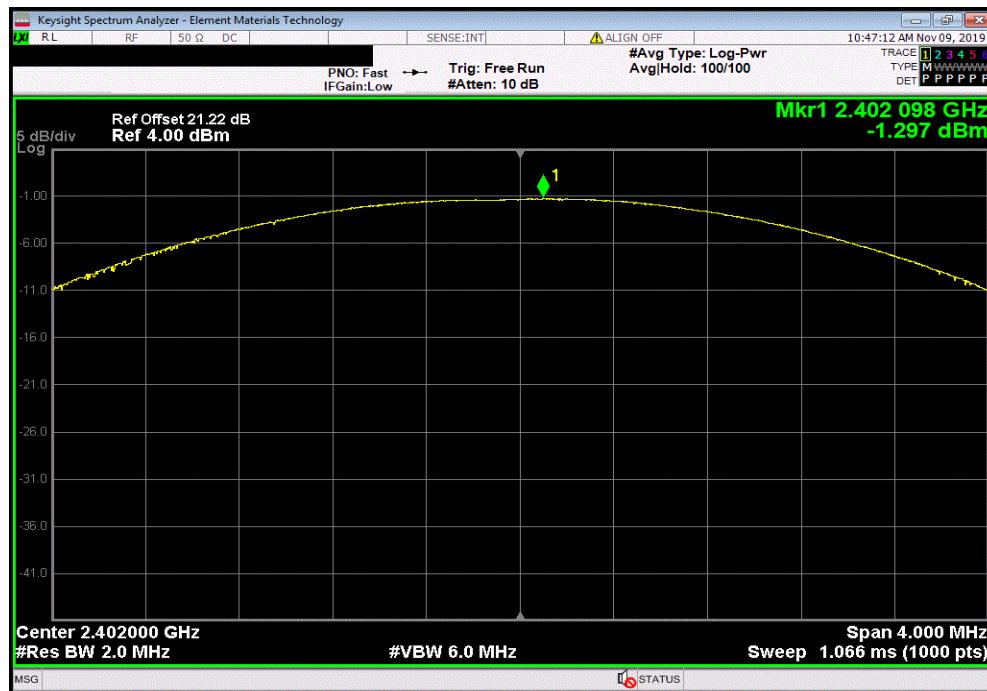


TbtTx 2019.08.30.0 XMT 2019.09.05

DH5, GFSK, High Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-2.129	21	Pass



2DH5, pi/4-DQPSK, Low Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-1.297	21	Pass

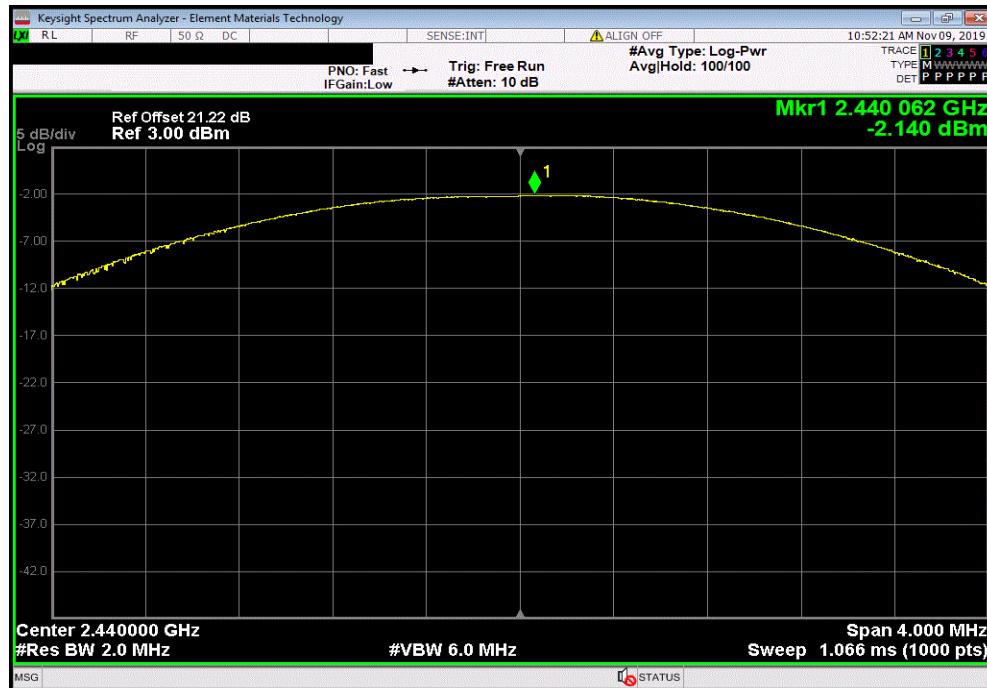


# OUTPUT POWER

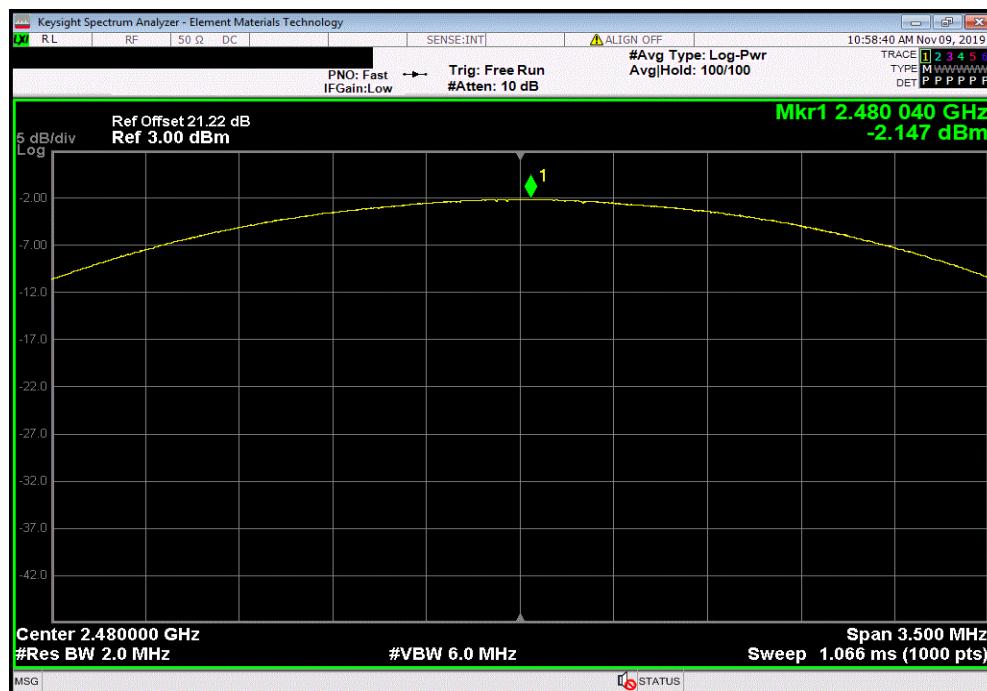


TbtTx 2019.08.30.0 XMT 2019.09.05

2DH5, pi/4-DQPSK, Mid Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-2.14	21	Pass



2DH5, pi/4-DQPSK, High Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-2.147	21	Pass

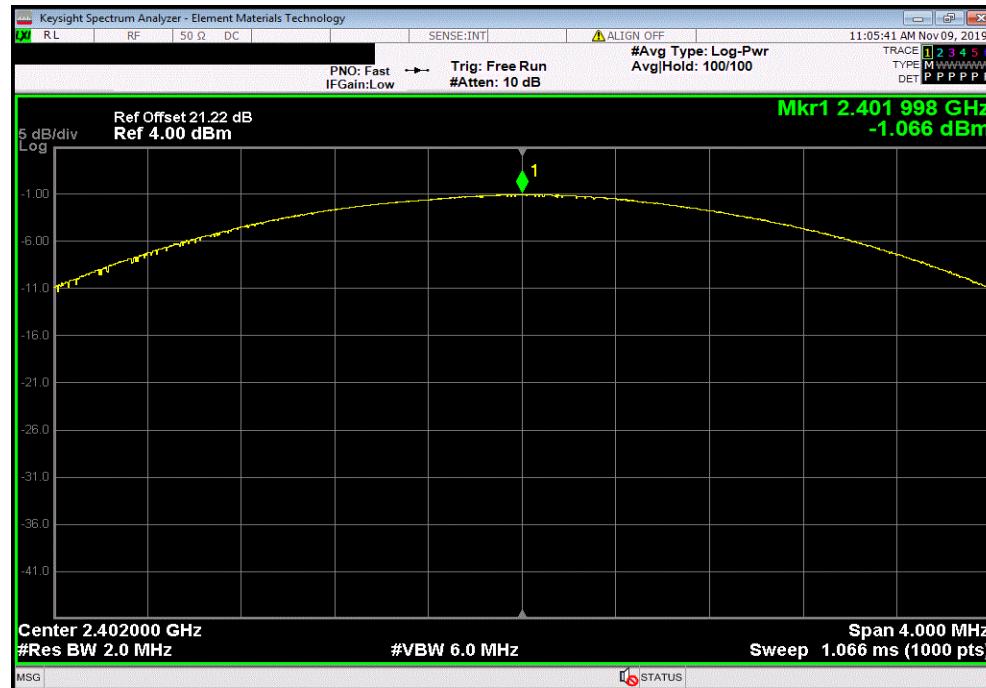


# OUTPUT POWER

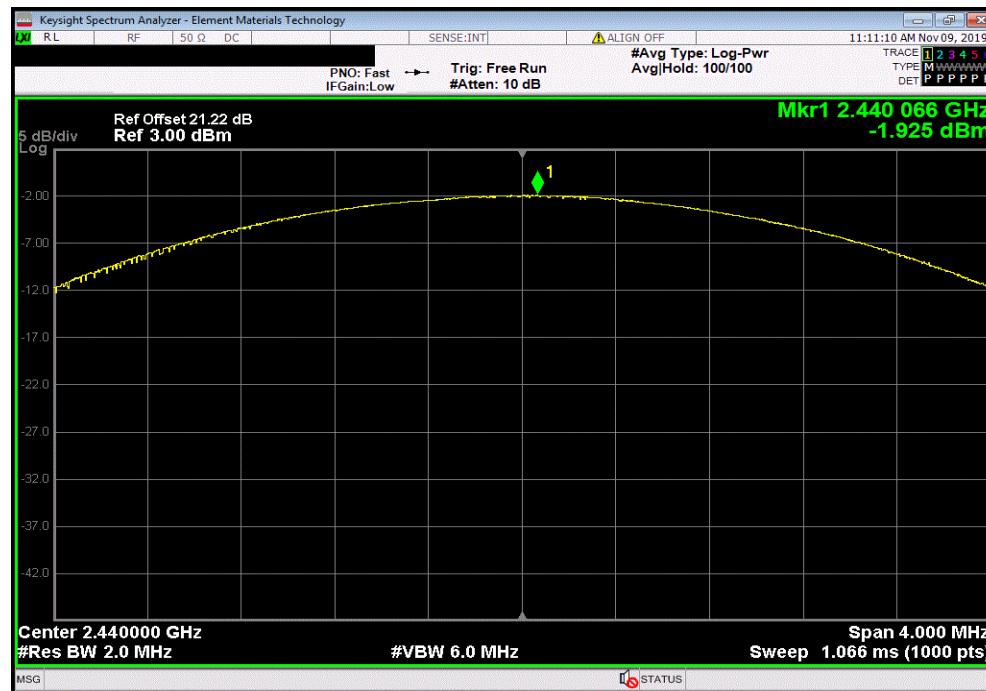


TbtTx 2019.08.30.0 XMT 2019.09.05

3DH5, 8-DPSK, Low Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-1.066	21	Pass



3DH5, 8-DPSK, Mid Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-1.925	21	Pass



# OUTPUT POWER



TbtTx 2019.08.30.0 XM1 2019.09.05

3DH5, 8-DPSK, High Channel				Out Pwr (dBm)	Limit (dBm)	Result
				-2.3	21	Pass

