WatchGuard Video

MIC-WRL-TRN-410

FCC 15.247:2018

902 – 928 MHz FHSS Transceiver

Report # WTVD0006.3 Rev 1

NVLAP LAB CODE: 201049-0

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CERTIFICATE OF TEST

Last Date of Test: July 11, 2018
WatchGuard Video
Model: MIC-WRL-TRN-410

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2018	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	N/A	Characterization of radio operation.
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	
7.8.6	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	
11.10.2	Power Spectral Density	No	N/A	Not required for FHSS devices.

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.

REVISION HISTORY

Revision Number	Description	Date	Page Number
01	Corrected Dwell Time to reflect 900 MHz limits.	7/18/2018	22-23

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). Certification chambers and Open Area Test Sites are filed with ISED.

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

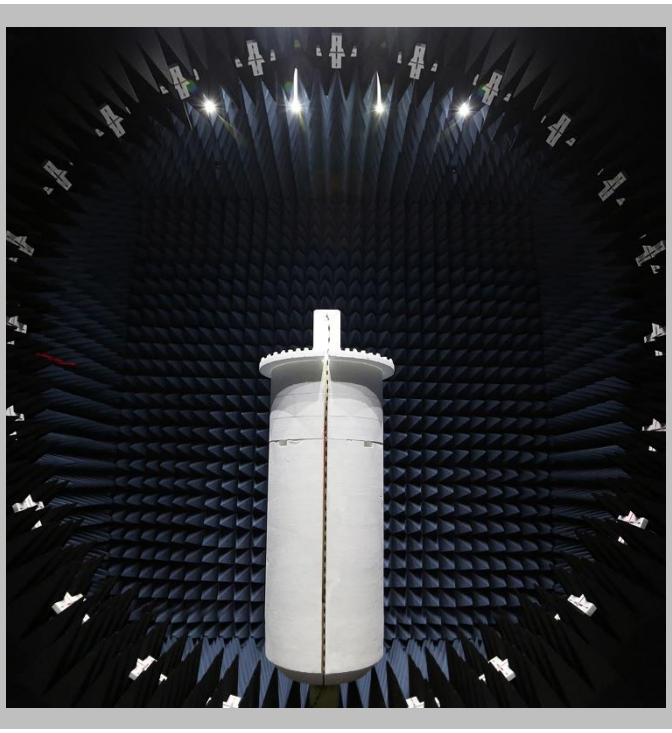
MIC – Recognized by MIC as a CAB for the acceptance of test data.

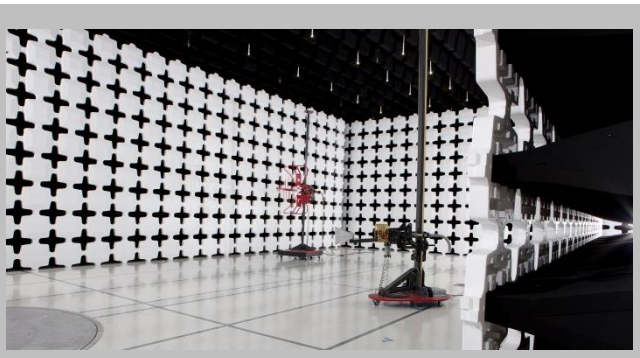
SCOPE

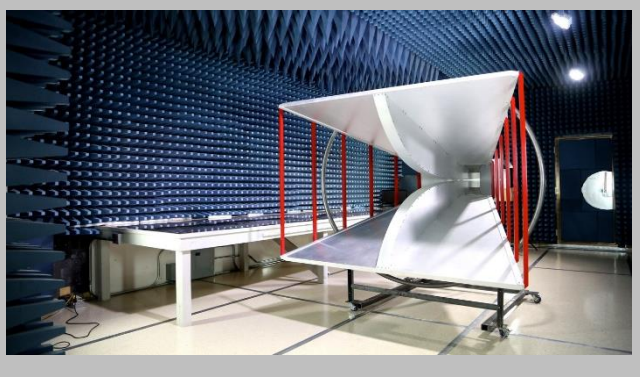
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

TMU.2015.07.10

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.

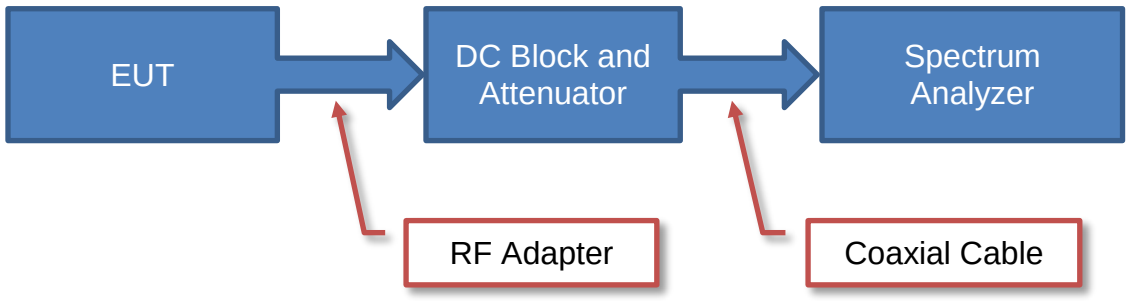
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable 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.

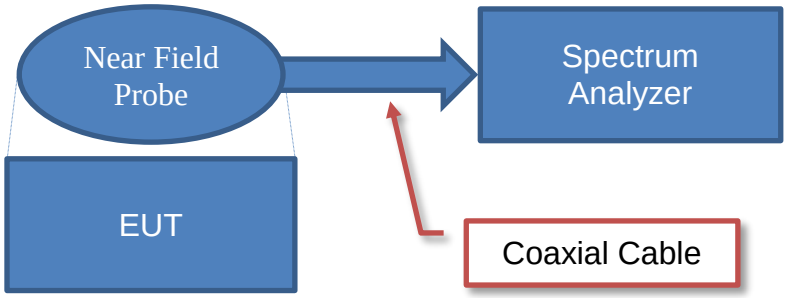
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams

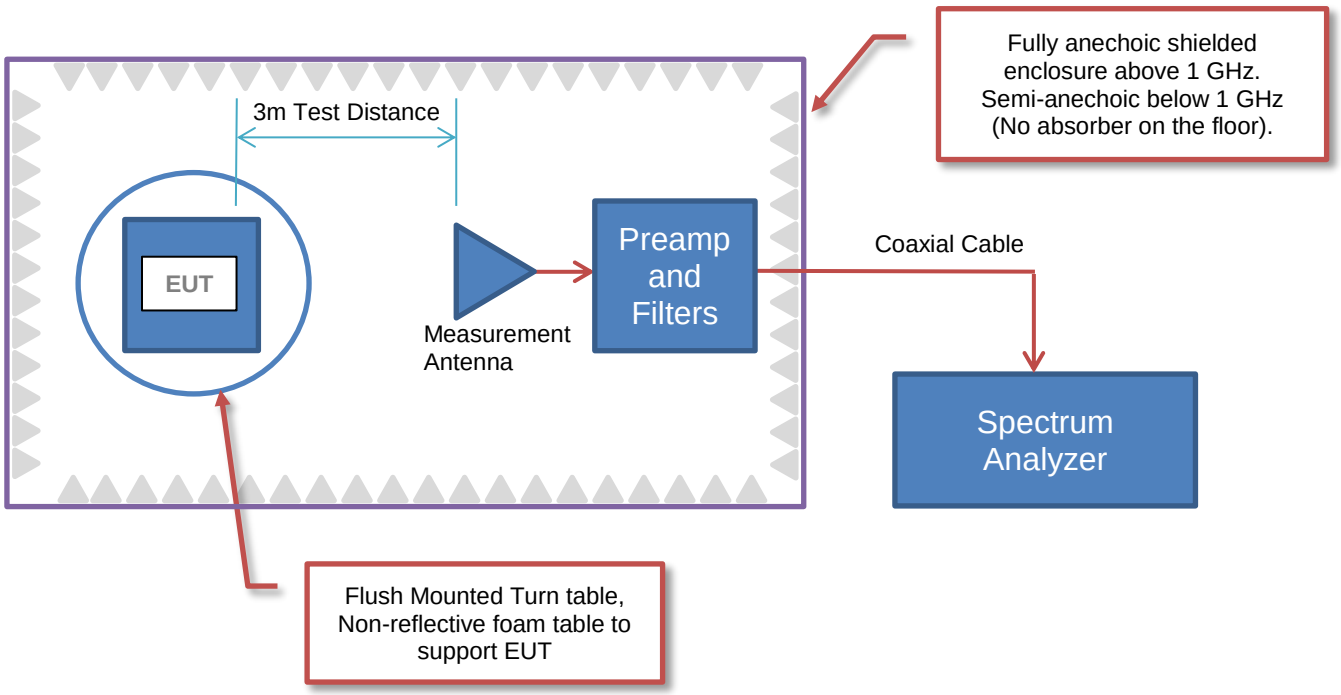
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	WatchGuard Video
Address:	415 East Exchange Parkway
City, State, Zip:	Allen, TX 75002
Test Requested By:	Navaid Karimi
Model:	MIC-WRL-TRN-410
First Date of Test:	June 18, 2018
Last Date of Test:	July 11, 2018
Receipt Date of Samples:	June 15, 2018
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The EUT is the MIC-WRL-TRN-410 "Transmitter" component. It communicates with the MIC-WRL-CHG-410 "Base" component. These two components operate as a pair and comprise the operational wireless microphone system.

Testing Objective:
Seeking to demonstrate compliance under FCC 15.247:2018 for operation in the 902-928 MHz Band.

CONFIGURATIONS

Configuration WTVD0006- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Wireless Microphone	WatchGuard Video	MIC-WRL-TRN-410	Proto1a

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	6/18/2018	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.
2	6/18/2018	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.
3	6/18/2018	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.
4	6/18/2018	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.
5	6/18/2018	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.
6	6/18/2018	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.
7	6/18/2018	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	6/19/2018	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.
9	7/11/2018	Dwell Time	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2018.05.04

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 902.25 MHz, Mid Channel at 914.75 MHz, and High Channel at 927.75 MHz.

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

WTVD0006 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz

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
Antenna - Biconilog	ETS Lindgren	3143B	AYF	10-May-2018	24 mo
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	10-Oct-2017	12 mo
Cable	Northwest EMC	8-18GHz	TXD	31-May-2018	12 mo
Cable	Northwest EMC	1-8.2 GHz	TXC	31-May-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	9-Oct-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	31-May-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-2018	12 mo

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.

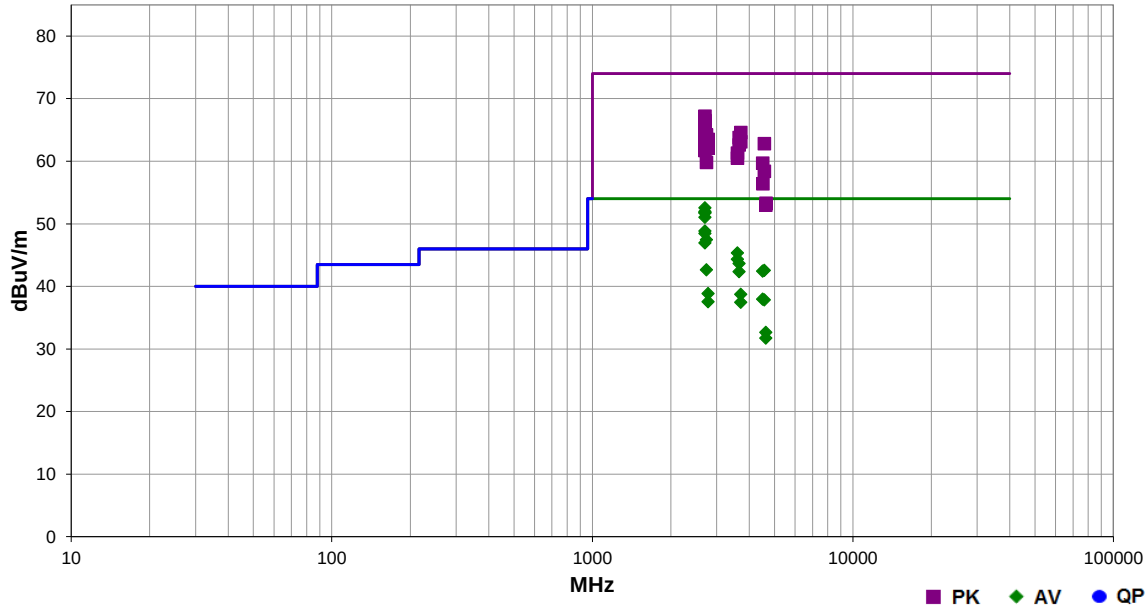
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	WTVD0006	**Date:**	19-Jun-2018		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	TX02	**Humidity:**	53.8% RH		
Serial Number:	Proto1a	**Barometric Pres.:**	1018 mbar	**Tested by:**	Marty Martin
EUT:	MIC-WRL-TRN-410				
Configuration:	1				
Customer:	WatchGuard Video				
Attendees:	Paul Hunt and Navaid Karimi				
EUT Power:	Battery				
Operating Mode:	Transmitting at Low Channel 902.25 MHz, Mid Channel at 914.75 MHz, and High Channel at 927.75 MHz.				
Deviations:	None				
Comments:	See Comments. Average duty cycle correction -13.1dB = 20 log (22.24ms/100ms)				

Test Specifications	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

Run #	8	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2706.800	67.5	-1.9	3.1	240.0	-13.1	0.0	Horz	AV	0.0	52.5	54.0	-1.5	Low Ch, Index 1, EUT Z
2706.865	66.9	-1.9	1.0	337.0	-13.1	0.0	Vert	AV	0.0	51.9	54.0	-2.1	Low Ch, Index 1, EUT Y
2706.835	66.7	-1.9	3.4	218.0	-13.1	0.0	Horz	AV	0.0	51.7	54.0	-2.3	Low Ch, Index 1, EUT Z Rerun
2706.670	66.7	-1.9	3.4	231.9	-13.1	0.0	Horz	AV	0.0	51.7	54.0	-2.3	Low Ch, Index 0, EUT Z
2706.900	66.0	-1.9	3.0	344.0	-13.1	0.0	Horz	AV	0.0	51.0	54.0	-3.0	Low Ch, Index 1, EUT X
2706.885	63.8	-1.9	3.0	7.0	-13.1	0.0	Horz	AV	0.0	48.8	54.0	-5.2	Low Ch, Index 1, EUT Y
2706.855	63.4	-1.9	3.2	164.0	-13.1	0.0	Vert	AV	0.0	48.4	54.0	-5.6	Low Ch, Index 1, EUT Z
2744.215	62.4	-1.9	3.6	225.0	-13.1	0.0	Horz	AV	0.0	47.4	54.0	-6.6	Mid Ch, Index 1, EUT Z
2707.230	69.1	-1.9	3.1	240.0	0.0	0.0	Horz	PK	0.0	67.2	74.0	-6.8	Low Ch, Index 1, EUT Z
2706.870	61.9	-1.9	1.0	306.0	-13.1	0.0	Vert	AV	0.0	46.9	54.0	-7.1	Low Ch, Index 1, EUT X
2707.030	68.4	-1.9	1.0	337.0	0.0	0.0	Vert	PK	0.0	66.5	74.0	-7.5	Low Ch, Index 1, EUT Y
2707.225	68.3	-1.9	3.4	218.0	0.0	0.0	Horz	PK	0.0	66.4	74.0	-7.6	Low Ch, Index 1, EUT Z Rerun
2706.965	67.8	-1.9	3.4	231.9	0.0	0.0	Horz	PK	0.0	65.9	74.0	-8.1	Low Ch, Index 0, EUT Z
2706.990	67.5	-1.9	3.0	344.0	0.0	0.0	Horz	PK	0.0	65.6	74.0	-8.4	Low Ch, Index 1, EUT X
3609.220	55.2	3.2	1.0	63.0	-13.1	0.0	Vert	AV	0.0	45.3	54.0	-8.7	Low Ch, Index 1, EUT Y
3712.280	60.9	3.7	1.0	63.0	0.0	0.0	Vert	PK	0.0	64.6	74.0	-9.4	High Ch, Index 1, EUT Y
3609.335	54.2	3.2	3.0	312.0	-13.1	0.0	Horz	AV	0.0	44.3	54.0	-9.7	Low Ch, Index 1, EUT Z
2744.205	66.1	-1.9	3.6	225.0	0.0	0.0	Horz	PK	0.0	64.2	74.0	-9.8	Mid Ch, Index 1, EUT Z
3658.810	60.4	3.4	3.2	313.0	0.0	0.0	Horz	PK	0.0	63.8	74.0	-10.2	Mid Ch, Index 1, EUT Z
2707.085	65.6	-1.9	3.0	7.0	0.0	0.0	Horz	PK	0.0	63.7	74.0	-10.3	Low Ch, Index 1, EUT Y
3659.055	53.3	3.4	3.2	313.0	-13.1	0.0	Horz	AV	0.0	43.6	54.0	-10.4	Mid Ch, Index 1, EUT Z
2784.335	65.1	-1.6	4.0	232.9	0.0	0.0	Horz	PK	0.0	63.5	74.0	-10.5	High Ch, Index 1, EUT Z

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2707.030	65.0	-1.9	3.2	164.0	0.0	0.0	Vert	PK	0.0	63.1	74.0	-10.9	Low Ch, Index 1, EUT Z
3712.430	59.4	3.7	2.4	310.9	0.0	0.0	Horz	PK	0.0	63.1	74.0	-10.9	High Ch, Index 1, EUT Z
4574.265	56.8	6.0	3.5	207.9	0.0	0.0	Vert	PK	0.0	62.8	74.0	-11.2	Mid Ch, Index 1, EUT Y
2744.210	57.6	-1.9	1.0	303.9	-13.1	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Mid Ch, Index 1, EUT Y
3659.085	59.2	3.4	1.0	182.0	0.0	0.0	Vert	PK	0.0	62.6	74.0	-11.4	Mid Ch, Index 1, EUT Y
4573.290	49.6	6.0	3.5	207.9	-13.1	0.0	Vert	AV	0.0	42.5	54.0	-11.5	Mid Ch, Index 1, EUT Y
4511.705	49.7	5.8	4.0	36.0	-13.1	0.0	Vert	AV	0.0	42.4	54.0	-11.6	Low Ch, Index 1, EUT Y
3659.040	52.0	3.4	1.0	182.0	-13.1	0.0	Vert	AV	0.0	42.3	54.0	-11.7	Mid Ch, Index 1, EUT Y
2784.250	63.7	-1.6	1.0	333.9	0.0	0.0	Vert	PK	0.0	62.1	74.0	-11.9	High Ch, Index 1, EUT Y
2707.195	63.6	-1.9	1.0	306.0	0.0	0.0	Vert	PK	0.0	61.7	74.0	-12.3	Low Ch, Index 1, EUT X
3608.615	58.1	3.2	1.0	63.0	0.0	0.0	Vert	PK	0.0	61.3	74.0	-12.7	Low Ch, Index 1, EUT Y
3609.465	57.3	3.2	3.0	312.0	0.0	0.0	Horz	PK	0.0	60.5	74.0	-13.5	Low Ch, Index 1, EUT Z
2744.450	61.7	-1.9	1.0	303.9	0.0	0.0	Vert	PK	0.0	59.8	74.0	-14.2	Mid Ch, Index 1, EUT Y
4510.555	53.9	5.8	4.0	36.0	0.0	0.0	Vert	PK	0.0	59.7	74.0	-14.3	Low Ch, Index 1, EUT Y
2784.175	53.5	-1.6	4.0	232.9	-13.1	0.0	Horz	AV	0.0	38.8	54.0	-15.2	High Ch, Index 1, EUT Z
3712.345	48.1	3.7	1.0	63.0	-13.1	0.0	Vert	AV	0.0	38.7	54.0	-15.3	High Ch, Index 1, EUT Y
4573.430	52.4	6.0	3.5	244.9	0.0	0.0	Horz	PK	0.0	58.4	74.0	-15.6	Mid Ch, Index 1, EUT Z
4511.705	45.2	5.8	2.9	55.0	-13.1	0.0	Horz	AV	0.0	37.9	54.0	-16.1	Low Ch, Index 1, EUT Z
4573.240	44.9	6.0	3.5	244.9	-13.1	0.0	Horz	AV	0.0	37.8	54.0	-16.2	Mid Ch, Index 1, EUT Z
2784.195	52.2	-1.6	1.0	333.9	-13.1	0.0	Vert	AV	0.0	37.5	54.0	-16.5	High Ch, Index 1, EUT Y
3712.345	46.8	3.7	2.4	310.9	-13.1	0.0	Horz	AV	0.0	37.4	54.0	-16.6	High Ch, Index 1, EUT Z
4512.105	50.6	5.8	2.9	55.0	0.0	0.0	Horz	PK	0.0	56.4	74.0	-17.6	Low Ch, Index 1, EUT Z
4639.950	47.0	6.3	1.0	357.0	0.0	0.0	Vert	PK	0.0	53.3	74.0	-20.7	High Ch, Index 1, EUT Y
4638.455	46.7	6.3	3.0	33.9	0.0	0.0	Horz	PK	0.0	53.0	74.0	-21.0	High Ch, Index 1, EUT Z
4638.180	39.4	6.3	1.0	357.0	-13.1	0.0	Vert	AV	0.0	32.6	54.0	-21.4	High Ch, Index 1, EUT Y
4638.285	38.5	6.3	3.0	33.9	-13.1	0.0	Horz	AV	0.0	31.7	54.0	-22.3	High Ch, Index 1, EUT Z

DUTY CYCLE

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

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

The EUT operates at 100% Duty Cycle.

CARRIER FREQUENCY SEPARATION

XMit 2017.12.13

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	17-Nov-17	17-Nov-18
Block - DC	Fairview Microwave	SD3379	AMT	11-Oct-17	11-Oct-18
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	28-Nov-17	28-Nov-18
Generator - Signal	Agilent	N5173B	TIW	5-Jul-17	5-Jul-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-18	15-Mar-19

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 902-928 MHz 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

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	MIC-WRL-TRN-410			**Work Order:**	WTVD0006
Serial Number:	Proto1a			**Date:**	18-Jun-18
Customer:	WatchGuard Video			**Temperature:**	23.2 °C
Attendees:	Paul Hunt, Navaid Karimi			**Humidity:**	52% RH
Project:	None			**Barometric Pres.:**	1019 mbar
Tested by:	Marty Martin	**Power:**	Battery	**Job Site:**	TX09

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

EUT operational.

DEVIATIONS FROM TEST STANDARD

None

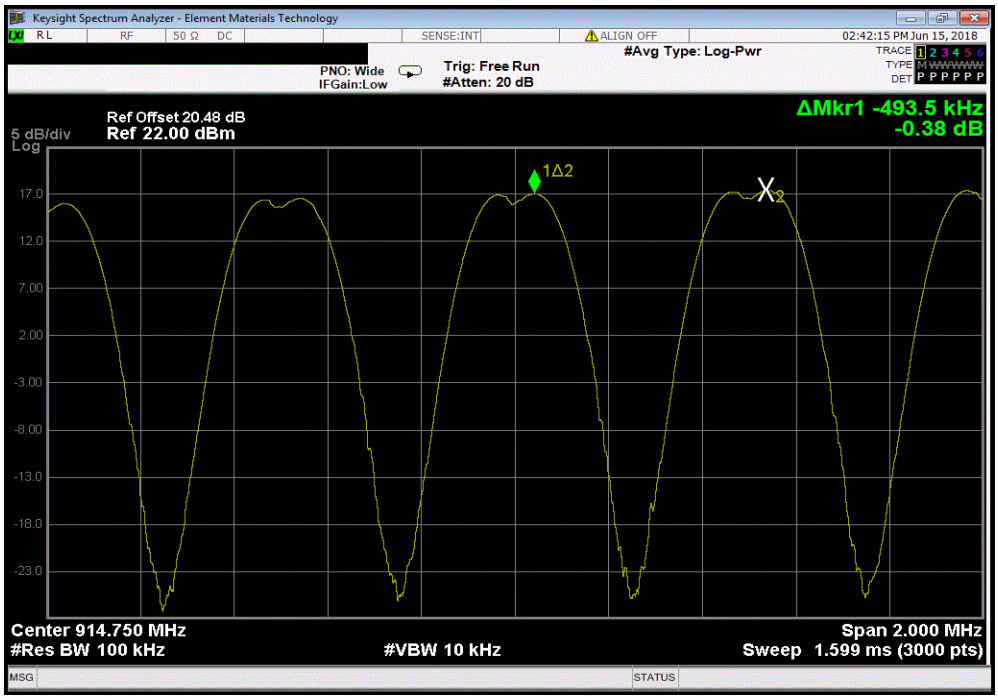
Configuration #	**1**	*Signature* Marty Martin

		Value	**Limit (≥)**	**Results**
902 MHz - 928 MHz Band				
	Index 1			
	Hopping 902.25 - 927.75	0.5 MHz	150 kHz	Pass

CARRIER FREQUENCY SEPARATION

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 1, Hopping 902.25 - 927.75						
				Value	Limit (≥)	Results
				0.5 MHz	150 kHz	Pass



NUMBER OF HOPPING FREQUENCIES

XMit 2017.12.13

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	17-Nov-17	17-Nov-18
Block - DC	Fairview Microwave	SD3379	AMT	11-Oct-17	11-Oct-18
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	28-Nov-17	28-Nov-18
Generator - Signal	Agilent	N5173B	TIW	5-Jul-17	5-Jul-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-18	15-Mar-19

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

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**MIC-WRL-TRN-410**			**Work Order:**	**WTVD0006**
Serial Number:	**Proto1a**			**Date:**	**18-Jun-18**
Customer:	**WatchGuard Video**			**Temperature:**	**23.4 °C**
Attendees:	**Paul Hunt, Navaid Karimi**			**Humidity:**	**52.5% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

EUT operational.

DEVIATIONS FROM TEST STANDARD

None

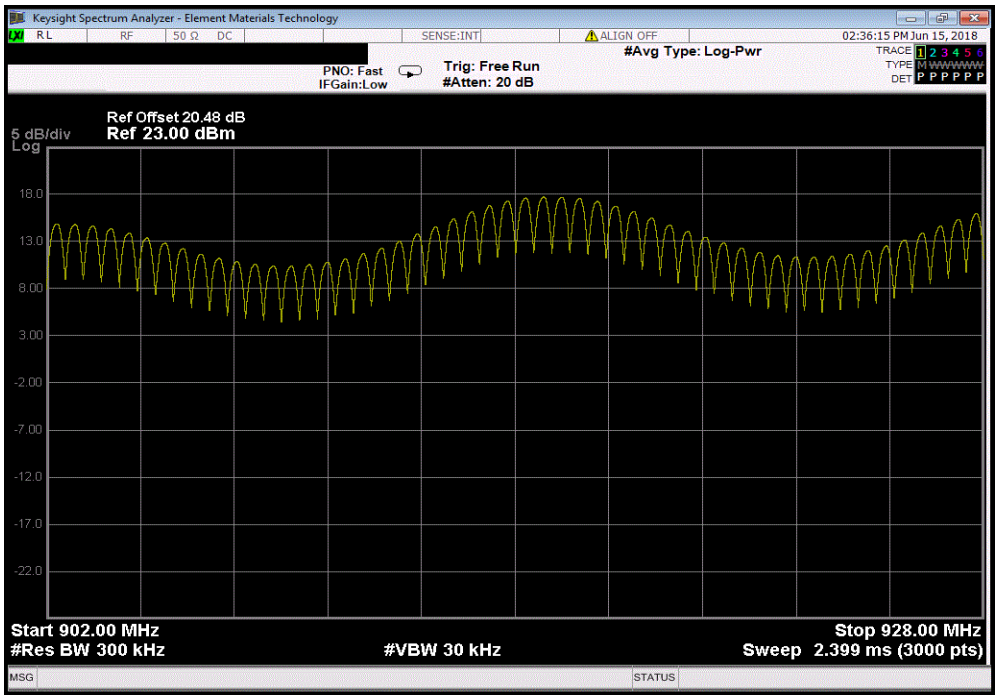
Configuration #	**1**	*Signature* Marty Martin

		Number of Channels	**Limit (≥)**	**Results**
902 MHz - 928 MHz Band				
	Index 1			
	Hopping 902.25 - 927.75	52	50	Pass

NUMBER OF HOPPING FREQUENCIES

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 1, Hopping 902.25 - 927.75						
				Number of Channels	Limit (≥)	Results
				52	50	Pass



DWELL TIME

XMit 2017.12.13

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	17-Nov-17	17-Nov-18
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	28-Nov-17	28-Nov-18
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-18	15-Mar-19
Block - DC	Fairview Microwave	SD3379	AMT	11-Oct-17	11-Oct-18
Generator - Signal	Agilent	N5173B	TIW	5-Jul-17	5-Jul-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 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 this propriatary radio, this would be 50 Channels * 400mS = 20.0 Sec.

On Time During 20 Seconds = Pulse Width * Average Number of Pulses

DWELL TIME

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**MIC-WRL-TRN-410**			**Work Order:**	**WTVD0006**
Serial Number:	**Proto1a**			**Date:**	**11-Jul-18**
Customer:	**WatchGuard Video**			**Temperature:**	**22 °C**
Attendees:	**Paul Hunt, Navaid Karimi**			**Humidity:**	**56.5% RH**
Project:	**None**			**Barometric Pres.:**	**1021 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

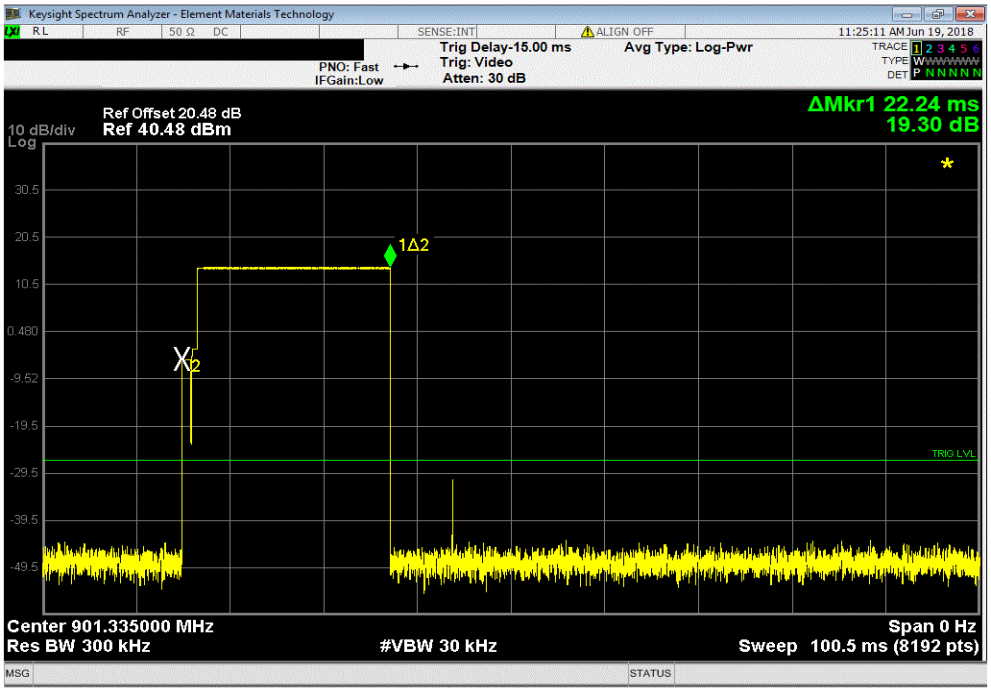
Configuration #	**1**	*Signature*

		Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 20s	Limit (ms)	Results
Hopping Mode								
	Index 1							
	Hopping 902.25 - 927.75	22.24	N/A	N/A	N/A	N/A	N/A	N/A
	Hopping 902.25 - 927.75	N/A	N/A	13	N/A	N/A	N/A	N/A
	Hopping 902.25 - 927.75	22.24	N/A	13	N/A	289.12	400	Pass

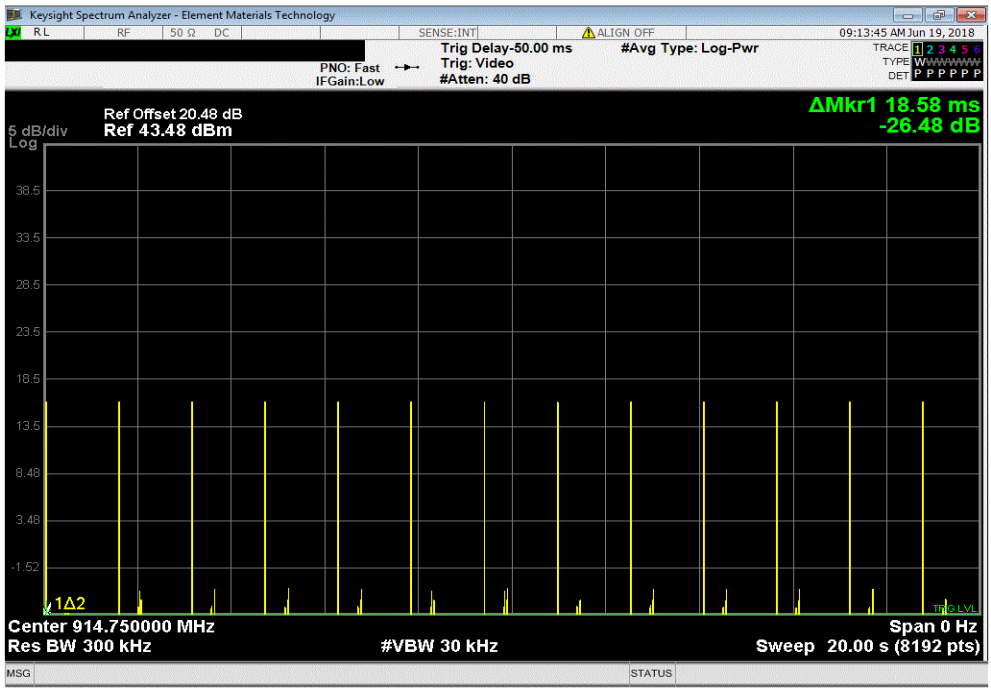
DWELL TIME

TbtTx 2017.12.14 XMit 2017.12.13

Hopping 902.25 - 927.75						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 20s	Limit (ms)	Results
22.24	N/A	N/A	N/A	N/A	N/A	N/A



Hopping 902.25 - 927.75						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 20s	Limit (ms)	Results
N/A	N/A	13	N/A	N/A	N/A	N/A



DWELL TIME

TbtTx 2017.12.14 XMit 2017.12.13

Hopping 902.25 - 927.75							
	Pulse Width (ms)	**Number of Pulses**	**Average No. of Pulses**	**Scale Factor**	**On Time (ms) During 20s**	**Limit (ms)**	**Results**
	22.24	N/A	13	N/A	289.12	400	Pass

Calculation Only

No Screen Capture Required

OUTPUT POWER

XMit 2017.12.13

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	17-Nov-17	17-Nov-18
Block - DC	Fairview Microwave	SD3379	AMT	11-Oct-17	11-Oct-18
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	28-Nov-17	28-Nov-18
Generator - Signal	Agilent	N5173B	TIW	5-Jul-17	5-Jul-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-18	15-Mar-19

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

De Facto EIRP Limit: The EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**MIC-WRL-TRN-410**			**Work Order:**	**WTVD0006**
Serial Number:	**Proto1a**			**Date:**	**18-Jun-18**
Customer:	**WatchGuard Video**			**Temperature:**	**23.2 °C**
Attendees:	**Paul Hunt, Navaid Karimi**			**Humidity:**	**52.7% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

EUT operational.

DEVIATIONS FROM TEST STANDARD

None

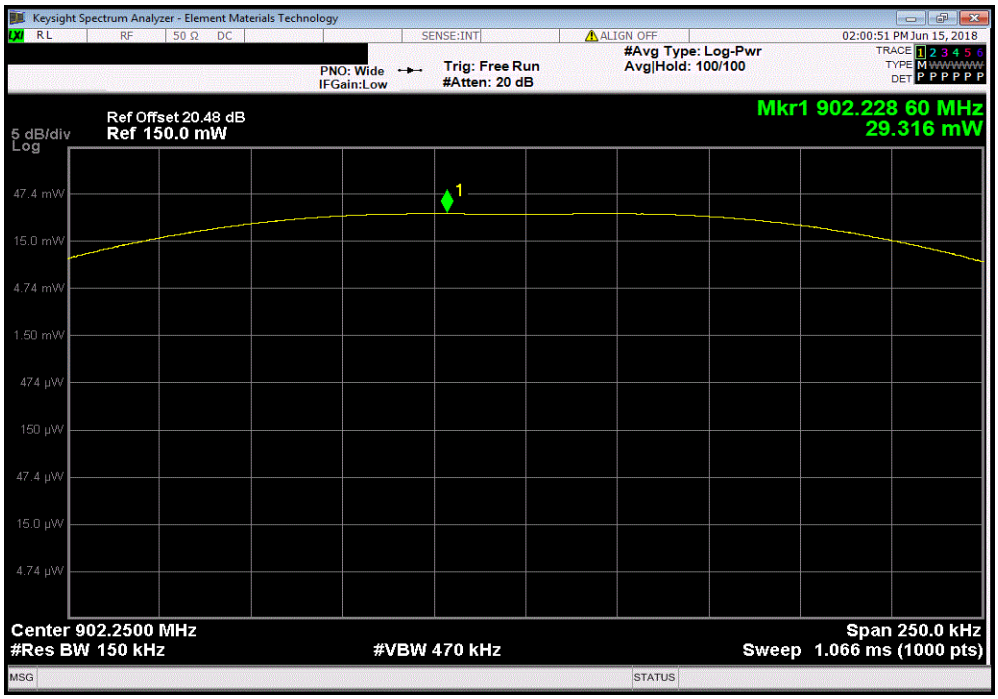
Configuration #	**1**	*Signature*

		Value	**Limit (<)**	**Result**
902 MHz - 928 MHz Band				
	Index 0			
	Low Channel 0, 902.25 MHz	29.316 mW	1 W	Pass
	Mid Channel 25, 914.75 MHz	51.128 mW	1 W	Pass
	High Channel 51, 927.75 MHz	38.248 mW	1 W	Pass
	Index 1			
	Low Channel 0, 902.25 MHz	29.487 mW	1 W	Pass
	Mid Channel 25, 914.75 MHz	51.753 mW	1 W	Pass
	High Channel 51, 927.75 MHz	38.894 mW	1 W	Pass

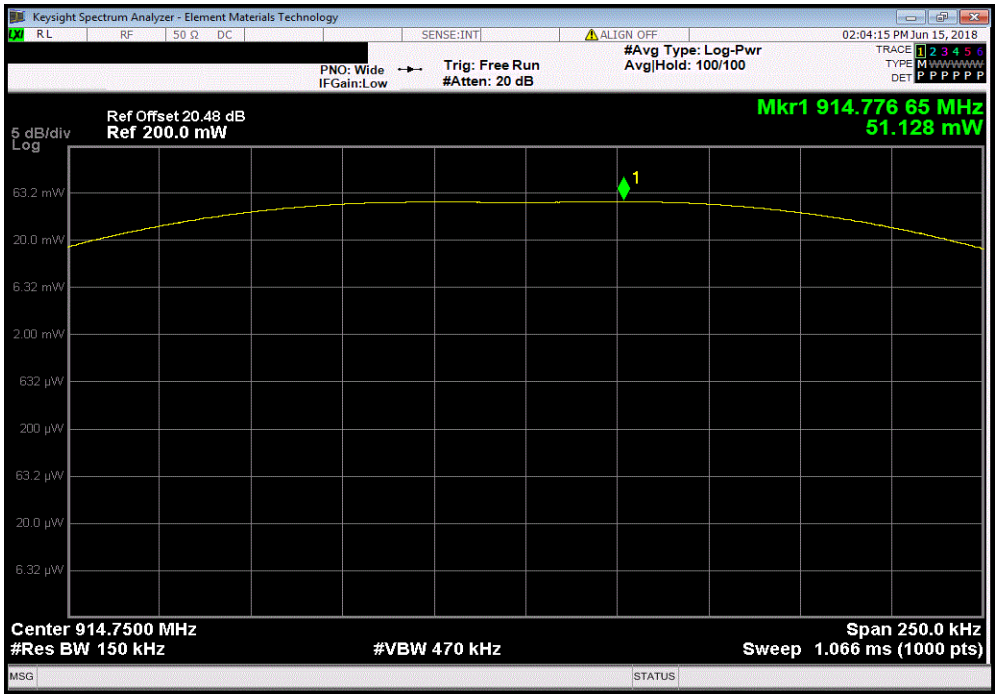
OUTPUT POWER

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 0, Low Channel 0, 902.25 MHz						
				Value	Limit (<)	Result
				29.316 mW	1 W	Pass



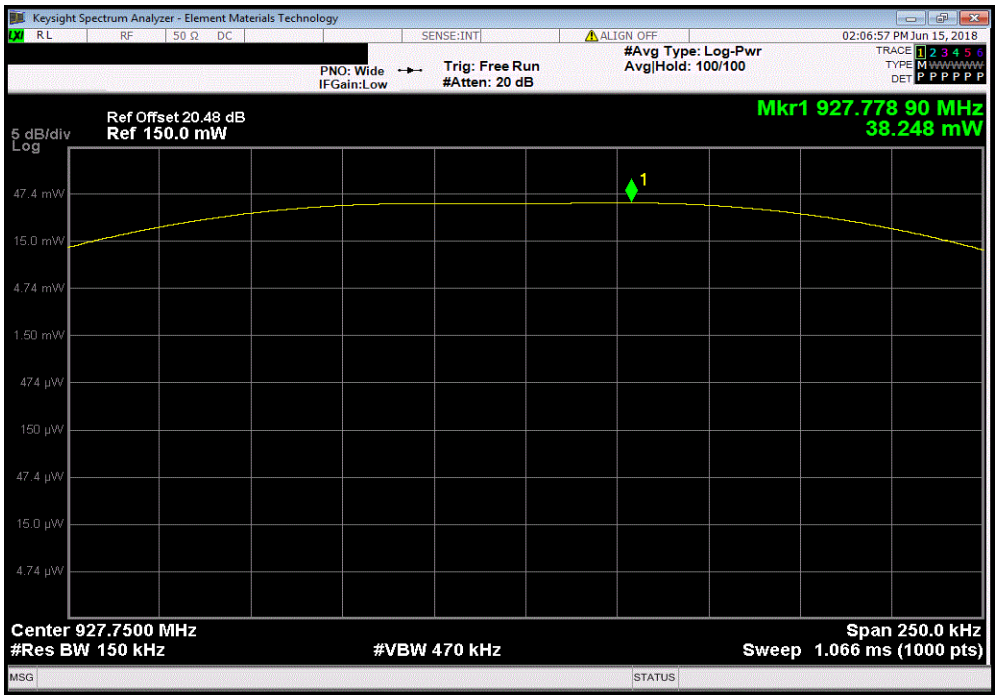
902 MHz - 928 MHz Band, Index 0, Mid Channel 25, 914.75 MHz						
				Value	Limit (<)	Result
				51.128 mW	1 W	Pass



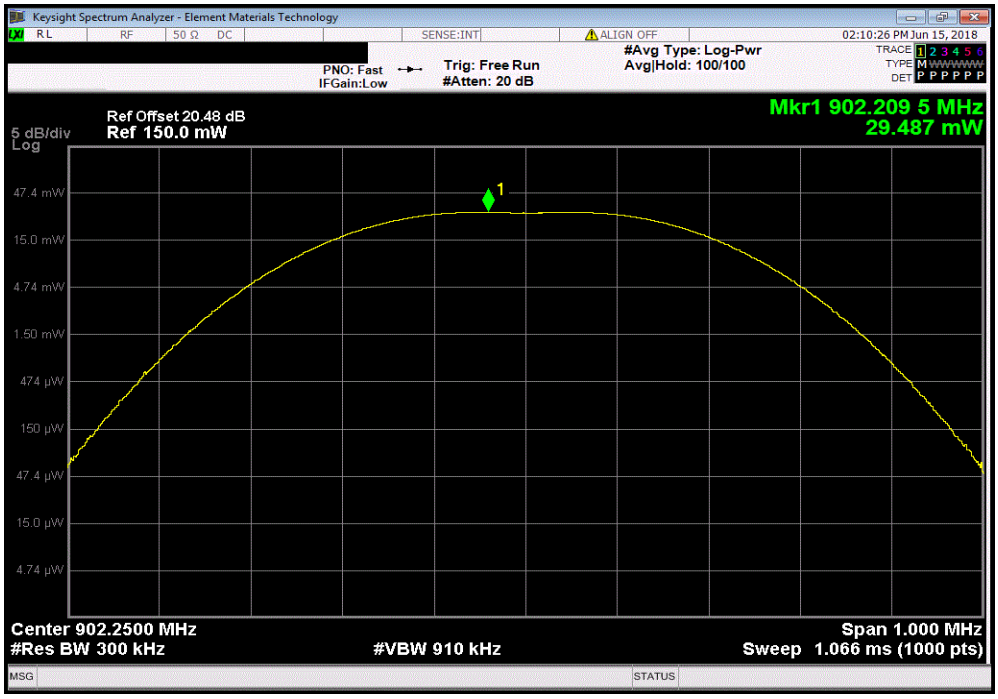
OUTPUT POWER

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 0, High Channel 51, 927.75 MHz						
				Value	Limit (<)	Result
				38.248 mW	1 W	Pass



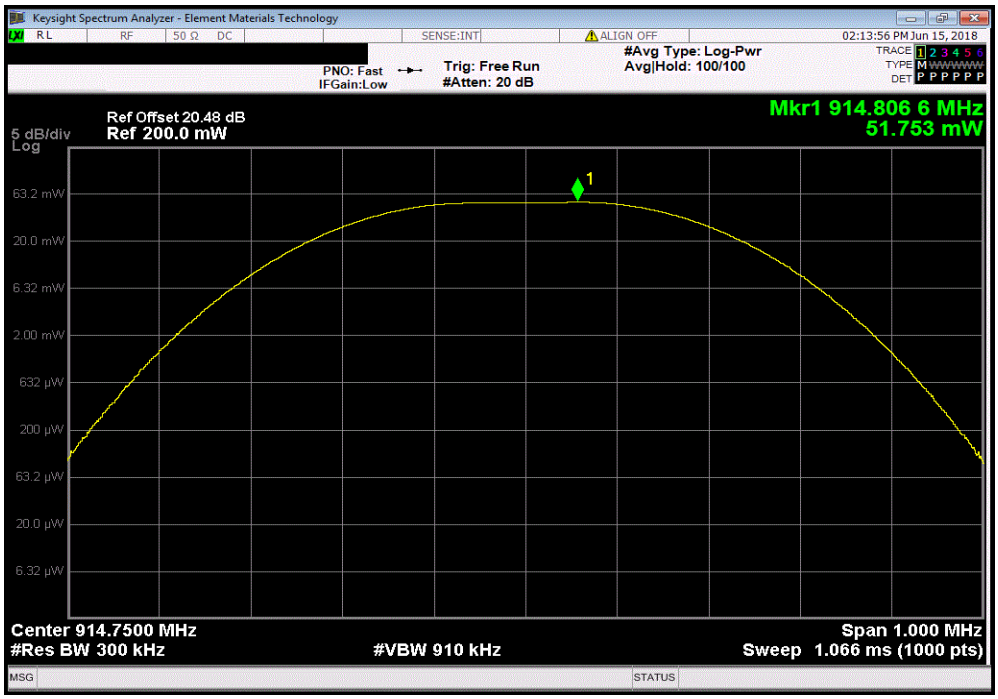
902 MHz - 928 MHz Band, Index 1, Low Channel 0, 902.25 MHz						
				Value	Limit (<)	Result
				29.487 mW	1 W	Pass



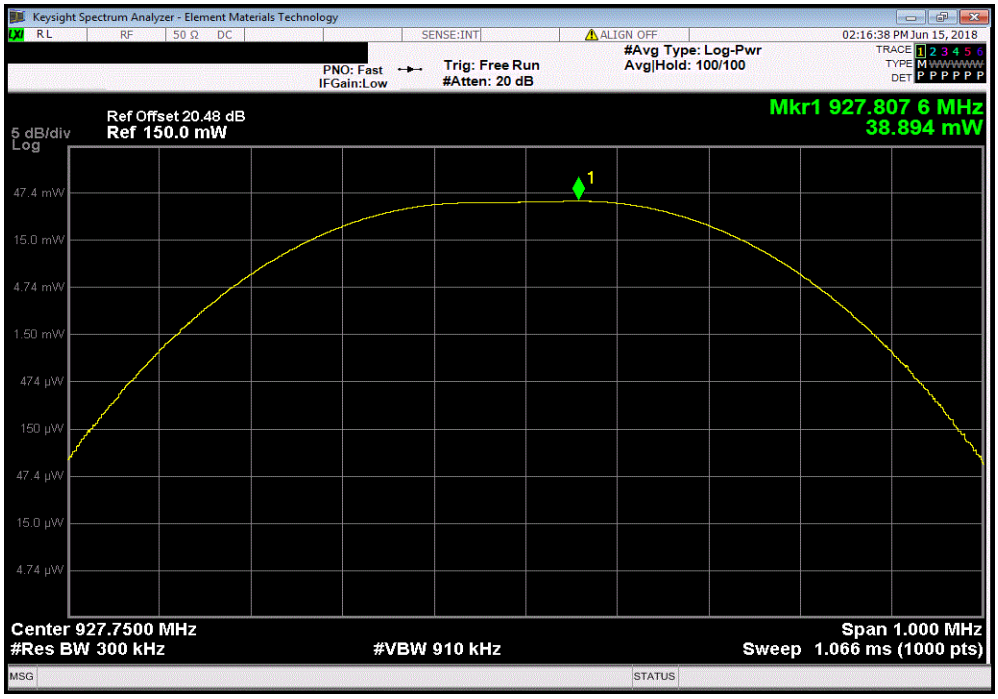
OUTPUT POWER

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 1, Mid Channel 25, 914.75 MHz						
				Value	Limit (<)	Result
				51.753 mW	1 W	Pass



902 MHz - 928 MHz Band, Index 1, High Channel 51, 927.75 MHz						
				Value	Limit (<)	Result
				38.894 mW	1 W	Pass



BAND EDGE COMPLIANCE

XMit 2017.12.13

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	17-Nov-17	17-Nov-18
Block - DC	Fairview Microwave	SD3379	AMT	11-Oct-17	11-Oct-18
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	28-Nov-17	28-Nov-18
Generator - Signal	Agilent	N5173B	TIW	5-Jul-17	5-Jul-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-18	15-Mar-19

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**MIC-WRL-TRN-410**			**Work Order:**	**WTVD0006**
Serial Number:	**Proto1a**			**Date:**	**18-Jun-18**
Customer:	**WatchGuard Video**			**Temperature:**	**23.7 °C**
Attendees:	**Paul Hunt, Navaid Karimi**			**Humidity:**	**50.5% RH**
Project:	**None**			**Barometric Pres.:**	**1018 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

EUT operational.

DEVIATIONS FROM TEST STANDARD

None

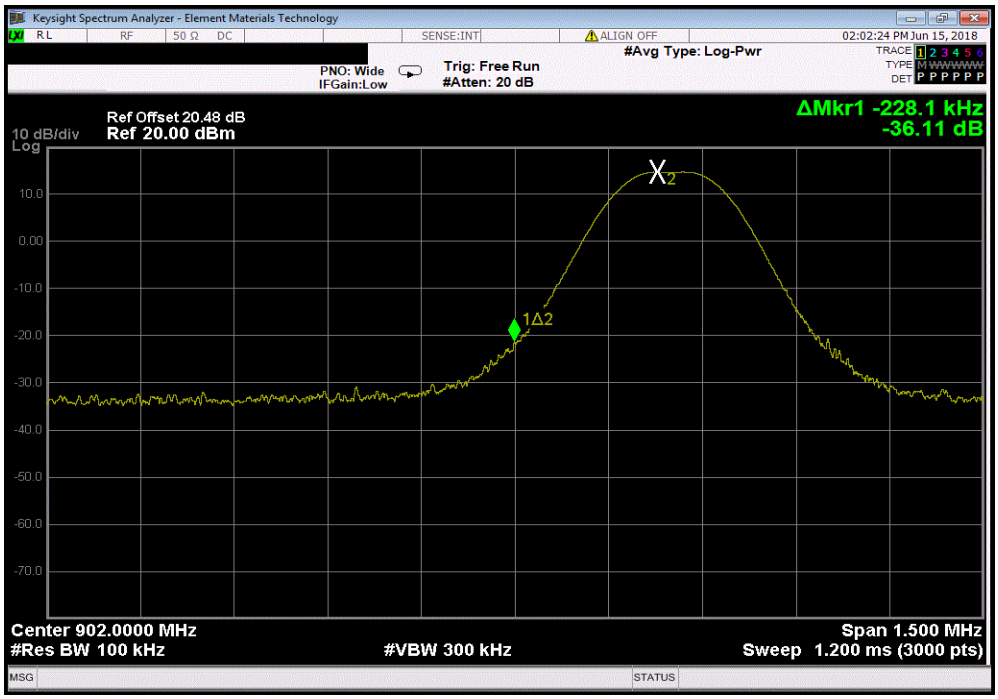
Configuration #	**1**	*Signature*

		Value (dBc)	**Limit ≤ (dBc)**	**Result**
902 MHz - 928 MHz Band				
	Index 0			
	Low Channel 0, 902.25 MHz	-36.11	-20	Pass
	High Channel 51, 927.75 MHz	-39.93	-20	Pass
	Index 1			
	Low Channel 0, 902.25 MHz	-29.8	-20	Pass
	High Channel 51, 927.75 MHz	-34.29	-20	Pass

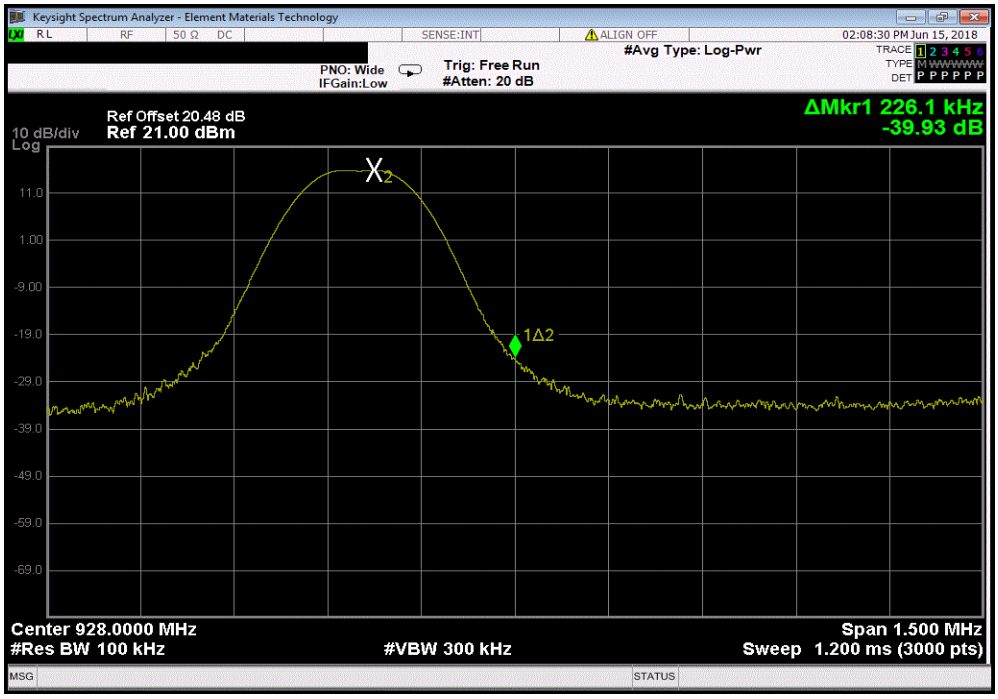
BAND EDGE COMPLIANCE

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 0, Low Channel 0, 902.25 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-36.11	-20	Pass



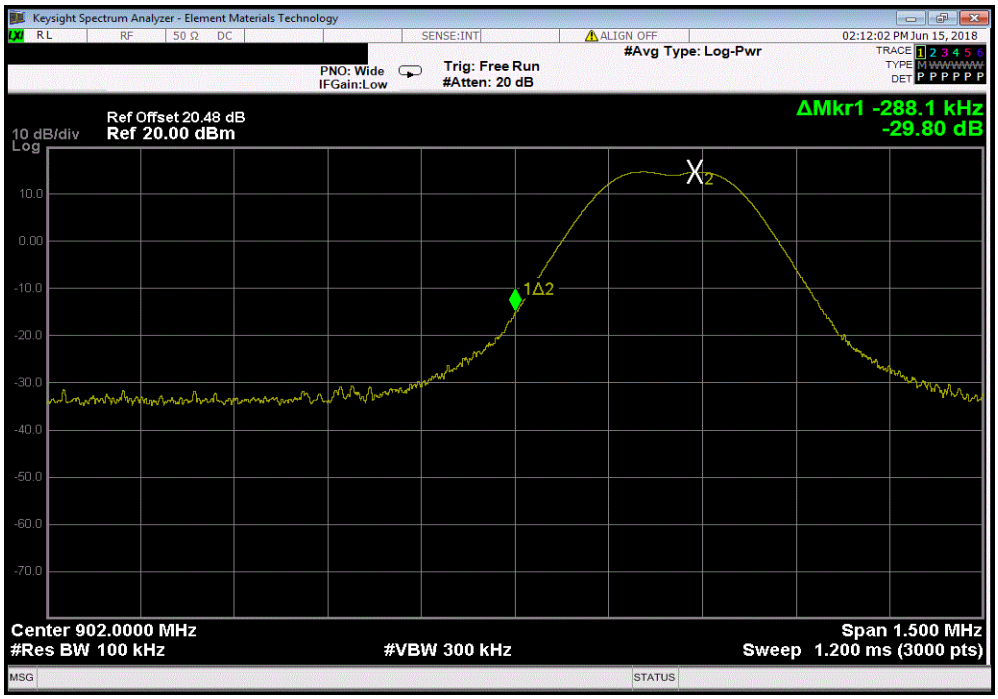
902 MHz - 928 MHz Band, Index 0, High Channel 51, 927.75 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-39.93	-20	Pass



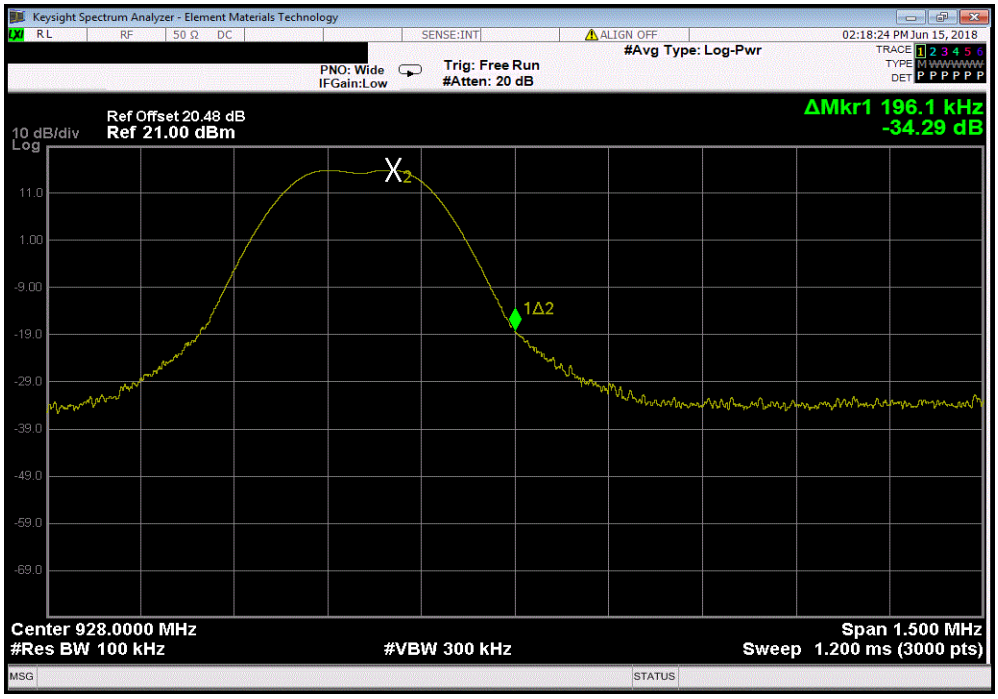
BAND EDGE COMPLIANCE

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 1, Low Channel 0, 902.25 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-29.8	-20	Pass



902 MHz - 928 MHz Band, Index 1, High Channel 51, 927.75 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-34.29	-20	Pass



BAND EDGE COMPLIANCE -HOPPING MODE

XMit 2017.12.13

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-18	15-Mar-19
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	28-Nov-17	28-Nov-18
Block - DC	Fairview Microwave	SD3379	AMT	11-Oct-17	11-Oct-18
Attenuator	Fairview Microwave	SA4018-20	TYE	17-Nov-17	17-Nov-18

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to its normal pseudo-random hopping sequence. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE -HOPPING MODE

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**MIC-WRL-TRN-410**			**Work Order:**	**WTVD0006**
Serial Number:	**Proto1a**			**Date:**	**18-Jun-18**
Customer:	**WatchGuard Video**			**Temperature:**	**21.8 °C**
Attendees:	**Paul Hunt, Navaid Karimi**			**Humidity:**	**55.4% RH**
Project:	**None**			**Barometric Pres.:**	**1021 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

EUT operational.

DEVIATIONS FROM TEST STANDARD

None

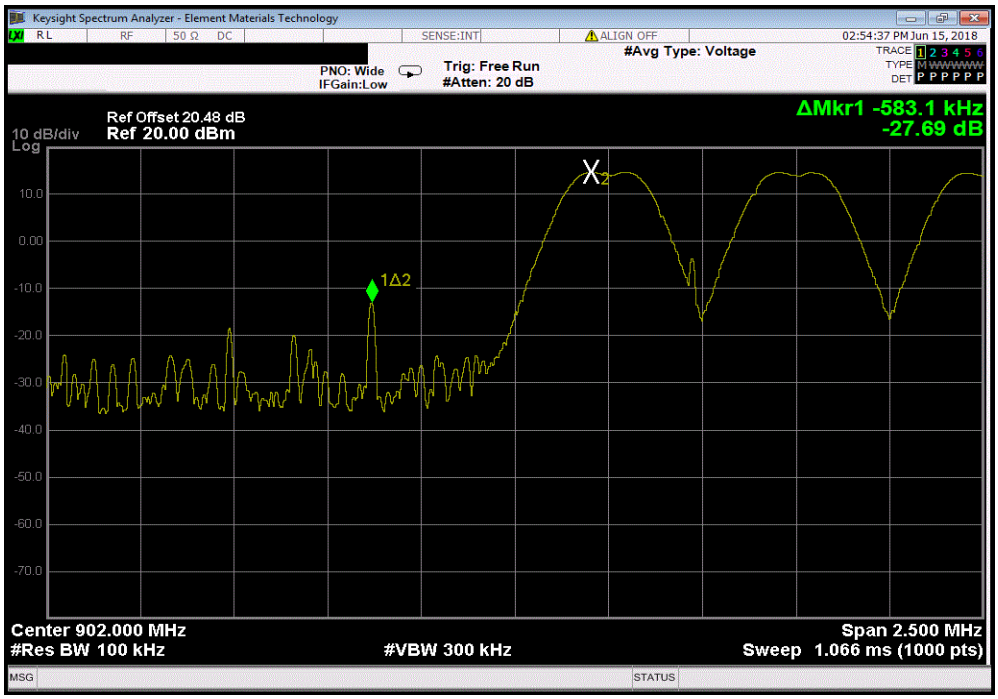
Configuration #	**1**	*Signature*

		Value (dBc)	**Limit ≤ (dBc)**	**Result**
Hopping Mode				
	Index 1			
	Low Channel, 902.25 MHz	-27.69	-20	Pass
	High Channel, 927.75 MHz	-34.47	-20	Pass

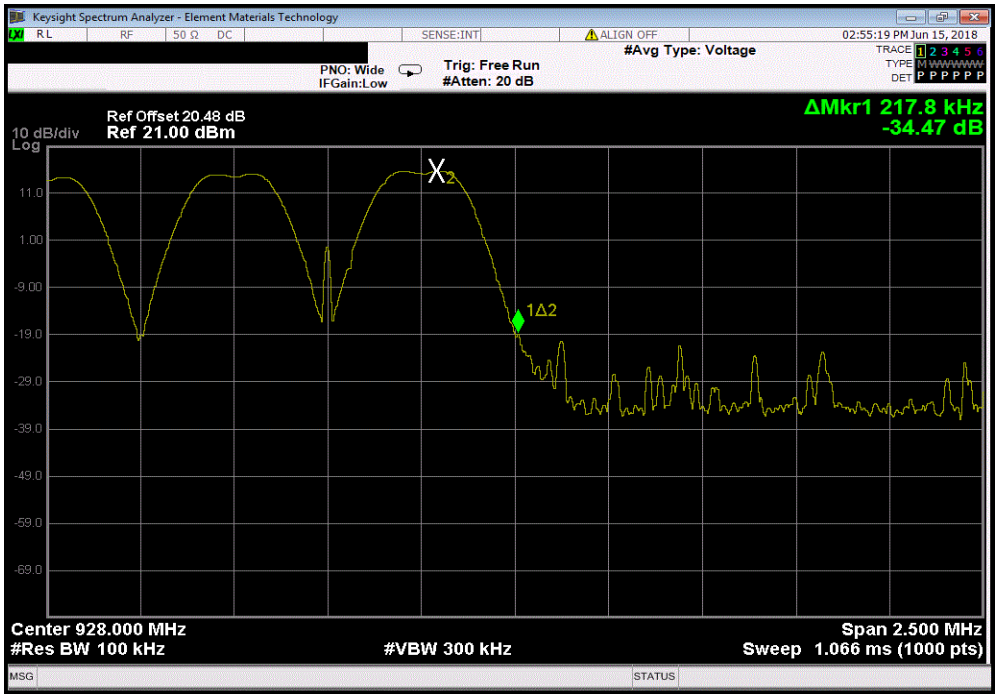
BAND EDGE COMPLIANCE -HOPPING MODE

TbtTx 2017.12.14 XMit 2017.12.13

Hopping Mode, Index 1, Low Channel, 902.25 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-27.69	-20	Pass



Hopping Mode, Index 1, High Channel, 927.75 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-34.47	-20	Pass



OCCUPIED BANDWIDTH

XMit 2017.12.13

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	17-Nov-17	17-Nov-18
Block - DC	Fairview Microwave	SD3379	AMT	11-Oct-17	11-Oct-18
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	28-Nov-17	28-Nov-18
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-18	15-Mar-19
Generator - Signal	Agilent	N5173B	TIW	5-Jul-17	5-Jul-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was set to the channels and modes listed in the datasheet.

The 20 dB occupied bandwidth was measured with the EUT set to low, medium and high transmit frequencies in the band. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode.

OCCUPIED BANDWIDTH

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**MIC-WRL-TRN-410**			**Work Order:**	**WTVD0006**
Serial Number:	**Proto1a**			**Date:**	**18-Jun-18**
Customer:	**WatchGuard Video**			**Temperature:**	**23.5 °C**
Attendees:	**Paul Hunt, Navaid Karimi**			**Humidity:**	**49.8% RH**
Project:	**None**			**Barometric Pres.:**	**1018 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

EUT operational.

DEVIATIONS FROM TEST STANDARD

None

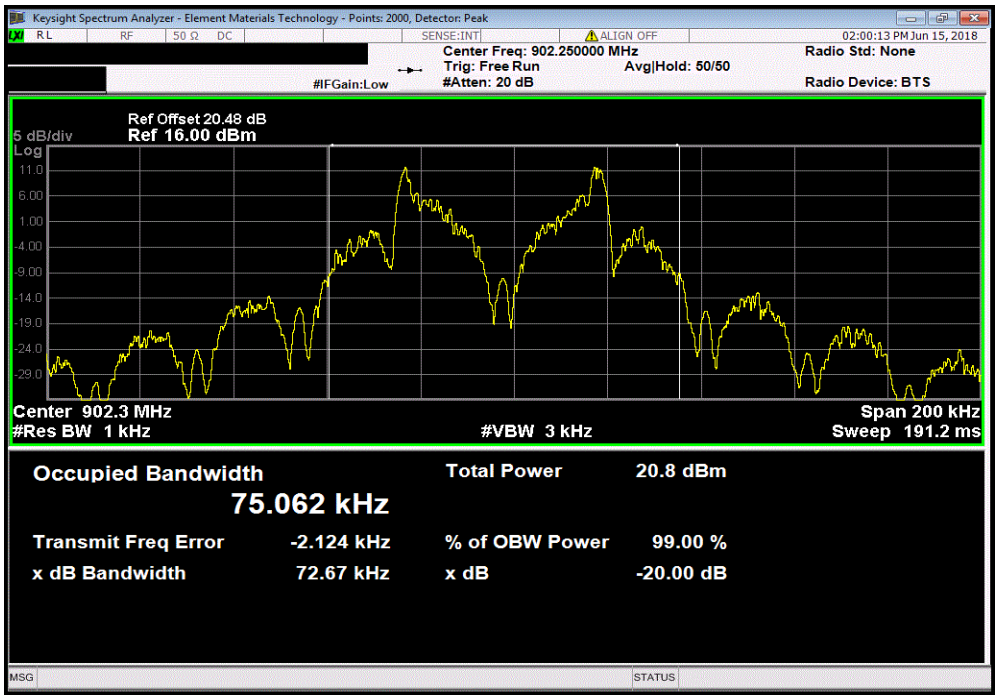
Configuration #	**1**	*Signature*

		Value	**Limit (≤)**	**Result**
902 MHz - 928 MHz Band				
	Index 0			
	Low Channel 0, 902.25 MHz	72.674 kHz	500 kHz	Pass
	Mid Channel 25, 914.75 MHz	74.825 kHz	500 kHz	Pass
	High Channel 51, 927.75 MHz	73.017 kHz	500 kHz	Pass
	Index 1			
	Low Channel 0, 902.25 MHz	133.556 kHz	500 kHz	Pass
	Mid Channel 25, 914.75 MHz	142.886 kHz	500 kHz	Pass
	High Channel 51, 927.75 MHz	153.243 kHz	500 kHz	Pass

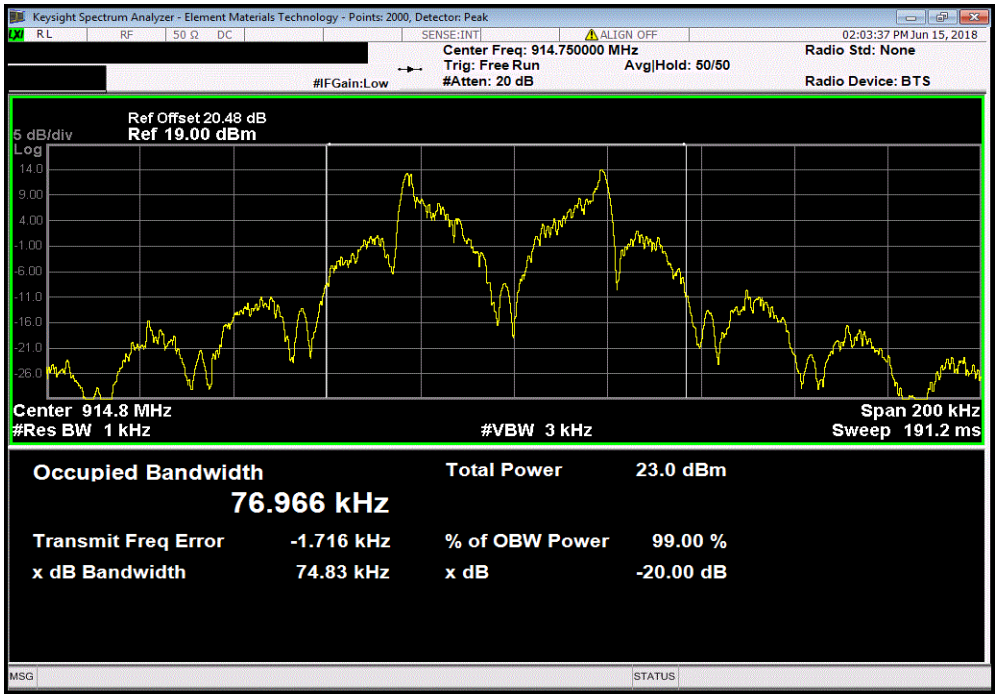
OCCUPIED BANDWIDTH

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 0, Low Channel 0, 902.25 MHz						
				Value	Limit (≤)	Result
				72.674 kHz	500 kHz	Pass



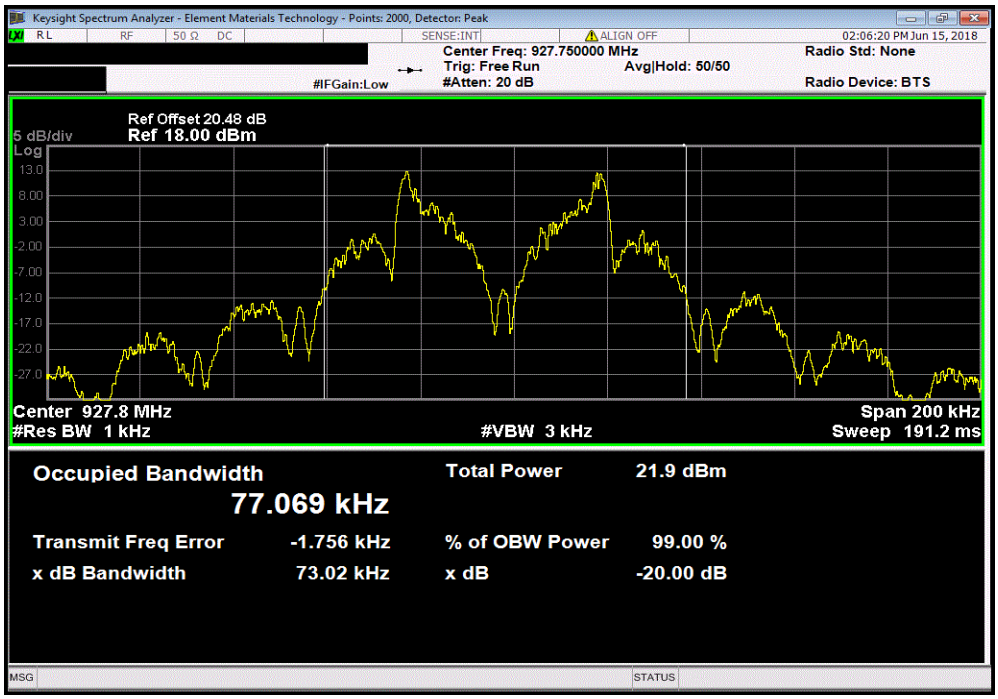
902 MHz - 928 MHz Band, Index 0, Mid Channel 25, 914.75 MHz						
				Value	Limit (≤)	Result
				74.825 kHz	500 kHz	Pass



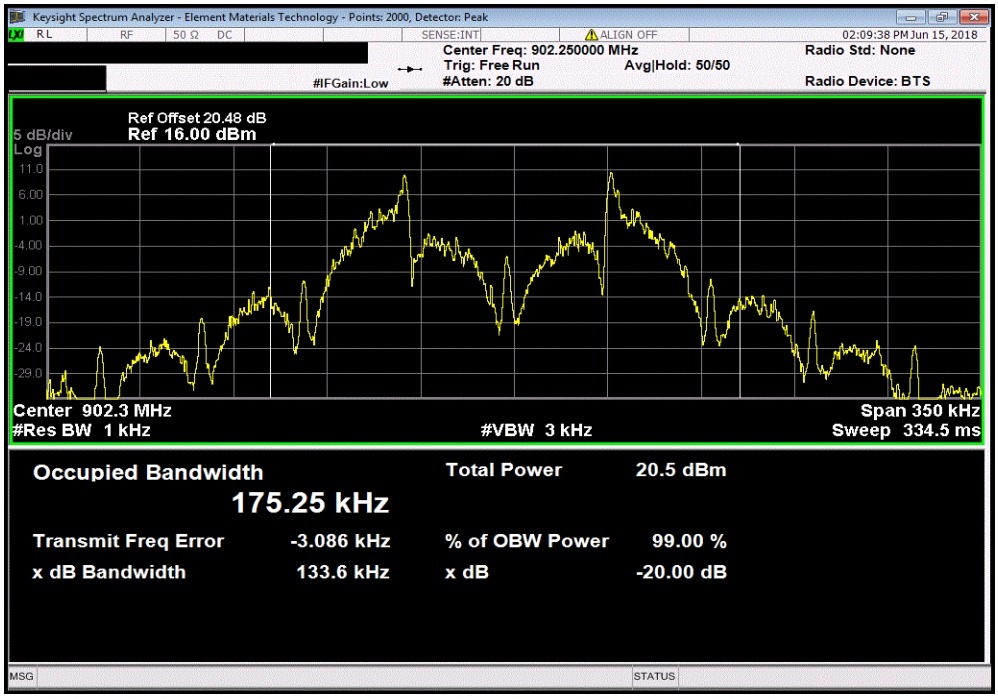
OCCUPIED BANDWIDTH

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 0, High Channel 51, 927.75 MHz						
				Value	Limit (≤)	Result
				73.017 kHz	500 kHz	Pass



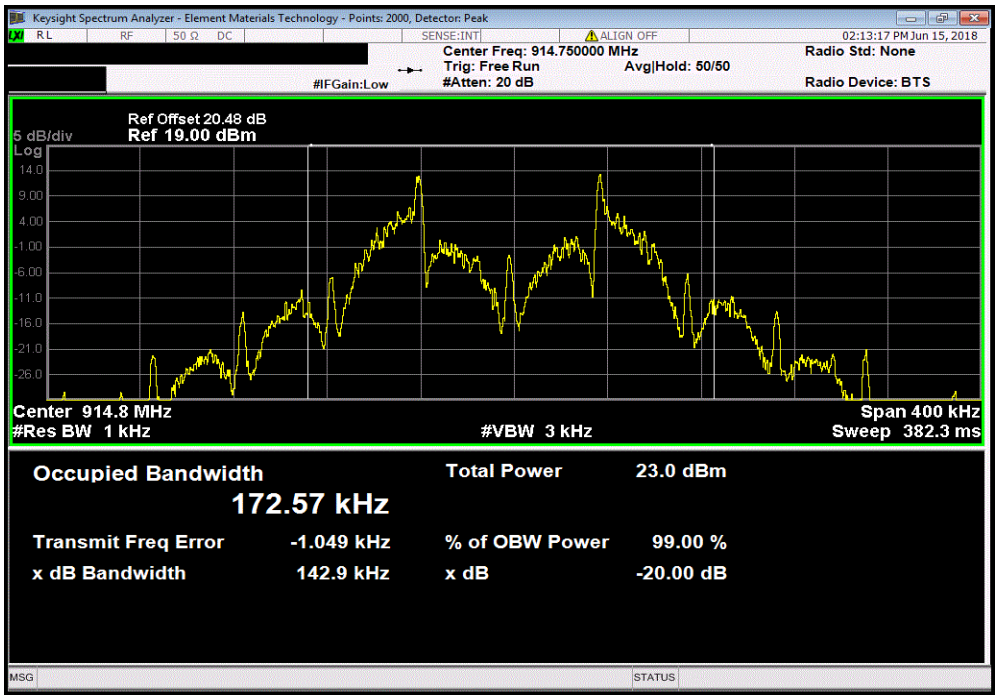
902 MHz - 928 MHz Band, Index 1, Low Channel 0, 902.25 MHz						
				Value	Limit (≤)	Result
				133.556 kHz	500 kHz	Pass



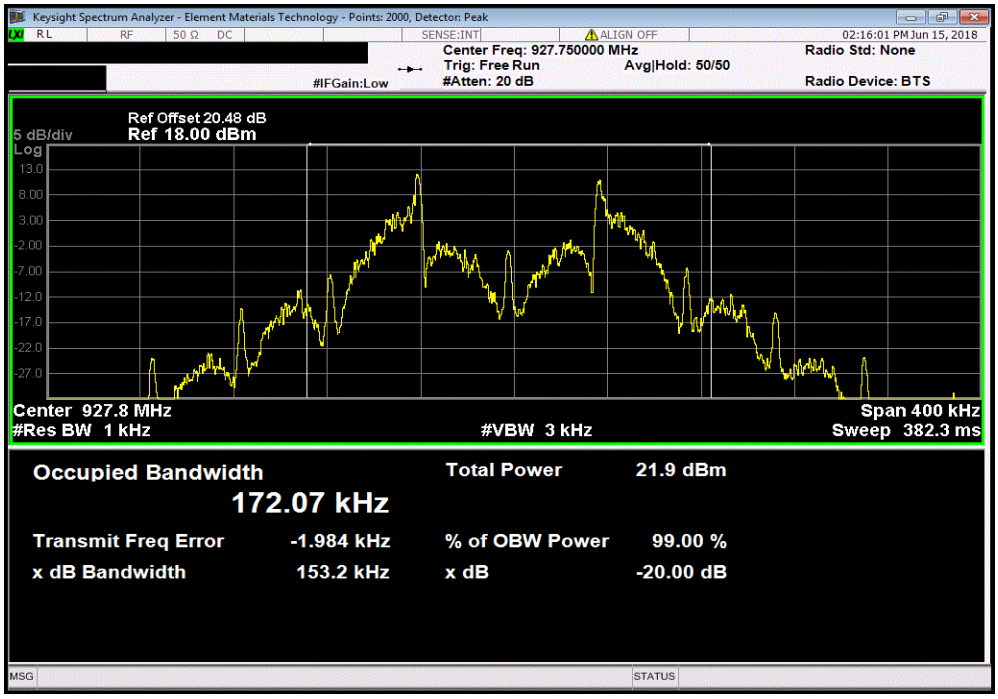
OCCUPIED BANDWIDTH

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 1, Mid Channel 25, 914.75 MHz						
				Value	Limit (≤)	Result
				142.886 kHz	500 kHz	Pass



902 MHz - 928 MHz Band, Index 1, High Channel 51, 927.75 MHz						
				Value	Limit (≤)	Result
				153.243 kHz	500 kHz	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2017.12.13

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	17-Nov-17	17-Nov-18
Block - DC	Fairview Microwave	SD3379	AMT	11-Oct-17	11-Oct-18
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	28-Nov-17	28-Nov-18
Generator - Signal	Agilent	N5173B	TIW	5-Jul-17	5-Jul-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	15-Mar-18	15-Mar-19

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**MIC-WRL-TRN-410**			**Work Order:**	**WTVD0006**
Serial Number:	**Proto1a**			**Date:**	**18-Jun-18**
Customer:	**WatchGuard Video**			**Temperature:**	**23.2 °C**
Attendees:	**Paul Hunt, Navaid Karimi**			**Humidity:**	**51.7% RH**
Project:	**None**			**Barometric Pres.:**	**1019 mbar**
Tested by:	**Marty Martin**	**Power:**	**Battery**	**Job Site:**	**TX09**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

EUT operational.

DEVIATIONS FROM TEST STANDARD

None

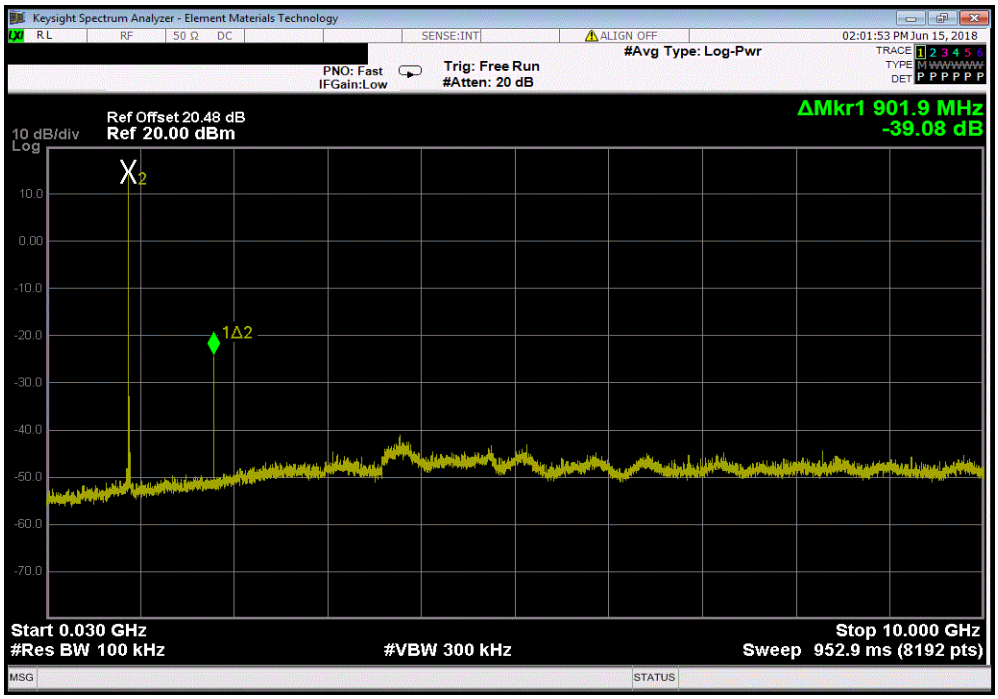
Configuration #	**1**	*Signature* Marty Martin

		Frequency Range	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
902 MHz - 928 MHz Band					
	Index 0				
	Low Channel 0, 902.25 MHz	30 MHz - 10 GHz	-39.08	-20	Pass
	Mid Channel 25, 914.75 MHz	30 MHz - 10 GHz	-38.36	-20	Pass
	High Channel 51, 927.75 MHz	30 MHz - 10 GHz	-39.95	-20	Pass
	Index 1				
	Low Channel 0, 902.25 MHz	30 MHz - 10 GHz	-39.15	-20	Pass
	Mid Channel 25, 914.75 MHz	30 MHz - 10 GHz	-38.4	-20	Pass
	High Channel 51, 927.75 MHz	30 MHz - 10 GHz	-40.18	-20	Pass

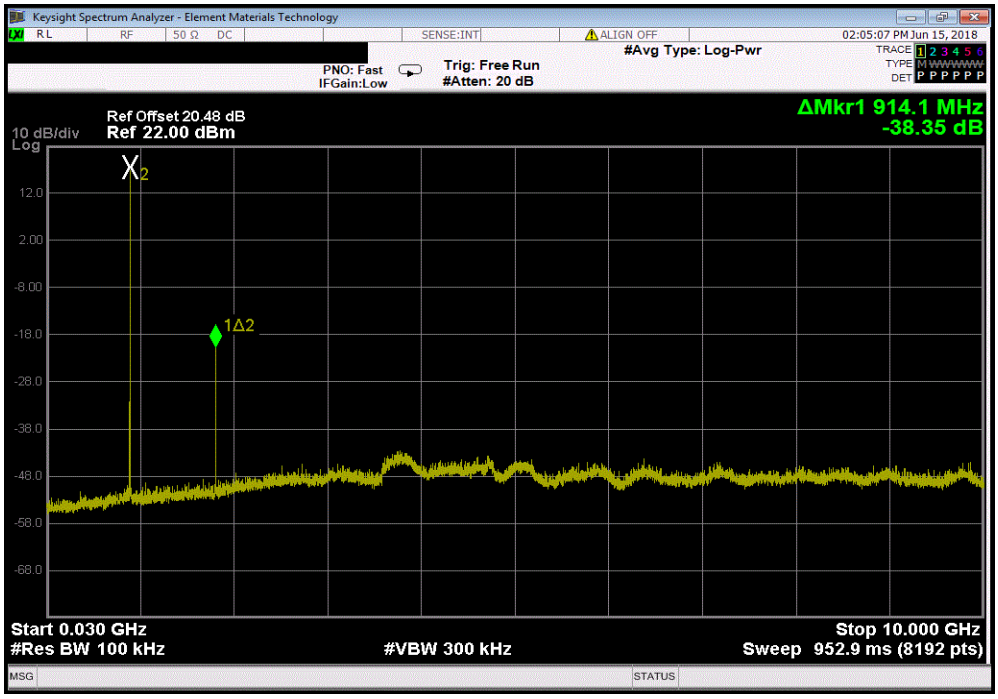
SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 0, Low Channel 0, 902.25 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 10 GHz		-39.08	-20	Pass



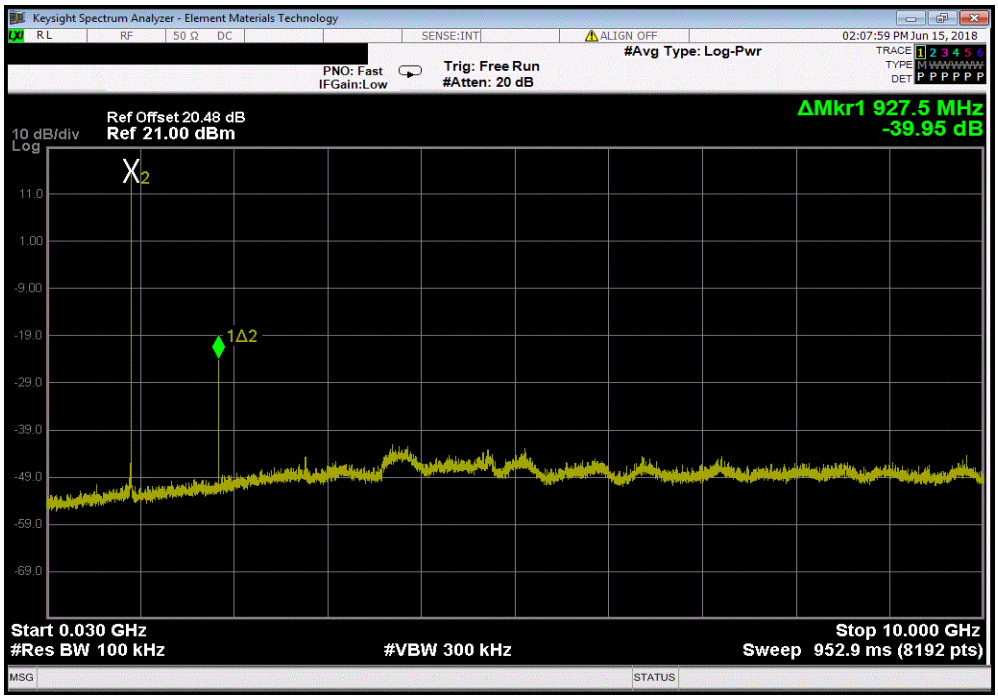
902 MHz - 928 MHz Band, Index 0, Mid Channel 25, 914.75 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 10 GHz		-38.36	-20	Pass



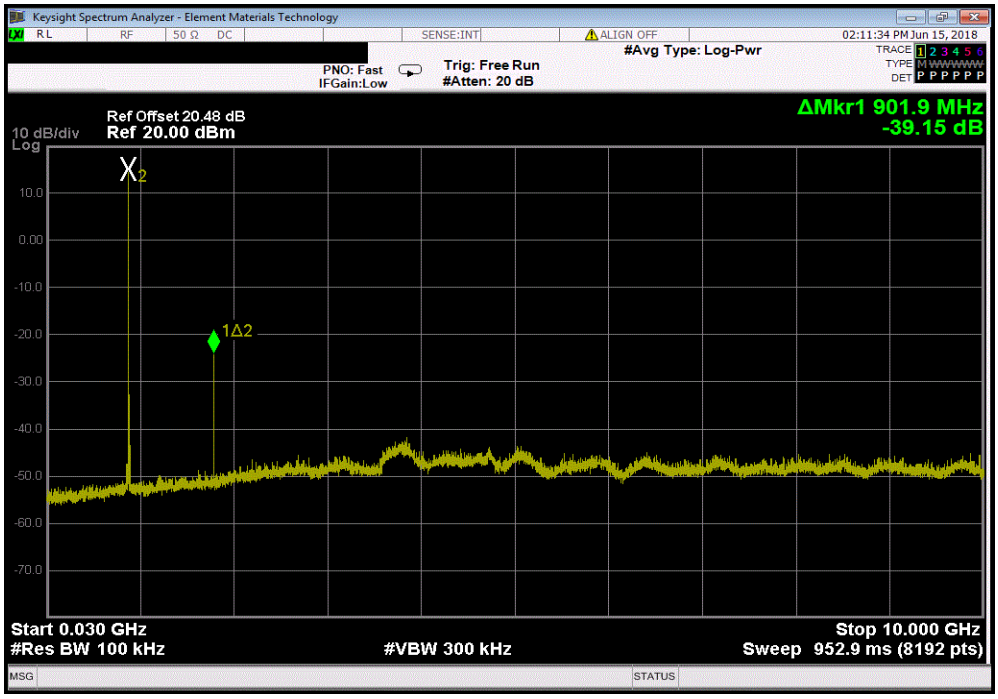
SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 0, High Channel 51, 927.75 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 10 GHz		-39.95	-20	Pass



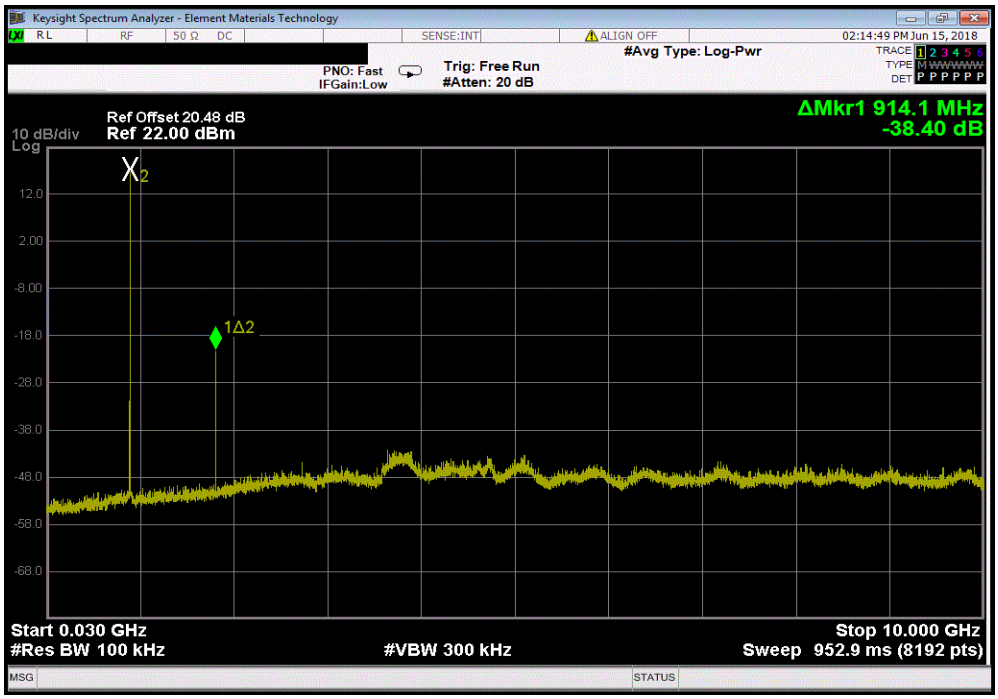
902 MHz - 928 MHz Band, Index 1, Low Channel 0, 902.25 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 10 GHz		-39.15	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.12.14 XMit 2017.12.13

902 MHz - 928 MHz Band, Index 1, Mid Channel 25, 914.75 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 10 GHz		-38.4	-20	Pass



902 MHz - 928 MHz Band, Index 1, High Channel 51, 927.75 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 10 GHz		-40.18	-20	Pass