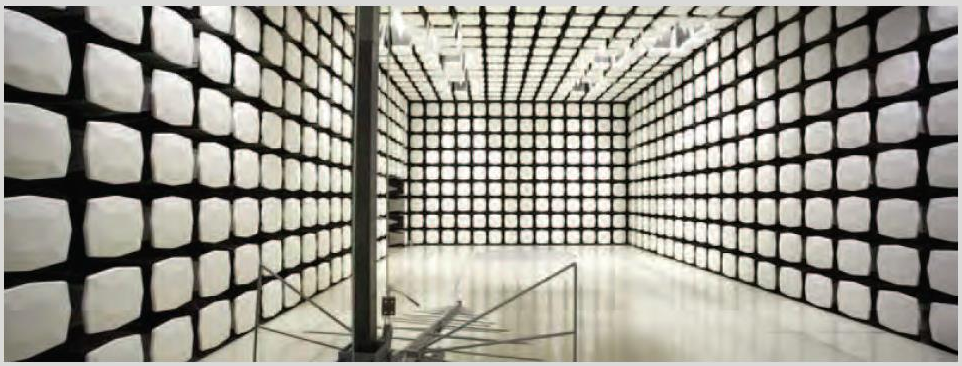
Polaris Industries, Inc.

7 Inch Snow, RC-7W

FCC 15.247:2021

FHSS Transceiver

Report: POLR0113, Issue Date: December 11, 2021



CERT #3310.02

CERTIFICATE OF TEST

Last Date of Test: October 6, 2021
Polaris Industries, Inc.
EUT: 7 Inch Snow, RC-7W

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2021	ANSI C63.10:2013, KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions (Transmitter)	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	No	N/A	Not required as this is covered by the original approval
7.8.3	Number of Hopping Frequencies	No	N/A	Not required as this is covered by the original approval
7.8.4	Dwell Time	No	N/A	Not required as this is covered by the original approval
7.8.5	Output Power	Yes	Pass	
7.8.5	Equivalent Isotropic Radiated Power	Yes	Pass	
7.8.6	Band Edge Compliance	No	N/A	Not required as this is covered by the original approval
7.8.6	Band Edge Compliance - Hopping Mode	No	N/A	Not required as this is covered by the original approval
7.8.7	Occupied Bandwidth	Yes	Pass	
7.8.8	Spurious Conducted Emissions	No	N/A	Not required as this is covered by the original approval
11.10.2	Power Spectral Density	No	N/A	Not required for FHSS devices.

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

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

REVISION HISTORY

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

ACCREDITATIONS AND AUTHORIZATIONS

element
2021.09.01

United States

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

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

Canada

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

European Union

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

United Kingdom

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

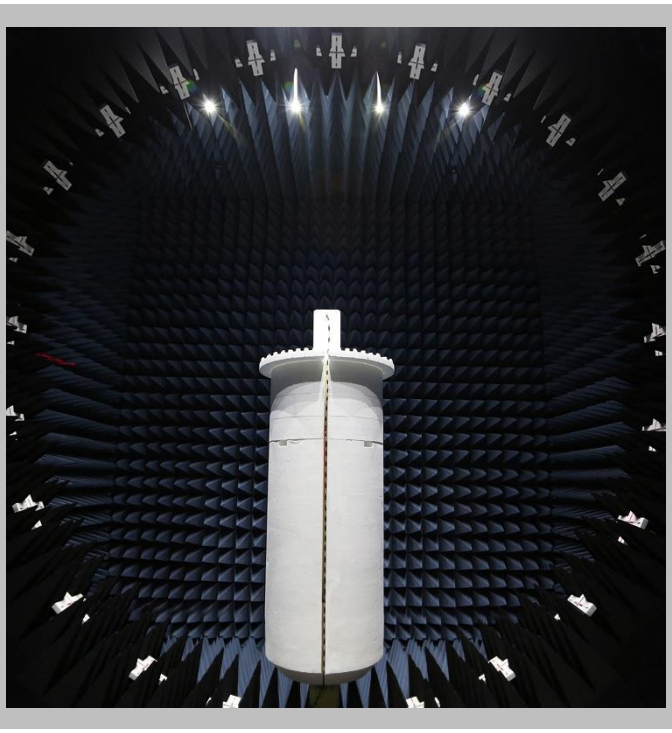
For details on the Scopes of our Accreditations, please visit:

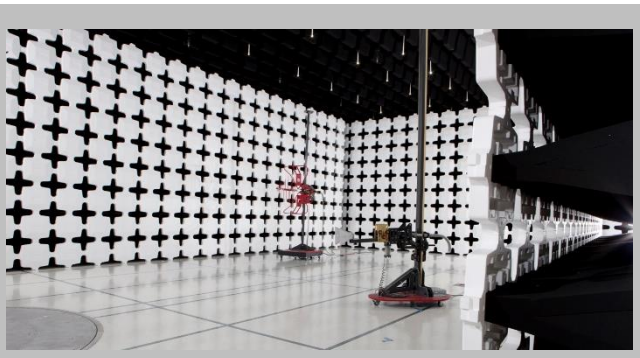
California Minnesota Oregon Texas Washington

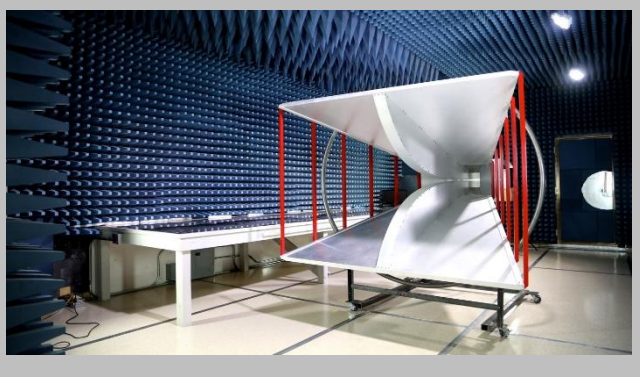
FACILITIES

element
2020.12.15

California	Minnesota	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	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
A2LA				
Lab Code: 3310.04	Lab Code: 3310.05	Lab Code: 3310.02	Lab Code: 3310.03	Lab Code: 3310.06
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
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.

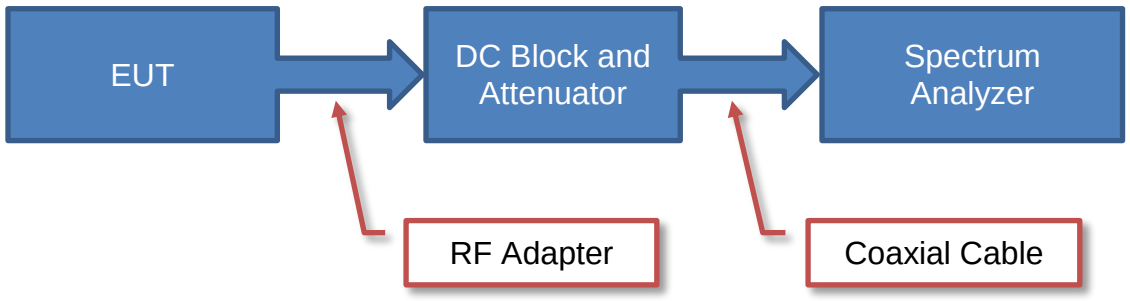
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found in the table below. A lab specific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

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

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

TEST SETUP BLOCK DIAGRAMS

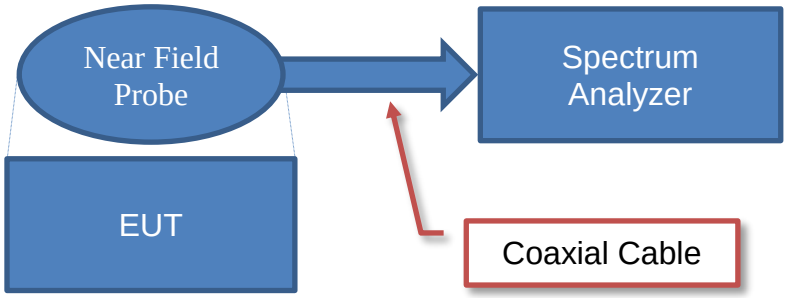
Antenna Port Conducted Measurements



Sample Calculation

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

Near Field Test Fixture Measurements

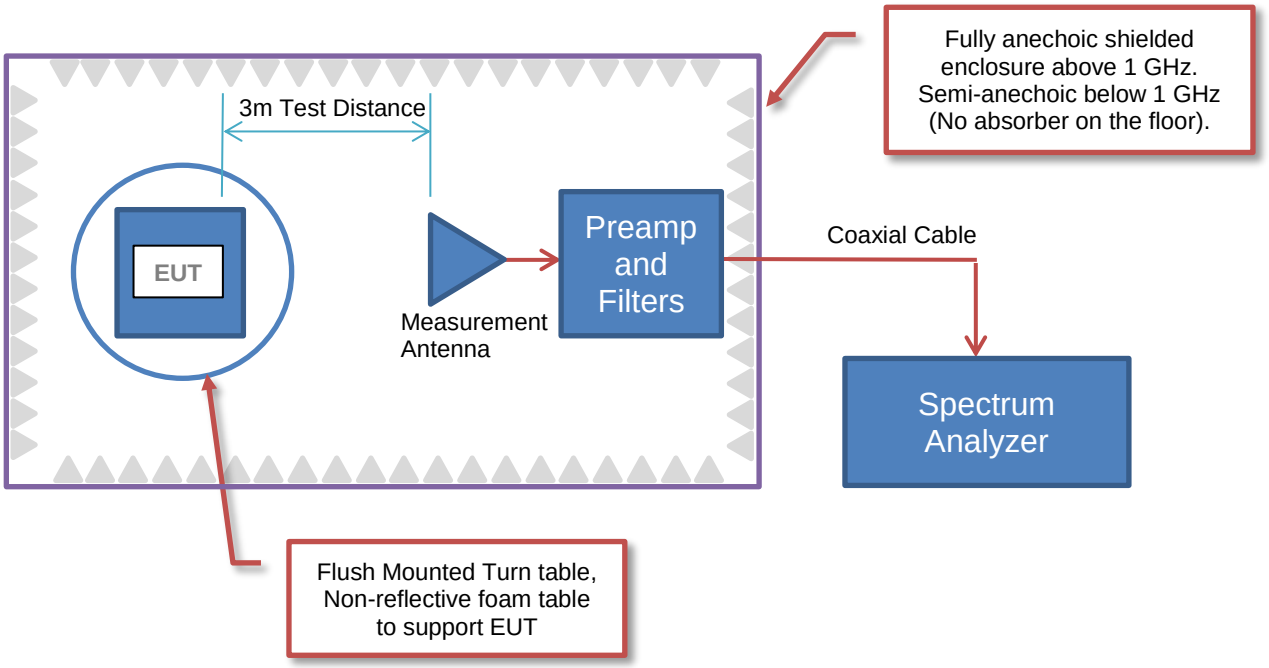


Sample Calculation

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

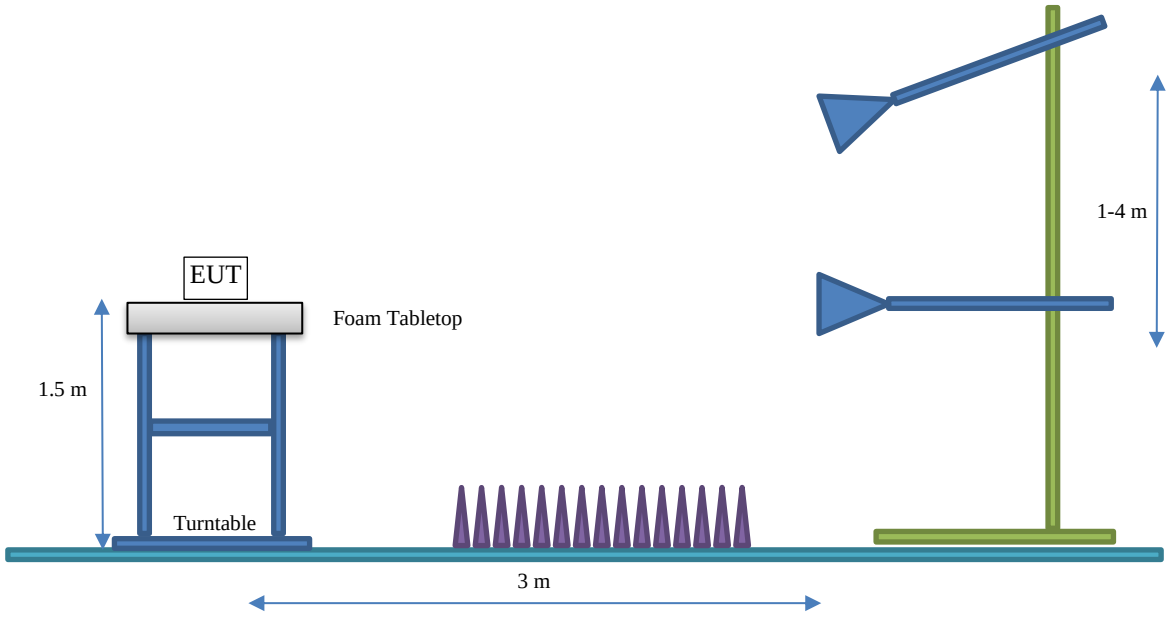
TEST SETUP BLOCK DIAGRAMS

Spurious Radiated Emissions



Bore Sighting (>1GHz)

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



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Polaris Industries, Inc.
Address:	7290 E. Viking Boulevard
City, State, Zip:	Wyoming, MN 55092
Test Requested By:	Laura Zehnder
EUT:	7 Inch Snow, RC-7W
First Date of Test:	October 5, 2021
Last Date of Test:	October 6, 2021
Receipt Date of Samples:	October 6, 2021
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

The Polaris RC-7W display and navigation unit is mounted on the dash of snowmobiles. The display runs the Linux operating system using an NXP iMX6 quad-core microprocessor. It is equipped with a high-brightness 800x480 pixel LCD display and is powered from the vehicle's electrical system. Vehicle information is acquired and displayed on the display. Connection to the vehicle's CAN bus and various analog sensors provide the vehicle information. The display contains the Texas Instruments (TI) CC2564MODNCMOER certified Bluetooth module and the TI WL1837MODGIMOCR certified Bluetooth/WiFi module. These radios are used to communicate to the users phone or headset and to connect to cloud-based services. Both Bluetooth transceivers can operate in Classic and LE modes of operation. The WiFi band use only the 2.4GHz band. The display contains a Polaris proprietary Vehicle-to-Vehicle radio. This communicates vehicle position and status messages among a ride group of similarly equipped vehicles. The radio is a 915MHz band frequency-hopping spreadspectrum design. The power level and frequency hop sequence is programmable to comply with the political locale. For example, in the United States, channels between 902.5MHz and 927.5 are used at a power level of 30dBi. In the EU market, the function is not activated. The transceiver is comprised of a Semtech SX1276 with LNA/PA provided by the Skyworks SE2435L. The modulation scheme is LoRa digital modulation. Max data rate is 125kHz and maximum transmit time is 400mS. The vehicle-to-vehicle transceiver uses external mounted antenna (Laird DS-B806896). The device will also contain a GPS receiver. A GNSS receiver based on the Telit SE868-V3 module is used for navigational and time-keeping functions. The antenna for this function is external to the display. The display will be powered by the vehicles rechargeable battery and the radios can transmit while the battery is recharging. The antenna (Linx ANT-916-WRT-SMA) is attached to the V2V radio connector via an sma to fakra adapter. The C2PC is in support of adding the Linx antenna which as a peak gain of 4.4 dBi.

Testing Objective:

Seeking to demonstrate compliance under FCC 15.247:2021 for operation in the 902 - 928 MHz Band.

POWER SETTINGS AND ANTENNAS

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

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
½ wave dipole	Manufacturer	900 - 930	4.4

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

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Position (if multiple channels)	Power Setting
Single Data Rate / Modulation	Low Channel	30
	Mid Channel	30
	High Channel	30

CONFIGURATIONS

Configuration POLR0113- 1

Software/Firmware Running during test	
Description	**Version**
RadioControl.exe	None

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Vehicle Display	Polaris Industries, Inc.	RC-7W	21152F0011

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
I.T.E. Power Supply	XP Power	VEL36US150-US-JA	None
USB to RJ45 Adapter	Cable Matters® Inc.	202013	YP4JT0B1
Laptop	HP	Elite Book 8470p	00180-833-943-338 X20-46796

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	3.0 m	No	Vehicle Display	I.T.E. Power Supply
USB	Yes	0.4 m	No	Vehicle Display	USB to RJ45 Adapter
Ethernet – Cat 5e	No	1.0 m	No	USB to RJ45 Adapter	Laptop

CONFIGURATIONS

Configuration POLR0113- 2

Software/Firmware Running during test	
Description	**Version**
RadioControl.exe	None

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Vehicle Display	Polaris Industries, Inc.	RC-7W	21152F0011
V2V Antenna	Linx	ANT-916-WRT-SMA	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
I.T.E. Power Supply	XP Power	VEL36US150-US-JA	None
USB to RJ45 Adapter	Cable Matters® Inc.	202013	YP4JT0B1
GPS Antenna	Taoglas, Inc	Unknown	109347-19-01A#04
AM/FM Receiver Antenna	Polaris Industries, Inc	Unknown	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	HP	Elite Book 8470p	00180-833-943-338 X20-46796

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	3.0 m	No	Vehicle Display	I.T.E. Power Supply
USB	Yes	0.4 m	No	Vehicle Display	USB to RJ45 Adapter
Ethernet - Cat 5e	Yes	7.6 m	No	USB to RJ45 Adapter	Laptop
RF Coax	Yes	0.3 m	No	Vehicle Display	VTV Antenna
RG-174	Yes	0.5 m	No	Vehicle Display	GPS Antenna
AM/FM Antenna Cable	Yes	1.2 m	No	Vehicle Display	AM/FM Antenna

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2021-10-05	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.
2	2021-10-05	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2021-10-05	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2021-10-05	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2021-10-06	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.02.0
EmiR5 2021.08.30.0
PSA-ESCI 2021.03.17.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies (in no-hop, single channel mode) 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 within 2 MHz of the allowable band may have been taken using the integration method from ANSI C63.10 clause 11.13.3. This procedure uses the channel power feature of the spectrum analyzer to integrate the power of the emission within a 1 MHz bandwidth.

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*log(1/dc).

RMS measurements taken for a FHSS radio also may have a duty cycle correction subtracted using the formula 20*log(dc), based on the requirements for pulsed operation from ANSI C63.10 section 7.5.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	2020-12-08	2021-12-08
Antenna - Biconilog	Teseq	CBL 6141B	AXR	2020-10-13	2022-10-13
Antenna - Double Ridge	EMCO	3115	AHC	2020-07-01	2022-07-01
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2020-11-17	2021-11-17
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2020-11-17	2021-11-17
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2020-11-18	2021-11-18
Cable	N/A	Bilog Cables	EVA	2020-11-17	2021-11-17
Cable	N/A	Double Ridge Horn Cables	EVB	2020-11-17	2021-11-17
Cable	None	Standard Gain Horn Cables	EVF	2020-11-18	2021-11-18
Attenuator	Coaxicom	3910-20	AXZ	2021-02-15	2022-02-15
Attenuator	Coaxicom	3910-10	AWX	2021-02-15	2022-02-15
Filter - Low Pass	Micro-Tronics	LPM50003	LFB	2021-02-15	2022-02-15
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	2021-02-15	2022-02-15
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HFT	2020-11-13	2021-11-13

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.02.0
EmiR5 2021.08.30.0
PSA-ESCI 2021.03.17.0

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	5.2 dB	-5.2 dB

FREQUENCY RANGE INVESTIGATED

30 MHz TO 9300 MHz

POWER INVESTIGATED

15.0 VDC via 110VAC/60Hz

CONFIGURATIONS INVESTIGATED

POLR0113-2

MODES INVESTIGATED

Continuous Tx, LoRa, Low Ch = 902.4 MHz, Mid Ch = 915.4 MHz, High Ch = 927.6 MHz

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.02.0
EmiR5 2021.08.30.0
PSA-ESCI 2021.03.17.0

EUT:	7 Inch Snow, RC-7W	Work Order:	POLR0113
Serial Number:	21152F0011	Date:	2021-10-06
Customer:	Polaris Industries, Inc.	Temperature:	21.7°C
Attendees:	None	Relative Humidity:	44.9%
Customer Project:	None	Bar. Pressure:	1022 mb
Tested By:	Jeff Alcoke	Job Site:	EV01
Power:	15.0 VDC via 110VAC/60Hz	Configuration:	POLR0113-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	7	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

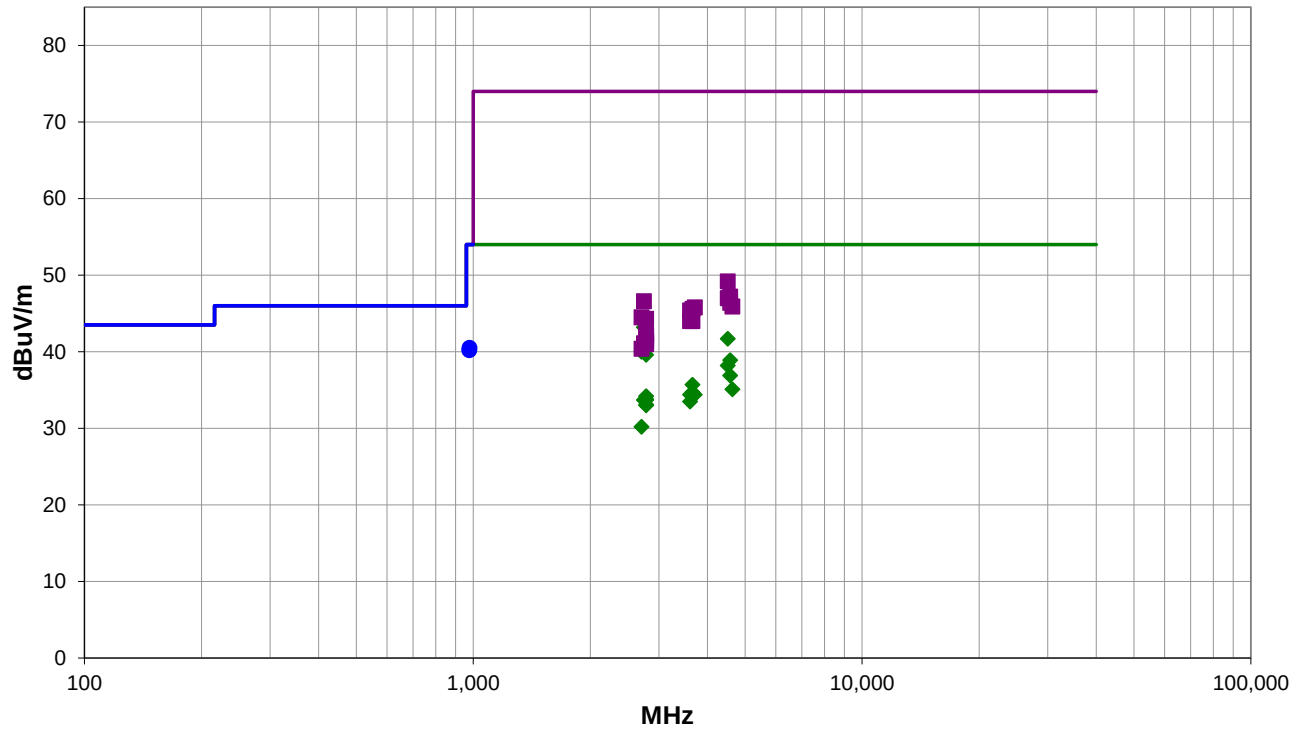
Please reference data comments below for channel and EUT orientation. The EUT operates at a duty cycle of 95%, a duty cycle correction factor of 10*log(1 / 0.95) = 0.2 dB was added to the average measurements.

EUT OPERATING MODES

Continuous Tx, LoRa, Low Ch = 902.4 MHz, Mid Ch = 915.4 MHz, High Ch = 927.6 MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 7 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.02.0
EmiR5 2021.08.30.0
PSA-ESCI 2021.03.17.0

RESULTS - Run #7

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2746.208	45.7	-2.7	2.2	360.0	0.2	0.0	Horz	AV	0.0	43.2	54.0	-10.8	Mid Ch, EUT Horz
4512.075	36.6	4.9	2.1	141.0	0.2	0.0	Horz	AV	0.0	41.7	54.0	-12.3	Low Ch, EUT Horz
977.418	16.9	13.6	1.0	0.0	0.0	10.0	Vert	QP	0.0	40.5	54.0	-13.5	High Ch, EUT Horz
976.108	16.6	13.6	4.0	180.0	0.0	10.0	Horz	QP	0.0	40.2	54.0	-13.8	High Ch, EUT Horz
2707.167	42.7	-2.9	2.3	345.0	0.2	0.0	Horz	AV	0.0	40.0	54.0	-14.0	Low Ch, EUT Horz
2782.758	41.9	-2.5	2.2	156.0	0.2	0.0	Horz	AV	0.0	39.6	54.0	-14.4	High Ch, EUT Horz
4576.958	33.2	5.5	1.5	137.0	0.2	0.0	Horz	AV	0.0	38.9	54.0	-15.1	Mid Ch, EUT Horz
4511.942	33.1	4.9	1.5	251.0	0.2	0.0	Vert	AV	0.0	38.2	54.0	-15.8	Low Ch, EUT on Side
4576.983	31.2	5.5	1.5	99.0	0.2	0.0	Vert	AV	0.0	36.9	54.0	-17.1	Mid Ch, EUT on Side
3661.583	31.9	3.6	1.2	197.0	0.2	0.0	Vert	AV	0.0	35.7	54.0	-18.3	Mid Ch, EUT on Side
4638.117	29.5	5.4	1.1	122.0	0.2	0.0	Vert	AV	0.0	35.1	54.0	-18.9	High Ch, EUT on Side
3661.675	30.9	3.6	1.5	172.0	0.2	0.0	Horz	AV	0.0	34.7	54.0	-19.3	Mid Ch, EUT Horz
3710.375	30.4	3.8	1.5	143.0	0.2	0.0	Vert	AV	0.0	34.4	54.0	-19.6	High Ch, EUT on Side
3609.567	31.1	3.1	3.0	351.0	0.2	0.0	Horz	AV	0.0	34.4	54.0	-19.6	Low Ch, EUT Horz
2782.817	36.5	-2.5	1.1	33.0	0.2	0.0	Vert	AV	0.0	34.2	54.0	-19.8	High Ch, EUT on Side
2782.850	36.1	-2.5	1.3	211.0	0.2	0.0	Horz	AV	0.0	33.8	54.0	-20.2	High Ch, EUT on Side
2782.817	36.0	-2.5	1.2	131.0	0.2	0.0	Vert	AV	0.0	33.7	54.0	-20.3	High Ch, EUT Vert
2746.150	36.2	-2.7	1.4	85.0	0.2	0.0	Vert	AV	0.0	33.7	54.0	-20.3	Mid Ch, EUT on Side
3609.683	30.2	3.1	1.5	202.0	0.2	0.0	Vert	AV	0.0	33.5	54.0	-20.5	Low Ch, EUT on Side
2782.742	35.4	-2.5	1.1	57.0	0.2	0.0	Vert	AV	0.0	33.1	54.0	-20.9	High Ch, EUT Horz
2782.833	35.3	-2.5	1.3	320.0	0.2	0.0	Horz	AV	0.0	33.0	54.0	-21.0	High Ch, EUT Vert
2707.208	32.9	-2.9	1.1	209.0	0.2	0.0	Vert	AV	0.0	30.2	54.0	-23.8	Low Ch, EUT on Side
4512.075	44.3	4.9	2.1	141.0	0.0	0.0	Horz	PK	0.0	49.2	74.0	-24.8	Low Ch, EUT Horz
4577.283	41.7	5.5	1.5	137.0	0.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	Mid Ch, EUT Horz
4511.750	42.1	4.9	1.5	251.0	0.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	Low Ch, EUT on Side
2746.275	49.3	-2.7	2.2	360.0	0.0	0.0	Horz	PK	0.0	46.6	74.0	-27.4	Mid Ch, EUT Horz
4577.392	40.9	5.5	1.5	99.0	0.0	0.0	Vert	PK	0.0	46.4	74.0	-27.6	Mid Ch, EUT on Side
4637.425	40.4	5.5	1.1	122.0	0.0	0.0	Vert	PK	0.0	45.9	74.0	-28.1	High Ch, EUT on Side
3711.317	42.0	3.8	1.5	143.0	0.0	0.0	Vert	PK	0.0	45.8	74.0	-28.2	High Ch, EUT on Side
3661.692	42.0	3.6	1.2	197.0	0.0	0.0	Vert	PK	0.0	45.6	74.0	-28.4	Mid Ch, EUT on Side
3609.800	42.3	3.1	3.0	351.0	0.0	0.0	Horz	PK	0.0	45.4	74.0	-28.6	Low Ch, EUT Horz
2707.067	47.4	-2.9	2.3	345.0	0.0	0.0	Horz	PK	0.0	44.5	74.0	-29.5	Low Ch, EUT Horz
2782.483	46.8	-2.5	2.2	156.0	0.0	0.0	Horz	PK	0.0	44.3	74.0	-29.7	High Ch, EUT Horz
3609.967	40.9	3.1	1.5	202.0	0.0	0.0	Vert	PK	0.0	44.0	74.0	-30.0	Low Ch, EUT on Side
3661.742	40.4	3.6	1.5	172.0	0.0	0.0	Horz	PK	0.0	44.0	74.0	-30.0	Mid Ch, EUT Horz
2782.958	44.8	-2.5	1.3	211.0	0.0	0.0	Horz	PK	0.0	42.3	74.0	-31.7	High Ch, EUT on Side
2782.817	44.6	-2.5	1.1	33.0	0.0	0.0	Vert	PK	0.0	42.1	74.0	-31.9	High Ch, EUT on Side
2782.725	44.0	-2.5	1.1	57.0	0.0	0.0	Vert	PK	0.0	41.5	74.0	-32.5	High Ch, EUT Horz
2783.042	43.8	-2.5	1.2	131.0	0.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	High Ch, EUT Vert
2746.125	43.8	-2.7	1.4	85.0	0.0	0.0	Vert	PK	0.0	41.1	74.0	-32.9	Mid Ch, EUT on Side

SPURIOUS RADIATED EMISSIONS

element
WTD.2021.09.02.0
EmiR5 2021.08.30.0
PSA-ESCI 2021.03.17.0

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2782.725	43.5	-2.5	1.3	320.0	0.0	0.0	Horz	PK	0.0	41.0	74.0	-33.0	High Ch, EUT Vert
2707.567	43.3	-2.9	1.1	209.0	0.0	0.0	Vert	PK	0.0	40.4	74.0	-33.6	Low Ch, EUT on Side

CONCLUSION
Pass

Tested By

DUTY CYCLE

XMit 2020.12.30.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5181A	TIG	2020-04-16	2023-04-16
Cable	Micro-Coax	UFD150A-1-0720-200200	EVK	2021-03-14	2022-03-14
Attenuator	Fairview Microwave	18B5W-26	RFZ	2021-07-16	2022-07-16
Attenuator	S.M. Electronics	SA26B-20	AUY	2021-03-14	2022-03-14
Block - DC	Fairview Microwave	SD3379	AMW	2021-03-14	2022-03-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2021-07-06	2022-07-06

TEST DESCRIPTION

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

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

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

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

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

DUTY CYCLE

TbtTx 2019.08.30.0 XMit 2020.12.30.0

EUT:	7 Inch Snow, RC-7W			**Work Order:**	POLR0113
Serial Number:	21152F0011			**Date:**	5-Oct-21
Customer:	Polaris Industries, Inc.			**Temperature:**	22.1 °C
Attendees:	None			**Humidity:**	47.2% RH
Project:	None			**Barometric Pres.:**	1015 mbar
Tested by:	Jeff Alcoke	**Power:**	15.0 VDC via 110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes: DC Block, 46 dB attenuation, and measurement cable.

DEVIATIONS FROM TEST STANDARD

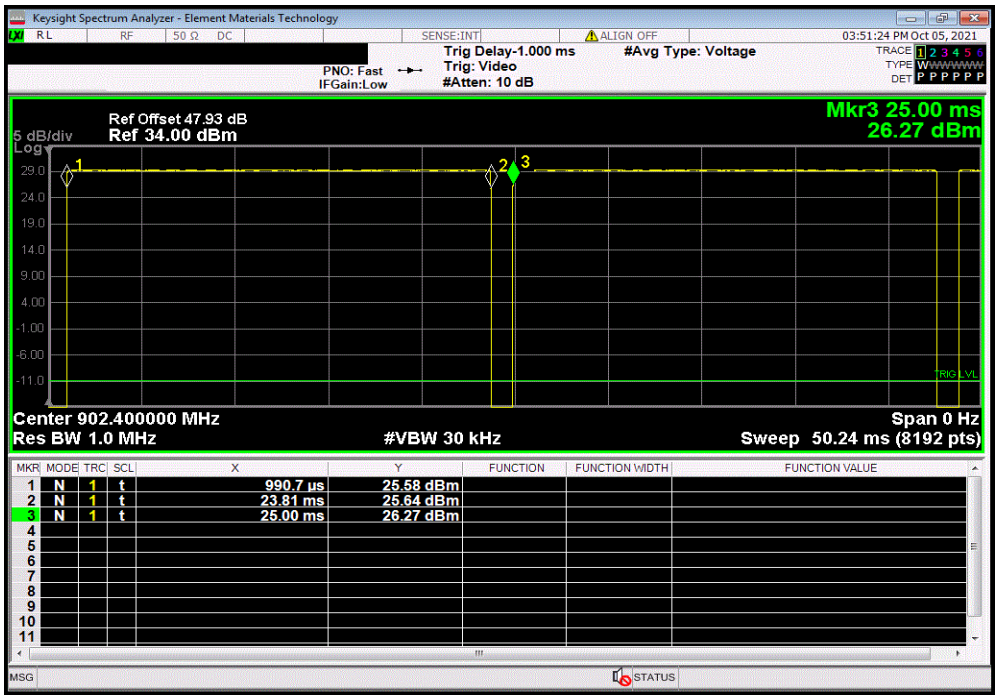
None

Configuration #	1	Signature

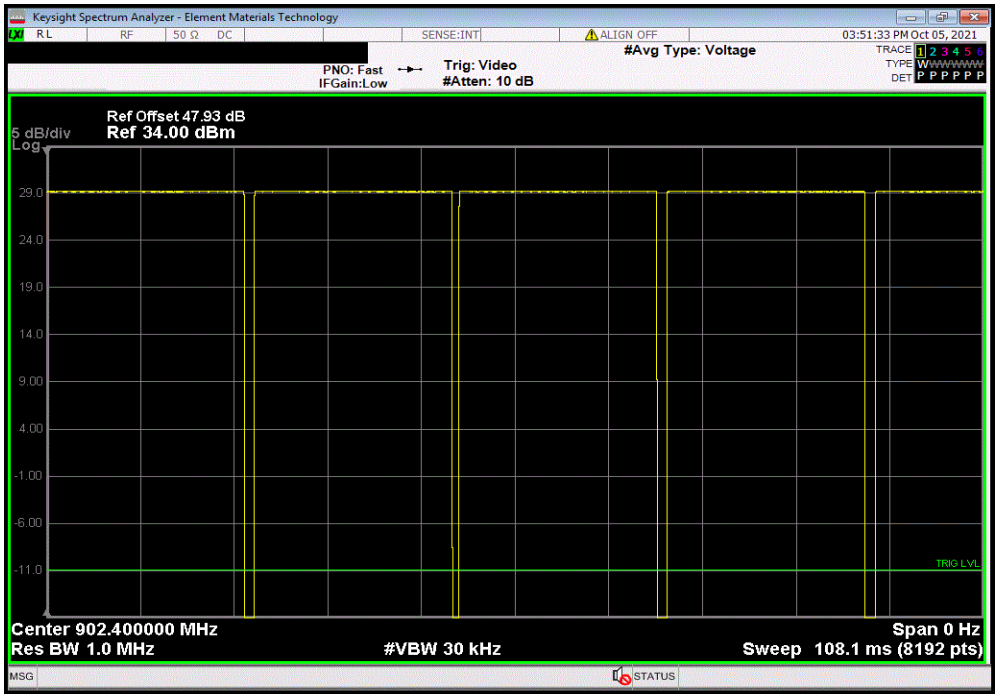
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
FSK, Single Channel						
Low Channel, 902.4 MHz	22.816 ms	24.006 ms	1	95	N/A	N/A
Low Channel, 902.4 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, 915.4 MHz	22.811 ms	24 ms	1	95	N/A	N/A
Mid Channel, 915.4 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel, 927.6 MHz	22.811 ms	23.995 ms	1	95.1	N/A	N/A
High Channel, 927.6 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

FSK, Single Channel, Low Channel, 902.4 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	22.816 ms	24.006 ms	1	95	N/A	N/A

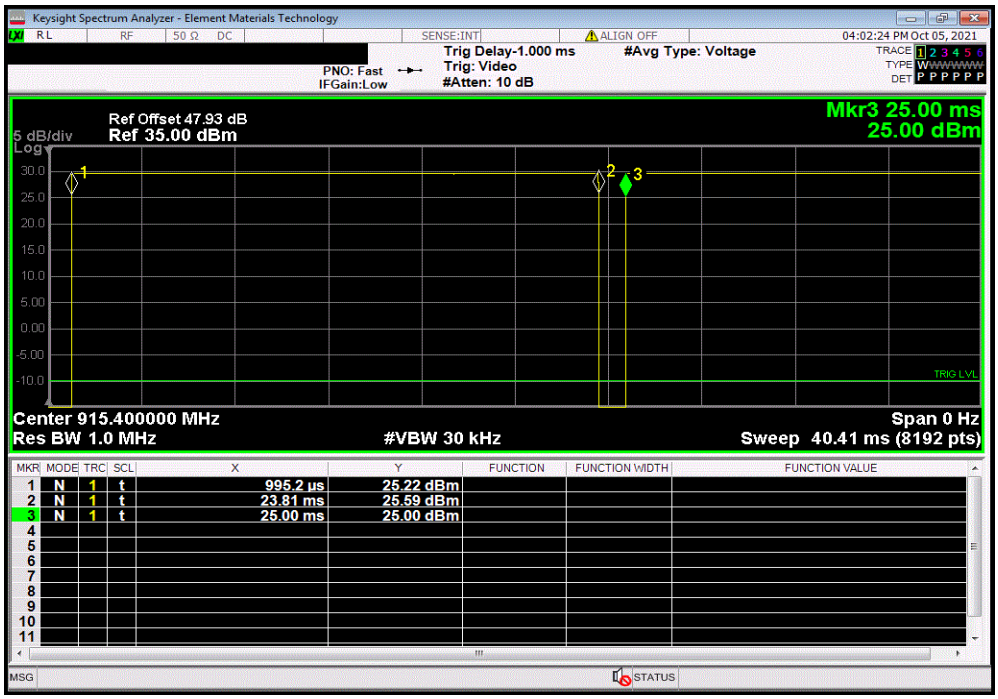


FSK, Single Channel, Low Channel, 902.4 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

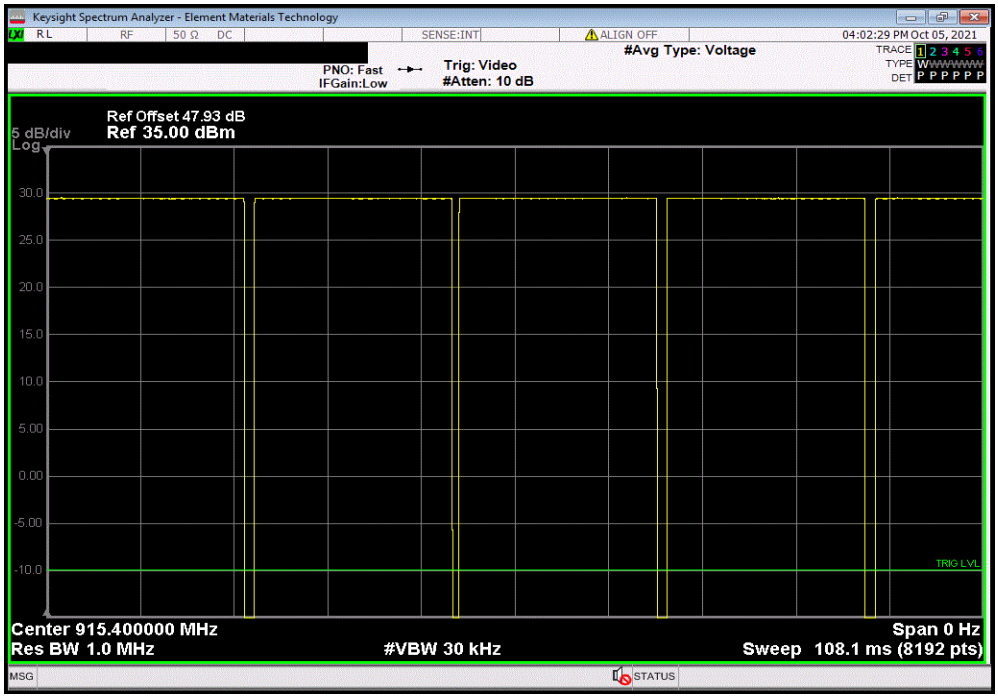


DUTY CYCLE

FSK, Single Channel, Mid Channel, 915.4 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	22.811 ms	24 ms	1	95	N/A	N/A

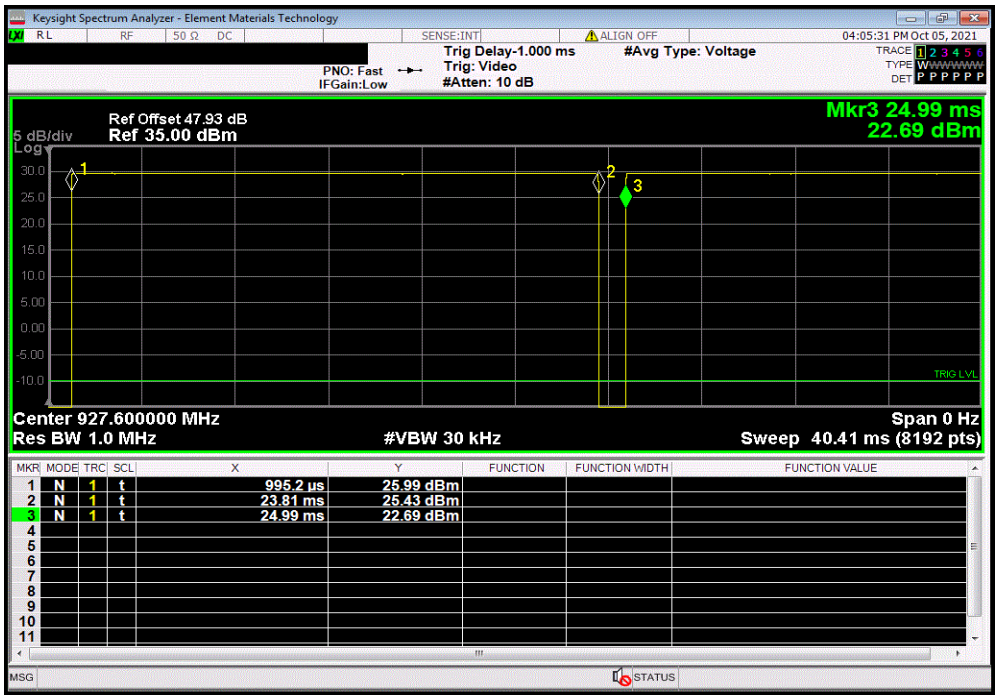


FSK, Single Channel, Mid Channel, 915.4 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

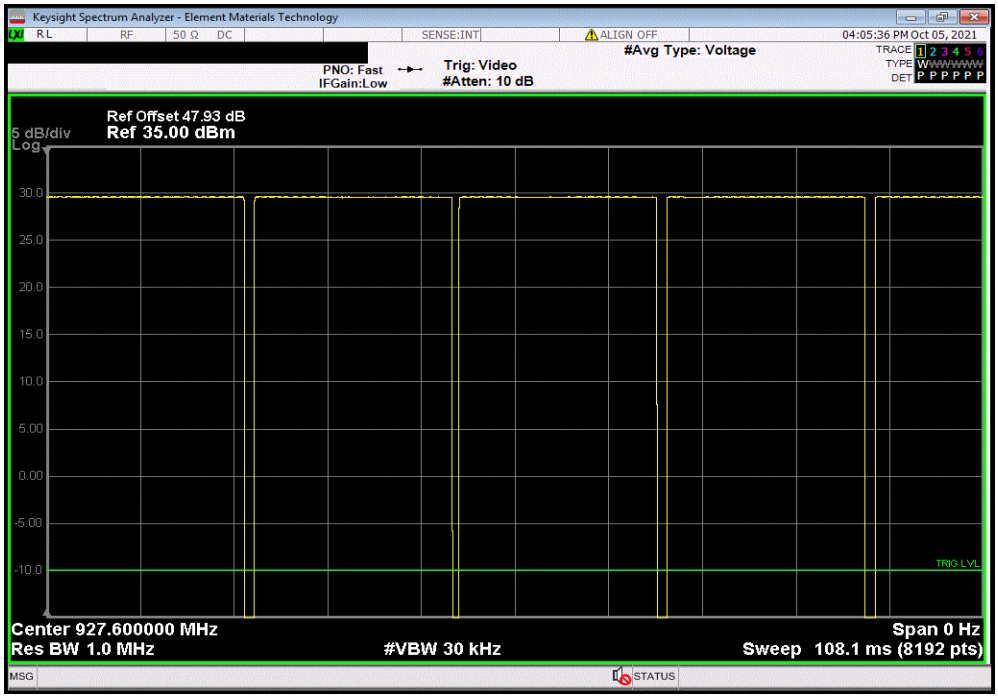


DUTY CYCLE

FSK, Single Channel, High Channel, 927.6 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	22.811 ms	23.995 ms	1	95.1	N/A	N/A



FSK, Single Channel, High Channel, 927.6 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OUTPUT POWER

XMit 2020.12.30.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5181A	TIG	2020-04-16	2023-04-16
Cable	Micro-Coax	UFD150A-1-0720-200200	EVK	2021-03-14	2022-03-14
Attenuator	Fairview Microwave	18B5W-26	RFZ	2021-07-16	2022-07-16
Attenuator	S.M. Electronics	SA26B-20	AUY	2021-03-14	2022-03-14
Block - DC	Fairview Microwave	SD3379	AMW	2021-03-14	2022-03-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2021-07-06	2022-07-06

TEST DESCRIPTION

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

element

TbtTx 2021.03.19.1 XMit 2020.12.30.0

EUT:	7 Inch Snow, RC-7W			**Work Order:**	POLR0113
Serial Number:	21152F0011			**Date:**	5-Oct-21
Customer:	Polaris Industries, Inc.			**Temperature:**	22.1 °C
Attendees:	None			**Humidity:**	47.1% RH
Project:	None			**Barometric Pres.:**	1015 mbar
Tested by:	Jeff Alcoke	**Power:**	15.0 VDC via 110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes: DC Block, 46 dB attenuation, and measurement cable.

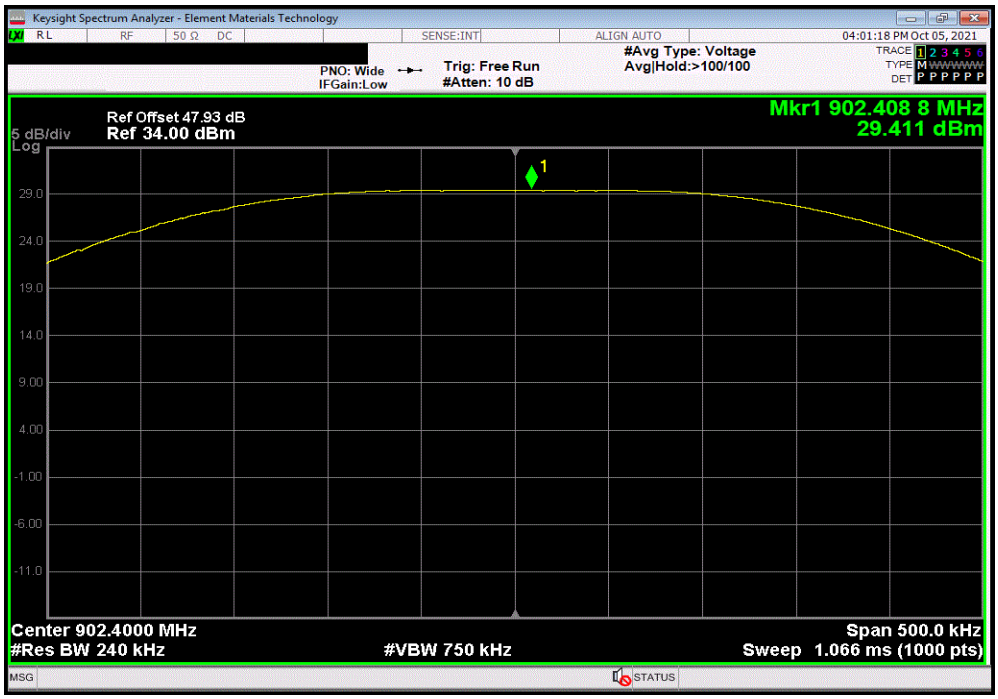
DEVIATIONS FROM TEST STANDARD

None

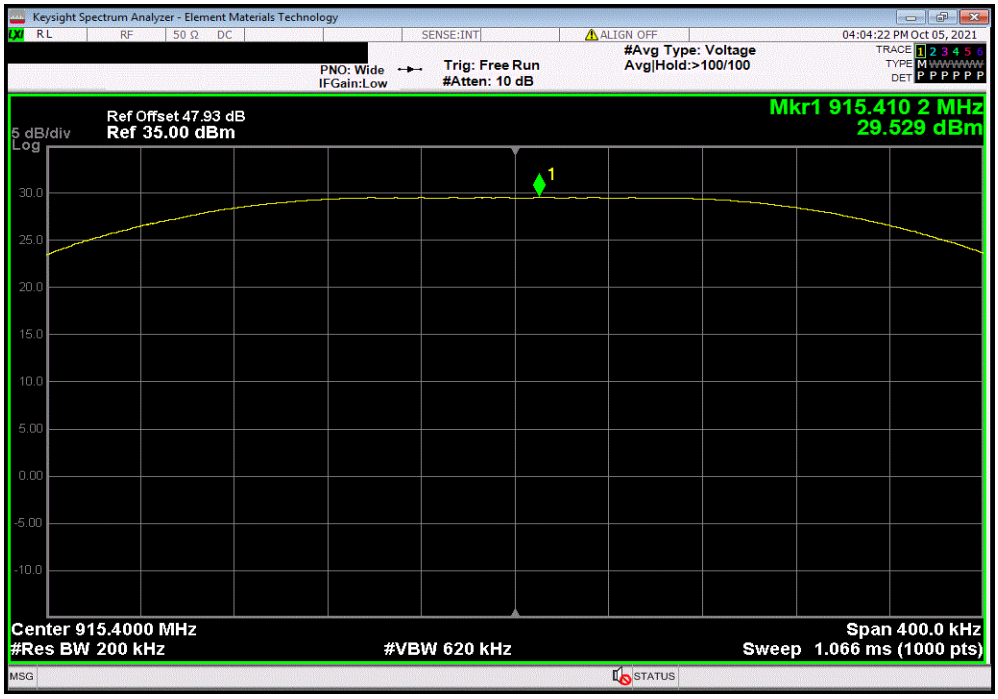
Configuration #	1	Signature

	Value	Limit (<)	Result
FSK, Single Channel			
Low Channel, 902.4 MHz	29.411 dBm	30 dBm	Pass
Mid Channel, 915.4 MHz	29.529 dBm	30 dBm	Pass
High Channel, 927.6 MHz	29.67 dBm	30 dBm	Pass

FSK, Single Channel, Low Channel, 902.4 MHz						
				Value	Limit (<)	Result
				29.411 dBm	30 dBm	Pass

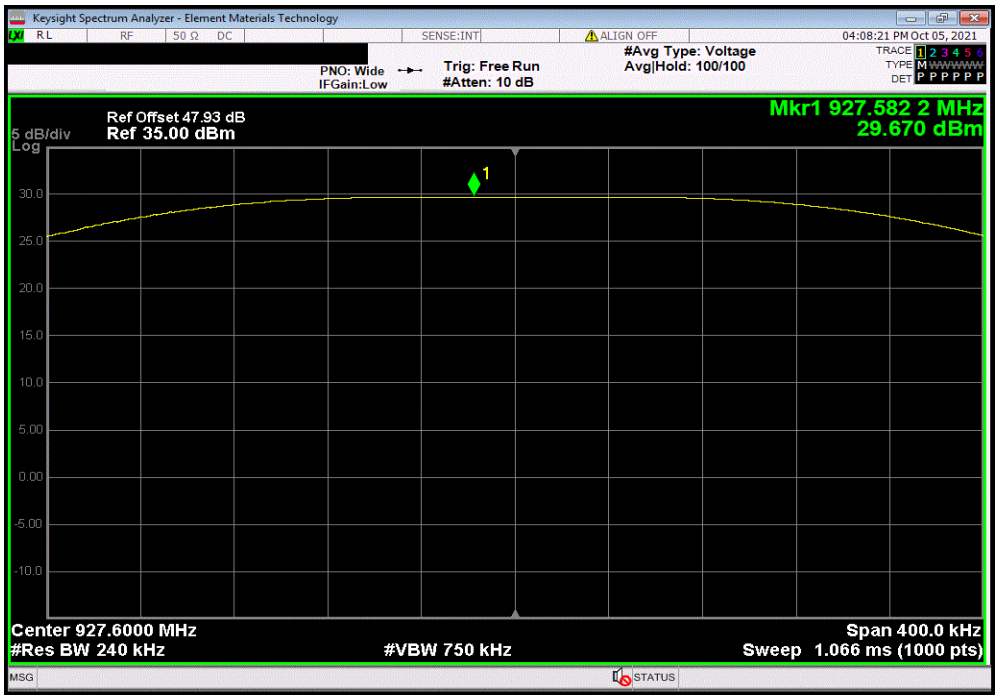


FSK, Single Channel, Mid Channel, 915.4 MHz						
				Value	Limit (<)	Result
				29.529 dBm	30 dBm	Pass



OUTPUT POWER

FSK, Single Channel, High Channel, 927.6 MHz						
				Value	Limit (<)	Result
				29.67 dBm	30 dBm	Pass



EQUIVALENT ISOTROPIC RADIATED POWER

XMit 2020.12.30.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5181A	TIG	2020-04-16	2023-04-16
Cable	Micro-Coax	UFD150A-1-0720-200200	EVK	2021-03-14	2022-03-14
Attenuator	Fairview Microwave	18B5W-26	RFZ	2021-07-16	2022-07-16
Attenuator	S.M. Electronics	SA26B-20	AUY	2021-03-14	2022-03-14
Block - DC	Fairview Microwave	SD3379	AMW	2021-03-14	2022-03-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2021-07-06	2022-07-06

TEST DESCRIPTION

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.

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

EQUIVALENT ISOTROPIC RADIATED POWER

TbtTx 2021.03.19.1 XMit 2020.12.30.0

EUT:	7 Inch Snow, RC-7W			**Work Order:**	POLR0113
Serial Number:	21152F0011			**Date:**	5-Oct-21
Customer:	Polaris Industries, Inc.			**Temperature:**	22.1 °C
Attendees:	None			**Humidity:**	47.1% RH
Project:	None			**Barometric Pres.:**	1015 mbar
Tested by:	Jeff Alcoke	**Power:**	15.0 VDC via 110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes: DC Block, 46 dB attenuation, and measurement cable.

DEVIATIONS FROM TEST STANDARD

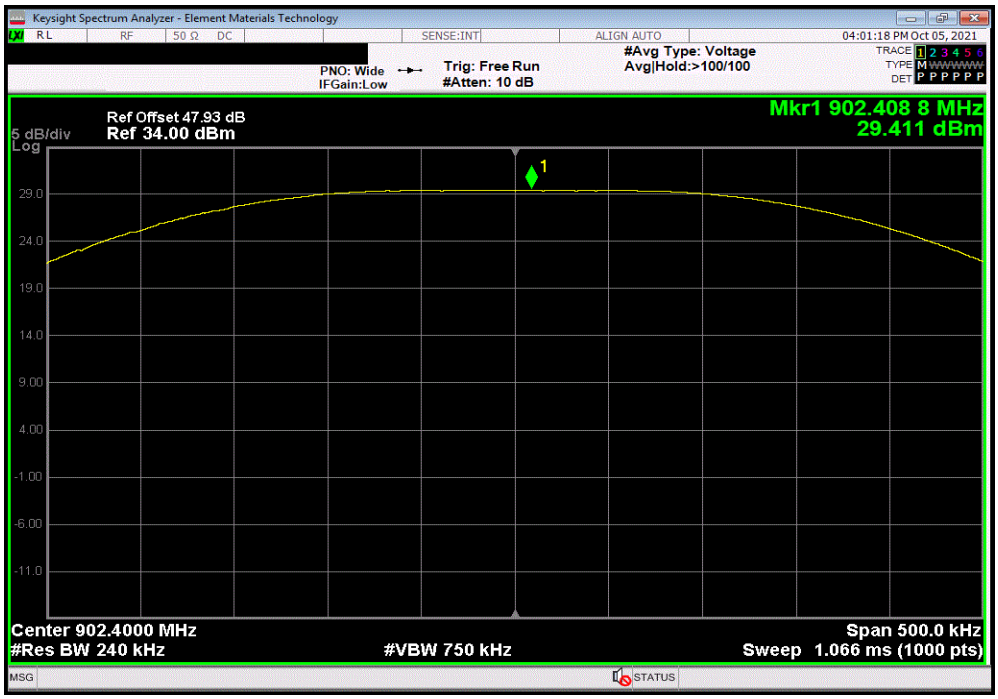
None

Configuration #	1	Signature

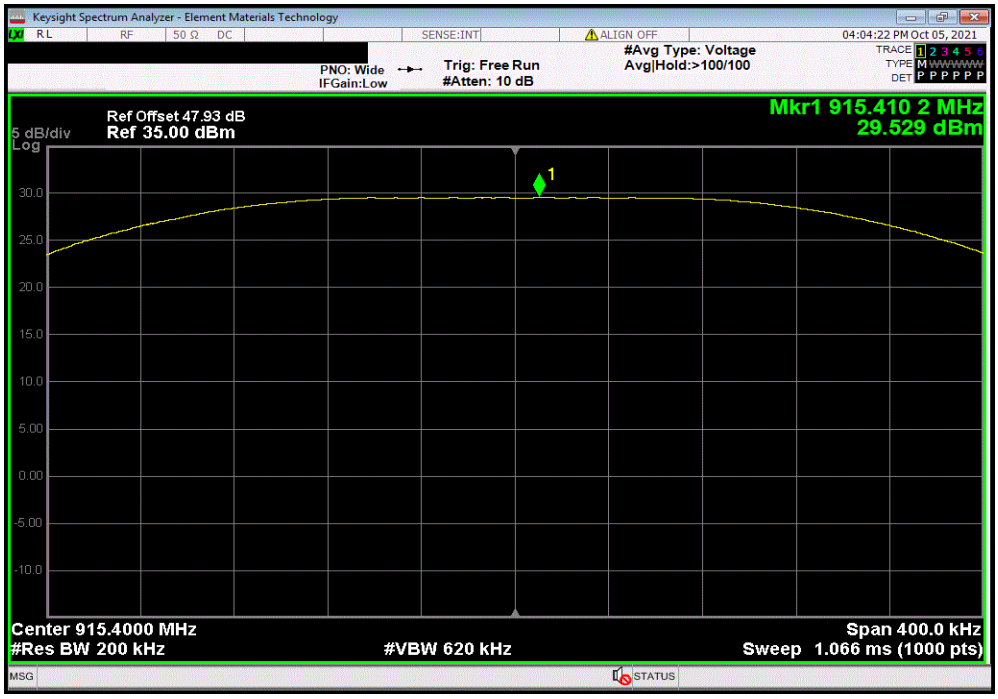
	Value (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
FSK, Single Channel					
Low Channel, 902.4 MHz	29.411	4.4	33.8	< 36	Pass
Mid Channel, 915.4 MHz	29.529	4.4	33.9	< 36	Pass
High Channel, 927.6 MHz	29.67	4.4	34.1	< 36	Pass

EQUIVALENT ISOTROPIC RADIATED POWER

FSK, Single Channel, Low Channel, 902.4 MHz						
		Value (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		29.411	4.4	33.8	< 36	Pass

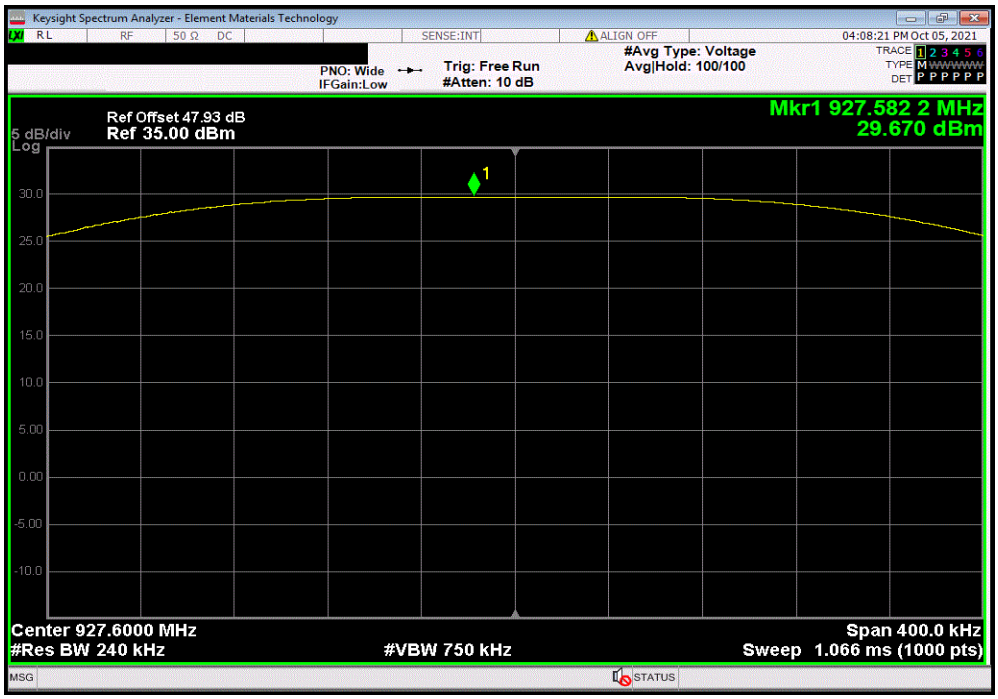


FSK, Single Channel, Mid Channel, 915.4 MHz						
		Value (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		29.529	4.4	33.9	< 36	Pass



EQUIVALENT ISOTROPIC RADIATED POWER

FSK, Single Channel, High Channel, 927.6 MHz						
		Value (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
		29.67	4.4	34.1	< 36	Pass



OCCUPIED BANDWIDTH

XMit 2020.12.30.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5181A	TIG	2020-04-16	2023-04-16
Cable	Micro-Coax	UFD150A-1-0720-200200	EVK	2021-03-14	2022-03-14
Attenuator	Fairview Microwave	18B5W-26	RFZ	2021-07-16	2022-07-16
Attenuator	S.M. Electronics	SA26B-20	AUY	2021-03-14	2022-03-14
Block - DC	Fairview Microwave	SD3379	AMW	2021-03-14	2022-03-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	2021-07-06	2022-07-06

TEST DESCRIPTION

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 2021.03.19.1 XMit 2020.12.30.0

EUT:	7 Inch Snow, RC-7W			**Work Order:**	POLR0113
Serial Number:	21152F0011			**Date:**	5-Oct-21
Customer:	Polaris Industries, Inc.			**Temperature:**	22.1 °C
Attendees:	None			**Humidity:**	47.1% RH
Project:	None			**Barometric Pres.:**	1015 mbar
Tested by:	Jeff Alcoke	**Power:**	15.0 VDC via 110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2021	ANSI C63.10:2013

COMMENTS

Reference level offset includes: DC Block, 46 dB attenuation, and measurement cable.

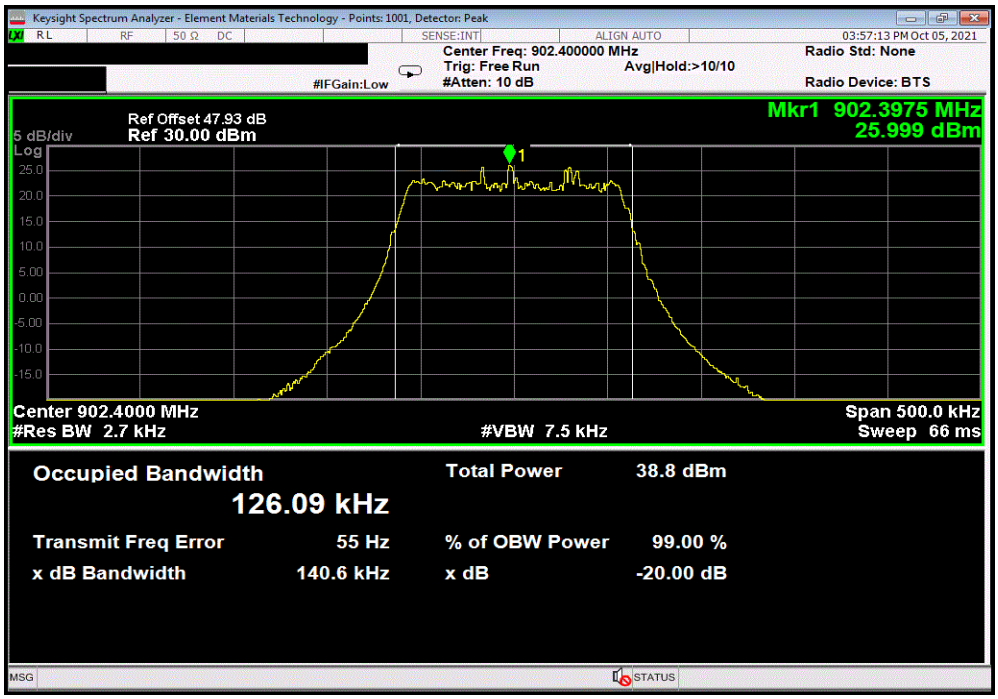
DEVIATIONS FROM TEST STANDARD

None

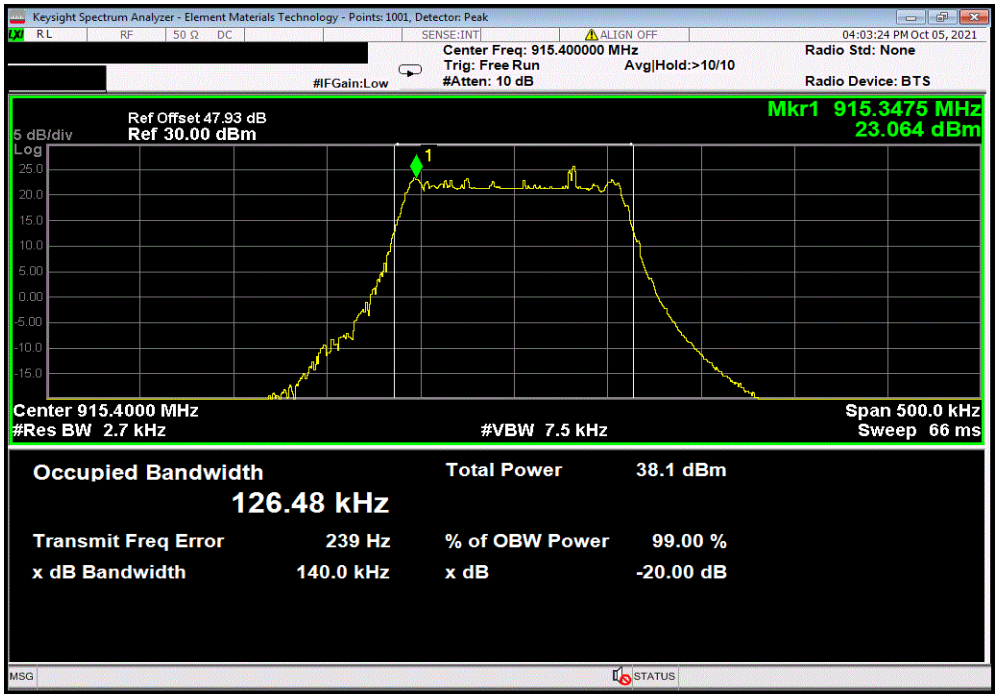
Configuration #	1	Signature

	Value	Limit (≤)	Result
FSK, Single Channel			
Low Channel, 902.4 MHz	140.557 kHz	250 kHz	Pass
Mid Channel, 915.4 MHz	139.984 kHz	250 kHz	Pass
High Channel, 927.6 MHz	140.01 kHz	250 kHz	Pass

FSK, Single Channel, Low Channel, 902.4 MHz						
				Value	Limit (≤)	Result
				140.557 kHz	250 kHz	Pass



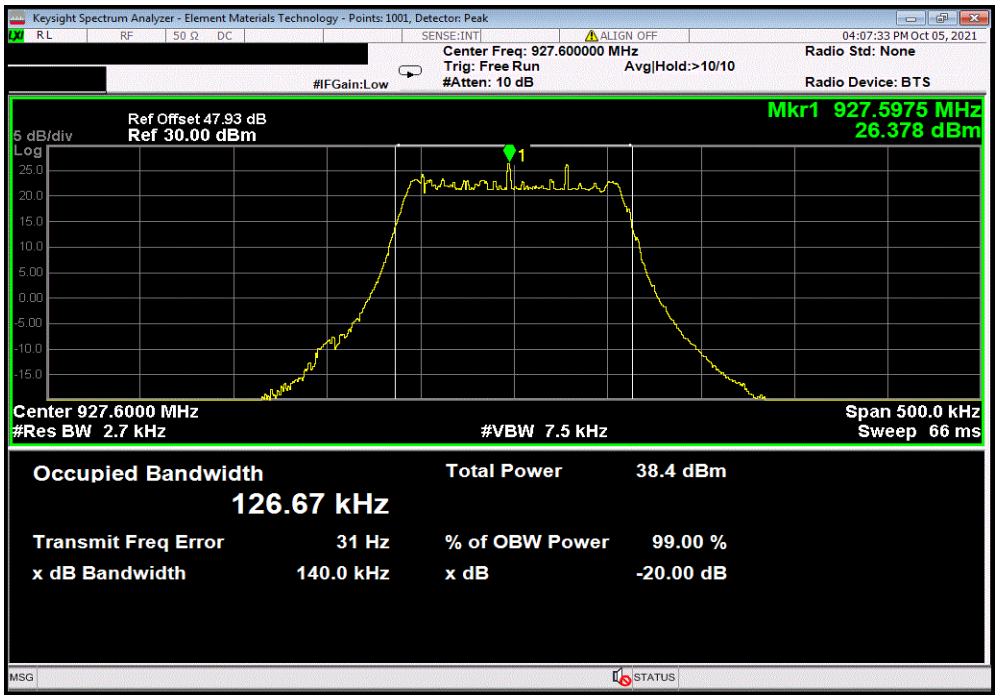
FSK, Single Channel, Mid Channel, 915.4 MHz						
				Value	Limit (≤)	Result
				139.984 kHz	250 kHz	Pass



OCCUPIED BANDWIDTH

TbtTx 2021.03.19.1 XMit 2020.12.30.0

FSK, Single Channel, High Channel, 927.6 MHz						
				Value	Limit (≤)	Result
				140.01 kHz	250 kHz	Pass



End of Test Report