



CINCH Systems

RF-ROR-V3-319

FCC 15.231:2026

RSS-210 Issue 11:2024

RSS-Gen Issue 5:2018+A1:2019+A2:2021

Periodic Radio

Report: CINC0072.0 Rev. 01, Issue Date: May 18, 2026



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CERTIFICATE OF TEST

Last Date of Test: April 7, 2026

CINCH Systems

EUT: RF-ROR-V3-319

Radio Equipment Testing

Standards

Specification	Method
FCC 15.231:2026	ANSI C63.10:2020 Cor.1:2023
RSS-210 Issue 11:2024	ANSI C63.10-2020 Cor.1:2023+C63.10a:2024 + Errata to
RSS-Gen Issue 5:2018+A1:2019+A2:2021	C63.10a:2024

Results

Test Description	Result	FCC Section(s)	RSS Section(s)	ANSI C63.10 Section(s)	Comments
Powerline Conducted Emissions (Transmitter)	N/A	15.207	RSS-Gen 8.8	6.2	Not required, battery powered product.
Field Strength of Fundamental	Pass	15.231(b)	RSS-210 A1.3	6.5, 6.6	
Spurious Radiated Emissions	Pass	15.231(b)	RSS-210 A1.3	6.4, 6.5, 6.6	
Emissions Bandwidth	Pass	15.231(c)	N/A	6.9.2	
Occupied Bandwidth	Pass	N/A	RSS-210 A1.4	6.9.3	
Periodic Technical Requirements	N/A	15.231(a)	RSS-210 A1.2	7.4e	Not required to test. If applicable, this is addressed by an attestation in the equipment theory of operation.
Duty Cycle	Pass	15.231	RSS-210 A1.2	7.5	
Powerline Conducted Emissions (Receiver)	N/A	15.101, 15.107	RSS-Gen 7.2	ANSI C63.4 - 12.2.4	Not required, battery powered product.
Radiated Emissions for Receiver	N/A	15.101, 15.109	RSS-Gen 7.3	ANSI C63.4 - 12.2.5	Not included per FCC 15.101 as this will be covered under SDoC rules for the FCC. RSS-Gen section 7 stated receiver requirements only apply to standalone receivers operating in the 30-960 MHz band and this is not a standalone receiver.

Deviations From Test Standards

None

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

CERTIFICATE OF TEST



Approved By:

Jeff Alcock, Senior EMC Test Engineer
Signed for and on behalf of Element

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REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Updated restricted bands for ISED and added note to comments section.	2026-05-18	18-20
	Updated to '15.231(b)' and 'RSS-210 A1.3' for Fundamental and SRE.	2026-05-18	3
	Updated the comments for 15.107 testing to 'not required, battery powered product'.	2026-05-18	3
	With a limit of .25% of the center frequency, $.0025 \times 319.5\text{MHz} = 0.79875\text{ MHz}$ limit, added this and noted pass.	2026-05-18	31
	Changed from 'low power radio' to 'periodic radio'	2026-05-18	1
	Updated functional description.	2026-05-18	11
	Updated blue limit line to purple.	2026-05-18	18-20

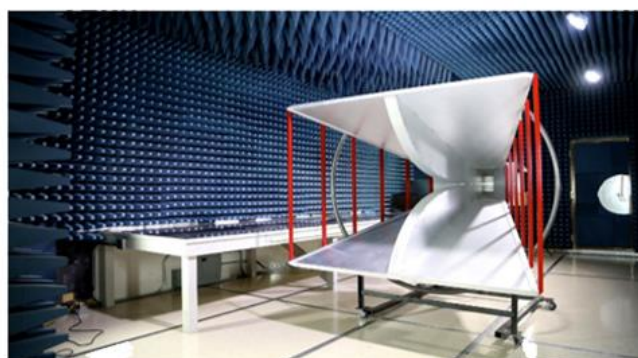
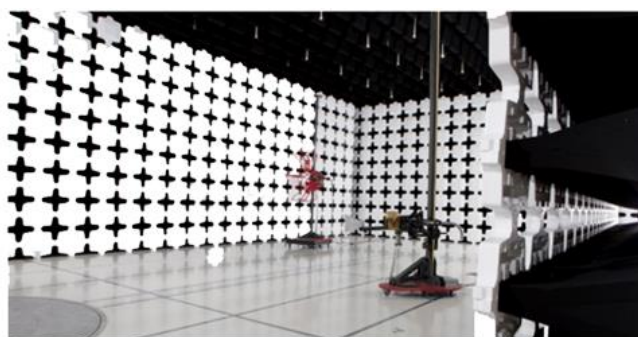
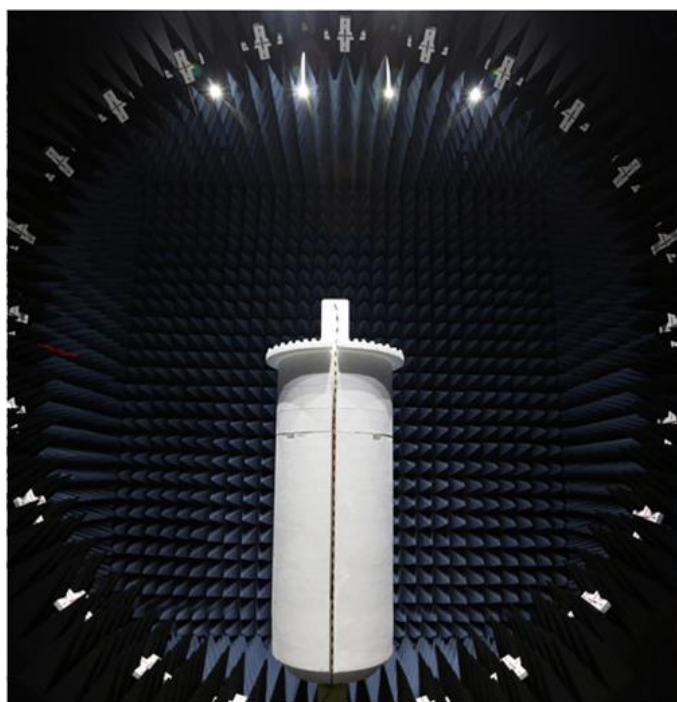
FACILITIES

Testing was performed at the following location(s)

	Location	Labs ⁽¹⁾	Address	A2LA ⁽²⁾	ISED ⁽³⁾	BSMI ⁽⁴⁾	VCCI ⁽⁵⁾	CAB	FDA ⁽⁶⁾
☐	California	OC01-17	41 Tesla Irvine, CA 92618 (949) 861-8918	3310.04	2834B	SL2-IN-E-1154R	A-0029	US0158	TL-55
☒	Minnesota	MN01-11	9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	3310.05	2834E	SL2-IN-E-1152R	A-0109	US0175	TL-57
☐	Oregon	EV01-12	6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	3310.02	2834D	SL2-IN-E-1017	A-0108	US0017	TL-56
☐	Washington	NC01-05	19201 120th Ave NE Bothell, WA 98011 (425) 984-6600	3310.06	2834F	SL2-IN-E-1153R	A-0110	US0157	TL-67
☐	Offsite	N/A	See Product Description	N/A	N/A	N/A	N/A	N/A	N/A

See data sheets for specific labs

- (1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
- (2) A2LA Certificate No.
- (3) ISED Company No.
- (4) BSMI No.
- (5) VCCI Site Filing No.
- (6) FDA ASCA No.



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 reported is based on statistical analysis that was performed by the laboratory. 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.

Various Measurements

Test	All Labs (+/-)
Frequency Accuracy (%)	0.0007
Amplitude Accuracy (dB)	1.2
Conducted Power (dB)	1.2
Radiated Power via Substitution (dB)	0.7
Temperature (degrees C)	0.7
Humidity (% RH)	2.5
Voltage (AC) (%)	1
Voltage (DC) (%)	0.7
Near-field Measurement of E-Field (dB)	1.89
Near-field Measurement of H-Field (dB)	2.65

Field Strength Measurements (dB)

Range	MN05 (+/-)
9kHz-30MHz	1.8
30MHz-1GHz 3m	4.6
1GHz-6GHz	5.1
6GHz-40GHz	5.3
40GHz-220GHz	4.9

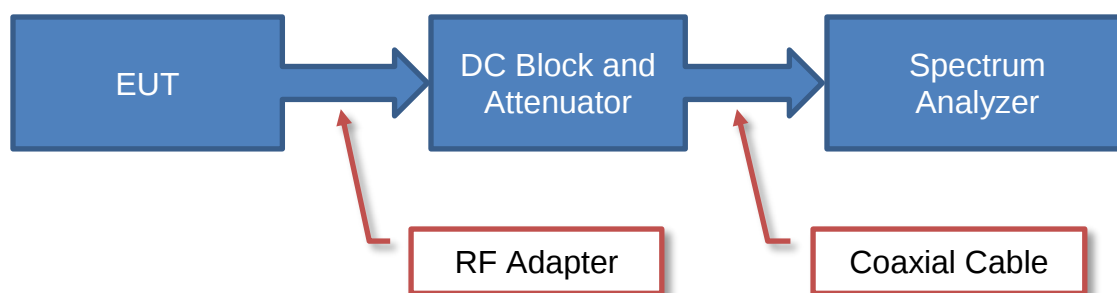
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

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

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

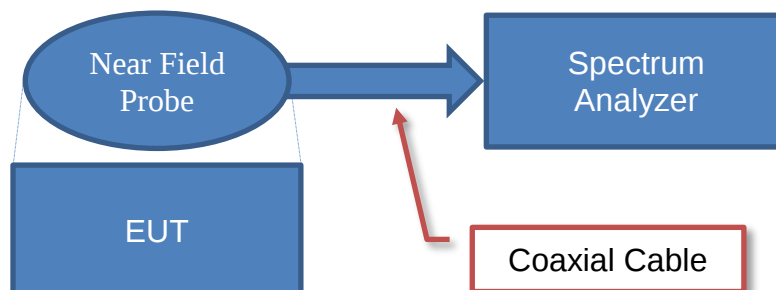
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

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

Near Field Test Fixture Measurements

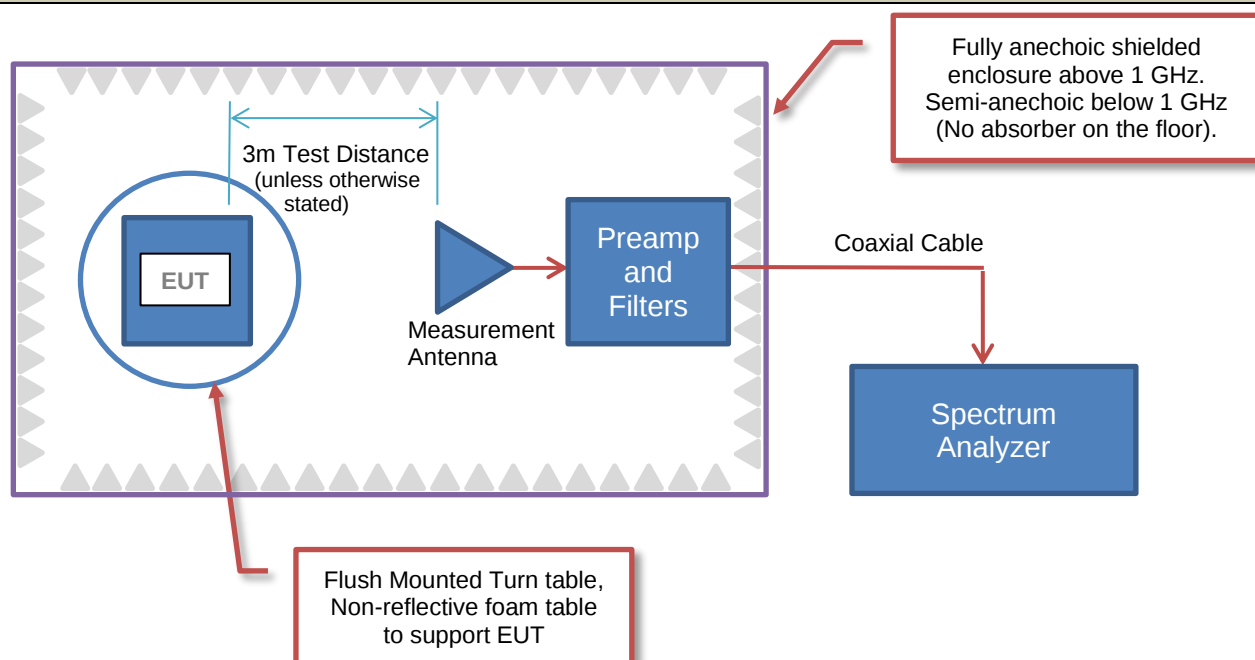


Sample Calculation (logarithmic units)

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

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

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

Conducted Emissions:

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

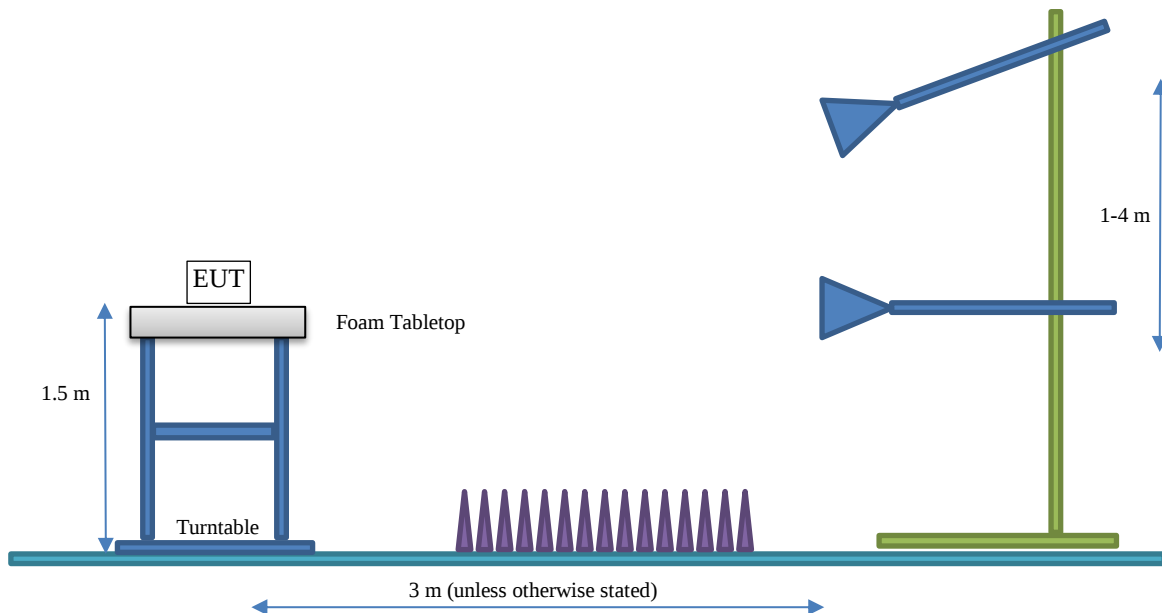
Radiated Power (ERP/EIRP) – Substitution Method:

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

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

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



PRODUCT DESCRIPTION



Client and Equipment under Test (EUT) Information

Company Name:	CINCH Systems
Address:	12075 43rd Street NE sTE 300
City, State, Zip:	St. Michael, MN 55376
Test Requested By:	Mark Cawley
EUT:	RF-ROR-V3-319
First Date of Test:	April 7, 2026
Last Date of Test:	April 7, 2026
Receipt Date of Samples:	April 7, 2026
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

Model RF-ROR is a heat detector interfacing wirelessly to a fire & security panel to provide property protection. The periodic transmitter operates at a frequency of 319.5MHz and utilizes AM modulation (OOK).

Testing Objective:

To demonstrate compliance of the Periodic radio to FCC 15.231 requirements. and RSS-210 Annex A specifications.

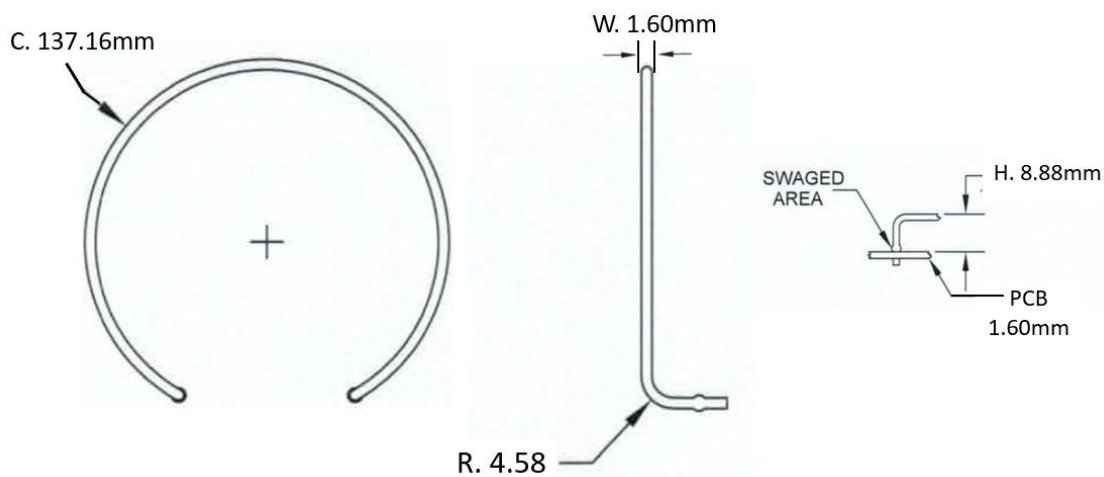
POWER SETTINGS AND ANTENNAS



The power settings, antenna information and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit during normal operation.

ANTENNA INFORMATION:

Type	Manufacturer:	Frequency Range (MHz)	Antenna Properties
Monopole	Cinch Systems Inc.	319.5	Length: 153.67 mm Circumference: 137.16 mm Width: 1.60 mm Radiation Resistance: 0.53 Ohms (see diagram below)



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

- ☐ Test software settings Firmware used for testing: v003
☒ Rated power settings

SETTINGS FOR ALL TESTS IN THIS REPORT

RF-ROR-V3-319	Power Setting (dBm)
OOK and CW Modulations	13

CONFIGURATIONS



Configuration CINC0072-1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RF-ROR-V3-319	CINCH Systems	RF-ROR-V3-319	6CD969

Configuration CINC0072-2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RF-ROR-V3-319	CINCH Systems	RF-ROR-V3-319	C0BC64

Configuration CINC0072-4

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RF-ROR-V3-319	CINCH Systems	RF-ROR-V3-319	E12E67

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2026-04-07	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	2026-04-07	Emissions Bandwidth	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2026-04-07	Field Strength of Fundamental	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	2026-04-07	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	2026-04-07	Spurious Radiated Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

FIELD STRENGTH OF FUNDAMENTAL

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was configured for continuous un-modulated CW operation at its single transmit frequency. The field strength of the transmit frequency was maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT in 3 orthogonal planes (per ANSI C63.10).

Peak measurements were made with a resolution bandwidth of 120 kHz and a video bandwidth of 300 kHz for measurements at or below 1 GHz. A duty cycle correction factor was added to the peak readings to mathematically derive the average levels. The supporting screen captures and duty cycle calculation is contained in the "Duty Cycle" module in this report.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2025-09-29	2027-09-29
Cable	ESM Cable Corp.	Bilog Cables	MNH	2025-09-05	2026-09-05
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	2025-09-03	2026-09-03
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2025-04-11	2026-04-11

FREQUENCY RANGE INVESTIGATED

300 MHz TO 350 MHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

CINC0072-4

MODES INVESTIGATED

Transmitting

FIELD STRENGTH OF FUNDAMENTAL

EUT:	RF-ROR-V3-319	Work Order:	CINC0072
Serial Number:	E12E67	Date:	2026-04-07
Customer:	CINCH Systems	Temperature:	23.1°C
Attendees:	Kerry Tobias	Relative Humidity:	20.1%
Customer Project:	None	Bar. Pressure (PMSL):	1031 mb
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	Battery	Configuration:	CINC0072-4

TEST PARAMETERS

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

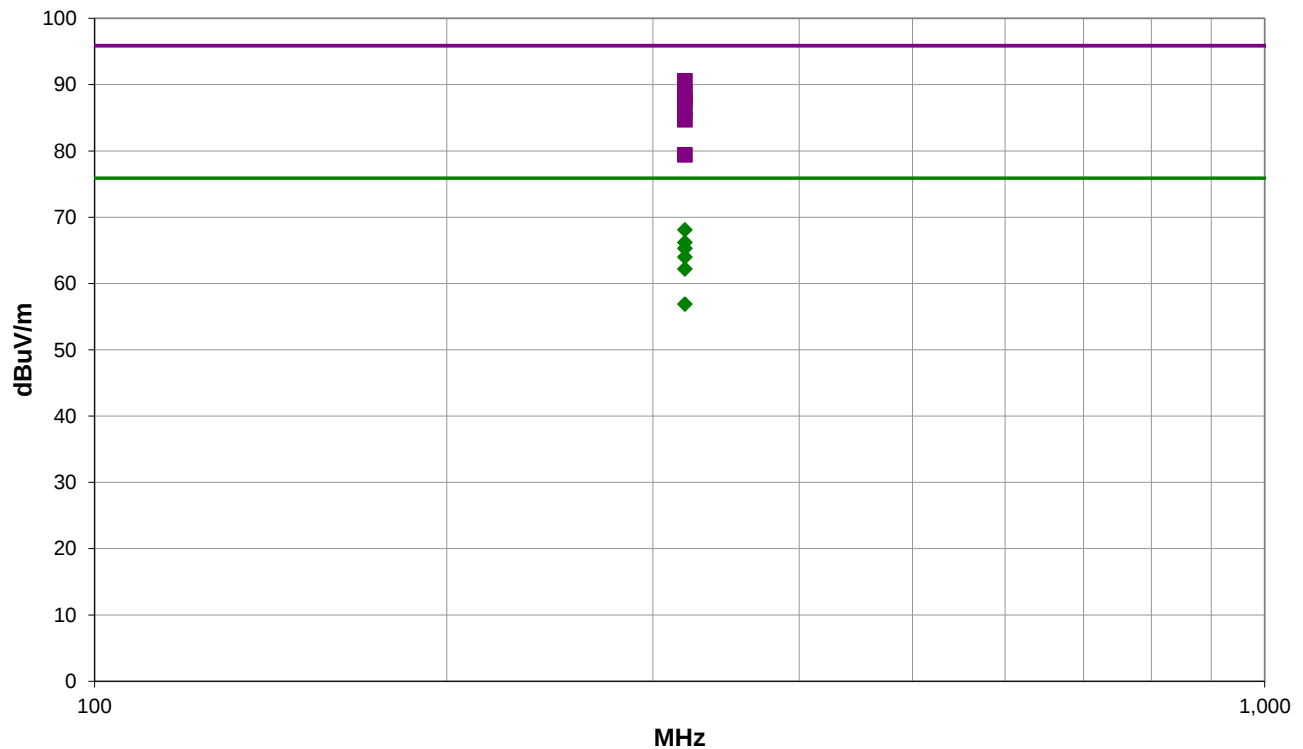
None

EUT OPERATING MODES

Transmitting

DEVIATIONS FROM TEST STANDARD

None



Run #: 1

■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #1

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
319.493	67.6	23.0	1.0	28.0	0.0	0.0	Horz	PK	0.0	90.6	95.9	-5.3	EUT Horz
319.498	65.7	23.0	1.7	96.0	0.0	0.0	Vert	PK	0.0	88.7	95.9	-7.2	EUT On Side
319.493	67.6	23.0	1.0	28.0	-22.5	0.0	Horz	AV	0.0	68.1	75.9	-7.8	EUT Horz
319.497	64.8	23.0	1.8	104.0	0.0	0.0	Vert	PK	0.0	87.8	95.9	-8.1	EUT Vert
319.497	63.5	23.0	1.1	156.0	0.0	0.0	Horz	PK	0.0	86.5	95.9	-9.4	EUT On Side
319.498	65.7	23.0	1.7	96.0	-22.5	0.0	Vert	AV	0.0	66.2	75.9	-9.7	EUT On Side
319.497	64.8	23.0	1.8	104.0	-22.5	0.0	Vert	AV	0.0	65.3	75.9	-10.6	EUT Vert
319.497	61.7	23.0	1.0	79.0	0.0	0.0	Horz	PK	0.0	84.7	95.9	-11.2	EUT Vert
319.497	63.5	23.0	1.1	156.0	-22.5	0.0	Horz	AV	0.0	64.0	75.9	-11.9	EUT On Side
319.497	61.7	23.0	1.0	79.0	-22.5	0.0	Horz	AV	0.0	62.2	75.9	-13.7	EUT Vert
319.498	56.4	23.0	2.3	154.0	0.0	0.0	Vert	PK	0.0	79.4	95.9	-16.5	EUT Horz
319.498	56.4	23.0	2.3	154.0	-22.5	0.0	Vert	AV	0.0	56.9	75.9	-19.0	EUT Horz

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

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 frequency in each operational band and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. A reference preview scan (pre-scan) is 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, 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 = Calculated Average based on Peak and Duty Cycle Correction Factor

Peak measurements were made with a resolution bandwidth of 120 kHz and a video bandwidth of 300 kHz for measurements at or below 1 GHz. Above 1 GHz, a resolution bandwidth of 1 MHz and a video bandwidth of 3 MHz was used.

A duty cycle correction factor was added to the peak readings to mathematically derive the average levels. The supporting screen captures and duty cycle calculation is contained in the "Duty Cycle" module in this report.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Loop	ETS Lindgren	6502	AOB	2025-06-17	2027-06-17
Cable	ESM Cable Corp.	Bilog Cables	MNH	2025-09-05	2026-09-05
Antenna - Double Ridge	ETS Lindgren	3115	AIP	2024-08-02	2026-08-02
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2025-09-05	2026-09-05
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2026-01-07	2027-01-07
Filter - High Pass	Micro-Tronics	HPM50108	LFM	2025-09-03	2026-09-03
Attenuator	Fairview Microwave	SA18H-20	VAF	2025-09-03	2026-09-03
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2025-09-29	2027-09-29
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2025-10-07	2026-10-07
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	2025-09-03	2026-09-03
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2025-04-11	2026-04-11

FREQUENCY RANGE INVESTIGATED

9 kHz TO 8200 MHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

CINC0072-4

MODES INVESTIGATED

Transmitting 319.5 MHz, CW

SPURIOUS RADIATED EMISSIONS

EUT:	RF-ROR-V3-319	Work Order:	CINC0072
Serial Number:	E12E67	Date:	2026-04-07
Customer:	CINCH Systems	Temperature:	23.1°C
Attendees:	Kerry Tobias	Relative Humidity:	20.1%
Customer Project:	None	Bar. Pressure (PMSL):	1031 mb
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	Battery	Configuration:	CINC0072-4

TEST PARAMETERS

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

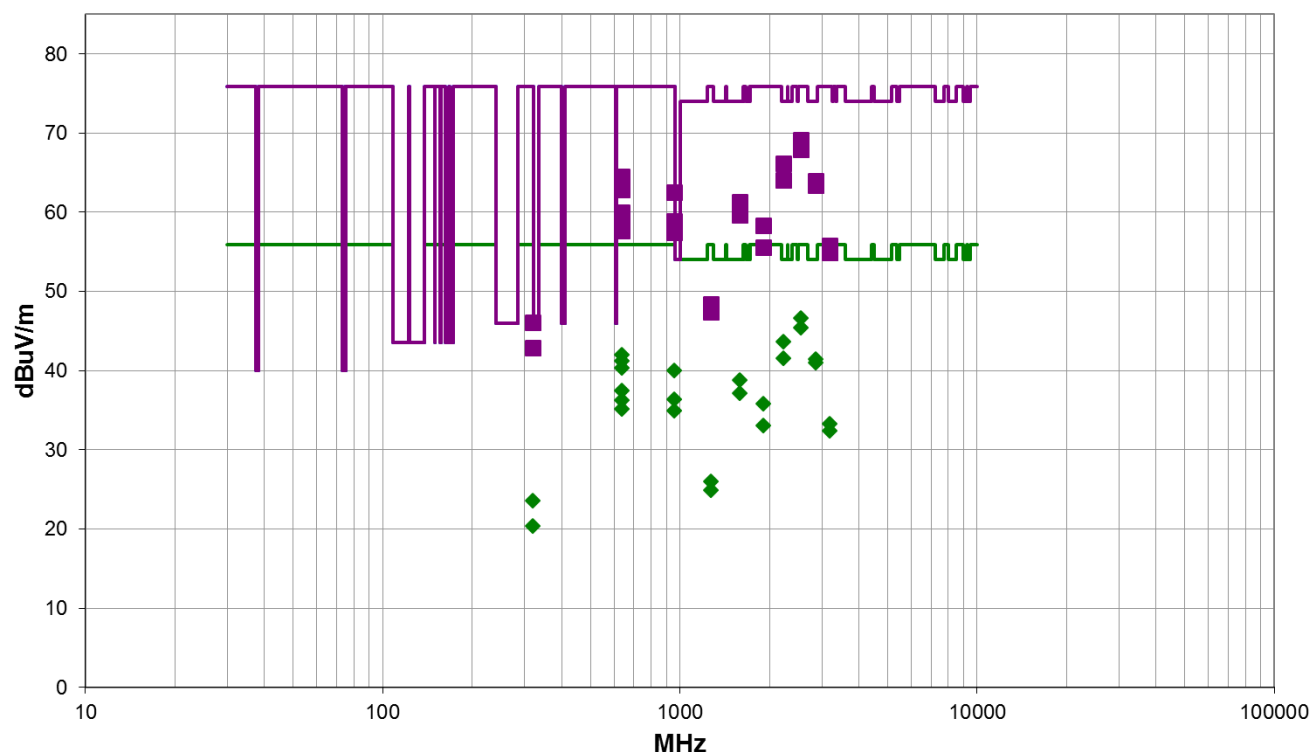
Data below with FCC 15.231 limits shown.

EUT OPERATING MODES

Transmitting 319.5 MHz, CW

DEVIATIONS FROM TEST STANDARD

None



Run #: 3

■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #3

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
2556.025	71.2	-2.1	1.0	69.0	0.0	0.0	Vert	PK	0.0	69.1	75.9	-6.8	EUT On Side
2236.425	68.0	-1.9	1.3	350.0	0.0	0.0	Vert	PK	0.0	66.1	74.0	-7.9	EUT On Side
2555.908	70.0	-2.1	1.1	286.0	0.0	0.0	Horz	PK	0.0	67.9	75.9	-8.0	EUT Horz
2556.025	71.2	-2.1	1.0	69.0	-22.5	0.0	Vert	AV	0.0	46.6	55.9	-9.3	EUT On Side
2236.408	65.9	-1.9	1.0	268.0	0.0	0.0	Horz	PK	0.0	64.0	74.0	-10.0	EUT Horz
2875.350	64.6	-0.7	1.5	119.0	0.0	0.0	Vert	PK	0.0	63.9	74.0	-10.1	EUT On Side
2236.425	68.0	-1.9	1.3	350.0	-22.5	0.0	Vert	AV	0.0	43.6	54.0	-10.4	EUT On Side
2555.908	70.0	-2.1	1.1	286.0	-22.5	0.0	Horz	AV	0.0	45.4	55.9	-10.5	EUT Horz
2875.308	64.1	-0.7	1.1	288.0	0.0	0.0	Horz	PK	0.0	63.4	74.0	-10.6	EUT Horz
638.995	42.4	12.1	1.0	97.0	0.0	10.0	Vert	PK	0.0	64.5	75.9	-11.4	EUT On Side
638.998	41.6	12.1	1.0	274.0	0.0	10.0	Vert	PK	0.0	63.7	75.9	-12.2	EUT Vert
2236.408	65.9	-1.9	1.0	268.0	-22.5	0.0	Horz	AV	0.0	41.5	54.0	-12.5	EUT Horz
2875.350	64.6	-0.7	1.5	119.0	-22.5	0.0	Vert	AV	0.0	41.4	54.0	-12.6	EUT On Side
1597.458	66.2	-4.9	1.0	17.0	0.0	0.0	Horz	PK	0.0	61.3	74.0	-12.7	EUT Horz
2875.308	64.1	-0.7	1.1	288.0	-22.5	0.0	Horz	AV	0.0	40.9	54.0	-13.1	EUT Horz
639.002	40.7	12.1	1.3	46.0	0.0	10.0	Horz	PK	0.0	62.8	75.9	-13.1	EUT Horz
958.501	34.7	17.8	1.2	125.0	0.0	10.0	Vert	PK	0.0	62.5	75.9	-13.4	EUT Horz
638.995	42.4	12.1	1.0	97.0	-22.5	10.0	Vert	AV	0.0	42.0	55.9	-13.9	EUT On Side
1597.458	64.5	-4.9	2.8	248.0	0.0	0.0	Vert	PK	0.0	59.6	74.0	-14.4	EUT On Side
638.998	41.6	12.1	1.0	274.0	-22.5	10.0	Vert	AV	0.0	41.2	55.9	-14.7	EUT Vert
1597.458	66.2	-4.9	1.0	17.0	-22.5	0.0	Horz	AV	0.0	38.8	54.0	-15.2	EUT Horz
639.002	40.7	12.1	1.3	46.0	-22.5	10.0	Horz	AV	0.0	40.3	55.9	-15.6	EUT Horz
958.501	34.7	17.8	1.2	125.0	-22.5	10.0	Vert	AV	0.0	40.0	55.9	-15.9	EUT Horz
638.998	37.8	12.1	1.3	42.0	0.0	10.0	Horz	PK	0.0	59.9	75.9	-16.0	EUT Vert
1597.458	64.5	-4.9	2.8	248.0	-22.5	0.0	Vert	AV	0.0	37.1	54.0	-16.9	EUT On Side
958.508	31.0	17.8	1.2	12.0	0.0	10.0	Vert	PK	0.0	58.8	75.9	-17.1	EUT On Side
638.995	36.6	12.1	4.0	199.0	0.0	10.0	Horz	PK	0.0	58.7	75.9	-17.2	EUT On Side
1916.975	61.4	-3.1	1.0	231.0	0.0	0.0	Horz	PK	0.0	58.3	75.9	-17.6	EUT Horz
638.995	35.5	12.1	1.0	166.0	0.0	10.0	Vert	PK	0.0	57.6	75.9	-18.3	EUT Horz
638.998	37.8	12.1	1.3	42.0	-22.5	10.0	Horz	AV	0.0	37.4	55.9	-18.5	EUT Vert
958.480	29.6	17.8	1.0	155.0	0.0	10.0	Horz	PK	0.0	57.4	75.9	-18.5	EUT Horz
958.508	31.0	17.8	1.2	12.0	-22.5	10.0	Vert	AV	0.0	36.3	55.9	-19.6	EUT On Side
638.995	36.6	12.1	4.0	199.0	-22.5	10.0	Horz	AV	0.0	36.2	55.9	-19.7	EUT On Side
1916.975	61.4	-3.1	1.0	231.0	-22.5	0.0	Horz	AV	0.0	35.8	55.9	-20.1	EUT Horz
3194.817	54.9	0.8	1.1	316.0	0.0	0.0	Horz	PK	0.0	55.7	75.9	-20.2	EUT Horz
1917.117	58.6	-3.1	3.1	87.0	0.0	0.0	Vert	PK	0.0	55.5	75.9	-20.4	EUT On Side
638.995	35.5	12.1	1.0	166.0	-22.5	10.0	Vert	AV	0.0	35.1	55.9	-20.8	EUT Horz
958.480	29.6	17.8	1.0	155.0	-22.5	10.0	Horz	AV	0.0	34.9	55.9	-21.0	EUT Horz
3195.158	54.1	0.8	1.5	70.0	0.0	0.0	Vert	PK	0.0	54.9	75.9	-21.0	EUT On Side
3194.817	54.9	0.8	1.1	316.0	-22.5	0.0	Horz	AV	0.0	33.2	55.9	-22.7	EUT Horz

SPURIOUS RADIATED EMISSIONS

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
1917.117	58.6	-3.1	3.1	87.0	-22.5	0.0	Vert	AV	0.0	33.0	55.9	-22.9	EUT On Side
3195.158	54.1	0.8	1.5	70.0	-22.5	0.0	Vert	AV	0.0	32.4	55.9	-23.5	EUT On Side
1277.883	54.4	-6.0	1.0	271.0	0.0	0.0	Vert	PK	0.0	48.4	75.9	-27.5	EUT On Side
1278.067	53.3	-6.0	1.5	332.0	0.0	0.0	Horz	PK	0.0	47.3	75.9	-28.6	EUT Horz
321.563	34.0	2.0	2.4	293.0	0.0	10.0	Vert	PK	0.0	46.0	75.9	-29.9	EUT Vert
1277.883	54.4	-6.0	1.0	271.0	-22.5	0.0	Vert	AV	0.0	25.9	55.9	-30.0	EUT On Side
1278.067	53.3	-6.0	1.5	332.0	-22.5	0.0	Horz	AV	0.0	24.8	55.9	-31.1	EUT Horz
321.563	34.0	2.0	2.4	293.0	-22.5	10.0	Vert	AV	0.0	23.5	55.9	-32.4	EUT Vert
321.610	30.8	2.0	1.0	61.0	0.0	10.0	Horz	PK	0.0	42.8	75.9	-33.1	EUT Vert
321.610	30.8	2.0	1.0	61.0	-22.5	10.0	Horz	AV	0.0	20.3	55.9	-35.6	EUT Vert

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	RF-ROR-V3-319 MHz	Work Order:	CINC0072
Serial Number:	E12E67	Date:	2026-04-07
Customer:	CINCH Systems	Temperature:	23.1°C
Attendees:	Kerry Tobias	Relative Humidity:	0.201%
Customer Project:	None	Bar. Pressure (PMSL):	1031 mb
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	Battery	Configuration:	CINC0072-0

TEST PARAMETERS

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

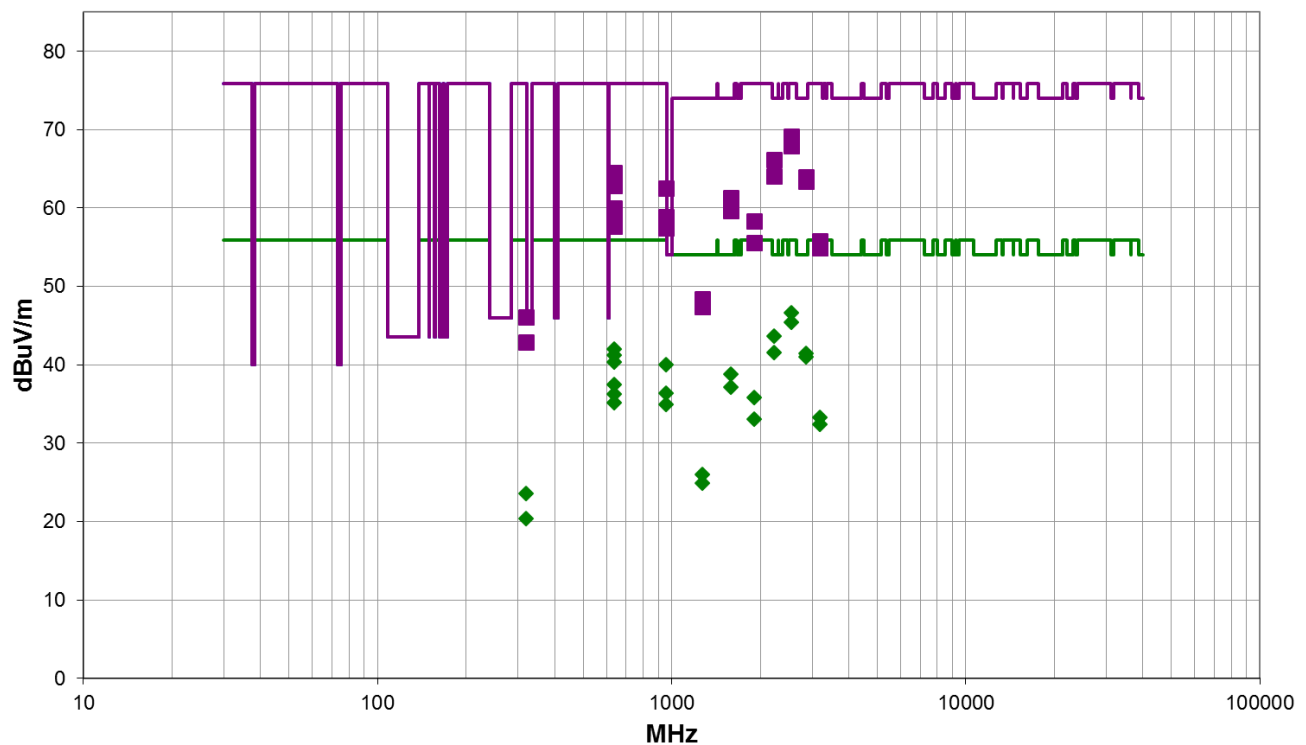
Data below is with ISED RSS-210 limits shown.

EUT OPERATING MODES

Transmitting 319.5 MHz, CW

DEVIATIONS FROM TEST STANDARD

None



Run #: 3

■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #3

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
2556.025	71.2	-2.1	1.0	69.0	0.0	0.0	Vert	PK	0.0	69.1	75.9	-6.8	EUT On Side
2236.425	68.0	-1.9	1.3	350.0	0.0	0.0	Vert	PK	0.0	66.1	74.0	-7.9	EUT On Side
2555.908	70.0	-2.1	1.1	286.0	0.0	0.0	Horz	PK	0.0	67.9	75.9	-8.0	EUT Horz
2556.025	71.2	-2.1	1.0	69.0	-22.5	0.0	Vert	AV	0.0	46.6	55.9	-9.3	EUT On Side
2236.408	65.9	-1.9	1.0	268.0	0.0	0.0	Horz	PK	0.0	64.0	74.0	-10.0	EUT Horz
2875.350	64.6	-0.7	1.5	119.0	0.0	0.0	Vert	PK	0.0	63.9	74.0	-10.1	EUT On Side
2236.425	68.0	-1.9	1.3	350.0	-22.5	0.0	Vert	AV	0.0	43.6	54.0	-10.4	EUT On Side
2555.908	70.0	-2.1	1.1	286.0	-22.5	0.0	Horz	AV	0.0	45.4	55.9	-10.5	EUT Horz
2875.308	64.1	-0.7	1.1	288.0	0.0	0.0	Horz	PK	0.0	63.4	74.0	-10.6	EUT Horz
638.995	42.4	12.1	1.0	97.0	0.0	10.0	Vert	PK	0.0	64.5	75.9	-11.4	EUT On Side
638.998	41.6	12.1	1.0	274.0	0.0	10.0	Vert	PK	0.0	63.7	75.9	-12.2	EUT Vert
2236.408	65.9	-1.9	1.0	268.0	-22.5	0.0	Horz	AV	0.0	41.5	54.0	-12.5	EUT Horz
2875.350	64.6	-0.7	1.5	119.0	-22.5	0.0	Vert	AV	0.0	41.4	54.0	-12.6	EUT On Side
1597.458	66.2	-4.9	1.0	17.0	0.0	0.0	Horz	PK	0.0	61.3	74.0	-12.7	EUT Horz
2875.308	64.1	-0.7	1.1	288.0	-22.5	0.0	Horz	AV	0.0	40.9	54.0	-13.1	EUT Horz
639.002	40.7	12.1	1.3	46.0	0.0	10.0	Horz	PK	0.0	62.8	75.9	-13.1	EUT Horz
958.501	34.7	17.8	1.2	125.0	0.0	10.0	Vert	PK	0.0	62.5	75.9	-13.4	EUT Horz
638.995	42.4	12.1	1.0	97.0	-22.5	10.0	Vert	AV	0.0	42.0	55.9	-13.9	EUT On Side
1597.458	64.5	-4.9	2.8	248.0	0.0	0.0	Vert	PK	0.0	59.6	74.0	-14.4	EUT On Side
638.998	41.6	12.1	1.0	274.0	-22.5	10.0	Vert	AV	0.0	41.2	55.9	-14.7	EUT Vert
1597.458	66.2	-4.9	1.0	17.0	-22.5	0.0	Horz	AV	0.0	38.8	54.0	-15.2	EUT Horz
639.002	40.7	12.1	1.3	46.0	-22.5	10.0	Horz	AV	0.0	40.3	55.9	-15.6	EUT Horz
958.501	34.7	17.8	1.2	125.0	-22.5	10.0	Vert	AV	0.0	40.0	55.9	-15.9	EUT Horz
638.998	37.8	12.1	1.3	42.0	0.0	10.0	Horz	PK	0.0	59.9	75.9	-16.0	EUT Vert
1597.458	64.5	-4.9	2.8	248.0	-22.5	0.0	Vert	AV	0.0	37.1	54.0	-16.9	EUT On Side
958.508	31.0	17.8	1.2	12.0	0.0	10.0	Vert	PK	0.0	58.8	75.9	-17.1	EUT On Side
638.995	36.6	12.1	4.0	199.0	0.0	10.0	Horz	PK	0.0	58.7	75.9	-17.2	EUT On Side
1916.975	61.4	-3.1	1.0	231.0	0.0	0.0	Horz	PK	0.0	58.3	75.9	-17.6	EUT Horz
638.995	35.5	12.1	1.0	166.0	0.0	10.0	Vert	PK	0.0	57.6	75.9	-18.3	EUT Horz
638.998	37.8	12.1	1.3	42.0	-22.5	10.0	Horz	AV	0.0	37.4	55.9	-18.5	EUT Vert
958.480	29.6	17.8	1.0	155.0	0.0	10.0	Horz	PK	0.0	57.4	75.9	-18.5	EUT Horz
958.508	31.0	17.8	1.2	12.0	-22.5	10.0	Vert	AV	0.0	36.3	55.9	-19.6	EUT On Side
638.995	36.6	12.1	4.0	199.0	-22.5	10.0	Horz	AV	0.0	36.2	55.9	-19.7	EUT On Side
1916.975	61.4	-3.1	1.0	231.0	-22.5	0.0	Horz	AV	0.0	35.8	55.9	-20.1	EUT Horz
3194.817	54.9	0.8	1.1	316.0	0.0	0.0	Horz	PK	0.0	55.7	75.9	-20.2	EUT Horz
1917.117	58.6	-3.1	3.1	87.0	0.0	0.0	Vert	PK	0.0	55.5	75.9	-20.4	EUT On Side
638.995	35.5	12.1	1.0	166.0	-22.5	10.0	Vert	AV	0.0	35.1	55.9	-20.8	EUT Horz
958.480	29.6	17.8	1.0	155.0	-22.5	10.0	Horz	AV	0.0	34.9	55.9	-21.0	EUT Horz
3195.158	54.1	0.8	1.5	70.0	0.0	0.0	Vert	PK	0.0	54.9	75.9	-21.0	EUT On Side
3194.817	54.9	0.8	1.1	316.0	-22.5	0.0	Horz	AV	0.0	33.2	55.9	-22.7	EUT Horz

SPURIOUS RADIATED EMISSIONS

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
1917.117	58.6	-3.1	3.1	87.0	-22.5	0.0	Vert	AV	0.0	33.0	55.9	-22.9	EUT On Side
3195.158	54.1	0.8	1.5	70.0	-22.5	0.0	Vert	AV	0.0	32.4	55.9	-23.5	EUT On Side
1277.883	54.4	-6.0	1.0	271.0	0.0	0.0	Vert	PK	0.0	48.4	74.0	-25.6	EUT On Side
1278.067	53.3	-6.0	1.5	332.0	0.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	EUT Horz
1277.883	54.4	-6.0	1.0	271.0	-22.5	0.0	Vert	AV	0.0	25.9	54.0	-28.1	EUT On Side
1278.067	53.3	-6.0	1.5	332.0	-22.5	0.0	Horz	AV	0.0	24.8	54.0	-29.2	EUT Horz
321.563	34.0	2.0	2.4	293.0	0.0	10.0	Vert	PK	0.0	46.0	75.9	-29.9	EUT Vert
321.563	34.0	2.0	2.4	293.0	-22.5	10.0	Vert	AV	0.0	23.5	55.9	-32.4	EUT Vert
321.610	30.8	2.0	1.0	61.0	0.0	10.0	Horz	PK	0.0	42.8	75.9	-33.1	EUT Vert
321.610	30.8	2.0	1.0	61.0	-22.5	10.0	Horz	AV	0.0	20.3	55.9	-35.6	EUT Vert

CONCLUSION

Pass



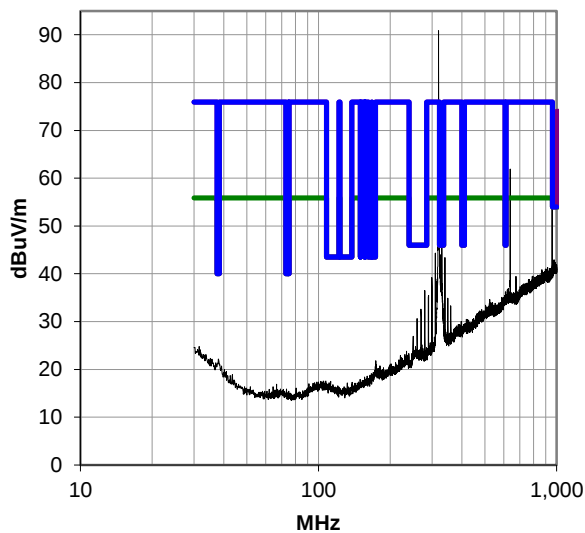
Tested By

SPURIOUS RADIATED EMISSIONS

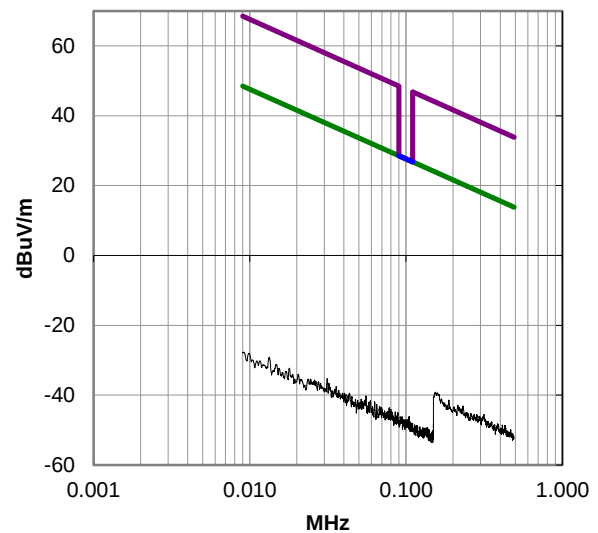
PRESCAN DATA

Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.

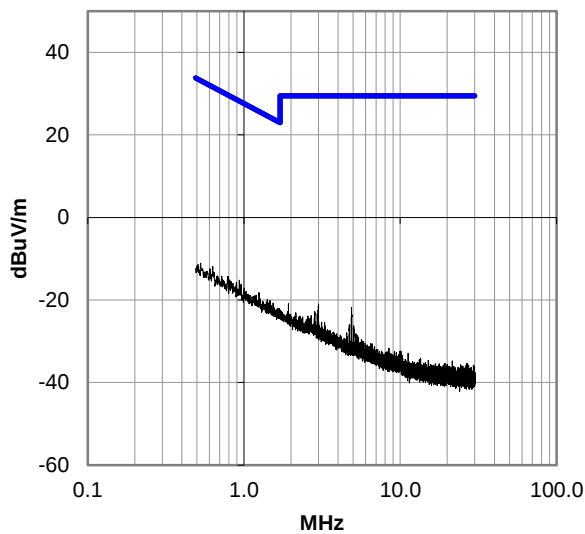
30-1000 MHz, Run 6



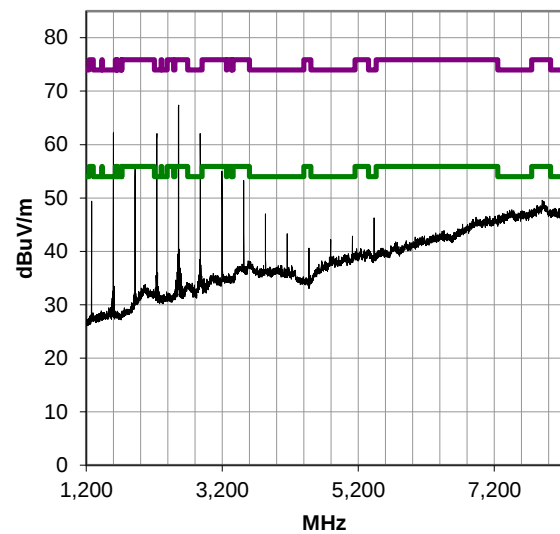
0.009-0.49 MHz, Run 8



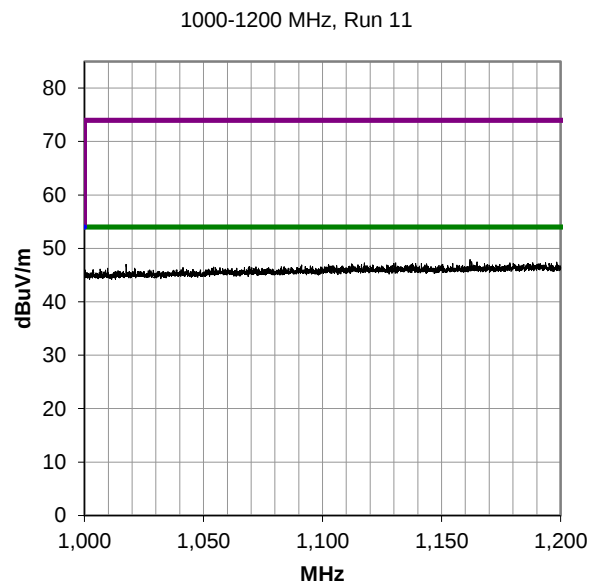
0.49-30 MHz, Run 9



1200-8200 MHz, Run 10



SPURIOUS RADIATED EMISSIONS



EMISSIONS BANDWIDTH

TEST DESCRIPTION

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 measurement was made in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power.

The EUT was transmitting at its maximum data rate.

The 20 dB occupied bandwidth is required to be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2025-04-11	2026-04-11
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2025-09-29	2027-09-29
Cable	ESM Cable Corp.	Bilog Cables	MNH	2025-09-05	2026-09-05

EMISSIONS BANDWIDTH



EUT:	RF-ROR-V3-319	Work Order:	CINC0072
Serial Number:	C0BC64	Date:	2026-04-07
Customer:	CINCH Systems	Temperature:	23.1°C
Attendees:	Kerry Tobias	Relative Humidity:	20.2%
Customer Project:	None	Bar. Pressure (PMSL):	1032 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	Battery	Configuration:	CINC0072-2

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

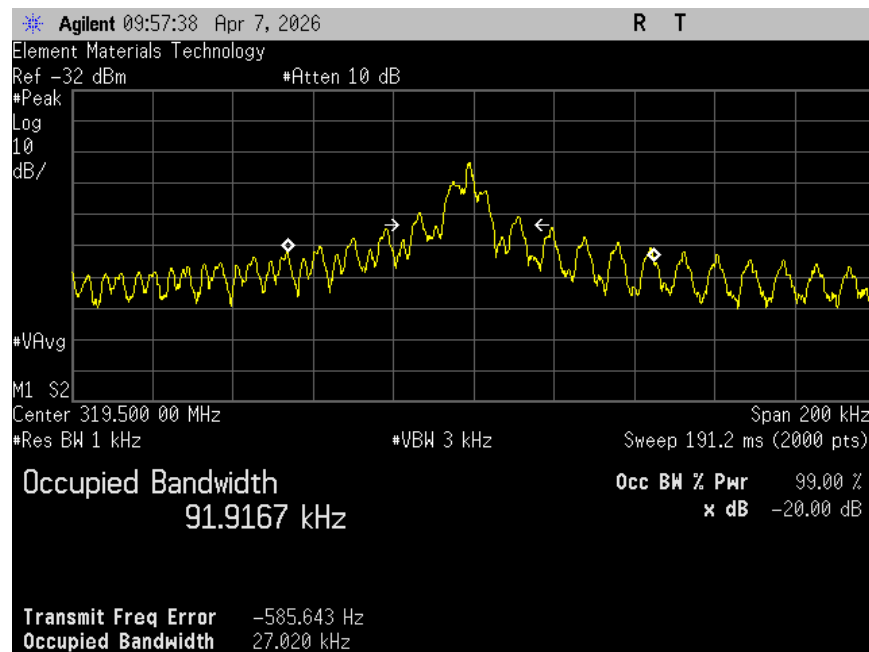
Pass

Tested By

TEST RESULTS

	Value	Limit	Result
Periodic Radio, OOK Modulation, 319.5 MHz	27.02 kHz	< 798.75 kHz	Pass

EMISSIONS BANDWIDTH



Periodic Radio, OOK Modulation, 319.5 MHz

DUTY CYCLE

TEST DESCRIPTION

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 measurement was made in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power.

For software controlled or pre-programmed devices, the manufacturer shall declare the duty cycle class or classes for the equipment under test. For manually operated or event dependant devices, with or without software controlled functions, the manufacturer shall declare whether the device once triggered, follows a pre-programmed cycle, or whether the transmission is constant until the trigger is released or manually reset. The manufacturer shall also give a description of the application for the device and include a typical usage pattern. The typical usage pattern as declared by the manufacturer shall be used to determine the duty cycle and hence the duty class.

Where an acknowledgement is required, the additional transmitter on-time shall be included and declared by the manufacturer.

To derive average emission measurements, a duty cycle correction factor was utilized:

Duty Cycle = On time/100 milliseconds (or the period, whichever is less)

Where "On time" = $N1L1 + N2L2 + \dots$

Where N1 is the number of type 1 pulses, L1 is length of type 1 pulses, N2 is the number of type 2 pulses, L2 is the length of type 2 pulses, etc.

Therefore, Duty Cycle = $(N1L1 + N2L2 + \dots)/100\text{mS}$ or T, whichever is less. (Where T is the period of the pulse train.)

The measured values for the EUT's pulse train are as follows:

Period = **100** mSec

Pulsewidth of Type 1 Pulse = **0.1184** mSec

Pulsewidth of Type 2 Pulse = **0.4761** mSec

Number of Type 1 Pulses = **59**

Number of Type 2 Pulses = **1**

Duty Cycle Correction Factor = $20 \log [((59)(0.1184) + (1)(0.4761))/100] = -22.5 \text{ dB}$

The duty cycle correction factor of **-22.5 dB** was added to the peak readings to mathematically derive the average levels. Peak measurements were made with a resolution bandwidth of 100kHz and a video bandwidth of 300kHz.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2025-04-11	2026-04-11
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2025-09-29	2027-09-29
Cable	ESM Cable Corp.	Bilog Cables	MNH	2025-09-05	2026-09-05

DUTY CYCLE

EUT:	RF-ROR-V3-319	Work Order:	CINC0072
Serial Number:	6CD969	Date:	2026-04-07
Customer:	CINCH Systems	Temperature:	23.1°C
Attendees:	Kerry Tobias	Relative Humidity:	20.1%
Customer Project:	None	Bar. Pressure (PMSL):	1032 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	Battery	Configuration:	CINC0072-1

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

N/A

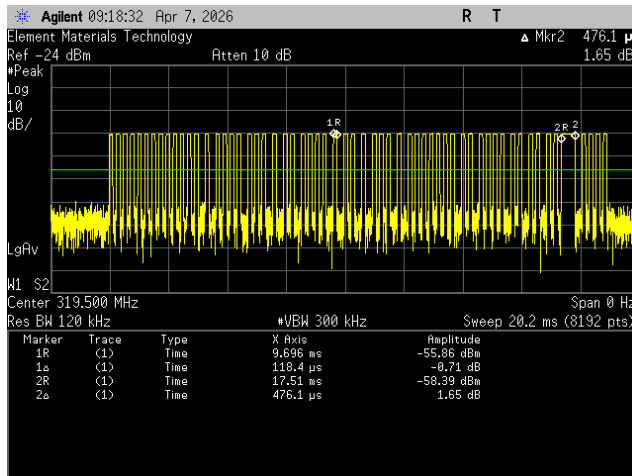


Tested By

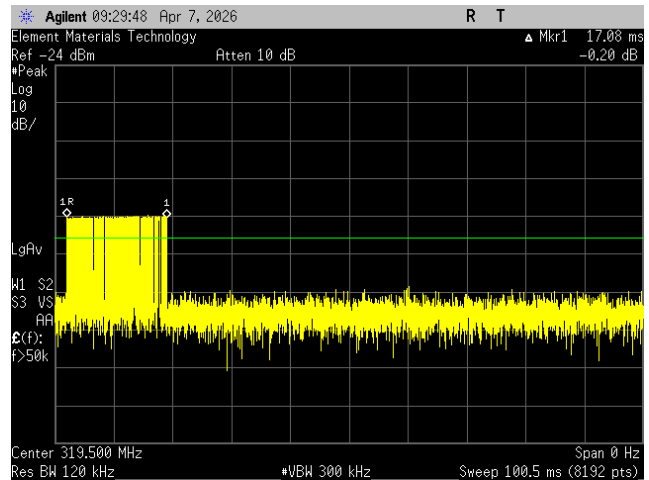
TEST RESULTS

	Number of Type 1 Pulses	Type 1 Pulse Length (ms)	Number of Type 2 Pulses	Type 2 Pulse Length (ms)	DCCF
Periodic Radio, OOK Modulation, 319.5 MHz					
20 ms	59	0.1184	1	0.4761	-22.5
100 ms	N/A	N/A	N/A	N/A	N/A
5 s	N/A	N/A	N/A	N/A	N/A
10 s	N/A	N/A	N/A	N/A	N/A

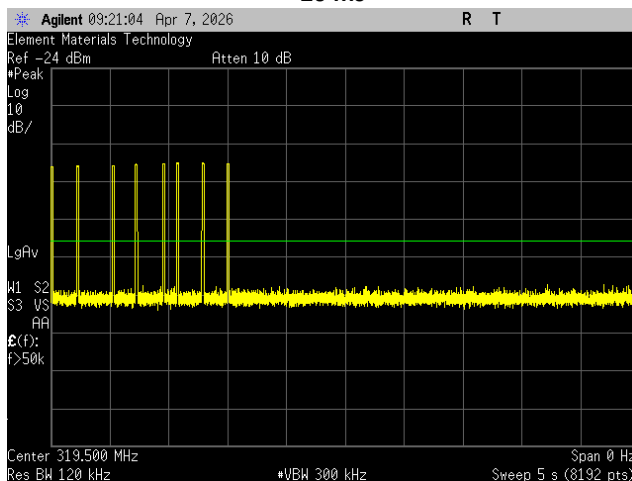
DUTY CYCLE



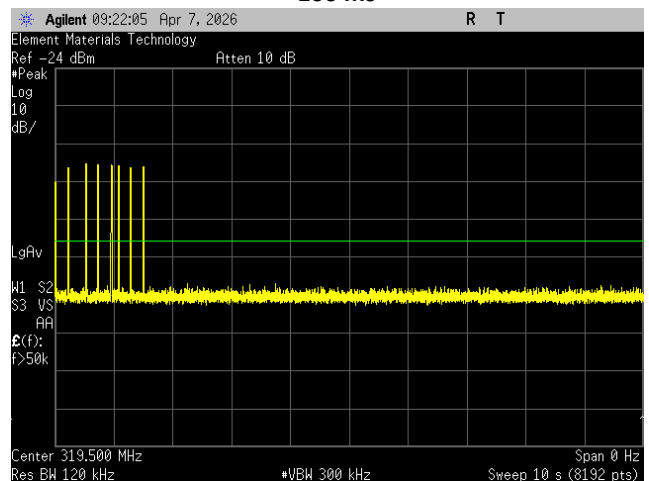
Periodic Radio, OOK Modulation, 319.5 MHz
20 ms



Periodic Radio, OOK Modulation, 319.5 MHz
100 ms



Periodic Radio, OOK Modulation, 319.5 MHz
5 s



Periodic Radio, OOK Modulation, 319.5 MHz
10 s

OCCUPIED BANDWIDTH

TEST DESCRIPTION

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 measurement was made in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power.

The EUT was transmitting at its maximum data rate.

The 99% occupied bandwidth is required to be less than or equal to 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2025-04-11	2026-04-11
Antenna - Biconilog	ETS Lindgren	3142D	AXO	2025-09-29	2027-09-29
Cable	ESM Cable Corp.	Bilog Cables	MNH	2025-09-05	2026-09-05

OCCUPIED BANDWIDTH



EUT:	RF-ROR-V3-319	Work Order:	CINC0072
Serial Number:	C0BC64	Date:	2026-04-07
Customer:	CINCH Systems	Temperature:	23.1°C
Attendees:	Kerry Tobias	Relative Humidity:	20.1%
Customer Project:	None	Bar. Pressure (PMSL):	1032 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN05
Power:	Battery	Configuration:	CINC0072-2

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

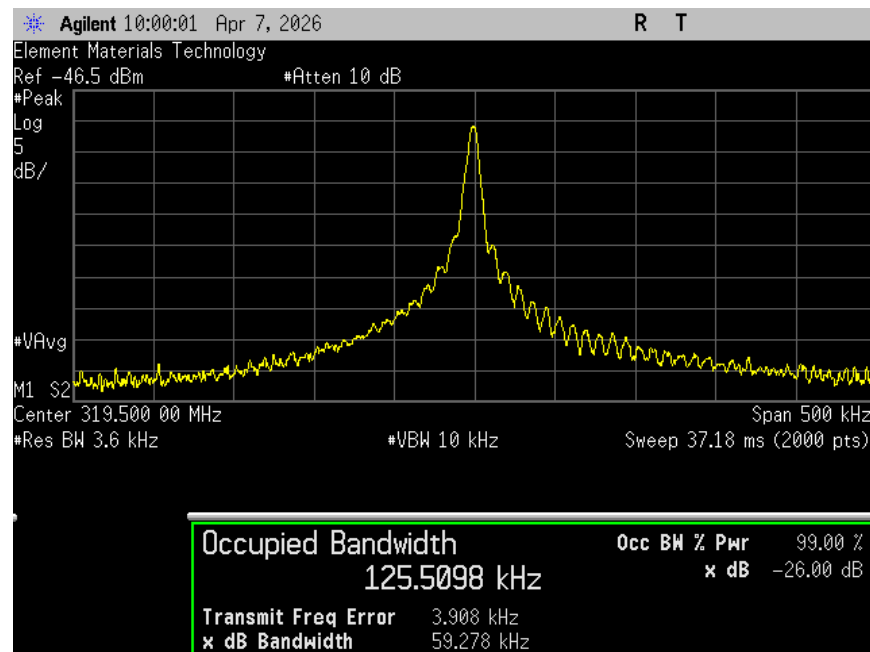
Pass

Tested By

TEST RESULTS

	Value (kHz)	Limit (kHz)	Result
Periodic Radio, OOK Modulation, 319.5 MHz	125.231	798.75	Pass

OCCUPIED BANDWIDTH



Periodic Radio, OOK Modulation, 319.5 MHz

End of Test Report