

06/17/2026

GE Vernova MDS, LLC
175 Science Parkway
Rochester, NY 14620-4260
USA

Dear John Harmon,

Enclosed is the EMC test report for testing of the GE Vernova MDS, LLC, MDS Orbit SD4 Industrial Radio tested to the requirements of IEC62311 Issue 2, FCC Part 2.1091 and RSS-102 Issue 6

Thank you for using the services of Eurofins E&E North America. If you have any questions regarding these results or if MET can be of further service to you, please do feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Nancy LaBrecque".

Nancy LaBrecque
Documentation Department
Eurofins Electrical and Electronic Testing NA, Inc.

Reference: WIRA141757-MPE-R1



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**RF Exposure Criteria
Test Report
Using Maximum Permissible Exposure (MPE) Calculations**

for the

GE Vernova MDS, LLC
MDS Orbit SD4 Industrial Radio

Tested under

IEC62311 Issue 2, FCC Part 2.1091 and RSS-102 Issue 6

Report: WIRA141757-MPE-R1

06/17/2026



Bryan Taylor, EMC / Wireless Test Engineer
Electromagnetic Compatibility Lab



Nancy LaBrecque
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Part 15.247 under normal use and maintenance.



Matthew Hinojosa
EMC Manager, Austin Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
0	6/3/2026	Initial Issue.
1	06/17/2026	Editorial Updates

List of Terms and Abbreviations

AC	Alternating Current
ACF	Antenna Correction Factor
Cal	Calibration
<i>d</i>	Measurement Distance
dB	Decibels
dBμA	Decibels above one microamp
dBμV	Decibels above one microvolt
dBμA/m	Decibels above one microamp per meter
dBμV/m	Decibels above one microvolt per meter
DC	Direct Current
E	Electric Field
DSL	Digital Subscriber Line
ESD	Electrostatic Discharge
EUT	Equipment Under Test
<i>f</i>	Frequency
CISPR	Comite International Special des Perturbations Radioelectriques (International Special Committee on Radio Interference)
GRP	Ground Reference Plane
H	Magnetic Field
HCP	Horizontal Coupling Plane
Hz	Hertz
IEC	International Electrotechnical Commission
kHz	kiloHertz
kPa	kiloPascal
kV	kilovolt
LISN	Line Impedance Stabilization Network
MHz	MegaHertz
μH	microHenry
μF	microFarad
μs	microseconds
PRF	Pulse Repetition Frequency
RF	Radio Frequency
RMS	Root-Mean-Square
V/m	Volts per meter
VCP	Vertical Coupling Plane

1.0 Requirements Summary

Page Number	Test Name	Result
10	IEC62311: 2019 MPE Limits (For General Public Exposure)	Compliant
11	RSS-102 Issue 5 MPE Limits (For General Public Exposure)	Compliant
11	FCC Part 2.1091 MPE Limits (For General Public Exposure)	Compliant

Table 1. Summary of Test Results

2.0 Equipment Configuration

2.1 Overview

Eurofins MET Labs was contracted by GE Vernova MDS, LLC to perform testing on the MDS Orbit SD4 Industrial Radio, under GE Vernova MDS, LLC's purchase order number 4501454327.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the GE Vernova MDS, LLC MDS Orbit SD4 Industrial Radio.

The results obtained relate only to the item(s) tested.

Product Name:	MDS Orbit SD4 Industrial Radio	
Model Number:	SD4-1	
Serial Number:	4197406	
FCCID:	E5MDS-SD4	
ICID:	101D-SD4	
Equipment Specifications:	Primary Power:	10 - 30VDC
	Type of Modulation(s):	FSK
	Conducted Output Power with Maximum Setting(measured)	37.32dBm (5.39W)
	Conducted Output Power with Minimum Setting (measured)	19.93dBm (0.09W)
	EUT Frequency Ranges:	406.1MHz – 450MHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Bryan Taylor and Sergio Gutierrez	
Test Date(s):	5/5/2026 to 6/1/2026	

Table 2. EUT Summary Table

2.2 Test Site

All testing was performed at Eurofins E&E North America, Austin, TX. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

2.3 References

IEC62311 Edition 2.0 (2019-04)	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)
RSS-102: Issue 6	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
FCC Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.

Table 3. References

2.4 Description of Test Sample

The MDS Orbit SD4 Industrial Radio is designed to operate in point-to-multipoint environments, including utility automation/distribution systems, and other telemetry functions.

2.5 Modifications

2.5.1 Modifications to EUT

No modifications were made to the EUT.

2.5.2 Modifications to Test Standard

No modifications were made to the test standard.

2.6 Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to GE Vernova MDS, LLC upon completion of testing.

3.0 Maximum Permissible Exposure Results

3.1 IEC62311 (ICNIRP) RF Exposure Limits

Table 7. Reference levels for general public exposure to time-varying electric and magnetic fields (unperturbed rms values).^a

Frequency range	E-field strength (V m ⁻¹)	H-field strength (A m ⁻¹)	B-field (μT)	Equivalent plane wave power density S_{eq} (W m ⁻²)
up to 1 Hz	—	3.2×10^4	4×10^4	—
1–8 Hz	10,000	$3.2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8–25 Hz	10,000	$4,000/f$	$5,000/f$	—
0.025–0.8 kHz	$250/f$	$4/f$	$5/f$	—
0.8–3 kHz	$250/f$	5	6.25	—
3–150 kHz	87	5	6.25	—
0.15–1 MHz	87	$0.73/f$	$0.92/f$	—
1–10 MHz	$87/f^{1/2}$	$0.73/f$	$0.92/f$	—
10–400 MHz	28	0.073	0.092	2
400–2,000 MHz	$1.375f^{1/2}$	$0.0037f^{1/2}$	$0.0046f^{1/2}$	$f/200$
2–300 GHz	61	0.16	0.20	10

^a Note:

1. f as indicated in the frequency range column.
2. Provided that basic restrictions are met and adverse indirect effects can be excluded, field strength values can be exceeded.
3. For frequencies between 100 kHz and 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any 6-min period.
4. For peak values at frequencies up to 100 kHz see Table 4, note 3.
5. For peak values at frequencies exceeding 100 kHz see Figs. 1 and 2. Between 100 kHz and 10 MHz, peak values for the field strengths are obtained by interpolation from the 1.5-fold peak at 100 kHz to the 32-fold peak at 10 MHz. For frequencies exceeding 10 MHz it is suggested that the peak equivalent plane wave power density, as averaged over the pulse width does not exceed 1,000 times the S_{eq} restrictions, or that the field strength does not exceed 32 times the field strength exposure levels given in the table.
6. For frequencies exceeding 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any $68/f^{1.05}$ -min period (f in GHz).
7. No E-field value is provided for frequencies <1 Hz, which are effectively static electric fields. perception of surface electric charges will not occur at field strengths less than 25 kV m⁻¹. Spark discharges causing stress or annoyance should be avoided.

3.2 RSS-102 RF Exposure Limits

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f ^{0.25}	0.1540/ f ^{0.25}	8.944/ f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619 f ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000/f ^{1.2}
Note: f is frequency in MHz. * Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

3.3 FCC Exposure Limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f ²)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30
f = frequency in MHz. * = Plane-wave equivalent power density.				

Test Procedure:

An MPE evaluation for was performed in order to show that the device was compliant with the general population exposure limits. The maximum power density was calculated for each transmitter band at a separation distance that meets the power density limit for a specific gain of antenna.

For each transmitter the maximum RF exposure at a specific distance was calculated using the formula:

$$S = P \cdot G / (4\pi R^2)$$

Where:

- **S** = power density (W/m² or mW/cm²)
- **P** = transmitter output power (watts)
- **G** = antenna gain (linear, not dB)
- **R** = distance from the antenna (meters)
- **4πR²** = surface area of a sphere at distance R

Test Results:

The MDS Orbit SD4 Industrial Radio was **compliant** with IEC62311 Issue 2, FCC Part 2.1091 and RSS-102 Issue 6. The calculated maximum power density at varying distances was calculated showing the compliance distance for a variety of antenna gains.

Test Data:

Operating Mode	Frequency (MHz)	Separation Distance (meters)	Declared Max Cond. Power (Inc. Tolerance) (dBm)	Antenna Gain (dBi)	MPE Value (mW/cm ²)	MPE Limit (mW/cm ²)	Margin to Limit (mW/cm ²)
Low Ch, 5dBi Ant Gain	406.1	0.71	37.32	5	0.2693	0.2707	0.0014
Mid Ch, 5dBi Ant Gain	425	0.7	37.32	5	0.2771	0.2833	0.0063
High Ch, 5dBi Ant Gain	450	0.68	37.32	5	0.2936	0.3000	0.0064
Low Ch, 10dBi Ant Gain	406.1	1.26	37.32	10	0.2704	0.2707	0.0003
Mid Ch, 10dBi Ant Gain	425	1.25	37.32	10	0.2748	0.2833	0.0086
High Ch, 10dBi Ant Gain	450	1.21	37.32	10	0.2932	0.3000	0.0068
Low Ch, 16.5dBi Ant Gain	406.1	2.7	37.32	16.5	0.2631	0.2707	0.0077
Mid Ch, 16.5dBi Ant Gain	425	2.7	37.32	16.5	0.2631	0.2833	0.0203
High Ch, 16.5dBi Ant Gain	450	2.6	37.32	16.5	0.2837	0.3000	0.0163

FCC MPE Data

Operating Mode	Frequency (MHz)	Separation Distance (meters)	Declared Max Cond. Power (Inc. Tolerance) (dBm)	Antenna Gain (dBi)	MPE Value (W/m ²)	MPE Limit (W/m ²)	Margin to Limit (W/m ²)
Low Ch, 5dBi Ant Gain	406.1	0.93	37.32	5	1.5697	1.5881	0.0184
Mid Ch, 5dBi Ant Gain	425	0.92	37.32	5	1.6040	1.6382	0.0342
High Ch, 5dBi Ant Gain	450	0.9	37.32	5	1.6761	1.7035	0.0274
Low Ch, 10dBi Ant Gain	406.1	1.65	37.32	10	1.5770	1.5881	0.0111
Mid Ch, 10dBi Ant Gain	425	1.63	37.32	10	1.6159	1.6382	0.0223
High Ch, 10dBi Ant Gain	450	1.6	37.32	10	1.6771	1.7035	0.0264
Low Ch, 16.5dBi Ant Gain	406.1	3.5	37.32	16.5	1.5655	1.5881	0.0226
Mid Ch, 16.5dBi Ant Gain	425	3.5	37.32	16.5	1.5655	1.6382	0.0727
High Ch, 16.5dBi Ant Gain	450	3.5	37.32	16.5	1.5655	1.7035	0.1380

ISED MPE Data

Operating Mode	Frequency (MHz)	Separation Distance (meters)	Declared Max Cond. Power (Inc. Tolerance) (dBm)	Antenna Gain (dBi)	MPE Value (W/m ²)	MPE Limit (W/m ²)	Margin to Limit (W/m ²)
Low Ch, 5dBi Ant Gain	406.1	0.82	37.32	5	2.0191	2.0305	0.0114
Mid Ch, 5dBi Ant Gain	425	0.8	37.32	5	2.1213	2.1250	0.0037
High Ch, 5dBi Ant Gain	450	0.78	37.32	5	2.2315	2.2500	0.0185
Low Ch, 10dBi Ant Gain	406.1	1.5	37.32	10	1.9081	2.0305	0.1224
Mid Ch, 10dBi Ant Gain	425	1.45	37.32	10	2.0420	2.1250	0.0830
High Ch, 10dBi Ant Gain	450	1.4	37.32	10	2.1905	2.2500	0.0595
Low Ch, 16.5dBi Ant Gain	406.1	3.15	37.32	16.5	1.9327	2.0305	0.0978
Mid Ch, 16.5dBi Ant Gain	425	3.05	37.32	16.5	2.0615	2.1250	0.0635
High Ch, 16.5dBi Ant Gain	450	2.95	37.32	16.5	2.2037	2.2500	0.0463

IEC62311 MPE Data

Test Engineer(s): Bryan Taylor

Test Date(s): 5/5/2026 - 6/1/2026