RF Exposure Evaluation Report

Client: **Raven Industries**
205 E 6th St
Sioux Falls, SD 57104 USA

Test Report No.: **RFE20210412-23-01A**

Approved By:

Nic S. Johnson, NCE
Techncial Manager
iNARTE certified EMC Engineer EMC-003337-NE

Date: **June 20, 2023**

Total Pages: **7**

Revision Page

Rev. No.	Date	Description
Original	17 January 2023	Prepared by – NJohnson
A	20 June 2023	NJohnson

Regulatory Requirements:

FCC Part 1.1310, 1.1307

Summary:

The EUT's Average Power and Antenna Gain were used to evaluate the minimum distance for acceptable Maximum Permissible Exposure to the HiPointer 100 RADAR.

Power:	100W Peak Power
Duty Cycle:	5%
Average Power	5W
Antenna gain:	24.56 dBi / 286 numeric

Antenna gain, peak power, and duty cycle were declared by the manufacturer.

Limits:

from FCC Part 1.1310

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

Calculations:

The Friis transmission equation was used to calculate the field strength at the specified separation distance:

$$S = (P \times G) / (4 \times \pi \times d^2)$$

to calculate for compliance with exemption limits.

S =   power density (in mW/cm^2)

P =   transmitter conducted power (in mW)

G =   antenna numeric gain = 2.78 numeric / 4.44 dBi. Antenna gain was reported by the manufacturer

D =   distance to radiation center (151 cm Controlled or 338 cm Uncontrolled)

Occupational/Controlled	
General Population/uncontrolled	YES

HiPointer 100							
Frequency	**Antenna Gain**	**Transmitter Average Power (Watts)**	**Power EIRP**	**Power Density**	**Limit at specified distance**	**% of limit**	**Result**
MHz	**numerical**	**W**	**mW**	**mW/cm^2**	**mW/cm^2**		
9430	286.000	5.00	5000.00	0.996582	1.000000	99.66%	PASS

Distance	338	**cm**

Note: The user's manual will stipulate that a 338cm distance from the user is to be maintained for Uncontrolled Exposure.

REPORT END