RF Exposure

The 011-01996-01 is a marine mount radar system operating in the marine services authorized under part 80 of CFR 47. Per 2.1091(c) of CFR 47, the equipment is categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use. The radiating structure for the device is typically mounted more than 265 centimeters away and located outside and above the crafts helm. Due to the location of the antenna, normal operating conditions, and use the unit will satisfy the requirements for RF Exposure per CFR rule 1.1311. MPE calculations are shown below demonstrating compliance.

MPE calculations

MPE Calculator	MPE uses EIRP for calculation. EIRP is based on TX power added to the antenna gain in dBi.					
	dBi = dB gain compared to an isotropic radiator.					
	S = power density in mW/cm^2					
					Antenna Gain (dBi)	30
		Output Power		dBd + 2.17 = dBi	dBi to dBd	2.17
Tx Frequency (MHz)	9400	Average (Watts)	9.6000		Antenna Gain (dBd)	27.83
Cable Loss (dB)	0.0	(dBm)	39.82		Antenna minus cable (dBi)	30.00
	Calculated ERP (mw)	5824668.764			EIRP = Po(dBM) + Gain (dB)	
	Calculated EIRP (mw)	9600000.000			Radiated (EIRP) dBm	69.823
					ERP = EIRP - 2.17 dB	
	Occupational Limit	Power density (S)			Radiated (ERP) dBm	67.653
5.00000	**mW/cm^2**	EIRP				
		------- = mW/cm^2				
	General Public Limit	4 p r^2				
1.00000	**mW/cm^2**	r (cm) EIRP (mW)				

FCC radio frequency radiation exposure limits per 1.1310		
Frequency (MHz)	Occupational Limit	Public Limit
300-1,500	f/300	f/1500
1,500-10,000	5	1

FCC radio frequency radiation exposure limits per 1.1310		
Frequency (MHz)	Occupational Limit @ Tx Freq (mW/cm^2)	Public Limit @ Tx Freq (mW/cm^2)
300-1,500	31.33333333	6.266666667
1,500-10,000	5	1

EIRP	Distance	Distance	S	Distance
milliwatts	cm	inches	mW/cm^2	Feet
9600000.000	2000.00	787.40	0.19099	65.62
9600000.000	1500.00	590.55	0.33953	49.21
9600000.000	1000.00	393.70	0.76394	32.81
9600000.000	900.00	354.33	0.94314	29.53
9600000.000	875.00	344.49	0.99780	28.71
9600000.000	800.00	314.96	1.19366	26.25
9600000.000	700.00	275.59	1.55907	22.97
9600000.000	600.00	236.22	2.12207	19.69
9600000.000	500.00	196.85	3.05577	16.40
9600000.000	450.00	177.17	3.77256	14.76
9600000.000	400.00	157.48	4.77465	13.12
9600000.000	391.00	153.94	4.99698	12.83
9600000.000	390.00	153.54	5.02264	12.80
9600000.000	300.00	118.11	8.48826	9.84
9600000.000	275.00	108.27	10.10174	9.02

Frequency (MHz)	Occupational Limit minimum Distance (feet)	Public Limit minimum distance (feetm)
300-1,500	N/A	N/A
1,500-10,000	12.80	28.70