



Human Exposure to Electromagnetic Fields

This document demonstrates that the Ocean Signal EPIRB1 Pro Emergency Position Indicating Radio Beacon complies with the US requirements for protection of the general public (uncontrolled) from exposure to electromagnetic fields.

In the US regulation 47 CFR chapter 2.1091 requires Radiofrequency radiation exposure evaluation to the limits in 47 CFR chapter 1.1310[1] which specifies that in the bands:-

300 – 1500MHz the exposure limit is given by $f/300$ which = 0.27mW/cm squared

EPIRB

From Test Report 75947245-01 the measured conducted RF power at 406.04 MHz is stated as 43 dBm (19950 mW).

The EPIRB maximum transmission rate is 0.5 seconds every 50seconds

$$\text{Duty Cycle} = 0.5/50 = 0.97\%$$

$$\text{Maximum Antenna Gain} = 0 \text{ dBi}$$

$$\therefore \text{Average radiated power (Pav)} = 194 \text{ mW}$$

Distance at which the power density meets the $0.2\text{mW}/\text{cm}^2$ limit is given by:

$$r = \sqrt{(P_{av}/(4 \times \pi \times 0.2))}$$

$$r = 8\text{cms (3inches)}$$

According to the procedure in KDB447498 (v05r02) section 4.3, SAR testing is excluded if the following criteria is met.

$$(P/d) \times \sqrt{f} \leq 3.0 \text{ for 1-g SAR}$$

Where

P is the time averaged maximum conducted power in mW

d minimum separation distance in mm

f is the frequency in GHz

Power and distance are rounded values

For d = 76 mm, f = 406 MHz and P = 194 mW

$$\text{SAR} = 1.6$$

Which is less the value of 3 specified for exemption to 1-g SAR evaluation.

Therefore, the EPIRB1 Pro with the maximum external antenna gain meets the requirements for exposure to radiated electromagnetic fields at a worst case distance of 20 cm from the transmitting antenna at both frequencies.

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01 April 2020