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Exposure Assessment

easyONE (Maritime Survivor Locating Device)

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General

The information contained in this report is intended to show verification of the RF Exposure Assessment of the Weatherdock easyONE MSLD (AIS transmitter) to the requirements of the applied test specifications.

General Public Exposure levels:

Antenna Gain	Peak Output Power (mW)	Calculated RF Exposure at 2 cm	General Public Exposure Limit	Application
1	550	0.04 mW/cm²	0.20 mW/cm²	FCC 47 CFR § 1.1310
			2.00 W/m²	ICNIRP
			2.00 W/m²	Canada's RF Safety Code 6
			2.00 W/m²	ARPANSA

The calculations have shown that they meet the General Public Exposure Levels described in the FCC 47 CFR § 1.1310 Guidelines limits at 2 cm, the point of investigation, which is the minimum separation distance when the device is operating.

1 Product Information

1.1 Attestation

The wireless device described within this report has been shown to be capable of compliance with the basic restrictions related to human exposure to electromagnetic fields (10 MHz - 300 MHz) - General public. The calculations shown in this report were made in accordance the procedures specified in the applied test specification(s)

1.2 Technical Description

The Equipment under test was a Weatherdock easyONE MSLD (AIS-MOB). A full technical description can be found in the manufacturer's documentation.
The wireless device described within this report has been shown to be capable of compliance with the basic restrictions related to human exposure to electromagnetic fields (10 MHz - 300 MHz) - General public. The calculations shown in this report were made in accordance the procedures specified in the applied test specification(s).
All reported calculations were carried out on the relevant information supplied or measured of a sample as found in Test-Reports:

- TUV-SUD: No. 70464-37519-01 (Edition 1) on IEC 61097-14 (Radio tests)

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The radiated power (e.i.r.p.) at 161.975 and 162.025 MHz measured in this test report is 27.4 dBm = 0,55 W.
The duty cycle of the emission is given by a burst of eight AIS messages á 26 ms every 60 seconds:

Duty Cycle = (8 x 0.026 s) / 60 s = 0.0035

The average power is:

Pav = P · Duty Cycle = 0.55 W · 0.0035 = 0.0019 W = 1.9 mW

The limit of 0.2mW/cm² (see table above) is given at a distance of 0.87 cm according the calculation:

$$r = \sqrt{\frac{1.9\ mW}{4 \cdot \pi \cdot 0.2\ mW/cm2}} = 0.87\ \text{cm}$$

According to knowledge data base KDB447498 (v05r02) section 4.3, SAR testing is excluded, if the following criteria is met:

$$\frac{Pav}{d} \cdot \sqrt{f} \leq 3.0 \quad , \qquad for\ 1-g\ SAR$$

Pav = the time averaged maximum conducted power in mW
d = minimum separation distance in mm
f = frequency in GHz

For d = 2 cm = 20 mm, f = 162 MHz and Pav = 1.9 mW:

$$\frac{1.9}{20} \cdot \sqrt{0.162} = 0.038 \leq 3.0$$

This is less than 3.0 for the exemption to 1-g SAR evaluation.

The operation position of the easyONE is at distances of > 2cm considering the location of the transmitter at an inflated life vest (see user manual) or floating on water.

The calculated RF Exposure at 2 cm :

$$S = \frac{P}{4 \cdot \pi \cdot r^2} = \frac{1.9\ mW}{4 \cdot \pi \cdot 2^2\ cm^2} = 0{,}04\ \text{mW/cm}^2$$

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