Document Type	Document No.	
	Issue	01.00
Approved:	Date Last Amended	14/02/2013
	Last Amended by	David Sheekey
Document Title	RF Exposure Exemption Justification	

Ocean Signal has declared that this device is exempt from SAR evaluation under RSS102, with the following justification.

> During Cospas-Sarsat testing the maximum measured peak output power (PEIRP) at 406.040MHz was determined to be 17.9Watts. (from the value of $EIRP_{maxEOL}$ from test report 12/1410 Annex 5.1. 42.5dBm equates to $10^{\wedge(42.5/10)}$ = 17.9W.) Note that this is the peak power measured for each transmission. In assessing whether this radiated test meets the requirements of RSS102 section 3.2.2, the operation mode selected is the Cospas Sarsat configuration for evaluation of PLBs held off ground, ie in the hand.
>
> The 406MHz transmission is 520mS every 50seconds (on average), giving a duty cycle time averaged of 6 minutes of (7 x 0.520)/(6 x 60) = 3.64/360 = 0.01
>
> This gives a time averaged EIRP of 17.9W x 0.01 = 179milliWatts.
>
> From RSS102, section 2.5.1 devices in the frequency range 3kHz to 1GHz are exempt from routine SAR evaluation if the radiated power is less than 200mW.
>
> The transmission at 121.5MHz was measured at a maximum EIRP of 41.37mw (from Test Report 12/1093 to RTCM SC11010.2) which is below the 200mW exemption in RSS102 section 2.5.1.

Ocean Signal has made the following statement in the User Manual. "This product has been evaluated for compliance with the FCC exposure limits given in CFR47 part 2.1093 at a distance of 3.5cm for "General Use Only". This product also complies with EN62479 (EU) and RSS-102 (Canada)."

The justification for the 3.5cm is based on the following assumptions and calculations. The PLB is intended to be operated held in the hand therefore from CFR47 chapter 2.1093.d.2 the limit for General Population is 4W/kg.

$$SAR = (\sigma \times E^2)/\rho$$

Where

σ is the specific conductivity of a body in S/m (121.5MHZ = 0.8 and 406MHz = 0.93)
E is the incident field strength inV/m
ρ is the mass density in Kgm^3

Therefore for 406MHz

Distance at which 4W/kg is met = $((377 \times 0.93 \times 0.179)/(4 \times 1000 \times 4 \times \pi))^{0.5}$
= 3.5cm

For 121.5MHz

Distance at which 4W/kg is met = $((377 \times 0.8 \times 0.0414)/(4 \times 1000 \times 4 \times \pi))^{0.5}$
= 1.6cm

Signed on behalf of Ocean Signal

D C Sheekey

David Sheekey
Product and Approvals Manager