RF Exposure Statement

- for EPIRB models GME-MT603G and GME-MT603FG -

We, Standard Communications Pty Ltd, as the Manufacturer of GME-MT603G and GME-MT603FG 406MHz COSPAS-SARSAT EPIRBs, declare that all reasonably foreseeable risks are covered by tests performed as per applicable standards:

a) Specification for COSPAS-SARSAT 406 MHz Distress Beacons C/S T.001 - Issue 3 – Revision 15 October 2014,
b) COSPAS-SARSAT 406 MHz Beacon Type Approval Standard C/S T.007 - Issue 4 – Revision 9 October 2014,
c) Interim Procedure for the Determination of Compliance of 406 MHz Beacons Equipped with a TCXO with COSPAS-SARSAT Type Approval Requirements C/S IP (TCXO) – Issue 1 – Revision 5 October 2013,
d) COSPAS-SARSAT EPIRB – Satellite emergency position indicating radio beacon operating on 406 MHz – Operational and performance requirements, methods of testing and required test results, IEC 61097-2, Edition 3.0 (2008-01),
e) Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results, IEC 60945 Edition 4.0 (2002-08),
f) RTCM Standard 11000.2 (2002) for 406 MHz satellite emergency position-indicating radiobeacons (EPIRBs),

as documented in corresponding test reports, provided as a part of Technical (Exhibit) file.

The only identified risk is related to RF exposure and is not covered by the tests. The risk is assessed, and it has been found that the risk level of RF exposure is very low, as shown in the analysis below.

RF Exposure analysis

PD - Power Density
$\bar{P}$ – Mean RF Power
G – Antenna Gain
D – Distance
d – Duty Cycle
P – RF Power

$$\bar{P} = d * P \quad (1)$$

$$PD = \frac{\bar{P} * G}{4\pi D^2} \quad (2)$$

P_{406} = 5 W; d_{406} = 0.5s / 50s = 1%; G_{406} = 1; $\overline{P_{406}}$ = 50 mW;
P_{121} = 25 mW; d_{121} = 96.27%; G_{121} = 1; $\overline{P_{121}}$ = 24.067 mW

Table 1 Estimated power density for 406MHz and 121.5MHz signals emitted from MT603G and MT603FG EPIRBs

Distance	406MHz RF power density	121.5Mhz RF power density
0.1 m	398.08 mW/m^2	191.61 mW/m^2
0.2 m	99.5 mW/m^2	47.88 mW/m^2
0.5 m	15.91 mW/m^2	7.66 mW/m^2
1.0 m	3.98 mW/m^2	1.91 mW/m^2

The equation (2) presents the method of calculation of the far-field RF exposure (power density). This equation is used to estimate RF power density for 121.5MHz and 406MHz signals, emitted from the EPIRB units.

Conclusion

From the data presented in the table above, it can be concluded that in the far field of radiation, where the formula (2) applies, the risk or RF exposure are negligible. Closer to the antenna, in the near-field, where electromagnetic field does not have plane-wave character, RF exposure could be slightly higher, but within the limits for maximum permissible exposure (*Annex A*) defined by **47 CFR 1.1310** - *Radiofrequency radiation exposure limits*. The duty cycle of 5 W RF signal at 406MHz is 1% (one burst of 0.5 second duration, every 50 seconds) further reduces the risk of overexposure.

Signed:

Date:
11/10/2018

Zeljko Beljic, Beacon Team leader

ANNEX A

Table 2 Limits for maximum permissible exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) 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
(B) 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

f = frequency in MHz * = Plane-wave equivalent power density