Calculation: RF-Exposure for 156 ~ 162 MHz transmitter

FCC ID: **QWZR6**

In accordance with **CFRR Part 47, §1.1310**

S: Limit for power density (Frequency range 30 – 300 MHz) according to
☒ Occupational/Controlled Exposure: 1.0 mW/cm^2
☒ General Population/Uncontrolled Exposure: 0.2 mW/cm^2
(based for frequency range 30 – 300 MHz)

P: **12.5 W**
(max rated conducted output power, refer clause 5.2 of test report F211774E1)

G: **3,27**
(max 3 dBd taken from antenna data sheet CElmar VHF – Marine Antennas and alternatively max 0 dBd taken from the antenna data sheet VHFGPS4 The installation-specific cable attenuation is not considered here.)

D: Duty cycle: **0,2**
(normal usage duty factor for AIS is 2% and for VDES is estimated 20%)

R: Calculated distance in what the limit of S must be reached:
25,5 cm for general population and **57,0** cm for occupational

$$S = \frac{P \cdot G \cdot D}{4 \cdot \pi \cdot R^2} \Rightarrow \underline{R} = \sqrt{\frac{12500\ mW \cdot 3{,}27 \cdot 0{,}2}{4 \cdot \pi \cdot 1.0\ mW/cm^2}} = \underline{\mathbf{25,5\ cm}}$$

$$S = \frac{P \cdot G \cdot D}{4 \cdot \pi \cdot R^2} \Rightarrow \underline{R} = \sqrt{\frac{12500\ mW \cdot 3{,}27 \cdot 0{,}2}{4 \cdot \pi \cdot 0.2\ mW/cm^2}} = \underline{\mathbf{57,0\ cm}}$$

Conclusion: The calculated minimum distance without taking any cable attenuation into consideration is 25,5 cm (occupational) / 57,0cm (general population) – as the AIS transmitter antenna is to be located a high as possible on the ship to obtain sufficient range (LOS), the intentional RF transmissions are not a concern for the RF safety purposes.