Calculation: RF-Exposure

Type identification: **Nauticast-B AIS-300**

In accordance to the **Council Recommendation 1999/519/EC**

S: Limit for power density according to table 2 of 1999/519/EC: **2 W/m²**
P: maximum conducted rf-power: **33 dBm =2 W**
D: Duty cycle: **D =** 26.5 ms / 30 s = **0.0883%** (based on AIS-Class-B-Standard)
G: antenna gain of antenna RA109 of manufacturer glomex **3 dBd = 5.15 dBi = 3.273**
R: minimum distance to the center of radiation of the antenna (m),

$$S = \frac{P*G}{4*\pi*R^2} \qquad => \qquad R_2 = \sqrt{\frac{P*D*G}{4*\pi*S}} = \sqrt{\frac{1.766\,mW*3.273}{4*\pi*2\frac{W}{m^2}}} = 0.015\,m$$

The transceiver is classified as mobile device therefore the distance between the transmitting antenna and human body shall be at least **1.5 cm**

The limit for "General Population/Uncontrolled Exposure" of the power density is 2 W/m² (see Limit table 2 1999/519EC)

In accordance to **EN 60945 (2003) chapter 12.2**

S: Limit for power density according to capter 12.2.3 of EN 60945 (2003): **100 W/m² & 10 W/m²**
P: maximum conducted rf-power: **33 dBm =2 W**
D: Duty cycle: **D =** 26.5 ms / 30 s = **0.0883%** (based on AIS-Class-B-Standard)
G: antenna gain of antenna RA109 of manufacturer glomex **3 dBd = 5.15 dBi = 3.273**
R: minimum distance to the center of radiation of the antenna (m),

$$S = \frac{P*G}{4*\pi*R^2} \qquad => \qquad R_{100} = \sqrt{\frac{P*D*G}{4*\pi*S}} = \sqrt{\frac{1.766\,mW*3.273}{4*\pi*100\frac{W}{m^2}}} = 0.00214\,m$$

$$=> \qquad R_{10} = \sqrt{\frac{P*D*G}{4*\pi*S}} = \sqrt{\frac{1.766\,mW*3.273}{4*\pi*10\frac{W}{m^2}}} = 0.00678\,m$$

In a distance of more than **2.1 mm** from the antenna of the EUT the criteria for the power density of 100 W/m² is fulfilled

In a distance of more than **6.8 mm** from the antenna of the EUT the criteria of a power density of 10 W/m² is fulfilled