Calculation: RF-Exposure for 57 GHz – 71 GHz transmitter

Type identification: **Data coupler NEARFI D ETH R**

In accordance to the **CFR Part 47, §1.1310** and **RSS-102 Issue 5**

S: Limit for power density according to
- CFR Part 47, §1.1310: 10 W/m²
- RSS-102 Issue 5, Table 4: 10 W/m²

P_{meas}: 0.0000589 W (average value, refer clause 5.3 of test report F220999E1, 2nd version)

P_{nom}: 10 mW (nominal rf-output power)

G: Not applicable, the above-mentioned power it an EIRP value

D: 1, the EUT has a 100 % duty cycle.

R: Distance in what the limit of S has to be reached: 0.3 m.

$$S_{meas} = \frac{P_{meas} \cdot G \cdot D}{4 \cdot \pi \cdot R^2} \Rightarrow \underline{S} = \frac{0.0000589\ W}{4 \cdot \pi \cdot (0.3\ m)^2} = \underline{0.000052 \frac{W}{m^2}}$$

$$S_{nom} = \frac{P_{nom} \cdot G \cdot D}{4 \cdot \pi \cdot R^2} \Rightarrow \underline{S} = \frac{0.001\ W}{4 \cdot \pi \cdot (0.3\ m)^2} = \underline{0.000842 \frac{W}{m^2}}$$

The value of the power density is below the limit of CFR Part 47, §1.1310 for the "General population / Uncontrolled Exposure" and below the limit of RSS-102 Issue 5, Table 4 "General Public (uncontrolled environment)".
Base of the above calculations is the average EIRP level of the EUT.