

Calculation: RF-Exposure for Licensed Transmitter

FCC ID: **ZSS-ZSNBL10001**

Type of Device: **NB_IoT Modem inside IoT Leak Logger ZSNB-L12 (host device)**

In accordance with **CFR47, §1.1310 Radiofrequency radiation exposure limits** and

447498 D01 General RF Exposure Guidance v06

447498 D04 Interim General RF Exposure Guidance v01

The device operates in different frequency bands in the range of 699.1 ~ 1914.9 MHz. The highest radiated output power is hereby reached with E-UTRA Band 66.

S: Limit for power density according to Table 1 to § 1.1310(e)(1)

(i) Occupational / Controlled Exposure

(ii) General Population / Uncontrolled Exposure

(Limit for **1710 MHz** leading to highest output power: **1.0 mW/cm²**)

Limit for lowest supported frequency **699.1 MHz**: $f/1500 \sim 0.46 \text{ mW/cm}^2$)

P: **134,9 mW** (max conducted output power leading to highest radiated power)

G: **0.812** (numeric gain based on measured antenna gain **-0.9 dBi**)

D: Duty cycle: **1** (100%)

R: Distance in what the limit of S must be reached: **20 cm**
(refer also to the manufacturers installation / user manual)

$$S = \frac{P \cdot G \cdot D}{4 \cdot \pi \cdot R^2} \Rightarrow \underline{S} = \frac{134,9 \text{ mW} \cdot 0.812 \cdot 1}{4 \cdot \pi \cdot (20 \text{ cm})^2} = \underline{\underline{0,022 \frac{\text{mW}}{\text{cm}^2}}}$$

Conclusion: The maximum value of the calculated power density over all supported frequency bands at the recommended minimum separation distance of 20cm is well below the applicable limits.