Power density calculation according to CFR47 1.1310

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- P_S = Max.power density according to **CFR47 1.1310** and OET Bulletin 65, Supplement C for **General Population/Uncontrolled Exposure** (in appropriate units, e.g. mW/cm^2)
- P = power input to the antenna (in appropriate units, e.g., mW)
- G = power gain of the antenna in the direction of interest relative to an isotropic radiator
- G_{dB} = power gain of the antenna in dB.
- R = distance from point of power density to the center of radiation of the antenna (appropriate units, e.g., cm)

G_{dB} := 1.2 dBi P := 1mW 1mW = 0dBm = Class2

$$G := 10^{\frac{G_{dB}}{10}} \qquad P_S := 1\,\frac{mW}{cm^2}$$

$$EIPR := P \cdot G \qquad P_S = \frac{EIPR}{4 \cdot \pi \cdot R^2}$$

Solving for R, gives:

$$R := \begin{bmatrix} \frac{1}{\left(2 \cdot P_S \cdot \pi\right)} \cdot \left(P_S \cdot \pi \cdot EIPR\right)^{\left(\frac{1}{2}\right)} \\ \frac{-1}{\left(2 \cdot P_S \cdot \pi\right)} \cdot \left(P_S \cdot \pi \cdot EIPR\right)^{\left(\frac{1}{2}\right)} \end{bmatrix} \quad \Rightarrow \quad R = (-0.324 \text{ or } +0.324)\ cm$$

From the above calculation (disregard the negative value) it can be seen that the minimum distance to the antenna in order to comply with the maximum power density as described in CFR47 1.1310 and OET 65, supplement C, is less than 0.4cm.
The calculation is based on the far-field formula, whereby the prediction is more conservative and will over predict the power density in the near-field, making this a "worst-case" prediction.
Due to the shape of the EUT cabinet the closest possible distance from the radiating antenna to the body of the user will at least 1cm.