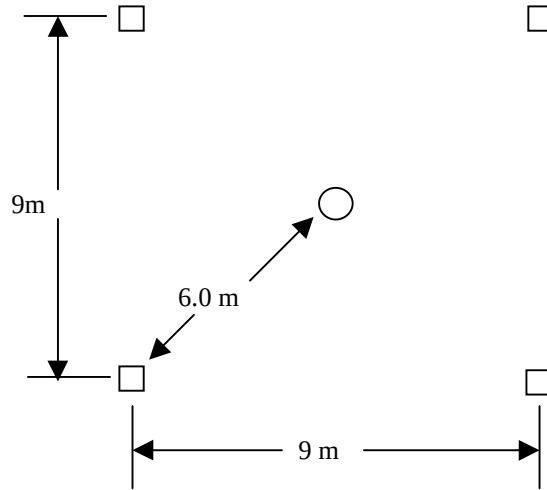


Radiofrequency radiation exposure prediction from ShelfNet System

For calculation the RF exposure we apply a worst possible case scenario where multiple systems are installed in a single location. In this scenario, there is the potential for more than one transmitter to be generating RF at the same point in time.

We have determined that the worst case scenario is as follows: four transmitters located at the four corners of a square area of store space as illustrated below. The minimum spacing between any two transmitters is 9 m. The area of most potential RF field strength is directly in the middle of this square. This scenario places four transmitters around a central point with 6.0 m of distance from any transmitter to this central location. The worst case possible field strength is calculated by determining the field strength 6.0-m away from one transmitter, and then multiplying that number by four.



For ShelfNet transmitter peak power 0.94 W the field strength at 6 m can be calculated as:

$$E = \sqrt{\frac{30 \cdot P \cdot G}{d^2}} = \sqrt{\frac{30 \cdot 0.944}{6^2}} = \sqrt{3.13} \frac{\text{V}}{\text{m}}$$

If we converted V/m into power density mW/cm² we will receive:

$$\text{Power density} = \frac{E^2}{3770} = \frac{(\sqrt{3.13})^2}{3770} = 9.3 \cdot 10^{-4} \frac{\text{mW}}{\text{cm}^2}$$

When 4 transmitters work simultaneously:

$$\text{Power density} = 9.3 \cdot 10^{-4} \cdot 4 = 0.0037 \frac{\text{mW}}{\text{cm}^2}$$

The limit for Maximum Permissible Exposure (MPE) for General Population/Uncontrolled Exposure from Table 1 (1.1310 FCC Regulations) in frequency range 2.4 – 2.483 GHz defined as 1 mW/cm². It is clear, that 0.0037 mW/cm² make up only 0.37% of the 1 mW/cm², even without taking into account the averaging factor. Therefore, the RF exposure from ShelfNet System fully comply with FCC Radiofrequency Radiation Exposure Requirements (MPE).

Aron Viner
Manager Product Compliance
ERS International
Phone: 978 264 2885
Fax: 978 264 2801
E-mail: aviner@ersi.com