

Here are calculations which show compliance of the ERS active cell antenna with FCC section 15.247(b)(4):

According to Table 1 in 1.1310, Radiofrequency Radiation Exposure Limits, the maximum permissible exposure (MPE) for general population/uncontrolled exposure at frequencies above 1500 MHz (the antenna operates between 2.403 and 2.477 GHz) is a power density of 1mW/cm^2 .

This calculation computes the minimum distance away from the active cell antenna that an individual can be while staying within the safe exposure limits as defined by the aforementioned table.

According to the ERS Shelfnet Technical Description, the peak antenna gain of the active cell antenna is 6dB, and the amplifier used has a typical amplification of 29dB, so the Effective Radiated Power (ERP) is 35dBm. The power density, P, at any point a radial distance r from the antenna is given by:

$$P = \text{ERP} / (4 * \pi * r^2)$$

With $P = 1\text{mW/cm}^2$

ERP=35dBm

Converting ERP to milliWatts:

$$\text{ERP} = 35\text{dBm} = 10\text{Log}(\text{ERP}_{\text{mW}})$$

$$\text{ERP}_{\text{mW}} = 3160 \text{ mW}$$

Solving for r, we obtain:

$$r = (3200 / (4 * \pi))^{1/2}$$

Which results in $r = 16\text{cm}$

So the minimum acceptable distance the active cell antenna can be located away from any given individual is 16 centimeters. Since the antenna is a ceiling mounted device, it will never be within this minimum distance. Therefore the antenna complies with 15.247(b)(4).