

Compliance with FCC MPE Requirements in the Cellular Band

The RadioFrame Networks S-Series OmniCell@Home™ Picocell

EUT will only be used with a separation distance of 20 centimeters or greater between the antenna and the body of the user or nearby persons and can therefore be considered a mobile transmitter per 47CFR 2.1091 (b). The EUT can be configured for either the 850 or 1900 band. This document will provide calculations for the 850 band. The EUT has two antenna ports. One antenna port is for transmit and the other is receive.

The maximum peak power was measured to be 123mW (ERP) for FCC ID: PURSSEROMNICELLH. This measurement was taken by Northwest EMC as shown in report #RAF0085. The EUT meets the requirement that it will be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines (ref. 47 CFR 1.1307, 1.1310, 2.1091 and 2.1093. Also OET Bulletin 65, Supplement C).

The MPE Estimates are as follows:

Table 1 in 47 CFR 1.1310 defines the maximum permissible exposure (MPE) for the general population as 1 mw/cm². The exposure level at a 20 cm distance from the EUT's transmitting antenna is calculated using the general equation:

$$S=(PG)/4\pi R^2$$

Where: S = Power Density (1 mw/cm²)

P = power input to the antenna (mW)

G = numeric power gain relative to an isotropic radiator

R = distance to the center of the radiation of the antenna (20 cm = limit for MPE estimates)

PG = EIRP

Solving for S, the maximum power densities 20 cm from the transmitting antennas are summarized in the following tables:

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850 Band Radio

Antenna Type	Distance to Antenna (cm)	Transmit Frequency (MHz)	Max Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/cm ²)	General Population Exposure Limit from 1.1310 (mW/cm ²)	Ratio of Power Density to the Exposure Limit
Omni	20	869.2	122.3	1	0	0.031	0.58693	0.053