RF Exposure MPE Exhibit

Output Power Calculation

The ERP may be calculated by adding the antenna gain to the output power in dBm:
EIRP = P $_{max}$ + G $_{dBi}$
However, the antenna is not supplied with the EUT. Therefore, instead of calculation the EIRP, the maximum allowed antenna gain was calculated. The calculation was performed on the base of the limit (3 W or 34.8 dBm) of the ERP for exclusion from routine environmental evaluation for RF exposure according to FCC 2.1091(c).
The maximum gain G$_{max}$ = 34.8 – 20.5 = 14.3 dBd = 16.4 dBi

Maximum permissible exposure is Freq. (MHz)/1500 = MPE mW/cm^2
1931.25 MHz/1500 = 1.2875 mw/cm^2

The following calculations determine at what distance from the antenna the power density is = 1.2875 mw/cm^2

Tx output power = 20.5 dBm
Antenna Gain   = 16.4 dBi
EIRP of TX and Antenna = 36.9 dBm
36.9 dBm=4.90 Watts or 4897.79 mW

MPE Calculation

$$PowerDensity = Pd(\text{mW/cm}^2) = \frac{EIRP}{4\pi d^2}$$

$$d = \sqrt{\frac{EIRP}{4\pi Pd}}$$

$$d = \sqrt{\frac{4897.79}{4\pi 1.2875 mw/cm2}}$$

d = 17.39 cm

The minimum safe distance is 17.39 cm for the UTStarcom iCell DorA BTS when installed. .