Environmental evaluation and exposure limit according to FCC CFR 47part 1, §1.1307, §1.1310

The booster may be installed indoors or outdoors as stated in the User's manual page V, the calculation was done to confirm a safe distance.

Limit for power density for general population/uncontrolled exposure is f/1500 mW/cm^2 for 300 – 1500 MHz frequency range:

$$P = 806/1500 = 0.53\ mW/cm^2$$

The power density $\mathbf{P\ (mW/cm^2) = P_T / 4\pi r^2}$, where

P_T is the transmitted power, which is equal to the peak transmitter output power plus maximum antenna gain.

Indoor antenna installation

The maximum equivalent isotropically radiated power EIRP is

$$P_T = 36.69\ dBm + 0.2\ dBi = 36.89\ dBm = 4887\ mW, \text{ where}$$

36.69 dBm is the EUT maximum output power at analog FM modulation in 851-862 MHz band;
0.2 dBi – antenna assembly gain.

The minimum safe distance "r", where RF exposure does not exceed FCC permissible limit, is

$$r = \text{sqrt}\ \{ P_T / (Px4\pi)\} = \text{sqrt}\ \{4887 / (0.53\ x12.56)\} = 28\ cm.$$

Outdoor antenna installation

The maximum equivalent isotropically radiated power EIRP is

$$P_T = 36.69\ dBm + 7\ dBi = 43.69\ dBm = 23388\ mW, \text{ where}$$

36.69 dBm is the EUT maximum output power at analog FM modulation in 851-862 MHz band;
7 dBi – antenna assembly gain (please refer to page 7 of User_manual_28127_rev1).

According to manufacturer statement provided in user manual the maximum manufacturer rated power is 40 dBm. In a DAS system they suppose a loss about 9 dB due to cable insertion, splitter, etc.

The maximum equivalent isotropically radiated power EIRP shall be

$$P_T = 40\ dBm + 7\ dBi - 9\ dB = 38\ dBm = 6309\ mW \text{ and}$$
$$ERP = 38\ dBm – 2.15\ dB = 35.85\ dBm = 3846\ mW \approx 3.85\ W < 5\ W.$$

The minimum safe distance "r", where RF exposure does not exceed FCC permissible limit, is

$$r = \text{sqrt}\ \{ P_T / (Px4\pi)\} = \text{sqrt}\ \{23388 / (0.53\ x12.56)\} = 60\ cm.$$

A warning about a min safe distance is contained in the user manual common for some boosters.