RF Exposure Evaluation according to RSS-102 and FCC 47 CFR part 1 §1.1307

The transceiver is classified as fixed. The calculation was done for minimum safety distance.

The device operating frequency range is 4945 – 4985 MHz. Limit for power density for general population/uncontrolled exposure is 1 mW/cm^2 (for 1500 –100,000 MHz frequency range).

The power density **$P\ (mW/cm^2) = P_T / 4\pi r^2$**

P_T is the transmitted power, which is equal to the peak transmitter output power plus maximum antenna gain. The maximum equivalent isotropically radiated power EIRP is

P_T = 31.05 dBm +27 dBi = 58.05 dBm = 638263 mW, where

31.05 dBm is the EUT maximum output power, obtained at low frequency 4950 MHz with 64QAM modulation and 130 Mbps bit rate, 20 MHz CBW;
27 dBi – external antenna gain.

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

$$r = \text{sqrt}\{ P_T / (P \times 4\pi)\} = \text{sqrt}\{638263/ 12.56\} = 225 \text{ cm}.$$

General public will not be exposed to dangerous RF level if the EUT, fixed device, will be used at a distance of more than 225 cm from humans.

Warning in the User Manual shall be provided.