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 4942.5 – 4987.5 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 = 24.85 dBm +26 dBi = 50.85 dBm = 121618 mW, where

24.85 dBm is the EUT maximum output power, obtained at high frequency 4987.5 MHz with BPSK modulation and 1.5 Mbps bit rate;
26 dBi – antenna assembly gain.

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

$$r = \text{sqrt}\ \{ P_T / (P \times 4\pi)\} = \text{sqrt}\ \{121618/ 12.56\} = 98\ \text{cm}.$$

General public cannot be exposed to dangerous RF level because the EUT is a fixed device intended for use at a distance of more than 2.0 m from humans.