RF Exposure

The equipment under test (EUT) is a T5100T Electrical Treadmil with BT4.0 (Dual Mode) function and 2.4G WIFI function operating in 2402-2480MHz and 2412-2462MHz, The EUT is powered by 120 VAC, 60 Hz, 12A. For more detail information pls. refer to the user manual.

For BT function:
Bluetooth Version: 4.0 (Dual Mode)
Modulation Type: GFSK, π/4-DQPSK and 8-DPSK
Antenna Type: Integral antenna.
Antenna Gain: 0.04dBi.

The nominal conducted output power specified: 1.96dBm (+/-5dB).
The nominal radiated output power (e.i.r.p) specified: 2dBm (+/- 5dB).

The maximun peak radiated emission for the EUT is 100.9dBμV/m at 3m in the frequency 2402MHz (EDR mode)
The EIRP = [(FS*D) ^2 / 30] mW = 5.67dBm
which is within the production variation.

The minimum peak radiated emission for the EUT is 93.0dBμV/m at 3m in the frequency 2480MHz (BLE mode)
The EIRP = [(FS*D) ^2 / 30] mW = -2.23dBm
which is within the production variation.

The maximun conducted output power specified is 6.96 dBm = 4.97 mW
The source- based time-averaging conducted output power = **4.97** mW

For 2.4G WIFI function:
Antenna Type: Integral Antenna
Antenna Gain: 0.04dBi
Modulation Type: CCK, BPSK, QPSK, 16QAM, 64QAM

For 802.11b and 802.11n-HT20:
The normal radiated output power (e.i.r.p) is: 19.04dBm (tolerance: +/-5dB).
The normal conducted output power is 19.0dBm (tolerance: +/-5dB).

The maximum conducted output power for the EUT is 23.4dBm in the frequency 2.437GHz 802.11g mode which is within the production variation.
The minimum conducted output power for the EUT is 15.2dBm in the frequency 2.462GHz 802.11b mode which is within the production variation.

The source-based time averaged maximum radiated power = 19.04dBm+5dB= 24.04dBm = **253.51**mW

According to FCC Part 2.1091, this unlicensed transmitting devices is categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, According to the KDB 447498 V07 and OET 65, the simple calculation as below:

At the distance (R) of 20cm to 40cm and in 0.3 GHz to 6 GHz, MPE Exclusion Threshold Level:

$$P_{\text{th}}\ (\text{mW}) = ERP_{20\ \text{cm}}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

The MPE Threshold is 3060mW for general population and uncontrolled exposure in the 2.4GHz frequency range according to FCC Part 1.1307. As the measured power density at 20cm from the transmitter is lower than the MPE Threshold, the compliance to the MPE Threshold can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structure and body of the user or nearby persons.
Note: EIRP is higher than ERP, thus EIRP is compared with the Exclusion Threshold.