

## MPE Analysis Report

The Equipment Under Test (Model: CX FLEX 4A) is an Merchandise Theft Deterrent System which equippes with a 2.4GHz ZigBee transceiver and a 125kHz RFID module. The EUT is intended for alarm system. The EUT is powered by AC/DC adaptor (Model: W&T AD1806B050025U Input:100-240VAC 50/60Hz 0.25A, Output: 5V 0.25A). All USB ports has no data transfer as declared by applicant.

Zigbee portion (2405MHz to 2480MHz, 5MHz channel spacing, 16 channels)

Antenna Type: Internal, Integral

Antenna Gain: -1 dBi

Conducted output power: -4 dBm to 0 dBm

125kHz RFID portion (125kHz single channel)

Antenna Type: Internal, Integral

Antenna Gain: 0dBi

Nominal Field Strength: 70 dB $\mu$ V/m@3m

Maximum allowable production tolerance: +3 / - 6 dB

For Maximum Permissible Exposure (MPE) evaluation of the unit, the maximum power density at 20 cm from this transmitter shall be less than the General Population / Uncontrolled MPE limit in OET Bulletin 65 and meet the requirement listed in KDB447498.

For the Zigbee portion of the unit, the measured powers among all the measured channels were within its production tolerance. Its maximum source-based time-averaging duty factor is 100%. From these data and its operating configuration, the exposed power density at a distance (R) of 20 cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow:

The EIRP radiated power  
= conducted power (with maximum tolerance) + antenna gain  
= 0 dBm – 1 dBi  
= -1 dBm           ( = 0.79 mW )

The radiated (EIRP) source-based time-averaging output power  
= (0.79 \* 1) mW = 0.79 mW

The power density at 20 cm from the antenna  
= EIRP / 4 $\pi$ R<sup>2</sup>  
= 0.00016 mW cm<sup>-2</sup>

In the frequency range of 1,500 - 100,000MHz, the MPE limit is 1.0 mWcm<sup>-2</sup> for general population and uncontrolled exposure. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structures and body of the user or nearby persons.

The following RF exposure statement is proposed to be included in the user manual:

**FCC RF Radiation Exposure Statement**

**Caution: To maintain compliance with the FCC's RF exposure guidelines, place the unit at least 20cm from nearby persons."**