CTK Co., Ltd.
386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea
Tel: +82-31-339-9970 Fax: +82-31-339-9855
www.e-ctk.com

# RF EXPOSURE EVALUATION

| | |
|---|---|
| **Applicant** | : Shin Heung Precision Co., Ltd. |
| **Applicant Address** | : 222-2, Sinneung-Ri, Seowun-Myeon, Anseong-City, Gyeonggi-Do, 456-853, Korea |
| **Kind of Product** | : POS PRINTER |
| **Equipment model name** | : ELLIX4abc |
| **RF power** | : 13.229 dBm Peak Conducted |
| **Antenna type** | : Internal antenna |
| **Antenna Gain** | : 3.384 dBi |
| **Frequency Range** | : 2402 - 2480 MHz |
| **Number of channels** | : 79 CH |

# ** MPE Calculations **

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user. The MPE calculation for this exposure is shown below.

The peak radiated output power (EIRP) is calculated as follows:

| | |
|---|---|
| EIRP = P + G<br>EIRP = 13.229 + 3.384<br>= 16.613 dBm<br>=> 45.846 mW | Where,<br>P = Power input to the antenna (mW)<br>G = Power gain of the antenna (dBi) |

The numeric gain(G) of the antenna with a gain specified in dB is determined by:

$G = Log^{-1}$ (dB antenna gain / 10)

$G = Log^{-1}$ (3.384/ 10)

G = 2.18

## Power density at the specific separation:

| | |
|---|---|
| $S = PG/(4R^2\pi)$<br>$S = (45.846)/(4 * 20^2 * \pi)$<br>$S = 0.009$ mW/cm$^2$ | Where,<br>S = Maximum power density (mW/cm$^2$)<br>P = Power input to the antenna (mW)<br>G = Numeric power gain of the antenna<br>R = Distance to the center of the radiation of the antenna<br>(20cm = limit for MPE) |

The Maximum permissible exposure (MPE) for the general population is 1 mW/cm$^2$ .
The power density at 20cm does not exceed the 1 mW/cm$^2$ limit.

## Estimated safe separation:

| | |
|---|---|
| $R = \sqrt{(PG / 4\pi)}$<br>$R = \sqrt{(45.846 / 4\pi)}$<br>R = 1.91 cm | Where,<br>P = Power input to the antenna (mW)<br>G = Numeric power gain of the antenna<br>R = Distance to the center of the radiation of the antenna<br>(20cm = limit for MPE) |