



Product Service

MPE Calculation

Applicant: SPIN-R LTD.

Address: BLK A, 9/F GOODVIEW IND BLDG, 11 KIN FAT STREET, TUEN MUN, Hong Kong

Product: Apps Controlled automatic watch winder with LED light and door lock

Model No.: PL1M-00U098

According to subpart 15.247(i) and subpart §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| (B) Limits for General Population/Uncontrolled Exposure | | | | |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Averaging Time (minutes) |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | / | / | f/1500 | 30 |
| 1500–100,000 | / | / | 1.0 | 30 |

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

 $S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

| | |
|--|--------|
| Maximum peak output power at antenna input terminal (dBm): | -7.18 |
| Maximum peak output power at antenna input terminal (mW): | 0.19 |
| Prediction distance (cm): | 20 |
| Antenna Gain, typical (dBi): | 0 |
| Maximum Antenna Gain (numeric): | 1 |
| The worst case is power density at predication frequency at 20 cm (mW/cm ²): | 0.0015 |
| MPE limit for general population exposure at prediction frequency (mW/cm ²): | 1.0 |

 $0.0000378 \text{ (mW/cm}^2\text{)} < 1 \text{ (mW/cm}^2\text{)}$

Result: Compliant



Product Service

TUV SUD China, Shenzhen Branch

Reviewed by:

A handwritten signature in blue ink, appearing to be 'Phoebe Hu'.

Phoebe Hu/EMC Project Manager
Date: 2015-07-10

Prepared By:

A handwritten signature in blue ink, appearing to be 'Calvin Weng'.

Calvin Wengi/EMC Project Engineer
Date: 2015-07-10