



Certificate No.: 3745.01



Report No: 709502402016-00C

## MPE Calculation

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Applicant:            | Zhejiang Cainiao Supply Chain Management Co., Ltd.     |
| Address:              | No.168 Wuchang Avenue, Wuchang Street, Yuhang District |
|                       | Hangzhou China                                         |
| FCC ID:               | 2BGGH-CNR1                                             |
| Product:              | UHF-RFID                                               |
| Model No.:            | CNR1                                                   |
| Reference RF report # | 709502402016-00B                                       |

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 <sup>2</sup> ) | Averaging Time (minutes) |
| 0.3–1.34                                                | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34–30                                                 | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30–300                                                  | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300–1,500                                               | /                             | /                             | f/1500                              | 30                       |
| 1,500–100,000                                           | /                             | /                             | 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/cm<sup>2</sup>);

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);



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Calculated Data

|                                                                                          |           |
|------------------------------------------------------------------------------------------|-----------|
| Maximum peak output power at antenna input terminal (dBm):                               | 26.84     |
| Maximum peak output power at antenna input terminal (mW):                                | 483.05880 |
| Prediction distance (cm):                                                                | 20        |
| Antenna Gain, typical (dBi):                                                             | 5.5       |
| Maximum Antenna Gain (numeric):                                                          | 3.5481    |
| The worst case is power density at predication frequency at 20 cm (mW/cm <sup>2</sup> ): | 0.3410    |
| MPE limit for general population exposure at prediction frequency (mW/cm <sup>2</sup> ): | 1.0       |

The max power density 0.3410 (mW/cm<sup>2</sup>) < 1 (mW/cm<sup>2</sup>)

Result: Compliant

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

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