

## MPE Calculation

|                       |  |
|-----------------------|--|
| Applicant:            | Hangzhou Tuya Information Technology Co.,Ltd                           |
| Address:              | Room701,Building3,More Center,No.87 GuDun Road,Hangzhou,Zhejiang China |
| Product:              | BLE Module   |
| FCC ID:               | 2ANDL-BT7L-IPEX  |
| Model No.:            | BT7L-IPEX  |
| Reference RF report # | 708881974871-00  |

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);

## Calculated Data:

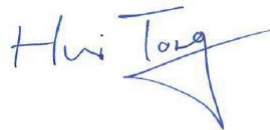
|  |         |
|--|---------|
| Maximum peak output power at antenna input terminal (dBm):                               | 9.80    |
| Maximum peak output power at antenna input terminal (mW):                                | 9.55    |
| tune-up conducted power(dBm):  | 10      |
| tune-up conducted power(mW):   | 10      |
| Prediction distance (cm):  | 20      |
| Antenna Gain, typical (dBi):   | 2.5     |
| Maximum Antenna Gain (numeric):  | 1.78    |
| The worst case is power density at predication frequency at 20 cm (mW/cm <sup>2</sup> ): | 0.00354 |
| MPE limit for general population exposure at prediction frequency (mW/cm <sup>2</sup> ): | 1.0     |

**Note:** The tune-up conducted power (10 dBm) was declared by the manufacturer.  
0.00354 (mW/cm<sup>2</sup>) < 1 (mW/cm<sup>2</sup>)

Result: Compliant

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

Reviewed by:



Hui TONG

EMC Section Manager

Date: 2019-11-27

Prepared by:



Jiayi XU

EMC Project Engineer

Date: 2019-11-27

Tested by:



Wenqiang LU

EMC Test Engineer

Date: 2019-11-27