

## FCC §15.247 (i) & §1.1307 (b) (3) & §2.1091- MPE-Based Exemption

### Applicable Standard

According to subpart 15.247 (i) and subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

According to KDB 447498 D04 Interim General RF Exposure Guidance V01

### MPE-Based Exemption:

General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table B.1 [Table 1 of § 1.1307(b)(3)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

| RF Source frequency (MHz) | Threshold ERP (watts) |
|---------------------------|-----------------------|
| 0.3-1.34                  | $1,920 R^2$ .         |
| 1.34-30                   | $3,450 R^2/f^2$ .     |
| 30-300                    | $3.83 R^2$ .          |
| 300-1,500                 | $0.0128 R^2 f$ .      |
| 1,500-100,000             | $19.2 R^2$ .          |

R is the minimum separation distance in meters

f = frequency in MHz

### Result

| Mode        | Frequency (MHz) | Tune up conducted power <sup>#</sup> (dBm) | Antenna Gain <sup>#</sup> |       | ERP   |       | Evaluation Distance (m) | ERP Limit (mW) |
|-------------|-----------------|--------------------------------------------|---------------------------|-------|-------|-------|-------------------------|----------------|
|             |                 |                                            | (dBi)                     | (dBd) | (dBm) | (mW)  |                         |                |
| Lora_Hybrid | 902.3-914.9     | 6.5                                        | 0.3                       | -1.85 | 4.65  | 2.92  | 0.2                     | 462            |
| Lora_DTS    | 903-914.2       | 18.5                                       | 0.3                       | -1.85 | 16.65 | 46.24 | 0.2                     | 462            |
| BLE         | 2402-2480       | 0.97                                       | 1.9                       | -0.25 | 0.72  | 1.18  | 0.2                     | 768            |

- Note: 1. The tune up conducted power<sup>#</sup> and antenna gain<sup>#</sup> was declared by the applicant.  
 2. 0dBd=2.15dBi  
 3. The BLE and Lora can transmit at same time, the Lora\_Hybrid and Lora\_DTS cannot transmit at same time.  
 4. The device contains a certified RF module (Model: STM32WB5MMGH, FCC ID: YCP-32WB5MMGH02)

Simultaneous transmitting consideration (worst case):

$$\text{The ratio} = \text{ERP}_{\text{Lora}}/\text{limit} + \text{ERP}_{\text{BLE}}/\text{limit} = 46.24/462 + 1.18/768 = 0.102 < 1.0$$

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

**Result: Compliant.**