



## RF Exposure Evaluation Declaration

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**FCC ID:** 2AUBBFL30F

**Applicant:** China Starwin Science & Technology Co., Ltd

**Application Type:** Certification

**Product:** Flat Panel Integrated Satellite Communication Terminal

**Model No.:** FL30F-M

**Brand Name:** 

**FCC Classification:** Digital Transmission System (DTS)  
Licensed Non-Broadcast Station Transmitter (TNB)

**Reviewed By:**

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Jame Yuan

**Approved By:**

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Robin Wu



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

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**Revision History**

| Report No.    | Version | Description    | Issue Date | Note  |
|---------------|---------|----------------|------------|-------|
| 2112RSU001-U4 | Rev. 01 | Initial Report | 03-03-2022 | Valid |
|               |         |                |            |       |

## 1. PRODUCT INFORMATION

|                                                                                                                                                          |                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Product Name                                                                                                                                             | Flat Panel Integrated Satellite Communication Terminal                                 |
| Model No.                                                                                                                                                | FL30F-M                                                                                |
| Hardware Version                                                                                                                                         | XY-PB-FL30-202111                                                                      |
| Software Version                                                                                                                                         | XY-PB-FL30-V2.02                                                                       |
| Wi-Fi Specification                                                                                                                                      | 802.11b/g/n                                                                            |
| Bluetooth Version                                                                                                                                        | V4.2 single mode, BLE only                                                             |
| Satellite Specification                                                                                                                                  | Transmit: 14.00 ~ 14.50 GHz<br>Receive: 10.70 ~ 12.75 GHz                              |
| GNSS Specification                                                                                                                                       | GPS, BDS                                                                               |
| Operating Temperature                                                                                                                                    | -25 ~ 50 °C                                                                            |
| Power Type                                                                                                                                               | AC/DC Adapter                                                                          |
| <b>Accessory</b>                                                                                                                                         |                                                                                        |
| DC Adapter                                                                                                                                               | Model: GST160A24<br>Input: 100-240VAC, 50/60Hz, 2.0A<br>Output: 24VDC, 6.67A, 160W MAX |
| Remark:<br>The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. |                                                                                        |

## 2. RF Exposure Evaluation

### 2.1. Test Limit

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency Range<br>(MHz)                                   | Electric Field<br>Strength<br>(V/m) | Magnetic Field<br>Strength<br>(A/m) | Power Density<br>(mW/cm <sup>2</sup> ) | Average Time<br>(Minutes) |
|------------------------------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------|---------------------------|
| (A) Limits for Occupational / Control Exposures            |                                     |                                     |                                        |                           |
| 300-1500                                                   | --                                  | --                                  | f/300                                  | 6                         |
| 1500-100000                                                | --                                  | --                                  | 5                                      | 6                         |
| (B) Limits for General Population / Uncontrolled Exposures |                                     |                                     |                                        |                           |
| 300-1500                                                   | --                                  | --                                  | f/1500                                 | 6                         |
| 1500-100000                                                | --                                  | --                                  | 1                                      | 30                        |

f= Frequency in MHz

Calculation Formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

r = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

## 2.2. Test Result

|           |                                                        |
|-----------|--------------------------------------------------------|
| Product   | Flat Panel Integrated Satellite Communication Terminal |
| Test Item | RF Exposure Evaluation                                 |

### For -10 ~ +10 degrees on-axis:

| Test Mode  | Frequency Band (MHz) | Max Conducted Power (dBm) | Maximum EIRP (dBm) | Maximum EIRP (mW) | Power Density at R = 1702 cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|------------|----------------------|---------------------------|--------------------|-------------------|----------------------------------------------------|-----------------------------|
| BLE        | 2400 ~ 2483.5        | 5.00                      | 6.50               | 4.47              | 0.0000                                             | 1                           |
| 2.4G Wi-Fi | 2400 ~ 2483.5        | 18.00                     | 28.00              | 630.96            | 0.0000                                             | 1                           |
| Satellite  | 13750 ~ 14500        | 42.50                     | 75.61              | 36391503.61       | 0.9997                                             | 1                           |

### Conclusion:

BLE, 2.4G Wi-Fi and Satellite can transmit simultaneously.

So the Power Density at R (1702 cm) =  $0.0000\text{mW/cm}^2 + 0.0000\text{mW/cm}^2 + 0.9997\text{mW/cm}^2 = 0.9997\text{mW/cm}^2 < 1\text{mW/cm}^2$ .

Therefore, the Safety Distance is **1702** cm (for -10 ~ +10 degrees on-axis).

### For out range of ±10 degrees on-axis:

| Test Mode  | Frequency Band (MHz) | Max Conducted Power (dBm) | Maximum EIRP (dBm) | Maximum EIRP (mW) | Power Density at R = 56 cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|------------|----------------------|---------------------------|--------------------|-------------------|--------------------------------------------------|-----------------------------|
| BLE        | 2400 ~ 2483.5        | 5.00                      | 6.50               | 4.47              | 0.0001                                           | 1                           |
| 2.4G Wi-Fi | 2400 ~ 2483.5        | 18.00                     | 28.00              | 630.96            | 0.0160                                           | 1                           |
| Satellite  | 13750 ~ 14500        | 42.50                     | 45.81              | 38106.58          | 0.9670                                           | 1                           |

### Conclusion:

BLE, 2.4G Wi-Fi and Satellite can transmit simultaneously.

So the Power Density at R (56 cm) =  $0.0001\text{mW/cm}^2 + 0.0160\text{mW/cm}^2 + 0.9670\text{mW/cm}^2 = 0.9831\text{mW/cm}^2 < 1\text{mW/cm}^2$ .

Therefore, the Safety Distance is **56** cm (for out range of ±10 degrees on-axis).

The End