



## RF Exposure Evaluation Declaration

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**FCC ID:** 2AUBBFL60P-E

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

**Application Type:** Certification

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

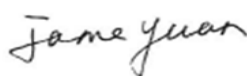
**Model No.:** FL60P-E

**Serial Model No.:** FL60P-M, FL60F-M

**Brand Name:** 

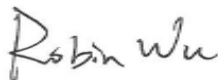
**FCC Classification:** Digital Transmission System (DTS)  
Licensed Non-Broadcast Station Transmitter (TNB)

Reviewed By:



( Jame Yuan )

Approved By:



( 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.


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### Revision History

Report No.	Version	Description	Issue Date	Note
1907RSU030-U5	Rev. 01	Initial Report	09-10-2019	Valid

## 1. PRODUCT INFORMATION

### 1.1. Equipment Description

Product Name	Flat Panel Integrated Satellite Communication Terminal
Model No.	FL60P-E
Serial Model No.	FL60P-M, FL60F-M
Brand Name	
Wi-Fi Specification	802.11b/g/n
Bluetooth Version	V5.0 (single mode, BLE only)
Satellite Specification	Transmit: 13.75~14.50GHz Receive: 10.95~12.75GHz
GNSS Specification	GPS, GLONASS, BDS
<b>Accessories</b>	
Adapter	Model No.: GST160A24 Input Power: 100 - 240V ~ 50/60Hz, Max. 2.0A Output Power: 24VDC 6.67A, 160W MAX

### 1.2. Antenna Description

Antenna Type	Frequency Range (MHz)	TX Paths	Max Peak Gain (dBi)
BLE Internal Antenna			
PCB Antenna	2400 ~ 2483.5	1	1.50
2.4G Wi-Fi Internal Antenna			
Dipole Antenna	2400 ~ 2483.5	1	6.00
Satellite Internal Antenna			
Slotted Waveguide Array Antenna	13750 ~ 14500	1	36.22

### 1.3. Satellite Antenna Gain

Frequency Range (MHz)	Off-axis (degree)	Max Peak Gain (dBi)
13750 ~ 14500	Antenna main beam	36.22
	Out range of +10	3.32
	Out range of -10	3.32

Note: The details of the satellite antenna gain refer to the antenna specification.

## 2. RF Exposure Evaluation

### 2.1. Limits

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 (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (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:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

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 of RF Exposure Evaluation

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

Antenna Gain: Refer to clause 1.2 & 1.3.

### For antenna main beam:

Test Mode	Frequency Band (MHz)	Max Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Power Density at R = 1100 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
BLE	2400 ~ 2483.5	0.25	1.75	1.50	0.0000	1
2.4G Wi-Fi	2400 ~ 2483.5	18.37	24.37	273.53	0.0000	1
Satellite	13750 ~ 14500	35.53	71.75	14962356.56	0.9840	1

### Conclusion:

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

So the Power Density at R (1100 cm) =  $0.0000\text{mW/cm}^2 + 0.0000\text{mW/cm}^2 + 0.9840\text{mW/cm}^2 = 0.9840\text{mW/cm}^2 < 1\text{mW/cm}^2$ .

Therefore, the Safety Distance is **1100** cm (for antenna main beam).

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

Test Mode	Frequency Band (MHz)	Max Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Power Density at R = 26 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
BLE	2400 ~ 2483.5	0.25	1.75	1.50	0.0002	1
2.4G Wi-Fi	2400 ~ 2483.5	18.37	24.37	273.53	0.0322	1
Satellite	13750 ~ 14500	35.53	38.85	7673.61	0.9033	1

### Conclusion:

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

So the Power Density at R (20 cm) =  $0.0002\text{mW/cm}^2 + 0.0322\text{mW/cm}^2 + 0.9033\text{mW/cm}^2 = 0.9357\text{mW/cm}^2 < 1\text{mW/cm}^2$ .

Therefore, the Safety Distance is **26** cm (for out range of ±10 degrees off-axis).

The End

## **Appendix A - Test Setup Photograph**

Refer to “1907RSU030-UT” file.

## **Appendix B - EUT Photograph**

Refer to "1907RSU030-UE" file.