



RF Exposure Evaluation Declaration

FCC ID: 2AUBBV9OTM45

Applicant: China Starwin Science & Technology Co., Ltd

Application Type: Certification

Product: mobile satellite communication terminal

Model No.: V9 OTM45

Brand Name: 

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

Reviewed By:

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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
2107RSU044-U5	Rev. 01	Initial Report	03-02-2022	Valid

1. PRODUCT INFORMATION

Product Name	mobile satellite communication terminal
Model No.	V9 OTM45
Hardware Version	XY-V9-OTM45-202111
Software Version	XY-V9-OTM45-V1.17B
Wi-Fi Specification	802.11b/g/n
Bluetooth Version	V4.2 single mode, BLE only
Satellite Specification	Transmit: 13.75~14.50GHz Receive: 10.70~12.75GHz
GNSS Specification	GPS, BDS
Operating Temperature	-25 ~ 50 °C
Antenna Type	Bluetooth: Dipole Antenna 2.4G Wi-Fi: Dipole Antenna Satellite: Slotted Waveguide Array Antenna
Antenna Gain	Bluetooth: 1.5 dBi 2.4G Wi-Fi: 10.0 dBi Satellite: 33.21 dBi (in range of ± 10 degree) 3.69 dBi (out range of ± 10 degree)
Power Supply	By AC Power
<p>Remark:</p> <p>The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.</p>	

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 (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	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/cm²

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/cm². 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	mobile 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 = 1292 cm (mW/cm ²)	Limit (mW/cm ²)
BLE	2400 ~ 2483.5	5.0	6.5	4.47	0.0000	1
2.4G Wi-Fi	2400 ~ 2483.5	17.5	27.5	562.34	0.0000	1
Satellite	13750 ~ 14500	40.0	73.21	20941124.56	0.9983	1

Conclusion:

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

So the Power Density at R (1292 cm) = $0.0000\text{mW/cm}^2 + 0.0000\text{mW/cm}^2 + 0.9983\text{mW/cm}^2 = 0.9983\text{mW/cm}^2 < 1\text{mW/cm}^2$.

Therefore, the Compliance Distance is **1292 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 = 44 cm (mW/cm ²)	Limit (mW/cm ²)
BLE	2400 ~ 2483.5	5.0	6.5	4.47	0.0002	1
2.4G Wi-Fi	2400 ~ 2483.5	17.5	27.5	562.34	0.0231	1
Satellite	13750 ~ 14500	40.0	43.69	23388.37	0.9614	1

Conclusion:

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

So the Power Density at R (44 cm) = $0.0002\text{mW/cm}^2 + 0.0231\text{mW/cm}^2 + 0.9614\text{mW/cm}^2 = 0.9847\text{mW/cm}^2 < 1\text{mW/cm}^2$.

Therefore, the Compliance Distance is **44 cm** (for out range of ±10 degrees on-axis).

The End