



RADIO TEST REPORT

Report No: STS2107058H01

Issued for

Wuxi Wisen Innovation Co., Ltd.

Office D501, 530 Mansion, Taihu International Hi-tech Zone,
Xinwu District, Wuxi, China

Product Name:	RS-485 Interface Node
Brand Name:	WiSenMeshWAN®
Model Name:	6510
Series Model:	651X
FCC ID:	2AUZW-651X
Test Standard:	FCC 47CFR §2.1091

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Test Report Certification

Applicant's Name..... : Wuxi Wisen Innovation Co., Ltd.
Address : Office D501, 530 Mansion, Taihu International Hi-tech Zone, Xinwu District, Wuxi, China
Manufacturer's Name : Wuxi Wisen Innovation Co., Ltd.
Address : Office D501, 530 Mansion, Taihu International Hi-tech Zone, Xinwu District, Wuxi, China

Product Description

Product Name..... : RS-485 Interface Node
Brand Name : WiSenMeshWAN®
Model Name : 6510
Series Model..... : 651X


Standards..... : FCC 47CFR §2.1091

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Date of Test..... :
Date of receipt of test item : 08 July 2021
Date (s) of performance of tests..... : 08 July 2021 ~ 24 July 2021
Date of Issue..... : 24 July 2021
Test Result..... : **Pass**

Testing Engineer : 

 (Chris Chen)

Technical Manager : 

 (Sean she)

Authorized Signatory : 

 (Vita Li)





TABLE OF CONTENTS

1. GENERAL INFORMATION	5
1.1 GENERAL DESCRIPTION OF THE EUT	5
1.2 TEST FACTORY	5
2. FCC 47CFR §2.1091 REQUIREMENT	6
2.1 TEST STANDARDS	6
2.2 LIMIT	6
2.3 EUT OPERATION CONDITION	7
2.4 CLASSIFICATION	7
2.5 TEST RESULT	7





Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	24 July 2021	STS2107058H01	ALL	Initial Issue





1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	RS-485 Interface Node								
Brand Name	WiSenMeshWAN®								
Model Name	6510								
Series Model	651X								
Model Difference	651X, Where X can be 0-F (Hexadecimal).								
Product Description	<p>The EUT is RS-485 Interface Node</p> <table border="1"><tr><td>Operation Frequency:</td><td>902-928MHz</td></tr><tr><td>Modulation Type:</td><td>FSK/LoRa</td></tr><tr><td>Antenna gain:</td><td>0dBi</td></tr><tr><td>Antenna Designation:</td><td>External Antenna</td></tr></table>	Operation Frequency:	902-928MHz	Modulation Type:	FSK/LoRa	Antenna gain:	0dBi	Antenna Designation:	External Antenna
Operation Frequency:	902-928MHz								
Modulation Type:	FSK/LoRa								
Antenna gain:	0dBi								
Antenna Designation:	External Antenna								
Battery	<p>Model: ER34615 Rated Voltage: 3.6V Capacity: 19AH</p> <p>Model: M101 Rated Voltage: 12.8V Charge Limit Voltage: 14.6 Capacity: 6AH</p>								
Hardware version number	V1.2								
Software version number	V1538								

1.2 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01



2. FCC 47CFR §2.1091 REQUIREMENT

2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the 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)
Limits for Occupational / controlled Exposures			
0.3-3.0	614	1.63	*(100)
3.0-30	1842/f	4.89/f	*(900/f ²)
30-300	61.4	0.163	1.0
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
0.3-1.34	614	1.63	*(100)
1.34-30	824/f	2.19/f	*(180/f ²)
30-300	27.5	0.073	0.2
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz, * = Plane-wave equivalent power density.

Friss Formula

Friss Transmission 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

π = 3.1416

R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.



2.3 EUT OPERATION CONDITION

EUT was enabled to transmit and receive at lowest, middle and highest channels.

2.4 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

2.5 TEST RESULT

Turn up

Mode	Detector	Turn up power(dBm)
905M	AV	14±1dBm

ANT Gain (G)

902-928MHz: 0dBi (gain of antenna in linear scale=1)

Protocol	Max Turn up power (dBm)	Max Turn up power (mW)	ANT Gain(gain of antenna in linear scale)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Result
905M	15	31.6228	1	0.0063	1	Pass

END OF THE REPORT