

Radio Test Report

Report No.: STS2307144H01

Issued for

Azores Networks LLC

2701 Custer Parkway, Suite 706 Richardson, TX 75080, USA

Product Name: XGSPON

Brand Name: **AZORES BOW**

Model Name: WAGM51W6

Series Model(s): N/A

FCC ID: 2BCE2-WAGM51W6

Test Standards: FCC 47CFR §2.1091

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TEST REPORT

Applicant's Name : Azores Networks LLC
 Address : 2701 Custer Parkway, Suite 706 Richardson, TX 75080, USA
Manufacturer's Name : Azores Networks LLC
 Address : 2701 Custer Parkway, Suite 706 Richardson, TX 75080, USA

Product Description

Product Name..... : XGSPON
 Brand Name..... : **AZORES BOW**
 Model Name : WAGM51W6
 Series Model(s)..... : N/A

Test Standards : FCC 47CFR §2.1091
 447498 D04 Interim General RF Exposure Guidance v01

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Date of Test

Date of receipt of test item : 28 July 2023
 Date (s) of performance of tests : 28 July 2023 ~ 19 Sept. 2023
 Date of Issue..... : 19 Sept. 2023
 Test Result..... : **Pass**

Testing Engineer :

Aaron Bu

(Aaron Bu)

Technical Manager :

Sean She

(Sean she)

Authorized Signatory :

Chris Chen

(Chris Chen)





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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	19 Sept. 2023	STS2307144H01	ALL	Initial Issue

1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	XGSPON		
Brand Name	AZORES BOW		
Model Name	WAGM51W6		
Series Model(s)	N/A		
Model Difference	N/A		
Product Description	The EUT is XGSPON		
	Operation Frequency:	2.4GWLAN	802.11b/g/n(HT20)/ax(HE20)ac(VHT20): 2412~2462 MHz 802.11n(40MHz)/ax(HE40)/ac(VHT40): 2422~2452MHz
		5.2GWLAN	IEEE 802.11a/ n(HT20)/ac(VHT20): 5.180GHz-5.240GHz IEEE 802.11n(HT40)/ac(VHT40): 5.190GHz-5.230GHz IEEE802.11ac(VHT80)/ax(HE80): 5.210GHz IEEE 802.11 ac(VHT160)/ax(HE160): 5.250GHz
		5.3G WLAN	IEEE 802.11a/ n(HT20)/ac(VHT20): 5.260GHz-5.320GHz IEEE 802.11 n(HT40)/ac(VHT40): 5.270GHz-5.310GHz IEEE 802.11ac(VHT80) /ax(HE80): 5.290GHz
		5.6G WLAN	IEEE 802.11a/ n(HT20)/ac(VHT20): 5.500GHz-5.700GHz IEEE 802.11 n(HT40)/ac(VHT40): 5.510GHz-5.670GHz IEEE 802.11ac(VHT80)/ax(HE80): 5.530GHz-5.610GHz IEEE 802.11 ac(VHT160)/ax(HE160): 5.570GHz
		5.8G WLAN	IEEE 802.11a/ n(HT20)/ac(VHT20): 5.745GHz-5.825GHz IEEE 802.11a/ n(HT40)/ac(VHT40): 5.755GHz-5.795GHz IEEE 802.11ac(VHT80)/ax(HE80):5.775GHz
	Modulation Type:	2.4G WLAN	802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g/n/ax:(OFDM):BPSK,QPSK,16-QAM,64-QAM
		5G WLAN	802.11a(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11ac(OFDM): BPSK,QPSK,16-QAM,64-QAM,256-QAM



	Antenna gain:	2.4G WLAN: ANT 1: 2.18dBi ANT 2: 2.81dBi MIMO 1+2: 5.51 dBi U-NII-1: Antenna number: 3 Antenna 1 gain : 2.81dBi Antenna 2 gain : 3.33dBi Antenna 3 gain : 4.28dBi MIMO technology Directional gain=8.27dBi U-NII-2A: Antenna number: 3 Antenna 1 gain : 2.92dBi Antenna 2 gain : 3.44dBi Antenna 3 gain : 4.73dBi MIMO technology Directional gain=8.50dBi U-NII-2C: Antenna number: 3 Antenna 1 gain : 3.81dBi Antenna 2 gain : 4.33dBi Antenna 3 gain : 4.64dBi MIMO technology Directional gain=9.04dBi U-NII-3: Antenna number: 3 Antenna 1 gain : 3.81dBi Antenna 2 gain : 4.33dBi Antenna 3 gain : 4.21dBi MIMO technology Directional gain=8.89dBi
	Antenna Designation:	PIFA Antenna
Adapter	Model: TPA243B-30120-US Input:AC 100-240V 50/60Hz,1A output: DC 12V, 2.5A Model: RD1202500-C55-195MG Input: AC 100-240V 50/60Hz,1.5A MAX Output:DC 12V 2.5A	
Hardware Version	V1.0	
Software Version	V1.0.01	

1.2 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai 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			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

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 TEST RESULT

Turn up

Mode	Detector	Turn up Power
2.4G WLAN	AV	22±1dBm
5G WLAN	AV	23±1dBm

Protocol	Fre. (MHz)	Separation distance (cm)	Max Turn up power (dBm)	ANT Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Ratio	Result
2.4G WLAN	2412	20	23.00	2.18	25.18	329.61	0.0656	1	0.0656	Pass
5G WLAN	5795	20	24.00	8.89	32.89	1945.36	0.3870	1	0.3870	Pass

Multiple transmission:

$$2.4G\ WLAN + 5G\ WLAN = 0.0656 + 0.3870 = 0.4526 < 1$$

Note: 1. The Maximum power is less than the limit, complies with the exemption requirements.

$$2. ERP = EIRP - 2.15$$

*****END OF THE REPORT*****