

RF Exposure Evaluation Report

Applicant: Libre Wireless Technologies, Inc.
Address of Applicant: 2100 Geng Road, Suite 210, Palo Alto, CA 94303, USA

Equipment Under Test (EUT)

Product Name: WiFi Media Streaming Module
Model No.: LS9X-AC11DBT-C, LS9X-AC11DBT-AC
Trade mark:



FCC ID: 2ADBM-LS9X-AC11DBT
Applicable standards: FCC CFR Title 47 Part 2 Subpart J Section 2.1091
Date of sample receipt: 17 Jan., 2020
Date of Test: 17 Jan., to 14 Mar., 2020
Date of report issue: 21 May, 2020
Test Result: PASS*

Authorized Signature:

A blue circular stamp from CCIS (Shenzhen Zhongjian Nanfang Testing Co., Ltd.) is overlaid on a handwritten signature in blue ink. The stamp contains the text "ZHONGJIAN NANFANG TESTING CO., LTD." around the perimeter and "CCIS" in the center.

Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	21 May, 2020	Original

Tested by: Mike.ou
Test Engineer

Date: 21 May, 2020

Reviewed by: Winner Zhang
Project Engineer

Date: 21 May, 2020

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4 General Information

4.1 Client Information

Applicant:	Libre Wireless Technologies, Inc.
Address:	2100 Geng Road, Suite 210, Palo Alto, CA 94303, USA
Manufacturer:	Libre Wireless Technologies, Inc.
Address:	2100 Geng Road, Suite 210, Palo Alto, CA 94303, USA

4.2 General Description of E.U.T.

Product Name:	WiFi Media Streaming Module
Model No.:	LS9X-AC11DBT-C, LS9X-AC11DBT-AC
Operation Frequency:	2.4G Wi-Fi: 2412MHz~2472MHz 5.2G Wi-Fi Band 1: 5180MHz~5240MHz 5.3G Wi-Fi Band 2: 5260MHz~5320MHz 5.6G Wi-Fi Band 3: 5500MHz~5700MHz 5.8G Wi-Fi Band 4: 5725MHz~5875MHz Bluetooth/ BLE: 2402MHz~2480MHz
Modulation technology:	802.11b: DSSS, 802.11a/g/n/ac: OFDM Bluetooth BDR /BLE: GFSK, Bluetooth EDR: $\pi/4$ -DQPSK, 8DPSK
Antenna Type:	Rod Antenna, PCB Antenna
Antenna gain:	BT/ BLE/ 2.4G Wi-Fi: Rod antenna: 3.0 dBi PCB antenna: 1.5 dBi 5G Wi-Fi: Rod antenna: 3.0 dBi PCB antenna: 3.1 dBi
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

4.3 Operating Modes

Operating mode	Detail description
BLE mode	Keep the EUT in continuously transmitting in BLE mode
BT mode	Keep the EUT in continuously transmitting in BT mode
2.4G WIFI mode	Keep the EUT in continuously transmitting in 2.4G WIFI mode
5G WIFI mode	Keep the EUT in continuously transmitting in 5G WIFI mode

4.4 Additions to, deviations, or exclusions from the method

No

4.5 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Designation No.: CN1211**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

4.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No.110~116, Building B, Jinyuan Business Building, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

5 Technical Requirements Specification in FCC CFR Title 47 Part 2.1091

5.1 Limits

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)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

5.2 Test Procedure

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna

5.3 Result

Frequency (MHz)	Maximum Output power (dBm)	Maximum Output power (mW)	Antenna Gain (dBi)	Antenna Gain (numeric)	Distance (cm)	Result (mW/cm ²)	Limits for General Population/ Uncontrolled Exposure (mW/cm ²)
2.4G Wi-Fi							
2412	16.30	42.66	3.0	2.00	20.00	0.0190	1.0
5.2G Wi-Fi							
5180	15.70	37.15	3.1	2.04	20.00	0.0151	1.0
5.3G Wi-Fi							
5260	14.18	26.18	3.1	2.04	20.00	0.0106	1.0
5.6G Wi-Fi							
5500	13.82	24.10	3.1	2.04	20.00	0.0098	1.0
5.8G Wi-Fi							
5745	11.39	13.77	3.1	2.04	20.00	0.0056	1.0
BLE							
2480	6.89	4.89	3.0	2.00	20.00	0.0019	1.0
BT							
2441	6.42	4.39	3.0	2.00	20.00	0.0017	1.0

Note: Just the worst case mode was shown in report.

5.4 Conclusion

The device is exempt from the RF exposure evaluation.

-----End of report-----