

Report No.: SZEM200900885204 Page: 1 of 8

RF Exposure Evaluation Report

Application No.:	SZEM2009008852CR
Applicant:	Sichuan Al-Link Technology Co., Ltd.
Address of Applicant:	Anzhou, Industrial park, Mianyang, Sichuan, china
Manufacturer:	Sichuan Al-Link Technology Co., Ltd.
Address of Manufacturer:	Anzhou, Industrial park, Mianyang, Sichuan, china
Product Name:	WIFI module
Model No.:	WF-R12B-UWD1, WF-R12B-UWD2, WF-R12B-UWD3 🔺
*	Please refer to section 4.1 of this report which indicates which model was
	actually tested and which were electrically identical.
FCC ID:	2AOKI-WFR12BUWD1
	47 CFR Part 1.1307
Standards:	47 CFR Part 1.1310
	47 CFR Part 2.1091
Date of Receipt:	2020-09-04
Date of Test:	2020-09-04 to 2020-10-04
Date of Issue:	2020-10-04
Test Result :	PASS*

In the configuration tested, the EUT complied with the standards specified above.

Keny. Xu

Keny Xu EMC Laboratory Manager



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-en-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exoncreate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) itset and such as maple(s) are retained for 30 days only. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@sgs.com



Report No.: SZEM200900885204 Page: 2 of 8

2 Version

Revision Record								
Version	Chapter	Date	Modifier	Remark				
01		2020-10-04		Original				

Authorized for issue by:		
	Relisonti	
	Edison Li /Project Engineer	-
	Evic Fu	
	Eric Fu /Reviewer	-



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-en-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not excore a transaction from exercising all their rights and obligations under the transaction documents. This document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this lest report refer only to the sample(s) iseted and such sample(s) iser retained for 30 days only. Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@egs.com

or email: <u>CN_Doccheck@sgs.com</u> No.1 Workshop, M-10, Midde Section, Science & Technology Park, Shenzhen, China 518057 tt (86–755) 26012053 ft (86–755) 26710594 www.sgsgroup.com.cn 中国・深圳・科技园中区M-10栋一号厂房 邮编: 518057 tt (86–755) 26012053 ft (86–755) 26710594 sgs.china@sgs.com



> Report No.: SZEM200900885204 Page: 3 of 8

3 Contents

		Page
1	COVER PAGE	1
2	VERSION	2
3	CONTENTS	3
4	GENERAL INFORMATION	
	4.1 GENERAL DESCRIPTION OF EUT	
	4.2 TEST LOCATION	
	4.3 TEST FACILITY	
	4.4 DEVIATION FROM STANDARDS	6
	4.5 ABNORMALITIES FROM STANDARD CONDITIONS	6
	4.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
5	FFEXPOSURE EVALUATION	7
	5.1 RF EXPOSURE COMPLIANCE REQUIREMENT	7
	5.1.1 Limits	7
	5.1.2 Test Procedure	7
	5.1.3 EUT RF Exposure Evaluation	



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>http://www.sgs.com/en/Terms-and-Conditions.aspx</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>http://www.sgs.com/en/Terms-and-Conditions/Terms-en-Document.aspx</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exconerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) issed and such sample(s) are retained for 30 days only. Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@egs.com

or email: <u>CN_Doccheck@sgs.com</u> No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn 中国 • 深圳 • 科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.com



Report No.: SZEM200900885204 Page: 4 of 8

4 General Information

4.1 General Description of EUT

Power supply:	DC3.3V						
Internal source:	More than 10	More than 108MHz					
For 2.4G WiFi:	For 2.4G WiFi:						
Type of Modulation:	802.11b: DS	SS (CCK, DQPSK, DBPSK)					
	802.11g: OF	DM (64QAM, 16QAM, QPSK, B	PSK)				
	802.11n (HT	20/HT40): OFDM (64QAM, 16Q	AM, QPSK, BPSK)				
Operating Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz					
	802.11n(HT4	0): 2422MHz to 2452MHz					
Channel Number:	802.11b/g/11	n(HT20): 11 Channels					
	802.11n(HT4	0): 7 Channels					
Channels Step:	Channels wit	h 5MHz step					
Sample Type:	Fixed produc	tion					
Antenna Type:	Please refer	to section 4.1 of this report.					
Antenna Gain:	Please refer	to section 4.1 of this report.					
	Note: The tw	o antennas can simultaneous tr	ansmission.				
For 5G WiFi:							
Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels			
	UNII Band I	802.11a/n(HT20)/ac(HT20)	5180-5240	4			
		802.11n(HT40)/ac(HT40)	5190-5230	2			
		1					
	UNII Band	802.11a/n(HT20)/ac(HT20)	5260-5320	4			
	II-A	802.11n(HT40)/ac(HT40)	5270-5310	2			
		802.11ac(HT80)	5290	1			
	UNII Band	802.11a/n(HT20)/ac(HT20)	5500-5700	11			
	II-C	802.11n(HT40)/ac(HT40)	5510-5670	5			
		802.11ac(HT80)	5530, 5610MHz	2			
	UNII Band	802.11a/n(HT20)/ac(HT20)	5745-5825	5			
	111	802.11n(HT40)/ac(HT40)	5755-5795	2			
		802.11ac(HT80)	5775	1			
Modulation Type:	802.11a: OF	DM(64QAM, 16QAM, QPSK, BF	PSK)				
	802.11n: OF	DM (BPSK, QPSK, 16QAM, 640	QAM)				
	802.11ac: OF	FDM (BPSK, QPSK, 16QAM, 64	IQAM, 256QAM)				
DFS Function:	Slave withou	t radar detection					
Sample Type:	Fixed produc	Fixed production					
Antenna Type:	Please refer to section 4.1 of this report.						



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-en-Document.aspx. Attention is drawn to the limitation or liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exconerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@egs.com

01 mint Creation Science & Technology Park, Shenzhen, China 518057 tt (86-755) 26012053 ft (86-755) 26710594 www.sgsgroup.com.cn 中国・深圳・科技园中区M-10栋一号厂房 邮编: 518057 tt (86-755) 26012053 ft (86-755) 26710594 sgs.china@sgs.com



Report No.: SZEM200900885204 Page: 5 of 8

Antenna Gain:	Please refer to section 4.1 of this report.
	Note: two antennas can simultaneous transmission.

Remark:

Model No.: WF-R12B-UWD1, WF-R12B-UWD2, WF-R12B-UWD3

Only the model WF-R12B-UWD1 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only the model WF-R12B-UWD1 and WF-R12B-UWD2 difference on the connector part and model No., WF-R12B-UWD2 and WF-R12B-UWD3 difference on overall dimension and model No. and for all the above models difference on the cable length of antennas.

This report SZEM200900885204 is prepared for FCC class II permissive change.

The modular approval by TCB, FCC ID:2AOKI-WFR12BUWD1, Granted on 04/16/2020.

According to the declaration from the applicant, this report was an additional report copied from the report SZEM200100064404, just added the antenna 1 series number15 and series number16. The specifications of antenna 1 series number15 and series number16 are shown below:

Antenna Type Code	Antenna Project Code	Max Antenna Gain(dBi)	Cable Length (Unit: cm)	Part No.	Remark
Walsin RF	Metal	2.4G Peak Gain: 1.72dBi	10cm	SLK-T3010-L-XI-B	Series Number15
Device	Antenna1	5G Peak Gain: 2.57dBi	60cm	SLK-T3010-L-XI-B	Series Number16

Since the electrical circuit design, layout, components used and internal wiring were identical, only different by the addition of the antenna 1 series number15 and series number16.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the lime of its intervention only and within the limits of Cilent's instructions, if any. The Company's sole responsibility is to its Cilent and this document does not excore a transaction from exercising all their rights and obligations under the transaction documents. This document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) test and sub aspmele(s) are retained for 30 days only. Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@egs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 中国·深圳•科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594

www.sqsqroup.com.cn

sgs.china@sgs.com



Report No.: SZEM200900885204 Page: 6 of 8

4.2 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.3 Test Facility

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

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC – Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

None.

4.6 Other Information Requested by the Customer

None.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-en-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not excore a transaction from exercising all their rights and obligations under the transaction documents. This document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) test and sub aspmele(s) are retained for 30 days only. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@egs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 中国 • 深圳 • 科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 www.sqsqroup.com.cn

sgs.china@sgs.com



Report No.: SZEM200900885204 Page: 7 of 8

5 **RF Exposure Evaluation**

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: 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 part1.1307(b) TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)	
(A) Lim	its for Occupational	/Controlled Exposu	res		
0.3–3.0 3.0–30 30–300 300–1500	614 1842/f 61.4	1.63 4.89/f 0.163	*(100) *(900/f ²) 1.0 f/300	6 6 6 6	
1500–100,000			5	6	
(B) Limits	for General Populati	on/Uncontrolled Exp	oosure		

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

F= Frequency in MHz

Friis Formula Friis transmission formula: $Pd = (Pout^*G)/(4^* Pi * R^2)$ Where $Pd = power density in mW/cm^2$ Pout = output power to antenna in mW G = gain of antenna in linear scalePi = 3.1416

For Uncontrolled Environment, the MPE limit of 300MHz to 1500MHz is f/1500 mW/cm², the MPE limit of 1500MHz to 100000MHz is 1.0 mW/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.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-en-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document fere only to the sample(s) tested and such sample(s) are retained for 30 days only. Attention: To check the authenticity of testing /inspection report accriticate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@seg.com (No.1Worksbo, M-01 Middsededing. Science & TechnologyPark, Shenzhen, China 518057 to (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn mail: CN_Doccheck@seg.com for a seg.com for a seg.com in this test results and plant and science & technologyPark, Shenzhen, China 518057 to (86-755) 26012053 f (86-755) 26710594 seg.com for a seg.com for

Member of the SGS Group (SGS SA)



Report No.: SZEM200900885204 Page: 8 of 8

5.1.3 EUT RF Exposure Evaluation

1) Test Results

Note: The 2.4G WiFi and 5G WiFi can't synchronous transmission at the same time.

For 2.4G WiFi:

The max tune-up tolerance power Into Antenna & RF Exposure Evaluation Distance:

Antenna	Max Antenna Gain (dBi)	Max Antenna Gain (Numeric)	Max tune-up tolerance power (dBm)	Max tune-up Tolerance power to Antenna (mW)	Power Density at R = 20 cm (mW/cm²)	Limit (mW/cm ²)	MPE Ratios	Result
Ant1+2	1.72	1.49	14.84	30.48	0.0090	1	0.0090	PASS

Note: Refer to report No. SZEM200900885202 or EUT test Max Conducted Peak Output Power value. The distancer (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

For 5G WiFi:

The max tune-up tolerance power Into Antenna & RF Exposure Evaluation Distance:

Antenna	Max Antenna Gain (dBi)	Max Antenna Gain (Numeric)	Max tune-up tolerance power (dBm)	Max tune-up Tolerance power to Antenna (mW)	Power Density at R = 20 cm (mW/cm²)	Limit (mW/cm ²)	MPE Ratios	Result
Ant1+2	2.57	1.81	14.96	31.33	0.0113	1	0.0113	PASS

Note: Refer to report No. SZEM200900885203 or EUT test Max Conducted Peak Output Power value. The distancer (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

Since the SAR Exclusion Threshold Level is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

End of Report



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-a-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document. Sone excerts and within the limits of transaction from exercising all their rights and obligations under the transaction documents. This document is cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or faisification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. Attention: To check the authenticity of testing impection report & certificate, piezes contact us at lelephone: (86-755) 8307 1443, or email: CN. Doccheck@esg.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86–755) 26012053 f (86–755) 26710594 www.sgsgroup.com.cn 中国 •深圳 • 科技园中区M-10栋一号厂房 邮编: 518057 t (86–755) 26012053 f (86–755) 26710594 sgs.china@sgs.com