

# RF EXPOSURE EVALUATION REPORT

**Application No.:** GZCR2210001341AT  
**Applicant:** SZZJ COMMUNICATION TECHNOLOGY CO., LIMITED  
**Address of Applicant:** 0488,306Room,3rd FL Guangshen Building No.2023, Shennan East Road, Xinnan Community Nanhu Street Luohu, Shenzhen, Guangdong, China  
**Manufacturer:** SZZJ COMMUNICATION TECHNOLOGY CO., LIMITED  
**Address of Manufacturer:** 0488,306Room,3rd FL Guangshen Building No.2023, Shennan East Road, Xinnan Community Nanhu Street Luohu, Shenzhen, Guangdong, China  
**Factory:** SZZJ COMMUNICATION TECHNOLOGY CO., LIMITED  
**Address of Factory:** 0488,306Room,3rd FL Guangshen Building No.2023, Shennan East Road, Xinnan Community Nanhu Street Luohu, Shenzhen, Guangdong, China

### Equipment Under Test (EUT):

**EUT Name:** Booster  
**Model No.:** SZZJ-A10LF-LCPA, SZZJ-A13LF-LCPA, SZZJ-A17LF-LCPA  
Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

**Standard(s) :** 47 CFR Part 2.1091  
47 CFR Part 1.1310, Part 1.1307

**Date of Receipt:** 2022-10-24

**Date of Evaluation:** 2022-10-31

**Date of Issue:** 2022-11-01


<b>Test Result:</b>	<b>Pass*</b>
---------------------	--------------

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

Kobe Jian  
EMC Laboratory Manager



Revision Record			
Version	Chapter	Date	Modifier Remark
01	GZCR221000134102	2022-11-01	Original

<b>Authorized for issue by:</b>			
			
	<b>Kevin Zhang /Project Engineer</b>		
			
	<b>Ricky Liu /Reviewer</b>		



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-Documents.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 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@sgs.com](mailto:CN.Doccheck@sgs.com)**

## 2 Evaluation Summary

Radio Spectrum Technical Requirement				
Item	Standard	Requirement	Method	Result
RF Exposure	47 CFR Part 2.1091 47 CFR Part 1.1310 47 CFR Part 1.1307	47 CFR Part 1.1310	47 CFR Part 1.1310	PASS

### ■ Declaration of EUT Family Grouping:

**Model No.:** SZZJ-A10LF-LCPA, SZZJ-A13LF-LCPA, SZZJ-A17LF-LCPA

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only differences on the maximum output power, maximum gain and model No.. They named differently just due to different maximum output power and maximum gain. Both output power and gain changes were performed by software only, no design changes.

Max. Output Power: (Conducted)	Uplink:	17~21dBm
	Downlink:	8dBm for SZZJ-A17LF-LCPA 3dBm for SZZJ-A13LF-LCPA 0dBm for SZZJ-A10LF-LCPA
Max. Gain:	Uplink:	63dB
	Downlink:	63dB for SZZJ-A17LF-LCPA 60dB for SZZJ-A13LF-LCPA 58dB for SZZJ-A10LF-LCPA
Software Version:		SZZJ_AV1.01.17.00 for SZZJ-A17LF-LCPA
		SZZJ_AV1.01.17.01 for SZZJ-A13LF-LCPA
		SZZJ_AV1.01.17.02 for SZZJ-A10LF-LCPA

Furthermore, there are two outer shells for all modes, please refer to External and Internal Photos for GZCR2210001341AT for details.

All test performed with model number SZZJ-A17LF-LCPA & SZZJ-A13LF-LCPA & SZZJ-A10LF-LCPA and passed well, Reviewed the test data find model SZZJ-A17LF-LCPA with max power and Gain is the worst case obviously. Therefore only the data for model SZZJ-A17LF-LCPA recored in 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-e-Documents.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 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.

### 3 Contents

	Page
1 Covers Page .....	1
2 Evaluation Summary .....	3
3 Contents .....	4
4 General Information.....	5
4.1 Details of E.U.T. ....	5
4.2 Evaluated Location .....	6
4.3 Test Facility.....	7
4.4 Deviation from Standards .....	7
4.5 Abnormalities from Standard Conditions .....	7
5 Radio Spectrum Technical Requirement.....	8
5.1 RF Exposure .....	8
5.1.1 Requirement.....	8
5.1.2 Method.....	9
5.1.3 Conclusion .....	9
5.2 EUT Constructional Details (EUT Photos) .....	10



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-Documents.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 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@sgs.com](mailto:CN.Doccheck@sgs.com)

### 4 General Information

#### 4.1 Details of E.U.T.

Power Supply:	AC 100-240V, 50/60Hz by AC/DC adapter
	MODEL: JY-9V3A
	INPUT: 100-240V, 50/60Hz
	OUTPUT: 9.0V--3.0A
Test Voltage:	AC 110V
Cable:	DC output cable (unshielded, 1m)
Operating Temperature:	-25 to +55 °C
	Lower 700MHz Uplink: 698MHz to 716MHz
	Downlink: 728MHz to 746MHz
	Upper 700MHz Uplink: 777MHz to 787MHz
	Downlink: 746MHz to 756MHz
	Cellular Uplink: 824MHz to 849MHz
	Downlink: 869MHz to 894MHz
	AWS-1 Uplink: 1710MHz to 1755MHz
	Downlink: 2110MHz to 2155MHz
	Broadband PCS Uplink: 1850MHz to 1910MHz
	Downlink: 1930MHz to 1990MHz
Interface:	RF Port: 2 (N-F)
	Power Jack: 1
Max. Output Power:	Uplink: 17~21dBm
(Conducted)	Downlink: 8dBm for SZZJ-A17LF-LCPA
	3dBm for SZZJ-A13LF-LCPA
	0dBm for SZZJ-A10LF-LCPA
Max. Gain:	Uplink: 63dB
	Downlink: 63dB for SZZJ-A17LF-LCPA
	60dB for SZZJ-A13LF-LCPA
	58dB for SZZJ-A10LF-LCPA



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-Documents.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 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@sgs.com](mailto:CN.Doccheck@sgs.com)

Antenna Type: External Dedicated Antenna  
Permission Antenna Gain: 10dBi or less  
Software Version: SZZJ\_AV1.01.17.00 for SZZJ-A17LF-LCPA  
SZZJ\_AV1.01.17.01 for SZZJ-A13LF-LCPA  
SZZJ\_AV1.01.17.02 for SZZJ-A10LF-LCPA

Booster type Fixed consumer signal booster

### 4.2 Evaluated Location

All evaluation were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,  
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,  
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059



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-Documents.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 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@sgs.com](mailto:CN.Doccheck@sgs.com)

### 4.3 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

### 4.4 Deviation from Standards

None

### 4.5 Abnormalities from Standard Conditions

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-e-Documents.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 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@sgs.com](mailto:CN.Doccheck@sgs.com)

## 5 Radio Spectrum Technical Requirement

### 5.1 RF Exposure

#### 5.1.1 Requirement

In accordance with 47 CFR FCC Part 2.1091, this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

According to 47 CFR FCC Part 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 TO §1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(i) Limits for Occupational/Controlled Exposure</b>				
3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
<b>(ii) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

f = frequency in MHz. \* = Plane-wave equivalent power density



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-Documents.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 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@sgs.com](mailto:CN.Doccheck@sgs.com)



**5.1.2 Method**

According to IEEE C95.3:2002 section 5.5.1.1, the power density S at a point on the axis at a distance d from a transmitting antenna is given by the Friis free-space transmission formula:

$$S = \frac{PG}{4\pi d^2}$$

*S* = power density (mW/cm<sup>2</sup>)  
*P* = the net power delivered to the antenna (mW)  
*G* = gain of the antenna in linear scale  
*d* = distance between observation point and center of the radiator (cm)

From the maximum EUT RF output power, as well as the gain of the used antenna, according to the RF power density limit stated in above table, the minimum distance between the antenna and human body will be calculated.

**5.1.3 Conclusion**

Normal use condition for Distance between antenna and body: >=20cm declared by the manufacturer

Antenna Gain: 10 dBi

Product manual request the min cable length for both connect donor antenna to booster and server antenna to booster is 5 meters, So the exposure evaluation only the UL and DL single transmission be concerned in this report even if the product UL and DL simultaneous emission during operation.

RF exposure evaluation for UL and DL simultaneous emission

**For DOWNLINK**

Band	Max. Antenna Gain (Numeric)	Max. tune up tolerance power (dBm)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Result
700MHz	10	8	0.01255	0.4853	Complies
Cellular	10	8	0.01255	0.5793	Complies
AWS-1	10	8	0.01255	1	Complies
Broadband PCS	10	8	0.01255	1	Complies

Remark:  
 For 700MHz band, the limit is  $f/1500 = 728/1500 = 0.4853$  mW/cm<sup>2</sup> for the stringent limit.  
 For Cellular band, the limit is  $f/1500 = 869/1500 = 0.57933$  mW/cm<sup>2</sup> for the stringent limit.



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-Documents.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 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@sgs.com](mailto:CN.Doccheck@sgs.com)

**For UPLINK**

Band	Max. Antenna Gain (Numeric)	Max. tune up tolerance power (dBm)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Result
Lower 700MHz	10	21	0.25045	0.4653	Complies
Upper 700MHz	10	21	0.25045	0.518	
Cellular	10	21	0.25045	0.5493	Complies
AWS-1	10	21	0.25045	1	Complies
Broadband PCS	10	21	0.25045	1	Complies
Remark: For Lower 700MHz band, the limit is $f/1500 = 698/1500 = 0.4653 \text{ mW/cm}^2$ for the stringent limit. For Upper 700MHz band, the limit is $f/1500 = 777/1500 = 0.518 \text{ mW/cm}^2$ for the stringent limit. For Cellular band, the limit is $f/1500 = 824/1500 = 0.5493 \text{ mW/cm}^2$ for the stringent limit.					

So SAR report is not required.

**5.2 EUT Constructional Details (EUT Photos)**

Refer to External and Internal Photos for GZCR2210001341AT.

- End of the 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-e-Documents.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 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@sgs.com**