



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

SZEMC-TRF-01 Rev. A/0 Aug01,2022

Report No.: SZCR230300089202

Page: 1 of 9

# RF EXPOSURE EVALUATION REPORT

Application No.:	SZCR2303000892AT
Applicant:	SHENZHEN SATLEAD TECHNOLOGY CO., LTD
Address of Applicant:	TCL Science Park, NO.1001 Zhongshanyuan Road Shenzhen China
Manufacturer:	SHENZHEN SATLEAD TECHNOLOGY CO., LTD
Address of Manufacturer:	TCL Science Park, NO.1001 Zhongshanyuan Road Shenzhen China
Equipment Under Test (EUT):	
EUT Name:	Wireless date transceiver
Model No.:	HX-DU1021D
FCC ID:	2BA39HX-DU1021D
Standard(s) :	47 CFR PART 1, Subpart I, Section 1.1307 47 CFR PART 2, Subpart J, Section 2.1091
Date of Receipt:	2023-03-30
Date of Evaluation:	2023-04-23 to 2023-05-29
Date of Issue:	2023-06-03

Evaluation Result:	Pass*
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\* In the configuration evaluated, the EUT complied with the standards specified above.

Keny Xu  
EMC Laboratory Manager



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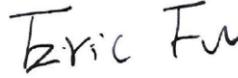
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<b>Revision Record</b>				
<b>Version</b>	<b>Chapter</b>	<b>Date</b>	<b>Modifier</b>	<b>Remark</b>
01		2023-06-03		Original

<b>Authorized for issue by:</b>			
		 _____ <b>Darren Yuan/Project Engineer</b>	
		 _____ <b>Eric Fu/Reviewer</b>	

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## 2 Evaluation Summary

**Note:**

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

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## 4 General Information

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

Power Supply:	DC 3.3V
Frequency Range:	903-927MHz
Modulation Type:	CSS
Channel Spacing:	500KHz
Number of Channels:	49
Antenna Type:	Dipole Antenna
Antenna Gain:	2dBi

### Channel list:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	903	18	911.5	35	920
2	903.5	19	912	36	920.5
3	904	20	912.5	37	921
4	904.5	21	913	38	921.5
5	905	22	913.5	39	922
6	905.5	23	914	40	922.5
7	906	24	914.5	41	923
8	906.5	25	915	42	923.5
9	907	26	915.5	43	924
10	907.5	27	916	44	924.5
11	908	28	916.5	45	925
12	908.5	29	917	46	925.5
13	909	30	917.5	47	926
14	909.5	31	918	48	926.5
15	910	32	918.5	49	927
16	910.5	33	919		
17	911	34	919.5		

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## 4.2 Evaluating 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, Nanshan District, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 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 (Member No. 1937)**

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. Shenzhen EMC laboratory 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: CN1336**

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

Designation Number: CN1336. Test Firm Registration Number: 787754.

- **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

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## 5 Technical Requirements Specification

### 5.1 RF Exposure Evaluation

#### 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 <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3–3.0 .....	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
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
<b>(B) 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
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi = 3.1416$

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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. 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.



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**5.1.3 EUT RF Exposure Evaluation**

Antenna Gain: 2dBi

Output Power Into Antenna &amp; RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
Low	903	19.02	79.80	0.03	0.60	PASS
Middle	915	18.77	75.34	0.02	0.61	PASS
High	927	18.90	77.62	0.02	0.61	PASS

Note: Refer to report No. SZCR230300089201 for EUT test Max Conducted Peak Output Power value.

The distance r (4th column) calculated from the Friis transmission formula is far greater than 20 cm separation requirement.

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## 6 EUT Constructional Details (EUT Photos)

Refer to appendix - external and internal photos for SZCR2303000892AT

- End of the Report -



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