

# RF Exposure Evaluation Report

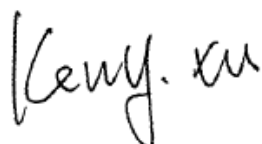
**Application No.:** SZEM2007005816CR  
**Applicant:** ZKTECO CO.,LTD.  
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**Manufacturer:** ZKTECO CO.,LTD.  
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**Factory:** ZKTECO CO.,LTD.  
**Address of Factory:** No.26,Pingshan 188 Industry zone,Tangxia Town,Dongguan City,Guangdong Province,China 523728

**Equipment Under Test (EUT):**  
**EUT Name:** Smart Access Control Terminal  
**Model No.:** SpeedFace-H5L  
**FCC ID:** 2AJ9T-H5IW  
**Standards:** 47 CFR PART 1, Subpart I, Section 1.1307  
 47 CFR PART 1, Subpart I, Section 1.1310  
 47 CRF PART 2, Subpart J, Section 2.1091  
 KDB 447498 D01 General RF Exposure Guidance v06

**Date of Receipt:** 2020-07-01  
**Date of Test:** 2020-07-11 to 2020-08-10  
**Date of Issue:** 2020-08-13

<b>Test Result :</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu  
 EMC Laboratory Manager



## 2 Version

<i>Revision Record</i>				
<i>Version</i>	<i>Chapter</i>	<i>Date</i>	<i>Modifier</i>	<i>Remark</i>
01		2020-08-13		Original

<b>Authorized for issue by:</b>			
			
		<hr/> <b>Damon Su /Project Engineer</b>	
			
		<hr/> <b>Eric Fu /Reviewer</b>	



### 3 Contents

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



## 4 General Information

### 4.1 General Description of EUT

Power Supply:	Input: DC 12V 3A Adapter Model: ADS-40SI-12-3 12036E Input: AC 100-240V 50/60Hz 1.0A Output: DC 12V 3A
Cable:	AC Cable:150cm unshielded
WIFI	
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	802.11b/g/n(HT20):11 802.11n(HT40):7
Channel Spacing:	5MHz
Antenna Type:	PIFA Antenna
Antenna Gain:	1.78dBi
125kHz	
Operation Frequency:	125kHz
Modulation Type:	ASK
Antenna Type:	Loop Antenna



## 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.



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## 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 <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:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

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.



### 5.1.3 EUT RF Exposure Evaluation

Antenna Gain: 1.78dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.51 in linear scale.

Output Power Into Antenna & 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	Result
Highest	2462	19.56	90.36	0.027	1.0	PASS

Note: Refer to report No. SZEM200700581602 for EUT test Max Conducted Peak Output Power value. The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

For 125kHz the RF output power is very low, RF Exposure can be ignored.

### 2) Exposure condition for simultaneous transmission operations

Simultaneous transmission MPE test is not required, because the Max. sum of the MPE ratios for WIFI and 125k is  $0.027/1.0=0.027 < 1.0$

- End of the Report -

