Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

RF Exposure evaluation

Report Reference No. ..... :	**GTS20190531004-1-5**
FCC ID. ..... :	**2AUL8SAAT-F527A**
Compiled by (position+printed name+signature) . :	File administrators Peter Xiao
Supervised by (position+printed name+signature) . :	Test Engineer Moon Tan
Approved by (position+printed name+signature) . :	Manager Simon Hu
Date of issue ..... :	Sep.09, 2019

Representative Laboratory Name :	**Shenzhen Global Test Service Co.,Ltd.**
Address ..... :	No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

Applicant's name ..... :	**Shenzhen Aerospace Innotech Corporation Limited**
Address ..... :	D9,The 10th Kejinan Road,High-Tech Zone,Nanshan Dist, Shenzhen, P.R.China

Test specification ..... **:**	
Standard ..... :	**47CFR §1.1310** **47CFR §2.1093** **KDB447498 v06**
TRF Originator ..... :	Shenzhen Global Test Service Co.,Ltd.
Master TRF ..... :	Dated 2014-12

Test item description..... :	**RFID Reader**
Trade Mark..... :	N/A
Manufacturer..... :	Shenzhen Aerospace Innotech Corporation Limited
Model/Type reference..... :	SAAT-F527A
Listed Models ..... :	SAAT-F526B, SAAT-F527B, SAAT-F527, HT-I730, HT-F730I, SAAT-E221C, SAAT-E221B, SAAT-E221C-POE, SAAT-F526B-A
Exposure category..... :	General population/uncontrolled environment
EUT Type..... :	Production Unit
Rating..... :	DC 12.0V by Adapter
Result..... :	**PASS**

T E S T R E P O R T

Test Report No. :	**GTS20190531004-1-5**	Sep.09, 2019 Date of issue

Equipment under Test	:	RFID Reader
Model /Type	:	SAAT-F527A
Listed Models	:	SAAT-F526B, SAAT-F527B, SAAT-F527, HT-I730, HT-F730I, SAAT-E221C, SAAT-E221B, SAAT-E221C-POE, SAAT-F526B-A
Applicant	:	**Shenzhen Aerospace Innotech Corporation Limited**
Address	:	D9,The 10th Kejinan Road,High-Tech Zone,Nanshan Dist, Shenzhen, P.R.China
Manufacturer	:	**Shenzhen Aerospace Innotech Corporation Limited**
Address	:	D9,The 10th Kejinan Road,High-Tech Zone,Nanshan Dist, Shenzhen, P.R.China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1 . SUMMARY

1.1. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

○ - supplied by the manufacturer

● - supplied by the lab

●	/	Length (m) :	/
		Shield :	/
		Detachable :	/

1.2. Product Description

Name of EUT	RFID Reader
Trade Mark:	/
Model/Type reference:	SAAT-F527A
List Model	SAAT-F526B, SAAT-F527B, SAAT-F527, HT-I730, HT-F730I, SAAT-E221C, SAAT-E221B, SAAT-E221C-POE, SAAT-F526B-A
Model Declaration	PCB board, structure and internal of these model(s) are the same, So no additional models were tested.
FCC ID	2AUL8SAAT-F527A
Power Supply	DC 12.0V by Adapter
Adapter information:	Model: PS36IBCAY300H Input:AC 100-240V,50/60Hz,1.0A Output:DC 12V/3000mA
RFID	
Operation frequency	2405-2480MHz
Channel Number	16 channels
Channel Spacing	5MHz
Modulation Type	GFSK
Antenna Description	External Antenna; 2.0dBi
Remark:	

2. TEST ENVIRONMENT

2.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

2.2. Test Facility

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

CNAS (No. CNAS L8169)
Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA (Certificate No. 4758.01)
Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.

2.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

2.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Global Test Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. METHOD OF MEASUREMENT

3.1. Applicable Standard

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.
FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.
FCC CFR 47 part2 2.1091: Radiofrequency radiation exposure evaluation: mobile devices

3.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
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

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 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
*=Plane-wave equivalent power density

4. MPE Calculation Method

Predication of MPE limit at a given distance
Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S=power density
P=power input to antenna
G=power gain of the antenna in the direction of interest relative to an isotropic radiator
R=distance to the center of radiation of the antenna

5. Antenna Information

SAAT-F527A can only use antennas certificated as follows provided by manufacturer;

Internal Identification	Antenna type and antenna number	Operate frequency band	Maximum antenna gain	Note
Antenna 0	PCB Antenna	2000 MHz – 2500 MHz	2.0 dBi	2.4G Antenna

6. Conducted Power

[2.4G]

Mode	Channel	Frequency(MHz)	Peak Conducted Output Power (dBm)
GFSK	0	2405	22.10
	7	2440	22.58
	15	2480	21.46

7. Manufacturing Tolerance

[2.4G]

GFSK (Peak)			
Channel	Channel 0	Channel 7	Channel 15
Target (dBm)	22.0	22.0	21.0
Tolerance ±(dB)	1.0	1.0	1.0

8. Measurement Results

8.1. Standalone MPE

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, r =20cm, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
GFSK	23.00	199.5262	2.0	1.5849	100%	0.063	1.0000

Remark:
1. Output power including tune-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

8.2. Simultaneous Transmission MPE

The sample support one 2.4G modular and one antenna, no need consider simultaneous transmission;

9. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

.....End of Report.....