TEST REPORT

Report No.: SHATBL2401024W03

Applicant	:	Star Systems International Limited
Product Name	:	RFID Reader
Brand Name	:	SSI
Model Name	:	HRD30000
FCC ID	:	2AA7KCELESTIA30000
Test Standard	:	47 CFR 2.1091
Date of Test	:	Dec. 13,2023~Jan. 09,2024

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(Chris Xu)

Report Approved by : Ghost Li.

(Ghost Li)

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(Terry Yang)

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REVISION HISTORY

Rev.	Issue Date	Revisions	Revised by
00	2024.1.9	Initial Release	N/A

DECLARATION OF REPORT

1. The device has been tested by ATBL, and the test results show that the equipment under test (EUT) is in compliance with the requirements of 47 CFR 2.1091. And it is applicable only to the tested sample identified in the report.

2. This report shall not be reproduced except in full, without the written approval of ATBL, this document only be altered or revised by ATBL, personal only, and shall be noted in the revision of the document.

3. The general information of EUT in this report is provided by the customer or manufacture, ATBL is only responsible for the test data but not for the information provided by the customer or manufacture.

4. The results in this report is only apply to the sample as tested under conditions. The customer or manufacturer is responsible for ensuring that the additional production units of this model have the same electrical and mechanical components.

5. In this report, '☐' indicates that EUT does not support content after '☐', and '☑' indicates that it supports content after '☑'

1. GENERAL DESCRIPTION

1.1 Applicant

Name	:	Star Systems International Limited
Address	:	Unit 7, 8/F, Vanta Industrial Centre, 21-33 Tai Lin Pai Road Kwai Chung, N.T., Hong Kong

1.2 Manufacturer

Name	:	Star Systems International Limited
Address	:	Unit 7, 8/F, Vanta Industrial Centre, 21-33 Tai Lin Pai Road Kwai Chung, N.T., Hong Kong

1.3 Factory

Name	:	IDRO Co., Ltd
Address	:	#407-2, 17 Daehak 4-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, South Korea 16226

1.4 General Information of EUT

General Information	
Equipment Name	RFID Reader
Brand Name	SSI
Model Name	HRD30000
Series Model	HRD3000X(X=0-9, A-Z, a-z, blank)
Model Difference	Different in Antenna option
Adapter	Model: THX-120300KC Brand:Shenzhen Tianhangxing Electronics Co. LTd. Input: 100-240 AC (50/60Hz) Output: 12V-3A
Battery	N/A
Frequency Range	902.75MHz~ 927.25MHz
Modulation Type	Dense reader mode PR ASK Single reader mode DSB ASK
Temperature Range	-20~+55℃
Hardware Version	IDRO900FE V2.0
Software Version	Rfmain_2023_08_10_01_SP.idro
Connecting I/O Port(s)	Refer to the remark below.

Remark:

The above information of EUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.5 Equipment Specification

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Name	Connector	Gain (dBi)	Antenna Cable loss (dB)	Antenna combination(dB)
1	SSI	Tarvos Pro (HRD30000)	Avior	N-Type	15	12	3
2	SSI	Tarvos Pro (HRD30000)	Avalon	N-Type	13	12	1
3	SSI	Tarvos Pro (HRD30000)	Cheetah II	N-Type	12	12	0
4	SSI	Tarvos Pro (HRD30000)	Kuma	N-Type	10	12	-2
5	SSI	Tarvos Pro (HRD30000)	Bobcat	N-Type	8	12	-4
6	SSI	Tarvos Pro (HRD30000)	Vespira	N-Type	12	12	0

1.6 Laboratory Information

Company Name	:	Shanghai ATBL Technology Co., Ltd.
Address	:	Building 8,No.160 Basheng Road, Waigaoqiao Free Trade Zone, Pudong New Area, Shanghai
Telephone	:	+86(0)21-51298625

1.7 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

47 CFR Part 2.1091

FCC KDB 447498 D01 Interim General RF Exposure Guidance v06

2. FCC 47CFR 2.1091 REQUIREMENT

LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE

Frequency Range (MHz)	E-field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (Minutes)
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

*Note:

1. f= Frequency in MHz * Plane-wave Equivalent Power Density

2. The averaging time for General Population/Uncontrolled exposure to fixed transmitters is not applicable for mobile and portable transmitters. See 47 CFR §§2.1091 and 2.1093 on source-based time-averaging requirement for mobile and portable transmitters.

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

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

CALCULATION

A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits. The distance must be at least 20 cm and fully supported by the operating and installation configurations of the transmitter and its antenna(s), according to the source-based time-averaged maximum power requirements of § 2.1091(d)(2). In cases where cable losses or other attenuations are applied to determine compliance, the most conservative operating configurations and exposure conditions must be evaluated.

EUT Antenna Gain=3dBi (Numeric 1.99), π=3.14, R=25cm

FCC Rules	Frequency	Output Power	Output Power	Power Density	Power Density Limit
	MHz	dBm	mW	mW/cm2	mW/cm2
FCC Part15.247	902.75	29.74	941.88	0.24	0.6

Note: 1 only worst case was recorded in the test report.

2 The EUT can't simultaneous transmission at the same time.

※※※※※END OF THE REPORT※※※※※