FCC MPE Evaluation Report

Report No: WD-RF-R-230169-B0

Product Name	**:**	RFID Reader
Model No.	**:**	ER750A
Multi-listing Model No.	**:**	ER750A-10, ER755A-00, ER755A-10, ER750A-00
FCC ID	**:**	WXAER750A
Applicant	**:**	GIGA-TMS INC
Received Date	**:**	May 22, 2023
Tested Date	**:**	Jun. 01, 2023 ~ Jun. 15, 2023
Applicable Standard	**:**	47 CFR FCC Part 2.1091 47 CFR FCC Part 1.1310 KDB 447498 D01 OET Bulletin 65 Supplement C

Testing Laboratory
2965

Wendell Industrial Co., Ltd
Wendell EMC & RF Laboratory

Test Report

Issued Date: June 15, 2023

Project No.: 23Q050801

Product Name	RFID Reader
Trade Name	PROMAG, GIGATEK, ProxData
Model No.	ER750A
Multi-listing Model No.	ER750A-10, ER755A-00, ER755A-10, ER750A-00
FCC ID	WXAER750A
Applicant	GIGA-TMS INC
Manufacturer	GIGA-TMS INC
EUT Rated Voltage	POE 48V & DC 9~24V
EUT Test Voltage	POE 48V
EUT Supports Radios Application	RFID 13.56 MHz
Applicable Standard	47 CFR FCC Part 2.1091 47 CFR FCC Part 1.1310 KDB 447498 D01 OET Bulletin 65 Supplement C
RF Evaluation	0.0000001 mW/cm^2
Test Result	Complied

Documented : Emma Lu

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Approved : Gary Wu

(Project Manager / Gary Wu)

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Document Revision History

Report No.	Issue date	Description
WD-RF-R-230169-B0	June 15, 2023	Initial report

Reference Testing Standard

Standard	Description	Version
47 CFR FCC Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.	--
47 CFR FCC Part 1.1310	Radiofrequency radiation exposure limits.	--
KDB 447498 D01	RF Exposure procedures and equipment authorization policies for mobile and portable devices.	V06
OET Bulletin 65 Supplement C	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields.	Edition 01-01

1 Generation Information

1.1 Applicant

GIGA-TMS INC
8F. NO31, Lane 169, Kang-Ning St., His-Chih, New Taipei City 22180, Taiwan

1.2 Manufacturer

GIGA-TMS INC
8F. NO31, Lane 169, Kang-Ning St., His-Chih, New Taipei City 22180, Taiwan

1.3 Description of Equipment under Test

Product Name	RFID Reader
Model No.	ER750A
Multi-listing Model No.	ER750A-10, ER755A-00, ER755A-10, ER750A-00
Model Difference	Refer to the table “Series Difference List”
FCC ID	WXAER750A
Frequency Range	13.56 MHz
Antenna Information	Refer to the table “Antenna List”

The above equipment was tested by Wendell EMC & RF Laboratory For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties

Series Difference List

Model / Differences	Model No.	Multi-listing Model No.			
	ER750A	ER750A-10	ER755A-10	ER750A-00	ER755A-00
POE	The model name of this project is collectively called as ER750A.	V	V	--	--
DC		V	V	V	V
Mifare UID		V	V	V	V
Mifare Sector Data		--	V	--	V

Note 1: Hardware differences: POE & DC.

Note 2: Firmware differences: Mifare UID & Mifare Sector Data.

Antenna List

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	N/A	PCB-T2891A	PCB Antenna	N/A

1.4 Test Facility

Items	Required (IEC 60068-1)
Temperature (°C)	15-35
Humidity (% RH)	25-75
Barometric pressure (mbar)	860-1060

Description: Accredited by TAF
Accredited Number: 2965

Issued by: Wendell Industrial Co., Ltd

Lab Address: 6F/6F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan (R.O.C)

Test Lab: Wendell EMC & RF Laboratory

Test Location: 1F., No. 119, Wugong 3rd Rd., Wugu Dist.,
New Taipei City 248, Taiwan (R.O.C.)

Designation Number: TW0025

Test Firm Registration Number: 665221

2 Mobile device Assessment Procedure

In 47 CFR § 2.1091, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term “fixed location” means that the device is physically secured at one location and is not able to be easily moved to another location.

3 RF Exposure Assessment

Estimation of the expected exposure in power density can be made with the following equation:

$$S = \frac{P \times G}{4\pi \times R^2} = \frac{EIRP}{4\pi \times R^2}$$

S: power density

P: power input to the 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.

EIRP: Effective Isotropic Radiated Power

4 Limit Requirement

In 47 CFR § 1.1310, use of the device as based upon the user's awareness and ability to exercise control over human exposure. The two categories defined are Occupational/Controlled Exposure and General Population/Uncontrolled. These two categories are defined as follow:

Occupational/Controlled Exposure:

Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

General Population/Uncontrolled:

General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/ cm²)**	**Averaging Time|E|²,|H|² or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1,842 / f	4.89 / f	(900 / f²)*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f / 300	6
1,500-100,000	--	--	5	6

Note：

(1) f = frequency in MHz

(2) * = Plane-wave equivalent power density

Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/ cm²)**	**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 / f²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f / 1,500	30
1,500-100,000	--	--	1.0	30

Note：

(1) f = frequency in MHz

(2) * = Plane-wave equivalent power density

5 Test Results

Mode	Max. Power (E.I.R.P)		Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
	dBm	mW				
RFID 13.56M	-33.38	0.0005	20	0.0000001	0.978933354	Pass

Note：

＊ Each Function of the max power which perform MPE of any configurations.

＊ dBμV/m to dBm conversion formula：dBm = dBμV/m + 20*log(m) - 104.77 (m = 3m distance)

＊ RFID_13.56MHz Max.Power = 61.85 dBμV/m = -33.38 dBm＊ The frequency (range) used by the radio frequency function is 1.5GHz~100GHz, the RF field strength limits is e.i.r.p. less than or equal to 1mW/cm^2.

＊ The limit is equal to the minimum value.

＊ The Max total MPE = RFID 13.56M = 0.0000001 (mW/cm^2)

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