FCC MPE Evaluation Report

Report No: WD-RF-R-230177-C0

Product Name	:	Access Control Card Reader
Model Name	:	XMP-TMC3071
Series Model Name	:	XMP-TMC3070-xxx-xx-xx; XMP-TMC3080-xxx-xx-xx (x=0~9 or x=A~Z)
FCC ID	:	2A6AAXMP3071
Applicant	:	Autec Gesellschaft fuer Automationstechnik mbH
Received Date	:	May 18, 2023
Tested Date	:	Jun. 13, 2023 ~ Jul. 26, 2023
Applicable Standard	:	47 CFR FCC Part 2.1091 47 CFR FCC Part 1.1310 KDB 447498 D01 OET Bulletin 65 Supplement C

Wendell Industrial Co., Ltd
Wendell EMC & RF Laboratory

Test Report

Issued Date: July 27, 2023

Project No.: 23Q051802

Product Name	Access Control Card Reader
Trade Name	Autec
Model Name	XMP-TMC3071
Series Model Name	XMP-TMC3070-xxx-xx-xx; XMP-TMC3080-xxx-xx-xx (x=0~9 or x=A~Z)
FCC ID	2A6AAXMP3071
Applicant	Autec Gesellschaft fuer Automationstechnik mbH
Manufacturer	Autec Gesellschaft fuer Automationstechnik mbH
EUT Rated Voltage	DC 12V / 24V
EUT Test Voltage	DC 12V / 24V
EUT Supports Radios Application	Bluetooth LE 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	0.00015 mW/cm^2
Test Result	Complied

Documented : Emma Lu

(Specialist / Emma Lu)

Technical Engineer : Jack Chang

(Section Manager / Jack Chang)

Approved : Gary Wu

(Project Manager / Gary Wu)

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Document Revision History

Report No.	Issue date	Description
WD-RF-R-230177-C0	July 27, 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

Autec Gesellschaft fuer Automationstechnik mbH
Bahnhofstrasse 57 + 61b, D-55234 Framersheim, Germany

1.2 Manufacturer

Autec Gesellschaft fuer Automationstechnik mbH
Bahnhofstrasse 57 + 61b, D-55234 Framersheim, Germany

1.3 Description of Equipment under Test

Product Name	Access Control Card Reader
Model No.	XMP-TMC3071
Series Model No.	XMP-TMC3070-xxx-xx-xx; XMP-TMC3080-xxx-xx-xx (x=0~9 or x=A~Z)
Model Difference	For Marketing
FCC ID	2A6AAXMP3071
Frequency Range	2402 ~ 2480 MHz 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

Antenna List

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	Autec Gesellschaft fuer Automationstechnik mbH	TMC30xx_BLE652	PCB Antenna	-2.44 dBi for 2.4GHz
2	Autec Gesellschaft fuer Automationstechnik mbH	ANT-TMC3070	Loop Antenna	0 dBi

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 / f^2)*	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 / f^2)*	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				
LE	-1.15	0.77	20	0.00015	1	Pass
RFID 13.56M	-20.40	0.01	20	0.00000	0.978933354	Pass

Note：

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

＊ The LE and RFID 13.56MHz cannot be transmitted at the same time.

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

＊ RFID 13.56MHz Max.Power = 74.83 dBμV/m = -20.4 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 = LE = 0.00015 (mW/cm^2)

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