

FCC MPE Evaluation Report

Report No: WD-RF-R-230176-C0

Product Name : Access Control Card Reader

Model Name : XMP-TMC3070

Series Model Name : XMP-TMC3070-xxx-xx; XMP-TMC3080-xxx-xx-xx

 $(x=0\sim9 \text{ or } x=A\sim Z)$

FCC ID : 2A6AAXMP3070

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

Caution:

This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment.

Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

This report must not be used to claim product endorsement by TAF or any agency of the government.

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Test Report

Issued Date: July 26, 2023
Project No.: 23Q051801

Product Name	Access Control Card Reader		
Trade Name	Autec		
Model Name	XMP-TMC3070		
Series Model Name	XMP-TMC3070-xxx-xx-xx; XMP-TMC3080-xxx-xx-xx (x=0~9 or x=A~Z)		
FCC ID	2A6AAXMP3070		
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 Bluetooth LE 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	0.00006 mW/cm ²		
Test Result	Complied		

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Document Revision History

Report No. Issue date		Description	
WD-RF-R-230176-C0	July 26, 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.			
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-TMC3070
Series Model No. $XMP-TMC3070-xxx-xx-xx; XMP-TMC3080-xxx-xx-xx (x=0~9 \text{ or } x=A~Z)$	
Model Difference For Marketing	
FCC ID 2A6AAXMP3070	
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 \S 2.1091 / 47 CFR \S 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	(E.I.K.I)		Distance	Power Density	Limit	Result
112000			(cm)	(mW/cm ²)	(mW/cm ²)	
LE	-5.49	0.28	20	0.00006	1	Pass
RFID 13.56M	-17.27	0.02	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.
- * $dB\mu V/m$ to dBm conversion formula : $dBm = dB\mu V/m + 20*log(m) 104.77$ (m = 3m distance)
- * RFID 13.56MHz Max.Power = 77.96 $dB\mu V/m = -17.27 dBm$
- * 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 = 0.00006 (mW/cm²)

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