

Report on the FCC and IC Testing of the
dormakaba EAD GmbH
EntriWorX Unit 92 40
In accordance with FCC 47 CFR Part 15.247,
RSS-Gen and RSS-102

Prepared for: dormakaba EAD GmbH
Albertistr. 3
DE-78056 Villingen-Schwenningen
Germany

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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Matthias Stumpe	2023-01-23	 SIGN-ID 751073
Authorised Signatory	Alex Fink	2023-01-23	 SIGN-ID 751075

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15.247 and RSS-102. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Patrick Müller	2023-01-23	 SIGN-ID 751074 Matthias Stumpe in deputy

Laboratory Accreditation Laboratory recognition ISED Canada test site registration
DAkkS Reg. No. D-PL-11321-11-02 Registration No. BNetzA-CAB-16/21-15 3050A-2
DAkkS Reg. No. D-PL-11321-11-03

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15.247, RSS-Gen and RSS 102.

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HRB 85742
VAT ID No. DE129484267
Information pursuant to Section 2(1)
DL-InfoV (Germany) at
www.tuev-sued.com/im

Managing Directors:
Walter Reithmaier (CEO)
Patrick van Welij

Phone: +49 (0) 9421 55 22-0
Fax: +49 (0) 9421 55 22-99
www.tuev-sued.de

TÜV SÜD Product Service GmbH
Äußere Frühlingstraße 45
94315 Straubing
Germany



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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	2021-11-19
2	Adjusted measuring distance to 5mm	2022-11-16
3	Guidance applied changed from "447498 D01 General RF Exposure Guidance v07" to "447498 D04 Interim General RF Exposure Guidance v01".	2023-01-23

Table 1

1.2 Introduction

Applicant	dormakaba EAD GmbH
Manufacturer	dormakaba EAD GmbH
Model Number(s)	9230-K7
Serial Number(s)	Prototype
Hardware Version(s)	04047633
Software Version(s)	Prototype
Additional information	---
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 1.1310 RSS-102
Test Plan/Issue/Date	NA
Order Number	207127
Date	2021-06-16
Date of Receipt of EUT	2021-09-16
Start of Test	2021-11-10
Finish of Test	2021-11-10
Name of Engineer(s)	Patrick Müller
Related Document(s)	KDB 447498 D04 Interim General RF Exposure Guidance v01 ANSI C63.10 (2013) RSS-102



Product Service

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 1.1310 and RSS-102 is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: Continuously transmitting				
2.1	1.1310	RF Exposure Evaluation	Pass	KDB 447498 D04 Interim General RF Exposure Guidance v01
2.1	2.51	Exemption Limits for Routine Evaluation – SAR Evaluation	Pass	RSS-102

Table 2



1.4 Product Information

Type designation:	EntriWorX Unit 92 40 9240-K7
Type of equipment:	Access control
Power supply:	PoE 802.3 at
Kind of equipment:	Transceiver
Frequency range:	2400-2483,5 MHz
Number of RF-Channels:	79
Channel spacing:	1 MHz
Temperature range:	0°C-50°C

1.4.1 Technical Description

The EntriWorX Unit 9240 is a device for access control at one door.
Power is supplied via 802.3at/af PoE(+).
It communicates via ethernet with the host system.
Bluetooth in combination with a Smartphone can be used to configure the device.

1.4.2 Placement of Antenna

The antenna is placed within the housing.



1.5 EUT Modification Record

The table below details modifications made to the EUT during the test programme.
The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
0	As supplied by the customer (S/N: Prototype)	Not Applicable	Not Applicable

Table 3

1.6 Test Location

TÜV SÜD Product Service conducted the following tests at our Straubing Test Laboratory.

Test Name	Name of Engineer(s)
Configuration and Mode: Continuously transmitting	
RF Exposure Evaluation	Patrick Müller

Table 4

Office Address:

Äußere Frühlingstraße 45
94315 Straubing
Germany



2 Test Details

2.1 RF Exposure Assessment

2.1.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (i)
FCC CFR 47 Part 1, Clause 1.1310
KDB 447498 D04 Interim General RF Exposure Guidance v01, Appendix B
RSS-102, Clause 2.5.1

2.1.2 Equipment Under Test and Modification State

EntriWorX Unit 9240, Model 9230-K7, S/N: Prototype - Modification State 0

2.1.3 Test Method

Estimation is based on output power test.
For details please refer to TR-69547-18843-05 Ed.1
The test was performed in accordance with KDB 447498 and RSS-102.

2.1.4 Test Results

In accordance with KDB 447498 D04 Interim General RF Exposure Guidance v01:

Maximum conducted power:	2.9 dBm
Antenna gain:	1.3 dBi
Carrier Power e.i.r.p. (calculated):	4.2 dBm = 2.63mW

KDB 477498, Appendix B

Maximum output power [dBm]	4.2
Maximum output power [mW]	2.63
Minimum test separation distance	5 mm
Frequency [MHz]	2480
Exemption limit	3mW
Test result	PASS

ISED RSS-102, Clause 2.5.1

Frequency [MHz]	2480
Test distance	5 mm
Carrier Power e.i.r.p.:	2.63 mW
Exemption limit	2.71 mW
Test result	PASS



3 Measurement Uncertainty

For a 95% confidence level. the measurement uncertainties for defined systems are:

Radio Testing			
Test Name	kp	Expanded Uncertainty	Note
Occupied Bandwidth	2.0	±1.14 %	2
RF-Frequency error	1.96	±1 · 10 ⁻⁷	7
RF-Power. conducted carrier	2	±0.079 dB	2
RF-Power uncertainty for given BER	1.96	+0.94 dB / -1.05	7
RF power. conducted. spurious emissions	1.96	+1.4 dB / -1.6 dB	7
RF power. radiated			
25 MHz – 4 GHz	1.96	+3.6 dB / -5.2 dB	8
1 GHz – 18 GHz	1.96	+3.8 dB / -5.6 dB	8
18 GHz – 26.5 GHz	1.96	+3.4 dB / -4.5 dB	8
40 GHz – 170 GHz	1.96	+4.2 dB / -7.1 dB	8
Spectral Power Density. conducted	2.0	±0.53 dB	2
Maximum frequency deviation			
300 Hz – 6 kHz	2	±2.89 %	2
6 kHz – 25 kHz	2	±0.2 dB	2
Maximum frequency deviation for FM	2	±2.89 %	2
Adjacent channel power 25 MHz – 1 GHz	2	±2.31 %	2
Temperature	2	±0.39 K	4
(Relative) Humidity	2	±2.28 %	2
DC- and low frequency AC voltage			
DC voltage	2	±0.01 %	2
AC voltage up to 1 kHz	2	±1.2 %	2
Time	2	±0.6 %	2

Table 5



Radio Interference Emission Testing			
Test Name	kp	Expanded Uncertainty	Note
Conducted Voltage Emission			
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB	1
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB	1
100 kHz to 200 MHz (50Ω/5μH AMN)	2	± 3.6 dB	1
Discontinuous Conducted Emission			
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB	1
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB	1
Conducted Current Emission			
9 kHz to 200 MHz	2	± 3.5 dB	1
Magnetic Fieldstrength			
9 kHz to 30 MHz (with loop antenna)	2	± 3.9 dB	1
9 kHz to 30 MHz (large-loop antenna 2 m)	2	± 3.5 dB	1
Radiated Emission			
Test distance 1 m (ALSE)			
9 kHz to 150 kHz	2	± 4.6 dB	1
150 kHz to 30 MHz	2	± 4.1 dB	1
30 MHz to 200 MHz	2	± 5.2 dB	1
200 MHz to 2 GHz	2	± 4.4 dB	1
2 GHz to 3 GHz	2	± 4.6 dB	1
Test distance 3 m			
30 MHz to 300 MHz	2	± 4.9 dB	1
300 MHz to 1 GHz	2	± 5.0 dB	1
1 GHz to 6 GHz	2	± 4.6 dB	1
Test distance 10 m			
30 MHz to 300 MHz	2	± 4.9 dB	1
300 MHz to 1 GHz	2	± 4.9 dB	1
Radio Interference Power			
30 MHz to 300 MHz	2	± 3.5 dB	1
Harmonic Current Emissions			4
Voltage Changes. Voltage Fluctuations and Flicker			4

Table 6



Immunity Testing			
Test Name	kp	Expanded Uncertainty	Note
Electrostatic Discharges			4
Radiated RF-Field			
Pre-calibrated field level	2	+32.2 / -24.3 %	5
Dynamic feedback field level	2.05	+21.2 / -17.5 %	3
Electrical Fast Transients (EFT) / Bursts			4
Surges			4
Conducted Disturbances. induced by RF-Fields			
via CDN	2	+15.1 / -13.1 %	6
via EM clamp	2	+42.6 / -29.9 %	6
via current clamp	2	+43.9 / -30.5 %	6
Power Frequency Magnetic Field	2	+20.7 / -17.1 %	2
Pulse Magnetic Field			4
Voltage Dips. Short Interruptions and Voltage Variations			4
Oscillatory Waves			4
Conducted Low Frequency Disturbances			
Voltage setting	2	± 0.9 %	2
Frequency setting	2	± 0.1 %	2
Electrical Transient Transmission in Road Vehicles			4

Table 7

Note 1:

The expanded uncertainty reported according to CISPR 16-4-2:2003-11 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$. providing a level of confidence of $p = 95.45\%$

Note 2:

The expanded uncertainty reported according to UKAS Lab 34 (Edition 1. 2002-08) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$. providing a level of confidence of $p = 95.45\%$

Note 3:

The expanded uncertainty reported according to UKAS Lab 34 (Edition 1. 2002-08) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2.05$. providing a level of confidence of $p = 95.45\%$

Note 4:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95%confidence.

Note 5:

The expanded uncertainty reported according to IEC 61000-4-3 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$. providing a level of confidence of $p = 95.45\%$

Note 6:

The expanded uncertainty reported according to IEC 61000-4-6 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$. providing a level of confidence of $p = 95.45\%$

Note 7:

The expanded uncertainty reported according ETSI TR 100 028 V1.4.1 (all parts) to is based on a standard uncertainty multiplied by a coverage factor of $k_p = 1.96$. providing a level of confidence of $p = 95.45\%$

Note 8:



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The expanded uncertainty reported according to ETSI TR 102 273 V1.2.1 (all parts) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 1.96$, providing a level of confidence of $p = 95.45\%$