Test report

Applicant:

Elatec GmbH

Zeppelinstraße 1

82178 Puchheim

Tel.: +49 89 5529961-0

Fax: +49 89 5529961-129

Test report no.:

190332-AU02+W04

for:

Elatec GmbH

RFID reader / writer module

TWN4 MultiTech 2 M HF

Industry Canada

according to:

RSS 102

EMV TESTHAUS

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12155-01-03

Accreditation:

Recognized on March 14th, 2019 by the
Department of Innovation, Science and Economic Development (ISED) Canada
as a wireless testing laboratory
CAB identifier: DE0011
ISED#: 3472A

Location of Testing:

EMV **TESTHAUS** GmbH
Tel.: +49 9421 56868-0
Fax: +49 9421 56868-100
Email: info@emv-testhaus.com
Gustav-Hertz-Straße 35
94315 Straubing, Germany

The technical accuracy is guaranteed through the quality management of the EMV **TESTHAUS** GmbH.

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List of tables

1 Test regulations

Standard	*Title*
RSS-102 Issue 5 March 2015	Spectrum Management and Telecommunications Radio Standards Specification Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)
SPR-002 Issue 1 September 2016	Spectrum Management and Telecommunications Supplementary Procedure Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits
Safety Code 6 (2015)	Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz
IEEE C95.3-2002 (R2008) Approved December 11, 2002 Reaffirmed June 12, 2008	IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz–300 GHz
ANSI C63.10 June 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

2 Summary of test results

Standard	*Result*	*Remark*
RSS-102 Issue 5	Passed	---

Straubing, June 15, 2020

Andreas Menacher
Test engineer
EMV **TESTHAUS** GmbH

Konrad Graßl
Head of Radio department
EMV **TESTHAUS** GmbH

3 Equipment under test (EUT)

Product type:	RFID reader / writer module
Model Name:	TWN4 MultiTech 2 M HF
HVIN:	EL20202
Manufacturer:	Elatec GmbH
Serial number:	2020153296
IC certification number:	7948A-TWN4F12
Short description:	EUT is a RFID reader / writer module which operates at the frequency 13.56 MHz.
Operating frequency:	13.56 MHz
Modulation:	ASK
Antenna types:	PCB antenna ☐ detachable ☒ not detachable
Power supply:	DC supply nominal voltage: 5.00 V
Type of device:	☐ Body-supported device ☐ Body-worn (or body-mount) radio ☐ Limb-Worn device ☒ other
Separation distance:	☐ ≤ 20 cm ☒ > 20 cm
Evaluated against exposure limits:	☒ General public use ☐ Controlled use

4 Photographs of EUT

See Annex B of test report 190332-AU02+W03.

5 Test results

This clause gives details about the test results as collected on page 5.

The climatic conditions are recorded during the tests. It is ensured that the climatic conditions are within the following ranges:

Ambient temperature	*Ambient humidity*	*Ambient pressure*
15°C to 35°C	30 % to 75 %	86 kPa to 106 kPa

5.1.1 Evaluation for separation distance > 20 cm, except 3 kHz – 10 MHz

Reference: RSS 102 clause 2.5.2

Basic standard: n/a

Performed by:	Andreas Menacher	Date of test:	June 8, 2020
Result:	☒ Limits kept	☐ Limits not kept	

5.1.1.1 Data of equipment under test (EUT)

Note: The data for the RF technology is taken out of the Test report 190332-AU02+W03 of the test laboratory EMV Testhaus GmbH

RF technology:

Antenna connector:	none
Antenna detachable:	No
Maximum field strength:	42.85 dBµV/m @ 30 m
Operation frequency:	13.56 MHz
Tune-up tolerance:	± 1 dB
Applicable duty cycle:	As worst case not applied.
Separation distance:	20 cm

5.1.1.2 Exemption Limits for Routine Evaluation – RF Exposure Evaluation

According to RSS 102 Clause 2.5.2:
RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:
• below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
• at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f$ 0.5 W (adjusted for tune-up tolerance), where f is in MHz;
• at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
• at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

5.1.1.3 Results

EIRP is calculated using the formula of ANSI C63.10-2013 clause 9.5:

EIRP = E + 20 x log(d) - 104.77 = 42.85 dBµV/m + 20 x log(30) – 104.77= -32.37 dBm

Where: EIRP = equivalent isotropically radiated power in dBm
E = electric field strength in dBµV/m
d = measurement distance in meters (m)

Channel Frequency (MHz)	*PEIRP + tuneup tolerance (dBm)*	*P (W)*	*Limit (W)*	*Fraction of limit (%)*	*Result*
13.56	-31.37	0.000001	1	0.0001	Passed

Table 1: Result of exemption for routine evaluation

6 Revision history

Revision	*Date*	*Issued by*	*Description of modifications*
0	2020-06-15	Andreas Menacher	First edition