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Applicant:

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Test report no.:

250049-AU01+W02

for:

HERMOS AG

HFMux16 Transponder Reader

HF WIP - Regal 16x RFID

according to:

47 CFR Part 1

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12155-01-00

Accreditation:

FCC test firm accreditation expiration date: 2025-09-19
MRA US-EU, FCC designation number: DE0010
Test firm registration number: 997268
FCC Registration Number (FRN): 0032245045
BNetzA-CAB-02/21-02/7 Valid until 2028-11-26

Location of Testing:

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The results contained in this document relate only to the item(s) tested

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1 Summary of test results

FCC standard	*Requirement*	*Result*	*Page*
Part 1, § 1.1310(e)(1)	Maximum permissible exposure, except WPT, calculation	Passed	8

Straubing, May 28, 2025

Tested by
Konrad Graßl
Department Manager Radio

Approved by
Christian Kiermeier
Reviewer

2 Test regulations

Standard	*Title*
Part 1, Subpart I, Section 1.1310 October 2024	Radiofrequency radiation exposure limits
ANSI C63.10 September, 2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3 Equipment under Test

All Information in this clause is declared by customer.

3.1 General information

Product type:	HFMux16 Transponder Reader		
Model name:	HF WIP - Regal 16x RFID		
Serial number(s):	2502HAG36916		
Applicant:	HERMOS AG		
Manufacturer:	HERMOS AG		
Hardware version:	HF_MUX16_RevD, 2.13.129		
Software version:	STM32_HF16x_DE13_AppV1802		
Short description:	EUT is a RFID reader operating at the frequency 13.56 MHz.		
Additional modifications:	None		
FCC ID:	2AP5OHFMUX16		
Power supply:	DC supply via PoE		
	Nominal voltage:	48 V	
	Minimum voltage:	43 V	
	Maximum voltage:	56 V	
Temperature range:	0 °C to +50 °C (customer defined)		
Device type:	☐ Portable	☒ Mobile	☐ Fixed

3.2 Radio specifications

System type:	RFID Reader		
Application frequency band:	13.110 MHz – 14.010 MHz		
Operating frequencies:	13.56 MHz		
Number of RF channels	1		
Highest internal frequency:	100 MHz		
Modulation	ASK		
Antenna:	Type:	PCB antenna with C-Network	
	Outer dimension:	85 x 54 mm	
	Inductance	0.5 µH	
	Width of wire	1.1 mm	
	Turns:	2	
	Connector:	☒ external	☐ internal
		☐ temporary	☐ none (integral antenna)

3.3 Human exposure specifications

Exposure tier:	Body
Separation distance:	> 20 cm
Evaluated against exposure limits:	General public use
Simultaneous transmissions:	no

3.4 Photographs of EUT

See Annex B of test report 250049-AU01+W01 of test laboratory Element Materials Technology Straubing GmbH.

4 Test results

This clause gives details about the test results as collected in the summary of test results on page 4.

4.1 Maximum permissible exposure, except WPT, calculation

Requirement:	Part 1, § 1.1310(e)(1)
Reference:	---

Performed by:	Konrad Graßl	Date of test:	May 28, 2025
Result:	☒ Limits kept	☐ Limits not kept	

4.1.1 Requirements and limits maximum permissible exposure

According to §1.1310(e)(1):
Table 1 to § 1.1310(e)(1) sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

Frequency range (MHz)	*Electric field strength (V/m)*	*Magnetic field strength (A/m)*	*Power densitiy (mW/cm^2)*	*Averaging time (minutes)*
1.34-30	824/f	2.19/f	$180/f^2$ (see note 2)	<30
300-1500	---	---	f/1500	<30
1500-100000	---	---	1.0	<30

Table 1: Table 1 to §1.1310(e)(1) Limits for Maximum Permissible Exposure (MPE) for General Population/Uncontrolled Exposure

Notes:
1. f = frequency in MHz
2. Plane-wave equivalent power density

4.1.2 Results

The following data are based on applicants document: Test report 250049-AU01+W01 of the test laboratory Element Materials Technology Straubing GmbH

Operation frequency:	13.56 MHz
Field strength:	55.4 dBµV/m at 30 m

Information related to Exposure:

Tune-up tolerance (according to the manufacturer):	0 dB
Separation distance:	20 cm
Exposure:	general public
Power averaging over time:	not applied

Operation frequency (MHz)	*EIRP + tune-up tolerance (dBm)*	*Power densitiy (mW/cm^2)*	*Limit (mW/cm^2)*	*Ratio of limit*	*Result*
13.56	-19.8	0.000002	0.978933	0.000002	Passed

Table 2: Result of evaluation of compliance

EIRP is calculated using the formula of ANSI C63.10, clause 11.12.2.2:

EIRP = E + 20log(d) - 104.8

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

5 Revision history

Revision	*Date*	*Issued by*	*Description of modifications*
0	2025-05-28	Konrad Graßl	First edition

Template: RF_FCC_IC_Human Exposure_V1.10