

EMF ASSESSMENT REPORT

ACCORDING TO: EN 50364:2018

FOR:

Agrident GmbH

ABR200 Module

Model: ABR200

This report is in conformity with ISO/ IEC 17025. The "A2LA Accredited" symbol endorsement applies only to the tests and calibrations that are listed in the scope of Hermon Laboratories accreditation. The test results relate only to the items tested. This test report shall not be reproduced in any form except in full with the written approval of Hermon Laboratories Ltd.

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1 Applicant information

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E-mail: Tal.cohen@msd.com
Contact name: Mr. Tal Cohen

2 Equipment under test attributes

Product name: ABR200 Module
Product type: RFID module
Model: ABR200
Serial number: 1204000101
Hardware version: 2.0
Software release: 1.33
Receipt date: 23-Jan-26

3 Manufacturers information

Manufacturer name: Agrident GmbH
Address: Dahlkampsanger 2, 30890 Barsinghausen, Germany
Telephone: +972543233089
E-Mail: Tal.cohen@msd.com
Contact name: Mr. Tal Cohen

4 Test details

Project ID: 173034
Location: Hermon Laboratories Ltd. P.O. Box 23, Binyamina 3055001, Israel
Performed: 19-Feb-26
Test specification: EN 50364:2018

5 Tests summary

Test	Status
EN 50364:2018, Section 6; EN 62369-1:2009 Section 4	
Assessment of compliance with reference levels	Pass

Assessment was completed against the relevant requirements of the test standard.
The results obtained indicate that the product complies in full with the requirements assessed.
The test results relate only to the items tested and assessed. Pass/ fail decision was based on nominal values.

	Name and Title	Date	Signature
Tested by:	Mr. M. Filobodchenko, test engineer, EMC & Radio	19-Feb-26	
Reviewed by:	Mrs. S. Peysahov Sheynin, test engineer, EMC & Radio	01-Apr-26	
Approved by:	Mr. M. Nikishin, group leader, EMC & Radio	14-May-26	

6 EUT description

Note: The following data in this clause is provided by the customer and represents his sole responsibility.

6.1 General information

The EUT is the ABR200 a RFID reader which is supplied with 2.5-4.5V DC. The ABR200 was developed for the integration into mobile devices.

6.2 Test configuration



7 Limits

The below limits are derived from 1999/519/EC Council Recommendation which is based on ICNIRP Guidelines – 1998.

7.1 Basic restrictions for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz)

Restrictions on exposure to time-varying electric, magnetic, and electromagnetic fields which are based directly on established health effects and biological considerations are termed 'basic restrictions'.

Frequency range	Magnetic flux density, mT	Current density, mA _{rms} /m ²	Whole body average SAR, W/kg	Localised SAR (head and trunk), W/kg	Localised SAR (limbs), W/kg	Power density S, W/m ²
0 Hz	40	-	-	-	-	-
>0-1 Hz	-	8	-	-	-	-
1-4 Hz	-	8/f	-	-	-	-
4-1 000 Hz	-	2	-	-	-	-
1 000 Hz-100 kHz	-	f/500	-	-	-	-
100 kHz-10 MHz	-	f/500	0.08	2	4	-
10 MHz-10 GHz	-	-	0.08	2	4	-
10-300 GHz	-	-	-	-	-	10

7.2 Reference level

Reference levels are provided for practical exposure-assessment purposes to determine whether the basic restrictions are likely to be exceeded.

Frequency range	E-field strength, V/m	H-field strength, A/m	B-field, µT	Equivalent plane wave power density Seq, W/m ²
0-1 Hz	-	32000	40000	-
1-8 Hz	10000	32000	40000/f ²	-
8-25 Hz	10000	4000/f	5000/f	-
0.025-0.8 kHz	250/f	4/f	5/f	-
0.8-3 kHz	250/f	5	6.25	-
3-150 kHz	87	5	6.25	-
0.15-1 MHz	87	0.73/f	0.92/f	-
1-10 MHz	87/√f -	0.73/f	0.92/f	-
10-400 MHz	28	0.073	0.092	2
400-2000 MHz	1.375√f	0.0037√f	0.0046√f	f/200
2-300 GHz	61	0.16	0.20	10

7.3 Low power exclusion level

Low-power electronic and electrical equipment is deemed to comply with the provisions of this standard if it can be demonstrated using routes B, C or D that the available antenna power and/or the average total radiated power is less than or equal to the applicable low-power exclusion level P_{max}.

Guideline / Standard	SAR limit (SAR _{max}), W/kg	Averaging mass (m), g	P _{max} , mW	Exposure tier	Region of body
ICNIRP	2	10	20	General public	Head and trunk
	4	10	40	General public	Limbs
	10	10	100	Occupational	Head and trunk
	20	10	200	Occupational	Limbs
IEEE Std C95.1-1999	1.6	1	1.6	Uncontrolled environment	Head, trunk, arms, legs
	4	10	40	Uncontrolled environment	Hands, wrists, feet and ankles
	8	1	8	Controlled environment	Head, trunk, arms, legs
	20	10	200	Controlled environment	Hands, wrists, feet and ankles
IEEE Std C95.1-2005	2	10	20	Action level	Body except extremities and pinnae
	4	10	40	Action level	Extremities and pinnae
	10	10	100	Controlled environment	Body except extremities and pinnae
	20	10	200	Controlled environment	Extremities and pinnae

8 Assessment of compliance with derived reference levels

8.1 General

This test was performed to verify compliance for RFID with the relevant limits for general public exposure specified as basic restrictions or reference levels in the Council Recommendation 1999/519/EC. Specification test limits are given in Table 8.1.1.

Table 8.1.1 Reference levels for electric, magnetic and electromagnetic fields

Frequency range, kHz	H-field, A/m	B-field, μ T	Electric field strength, V/m
European Council Recommendation 1999/519/EC, Table 2 Reference level			
110 -145	5.0	6.25	87.0

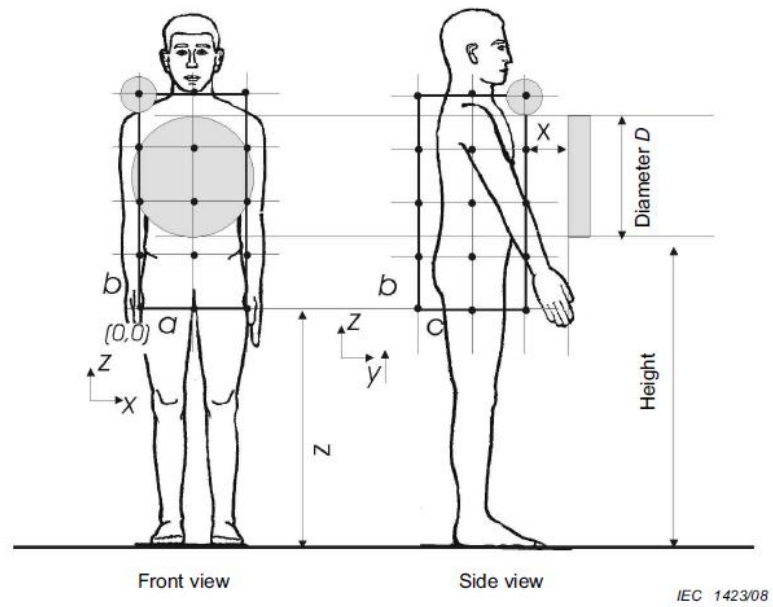
8.1.1 Test procedure

- 8.1.1.1 The EUT was set up as shown in Figure 8.1.1 (Figure 10 – Vertical, wall or frame mounted antenna of EN 62369-1) and the associated photograph. The RF exposure test was performed in free space conditions with isotropic magnetic field probe.
- 8.1.1.2 The ambient noise was measured and the result was recorded in Table 8.1.2. and Table 8.1.3.
- 8.1.1.3 The test was performed in EUT operating mode.
- 8.1.1.4 The Magnetic Field Tester (measurement probe) was placed as shown in Figure 8.1.1, where $a/b/c = 15$ cm, $x = 20$ cm.
- 8.1.1.1 The highest emission level was recorded in Table 8.1.4 and Table 8.1.5 and compared with the limit.
- 8.1.1.2 The test was repeated at the rest of test points as shown in Figure 8.1.1.

8.1.2 Compliance assessment

Based on the measurement results it has been demonstrated that the maximum emission radiated by the product at the distance of 20 cm is less than the reference level value given in Table 2 of 1999/519/EC Council Recommendation and considered complying with the standard requirements.

Figure 8.1.1 Setup for RF exposure measurements



Photograph 8.1.1 Setup for RF exposure noise measurement



Photograph 8.1.2 Setup for RF exposure measurements, E-field



Level 1 (20 cm)



Level 2 (20 cm + a)



Level 3 Level 2 (20 cm + 2×a)

Note: The antenna of the EUT was installed horizontally (the worst case for E-field measurements)

Photograph 8.1.3 Setup for RF exposure measurements, H-field



Level 1 (20 cm)



Level 2 (20 cm + a)



Level 3 Level 2 (20 cm + 2×a)

Note: The antenna of the EUT was installed vertically (the worst case for H-field measurements)

Table 8.1.2 Magnetic flux density measurement, noise measurement

Frequency, kHz	Operating mode	Test distance, m	H-Field result, A/m	Limit, A/m	Margin, A/m	Verdict
Noise	in OFF state	0.2	0.05	5.000	-4.95	Pass

Table 8.1.3 Electric field measurement, noise measurement

Frequency, kHz	Operating mode	Test distance, m	E-field result, V/m	Limit, V/m	Margin, V/m	Verdict
Noise	in OFF state	0.2	0.11	87	-86.89	Pass

Table 8.1.4 Magnetic flux density measurement at 20 cm distance

Frequency, kHz	Aux receiver antenna H-Field measurement, A/m									H-Field result, A/m*	Limit, A/m	Margin, A/m	Verdict
	Layer 1 (D = X)			Layer 2 (D = X+a)			Layer 3 (D = X+2×a)						
	1	2	3	1	2	3	1	2	3				
0 - 400	0.14	0.15	0.12	0.09	0.12	0.12	0.07	0.10	0.10	0.15	5.00	-4.85	Pass
0 - 400	0.30	0.86	0.62	0.22	0.44	0.31	0.13	0.18	0.16	0.86	5.00	-4.14	Pass
0 - 400	0.68	3.22	1.55	0.35	0.70	0.50	0.14	0.22	0.20	3.22	5.00	-1.78	Pass
0 - 400	0.21	0.62	0.52	0.23	0.35	0.31	0.12	0.16	0.14	0.62	5.00	-4.38	Pass
0 - 400	0.15	0.20	0.17	0.08	0.13	0.12	0.07	0.10	0.10	0.20	5.00	-4.80	Pass

Table 8.1.5 Electric field measurement at 20 cm distance

Frequency, kHz	Aux receiver antenna E-Field measurement, V/m									H-Field result, V/m *	Limit, V/m	Margin, V/m	Verdict
	Layer 1 (D = X)			Layer 2 (D = X+a)			Layer 3 (D = X+2×a)						
	1	2	3	1	2	3	1	2	3				
0 - 400	4.52	6.04	5.58	3.23	4.02	3.97	2.23	2.72	2.80	6.04	87.00	-80.96	Pass
0 - 400	7.78	12.35	11.09	4.65	6.31	6.29	2.74	3.49	3.37	12.35	87.00	-74.65	Pass
0 - 400	12.89	32.36	22.29	6.31	9.58	8.79	3.24	4.08	4.01	32.36	87.00	-54.64	Pass
0 - 400	9.66	18.25	13.21	5.75	7.92	7.47	3.04	3.67	3.64	18.25	87.00	-68.75	Pass
0 - 400	4.72	4.66	4.21	3.52	4.13	4.12	2.66	2.75	2.77	4.66	87.00	-82.34	Pass

Reference numbers of test equipment used

HL 5992							
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Full description is given in Appendix A.

9 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal./ Check	Due Cal./ Check
5992	Isotropic E&H-Field analyzer, 3 kHz – 30MHz	Narda S.T.S. / PMM	EHP-200AC	180ZX10207	03-Sep-24	03-Sep-26

10 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test description	Expanded uncertainty
B-field	$\pm 5.5 \%$
H-field	$\pm 5.5 \%$

Hermon Laboratories is accredited by A2LA for calibration according to present requirements of ISO/IEC 17025 and NCSL Z540-1. The accreditation is granted to perform calibration of parameters that are listed in the Scope of Hermon Laboratories Accreditation.

Hermon Laboratories calibrates its reference and transfer standards by calibration laboratories accredited to ISO/IEC 17025 by a mutually recognized Accreditation Body or by a recognized national metrology institute. All reference and transfer standards used in the calibration system are traceable to national or international standards.

In-house calibration of all test and measurement equipment is performed on a regular basis according to Hermon Laboratories calibration procedures, manufacturer calibration/verification procedures or procedures defined in the relevant standards. The Hermon Laboratories test and measurement equipment is calibrated within the tolerances specified by the manufacturers and/or by the relevant standards.

11 APPENDIX C Test facility description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, Radio, Safety, Environmental and Telecommunication testing facility.

Hermon Laboratories is recognized and accredited by the Federal Communications Commission (USA) for relevant parts of Code of Federal Regulations 47 (CFR 47), Test Firm Registration Number is 927748, Designation Number is IL1001; Recognized by Innovation, Science and Economic Development Canada for wireless and terminal testing (ISED), ISED #2186A, CAB identifier is IL1001; Certified by VCCI, Japan (the registration numbers for OATS are R-10808 for RE measurements below 1 GHz, G-20112 for RE measurements above 1 GHz, R-11082 for anechoic chamber for RE measurements below 1 GHz, G-10869 for RE measurements above 1 GHz, C-10845 for conducted emissions site and T-11606 for conducted emissions at telecommunication ports).

The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing, environmental simulation and calibration (for exact scope please refer to Certificate No. 839.01, 839.03 and 839.04).

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12 APPENDIX D Specification references

EN 50364:2018	Product standard for human exposure to electromagnetic fields from devices operating in the frequency range 0 Hz to 300 GHz, used in Electronic Article Surveillance (EAS), Radio Frequency Identification (RFID) and similar applications
EN 62369-1:2009	Evaluation of human exposure to electromagnetic fields from short range devices (SRDs) in various applications over the frequency range 0 GHz to 300 GHz Part 1: Fields produced by devices used for electronic article surveillance, radio frequency identification and similar systems
1999/519/EC:1999	COUNCIL RECOMMENDATION of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)
ICNIRP:1998	International Commission on Non-Ionizing Radiation Protection. Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz)

13 APPENDIX E Abbreviations and acronyms

A	ampere
A/m	ampere per meter
AVRG	average (detector)
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μ V)	decibel referred to one microvolt
dB(μ V/m)	decibel referred to one microvolt per meter
dB(μ A)	decibel referred to one microampere
DC	direct current
EIRP	equivalent isotropically radiated power
ERP	effective radiated power
EUT	equipment under test
EMF	electromagnetic field
F	frequency
GHz	gigahertz
H	height
HL	Hermon laboratories
Hz	hertz
k	kilo
kHz	kilohertz
m	meter
MHz	megahertz
min	minute
mm	millimeter
ms	millisecond
μ s	microsecond
NA	not applicable
Ω	Ohm
PS	power supply
QP	quasi-peak
RE	radiated emission
RF	radio frequency
rms	root mean square
s	second
Tx	transmit
V	volt

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