

FCC SAR Exclusion Report



Product name : Chirp 2/Chirp+ 2/ECHO+

Applicant : Deeper, UAB

FCC ID : 2AHKO-CRP

ISED ID : 21307-CRP

Test report No. : P000486402 003 V1.00

Laboratory information

Accreditation

Kiwa Nederland B.V. complies with the accreditation criteria for test laboratories as laid down in ISO/IEC 17025:2017. The accreditation covers the quality system of the laboratory as well as the specific activities as described in the authorized annex bearing the accreditation number L248 and is granted by the Dutch Council For Accreditation (RvA: Raad voor Accreditatie).

Kiwa Nederland B.V. is designated by the FCC as an Accredited Test Firm for compliance testing of equipment subject to Certification under Parts 15 & 18. The Designation number is: NL0001.

Kiwa Nederland B.V. is a Wireless Device Testing laboratory recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements.
The Industry Canada company number for Kiwa Nederland B.V. is: 4173A. The CABID is NL0001.

Kiwa Nederland B.V. is a registered Conformity Assessment body (CAB) under the Japan-EC MRA (Agreement on Mutual Recognition between Japan and the European Community). The registration number is: 201.

Documentation

The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 10 years at Kiwa Nederland B.V.

Testing Location

Test Site	Kiwa Nederland B.V.
Test Site location	Wilmersdorf 50 7327 AC Apeldoorn The Netherlands Tel. +31 88998 3393
Test Site FCC	NL0001
CABID	NL0001

Revision History

Version	Date	Remarks	By
v0.50	12-02-2025	First draft	GG
v1.00	18-02-2025	Final release	GG

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1 General Description

1.1 Applicant

Client name:	Deeper, UAB
Address:	Antakalnio g. 17;
Telephone:	10312 Vilnius, Lithuania
E-mail:	--
Contact name:	Evaldas.jakeliunas@deeper.eu Evaldas Jakeliūnas

1.2 Manufacturer

Manufacturer name:	Deeper, UAB
Address:	Antakalnio g. 17;
Telephone:	10312 Vilnius, Lithuania
E-mail:	--
Contact name:	Evaldas.jakeliunas@deeper.eu Evaldas Jakeliūnas

1.3 Tested Equipment Under Test (EUT)

Product name:	Chirp+ 2
Brand name:	Deeper
FCC ID:	2AHKO-CRP
IC:	21307-CRP
Product description:	Wireless sonar with GNSS and temperature sensor
Variant model(s):	Chirp+ 2 (GNSS and temperature sensor) Chirp+ 2 (GNSS, no temperature sensor) Chirp 2 (no GNSS, only temperature sensor) Chirp 2 (no GNSS, no temperature sensor) ECHO+
Batch and/or serial No.	DP4H10S10 DP4H20S10 DP4H30S10 DP4H40S10 DP4H30S20 DP5H10S10 DP4H13S10 DP4H23S10 DP6H13S10 DP6H13S11 DP6H23S10
Software version:	--
Hardware version:	--
Date of receipt	08-03-2021
Tests started:	09-03-2021

Testing ended:

12-05-2021

1.4

Applicable standards

47 CFR § 1.1307 (b)(1)(i)(A)

1.5 Conclusions

The sample of the product showed **NO NON-COMPLIANCES** to the specifications stated in paragraph 1.4 of this report.

The results of the test as stated in this report, are exclusively applicable to the product items as identified in this report. Kiwa Nederland B.V. accepts no responsibility for any properties of product items in this test report, which are not supported by the tests as specified in paragraph 1.4 "*Applicable standards*".

Assessment is performed by:

Name : dr. ir. G. Geers

Review of assessment methods and report by:

Name : ing. P. Suringa

The above conclusions have been verified by the following signatory:

Date : 08-05-2025

Name : P. van Wanrooij

Function : Test Engineer

Signature :

A handwritten signature in black ink, consisting of a stylized 'P' and 'W' followed by a dot.

2 SAR exclusion Evaluation

2.1 Transmitter specifications

The maximum conducted output power as shown below is taken from Telefication test report no. 201200772 001 which is reissued in P000486402 002. 802.11b has the highest output power of the available technologies.

Transmitter 1

Variable (unit)	Value	Symbol
Conducted time-averaged output power (mW)	245	P
Time-averaged output power ERP (mW)	145	P_{ERP}
Operating frequency range (MHz)	2412 MHz	f
Separation distance (cm)	> 20	d
Separation distance (m)	0.20	R

2.2 Evaluation calculations

802.11b

802.11b is evaluated according to method B of KDB 447498 D04 v01

Method B:

$$P_{th}(mW) = \begin{cases} ERP_{20cm} \left(\frac{d}{20cm} \right)^x & d \leq 20 cm \\ ERP_{20cm} & 20 cm < d \leq 40 cm \end{cases}$$

Where:

$$x = -\log_{10} \left(\frac{60}{ERP_{20cm} * \sqrt{f}} \right)$$

$$ERP_{20cm}(mW) = \begin{cases} 2040 * f & 0.3 GHz \leq f < 1.5 GHz \\ 3060 & 1.5 GHz \leq f \leq 6.0 GHz \end{cases}$$

Filling in the values of $d \leq 20(cm)$ and f (GHz) as reported in clause 2.1 in the equations above gives the result:

$P_{th} = 2570$ mW

P or $P_{ERP} = 145$ mW which is less than the calculated P_{th} so the EUT complies with the SAR based exemption requirement.

Assessment for multiple transmitters capable of transmitting simultaneously

EUT is not capable of transmitting simultaneously.

2.3 Conclusion

Since the EUT does not cause exposure in excess of the general population limit (defined in 47 CFR 1.1310 e) (ii)), no additional mitigation actions are required.

<<END OF REPORT>>