

# FCC SAR Exclusion Report



The RvA is signatory to ILAC - MRA



Product name : Mega Macs X  
Applicant : Hella Gutmann Solutions GmbH  
FCC ID : 2AEOK015265301

Test report No. : P000276511 003 Ver 1.00

## 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

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

## Revision History

Version	Date	Remarks	By
v0.50	21-06-2023	First draft	R.T
v1.00	21-06-2023	Final release	R.T
V2.00	10-10-2023	Revised Updated FCC-ID	R.T

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## 1 General Description

### 1.1 Applicant

<b>Client name:</b>	Hella Gutmann Solutions GmbH
<b>Address:</b>	Am Krebsbach 2, Ihringen, Germany
<b>Zip code:</b>	79241
<b>Telephone:</b>	49 7668 9900-0
<b>E-mail:</b>	Juergen.Ruf@hella-gutmann.com
<b>Contact name:</b>	Jürgen Ruf

### 1.2 Manufacturer

<b>Manufacturer name:</b>	Hella Gutmann Solutions GmbH
<b>Address:</b>	Am Krebsbach 2, Ihringen, Germany
<b>Zip code:</b>	79241
<b>Telephone:</b>	49 7668 9900-0
<b>E-mail:</b>	Juergen.Ruf@hella-gutmann.com
<b>Contact name:</b>	Jürgen Ruf

### 1.3 Tested Equipment Under Test (EUT)

<b>Product name:</b>	Mega Macs x
<b>Brand name:</b>	Hella Gutmann Solutions GmbH
<b>FCC ID:</b>	2AEOK015265301
<b>IC:</b>	Not applicable
<b>Product type:</b>	Measurement device
<b>Model(s):</b>	-
<b>Batch and/or serial No.</b>	-
<b>Software version:</b>	-
<b>Hardware version:</b>	-
<b>Date of receipt</b>	11-04-2023
<b>Tests started:</b>	11-04-2023
<b>Testing ended:</b>	18-04-2023

### 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 : Raoul Tolud, MSc.

Review of assessment methods and report by:

Name : Koray Korum, MSc

The above conclusions have been verified by the following signatory:

Date : 19-10-2023

Name : ing. R. van Barneveld

Function : Test Engineer

Signature :

A handwritten signature in blue ink, consisting of a stylized 'R' followed by several horizontal strokes.

## 2 SAR exclusion Evaluation

### 2.1 Transmitter specifications

#### Transmitter 1

Variable (unit)	Value	Symbol
Conducted time-averaged output power (mW)	12.5	P
Time-averaged output power ERP (mW)	12.5	P <sub>ERP</sub>
Operating frequency range (MHz)	2440	f
Separation distance (cm)	10	d
Separation distance (m)	0.1	R

#### Transmitter 2

Variable (unit)	Value	Symbol
Conducted time-averaged output power (mW)	91.20	P
Time-averaged output power ERP (mW)	91.20	P <sub>ERP</sub>
Operating frequency range (MHz)	2412	f
Separation distance (cm)	10	d
Separation distance (m)	0.1	R

## 2.2 Evaluation calculations

### Transmitter 1

Transmitter 1 is evaluated according to method B of KDB 447498 D04 v01

Method B:

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

Where:

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

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

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

$P_{th} = 819.9 \text{ mW}$

P or  $P_{ERP} = 12.5 \text{ mW}$  which is less than the calculated  $P_{th}$  so the EUT complies with the SAR based exemption requirement.

### Transmitter 2

Transmitter 2 is evaluated according to method B of KDB 447498 D04 v01

Method B:

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

Where:

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

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

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

$P_{th} = 819.9 \text{ mW}$

P or  $P_{ERP} = 91.2 \text{ mW}$  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

In the case of RF sources operating in the same time averaging period, evaluate if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\frac{P_1}{P_{th1}} + \frac{P_2}{P_{th2}} + \dots + \frac{P_n}{P_{thn}} \leq 1$$

Where  $P_x$  is the calculated power and  $P_{thx}$  the calculated limit for each transmitter.

$$BLE + WIFI = (12.5/819.9) + (91.2/819.9) = 0.015 + 0.111 = 0.126 \leq 1$$



## **2.3 Conclusion**

Since the EUT does not cause exposure in excess of the general population limit, no additional mitigation actions are required.