

FCC SAR Exclusion Report



Product name : RF Module 915 MHz
Applicant : Tyro Remotes B.V.
FCC ID : SQL-LP915
IC : 30985- LP915

Test report No. : P000393949 004 Ver 1.0

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).

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The Industry Canada company number for Kiwa Nederland B.V. is: 4173A. The CABID is NL0001.

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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	27/08/2024	First draft	LFD
v1.00	29/08/2024	Final release	LFD

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1 General Description

1.1 Applicant

Client name:	Tyro Remotes
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Zip code:	7602 KK Almelo Netherlands
Telephone:	+31 612734017
E-mail:	j.nijkrake@tyroremotes.eu
Contact name:	John Nijkrake

1.2 Manufacturer

Manufacturer name:	Tyro Remotes
Address:	Bedrijvenpark Twente 299
Zip code:	7602 KK Almelo Netherlands
Telephone:	+31 612734017
E-mail:	j.nijkrake@tyroremotes.eu
Contact name:	John Nijkrake

1.3 Tested Equipment Under Test (EUT)

Product name:	LEAP 915 MHz radio modules 3V1 / 2V8
Brand name:	LEAP
FCC ID:	SQL-LP915
IC:	30985- LP915
Product description:	915 MHz radio module
Variant model(s):	LP915 - 2V8
Batch and/or serial No.	Not Applicable
Software version:	4.0.19
Hardware version:	P02
Date of receipt:	25/04/2024
Tests started:	29/04/2024
Testing ended:	01/05/2024

1.3.1 Auxiliary items

AUX1

Product name:	Power supply for EUT
Product type:	AC/DC Adaptor
Remarks:	Connects to EUT

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 : L. Fonseca Dias

Review of assessment methods and report by:

Name : P. van Wanrooij, BASc

The above conclusions have been verified by the following signatory:

Date : 29-08-2024

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

From report P000393949 001, the worst case is used in the current report.

2.1 Transmitter specifications

BLE

Variable (unit)	Value	Symbol
Conducted time-averaged output power (mW)	1.052	P
Time-averaged output power ERP (mW)	1.387	P_{ERP}
Operating frequency range (MHz)	902 - 928	f
Separation distance (cm)	10	d
Separation distance (m)	0.1	R

2.2 Evaluation calculations

BLE

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:

$P_{th} = 667.3 \text{ mW}$

P or P_{ERP} = 1.387 mW which is less than the calculated P_{th} so the EUT complies with the SAR based exemption requirement.

$$x = -\log_{10} \left(\frac{60}{ERP_{20cm} * \sqrt{0.903}} \right)$$

$$x = 1.465$$

$$P_{th}(mW) = 1842 \left(\frac{1}{2} \right)^{1.465}$$

$$P_{th}(mW) = 667.3$$

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>>