telefication bv
The Netherlands
Chamber of Commerce
51565536
www.telefication.com

telefication

FCC MPE calculation Report

Product name	: W1600
Applicant	: CLB Research B.V.
FCC ID	: 2AWOF 128300
	Contains: 2ABCB-RPI3AP

Test report No. : 200400315 002 MPE calculation report Ver 1.0

Laboratory information

Accreditation

Telefication 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 L021 and is granted on 30 November 1990 by the Dutch Council For Accreditation (RvA: Raad voor Accreditatie).

Telefication 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.

Telefication 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 Telefication is: 4173A.

Telefication 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 Telefication Netherlands.

Testing Location

Test Site	Kiwa Telefication BV
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
v1.0	14-07-2021	Release version	PvW

Table of Contents

1 General Description

1.1 Applicant

Client name:	CLB Research B.V.
Address	G.G. Schipperstraat 24, the Netherlands
Zip code:	1483 GE, De Rijp
Telephone:	+31 162 582 900
E-mail:	Rcommandeur@clb.nl
Contact name:	Ruud Commandeur

1.2 Manufacturer

Client name:	CLB Research B.V.
Address	G.G. Schipperstraat 24, the Netherlands
Zip code:	1483 GE, De Rijp
Telephone:	+31 162 582 900
E-mail:	Rcommandeur@clb.nl
Contact name:	Ruud Commandeur

1.3 Tested Equipment Under Test (EUT)

Product name:	W1600
Brand name:	CLB
FCC ID:	2AWOF 128300 Contains: 2ABCB-RPI3AP
Product type:	Wireless Acoustic Monitoring Module
Model(s):	W1600
Batch and/or serial No.	--
Software version:	--
Hardware version:	CLB128305

1.4 SAR Measurement Evaluation

1.4.1 Maximum Output Power

The maximum radiated power including antenna gain is shown as below.

Mode	Max power output*
Bluetooth LE	5.4 mW
802.11b/g/n	30 mW
802.11a/ac	25.1 mW

* from specifications FCC ID 2ABCB-RPI3AP

1.4.2 MPE Limits

Limits for occupational/controlled exposure

Frequency Range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
0.3 – 3.0	614	1.63	100 (see note 1)	≤6
3.0 – 30	1842/f	4.89/f	$900/f^2$ (see note 1)	≤6
30 – 300	61.4	0.163	1.0	≤6
300 – 1500	--	--	f/300	≤6
1500 – 100000	--	--	5	≤6

Limits for general population/uncontrolled exposure

Frequency Range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
0.3 – 1.34	614	1.63	100 (see note 1)	≤30
1.34 – 30	824/f	2.19/f	$180/f^2$ (see note 1)	≤30
30 – 300	27.5	0.073	0.2	≤30
300 – 1500	--	--	f/1500	≤30
1500 – 100000	--	--	1.0	≤30

Notes :

f = frequency in MHz

1: plane wave equivalent power density

1.4.3 MPE calculation

As declared by the Applicant, the EUT is a wireless device used in a fixed application, at least 20 cm from any body part of the user or nearby persons.

Calculation method of RF Safety Distance:

$$PD = \frac{Pout * G}{4\pi r^2} = \frac{P(eirp)}{4\pi r^2}$$

Where:
PD = Power Density in mW/cm^2
Pout = Output power in mW
G = Gain of antenna
R = Distance between observation point and centre of the radiator in cm

Calculation results

Technology	Frequency (MHz)	Max radiated power (mW)	Distance (cm)	Power density ($\boldsymbol{mW/cm^2}$)	Limit ($\boldsymbol{mW/cm^2}$)
BLE	2400 – 2483.5	5.4	20	0.001	1.0
802.11b/g/n	2400 – 2483.5	30	20	0.006	1.0
802.11a/ac	5150 – 5750	25.1	20	0.005	1.0

Calculating the MPE ratio with simultaneous transmission:

$$MPE\ ratio = \frac{PD_1}{Limit_1} + \frac{PD_2}{Limit_2} \ldots \leq 1.0$$

802.11b/g/n and 802.11a/ac can transmit simultaneously so the MPE ratio is:

0.006/1.0 + 0.005/1.0 = 0.011
0.011 ≤ 1.0

1.5 Conclusion

The measurement results comply with the FCC limit per 47 CFR 1.1310 for devices for fixed use.