

## FCC MPE calculation Report

Product name : Wireless RFID reader  
Applicant : Ultimaker B.V.  
FCC ID : 2AL8M-1726A  
IC : 23486-1726A

Test report No. : P000132198 005 v3.00

## 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

<b>Test Site</b>	Kiwa Telefication BV
<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
v1.00	04-11-2022	Release version	KK
v2.00	22-11-2022	Product name in section 1.3 updated	KK
v3.00	19-01-2023	MPE calculation in section 1.4.3 corrected	KK

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## 1 General Description

### 1.1 Applicant

<b>Client name:</b>	Ultimaker B.V.
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<b>Contact name:</b>	Yordanka Tchifligarova

### 1.2 Manufacturer

<b>Manufacturer name:</b>	Ultimaker B.V.
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<b>Telephone:</b>	+31 (0) 6 2366 2732
<b>E-mail:</b>	product-compliance@ultimaker.com
<b>Contact name:</b>	Yordanka Tchifligarova

### 1.3 Tested Equipment Under Test (EUT)

<b>Product name:</b>	Wireless RFID reader
<b>Brand name:</b>	Ultimaker
<b>Product type:</b>	1726-A
<b>FCC ID:</b>	2AL8M-1726A
<b>IC:</b>	23486-1726A
<b>Software version:</b>	-
<b>Hardware version:</b>	1726-B

## 1.4 SAR Measurement Evaluation

### 1.4.1 Maximum Output Power

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

Technology	Field strength at 30m (dB $\mu$ V/m)
NFC	42.8

\* from Telefication test report no: P000132198 004.

### 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 <sup>2</sup> )	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 <sup>2</sup> (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 <sup>2</sup> )	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 <sup>2</sup> (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 10 cm from any body part of the user or nearby persons.

#### Calculation results

Technology	Frequency (MHz)	Field strength at 30 m (dB $\mu$ V/m)	Field strength at 10 cm (dB $\mu$ V/m)	Distance (cm)	Field strength at 10 cm (V/m)	Limit (V/m)
NFC	13.56	42.8	141.9	10	12.45	60.76

Note: For distance conversion 40 dB/ dec factor has been used.

## 1.5 Summary

Since MPE calculation are below the limit, SAR testing is not required.