

FCC SAR Exclusion Report

Product name : DS02
Applicant : TWTG R&D B.V.
FCC ID : 2ATYF-DS02

Test report No. : P00052180 003 Ver 2.00

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

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
v1.00	04-10-2022	Initial release	KK
v2.00	14-11-2022	Product name changed	KK

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1 General Description

1.1 Applicant

Client name: TWTG R&D B.V.
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Telephone: +31 10 203 7905
E-mail: wesley.kerstens@twtg.io
Contact name: Wesley Kerstens

1.2 Manufacturer

Manufacturer name: TWTG R&D B.V.
Address: Schaardijk 386, 2909LA, Zuid Holland, Capelle a/d IJssel, The Netherlands
Telephone: +31 10 203 7905
E-mail: info@twtg.io
Contact name: Dimer schaefer

1.3 Tested Equipment Under Test (EUT)

Product name: DS02
Brand name: TWTG R&D B.V.
FCC ID: 2ATYF-DS02
Model(s): -
Software version: 1.0
Hardware version: A8
Date of receipt: 17-11-2021
Tests started: 27-07-2022
Testing ended: 27-09-2022

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. Telefication 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 : Koray Korcum, MSc

Review of assessment methods and report by:

Name : Raoul Tolud, MSc

The above conclusions have been verified by the following signatory:

Date : 15-11-2022

Name : P. van Wanrooij

Function : Test Engineer

Signature :



2 SAR exclusion Evaluation

2.1 Transmitter specifications

Transmitter 1

Variable (unit)	Value	Symbol
Conducted time-averaged output power (mW)	3.24	P
Time-averaged output power ERP (mW)	4.18	P_{ERP}
Operating frequency range (MHz)	902.3	f
Separation distance (cm)	20	d
Separation distance (m)	0.02	R

Note: Values are taken From Telefication report no. P000052180 001.

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:

$P_{th} = 1841 \text{ mW}$

P or $P_{ERP} = 4.18 \text{ mW}$ which is less than the calculated P_{th} so the EUT complies with the SAR based exemption requirement.

2.3 Conclusion

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