

FCC SAR Exclusion Report

Product name : CARA MET Cube
Applicant : SenseNL B.V.
FCC ID : 2AWXW-MSCB01

Test report No. : 200900471 FCC RF exposure Ver 2.0

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).

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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 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

Revision History

Version	Date	Remarks	By
v1.00	06-05-2021	Release version	PvW
V2.0	21-10-2021	Updated separation distance from 50mm to 5mm	PvW

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1 General Description

1.1 Applicant

Client name:	SenseNL B.V.
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E-mail:	w.kavelaars@sownet.nl
Contact name:	Mr. W. Kavelaars

1.2 Manufacturer

Manufacturer name:	SenseNL B.V.
Address:	Ambachtsweg 41F, Pijnacker
Zip code:	2641 KT, the Netherlands
Telephone:	0858 768909
E-mail:	w.kavelaars@sownet.nl
Contact name:	Mr. W. Kavelaars

1.3 Tested Equipment Under Test (EUT)

Product name:	CARA MET Cube
Brand name:	SenseNL B.V.
FCC ID:	2AWXW-MSCB01
IC ID:	26309-MSCB01
Product type:	Wireless moisture content sensor
Model(s):	MSCB01
Batch and/or serial No.	--
Software version:	--
Hardware version:	--
Date of receipt:	05-11-2020
Tests started:	09-12-2020
Testing ended:	09-12-2020

1.4 SAR Measurement Evaluation

1.4.1 Maximum Output Power

The maximum radiated power including tune-up tolerance is shown as below.

Technology	Max power level
LoRa	10.2 dBm

Taken from Telefication report 200200690 001

1.4.2 SAR Testing Exclusions

According to KDB 447498 D01, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

- For the test separation distance ≤ 50 mm

$$\frac{\text{Max. Tune up Power}_{(\text{mW})}}{\text{Min. Test Separation Distance}_{(\text{mm})}} \times \sqrt{f_{(\text{GHz})}} \leq 3.0$$

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

- For the test separation distance > 50 mm, and the frequency at 100 MHz to 1500 MHz

$$\left[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times \left(\frac{f_{(\text{MHz})}}{150} \right) \right]_{(\text{mW})}$$

- For the test separation distance > 50 mm, and the frequency at > 1500 MHz to 6 GHz

$$[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times 10]_{(\text{mW})}$$

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Ant. to Surface (mm)	Calculated Result	Require SAR Testing?
LoRa	10.2	10.5	5	2.0	No

Note:

- When separation distance ≤ 50 mm and the calculated result shown in above table is ≤ 3.0 , the SAR testing exclusion is applied.
- When separation distance > 50 mm and the device output power is less than the calculated result (power threshold, mW) shown in above table, the SAR testing exclusion is applied.

1.5 Summary

Since the SAR testing for all device orientations apply SAR test exclusion per KDB 447498, SAR testing for this device is not required.