Manufacturer:	Nokeval Oy, Rounionkatu 107, FI-37150 Nokia, Finland
Model / HVIN:	eGate-Kombi-LWUS-RHT-CO2-TVOC-Dust40-DP
FCC ID:	2A3B4CMWX01
Test Laboratory:	SGS Fimko Oy
Address:	Karakaarenkuja 4, FI-02610 Espoo, Finland
Accreditation Body:	FINAS
CAB Identifier:	T004
ISED Company Number:	8708A

REFERENCE DOCUMENTS

KDB447498 D04 Interim General RF Exposure Guidance v01
47 CFR §1.1310 Radiofrequency radiation exposure limits
47 CFR §2.1091 Radiofrequency radiation exposure evaluation: mobile devices
Grant of the original module (FCC ID: VPYCMABZ)

EUT SPECIFICATION

The equipment under test is an indoor air quality transmitter, which measures temperature, humidity, CO2, TVOC, particles, and differential pressure. The equipment includes a LoRaWAN radio which operates in the 902-928 MHz band.

Operating Frequency Range:	125 kHz channel: 500 kHz channel:	902.3-914.9 MHz 903.0-914.2 MHz
Channels:	125 kHz channel: 500 kHz channel:	64 8
Nominal channel bandwidth:	125 kHz , 500 kHz	
Channel separation:	125 kHz channel: 500 kHz channel:	200 kHz 1.6 MHz
Maximum peak conducted output power	0.0746 W *)	
Modulation:	LoRa	
Integral Antenna gain:	+2.4 dBi	
Device category:	Mobile (separation distance > 20 cm)	
Environment:	General Population/Uncontrolled	

*) referenced from the grant of the original module (FCC ID: VPYCMABZ)

ASSESSMENT

A single RF source is exempt if the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

With separation distance 20 cm and frequency 902.3 MHz, the exemption threshold P_{th} is 1841 mW. The effective radiated power of the EUT (79.0 mW) is below the exemption threshold.

Note: the EUT complies with the exemption threshold at distances ≥ 2.33 cm.

CONCLUSION

The assessment shows that the device qualifies for SAR-based exemption in mobile use.

Date: June 6, 2022

Henri Mäki
Testing Engineer