PRODUCT ENVIRONMENTAL PROFILE

NaveoPro GW 1.0

Registration N°: ABBG-00629-V01.01_EN	Drafting rules: **« PCR-ed4-EN-2021 09 06» and « PSR-0005-ed3.1-FR-2023 12 08 »**
Verifier accreditation N°: VH49	Information and reference documents: **www.pep-ecopassport.org**
Date of issue: **05-2024**	Validity period: **5 years**
Independent verification of the declaration and data, in compliance with ISO 14025:2006 Internal ☐ External ☑	
The PCR review was conduct by a panel of experts chaired by Julie ORGELET (DDEMAIN)	
PEP are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022 The components of the present PEP may not be compared with components from any other program.	
Document complies with ISO 14025:2006 « Environmental labels and declaration. Type III environmental declarations »	

GENERAL INFORMATION

PRODUCT STUDIED

The product subject to the environmental declaration is an intelligent monitoring system for managing security lighting via a mobile application. The reference product subject to the environmental footprint assessment is the NaveoPro GW 1.0 gateway, whose technical characteristics are as follows:

Technical characteristics	
Product category	Other equipment - Active product
Product reference	51000040 - 51000045
Protection rating	IP30 RATING
Connection voltage (input)	Nominal: 12 or 24 VDC; range: 9 to 30 VDC with transient protection
Power consumption	4 W (standard); 15 W (maximum)
Processor	TI AM 3352, 1 GHz, 1 core
RAM memory	1 Go, DDR3
Built-in storage	8 Go eMMC
Wired interfaces	Ethernet, 1x Fast Ethernet on RJ45 connectors
Operating temperature	-40°C to +70°C
Dimensions (L x W x H)	139 x 115 x 46 mm
Included accessories	Power supply, antenna and raid-in mounting bracket
Product weight	0.57 kg
Primary packaging weight	0.06 kg
Geographical representativeness	Manufactured mainly in Asia, with assembly in France; distribution, installation, use and end-of-life in Europe.
Temporal representativeness	Data collected is representative of the year 2024

Table 1 - Technical specifications of the reference product

PRODUCT CATEGORY

This product follows the specific rules of the "Other devices" family of PSR-0005-ed3.1-FR-2023 12 08 in force for so-called active devices.

FUNCTIONAL UNIT

The functional unit (FU) studied is "Managing a maximum of 500 emergency lights for 10 years" in accordance with PCR Edition 4.

The maximum number of lights managed by the system (500 lights) is based on the technical specifications of the NaveoPro GW 1.0 gateway.

The NaveoPro GW 1.0 gateway offers the following features:

- Management of the frequency of mandatory and personalized tests according to current standards (test results are saved and available via reports)
- Configuration of annual maintenance
- Control of the entire security lighting installation
- Recording of all activities in the cloud

DECLARED UNIT

The declared unit (DU) studied is identical to the functional unit.

REFERENCE SERVICE LIFE

The reference service life of the product studied is 10 years as defined in PSR-0005-ed3.1-FR-2023 12 08.

CONSTITUENT MATERIALS

The total mass of the product is 0.63 kg including 0.57 kg of product and 0.06 kg of packaging. The constituent materials are:

Constituent materials	Metals		Plastics		Others	
	Aluminum	10.3%	PC	32.8%	Power supply	20.3%
	Steel	2.9%	PVC	1.5%	PCB	14.0%
	Brass	0.8%			Cardboard	6.8%
					Adapter	4.8%
					Plug-in connectors	3.9%
					Paper	1.6%
					Cable	0.3%
	Total	**14.1%**	**Total**	**34.3%**	**Total**	**51.6%**

Table 2 – Constituent materials

LIFE CYCLE ASSESSMENT METHODOLOGY

The Life Cycle Assessment of this declaration is in compliance with the criteria imposed by the PCR-ed4-EN-2021 09 06 of PEP ecopassport® Program. The functional unit has been developed in accordance with PCR edition 4. The distribution, installation, use and waste treatment scenarios comply with the assumptions set out in PSR-0005-ed3.1-FR-2023 12 08.

Results were obtained using EIME software version 6.2 and its most recent database "Database 2024-04".

MANUFACTURING STAGE

The product includes a Gateway part and a Translator part. They are assembled in France from components mainly manufactured in Asia.

The materials required to manufacture the product and its primary and secondary packaging have been considered.

Inbound transport of raw materials and components to the assembly site has been considered. As ABB & KAUFEL was unable to provide all the information relating to upstream transport, the following scenarios were considered in accordance with PCR-ed4-FR-2021 09 06:

- International transport: 19,000 km by ship and 1,000 km by truck
- Intra-continental transport: 3,500 km by truck
- Local / national transport: 1,000 km per truck

A truck loading rate of 85% and an empty return rate of 20% were considered.

The scrap rate of assembled components was considered. As ABB & KAUFEL were unable to provide loss rates for these components, default loss rates were applied for each part in accordance with PSR-0005-ed3.1-EN-2023 12 08.

All types of scrap or waste treatment generated during the manufacturing and assembly stages have been considered. In accordance with PSR-0005-ed3.1-FR-2023 12 08, the treatment of losses has been modeled:

- According to table 6 of appendix D of PEP-PCR-ed4-FR-2021 09 06 for waste treatment in Europe
- With 100% incineration without energy recovery when the parts are manufactured outside Europe

Truck transport between the assembly plant (Piffonds, France) and the final logistics platform (La Louvière, Belgium) was modeled using a 27t truck over 320 km. A truck load rate of 85% and an empty return rate of 20% were considered (source: Eurostat).

Energy model	**Electricity Mix; Production mix; Low voltage; 2020; China** **Electricity Mix; Production mix; Low voltage; 2020; Taiwan** **Electricity Mix; Production mix; Low voltage; 2020; France** **Electricity Mix; Production mix; Low voltage; 2020; Tunisia**	**(source: IEA)**

DISTRIBUTION STAGE

Distribution of the packaged product from the last logistics platform (Belgium) to the installation sites (Europe) was modelled by transport by 27t truck over 3500 km (intracontinental transport scenario from PEP-PCR-ed4-FR-2021 09 06).

A truck loading rate of 85% and an empty return rate of 20% were considered. Source PEFCR.

Transport does not require repackaging.

INSTALLATION STAGE

The product installation generates packaging waste (primary and secondary packaging), the treatment of which has been modelled in accordance with paragraph 3.1.5.2.1 of PSR-0005-ed3.1-FR-2023 12 08:

- 100 km waste collection by truck
- Packaging waste processing has been modelled as follows:

	Paper - cardboard
Recycling rate	82%
Incineration with energy recovery	9%
Landfill	9%

Table 3 - Packaging end-of-life scenario

The modules used for packaging end-of-life are representative of European modules.

Energy model	Electricity Mix; Production mix; Low voltage; European energy mix

USE STAGE

The product falls within the scope of the "other equipment" family of active components in PSR-0005-ed3.1-FR-2023 12 08.

In this case, the electrical consumption corresponds to the energy consumed in one year multiplied by the product's lifetime defined in its functional unit.

$$E = 35.04 * 10 = 350.4\ kWh$$

The electricity consumed in one year was calculated from the following data:

	Data
Power in active mode	4 W
Percentage of time in active mode	100%

Table 4 – Date used to calculate electricity consumed on one year

For this project, ABB & KAUFEL wanted the declaration to be usable for use in Europe. The electricity production consumed has been modelled by a European energy mix.

Energy model	Electricity Mix; Production mix; Low voltage; 2020; Europe EU-27 (source: IEA)

The product does not require replacement of parts over the reference lifespan.

END OF LIFE STAGE

The end-of-life treatment of the product was modelled using Ecosystem's LCI modules (called ESR) as recommended by PCR ed 4.

This is the only European database assessing the environmental footprint of electrical and electronic equipment at the end of its life cycle. 96 materials are modelled and broken down according to the different flows processed, enabling the environmental impacts and benefits of WEEE at the end of its life cycle to be quantified.

The BOMs (Bill Of Materials) of the product, electronic boards and cable have been isolated in order to use ESR data specific to the end-of-life treatment of the materials contained in each of these elements.

ESR data without benefits linked to virgin material substitution were used.

ESR data for the "Small Professional Elec. Equip. (Medical & Building & Industry & Research)" were used.

Energy model	Electricity Mix; Average LCI for 2015-2017; France, FR (Ecosystem modelling)

NET BENEFITS AND LOADS BEYOND THE BOUNDARIES OF THE SYSTEM (MODULE D ACCORDING TO EN 15804)

The **benefits of recycling packaging at the installation stage** [A5] were considered in Module D. These benefits were modelled by the quantities of recycled material reported at installation [A5] as negative quantities of virgin material.

Recycled material input loads in manufacturing [A1-A3] were considered in Module D. These loads were modeled by the recycled material input quantities reported in manufacturing [A1-A3] as positive quantities of virgin material. However, this product does not contain any materials with a recycled content.

The **benefits and costs of the product's end-of-life** have been considered in Module D. These benefits have been modelled by ESR data with modules with benefits alone, which corresponds to the difference between ESR data with benefits and without benefits.

BIOGENIC CARBON CONTENT

		Product	Primary packaging
	Biogenic content (DU) (kg C)	0.00E+00	2.24E-02
1	Biogenic content (FU) (kg C)	0.00E+00	2.24E-02

Table 5 - Biogenic carbon content of product and primary packaging

As the functional unit and the declared unit are identical, the biogenic carbon content is the same for both units.

ENVIRONMENTAL IMPACTS OF THE FUNCTIONAL UNIT

The results of impacts presented below were obtained using the methods defined by the PCR-ed4-EN-2021 09 06 and the PSR-0005-ed3.1-FR-2023 12 08. The analysis of the contribution of elementary flows to environmental indicators is based on calculations made using the EIME v6 life cycle analysis software. The set of indicators used is the "Indicators for PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2)" set developed by the CODDE department of Bureau Veritas in compliance with appendix A of PCR-ed4-FR-2021 09 06.

For biogenic carbon storage, the -1 / +1 assessment methodology is used.

In this study, the declared unit and the functional unit are identical.

ENVIRONMENTAL IMPACTS OF THE REFERENCE PRODUCT AT THE SCALE OF THE FUNCTIONAL UNIT

MANDATORY INDICATORS															
Impacts indicators	Unit	Manufacturing	Distribution	Installation	Use								End-of-life	Total (Off D)	Benefits and loads
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	B1-B7	C1-C4		D
Climate change - total	kg CO2 eq	3.26E+01	1.81E-01	5.97E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E+02	0.00E+00	1.24E+02	8.42E-01	1.58E+02	-3.04E+00
Climate change – fossil fuels	kg CO2 eq	3.28E+01	1.81E-01	2.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E+02	0.00E+00	1.23E+02	8.08E-01	1.57E+02	-3.23E+00
Climate change - biogenics	kg CO2 eq	-1.91E-01	0.00E+00	3.46E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.27E-01	0.00E+00	2.27E-01	3.33E-02	4.16E-01	1.92E-01
Climate change – land use and land use transformation	kg CO2 eq	3.07E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.07E-04	-1.77E-06
Ozone depletion	kg CFC-11 eq	6.75E-06	2.78E-10	7.40E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.99E-07	0.00E+00	5.99E-07	7.36E-08	7.43E-06	-2.33E-07
Acidification	mol H+ eq	2.09E-01	1.15E-03	8.01E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.33E-01	0.00E+00	6.33E-01	1.04E-02	8.54E-01	-4.52E-02
Freshwater eutrophication	kg $(PO4)^{3-}$eq	7.28E-05	6.79E-08	3.00E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.25E-04	0.00E+00	3.25E-04	1.74E-05	4.18E-04	-2.08E-02
Marine aquatic eutrophication	kg N eq	2.68E-02	5.38E-04	3.22E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.71E-02	0.00E+00	7.71E-02	6.25E-03	1.11E-01	-8.90E-03

Terrestrial eutrophication	mol N eq	2.85E-01	5.90E-03	2.20E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E+00	0.00E+00	1.24E+00	9.86E-03	1.54E+00	-1.13E-01
Photochemical ozone formation	kg COVNM eq	9.66E-02	1.49E-03	5.28E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.43E-01	0.00E+00	2.43E-01	3.11E-03	3.44E-01	-2.58E-02
Abiotic resource depletion – elements or resource depletion – metals and minerals	kg Sb eq	8.16E-03	7.13E-09	1.70E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.37E-05	0.00E+00	4.37E-05	2.65E-06	8.21E-03	-5.82E-03
Abiotic resources depletion – fossil fuels or resource depletion - fossils	MJ	4.49E+02	2.53E+00	2.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.12E+03	0.00E+00	3.12E+03	1.06E+01	3.58E+03	-3.76E+01
Water requirement	m3 eq	1.07E+01	6.88E-04	5.05E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.46E+00	0.00E+00	9.46E+00	1.68E+02	1.88E+02	-6.72E+02

Inventory flows	Unit	Manufacturing	Distribution	Installation	Use								End-of-life	Total (Off D)	Benefits and loads
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	B1-B7	C1-C4		D
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	1.67E+01	3.37E-03	7.82E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.25E+02	0.00E+00	8.25E+02	8.38E-01	8.43E+02	-1.18E+01
Use of renewable primary energy resources used as raw materials	MJ	1.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E+00	0.00E+00
Total use of renewable primary energy resources	MJ	1.77E+01	3.37E-03	7.82E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.25E+02	0.00E+00	8.25E+02	8.38E-01	8.44E+02	-1.18E+01
Use of non-renewable primary energy, excluding non-renewable primary	MJ	4.40E+02	2.53E+00	2.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.12E+03	0.00E+00	3.12E+03	1.06E+01	3.57E+03	-3.76E+01

energy resources used as raw materials														
Use of non-renewable primary energy resources used as raw materials	MJ	9.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.40E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	4.49E+02	2.53E+00	2.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.12E+03	0.00E+00	3.12E+03	1.06E+01	3.58E+03	-3.76E+01
Use of secondary materials	kg	1.79E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.79E-02	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m^3	2.45E-01	1.60E-05	2.16E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-01	0.00E+00	2.22E-01	4.51E+00	4.98E+00	-1.88E+01
Hazardous waste disposed of	kg	1.29E+02	0.00E+00	1.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.41E+00	0.00E+00	5.41E+00	3.67E-03	1.35E+02	-1.99E-02
Non-hazardous waste disposed of	kg	9.28E+00	6.36E-03	8.46E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.09E+01	0.00E+00	2.09E+01	8.19E-02	3.03E+01	-1.24E-01
Radioactive waste disposed of	kg	6.02E-03	4.53E-06	1.40E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.79E-03	0.00E+00	4.79E-03	4.13E-06	1.08E-02	-5.85E-05
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	4.82E-03	0.00E+00	1.76E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E-01	3.82E-01	0.00E+00
Materials for energy recovery	kg	9.16E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.16E-10	0.00E+00
Exported energy	MJ	7.63E-03	0.00E+00	1.03E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.51E-02	4.37E-02	0.00E+00

FACULTATIVE INDICATORS															
Impact indicators	**Unit**	**Manufacturing**	**Distribution**	**Installation**	**Use**								**End-of-life**	**Total (Off D)**	**Benefits and loads**
		A1-A3	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B1-B7**	**C1-C4**		**D**
Total use of primary energy during the life cycle	MJ	4.67E+02	2.53E+00	3.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.94E+03	0.00E+00	3.94E+03	1.15E+01	4.43E+03	-4.94E+01
Emission of fine particles, expressed in incidence of diseases	death/ Kg eq PM2.5	1.18E-06	9.33E-09	4.61E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-06	0.00E+00	5.09E-06	4.51E-08	6.33E-06	-3.16E-07
Ionizing radiation, human health	kBq U235 eq	8.56E+01	4.41E-04	1.90E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.78E+02	0.00E+00	1.78E+02	6.02E-02	2.82E+02	-5.59E-01
Ecotoxicity (fresh water)	CTUe	1.61E+02	1.19E-01	3.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.33E+02	0.00E+00	2.33E+02	4.97E+00	4.03E+02	-3.32E+01
Human toxicity, carcinogenic effects	CTUh	3.70E-07	3.18E-12	2.31E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.55E-08	0.00E+00	1.55E-08	9.55E-10	4.10E-07	-3.46E-08
Human toxicity, non-carcinogenic effects	CTUh	8.50E-07	6.16E-11	7.28E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.71E-07	0.00E+00	3.71E-07	6.42E-08	1.29E-06	-6.89E-07
Impacts related to land use/soil quality	No dimension	9.75E-01	0.00E+00	6.52E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.42E+00	0.00E+00	3.42E+00	2.34E+00	6.73E+00	-4.83E+01

Table 6 - Results of environmental indicators for life-cycle reference flow at functional unit and equipment level

Holder of the declaration		
	ABB & KAUFEL	
	206 Route de Saint Martin d'Ordon, 89330 Piffonds	
	Email	contact.center@fr.abb.com
	Website	www.kaufel.fr
Author of the Life Cycle Analysis		
	CODDE- Department of LCIE Bureau Veritas	
	170 Rue de Chatagnon – 38430 MOIRANS - FRANCE	
	Numb	+33 (0)4 76 07 36 46
	Email	codde@fr.bureauveritas.com
	Website	www.codde.fr