

# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Unistreet/Lumistreet gen2 Medium  
BGP283/293/393  
Signify N.V.

The Signify logo, featuring a green circular icon with a stylized 'S' followed by the word 'signify' in a lowercase, sans-serif font.

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Signify N.V.
Address	High Tech Campus 48, 5656 AE Eindhoven, The Netherlands
Contact details	sustainability@signify.com
Website	<a href="https://www.signify.com/global">https://www.signify.com/global</a>

### EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Electrical product
Category of EPD	Pre-verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Sustainability Signify
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input checked="" type="checkbox"/> Internal certification <input type="checkbox"/> External verification

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of lighting products may not be comparable if they do not comply with EN 15804 and if they are not compared in a lighting context.

### PRODUCT

Product name	Unistreet/Lumistreet gen2 Medium
Additional labels	BGP293 LED180-4S/730 II DM50 D9 48/60S
Product reference	910925868022
Place of production	Poland
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	Not Applicable

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass	7.306 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	6,42E+01
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	6,31E+01
Secondary material, inputs (%)	46.5
Secondary material, outputs (%)	58.6
Total energy use, A1-A3 (kWh)	214
Net fresh water use, A1-A3 (m <sup>3</sup> )	0.36

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Signify is the world leader in lighting for professionals, consumers and lighting for the Internet of Things. Our energy efficient lighting products, systems and services enable our customers to enjoy a superior quality of light, and make people’s lives safer and more comfortable, businesses more productive and cities more liveable.

For more information, please visit: <https://www.signify.com/global>

### PRODUCT DESCRIPTION

Designed for large-scale ledification projects, the Unistreet/Lumistreet gen2 is the ideal 1:1 luminaire replacement for municipalities. Thanks to its high efficiency and low initial cost, the Unistreet/Lumistreet gen2 luminaire enables a fast payback and significant savings in terms of energy consumption within a short period of time. The ease of installation and maintenance is enabled by the Service tag and the SR (System Ready) socket makes it future-ready and you can pair this luminaire with lighting control and software applications such as Interact City. Available with a number of different optics and lumen packages that can even be tuned further to fit exact project requirements, Unistreet/Lumistreet gen2 is a true point-to-point replacement solution for conventional light sources. The compact luminaire, using high-quality materials is also easy to dismantle and recycle at the end of its lifetime.

Further information can be found at <https://www.signify.com/global>.

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	65.06	EU , APAC
Minerals	22.56	EU , APAC
Fossil materials	12.39	EU , APAC
Bio-based materials	0	Not applicable

### BIOGENIC CARBON CONTENT

Product’s biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.184

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit
Mass per declared unit	7.306 kg
Functional unit	18000 Lumens over 100000 hours
Reference service life	100000

### SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MNR	MNR	MNR	MNR	MNR	x	MNR	MNR	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not relevant = MNR.

## MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, electricity, and waste formed in the production processes at Signify’s manufacturing facilities are included in this stage.

The product is made of metals, plastics, and electronic components. All components are transported to Signify’s production facility, where the main manufacturing processes primarily are associated with assembly. The finished product is packaged with polyethylene, cardboard, and/or paper as packaging material before being sent to customers. Manufacturing loss, ancillaries and wastes are calculated according to the data that each manufacturing site is sharing with Signify. The total annual amount of waste in kg is allocated to the total annual production in kg at the specific manufacturing site responsible for the production of the studied luminaire. Thus, it is possible to allocate it according to the weight of the product

Unistreet/Lumistreet gen2 Medium

analysed in this study. Some of the wastes are due to ancillary materials used during manufacturing while the rest is due to material losses.

## TRANSPORT AND INSTALLATION (A4-A5)

Transport distances were calculated on the base of the supplier location and manufacturing location and then made a cumulative group choosing the conservative scenario. Environmental impacts from installation include waste packaging materials (A5). The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

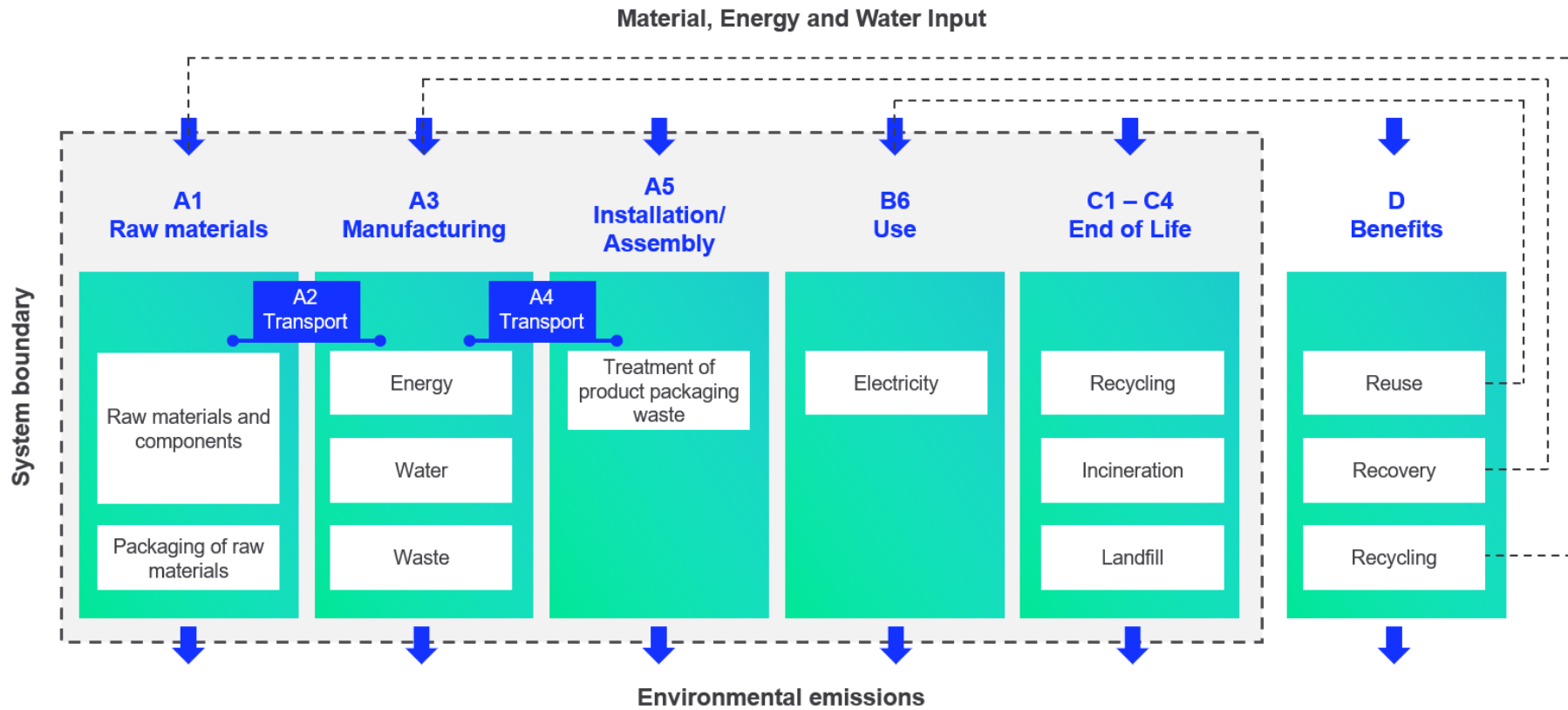
## PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase, the product consumes electricity from Europe’s electricity grid mix (B6). The total power consumption of the reference product is calculated as follows:  $Wattage \times Reference\ lifetime = kWh$  consumed throughout the entire use phase B6.

## PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. Transportation distance to treatment is assumed as 150 km and the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat production (D). The benefits and loads of incineration and recycling are included in Module D.

# SYSTEM BOUNDARY



## LIFE-CYCLE ASSESSMENT

### CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

### ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, ancillary materials, energy & water consumption, material loss and waste generation at the manufacturing site are attributed to the bill of materials of the products, therefore, they are allocated by partitioning the quantities on the base of the total production in kg throughout the year. Thus, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
No allocation	No allocation
No allocation	Allocated by mass or volume
Allocated by mass or volume	Allocated by mass or volume

This EPD is created with a most conservative scenario in A1-A3 in terms of material composition.

### AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	Not applicable

This EPD is product and factory specific and does not contain average calculations. It is created with a most conservative scenario in A1-A3 in terms of material composition.

### LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. EcoInvent 3.8 database was used as the source of environmental data.

# ENVIRONMENTAL IMPACT DATA

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total <sup>1)</sup>	kg CO <sub>2</sub> e	6,16E+01	1,46E+00	7,67E-02	6,31E+01	1,46E+00	6,83E-01	MNR	MNR	MNR	MNR	MNR	4,44E+03	MNR	MNR	1,03E-01	7,93E-01	6,50E-01	-1,04E+01
GWP – fossil	kg CO <sub>2</sub> e	6,20E+01	1,46E+00	7,39E-01	6,42E+01	1,46E+00	1,81E-02	MNR	MNR	MNR	MNR	MNR	4,43E+03	MNR	MNR	1,03E-01	7,93E-01	6,50E-01	-1,04E+01
GWP – biogenic	kg CO <sub>2</sub> e	-5,19E-01	0,00E+00	-6,65E-01	-1,18E+00	5,63E-04	6,65E-01	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	-1,97E-03
GWP – LULUC	kg CO <sub>2</sub> e	1,04E-01	8,93E-04	2,98E-03	1,08E-01	5,38E-04	5,95E-06	MNR	MNR	MNR	MNR	MNR	1,03E+01	MNR	MNR	3,79E-05	1,37E-04	1,00E-04	-1,06E-03
Ozone depletion pot.	kg CFC <sub>1,1,1</sub> e	3,15E-06	3,05E-07	9,71E-08	3,55E-06	3,35E-07	1,75E-09	MNR	MNR	MNR	MNR	MNR	2,25E-04	MNR	MNR	2,37E-08	1,11E-08	1,10E-08	-2,80E-07
Acidification potential	mol H <sup>+</sup> e	4,27E-01	3,39E-02	2,90E-03	4,63E-01	6,17E-03	1,36E-04	MNR	MNR	MNR	MNR	MNR	2,53E+01	MNR	MNR	4,36E-04	1,16E-03	5,29E-04	-1,10E-01
EP-freshwater <sup>2)</sup>	kg Pe	3,03E-03	7,42E-06	2,87E-05	3,07E-03	1,19E-05	1,82E-07	MNR	MNR	MNR	MNR	MNR	4,69E-01	MNR	MNR	8,42E-07	4,23E-06	5,02E-06	-6,60E-04
EP-marine	kg Ne	6,73E-02	8,45E-03	1,30E-03	7,70E-02	1,83E-03	5,77E-05	MNR	MNR	MNR	MNR	MNR	3,35E+00	MNR	MNR	1,29E-04	2,87E-04	1,05E-03	-1,17E-02
EP-terrestrial	mol Ne	7,04E-01	9,38E-02	8,31E-03	8,06E-01	2,02E-02	5,99E-04	MNR	MNR	MNR	MNR	MNR	3,81E+01	MNR	MNR	1,43E-03	3,21E-03	1,76E-03	-1,35E-01
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	2,17E-01	2,47E-02	2,15E-03	2,44E-01	6,47E-03	1,50E-04	MNR	MNR	MNR	MNR	MNR	1,04E+01	MNR	MNR	4,57E-04	8,57E-04	6,49E-04	-3,92E-02
ADP-minerals & metals <sup>4)</sup>	kg Sbe	3,15E-03	2,48E-06	3,85E-06	3,16E-03	3,42E-06	5,75E-08	MNR	MNR	MNR	MNR	MNR	4,13E-02	MNR	MNR	2,41E-07	9,45E-06	2,19E-07	-2,96E-04
ADP-fossil resources	MJ	6,97E+02	1,95E+01	9,88E+00	7,26E+02	2,19E+01	1,35E-01	MNR	MNR	MNR	MNR	MNR	9,42E+04	MNR	MNR	1,54E+00	1,26E+00	1,06E+00	-1,01E+02
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	1,97E+01	6,87E-02	2,49E-01	2,00E+01	9,79E-02	3,21E-02	MNR	MNR	MNR	MNR	MNR	2,57E+03	MNR	MNR	6,91E-03	4,69E-02	6,23E-02	-7,26E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO<sub>4</sub>e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

### ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	4,55E-06	8,57E-08	5,23E-08	4,69E-06	1,68E-07	1,27E-09	MNR	MNR	MNR	MNR	MNR	8,31E-05	MNR	MNR	1,19E-08	1,42E-08	8,68E-09	-5,96E-07
Ionizing radiation <sup>6)</sup>	kBq U235e	3,40E+00	9,09E-02	2,36E-02	3,51E+00	1,04E-01	4,91E-04	MNR	MNR	MNR	MNR	MNR	2,55E+03	MNR	MNR	7,36E-03	7,65E-03	5,57E-03	-6,06E-01
Ecotoxicity (freshwater)	CTUe	2,82E+03	1,43E+01	2,57E+01	2,86E+03	1,97E+01	9,38E-01	MNR	MNR	MNR	MNR	MNR	6,41E+04	MNR	MNR	1,39E+00	6,35E+00	4,22E+02	-2,48E+02
Human toxicity, cancer	CTUh	1,73E-07	7,47E-10	5,32E-10	1,74E-07	4,84E-10	4,20E-11	MNR	MNR	MNR	MNR	MNR	2,10E-06	MNR	MNR	3,41E-11	2,06E-10	4,89E-10	-5,72E-10
Human tox. non-cancer	CTUh	2,26E-06	1,14E-08	8,01E-09	2,28E-06	1,95E-08	1,75E-09	MNR	MNR	MNR	MNR	MNR	6,90E-05	MNR	MNR	1,38E-09	8,55E-09	1,31E-08	-3,23E-07
SQP <sup>7)</sup>	-	2,67E+02	9,97E+00	1,85E+01	2,95E+02	2,52E+01	7,37E-02	MNR	MNR	MNR	MNR	MNR	1,70E+04	MNR	MNR	1,78E+00	2,10E+00	1,61E+00	-2,26E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

### USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy <sup>8)</sup>	MJ	6,38E+01	1,66E-01	8,37E+00	7,24E+01	2,47E-01	4,49E-03	MNR	MNR	MNR	MNR	MNR	1,92E+04	MNR	MNR	1,74E-02	1,70E-01	4,45E-02	-1,85E+00
Renew. PER as material	MJ	6,00E+00	0,00E+00	5,82E+00	1,18E+01	0,00E+00	-5,82E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-4,50E-01	-8,35E-01	0,00E+00
Total use of renew. PER	MJ	6,98E+01	1,66E-01	1,42E+01	8,42E+01	2,47E-01	-5,82E+00	MNR	MNR	MNR	MNR	MNR	1,92E+04	MNR	MNR	1,74E-02	-2,80E-01	-7,91E-01	-1,85E+00
Non-re. PER as energy	MJ	6,69E+02	1,95E+01	9,55E+00	6,98E+02	2,19E+01	1,35E-01	MNR	MNR	MNR	MNR	MNR	9,40E+04	MNR	MNR	1,55E+00	1,26E+00	1,06E+00	-1,02E+02
Non-re. PER as material	MJ	2,63E+01	0,00E+00	4,78E-02	2,64E+01	0,00E+00	-4,78E-02	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-8,44E+00	-9,08E+00	0,00E+00
Total use of non-re. PER	MJ	6,95E+02	1,95E+01	9,60E+00	7,25E+02	2,19E+01	8,76E-02	MNR	MNR	MNR	MNR	MNR	9,40E+04	MNR	MNR	1,55E+00	-7,18E+00	-8,02E+00	-1,02E+02
Secondary materials	kg	3,40E+00	7,63E-03	4,55E-01	3,86E+00	6,08E-03	1,62E-04	MNR	MNR	MNR	MNR	MNR	9,70E+00	MNR	MNR	4,29E-04	1,20E-03	2,44E-03	4,21E-01
Renew. secondary fuels	MJ	9,06E-02	3,52E-05	3,21E-02	1,23E-01	6,13E-05	2,69E-06	MNR	MNR	MNR	MNR	MNR	7,86E-02	MNR	MNR	4,33E-06	6,15E-05	1,98E-05	-4,91E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m <sup>3</sup>	3,48E-01	1,72E-03	5,92E-03	3,56E-01	2,83E-03	5,68E-04	MNR	MNR	MNR	MNR	MNR	8,11E+01	MNR	MNR	2,00E-04	1,60E-03	9,79E-04	-3,36E-02

8) PER = Primary energy resources.

### END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,01E+01	2,63E-02	3,76E-02	1,01E+01	2,90E-02	1,26E-04	MNR	MNR	MNR	MNR	MNR	3,38E+02	MNR	MNR	2,05E-03	8,38E-03	6,22E-03	-1,60E+00
Non-hazardous waste	kg	1,01E+02	2,93E-01	5,48E-01	1,02E+02	4,77E-01	4,55E-01	MNR	MNR	MNR	MNR	MNR	2,14E+04	MNR	MNR	3,37E-02	6,12E-01	3,02E+00	-3,15E+01
Radioactive waste	kg	1,50E-03	1,35E-04	1,57E-05	1,65E-03	1,46E-04	2,17E-07	MNR	MNR	MNR	MNR	MNR	6,86E-01	MNR	MNR	1,03E-05	4,89E-06	0,00E+00	-2,23E-04

### END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	3,99E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	2,94E-01	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	2,51E-01	2,51E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	6,47E+00	0,00E+00	0,00E+00

### ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO <sub>2</sub> e	6,06E+01	1,45E+00	7,60E-01	6,28E+01	1,44E+00	1,73E-02	MNR	MNR	MNR	MNR	MNR	4,38E+03	MNR	MNR	1,02E-01	7,90E-01	1,04E+00	-1,02E+01
Ozone depletion Pot.	kg CFC <sub>11</sub> e	2,76E-06	2,41E-07	8,27E-08	3,08E-06	2,65E-07	1,53E-09	MNR	MNR	MNR	MNR	MNR	1,95E-04	MNR	MNR	1,87E-08	9,13E-09	8,91E-09	-2,38E-07
Acidification	kg SO <sub>2</sub> e	3,59E-01	2,71E-02	2,13E-03	3,88E-01	4,79E-03	9,95E-05	MNR	MNR	MNR	MNR	MNR	2,14E+01	MNR	MNR	3,38E-04	9,19E-04	4,08E-04	-9,52E-02
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	1,20E-01	3,20E-03	1,53E-03	1,24E-01	1,09E-03	7,41E-05	MNR	MNR	MNR	MNR	MNR	1,65E+01	MNR	MNR	7,71E-05	3,39E-04	3,30E-03	-2,61E-02
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	2,22E-02	7,17E-04	1,47E-04	2,31E-02	1,87E-04	3,12E-06	MNR	MNR	MNR	MNR	MNR	8,77E-01	MNR	MNR	1,32E-05	3,33E-05	1,15E-04	-4,64E-03
ADP-elements	kg Sbe	3,14E-03	2,42E-06	3,41E-06	3,14E-03	3,31E-06	4,51E-08	MNR	MNR	MNR	MNR	MNR	4,12E-02	MNR	MNR	2,34E-07	9,43E-06	2,03E-07	-2,95E-04
ADP-fossil	MJ	6,97E+02	1,95E+01	9,82E+00	7,26E+02	2,19E+01	1,35E-01	MNR	MNR	MNR	MNR	MNR	9,40E+04	MNR	MNR	1,54E+00	1,26E+00	1,06E+00	-1,01E+02

## APPENDIX (EPD HUB ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from a reference variant of a product family, based on various light management scenarios and power inputs of the luminaires within the same product family

To calculate the Scaled Impact (*SI*), we have followed the below methods:

1. Calculate the power scaling factor (PSF), which is the ratio of the power input of the variant in questions  $P_{in}$  and the power input of the base variant  $P_{base}$ .

$$PSF = \frac{P_{in}}{P_{base}}$$

2. Calculate the Total Scaling factor by multiplying the PSF by the control scaling factor (CSF), where the CSF is determined according the relevant control factor scenario (e.g. if the luminaire has a presence detection system). The presented controls factors values in Table A1 are based on BS EN 15193-1:2017. Please refer to this publication or contact Signify directly for more information.

$$TSF = PSF * CSF$$

**Table A1: Light management function (PEP EcoPassport aligned)**

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

3. Lastly, the GWP of the base variant is then scaled by the TSF.

$$\text{Scaled Impact} = \text{GWP}_{\text{case}} * \text{TSF}$$

**Table A2 Scaled GWP per scaling factor (EPD Hub aligned)**

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
BGP283/293/393 LED47-4S/740	4136.000	26.0	159.1	0.232	0.232	0.174	0.174	0.128	1030.7	773.0	773.0	566.9
BGP283/293/393 LED47-4S/730	4136.000	28.0	147.7	0.250	0.250	0.188	0.188	0.138	1110.0	832.5	832.5	610.5
BGP283/293/393 LED47-4S/727	4136.000	31.0	133.4	0.277	0.277	0.208	0.208	0.152	1228.9	921.7	921.7	675.9
BGP283/293/393 LED47-4S/722	4136.000	35.0	118.2	0.313	0.313	0.234	0.234	0.172	1387.5	1040.6	1040.6	763.1
BGP283/293/393 LED47-4S/830	4136.000	31.0	133.4	0.277	0.277	0.208	0.208	0.152	1228.9	921.7	921.7	675.9
BGP283/293/393 LED50-4S/740	4400.000	28.0	157.1	0.250	0.250	0.188	0.188	0.138	1110.0	832.5	832.5	610.5
BGP283/293/393 LED50-4S/730	4400.000	29.5	149.2	0.263	0.263	0.198	0.198	0.145	1169.5	877.1	877.1	643.2
BGP283/293/393 LED50-4S/727	4400.000	33.0	133.3	0.295	0.295	0.221	0.221	0.162	1308.2	981.2	981.2	719.5
BGP283/293/393 LED50-4S/722	4400.000	37.0	118.9	0.330	0.330	0.248	0.248	0.182	1466.8	1100.1	1100.1	806.7
BGP283/293/393 LED50-4S/830	4400.000	33.0	133.3	0.295	0.295	0.221	0.221	0.162	1308.2	981.2	981.2	719.5
BGP283/293/393 LED54-4S/740	4752.000	30.0	158.4	0.268	0.268	0.201	0.201	0.147	1189.3	892.0	892.0	654.1

BGP283/293/393 LED54-4S/730	4752.000	32.0	148.5	0.286	0.286	0.214	0.214	0.157	1268.6	951.4	951.4	697.7
BGP283/293/393 LED54-4S/727	4752.000	36.0	132.0	0.321	0.321	0.241	0.241	0.177	1427.1	1070.4	1070.4	784.9
BGP283/293/393 LED54-4S/722	4752.000	40.0	118.8	0.357	0.357	0.268	0.268	0.196	1585.7	1189.3	1189.3	872.1
BGP283/293/393 LED54-4S/830	4752.000	36.0	132.0	0.321	0.321	0.241	0.241	0.177	1427.1	1070.4	1070.4	784.9
BGP283/293/393 LED56-4S/740	4928.000	31.0	159.0	0.277	0.277	0.208	0.208	0.152	1228.9	921.7	921.7	675.9
BGP283/293/393 LED56-4S/730	4928.000	33.0	149.3	0.295	0.295	0.221	0.221	0.162	1308.2	981.2	981.2	719.5
BGP283/293/393 LED56-4S/727	4928.000	37.0	133.2	0.330	0.330	0.248	0.248	0.182	1466.8	1100.1	1100.1	806.7
BGP283/293/393 LED56-4S/722	4872.000	41.5	117.4	0.371	0.371	0.278	0.278	0.204	1645.2	1233.9	1233.9	904.8
BGP283/293/393 LED56-4S/830	4928.000	37.0	133.2	0.330	0.330	0.248	0.248	0.182	1466.8	1100.1	1100.1	806.7
BGP283/293/393 LED60-4S/740	5280.000	33.5	157.6	0.299	0.299	0.224	0.224	0.165	1328.0	996.0	996.0	730.4
BGP283/293/393 LED60-4S/730	5280.000	35.5	148.7	0.317	0.317	0.238	0.238	0.174	1407.3	1055.5	1055.5	774.0
BGP283/293/393 LED60-4S/727	5280.000	40.0	132.0	0.357	0.357	0.268	0.268	0.196	1585.7	1189.3	1189.3	872.1
BGP283/293/393 LED60-4S/722	5220.000	44.5	117.3	0.397	0.397	0.298	0.298	0.219	1764.1	1323.1	1323.1	970.3
BGP283/293/393 LED60-4S/830	5280.000	40.0	132.0	0.357	0.357	0.268	0.268	0.196	1585.7	1189.3	1189.3	872.1
BGP283/293/393 LED64-4S/740	5632.000	35.5	158.6	0.317	0.317	0.238	0.238	0.174	1407.3	1055.5	1055.5	774.0
BGP283/293/393 LED64-4S/730	5632.000	38.0	148.2	0.339	0.339	0.254	0.254	0.187	1506.4	1129.8	1129.8	828.5
BGP283/293/393 LED64-4S/727	5568.000	42.5	131.0	0.379	0.379	0.285	0.285	0.209	1684.8	1263.6	1263.6	926.7
BGP283/293/393 LED64-4S/722	5568.000	48.0	116.0	0.429	0.429	0.321	0.321	0.236	1902.9	1427.1	1427.1	1046.6
BGP283/293/393 LED64-4S/830	5568.000	42.5	131.0	0.379	0.379	0.285	0.285	0.209	1684.8	1263.6	1263.6	926.7
BGP283/293/393 LED70-4S/740	6160.000	38.0	162.1	0.339	0.339	0.254	0.254	0.187	1506.4	1129.8	1129.8	828.5

BGP283/293/393 LED70-4S/730	6160.000	40.5	152.1	0.362	0.362	0.271	0.271	0.199	1605.5	1204.2	1204.2	883.0
BGP283/293/393 LED70-4S/727	6230.000	46.0	135.4	0.411	0.411	0.308	0.308	0.226	1823.6	1367.7	1367.7	1003.0
BGP283/293/393 LED70-4S/722	6160.000	51.0	120.8	0.455	0.455	0.342	0.342	0.250	2021.8	1516.3	1516.3	1112.0
BGP283/293/393 LED70-4S/830	6090.000	45.5	133.8	0.406	0.406	0.305	0.305	0.223	1803.8	1352.8	1352.8	992.1
BGP283/293/393 LED74-4S/740	6512.000	40.5	160.8	0.362	0.362	0.271	0.271	0.199	1605.5	1204.2	1204.2	883.0
BGP283/293/393 LED74-4S/730	6438.000	43.0	149.7	0.384	0.384	0.288	0.288	0.211	1704.6	1278.5	1278.5	937.6
BGP283/293/393 LED74-4S/727	6586.000	48.5	135.8	0.433	0.433	0.325	0.325	0.238	1922.7	1442.0	1442.0	1057.5
BGP283/293/393 LED74-4S/722	6512.000	54.0	120.6	0.482	0.482	0.362	0.362	0.265	2140.7	1605.5	1605.5	1177.4
BGP283/293/393 LED74-4S/830	6438.000	48.0	134.1	0.429	0.429	0.321	0.321	0.236	1902.9	1427.1	1427.1	1046.6
BGP283/293/393 LED80-4S/740	6960.000	43.5	160.0	0.388	0.388	0.291	0.291	0.214	1724.5	1293.3	1293.3	948.5
BGP283/293/393 LED80-4S/730	6960.000	46.5	149.7	0.415	0.415	0.311	0.311	0.228	1843.4	1382.5	1382.5	1013.9
BGP283/293/393 LED80-4S/727	7040.000	53.0	132.8	0.473	0.473	0.355	0.355	0.260	2101.1	1575.8	1575.8	1155.6
BGP283/293/393 LED80-4S/722	7040.000	59.0	119.3	0.527	0.527	0.395	0.395	0.290	2338.9	1754.2	1754.2	1286.4
BGP283/293/393 LED80-4S/830	6960.000	52.0	133.8	0.464	0.464	0.348	0.348	0.255	2061.4	1546.1	1546.1	1133.8
BGP283/293/393 LED84-4S/740	7308.000	46.0	158.9	0.411	0.411	0.308	0.308	0.226	1823.6	1367.7	1367.7	1003.0
BGP283/293/393 LED84-4S/730	7308.000	49.0	149.1	0.438	0.438	0.328	0.328	0.241	1942.5	1456.9	1456.9	1068.4
BGP283/293/393 LED84-4S/727	7392.000	55.0	134.4	0.491	0.491	0.368	0.368	0.270	2180.4	1635.3	1635.3	1199.2
BGP283/293/393 LED84-4S/722	7392.000	62.0	119.2	0.554	0.554	0.415	0.415	0.304	2457.9	1843.4	1843.4	1351.8
BGP283/293/393 LED84-4S/830	7308.000	55.0	132.9	0.491	0.491	0.368	0.368	0.270	2180.4	1635.3	1635.3	1199.2
BGP283/293/393 LED90-4S/740	7830.000	49.5	158.2	0.442	0.442	0.331	0.331	0.243	1962.3	1471.7	1471.7	1079.3

BGP283/293/393 LED90-4S/730	7830.000	52.0	150.6	0.464	0.464	0.348	0.348	0.255	2061.4	1546.1	1546.1	1133.8
BGP283/293/393 LED90-4S/727	7920.000	59.0	134.2	0.527	0.527	0.395	0.395	0.290	2338.9	1754.2	1754.2	1286.4
BGP283/293/393 LED90-4S/722	7920.000	67.0	118.2	0.598	0.598	0.449	0.449	0.329	2656.1	1992.1	1992.1	1460.8
BGP283/293/393 LED90-4S/830	7830.000	59.0	132.7	0.527	0.527	0.395	0.395	0.290	2338.9	1754.2	1754.2	1286.4
BGP283/293/393 LED94-4S/740	8178.000	52.0	157.3	0.464	0.464	0.348	0.348	0.255	2061.4	1546.1	1546.1	1133.8
BGP283/293/393 LED94-4S/730	8178.000	55.0	148.7	0.491	0.491	0.368	0.368	0.270	2180.4	1635.3	1635.3	1199.2
BGP283/293/393 LED94-4S/727	8272.000	62.0	133.4	0.554	0.554	0.415	0.415	0.304	2457.9	1843.4	1843.4	1351.8
BGP283/293/393 LED94-4S/722	8272.000	70.0	118.2	0.625	0.625	0.469	0.469	0.344	2775.0	2081.3	2081.3	1526.3
BGP283/293/393 LED94-4S/830	8178.000	62.0	131.9	0.554	0.554	0.415	0.415	0.304	2457.9	1843.4	1843.4	1351.8
BGP283/293/393 LED99-4S/740	8700.000	54.0	161.1	0.482	0.482	0.362	0.362	0.265	2140.7	1605.5	1605.5	1177.4
BGP283/293/393 LED99-4S/730	8700.000	58.0	150.0	0.518	0.518	0.388	0.388	0.285	2299.3	1724.5	1724.5	1264.6
BGP283/293/393 LED99-4S/727	8800.000	66.0	133.3	0.589	0.589	0.442	0.442	0.324	2616.4	1962.3	1962.3	1439.0
BGP283/293/393 LED99-4S/722	8800.000	74.0	118.9	0.661	0.661	0.496	0.496	0.363	2933.6	2200.2	2200.2	1613.5
BGP283/293/393 LED99-4S/830	8600.000	65.0	132.3	0.580	0.580	0.435	0.435	0.319	2576.8	1932.6	1932.6	1417.2
BGP283/293/393 LED109-4S/740	9570.000	60.0	159.5	0.536	0.536	0.402	0.402	0.295	2378.6	1783.9	1783.9	1308.2
BGP283/293/393 LED109-4S/730	9460.000	64.0	147.8	0.571	0.571	0.429	0.429	0.314	2537.1	1902.9	1902.9	1395.4
BGP283/293/393 LED109-4S/727	9680.000	73.0	132.6	0.652	0.652	0.489	0.489	0.358	2893.9	2170.4	2170.4	1591.7
BGP283/293/393 LED109-4S/722	9570.000	82.0	116.7	0.732	0.732	0.549	0.549	0.403	3250.7	2438.0	2438.0	1787.9
BGP283/293/393 LED109-4S/830	9460.000	72.0	131.4	0.643	0.643	0.482	0.482	0.354	2854.3	2140.7	2140.7	1569.9
BGP283/293/393 LED119-4S/740	10320.000	66.0	156.4	0.589	0.589	0.442	0.442	0.324	2616.4	1962.3	1962.3	1439.0

BGP283/293/393 LED119-4S/730	10320.000	70.0	147.4	0.625	0.625	0.469	0.469	0.344	2775.0	2081.3	2081.3	1526.3
BGP283/293/393 LED119-4S/727	10440.000	80.0	130.5	0.714	0.714	0.536	0.536	0.393	3171.4	2378.6	2378.6	1744.3
BGP283/293/393 LED119-4S/722	10440.000	90.0	116.0	0.804	0.804	0.603	0.603	0.442	3567.9	2675.9	2675.9	1962.3
BGP283/293/393 LED119-4S/830	10320.000	79.0	130.6	0.705	0.705	0.529	0.529	0.388	3131.8	2348.8	2348.8	1722.5
BGP283/293/393 LED130-4S/740	11180.000	72.0	155.3	0.643	0.643	0.482	0.482	0.354	2854.3	2140.7	2140.7	1569.9
BGP283/293/393 LED130-4S/730	11180.000	77.0	145.2	0.688	0.688	0.516	0.516	0.378	3052.5	2289.4	2289.4	1678.9
BGP283/293/393 LED130-4S/727	11310.000	88.0	128.5	0.786	0.786	0.589	0.589	0.432	3488.6	2616.4	2616.4	1918.7
BGP283/293/393 LED130-4S/722	11180.000	100.0	111.8	0.893	0.893	0.670	0.670	0.491	3964.3	2973.2	2973.2	2180.4
BGP283/293/393 LED130-4S/830	11050.000	88.0	125.6	0.786	0.786	0.589	0.589	0.432	3488.6	2616.4	2616.4	1918.7
BGP283/293/393 LED139-4S/740	12040.000	78.0	154.4	0.696	0.696	0.522	0.522	0.383	3092.1	2319.1	2319.1	1700.7
BGP283/293/393 LED139-4S/730	11900.000	83.0	143.4	0.741	0.741	0.556	0.556	0.408	3290.4	2467.8	2467.8	1809.7
BGP283/293/393 LED139-4S/727	12180.000	95.0	128.2	0.848	0.848	0.636	0.636	0.467	3766.1	2824.6	2824.6	2071.3
BGP283/293/393 LED139-4S/722	12040.000	108.0	111.5	0.964	0.964	0.723	0.723	0.530	4281.4	3211.1	3211.1	2354.8
BGP283/293/393 LED139-4S/830	11900.000	94.0	126.6	0.839	0.839	0.629	0.629	0.462	3726.4	2794.8	2794.8	2049.5
BGP283/293/393 LED149-4S/740	12750.000	84.0	151.8	0.750	0.750	0.563	0.563	0.413	3330.0	2497.5	2497.5	1831.5
BGP283/293/393 LED149-4S/730	12750.000	90.0	141.7	0.804	0.804	0.603	0.603	0.442	3567.9	2675.9	2675.9	1962.3
BGP283/293/393 LED149-4S/727	12900.000	104.0	124.0	0.929	0.929	0.696	0.696	0.511	4122.9	3092.1	3092.1	2267.6
BGP283/293/393 LED149-4S/722	13050.000	112.0	116.5	1.000	1.000	0.750	0.750	0.550	4440.0	3330.0	3330.0	2442.0
BGP283/293/393 LED149-4S/830	12750.000	102.0	125.0	0.911	0.911	0.683	0.683	0.501	4043.6	3032.7	3032.7	2224.0
BGP283/293/393 LED160-4S/740	13600.000	91.0	149.5	0.813	0.813	0.609	0.609	0.447	3607.5	2705.6	2705.6	1984.1

BGP283/293/393 LED160-4S/730	13600.000	97.0	140.2	0.866	0.866	0.650	0.650	0.476	3845.4	2884.0	2884.0	2114.9
BGP283/293/393 LED160-4S/722	13760.000	120.0	114.7	1.071	1.071	0.804	0.804	0.589	4757.1	3567.9	3567.9	2616.4
BGP283/293/393 LED160-4S/830	13600.000	106.0	128.3	0.946	0.946	0.710	0.710	0.521	4202.1	3151.6	3151.6	2311.2
BGP283/293/393 LED170-4S/740	14450.000	97.0	149.0	0.866	0.866	0.650	0.650	0.476	3845.4	2884.0	2884.0	2114.9
BGP283/293/393 LED170-4S/730	14450.000	104.0	138.9	0.929	0.929	0.696	0.696	0.511	4122.9	3092.1	3092.1	2267.6
BGP283/293/393 LED170-4S/727	14790.000	114.0	129.7	1.018	1.018	0.763	0.763	0.560	4519.3	3389.5	3389.5	2485.6
BGP283/293/393 LED170-4S/722	14620.000	130.0	112.5	1.161	1.161	0.871	0.871	0.638	5153.6	3865.2	3865.2	2834.5
BGP283/293/393 LED170-4S/830	14280.000	112.0	127.5	1.000	1.000	0.750	0.750	0.550	4440.0	3330.0	3330.0	2442.0
BGP283/293/393 LED180-4S/740	15300.000	104.0	147.1	0.929	0.929	0.696	0.696	0.511	4122.9	3092.1	3092.1	2267.6
BGP283/293/393 LED180-4S/730	15300.000	106.0	144.3	0.946	0.946	0.710	0.710	0.521	4202.1	3151.6	3151.6	2311.2
BGP283/293/393 LED180-4S/727	15480.000	122.0	126.9	1.089	1.089	0.817	0.817	0.599	4836.4	3627.3	3627.3	2660.0
BGP283/293/393 LED180-4S/830	15120.000	120.0	126.0	1.071	1.071	0.804	0.804	0.589	4757.1	3567.9	3567.9	2616.4
BGP283/293/393 LED190-4S/740	16150.000	106.0	152.4	0.946	0.946	0.710	0.710	0.521	4202.1	3151.6	3151.6	2311.2
BGP283/293/393 LED190-4S/730	15960.000	112.0	142.5	1.000	1.000	0.750	0.750	0.550	4440.0	3330.0	3330.0	2442.0
BGP283/293/393 LED190-4S/727	16340.000	130.0	125.7	1.161	1.161	0.871	0.871	0.638	5153.6	3865.2	3865.2	2834.5
BGP283/293/393 LED190-4S/830	15770.000	128.0	123.2	1.143	1.143	0.857	0.857	0.629	5074.3	3805.7	3805.7	2790.9
BGP283/293/393 LED200-4S/740	16800.000	112.0	150.0	1.000	1.000	0.750	0.750	0.550	4440.0	3330.0	3330.0	2442.0
BGP283/293/393 LED200-4S/730	16800.000	118.0	142.4	1.054	1.054	0.790	0.790	0.579	4677.9	3508.4	3508.4	2572.8
BGP283/293/393 LED200-4S/727	17200.000	138.0	124.6	1.232	1.232	0.924	0.924	0.678	5470.7	4103.0	4103.0	3008.9
BGP283/293/393 LED200-4S/830	16400.000	136.0	120.6	1.214	1.214	0.911	0.911	0.668	5391.4	4043.6	4043.6	2965.3

BGP283/293/393 LED215-4S/727	18700.000	150.0	124.7	1.339	1.339	1.004	1.004	0.737	5946.4	4459.8	4459.8	3270.5
BGP283/293/393 LED220-4S/740	18260.000	124.0	147.3	1.107	1.107	0.830	0.830	0.609	4915.7	3686.8	3686.8	2703.6
BGP283/293/393 LED220-4S/730	18260.000	132.0	138.3	1.179	1.179	0.884	0.884	0.648	5232.9	3924.6	3924.6	2878.1
BGP283/293/393 LED240-4S/740	19680.000	136.0	144.7	1.214	1.214	0.911	0.911	0.668	5391.4	4043.6	4043.6	2965.3
BGP283/293/393 LED240-4S/730	19440.000	146.0	133.2	1.304	1.304	0.978	0.978	0.717	5787.9	4340.9	4340.9	3183.3

*\* Note that if the product is non-dimmable, only the values for "NC (No Control)" are valid; if the driver type is PSU, only the values for "NC (No Control)" and "PS (presence sensing)" for are valid.*

## APPENDIX (PEP ECOPASSPORT ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from a reference variant of a product family, based on various light management functions, the lumen output ( $O_{lum}$ ) and reference service life (RSL) of each product within the same product family.

To calculate the Scaled Impact ( $SI_{pep}$ ), we have followed the below methods:

1. Calculate the power scaling factor (PSF), which is the ratio of the power input of the variant in questions  $P_{in}$  and the power input of the base variant  $P_{base}$ .

$$PSF = \frac{P_{in}}{P_{base}}$$

2. Using this scaled GWP, we then can apply the PEP Ecopassport method for calculating the environmental impact of the functional unit for a luminary (1000 lumens over 35000 hours), applied to B6, where the Functional Unit application considers the lumen output ( $O_{lum}$ ) and reference service lifetime (RSL) of the product to estimate the final environmental impact. The scaled impact ( $SI_{pep}$ ) is presented in Table A4.

$$GSF = \frac{FU_{pep}}{FU_p} = \frac{1,000}{O_{lum}} * \frac{35,000}{RSL}$$

3. Calculate the GWP scaling factor (PGSF), by multiplying the PSF by the GSF.

$$PGSF = PSF * GSF$$

4. Calculate the Total Scaling factor by multiplying the PSF by the control scaling factor (CSF), where the CSF is determined according the relevant control factor scenario (e.g. if the luminaire has a presence detection system), as presented in Table A1.

$$TSF = PGSF * CSF$$

**Table A3: Light management functions (PEP EcoPassport aligned)**

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

5. Lastly, the GWP of the base variant is then scaled by the TSF.

$$Scaled\ GWP = GWP_{case} * TSF$$

As described in the EPD, calculations are made based on dataset describing electricity available on the low voltage level in Europe for year 2022 (source Ecoinvent 3.8 database). This value should be adjusted depending on specific project requirements. Presented controls factors and functional unit conversion values are based on the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). Please refer to this publication or contact Signify directly for more information.

**Table A4 Scale impact per scaling factor (PEP EcoPassport aligned)**

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
BGP283/293/393 LED47-4S/740	4136	26	159,1	0,232	0,020	0,015	0,015	0,011	87,2	65,4	65,4	48,0
BGP283/293/393 LED47-4S/730	4136	28	147,7	0,250	0,021	0,016	0,016	0,012	93,9	70,4	70,4	51,7
BGP283/293/393 LED47-4S/727	4136	31	133,4	0,277	0,023	0,018	0,018	0,013	104,0	78,0	78,0	57,2
BGP283/293/393 LED47-4S/722	4136	35	118,2	0,313	0,026	0,020	0,020	0,015	117,4	88,1	88,1	64,6

BGP283/293/393 LED47-4S/830	4136	31	133,4	0,277	0,023	0,018	0,018	0,013	104,0	78,0	78,0	57,2
BGP283/293/393 LED50-4S/740	4400	28	157,1	0,250	0,020	0,015	0,015	0,011	88,3	66,2	66,2	48,6
BGP283/293/393 LED50-4S/730	4400	29,5	149,2	0,263	0,021	0,016	0,016	0,012	93,0	69,8	69,8	51,2
BGP283/293/393 LED50-4S/727	4400	33	133,3	0,295	0,023	0,018	0,018	0,013	104,1	78,0	78,0	57,2
BGP283/293/393 LED50-4S/722	4400	37	118,9	0,330	0,026	0,020	0,020	0,014	116,7	87,5	87,5	64,2
BGP283/293/393 LED50-4S/830	4400	33	133,3	0,295	0,023	0,018	0,018	0,013	104,1	78,0	78,0	57,2
BGP283/293/393 LED54-4S/740	4752	30	158,4	0,268	0,020	0,015	0,015	0,011	87,6	65,7	65,7	48,2
BGP283/293/393 LED54-4S/730	4752	32	148,5	0,286	0,021	0,016	0,016	0,012	93,4	70,1	70,1	51,4
BGP283/293/393 LED54-4S/727	4752	36	132,0	0,321	0,024	0,018	0,018	0,013	105,1	78,8	78,8	57,8
BGP283/293/393 LED54-4S/722	4752	40	118,8	0,357	0,026	0,020	0,020	0,014	116,8	87,6	87,6	64,2
BGP283/293/393 LED54-4S/830	4752	36	132,0	0,321	0,024	0,018	0,018	0,013	105,1	78,8	78,8	57,8
BGP283/293/393 LED56-4S/740	4928	31	159,0	0,277	0,020	0,015	0,015	0,011	87,3	65,5	65,5	48,0
BGP283/293/393 LED56-4S/730	4928	33	149,3	0,295	0,021	0,016	0,016	0,012	92,9	69,7	69,7	51,1
BGP283/293/393 LED56-4S/727	4928	37	133,2	0,330	0,023	0,018	0,018	0,013	104,2	78,1	78,1	57,3
BGP283/293/393 LED56-4S/722	4872	41,5	117,4	0,371	0,027	0,020	0,020	0,015	118,2	88,6	88,6	65,0
BGP283/293/393 LED56-4S/830	4928	37	133,2	0,330	0,023	0,018	0,018	0,013	104,2	78,1	78,1	57,3
BGP283/293/393 LED60-4S/740	5280	33,5	157,6	0,299	0,020	0,015	0,015	0,011	88,0	66,0	66,0	48,4
BGP283/293/393 LED60-4S/730	5280	35,5	148,7	0,317	0,021	0,016	0,016	0,012	93,3	70,0	70,0	51,3
BGP283/293/393 LED60-4S/727	5280	40	132,0	0,357	0,024	0,018	0,018	0,013	105,1	78,8	78,8	57,8
BGP283/293/393 LED60-4S/722	5220	44,5	117,3	0,397	0,027	0,020	0,020	0,015	118,3	88,7	88,7	65,1

BGP283/293/393 LED60-4S/830	5280	40	132,0	0,357	0,024	0,018	0,018	0,013	105,1	78,8	78,8	57,8
BGP283/293/393 LED64-4S/740	5632	35,5	158,6	0,317	0,020	0,015	0,015	0,011	87,5	65,6	65,6	48,1
BGP283/293/393 LED64-4S/730	5632	38	148,2	0,339	0,021	0,016	0,016	0,012	93,6	70,2	70,2	51,5
BGP283/293/393 LED64-4S/727	5568	42,5	131,0	0,379	0,024	0,018	0,018	0,013	105,9	79,4	79,4	58,2
BGP283/293/393 LED64-4S/722	5568	48	116,0	0,429	0,027	0,020	0,020	0,015	119,6	89,7	89,7	65,8
BGP283/293/393 LED64-4S/830	5568	42,5	131,0	0,379	0,024	0,018	0,018	0,013	105,9	79,4	79,4	58,2
BGP283/293/393 LED70-4S/740	6160	38	162,1	0,339	0,019	0,014	0,014	0,011	85,6	64,2	64,2	47,1
BGP283/293/393 LED70-4S/730	6160	40,5	152,1	0,362	0,021	0,015	0,015	0,011	91,2	68,4	68,4	50,2
BGP283/293/393 LED70-4S/727	6230	46	135,4	0,411	0,023	0,017	0,017	0,013	102,4	76,8	76,8	56,3
BGP283/293/393 LED70-4S/722	6160	51	120,8	0,455	0,026	0,019	0,019	0,014	114,9	86,2	86,2	63,2
BGP283/293/393 LED70-4S/830	6090	45,5	133,8	0,406	0,023	0,018	0,018	0,013	103,7	77,7	77,7	57,0
BGP283/293/393 LED74-4S/740	6512	40,5	160,8	0,362	0,019	0,015	0,015	0,011	86,3	64,7	64,7	47,5
BGP283/293/393 LED74-4S/730	6438	43	149,7	0,384	0,021	0,016	0,016	0,011	92,7	69,5	69,5	51,0
BGP283/293/393 LED74-4S/727	6586	48,5	135,8	0,433	0,023	0,017	0,017	0,013	102,2	76,6	76,6	56,2
BGP283/293/393 LED74-4S/722	6512	54	120,6	0,482	0,026	0,019	0,019	0,014	115,1	86,3	86,3	63,3
BGP283/293/393 LED74-4S/830	6438	48	134,1	0,429	0,023	0,017	0,017	0,013	103,4	77,6	77,6	56,9
BGP283/293/393 LED80-4S/740	6960	43,5	160,0	0,388	0,020	0,015	0,015	0,011	86,7	65,0	65,0	47,7
BGP283/293/393 LED80-4S/730	6960	46,5	149,7	0,415	0,021	0,016	0,016	0,011	92,7	69,5	69,5	51,0
BGP283/293/393 LED80-4S/727	7040	53	132,8	0,473	0,024	0,018	0,018	0,013	104,5	78,3	78,3	57,5
BGP283/293/393 LED80-4S/722	7040	59	119,3	0,527	0,026	0,020	0,020	0,014	116,3	87,2	87,2	64,0

BGP283/293/393 LED80-4S/830	6960	52	133,8	0,464	0,023	0,018	0,018	0,013	103,7	77,7	77,7	57,0
BGP283/293/393 LED84-4S/740	7308	46	158,9	0,411	0,020	0,015	0,015	0,011	87,3	65,5	65,5	48,0
BGP283/293/393 LED84-4S/730	7308	49	149,1	0,438	0,021	0,016	0,016	0,012	93,0	69,8	69,8	51,2
BGP283/293/393 LED84-4S/727	7392	55	134,4	0,491	0,023	0,017	0,017	0,013	103,2	77,4	77,4	56,8
BGP283/293/393 LED84-4S/722	7392	62	119,2	0,554	0,026	0,020	0,020	0,014	116,4	87,3	87,3	64,0
BGP283/293/393 LED84-4S/830	7308	55	132,9	0,491	0,024	0,018	0,018	0,013	104,4	78,3	78,3	57,4
BGP283/293/393 LED90-4S/740	7830	49,5	158,2	0,442	0,020	0,015	0,015	0,011	87,7	65,8	65,8	48,2
BGP283/293/393 LED90-4S/730	7830	52	150,6	0,464	0,021	0,016	0,016	0,011	92,1	69,1	69,1	50,7
BGP283/293/393 LED90-4S/727	7920	59	134,2	0,527	0,023	0,017	0,017	0,013	103,4	77,5	77,5	56,8
BGP283/293/393 LED90-4S/722	7920	67	118,2	0,598	0,026	0,020	0,020	0,015	117,4	88,0	88,0	64,6
BGP283/293/393 LED90-4S/830	7830	59	132,7	0,527	0,024	0,018	0,018	0,013	104,5	78,4	78,4	57,5
BGP283/293/393 LED94-4S/740	8178	52	157,3	0,464	0,020	0,015	0,015	0,011	88,2	66,2	66,2	48,5
BGP283/293/393 LED94-4S/730	8178	55	148,7	0,491	0,021	0,016	0,016	0,012	93,3	70,0	70,0	51,3
BGP283/293/393 LED94-4S/727	8272	62	133,4	0,554	0,023	0,018	0,018	0,013	104,0	78,0	78,0	57,2
BGP283/293/393 LED94-4S/722	8272	70	118,2	0,625	0,026	0,020	0,020	0,015	117,4	88,1	88,1	64,6
BGP283/293/393 LED94-4S/830	8178	62	131,9	0,554	0,024	0,018	0,018	0,013	105,2	78,9	78,9	57,9
BGP283/293/393 LED99-4S/740	8700	54	161,1	0,482	0,019	0,015	0,015	0,011	86,1	64,6	64,6	47,4
BGP283/293/393 LED99-4S/730	8700	58	150,0	0,518	0,021	0,016	0,016	0,011	92,5	69,4	69,4	50,9
BGP283/293/393 LED99-4S/727	8800	66	133,3	0,589	0,023	0,018	0,018	0,013	104,1	78,0	78,0	57,2
BGP283/293/393 LED99-4S/722	8800	74	118,9	0,661	0,026	0,020	0,020	0,014	116,7	87,5	87,5	64,2

BGP283/293/393 LED99-4S/830	8600	65	132,3	0,580	0,024	0,018	0,018	0,013	104,9	78,7	78,7	57,7
BGP283/293/393 LED109-4S/740	9570	60	159,5	0,536	0,020	0,015	0,015	0,011	87,0	65,2	65,2	47,8
BGP283/293/393 LED109-4S/730	9460	64	147,8	0,571	0,021	0,016	0,016	0,012	93,9	70,4	70,4	51,6
BGP283/293/393 LED109-4S/727	9680	73	132,6	0,652	0,024	0,018	0,018	0,013	104,6	78,5	78,5	57,5
BGP283/293/393 LED109-4S/722	9570	82	116,7	0,732	0,027	0,020	0,020	0,015	118,9	89,2	89,2	65,4
BGP283/293/393 LED109-4S/830	9460	72	131,4	0,643	0,024	0,018	0,018	0,013	105,6	79,2	79,2	58,1
BGP283/293/393 LED119-4S/740	10320	66	156,4	0,589	0,020	0,015	0,015	0,011	88,7	66,6	66,6	48,8
BGP283/293/393 LED119-4S/730	10320	70	147,4	0,625	0,021	0,016	0,016	0,012	94,1	70,6	70,6	51,8
BGP283/293/393 LED119-4S/727	10440	80	130,5	0,714	0,024	0,018	0,018	0,013	106,3	79,7	79,7	58,5
BGP283/293/393 LED119-4S/722	10440	90	116,0	0,804	0,027	0,020	0,020	0,015	119,6	89,7	89,7	65,8
BGP283/293/393 LED119-4S/830	10320	79	130,6	0,705	0,024	0,018	0,018	0,013	106,2	79,7	79,7	58,4
BGP283/293/393 LED130-4S/740	11180	72	155,3	0,643	0,020	0,015	0,015	0,011	89,4	67,0	67,0	49,1
BGP283/293/393 LED130-4S/730	11180	77	145,2	0,688	0,022	0,016	0,016	0,012	95,6	71,7	71,7	52,6
BGP283/293/393 LED130-4S/727	11310	88	128,5	0,786	0,024	0,018	0,018	0,013	108,0	81,0	81,0	59,4
BGP283/293/393 LED130-4S/722	11180	100	111,8	0,893	0,028	0,021	0,021	0,015	124,1	93,1	93,1	68,3
BGP283/293/393 LED130-4S/830	11050	88	125,6	0,786	0,025	0,019	0,019	0,014	110,5	82,9	82,9	60,8
BGP283/293/393 LED139-4S/740	12040	78	154,4	0,696	0,020	0,015	0,015	0,011	89,9	67,4	67,4	49,4
BGP283/293/393 LED139-4S/730	11900	83	143,4	0,741	0,022	0,016	0,016	0,012	96,8	72,6	72,6	53,2
BGP283/293/393 LED139-4S/727	12180	95	128,2	0,848	0,024	0,018	0,018	0,013	108,2	81,2	81,2	59,5
BGP283/293/393 LED139-4S/722	12040	108	111,5	0,964	0,028	0,021	0,021	0,015	124,5	93,3	93,3	68,5

BGP283/293/393 LED139-4S/830	11900	94	126,6	0,839	0,025	0,019	0,019	0,014	109,6	82,2	82,2	60,3
BGP283/293/393 LED149-4S/740	12750	84	151,8	0,750	0,021	0,015	0,015	0,011	91,4	68,6	68,6	50,3
BGP283/293/393 LED149-4S/730	12750	90	141,7	0,804	0,022	0,017	0,017	0,012	97,9	73,5	73,5	53,9
BGP283/293/393 LED149-4S/727	12900	104	124,0	0,929	0,025	0,019	0,019	0,014	111,9	83,9	83,9	61,5
BGP283/293/393 LED149-4S/722	13050	112	116,5	1,000	0,027	0,020	0,020	0,015	119,1	89,3	89,3	65,5
BGP283/293/393 LED149-4S/830	12750	102	125,0	0,911	0,025	0,019	0,019	0,014	111,0	83,3	83,3	61,1
BGP283/293/393 LED160-4S/740	13600	91	149,5	0,813	0,021	0,016	0,016	0,012	92,8	69,6	69,6	51,1
BGP283/293/393 LED160-4S/730	13600	97	140,2	0,866	0,022	0,017	0,017	0,012	99,0	74,2	74,2	54,4
BGP283/293/393 LED160-4S/722	13760	120	114,7	1,071	0,027	0,020	0,020	0,015	121,0	90,8	90,8	66,6
BGP283/293/393 LED160-4S/830	13600	106	128,3	0,946	0,024	0,018	0,018	0,013	108,1	81,1	81,1	59,5
BGP283/293/393 LED170-4S/740	14450	97	149,0	0,866	0,021	0,016	0,016	0,012	93,1	69,9	69,9	51,2
BGP283/293/393 LED170-4S/730	14450	104	138,9	0,929	0,022	0,017	0,017	0,012	99,9	74,9	74,9	54,9
BGP283/293/393 LED170-4S/727	14790	114	129,7	1,018	0,024	0,018	0,018	0,013	106,9	80,2	80,2	58,8
BGP283/293/393 LED170-4S/722	14620	130	112,5	1,161	0,028	0,021	0,021	0,015	123,4	92,5	92,5	67,9
BGP283/293/393 LED170-4S/830	14280	112	127,5	1,000	0,025	0,018	0,018	0,013	108,8	81,6	81,6	59,9
BGP283/293/393 LED180-4S/740	15300	104	147,1	0,929	0,021	0,016	0,016	0,012	94,3	70,7	70,7	51,9
BGP283/293/393 LED180-4S/730	15300	106	144,3	0,946	0,022	0,016	0,016	0,012	96,1	72,1	72,1	52,9
BGP283/293/393 LED180-4S/727	15480	122	126,9	1,089	0,025	0,018	0,018	0,014	109,4	82,0	82,0	60,1
BGP283/293/393 LED180-4S/830	15120	120	126,0	1,071	0,025	0,019	0,019	0,014	110,1	82,6	82,6	60,6
BGP283/293/393 LED190-4S/740	16150	106	152,4	0,946	0,021	0,015	0,015	0,011	91,1	68,3	68,3	50,1

BGP283/293/393 LED190-4S/730	15960	112	142,5	1,000	0,022	0,016	0,016	0,012	97,4	73,0	73,0	53,6
BGP283/293/393 LED190-4S/727	16340	130	125,7	1,161	0,025	0,019	0,019	0,014	110,4	82,8	82,8	60,7
BGP283/293/393 LED190-4S/830	15770	128	123,2	1,143	0,025	0,019	0,019	0,014	112,6	84,5	84,5	61,9
BGP283/293/393 LED200-4S/740	16800	112	150,0	1,000	0,021	0,016	0,016	0,011	92,5	69,4	69,4	50,9
BGP283/293/393 LED200-4S/730	16800	118	142,4	1,054	0,022	0,016	0,016	0,012	97,5	73,1	73,1	53,6
BGP283/293/393 LED200-4S/727	17200	138	124,6	1,232	0,025	0,019	0,019	0,014	111,3	83,5	83,5	61,2
BGP283/293/393 LED200-4S/830	16400	136	120,6	1,214	0,026	0,019	0,019	0,014	115,1	86,3	86,3	63,3
BGP283/293/393 LED215-4S/727	18700	150	124,7	1,339	0,025	0,019	0,019	0,014	111,3	83,5	83,5	61,2
BGP283/293/393 LED220-4S/740	18260	124	147,3	1,107	0,021	0,016	0,016	0,012	94,2	70,7	70,7	51,8
BGP283/293/393 LED220-4S/730	18260	132	138,3	1,179	0,023	0,017	0,017	0,012	100,3	75,2	75,2	55,2
BGP283/293/393 LED240-4S/740	19680	136	144,7	1,214	0,022	0,016	0,016	0,012	95,9	71,9	71,9	52,7
BGP283/293/393 LED240-4S/730	19440	146	133,2	1,304	0,023	0,018	0,018	0,013	104,2	78,2	78,2	57,3

\* Note that if the product is non-dimmable, only the values for "NC (No Control)" are valid; if the driver type is PSU, only the values for "NC (No Control)" and "PS (presence sensing)" for are valid.

## ANNEX

### USE PHASE (B6) VALUES FOR DIFFERENT COUNTRY MIX

The table in this annex is useful for conversion and comparison of B6 values with other energy country mix. The Global Warming Potential Total (GWP tot) value is illustrated for each country. The value refers to 1 kwh.

Example on how to use the table:

This EPD was done according to a specific customer use location that can be read in the paragraph **PRODUCT USE AND MAINTENANCE (B1-B7)**.

If for example the EPD was done according to EU energy mix and you want to see how the GWP total changes according to a Finland country energy mix, you can take the original value in the results table here highlighted in yellow:

## ENVIRONMENTAL IMPACT DATA

### CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total <sup>21</sup>	kg CO <sub>2e</sub>	5,88E+00	2,61E-01	-1,25E-01	6,02E+00	3,02E-01	5,41E-01	MND	MND	MND	MND	MND	4,06E+02	MND	MNR	1,77E-02	2,62E-01	1,88E-01	-1,09E+01

Divide that value according to the EU value from the following table (EU = 3,96E-01) and then multiplying for the Finland value from the same table (FINLAND = 2,70E-01).

Thus, the calculation of this example would be:

$$\text{New B6 GWP tot for Finland} = (4,06E+02 / 3,96E-01) \times 2,70E-01 = 2,76 E+02$$

Country	GWP tot (kg CO2 eq. per kwh)
AUSTRALIA	9,59E-01
AUSTRIA	3,37E-01
BELGIUM	2,63E-01
CHINA	1,14E+00
DENMARK	2,91E-01
EU	3,96E-01
FINLAND	2,70E-01
FRANCE	8,77E-02
GERMANY	5,32E-01
HUNGARY	4,67E-01
IRELAND	4,26E-01
ITALY	3,94E-01
LATAM	3,50E-01
NAM	4,83E-01
NETHERLANDS	5,88E-01
NORWAY	2,59E-02
POLAND	1,05E+00

PORTUGAL	4,22E-01
ROW	7,32E-01
SPAIN	3,34E-01
SWEDEN	4,95E-02
SWITZERLAND	5,38E-02
UK	3,17E-01

Source Ecoinvent 3.8

