ENVIRONMENTAL PRODUCT DECLARATION

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

Philips Iridium gen4

BGP501
Signify N.V.

EPD HUB
Publishing 2024-07-02

GENERAL INFORMATION

MANUFACTURER

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

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: ☑ Internal certification ☐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	Philips Iridium gen4 Mini
Additional labels	BGP501 LED10-4S/830 DW10 BL1 FG GF SRTB
Product reference	910925866559
Place of production	Poland
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of 900 lumens over 100000 hours
Declared unit mass	9.257 kg
GWP-fossil, A1-A3 (kgCO2e)	8,07E+01
GWP-total, A1-A3 (kgCO2e)	8,01E+01
Secondary material, inputs (%)	50.4
Secondary material, outputs (%)	62
Total energy use, A1-A3 (kWh)	282
Total water use, A1-A3 (m3e)	0.55

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

Iridium gen4, the fourth generation of the Iridium family, is completely redesigned and fully optimized for visual comfort and tool-less maintenance. The Iridium gen4 provides guidance through the clear curved bowl placed in each luminaire along the road. Optional is the offer with GentleBeam. This is a textured curved glass, which reduces glare and improves visual comfort, while maintaining a good lighting distribution. The luminaire holds a new plug and play GearFlex module. This ensures a simplified maintenance and spare part repair process. The complete redesigned luminaire has a tool less opening, similar to Luma gen2, containing all electrical components in an easy to handle and accessible box inside the housing. Besides, the cable feed-through has been redesigned and access to the gear components is easy thanks to top down tool-less access. Iridium gen4 offers all connectivity and dimming options available today. As System Ready luminaire, it can be paired with lighting management systems such as Interact City or existing and upcoming sensor innovations. Also, installation has become easier and faster, and thanks to Service tag, you have access to all relevant documentations onsite. As a company conscious about the impact of light on the environment and biodiversity, the Iridium gen4 is equipped with dedicated light recipes that help with maintaining the optimal ecosystems for bats or preserve a dark night sky. Iridium gen4 is a luminaire rated as best in class regarding efficiency and light performance, compared to other luminaires in the range, in a broad range of applications.

For more information, please visit https://www.lighting.philips.com/link/BGP501/fam/aa/en

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	69.11	EUR, ASIA
Minerals	0	Not applicable
Fossil materials	30.89	EUR, ASIA
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	0.009

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product
Mass per declared unit	9.257 kg
Functional unit	1 unit of 900 lumens over 100000 hours
Reference service life	100000 hours

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 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)

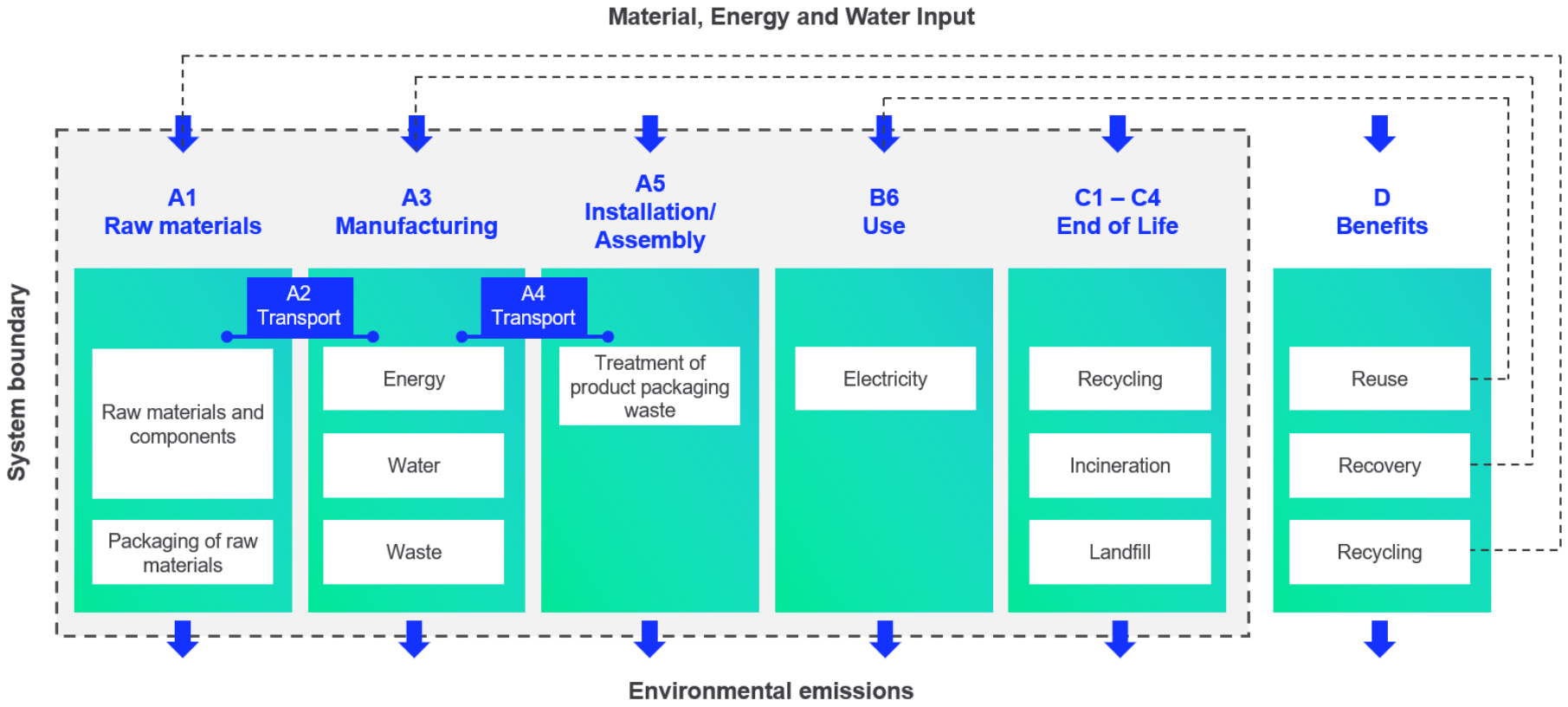
During the use phase, the product consumes electricity from Europe's electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: Wattage x Reference lifetime = kWh consumed throughout the entire use phase B6.

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[1)]	kg CO_2e	7,78E+01	1,75E+00	5,83E-01	8,01E+01	1,75E+00	7,43E-02	MNR	MNR	MNR	MNR	MNR	3,05E+02	MNR	MNR	1,30E-01	3,24E+00	2,57E+00	-1,49E+01
GWP – fossil	kg CO_2e	7,83E+01	1,75E+00	6,00E-01	8,07E+01	1,75E+00	4,31E-02	MNR	MNR	MNR	MNR	MNR	3,04E+02	MNR	MNR	1,29E-01	3,24E+00	1,91E+00	-1,49E+01
GWP – biogenic	kg CO_2e	-6,49E-01	0,00E+00	-1,78E-02	-6,66E-01	6,75E-04	3,12E-02	MNR	MNR	MNR	MNR	MNR	-2,22E-16	MNR	MNR	0,00E+00	0,00E+00	6,57E-01	-1,03E-02
GWP – LULUC	kg CO_2e	1,34E-01	8,89E-04	1,03E-03	1,36E-01	6,44E-04	5,27E-07	MNR	MNR	MNR	MNR	MNR	7,12E-01	MNR	MNR	4,78E-05	1,96E-04	1,05E-04	-4,44E-03
Ozone depletion pot.	kg CFC_{-11}e	2,94E-05	3,81E-07	8,61E-08	2,99E-05	4,02E-07	1,28E-10	MNR	MNR	MNR	MNR	MNR	1,55E-05	MNR	MNR	2,98E-08	1,95E-08	1,34E-08	-4,21E-07
Acidification potential	mol H^+e	6,22E-01	2,66E-02	1,89E-03	6,51E-01	7,39E-03	1,59E-05	MNR	MNR	MNR	MNR	MNR	1,74E+00	MNR	MNR	5,48E-04	2,09E-03	7,75E-04	-2,51E-01
EP-freshwater[2)]	kg Pe	4,70E-03	1,12E-05	1,47E-05	4,72E-03	1,43E-05	1,57E-08	MNR	MNR	MNR	MNR	MNR	3,22E-02	MNR	MNR	1,06E-06	6,44E-06	1,95E-06	-1,26E-03
EP-marine	kg Ne	8,58E-02	6,77E-03	4,74E-04	9,31E-02	2,20E-03	7,76E-06	MNR	MNR	MNR	MNR	MNR	2,30E-01	MNR	MNR	1,63E-04	6,24E-04	3,83E-04	-1,97E-02
EP-terrestrial	mol Ne	9,06E-01	7,51E-02	4,41E-03	9,86E-01	2,42E-02	7,86E-05	MNR	MNR	MNR	MNR	MNR	2,62E+00	MNR	MNR	1,80E-03	6,77E-03	3,03E-03	-2,45E-01
POCP ("smog")[3)]	kg NMVOCe	2,92E-01	2,04E-02	1,94E-03	3,15E-01	7,75E-03	1,92E-05	MNR	MNR	MNR	MNR	MNR	7,18E-01	MNR	MNR	5,75E-04	1,75E-03	8,25E-04	-7,00E-02
ADP-minerals & metals[4)]	kg Sbe	6,05E-03	3,44E-06	3,63E-06	6,06E-03	4,09E-06	4,26E-09	MNR	MNR	MNR	MNR	MNR	2,84E-03	MNR	MNR	3,03E-07	1,35E-05	3,12E-07	-3,20E-03
ADP-fossil resources	MJ	9,55E+02	2,46E+01	7,97E+00	9,87E+02	2,62E+01	1,31E-02	MNR	MNR	MNR	MNR	MNR	6,48E+03	MNR	MNR	1,94E+00	2,10E+00	1,26E+00	-1,47E+02
Water use[5)]	m^3e depr.	2,93E+01	9,71E-02	1,71E-01	2,96E+01	1,17E-01	2,87E-03	MNR	MNR	MNR	MNR	MNR	1,77E+02	MNR	MNR	8,70E-03	1,50E-01	1,11E-01	-2,01E+00

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 PO4e; 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	5,69E-06	1,44E-07	3,57E-08	5,87E-06	2,01E-07	1,14E-10	MNR	MNR	MNR	MNR	MNR	5,71E-06	MNR	MNR	1,49E-08	2,18E-08	9,98E-09	-1,09E-06
Ionizing radiation[6)]	kBq U235e	4,55E+00	1,16E-01	1,85E-02	4,69E+00	1,25E-01	3,26E-05	MNR	MNR	MNR	MNR	MNR	1,75E+02	MNR	MNR	9,26E-03	1,20E-02	5,96E-03	-9,23E-01

Ecotoxicity (freshwater)	CTUe	4,31E+03	1,98E+01	2,14E+01	4,35E+03	2,36E+01	4,60E-02	MNR	MNR	MNR	MNR	MNR	4,41E+03	MNR	MNR	1,75E+00	1,33E+01	5,46E+02	-1,28E+03
Human toxicity, cancer	CTUh	2,42E-07	7,62E-10	1,04E-09	2,44E-07	5,79E-10	4,79E-12	MNR	MNR	MNR	MNR	MNR	1,44E-07	MNR	MNR	4,30E-11	4,77E-10	2,78E-09	-1,72E-08
Human tox. non-cancer	CTUh	4,83E-06	1,77E-08	7,23E-09	4,85E-06	2,33E-08	2,36E-10	MNR	MNR	MNR	MNR	MNR	4,74E-06	MNR	MNR	1,73E-09	1,93E-08	1,67E-07	-1,99E-06
SQP[7)]	-	3,63E+02	1,97E+01	5,97E+00	3,89E+02	3,02E+01	6,28E-03	MNR	MNR	MNR	MNR	MNR	1,17E+03	MNR	MNR	2,24E+00	2,97E+00	1,67E+00	-7,01E+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[8)]	MJ	8,55E+01	2,39E-01	6,98E+00	9,27E+01	2,95E-01	2,86E-04	MNR	MNR	MNR	MNR	MNR	1,32E+03	MNR	MNR	2,19E-02	2,54E-01	5,23E-02	-7,84E+00
Renew. PER as material	MJ	5,96E+00	0,00E+00	3,07E-01	6,26E+00	0,00E+00	-3,07E-01	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	-5,96E+00	0,00E+00
Total use of renew. PER	MJ	9,14E+01	2,39E-01	7,29E+00	9,90E+01	2,95E-01	-3,07E-01	MNR	MNR	MNR	MNR	MNR	1,32E+03	MNR	MNR	2,19E-02	2,54E-01	-5,90E+00	-7,84E+00
Non-re. PER as energy	MJ	8,89E+02	2,46E+01	7,61E+00	9,21E+02	2,62E+01	1,31E-02	MNR	MNR	MNR	MNR	MNR	6,46E+03	MNR	MNR	1,94E+00	2,10E+00	1,26E+00	-1,47E+02
Non-re. PER as material	MJ	6,59E+01	0,00E+00	7,96E-03	6,59E+01	0,00E+00	-7,96E-03	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-3,27E+01	-3,29E+01	0,00E+00
Total use of non-re. PER	MJ	9,55E+02	2,46E+01	7,62E+00	9,87E+02	2,62E+01	5,15E-03	MNR	MNR	MNR	MNR	MNR	6,46E+03	MNR	MNR	1,94E+00	-3,06E+01	-3,16E+01	-1,47E+02
Secondary materials	kg	4,67E+00	8,35E-03	1,72E-02	4,70E+00	7,28E-03	1,61E-05	MNR	MNR	MNR	MNR	MNR	6,67E-01	MNR	MNR	5,40E-04	2,02E-03	3,18E-03	6,58E-01
Renew. secondary fuels	MJ	1,06E-01	5,54E-05	2,56E-04	1,06E-01	7,34E-05	1,02E-07	MNR	MNR	MNR	MNR	MNR	5,41E-03	MNR	MNR	5,45E-06	9,99E-05	2,73E-05	-1,65E-03
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^3	5,45E-01	2,62E-03	3,71E-03	5,51E-01	3,40E-03	6,63E-06	MNR	MNR	MNR	MNR	MNR	5,57E+00	MNR	MNR	2,52E-04	5,36E-03	2,73E-03	-9,12E-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	1,29E+01	3,29E-02	6,60E-02	1,30E+01	3,48E-02	7,89E-04	MNR	MNR	MNR	MNR	MNR	2,32E+01	MNR	MNR	2,58E-03	1,15E-02	1,00E-01	-2,35E+00
Non-hazardous waste	kg	1,60E+02	4,44E-01	4,78E-01	1,61E+02	5,71E-01	2,29E-02	MNR	MNR	MNR	MNR	MNR	1,47E+03	MNR	MNR	4,24E-02	1,60E+00	3,41E+00	-7,26E+01
Radioactive waste	kg	1,88E-03	1,68E-04	1,11E-05	2,06E-03	1,75E-04	2,46E-08	MNR	MNR	MNR	MNR	MNR	4,71E-02	MNR	MNR	1,30E-05	6,59E-06	0,00E+00	-3,39E-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	4,44E+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	1,31E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	3,17E-01	3,17E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	2,88E+01	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_2e	7,64E+01	1,73E+00	6,03E-01	7,87E+01	1,73E+00	4,30E-02	MNR	MNR	MNR	MNR	MNR	3,01E+02	MNR	MNR	1,28E-01	3,23E+00	1,89E+00	-1,46E+01
Ozone depletion Pot.	kg CFC_{-11}e	2,05E-05	3,01E-07	7,53E-08	2,08E-05	3,18E-07	1,10E-10	MNR	MNR	MNR	MNR	MNR	1,34E-05	MNR	MNR	2,36E-08	1,64E-08	1,10E-08	-3,55E-07
Acidification	kg SO_2e	5,29E-01	2,11E-02	1,53E-03	5,51E-01	5,74E-03	1,12E-05	MNR	MNR	MNR	MNR	MNR	1,47E+00	MNR	MNR	4,26E-04	1,62E-03	5,80E-04	-2,19E-01
Eutrophication	kg PO_4^3e	1,81E-01	2,76E-03	8,99E-04	1,84E-01	1,31E-03	9,23E-06	MNR	MNR	MNR	MNR	MNR	1,13E+00	MNR	MNR	9,70E-05	7,24E-04	5,51E-03	-5,92E-02
POCP (“smog”)	kg C_2H_4e	3,11E-02	5,91E-04	1,53E-04	3,18E-02	2,24E-04	2,49E-07	MNR	MNR	MNR	MNR	MNR	6,03E-02	MNR	MNR	1,66E-05	5,35E-05	3,87E-05	-9,58E-03
ADP-elements	kg Sbe	6,03E-03	3,35E-06	3,56E-06	6,04E-03	3,96E-06	3,55E-09	MNR	MNR	MNR	MNR	MNR	2,83E-03	MNR	MNR	2,94E-07	1,35E-05	2,71E-07	-3,20E-03
ADP-fossil	MJ	9,50E+02	2,46E+01	7,97E+00	9,83E+02	2,62E+01	1,31E-02	MNR	MNR	MNR	MNR	MNR	6,46E+03	MNR	MNR	1,94E+00	2,10E+00	1,26E+00	-1,47E+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 refernce variant of a product family, based on various light management scenarios and power inputs of the luminaires within the same product familiy

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.

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

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
BGP501 LED8-4S/757	720.0	5.6	128.6	0.727	0.727	0.545	0.545	0.4	221.7	166.2	166.2	122.0
BGP501 LED10-4S/757	890.0	6.8	130.9	0.883	0.883	0.662	0.662	0.486	269.3	201.9	201.9	148.2
BGP501 LED12-4S/757	1080.0	7.7	140.3	1.0	1.0	0.75	0.75	0.55	305.0	228.8	228.8	167.8
BGP501 LED14-4S/757	1246.0	8.9	140.0	1.156	1.156	0.867	0.867	0.636	352.6	264.4	264.4	194.0
BGP501 LED16-4S/757	1424.0	10.0	142.4	1.299	1.299	0.974	0.974	0.714	396.2	297.1	297.1	217.8
BGP501 LED18-4S/757	1602.0	11.2	143.0	1.455	1.455	1.091	1.091	0.8	443.8	332.8	332.8	244.0
BGP501 LED20-4S/757	1780.0	12.4	143.5	1.61	1.61	1.208	1.208	0.886	491.0	368.4	368.4	270.2
BGP501 LED22-4S/757	1936.0	13.6	142.4	1.766	1.766	1.324	1.324	0.971	538.6	403.8	403.8	296.2
BGP501 LED24-4S/757	2136.0	14.2	150.4	1.844	1.844	1.383	1.383	1.014	562.4	421.8	421.8	309.3
BGP501 LED27-4S/757	2403.0	16.0	150.2	2.078	2.078	1.558	1.558	1.143	633.8	475.2	475.2	348.6
BGP501 LED30-4S/757	2670.0	17.8	150.0	2.312	2.312	1.734	1.734	1.272	705.2	528.9	528.9	388.0
BGP501 LED35-4S/757	3115.0	20.5	152.0	2.662	2.662	1.996	1.996	1.464	811.9	608.8	608.8	446.5

BGP501 LED40-4S/757	3520.0	23.5	149.8	3.052	3.052	2.289	2.289	1.679	930.9	698.1	698.1	512.1
BGP501 LED45-4S/757	3960.0	26.5	149.4	3.442	3.442	2.582	2.582	1.893	1049.8	787.5	787.5	577.4
BGP501 LED50-4S/757	4350.0	29.5	147.5	3.831	3.831	2.873	2.873	2.107	1168.5	876.3	876.3	642.6
BGP501 LED55-4S/757	4816.0	33.0	145.9	4.286	4.286	3.214	3.214	2.357	1307.2	980.3	980.3	718.9
BGP501 LED60-4S/757	5160.0	36.0	143.3	4.675	4.675	3.506	3.506	2.571	1425.9	1069.3	1069.3	784.2
BGP501 LED65-4S/757	5610.0	39.5	142.0	5.13	5.13	3.848	3.848	2.822	1564.6	1173.6	1173.6	860.7
BGP501 LED8-4S/740	720.0	5.6	128.6	0.727	0.727	0.545	0.545	0.4	221.7	166.2	166.2	122.0
BGP501 LED10-4S/740	890.0	6.8	130.9	0.883	0.883	0.662	0.662	0.486	269.3	201.9	201.9	148.2
BGP501 LED12-4S/740	1080.0	7.7	140.3	1.0	1.0	0.75	0.75	0.55	305.0	228.8	228.8	167.8
BGP501 LED14-4S/740	1246.0	8.9	140.0	1.156	1.156	0.867	0.867	0.636	352.6	264.4	264.4	194.0
BGP501 LED16-4S/740	1424.0	10.0	142.4	1.299	1.299	0.974	0.974	0.714	396.2	297.1	297.1	217.8
BGP501 LED18-4S/740	1602.0	11.2	143.0	1.455	1.455	1.091	1.091	0.8	443.8	332.8	332.8	244.0
BGP501 LED20-4S/740	1780.0	12.4	143.5	1.61	1.61	1.208	1.208	0.886	491.0	368.4	368.4	270.2
BGP501 LED22-4S/740	1936.0	13.6	142.4	1.766	1.766	1.324	1.324	0.971	538.6	403.8	403.8	296.2
BGP501 LED24-4S/740	2136.0	14.2	150.4	1.844	1.844	1.383	1.383	1.014	562.4	421.8	421.8	309.3
BGP501 LED27-4S/740	2403.0	16.0	150.2	2.078	2.078	1.558	1.558	1.143	633.8	475.2	475.2	348.6
BGP501 LED30-4S/740	2670.0	17.8	150.0	2.312	2.312	1.734	1.734	1.272	705.2	528.9	528.9	388.0
BGP501 LED35-4S/740	3115.0	20.5	152.0	2.662	2.662	1.996	1.996	1.464	811.9	608.8	608.8	446.5
BGP501 LED40-4S/740	3520.0	23.5	149.8	3.052	3.052	2.289	2.289	1.679	930.9	698.1	698.1	512.1
BGP501 LED45-4S/740	3960.0	26.5	149.4	3.442	3.442	2.582	2.582	1.893	1049.8	787.5	787.5	577.4
BGP501 LED50-4S/740	4350.0	29.5	147.5	3.831	3.831	2.873	2.873	2.107	1168.5	876.3	876.3	642.6
BGP501 LED55-4S/740	4816.0	33.0	145.9	4.286	4.286	3.214	3.214	2.357	1307.2	980.3	980.3	718.9
BGP501 LED60-4S/740	5160.0	36.0	143.3	4.675	4.675	3.506	3.506	2.571	1425.9	1069.3	1069.3	784.2
BGP501 LED65-4S/740	5610.0	39.5	142.0	5.13	5.13	3.848	3.848	2.822	1564.6	1173.6	1173.6	860.7
BGP501 LED8-4S/730	720.0	5.9	122.0	0.766	0.766	0.574	0.574	0.421	233.6	175.1	175.1	128.4

BGP501 LED10-4S/730	890.0	7.1	125.4	0.922	0.922	0.692	0.692	0.507	281.2	211.1	211.1	154.6
BGP501 LED12-4S/730	1080.0	8.2	131.7	1.065	1.065	0.799	0.799	0.586	324.8	243.7	243.7	178.7
BGP501 LED14-4S/730	1246.0	9.4	132.6	1.221	1.221	0.916	0.916	0.672	372.4	279.4	279.4	205.0
BGP501 LED16-4S/730	1424.0	10.6	134.3	1.377	1.377	1.033	1.033	0.757	420.0	315.1	315.1	230.9
BGP501 LED18-4S/730	1602.0	11.8	135.8	1.532	1.532	1.149	1.149	0.843	467.3	350.4	350.4	257.1
BGP501 LED20-4S/730	1760.0	13.2	133.3	1.714	1.714	1.285	1.285	0.943	522.8	391.9	391.9	287.6
BGP501 LED22-4S/730	1936.0	14.4	134.4	1.87	1.87	1.402	1.402	1.029	570.4	427.6	427.6	313.8
BGP501 LED24-4S/730	2136.0	15.2	140.5	1.974	1.974	1.48	1.48	1.086	602.1	451.4	451.4	331.2
BGP501 LED27-4S/730	2403.0	17.0	141.4	2.208	2.208	1.656	1.656	1.214	673.4	505.1	505.1	370.3
BGP501 LED30-4S/730	2670.0	18.8	142.0	2.442	2.442	1.832	1.832	1.343	744.8	558.8	558.8	409.6
BGP501 LED35-4S/730	3080.0	22.0	140.0	2.857	2.857	2.143	2.143	1.571	871.4	653.6	653.6	479.2
BGP501 LED40-4S/730	3520.0	25.0	140.8	3.247	3.247	2.435	2.435	1.786	990.3	742.7	742.7	544.7
BGP501 LED45-4S/730	3915.0	28.5	137.4	3.701	3.701	2.776	2.776	2.036	1128.8	846.7	846.7	621.0
BGP501 LED50-4S/730	4350.0	31.5	138.1	4.091	4.091	3.068	3.068	2.25	1247.8	935.7	935.7	686.2
BGP501 LED55-4S/730	4816.0	35.0	137.6	4.545	4.545	3.409	3.409	2.5	1386.2	1039.7	1039.7	762.5
BGP501 LED60-4S/730	5100.0	38.5	132.5	5.0	5.0	3.75	3.75	2.75	1525.0	1143.8	1143.8	838.8
BGP501 LED8-4S/727	712.0	6.5	109.5	0.844	0.844	0.633	0.633	0.464	257.4	193.1	193.1	141.5
BGP501 LED10-4S/727	890.0	7.9	112.7	1.026	1.026	0.77	0.77	0.564	312.9	234.8	234.8	172.0
BGP501 LED12-4S/727	1068.0	9.1	117.4	1.182	1.182	0.886	0.886	0.65	360.5	270.2	270.2	198.2
BGP501 LED14-4S/727	1246.0	10.4	119.8	1.351	1.351	1.013	1.013	0.743	412.1	309.0	309.0	226.6
BGP501 LED16-4S/727	1424.0	11.8	120.7	1.532	1.532	1.149	1.149	0.843	467.3	350.4	350.4	257.1
BGP501 LED18-4S/727	1584.0	13.2	120.0	1.714	1.714	1.285	1.285	0.943	522.8	391.9	391.9	287.6
BGP501 LED20-4S/727	1760.0	14.8	118.9	1.922	1.922	1.442	1.442	1.057	586.2	439.8	439.8	322.4
BGP501 LED22-4S/727	1936.0	16.2	119.5	2.104	2.104	1.578	1.578	1.157	641.7	481.3	481.3	352.9
BGP501 LED24-4S/727	2136.0	16.8	127.1	2.182	2.182	1.636	1.636	1.2	665.5	499.0	499.0	366.0

BGP501 LED27-4S/727	2403.0	19.0	126.5	2.468	2.468	1.851	1.851	1.357	752.7	564.6	564.6	413.9
BGP501 LED30-4S/727	2640.0	21.0	125.7	2.727	2.727	2.045	2.045	1.5	831.7	623.7	623.7	457.5
BGP501 LED35-4S/727	3080.0	24.5	125.7	3.182	3.182	2.386	2.386	1.75	970.5	727.7	727.7	533.8
BGP501 LED40-4S/727	3480.0	28.0	124.3	3.636	3.636	2.727	2.727	2.0	1109.0	831.7	831.7	610.0
BGP501 LED45-4S/727	3915.0	32.0	122.3	4.156	4.156	3.117	3.117	2.286	1267.6	950.7	950.7	697.2
BGP501 LED50-4S/727	4300.0	36.0	119.4	4.675	4.675	3.506	3.506	2.571	1425.9	1069.3	1069.3	784.2
BGP501 LED55-4S/727	4760.0	40.0	119.0	5.195	5.195	3.896	3.896	2.857	1584.5	1188.3	1188.3	871.4
BGP501 LED6-4S/722	540.0	5.6	96.4	0.727	0.727	0.545	0.545	0.4	221.7	166.2	166.2	122.0
BGP501 LED8-4S/722	712.0	7.1	100.3	0.922	0.922	0.692	0.692	0.507	281.2	211.1	211.1	154.6
BGP501 LED10-4S/722	890.0	8.5	104.7	1.104	1.104	0.828	0.828	0.607	336.7	252.5	252.5	185.1
BGP501 LED12-4S/722	1068.0	10.0	106.8	1.299	1.299	0.974	0.974	0.714	396.2	297.1	297.1	217.8
BGP501 LED14-4S/722	1246.0	11.6	107.4	1.506	1.506	1.13	1.13	0.828	459.3	344.6	344.6	252.5
BGP501 LED16-4S/722	1408.0	13.2	106.7	1.714	1.714	1.285	1.285	0.943	522.8	391.9	391.9	287.6
BGP501 LED18-4S/722	1584.0	14.8	107.0	1.922	1.922	1.442	1.442	1.057	586.2	439.8	439.8	322.4
BGP501 LED20-4S/722	1740.0	16.6	104.8	2.156	2.156	1.617	1.617	1.186	657.6	493.2	493.2	361.7
BGP501 LED22-4S/722	1958.0	17.2	113.8	2.234	2.234	1.676	1.676	1.229	681.4	511.2	511.2	374.8
BGP501 LED24-4S/722	2136.0	18.8	113.6	2.442	2.442	1.832	1.832	1.343	744.8	558.8	558.8	409.6
BGP501 LED27-4S/722	2376.0	21.0	113.1	2.727	2.727	2.045	2.045	1.5	831.7	623.7	623.7	457.5
BGP501 LED30-4S/722	2640.0	23.5	112.3	3.052	3.052	2.289	2.289	1.679	930.9	698.1	698.1	512.1
BGP501 LED35-4S/722	3045.0	27.5	110.7	3.571	3.571	2.678	2.678	1.964	1089.2	816.8	816.8	599.0
BGP501 LED40-4S/722	3480.0	31.5	110.5	4.091	4.091	3.068	3.068	2.25	1247.8	935.7	935.7	686.2
BGP501 LED45-4S/722	3870.0	36.0	107.5	4.675	4.675	3.506	3.506	2.571	1425.9	1069.3	1069.3	784.2
BGP501 LED50-4S/722	4250.0	40.5	104.9	5.26	5.26	3.945	3.945	2.893	1604.3	1203.2	1203.2	882.4
BGP501 LED6-4S/840	540.0	5.4	100.0	0.701	0.701	0.526	0.526	0.386	213.8	160.4	160.4	117.7
BGP501 LED8-4S/840	720.0	6.3	114.3	0.818	0.818	0.613	0.613	0.45	249.5	187.0	187.0	137.2

BGP501 LED10-4S/840	900.0	7.4	121.6	0.961	0.961	0.721	0.721	0.529	293.1	219.9	219.9	161.3
BGP501 LED12-4S/840	1068.0	8.8	121.4	1.143	1.143	0.857	0.857	0.629	348.6	261.4	261.4	191.8
BGP501 LED14-4S/840	1246.0	10.2	122.2	1.325	1.325	0.994	0.994	0.729	404.1	303.2	303.2	222.3
BGP501 LED16-4S/840	1424.0	11.4	124.9	1.481	1.481	1.111	1.111	0.815	451.7	338.9	338.9	248.6
BGP501 LED18-4S/840	1584.0	12.8	123.8	1.662	1.662	1.246	1.246	0.914	506.9	380.0	380.0	278.8
BGP501 LED20-4S/840	1760.0	14.2	123.9	1.844	1.844	1.383	1.383	1.014	562.4	421.8	421.8	309.3
BGP501 LED22-4S/840	1958.0	15.0	130.5	1.948	1.948	1.461	1.461	1.071	594.1	445.6	445.6	326.7
BGP501 LED24-4S/840	2136.0	16.4	130.2	2.13	2.13	1.598	1.598	1.172	649.6	487.4	487.4	357.5
BGP501 LED27-4S/840	2403.0	18.4	130.6	2.39	2.39	1.792	1.792	1.315	729.0	546.6	546.6	401.1
BGP501 LED30-4S/840	2670.0	20.5	130.2	2.662	2.662	1.996	1.996	1.464	811.9	608.8	608.8	446.5
BGP501 LED35-4S/840	3080.0	23.5	131.1	3.052	3.052	2.289	2.289	1.679	930.9	698.1	698.1	512.1
BGP501 LED40-4S/840	3480.0	27.0	128.9	3.506	3.506	2.629	2.629	1.928	1069.3	801.8	801.8	588.0
BGP501 LED45-4S/840	3915.0	30.5	128.4	3.961	3.961	2.971	2.971	2.179	1208.1	906.2	906.2	664.6
BGP501 LED50-4S/840	4300.0	34.5	124.6	4.481	4.481	3.361	3.361	2.465	1366.7	1025.1	1025.1	751.8
BGP501 LED55-4S/840	4760.0	38.5	123.6	5.0	5.0	3.75	3.75	2.75	1525.0	1143.8	1143.8	838.8
BGP501 LED6-4S/830	540.0	5.1	105.9	0.662	0.662	0.497	0.497	0.364	201.9	151.6	151.6	111.0
BGP501 LED8-4S/830	712.0	6.5	109.5	0.844	0.844	0.633	0.633	0.464	257.4	193.1	193.1	141.5
BGP501 LED10-4S/830	900.0	7.7	116.9	1.0	1.0	0.75	0.75	0.55	305.0	228.8	228.8	167.8
BGP501 LED12-4S/830	1068.0	9.1	117.4	1.182	1.182	0.886	0.886	0.65	360.5	270.2	270.2	198.2
BGP501 LED14-4S/830	1246.0	10.4	119.8	1.351	1.351	1.013	1.013	0.743	412.1	309.0	309.0	226.6
BGP501 LED16-4S/830	1424.0	11.8	120.7	1.532	1.532	1.149	1.149	0.843	467.3	350.4	350.4	257.1
BGP501 LED18-4S/830	1584.0	13.2	120.0	1.714	1.714	1.285	1.285	0.943	522.8	391.9	391.9	287.6
BGP501 LED20-4S/830	1760.0	14.8	118.9	1.922	1.922	1.442	1.442	1.057	586.2	439.8	439.8	322.4
BGP501 LED22-4S/830	1936.0	16.2	119.5	2.104	2.104	1.578	1.578	1.157	641.7	481.3	481.3	352.9
BGP501 LED24-4S/830	2136.0	16.8	127.1	2.182	2.182	1.636	1.636	1.2	665.5	499.0	499.0	366.0

BGP501 LED27-4S/830	2403.0	19.0	126.5	2.468	2.468	1.851	1.851	1.357	752.7	564.6	564.6	413.9
BGP501 LED30-4S/830	2640.0	21.0	125.7	2.727	2.727	2.045	2.045	1.5	831.7	623.7	623.7	457.5
BGP501 LED35-4S/830	3080.0	24.5	125.7	3.182	3.182	2.386	2.386	1.75	970.5	727.7	727.7	533.8
BGP501 LED40-4S/830	3480.0	28.0	124.3	3.636	3.636	2.727	2.727	2.0	1109.0	831.7	831.7	610.0
BGP501 LED45-4S/830	3915.0	32.0	122.3	4.156	4.156	3.117	3.117	2.286	1267.6	950.7	950.7	697.2
BGP501 LED50-4S/830	4300.0	36.0	119.4	4.675	4.675	3.506	3.506	2.571	1425.9	1069.3	1069.3	784.2
BGP501 LED55-4S/830	4760.0	40.0	119.0	5.195	5.195	3.896	3.896	2.857	1584.5	1188.3	1188.3	871.4
BGP501 LED6-4S/827	540.0	5.4	100.0	0.701	0.701	0.526	0.526	0.386	213.8	160.4	160.4	117.7
BGP501 LED8-4S/827	712.0	6.9	103.2	0.896	0.896	0.672	0.672	0.493	273.3	205.0	205.0	150.4
BGP501 LED10-4S/827	900.0	8.2	109.8	1.065	1.065	0.799	0.799	0.586	324.8	243.7	243.7	178.7
BGP501 LED12-4S/827	1068.0	9.7	110.1	1.26	1.26	0.945	0.945	0.693	384.3	288.2	288.2	211.4
BGP501 LED14-4S/827	1246.0	11.2	111.2	1.455	1.455	1.091	1.091	0.8	443.8	332.8	332.8	244.0
BGP501 LED16-4S/827	1408.0	12.6	111.7	1.636	1.636	1.227	1.227	0.9	499.0	374.2	374.2	274.5
BGP501 LED18-4S/827	1584.0	14.2	111.5	1.844	1.844	1.383	1.383	1.014	562.4	421.8	421.8	309.3
BGP501 LED20-4S/827	1760.0	15.8	111.4	2.052	2.052	1.539	1.539	1.129	625.9	469.4	469.4	344.3
BGP501 LED22-4S/827	1958.0	16.6	118.0	2.156	2.156	1.617	1.617	1.186	657.6	493.2	493.2	361.7
BGP501 LED24-4S/827	2136.0	18.0	118.7	2.338	2.338	1.754	1.754	1.286	713.1	535.0	535.0	392.2
BGP501 LED27-4S/827	2403.0	20.5	117.2	2.662	2.662	1.996	1.996	1.464	811.9	608.8	608.8	446.5
BGP501 LED30-4S/827	2640.0	22.5	117.3	2.922	2.922	2.192	2.192	1.607	891.2	668.6	668.6	490.1
BGP501 LED35-4S/827	3080.0	26.5	116.2	3.442	3.442	2.582	2.582	1.893	1049.8	787.5	787.5	577.4
BGP501 LED40-4S/827	3480.0	30.5	114.1	3.961	3.961	2.971	2.971	2.179	1208.1	906.2	906.2	664.6
BGP501 LED45-4S/827	3870.0	34.5	112.2	4.481	4.481	3.361	3.361	2.465	1366.7	1025.1	1025.1	751.8
BGP501 LED50-4S/827	4250.0	39.0	109.0	5.065	5.065	3.799	3.799	2.786	1544.8	1158.7	1158.7	849.7

** 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 refernce 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 familiy.

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 (Olum) and reference service lifetime (RSL) of the product to estimate the final environmental impact. The scaled impact (SIpep) 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 (P*GSF*), 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
BGP501 LED8-4S/757	720.0	5.6	128.6	0.727	0.353	0.265	0.265	0.194	107.7	80.8	80.8	59.2
BGP501 LED10-4S/757	890.0	6.8	130.9	0.883	0.347	0.26	0.26	0.191	105.8	79.3	79.3	58.3
BGP501 LED12-4S/757	1080.0	7.7	140.3	1.0	0.324	0.243	0.243	0.178	98.8	74.1	74.1	54.3
BGP501 LED14-4S/757	1246.0	8.9	140.0	1.156	0.325	0.244	0.244	0.179	99.1	74.4	74.4	54.6
BGP501 LED16-4S/757	1424.0	10.0	142.4	1.299	0.319	0.239	0.239	0.175	97.3	72.9	72.9	53.4
BGP501 LED18-4S/757	1602.0	11.2	143.0	1.455	0.318	0.238	0.238	0.175	97.0	72.6	72.6	53.4
BGP501 LED20-4S/757	1780.0	12.4	143.5	1.61	0.317	0.238	0.238	0.174	96.7	72.6	72.6	53.1
BGP501 LED22-4S/757	1936.0	13.6	142.4	1.766	0.319	0.239	0.239	0.175	97.3	72.9	72.9	53.4
BGP501 LED24-4S/757	2136.0	14.2	150.4	1.844	0.302	0.226	0.226	0.166	92.1	68.9	68.9	50.6
BGP501 LED27-4S/757	2403.0	16.0	150.2	2.078	0.303	0.227	0.227	0.167	92.4	69.2	69.2	50.9
BGP501 LED30-4S/757	2670.0	17.8	150.0	2.312	0.303	0.227	0.227	0.167	92.4	69.2	69.2	50.9
BGP501 LED35-4S/757	3115.0	20.5	152.0	2.662	0.299	0.224	0.224	0.164	91.2	68.3	68.3	50.0
BGP501 LED40-4S/757	3520.0	23.5	149.8	3.052	0.303	0.227	0.227	0.167	92.4	69.2	69.2	50.9
BGP501 LED45-4S/757	3960.0	26.5	149.4	3.442	0.304	0.228	0.228	0.167	92.7	69.5	69.5	50.9
BGP501 LED50-4S/757	4350.0	29.5	147.5	3.831	0.308	0.231	0.231	0.169	93.9	70.5	70.5	51.5
BGP501 LED55-4S/757	4816.0	33.0	145.9	4.286	0.311	0.233	0.233	0.171	94.9	71.1	71.1	52.2
BGP501 LED60-4S/757	5160.0	36.0	143.3	4.675	0.317	0.238	0.238	0.174	96.7	72.6	72.6	53.1

BGP501 LED65-4S/757	5610.0	39.5	142.0	5.13	0.32	0.24	0.24	0.176	97.6	73.2	73.2	53.7
BGP501 LED8-4S/740	720.0	5.6	128.6	0.727	0.353	0.265	0.265	0.194	107.7	80.8	80.8	59.2
BGP501 LED10-4S/740	890.0	6.8	130.9	0.883	0.347	0.26	0.26	0.191	105.8	79.3	79.3	58.3
BGP501 LED12-4S/740	1080.0	7.7	140.3	1.0	0.324	0.243	0.243	0.178	98.8	74.1	74.1	54.3
BGP501 LED14-4S/740	1246.0	8.9	140.0	1.156	0.325	0.244	0.244	0.179	99.1	74.4	74.4	54.6
BGP501 LED16-4S/740	1424.0	10.0	142.4	1.299	0.319	0.239	0.239	0.175	97.3	72.9	72.9	53.4
BGP501 LED18-4S/740	1602.0	11.2	143.0	1.455	0.318	0.238	0.238	0.175	97.0	72.6	72.6	53.4
BGP501 LED20-4S/740	1780.0	12.4	143.5	1.61	0.317	0.238	0.238	0.174	96.7	72.6	72.6	53.1
BGP501 LED22-4S/740	1936.0	13.6	142.4	1.766	0.319	0.239	0.239	0.175	97.3	72.9	72.9	53.4
BGP501 LED24-4S/740	2136.0	14.2	150.4	1.844	0.302	0.226	0.226	0.166	92.1	68.9	68.9	50.6
BGP501 LED27-4S/740	2403.0	16.0	150.2	2.078	0.303	0.227	0.227	0.167	92.4	69.2	69.2	50.9
BGP501 LED30-4S/740	2670.0	17.8	150.0	2.312	0.303	0.227	0.227	0.167	92.4	69.2	69.2	50.9
BGP501 LED35-4S/740	3115.0	20.5	152.0	2.662	0.299	0.224	0.224	0.164	91.2	68.3	68.3	50.0
BGP501 LED40-4S/740	3520.0	23.5	149.8	3.052	0.303	0.227	0.227	0.167	92.4	69.2	69.2	50.9
BGP501 LED45-4S/740	3960.0	26.5	149.4	3.442	0.304	0.228	0.228	0.167	92.7	69.5	69.5	50.9
BGP501 LED50-4S/740	4350.0	29.5	147.5	3.831	0.308	0.231	0.231	0.169	93.9	70.5	70.5	51.5
BGP501 LED55-4S/740	4816.0	33.0	145.9	4.286	0.311	0.233	0.233	0.171	94.9	71.1	71.1	52.2
BGP501 LED60-4S/740	5160.0	36.0	143.3	4.675	0.317	0.238	0.238	0.174	96.7	72.6	72.6	53.1
BGP501 LED65-4S/740	5610.0	39.5	142.0	5.13	0.32	0.24	0.24	0.176	97.6	73.2	73.2	53.7
BGP501 LED8-4S/730	720.0	5.9	122.0	0.766	0.372	0.279	0.279	0.205	113.5	85.1	85.1	62.5
BGP501 LED10-4S/730	890.0	7.1	125.4	0.922	0.363	0.272	0.272	0.2	110.7	83.0	83.0	61.0
BGP501 LED12-4S/730	1080.0	8.2	131.7	1.065	0.345	0.259	0.259	0.19	105.2	79.0	79.0	58.0
BGP501 LED14-4S/730	1246.0	9.4	132.6	1.221	0.343	0.257	0.257	0.189	104.6	78.4	78.4	57.6
BGP501 LED16-4S/730	1424.0	10.6	134.3	1.377	0.338	0.254	0.254	0.186	103.1	77.5	77.5	56.7
BGP501 LED18-4S/730	1602.0	11.8	135.8	1.532	0.335	0.251	0.251	0.184	102.2	76.6	76.6	56.1

BGP501 LED20-4S/730	1760.0	13.2	133.3	1.714	0.341	0.256	0.256	0.188	104.0	78.1	78.1	57.3
BGP501 LED22-4S/730	1936.0	14.4	134.4	1.87	0.338	0.254	0.254	0.186	103.1	77.5	77.5	56.7
BGP501 LED24-4S/730	2136.0	15.2	140.5	1.974	0.323	0.242	0.242	0.178	98.5	73.8	73.8	54.3
BGP501 LED27-4S/730	2403.0	17.0	141.4	2.208	0.322	0.242	0.242	0.177	98.2	73.8	73.8	54.0
BGP501 LED30-4S/730	2670.0	18.8	142.0	2.442	0.32	0.24	0.24	0.176	97.6	73.2	73.2	53.7
BGP501 LED35-4S/730	3080.0	22.0	140.0	2.857	0.325	0.244	0.244	0.179	99.1	74.4	74.4	54.6
BGP501 LED40-4S/730	3520.0	25.0	140.8	3.247	0.323	0.242	0.242	0.178	98.5	73.8	73.8	54.3
BGP501 LED45-4S/730	3915.0	28.5	137.4	3.701	0.331	0.248	0.248	0.182	101.0	75.6	75.6	55.5
BGP501 LED50-4S/730	4350.0	31.5	138.1	4.091	0.329	0.247	0.247	0.181	100.3	75.3	75.3	55.2
BGP501 LED55-4S/730	4816.0	35.0	137.6	4.545	0.33	0.248	0.248	0.182	100.6	75.6	75.6	55.5
BGP501 LED60-4S/730	5100.0	38.5	132.5	5.0	0.343	0.257	0.257	0.189	104.6	78.4	78.4	57.6
BGP501 LED8-4S/727	712.0	6.5	109.5	0.844	0.415	0.311	0.311	0.228	126.6	94.9	94.9	69.5
BGP501 LED10-4S/727	890.0	7.9	112.7	1.026	0.403	0.302	0.302	0.222	122.9	92.1	92.1	67.7
BGP501 LED12-4S/727	1068.0	9.1	117.4	1.182	0.387	0.29	0.29	0.213	118.0	88.4	88.4	65.0
BGP501 LED14-4S/727	1246.0	10.4	119.8	1.351	0.379	0.284	0.284	0.208	115.6	86.6	86.6	63.4
BGP501 LED16-4S/727	1424.0	11.8	120.7	1.532	0.377	0.283	0.283	0.207	115.0	86.3	86.3	63.1
BGP501 LED18-4S/727	1584.0	13.2	120.0	1.714	0.379	0.284	0.284	0.208	115.6	86.6	86.6	63.4
BGP501 LED20-4S/727	1760.0	14.8	118.9	1.922	0.382	0.286	0.286	0.21	116.5	87.2	87.2	64.0
BGP501 LED22-4S/727	1936.0	16.2	119.5	2.104	0.38	0.285	0.285	0.209	115.9	86.9	86.9	63.7
BGP501 LED24-4S/727	2136.0	16.8	127.1	2.182	0.358	0.268	0.268	0.197	109.2	81.7	81.7	60.1
BGP501 LED27-4S/727	2403.0	19.0	126.5	2.468	0.359	0.269	0.269	0.197	109.5	82.0	82.0	60.1
BGP501 LED30-4S/727	2640.0	21.0	125.7	2.727	0.362	0.271	0.271	0.199	110.4	82.7	82.7	60.7
BGP501 LED35-4S/727	3080.0	24.5	125.7	3.182	0.362	0.271	0.271	0.199	110.4	82.7	82.7	60.7
BGP501 LED40-4S/727	3480.0	28.0	124.3	3.636	0.366	0.274	0.274	0.201	111.6	83.6	83.6	61.3
BGP501 LED45-4S/727	3915.0	32.0	122.3	4.156	0.372	0.279	0.279	0.205	113.5	85.1	85.1	62.5

BGP501 LED50-4S/727	4300.0	36.0	119.4	4.675	0.381	0.286	0.286	0.21	116.2	87.2	87.2	64.0
BGP501 LED55-4S/727	4760.0	40.0	119.0	5.195	0.382	0.286	0.286	0.21	116.5	87.2	87.2	64.0
BGP501 LED6-4S/722	540.0	5.6	96.4	0.727	0.471	0.353	0.353	0.259	143.7	107.7	107.7	79.0
BGP501 LED8-4S/722	712.0	7.1	100.3	0.922	0.453	0.34	0.34	0.249	138.2	103.7	103.7	75.9
BGP501 LED10-4S/722	890.0	8.5	104.7	1.104	0.434	0.326	0.326	0.239	132.4	99.4	99.4	72.9
BGP501 LED12-4S/722	1068.0	10.0	106.8	1.299	0.426	0.32	0.32	0.234	129.9	97.6	97.6	71.4
BGP501 LED14-4S/722	1246.0	11.6	107.4	1.506	0.423	0.317	0.317	0.233	129.0	96.7	96.7	71.1
BGP501 LED16-4S/722	1408.0	13.2	106.7	1.714	0.426	0.32	0.32	0.234	129.9	97.6	97.6	71.4
BGP501 LED18-4S/722	1584.0	14.8	107.0	1.922	0.425	0.319	0.319	0.234	129.6	97.3	97.3	71.4
BGP501 LED20-4S/722	1740.0	16.6	104.8	2.156	0.434	0.326	0.326	0.239	132.4	99.4	99.4	72.9
BGP501 LED22-4S/722	1958.0	17.2	113.8	2.234	0.399	0.299	0.299	0.219	121.7	91.2	91.2	66.8
BGP501 LED24-4S/722	2136.0	18.8	113.6	2.442	0.4	0.3	0.3	0.22	122.0	91.5	91.5	67.1
BGP501 LED27-4S/722	2376.0	21.0	113.1	2.727	0.402	0.302	0.302	0.221	122.6	92.1	92.1	67.4
BGP501 LED30-4S/722	2640.0	23.5	112.3	3.052	0.405	0.304	0.304	0.223	123.5	92.7	92.7	68.0
BGP501 LED35-4S/722	3045.0	27.5	110.7	3.571	0.41	0.308	0.308	0.226	125.0	93.9	93.9	68.9
BGP501 LED40-4S/722	3480.0	31.5	110.5	4.091	0.411	0.308	0.308	0.226	125.4	93.9	93.9	68.9
BGP501 LED45-4S/722	3870.0	36.0	107.5	4.675	0.423	0.317	0.317	0.233	129.0	96.7	96.7	71.1
BGP501 LED50-4S/722	4250.0	40.5	104.9	5.26	0.433	0.325	0.325	0.238	132.1	99.1	99.1	72.6
BGP501 LED6-4S/840	540.0	5.4	100.0	0.701	0.454	0.34	0.34	0.25	138.5	103.7	103.7	76.2
BGP501 LED8-4S/840	720.0	6.3	114.3	0.818	0.398	0.298	0.298	0.219	121.4	90.9	90.9	66.8
BGP501 LED10-4S/840	900.0	7.4	121.6	0.961	0.374	0.28	0.28	0.206	114.1	85.4	85.4	62.8
BGP501 LED12-4S/840	1068.0	8.8	121.4	1.143	0.375	0.281	0.281	0.206	114.4	85.7	85.7	62.8
BGP501 LED14-4S/840	1246.0	10.2	122.2	1.325	0.372	0.279	0.279	0.205	113.5	85.1	85.1	62.5
BGP501 LED16-4S/840	1424.0	11.4	124.9	1.481	0.364	0.273	0.273	0.2	111.0	83.3	83.3	61.0
BGP501 LED18-4S/840	1584.0	12.8	123.8	1.662	0.367	0.275	0.275	0.202	111.9	83.9	83.9	61.6

BGP501 LED20-4S/840	1760.0	14.2	123.9	1.844	0.367	0.275	0.275	0.202	111.9	83.9	83.9	61.6
BGP501 LED22-4S/840	1958.0	15.0	130.5	1.948	0.348	0.261	0.261	0.191	106.1	79.6	79.6	58.3
BGP501 LED24-4S/840	2136.0	16.4	130.2	2.13	0.349	0.262	0.262	0.192	106.4	79.9	79.9	58.6
BGP501 LED27-4S/840	2403.0	18.4	130.6	2.39	0.348	0.261	0.261	0.191	106.1	79.6	79.6	58.3
BGP501 LED30-4S/840	2670.0	20.5	130.2	2.662	0.349	0.262	0.262	0.192	106.4	79.9	79.9	58.6
BGP501 LED35-4S/840	3080.0	23.5	131.1	3.052	0.347	0.26	0.26	0.191	105.8	79.3	79.3	58.3
BGP501 LED40-4S/840	3480.0	27.0	128.9	3.506	0.353	0.265	0.265	0.194	107.7	80.8	80.8	59.2
BGP501 LED45-4S/840	3915.0	30.5	128.4	3.961	0.354	0.265	0.265	0.195	108.0	80.8	80.8	59.5
BGP501 LED50-4S/840	4300.0	34.5	124.6	4.481	0.365	0.274	0.274	0.201	111.3	83.6	83.6	61.3
BGP501 LED55-4S/840	4760.0	38.5	123.6	5.0	0.368	0.276	0.276	0.202	112.2	84.2	84.2	61.6
BGP501 LED6-4S/830	540.0	5.1	105.9	0.662	0.429	0.322	0.322	0.236	130.8	98.2	98.2	72.0
BGP501 LED8-4S/830	712.0	6.5	109.5	0.844	0.415	0.311	0.311	0.228	126.6	94.9	94.9	69.5
BGP501 LED10-4S/830	900.0	7.7	116.9	1.0	0.389	0.292	0.292	0.214	118.6	89.1	89.1	65.3
BGP501 LED12-4S/830	1068.0	9.1	117.4	1.182	0.387	0.29	0.29	0.213	118.0	88.4	88.4	65.0
BGP501 LED14-4S/830	1246.0	10.4	119.8	1.351	0.379	0.284	0.284	0.208	115.6	86.6	86.6	63.4
BGP501 LED16-4S/830	1424.0	11.8	120.7	1.532	0.377	0.283	0.283	0.207	115.0	86.3	86.3	63.1
BGP501 LED18-4S/830	1584.0	13.2	120.0	1.714	0.379	0.284	0.284	0.208	115.6	86.6	86.6	63.4
BGP501 LED20-4S/830	1760.0	14.8	118.9	1.922	0.382	0.286	0.286	0.21	116.5	87.2	87.2	64.0
BGP501 LED22-4S/830	1936.0	16.2	119.5	2.104	0.38	0.285	0.285	0.209	115.9	86.9	86.9	63.7
BGP501 LED24-4S/830	2136.0	16.8	127.1	2.182	0.358	0.268	0.268	0.197	109.2	81.7	81.7	60.1
BGP501 LED27-4S/830	2403.0	19.0	126.5	2.468	0.359	0.269	0.269	0.197	109.5	82.0	82.0	60.1
BGP501 LED30-4S/830	2640.0	21.0	125.7	2.727	0.362	0.271	0.271	0.199	110.4	82.7	82.7	60.7
BGP501 LED35-4S/830	3080.0	24.5	125.7	3.182	0.362	0.271	0.271	0.199	110.4	82.7	82.7	60.7
BGP501 LED40-4S/830	3480.0	28.0	124.3	3.636	0.366	0.274	0.274	0.201	111.6	83.6	83.6	61.3
BGP501 LED45-4S/830	3915.0	32.0	122.3	4.156	0.372	0.279	0.279	0.205	113.5	85.1	85.1	62.5

BGP501 LED50-4S/830	4300.0	36.0	119.4	4.675	0.381	0.286	0.286	0.21	116.2	87.2	87.2	64.0
BGP501 LED55-4S/830	4760.0	40.0	119.0	5.195	0.382	0.286	0.286	0.21	116.5	87.2	87.2	64.0
BGP501 LED6-4S/827	540.0	5.4	100.0	0.701	0.454	0.34	0.34	0.25	138.5	103.7	103.7	76.2
BGP501 LED8-4S/827	712.0	6.9	103.2	0.896	0.44	0.33	0.33	0.242	134.2	100.6	100.6	73.8
BGP501 LED10-4S/827	900.0	8.2	109.8	1.065	0.414	0.31	0.31	0.228	126.3	94.6	94.6	69.5
BGP501 LED12-4S/827	1068.0	9.7	110.1	1.26	0.413	0.31	0.31	0.227	126.0	94.6	94.6	69.2
BGP501 LED14-4S/827	1246.0	11.2	111.2	1.455	0.409	0.307	0.307	0.225	124.7	93.6	93.6	68.6
BGP501 LED16-4S/827	1408.0	12.6	111.7	1.636	0.407	0.305	0.305	0.224	124.1	93.0	93.0	68.3
BGP501 LED18-4S/827	1584.0	14.2	111.5	1.844	0.407	0.305	0.305	0.224	124.1	93.0	93.0	68.3
BGP501 LED20-4S/827	1760.0	15.8	111.4	2.052	0.408	0.306	0.306	0.224	124.4	93.3	93.3	68.3
BGP501 LED22-4S/827	1958.0	16.6	118.0	2.156	0.385	0.289	0.289	0.212	117.4	88.1	88.1	64.7
BGP501 LED24-4S/827	2136.0	18.0	118.7	2.338	0.383	0.287	0.287	0.211	116.8	87.5	87.5	64.4
BGP501 LED27-4S/827	2403.0	20.5	117.2	2.662	0.388	0.291	0.291	0.213	118.3	88.8	88.8	65.0
BGP501 LED30-4S/827	2640.0	22.5	117.3	2.922	0.387	0.29	0.29	0.213	118.0	88.4	88.4	65.0
BGP501 LED35-4S/827	3080.0	26.5	116.2	3.442	0.391	0.293	0.293	0.215	119.3	89.4	89.4	65.6
BGP501 LED40-4S/827	3480.0	30.5	114.1	3.961	0.398	0.298	0.298	0.219	121.4	90.9	90.9	66.8
BGP501 LED45-4S/827	3870.0	34.5	112.2	4.481	0.405	0.304	0.304	0.223	123.5	92.7	92.7	68.0
BGP501 LED50-4S/827	4250.0	39.0	109.0	5.065	0.417	0.313	0.313	0.229	127.2	95.5	95.5	69.8

** 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 highlighed 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[1)]	kg CO2e	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 multilplying for the Finland value from the same table (FINLAND = 2,70E-01).

Thus, the calculation of this example would be:

New B6 GWP tot for Finland = (4,06E+02 / 3,96E-01) x 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