Verification Holder

SAMSUNG ELECTRONICS CO., LTD.

129, Samsung-ro, Yeongtong-gu

16677 Suwon-si

KOREA, REPUBLIC OF

VERIFIED

The Bureau Veritas Verified Mark is an independent marketing claim verification process that assesses the validity of specific advertising or promotional statements. The product detailed below has successfully completed the marketing claim verification process according to the below specifications and protocols.

Protocol and Specification

BV Verification Rules Ed 2

VERP-030 - Carbon Footprint

Verified Marketing Claim

Product: Laptop / Carbon footprint
Galaxy Book5 Pro 360

SAMSUNG

Verified Statement:
Carbon footprint 373 kg CO2 eq. (US) / 324 kg CO2 eq. (UK)

Verification ID: BVVG_20003/A1
Report Number: 23417749 – 804192-02 v2

Verification Expiry Date: 24/10/2029

The verification has been done based on the Life Cycle Assessment (LCA) performed by Samsung on Samsung Galaxy Book5 Pro 360 including adaptor and packaging.
The scope of this audit is limited for the geographical part to: Manufactured in Vietnam, distributed and used in US.
The ISO 14067 following clauses are evaluated, and the evidence provided by the client has been found at a reasonable level to issue the verification statement:
5.1 & 5.2 & 5.3 & 6.2 & 6.3.1 & 6.3.2 & 6.3.3 & 6.3.4.1 & 6.3.4.2 & 6.3.4.3 & 6.3.5 & 6.3.6 & 6.3.7 & 6.3.8 & 6.4.2 6.4.3 & 6.4.6.2 & 6.4.6.3 & 6.4.9.2 & 6.4.9.3 & 6.5.1 & 6.5.2 & 7.1 & 7.2.

BUREAU VERITAS

Verification Statement Date: **13/12/2024**

LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES
S.A.S au capital de 15.745.984 €
RCS Nanterre B 408 363 174
33 avenue du Général Leclerc
F - 92266 FONTENAY AUX ROSES

Julien GAUTHIER
Certification Officer
LCIE

The verification statement neither expressly nor indirectly implies any warranty, guarantee or any other assurance that a product, for which the certificate is granted, complies with any statutory or other requirements.
The verification statement does not substitute any other product certificate and/or marking which may be mandatory or required under any other statutory or other regulations whatsoever.

Further clarifications regarding the scope of this verification may be obtained by consulting the organization.
To check this verification validity, please check our website:

BV Mark

CARBON FOOTPRINT VERIFICATION REPORT

Samsung Galaxy Book5 Pro 360

SAMSUNG ELECTRONICS CO., LTD

LCIE n°	23417749 - 804192	
CLIENT	SAMSUNG ELECTRONICS CO., LTD	
VERSION OF THE REPORT	1	
DATE OF THE VERSION	25 octobre 2024	
UPDATE	Not applicable – initial version	
LCIE DEPARTMENT	Department CODDE of LCIE Bureau Veritas	
VERIFIER	Siyao CHEN siyao.chen@bureauveritas.com	
SUPERVISOR	Beranger Hoppenot Beranger.Hoppenot@bureauveritas.com	
SIGNATURE		

SUMMARY

1. VERIFICATION STATEMENT

I hereby confirm that, following the checks performed, in accordance with the limits of the scope of our appointment, nothing has come to the verifier's attention to suggest any data errors or deviations from the requirements by the "carbon footprint of a product" and its project report, in terms of

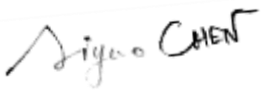
- the underlying data collected and used for the carbon calculations,
- the way the carbon-based calculations has been carried out to comply with the calculation rules,
- the presentation of environmental performance included in the "carbon footprint of a product", and
- any other information included in the "carbon footprint of a product"

with respect to the procedural and methodological requirements in VERP-030 - Carbon Footprint.

I confirm that, in accordance with the limits of the scope of our appointment, the company-specific data has been examined as regards plausibility and consistency. The declaration owner is responsible for its factual integrity and that the product does not violate relevant legislation.

I confirm that I have sufficient knowledge and experience of Laptop products amongst other electronic products, relevant standards and the geographical area of the studied products to carry out this verification.

I confirm that I have been independent in my role as verifier, i.e. I have not been involved in the execution of the carbon footprint of studied products and have no conflicts of interest regarding this verification.

Name and organization of verifier:	Bureau Veritas Consumer Products Services - LCIE China Co., Ltd. Building 4, No. 518, Xinzhuan Road, Songjiang District, Shanghai, P.R.C, 201600	Béranger HOPPENOT Bureau Veritas LCIE 170 Rue de Chatagnon 38430 MOIRANS FRANCE
Date and location:	In Shanghai October 25, 2024	At Moirans October 25, 2024
Signature:		

2. SCOPE OF THE AUDIT

2.1. SCOPE

The Samsung Galaxy Book5 Pro 360 is a high-performance convertible laptop that offers impressive specifications and features. Powered by the latest Intel Lunar Lake chipset, it features the Intel Core Ultra 7 and Core Ultra 5 processors, which provide excellent performance for a wide range of tasks.

The device boasts a large 16-inch WQXGA+ (2880x1800) display with a 16:10 aspect ratio, delivering a crisp and vibrant visual experience. Unfortunately, it does not have a secondary display or sub-camera, but it does include a 2.0MP FHD 1080p main camera.

In terms of memory, the Galaxy Book5 Pro 360 is equipped with 16GB of LPDDR5X memory, which ensures smooth multitasking and efficient performance. The device is powered by a 76Wh (typical) battery, which can be charged using the included 65W USB Type-C adapter.

Measuring 355.4 x 252.2 x 12.8 mm and weighing 1.694 kg, the Galaxy Book5 Pro 360 is a relatively compact and lightweight convertible laptop, making it easy to carry around. Overall, the Samsung Galaxy Book5 Pro 360 appears to be a well-equipped and versatile device, catering to the needs of users who require a powerful and flexible computing solution.

Samsung conducted a Carbon Footprint of Product Study of Galaxy Book5 Pro 360 and requested verification by Bureau Veritas for its improvement and issuance of BV MARK.

The documents in the scope of this audit are listed in the following table:

Documents	Type of document	Version, Date
Samsung Galaxy Book5 Pro 360_Modelsheet	Report (Excel file)	v2.6

The scope of this audit is limited to these elements:

- **Products scope:** Samsung Galaxy Book5 Pro 360, adaptator and packaging,
- **Geographical scope:** Manufactured in Vietnam, distributed and used in US
- **CFP results:**
  Total Carbon footprint : **373** kg CO2 eq

Indicator	Total	Manufacturing	Distribution	Installation	Use	End Of Life
Global Warming Potential (Kg CO2 eq.)	373.1	258.6	17.9	0.5	95.4	0.8

- **Declared unit:** "Note PC 1 unit with lifespan of 4 years"

- **System boundaries:** cradle to grave

The system boundary includes: Manufacturing - Distribution - Installation - Product Use - End of Life stage

(1) Pre-Manufacturing Stage

- The pre-manufacturing stage includes the acquisition of raw materials or the generation of materials that will be used in the product and its packaging.

- The process of manufacturing all parts

(2) Manufacturing Stage

- The manufacturing stage includes the assembly of parts, inspection, and the packaging process at the manufacturing site.

- The energy usage in the manufacturing stage reflects the database, taking into account the region of each manufacturing site. The manufacturing site for this product is SEV (Samsung Vietnam Factory1), using electricity from the low-voltage {VN} market.

- The transportation of the packaged product from the manufacturing facility to the first port is considered for internal distribution.

(3) Distribution Stage

- The distribution stage considers the distance from the first port to the warehouse in the sales country.

- The production site for this product is Samsung Vietnam Factory1, and the countries of use are designated as the United States and the United Kingdom.

(4) Installation Stage

- The installation stage includes the disposal of packaging materials.

(5) Product Use Stage

- The use stage considers the total amount of electricity consumed during the product's lifespan (Off, Sleep, Idle and ON mode).

- The geographical boundary is the sales countries (US)

- The database for energy usage during the use phase is set up as:

- US: 'Electricity, low voltage {US}| market group for electricity, low voltage | Cut-off, S'

(6) End of Life Stage

- The end-of-life stage considers the collection rate and treatment methods (recycling, incineration, and landfill) for the product, packaging, and consumables.

- Transportation to the collection site is also included.

2.2. VERIFICATION REQUIREMENTS

This audit is made according to the verification standards VERP-030 - Carbon Footprint_V2Which is made with modification linked alignment with IECQ and adjustment of VERP-009 for request when full compliance to ISO 14067 is not mature.

2.3. BUREAU VERITAS VERIFIER

The verifiers from Bureau Veritas are:

Siyao CHEN siyao.chen@bureauveritas.com

Bureau Veritas Consumer Products Services - LCIE China Co., Ltd.

Building 4, No. 518, Xinzhuan Road, Songjiang District, Shanghai, P.R.C, 201600

Beranger Hoppenot Beranger.Hoppenot@bureauveritas.com

CODDE – Department of LCIE Bureau Veritas

170 Rue de Chatagnon, 38430 MOIRANS,France

2.4. AGENDA OF THE AUDIT

The agenda of the audit is summarized in the following table.

Action	Date	Type of meeting	Client	Bureau Veritas
Initial review feedback	21/08/2024	Checklist	Samsung	Verifiers
1st feedback and modification	27/08/2024	Document update	Samsung	Verifiers
2nd review feedback	12/09/2024	Checklist & NC reports	Samsung	Verifiers
2nd feedback and modification	25/09/2024	Document update	Samsung	Verifiers
3rd review feedback	08/10/2024	Checklist & NC reports	Samsung	Verifiers
3rd feedback and modification	10/10/2024	Document update	Samsung	Verifiers
4th review feedback	11/10/2024	Checklist & NC reports	Samsung	Verifiers
4th feedback and modification	18/10/2024	Document update	Samsung	Verifiers
…				
7th review, closed	25/10/2024	Verification report	Samsung	Verifiers

3. CONCLUSIONS OF THE CRITICAL REVIEW

3.1. INITIAL VERIFICATION

At the beginning of the audit, the critical review of the carbon footprint calculator contained **22 comments and 5 Major NC**. Each of the 5 major NC is documented within a NC report, NC02 / NC04 / NC05 / NC07 / NC10 are treated by Samsung and the modification history and dialogues are recorded respectively in each NC report in the Annex "Dialogue with the verifier during the audit" of this report.

3.2. FINAL VERIFICATION

At the end of the audit, the critical review of the carbon footprint of a product contains **0 comment** about the carbon footprint of a product. Samsung has treated all the comments made by the verifier.

All the comments and exchanges are presented in the appendix of this report in the Annex "Dialogue with the verifier during the audit" of this report.

- The final status of the checklist is available in chapiter "Verification checklist".

The main strengths points of the "Carbon footprint of the laptop" are:

- Datacollection for the BOM of the product is very detail
- Distribution phase is made with primary data and is well documented
- Good systematic LCA approach

The main points of improvement of the "Carbon footprint of a product" are:

- CFP report is not always clear. Information should be more lay out in the report to be in full conformity with ISO 14067 standard
- Sources for the hypothesis considered is not always clearly set
- The use of proxi data (example : the main PWB) increase the impact of the product. A more detailed approach by modeling the actual PWB in detail will give a more specific and realistic footprint of the product.

The methodology shall be further developed to fully comply with ISO 14067 requirements.

4. RECOMMENDATIONS

As Samsung looks to enhance its LCA verification process, there are a few key areas we would suggest focusing on. First and foremost, it would be highly beneficial for the company to develop an internal guidance document for Product Environmental Footprint (PEF) methodology. This would serve as a solid foundation for future process certification efforts.

When crafting this guidance, it will be important to ensure alignment with relevant international standards and frameworks, such as EN50693, the GHG Protocol, Recommendation ITU-T L.1410, and other appropriate guidelines. The guidance should provide clear interpretation, meaningful recommendations, and well-reasoned conclusions - going beyond just basic data processing in Excel.

Additionally, we would recommend taking a closer look at the modeling of the main board. In a second phase of the analysis, refining the modeling using a more representative dataset could yield important insights, as the main board has been identified as a key contributor to the overall global warming potential (GWP).

Another area worthy of attention is the inclusion of "On Mode" energy consumption. Systematically incorporating this usage data into future studies will help to more accurately reflect the environmental impact during the critical use stage of the product lifecycle.

Finally, it will be essential that Samsung thoroughly considers and incorporates feedback from other reviewers. Addressing their comments and concerns is compulsory for achieving full compliance with ISO 14067 standards, which is crucial for the credibility of the LCA verification process.

By implementing these recommendations, Samsung can strengthen the rigor and reliability of its LCA efforts, leading to more robust and trustworthy verification reports.