



Supplier : SAMSUNG

Address : 129, samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do (16677)

GHG Emissions from Product Transport

SAMSUNG works to lessen our environmental impact along the supply chain for our products.

In 2024, we set a goal to reduce our emissions from product transport 10% by 2030.

Our assessment of emissions includes emissions from all modes of freight movement utilized.

All emissions were calculated using the Global Logistics Emissions Council Framework for Logistics Emissions Methodologies (GLEC Framework).

GREENHOUSE GAS VERIFICATION REPORT

Project number: 4791503853
Issue Date: October 11th, 2024

In accordance with ISO 14064 Part 3: 2019, UL Solutions has verified, to a limited level of assurance, that the 2023 GHG Statement for product transport of

SAMSUNG ELECTRONICS CO., LTD.

Meets the requirements of ISO 14064 Part 1: 2018 and the Global Logistics Emissions Council Framework for Logistics Emissions Methodologies (GLEC Framework), and that there is no evidence that the GHG Statement for product transport:

- Is not materially correct
- Is not a fair representation of GHG data and information
- Has not been prepared in accordance with related standards

January 1st, 2023, to December 31st, 2023

- Air transport: 68,030.5 tCO₂e
- Rail transport: 2,941.4 tCO₂e
- Road transport: 294,658.6 tCO₂e
- Sea transport: 3,008,911.1 tCO₂e

All values are for well-to-wheel emissions and are in metric tonnes of carbon dioxide equivalent, rounded to the first decimal place.

AW

Adrian Wain
Lead Verifier

UL Verification Services Inc.
2211 Newmarket Parkway, Suite 106
Marietta, GA 30067 USA

UL Solutions performs Greenhouse Gas (GHG) Verification in accordance with ISO 14064 Part 3: 2019. Greenhouse Gases: Specification with guidance for the verification and validation of greenhouse gas statements.

UL Solutions applies a risk-based approach to GHG Verification that incorporates an investigation of the inherent and control risks associated with GHG reporting.

UL Solutions' verification approach includes but is not limited to the collection and analysis of:

- Qualitative data through the engagement of management.
- Quantitative data through receipt of data files from information management systems.
- Supporting evidence for all data.

A full description of the approach taken in this verification can be found in Appendix A.



Samsung Electronics Co., Ltd

Level of assurance: Limited
Project number: 4791503853
Report issue date: October 11th, 2024

Introduction

Samsung Electronics Co., Ltd. (hereafter Samsung) has contracted UL Solutions to verify Samsung's GHG Statement for product transport to provide assurance that GHG inventories meet the requirements of IEEE 1680.1 (2018) criteria 4.8.2.2. Samsung has provided a GHG statement to UL Solutions covering the period of January 1st, 2023, to December 31st, 2023, prepared in accordance with ISO 14064 Part 1: 2018 and the Global Logistics Emissions Council Framework for Logistics Emissions Methodologies (GLEC Framework).

Approach

UL Solutions performs GHG verification in accordance with ISO 14064 Part 3: 2019: Greenhouse Gases: Specification with guidance for the verification and validation of GHG statements.

UL Solutions applies a risk-based approach to GHG verification that incorporates a detailed understanding of risks associated with GHG reporting and the controls required to mitigate such risks.

UL Solutions verification approach includes the collection and analysis of:

- Qualitative data through the engagement of management
- Quantitative data through receipt of data files from information management systems
- Supporting evidence for activity data

A full description of the approach can be found in Appendix A.

Responsibilities

Samsung designated themselves as the responsible party for the preparation and fair presentation of their GHG Statement and other supporting information required for evaluation of the statement in accordance with the criteria laid out in ISO 14064 Part 1: 2018 and the Global Logistics Emissions Council Framework for Logistics Emissions Methodologies (GLEC Framework). UL Solutions is responsible for expressing an opinion of the GHG Statement based on findings from verification activities designed to assess whether the GHG statement was materially accurate given quantitative and qualitative thresholds. The data assessed are historical in nature and this report is only valid for the GHG Statement of this defined period.

Level of assurance

Samsung requested that UL Solutions provide a limited level of assurance for their GHG statement for product transport.

Objectives

To verify to a limited level of assurance that Samsung's GHG statement for product transport is materially accurate for the purposes of conformance with the IEEE 1680.1 (2018) 4.8.2.2 criterion.

- The GHG emissions are as declared by the responsible party.

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- The data reported are accurate, complete, consistent, transparent, and free of material error or omission.
- The GHG statement is prepared consistent with the criteria laid out in ISO 14064 Part 1: 2018.
- The GHG statement is prepared consistent with the methodologies laid out in the Global Logistics Emissions Council Framework for Logistics Emissions Methodologies (GLEC Framework)

Criteria

Criteria against which the verification assessment was undertaken:

- ISO 14064 Part 1: 2018.
- IEEE 1680.1 (2018) 4.8.2.2.

Scope

Customer name	Samsung Electronics Co., Ltd.
Customer address	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea
Control approach	Operational
Locations/sources	Product transport by Air, Rail, Road, Sea
Period of evaluation	January 1st, 2023, to December 31st, 2023
Types of GHG included	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆
GWP values applied	IPCC AR6
Intended users	Green Electronics Council approved EPEAT Conformity Assurance Body

Materiality

The intended users of the GHG statement did not specify a required quantitative materiality threshold. Therefore, UL Solutions used the quantitative materiality threshold suggested by the WRI GHG Protocol for Corporate Accounting and Reporting Standard (Revised edition), where an error is considered to be materially misleading if its value exceeds 5% of the total values reported in the GHG statement.

Issuance of Opinion*

In UL Solutions' opinion, based on the evaluation activities conducted in accordance with ISO 14064 Part 3: 2019 to Samsung's GHG Statement for product transport for January 1st, 2023, to December 31st, 2023, limited level of assurance has determined that there is no evidence that the GHG statement:

- Is not materially correct
- Is not a fair representation of GHG data and information
- Has not been prepared in accordance with related standards

Samsung's GHG statement for product transport for January 1st, 2023, to December 31st, 2023, written in accordance with ISO 14064 Part 1: 2018 and the Global Logistics Emissions Council Framework for

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Logistics Emissions Methodologies (GLEC Framework) has been verified by UL Solutions to a limited level of assurance. The well-to-wheel emissions by mode of transport are verified as follows:

Scope	Metric tonnes CO ₂ e
Air	68,030.5
Rail	2,941.4
Road	294,658.6
Sea	3,008,911.1

All values are for well-to-wheel emissions and are in metric tonnes of carbon dioxide equivalent, rounded to the first decimal place.

Activities performed to the limited level of assurance are less extensive in nature, timing, and extent than activities performed for a reasonable level of assurance.

Place and date: 2211 Newmarket Parkway, Suite 106, Marietta, GA 30067, USA. October 11th, 2024

Verifier Signature:

AW

Adrian Wain, Lead Verifier

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Appendix A

Introduction

Appendix A describes how UL Solutions executed the verification of Samsung's GHG Statement for product transport for the period January 1st, 2023, to December 31st, 2023, in accordance with with ISO 14064 Part 3: 2019.

Execution summary

The scope of the verification activities was defined during the verification planning stage and were informed by the strategic analysis and risk assessment based on submitted data and industry research.

The verification activities involved, but were not limited to the items below:

- Strategic Analysis
- Risk Assessment
- Verification Activities
- Verification Conclusions
- Recommendations

The verification was executed by the team shown below:

Lead verifier	Adrian Wain is the Lead Verifier on the engagement and is a qualified GHG Verifier. Adrian has 13 years of experience in GHG accounting and verification and has performed GHG verification for over 40 organizations where transport related emissions have been a core component the engagement scope. Email: Adrian.wain@ul.com
Verifier	Amber Mehta is the Verifier on the engagement and is a qualified GHG Verifier. Amber has 9 years of experience in GHG accounting and verification. Email: Amber.Mehta@ul.com
Reviewer	Heather Pecho is the Reviewer on the engagement. Heather has 5 years of experience in GHG accounting and verification. Email: Heather.Pecho@ul.com

GHG management system

Meetings with Samsung and their appointed consultants (Ecoable Consulting Co., Ltd) determined that the selection and management of GHG information was determined by the requirements of the Global Logistics Emissions Council Framework for Logistics Emissions Methodologies (GLEC Framework).

The system boundary encompassed Well-to-Wheel GHG emissions from the transport of final product from the location of final assembly to the location of the purchaser.

The appointed consultants (Ecoable Consulting Co., Ltd) were responsible for the consolidation of GHG-related data into Excel workbooks for each transport activity. A review of the Excel workbooks showed that due care and attention had been exercised in their development.

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Based on the review of the GHG management system, UL Solutions did not find evidence that it was not in accordance with the required criteria.

GHG data and information

GHG data and information were reviewed for all transport activities. In addition, a review of the emission factors applied to each emission source was conducted.

Air transport: Data were derived from transport management systems and made available in two data formats (a) distance, mass, cost and, through combination, tonne-km per shipment, or (b) cost per shipment only. When data were made available in format (b), a tonne-km intensity per unit of cost based on format (a) was applied to derive tonne-km values. The tonne-km values in format (a) were then multiplied by a short haul or long haul emission factor. The tonne-km values in format (b) were then multiplied by an emission factor where haul type is unknown. Based on the strategic analysis and verification activities performed, UL Solutions did not find evidence that the information was not in accordance with the required criteria.

Rail transport: Data were derived from transport management systems and made available in cost only. The cost was multiplied by a tonne-km intensity per unit of cost based on data from road transport to produce tonne-km values. The tonne-km values were then multiplied by an emission factor for rail freight. Based on the strategic analysis and verification activities performed, UL Solutions did not find evidence that the information was not in accordance with the required criteria.

Road transport: Data were derived from transport management systems and made available in three data formats (a) distance travelled per year by vehicle type, (b) distance, mass, cost and, through combination, tonne-km per shipment, or (c) cost per shipment only. When data were made available in format (a) the fuel efficiency certificate of the vehicle type was used to determine fuel consumption. When data were made available in format (c), a tonne-km intensity per unit of cost based on format (b) was applied to derive tonne-km values. The fuel consumption values in format (a) were then multiplied by a fuel specific emission factor. The tonne-km values in format (b) and (c) were then multiplied by an emission factor for road transport specific to the continent on which the transport occurred. Based on the strategic analysis and verification activities performed, UL Solutions did not find evidence that the information was not in accordance with the required criteria.

Sea transport: Data were derived from transport management systems and made available in two data formats (a) distance, mass, cost and, through combination, tonne-km per shipment, or (b) cost per shipment only. When data were made available in format (b), a tonne-km intensity per unit of cost based on format (a) was applied to derive tonne-km values. The tonne-km values in format (a) and (b) were then multiplied by a trade-lane specific emission factor. Based on the strategic analysis and verification activities performed, UL Solutions did not find evidence that the information was not in accordance with the required criteria

Data aggregation processes

The data aggregation process contained two steps.

Activity data were gathered from two transport management systems (LogiTech and SDS) and then entered into the Excel workbooks used by Samsung's appointed consultants, through which CO₂e emissions values were calculated and then aggregated into the appropriate scopes.

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The inherent risk that activity data were aggregated incorrectly was addressed through substantive testing – reviewing samples of source data to confirm that they were aggregated correctly for the transport activity under review. The second step was assessed through analytical testing procedures – see data tracing.

Analytical testing

A range of analytical testing techniques were used to verify the data.

Recalculation: Multiplying activity data by the stated emission factor to check the correctness of the calculation functions used to develop the GHG statement. This test addressed the risk present by incorrect calculation configuration. UL Solutions did not find evidence that the calculations were not in accordance with the required criteria.

Trend analysis: Observing the progression of data over time to check for the presence of anomalous values. This test addressed the risk presented by the introduction of data using an incorrect unit of measure, an incorrect order of magnitude or an inaccurate extrapolation or estimation model. UL Solutions did not find evidence that the progression of data over time were not in accordance with the required criteria.

Data tracing: Rebuilding aggregate values from their source (e.g., utility bill) to the organization total to check for the inclusion and correct aggregation of all data. This test addressed the risk that values were mistakenly transferred from the source file to the Excel workbook. UL Solutions did not find evidence that the aggregations were not in accordance with the required criteria.

Control testing: During the strategic analysis, UL Solutions found that a significant portion of the process for the creation of the GHG statement was facilitated by the Excel workbook used by the appointed consultants. As a result, its proper use was found to be the largest control risk. Therefore, UL Solutions performed an extensive review of the Excel file functions for correctness and made enquiries into the experience of its authors and the review procedures it was subjected to. UL Solutions did not find evidence that the Excel file functions were incorrect, and the appointed consultant's experience and review procedures were insufficient.

Estimate testing: Rebuilding estimated activity values from their source (e.g. tonne-km intensity) to check for the accurate estimation of all data. UL Solutions did not find evidence that the estimation methods applied were not in accordance with the required criteria.