

Independent Verification Opinion

Verification Opinion No.:
C704874-2023-AG-TWN-DNV

Issued Place:
Taipei

Issued Date:
11 November, 2024

This is to verify initiate reporting of Greenhouse Gas Inventory Management Report (2023) of

Top Union Electronics Corporation

Scope of Verification

DNV Business Assurance (DNV) has been commissioned by Top Union Electronics Corporation ('the Organization') to perform a verification of the greenhouse gas statements of Greenhouse Gas Inventory Management Report (2023) (hereafter the "Inventory Report") in Taiwan, R.O.C. with respect to the area: No. 480, Niupu E. Rd.,300, Hsinchu City,Taiwan, Taiwan (R.O.C.).

The Reporting Boundary for the verification including direct GHG emissions and removals, indirect GHG emissions from imported energy, indirect GHG emissions from transportation, indirect GHG emissions from products used by the Organization and indirect GHG emissions associated with the use of products from the Organization. The further descriptions for the Organization and Reporting Boundary listed in Appendix A.

Verification Criteria and GHG Programme

The verification was performed on the basis of ISO 14064-1:2018 as well as criteria given to provide for consistent GHG emission identification, calculation, monitoring and reporting. The verification was conducted in accordance with ISO 14066:2011, ISO 14065:2020, ISO14064-3:2019

Verification Opinion

It is DNV's opinion that the Inventory Report (2023), which was published on 9 October 2024 is free from material discrepancies in accordance with the verification criteria identified as stated above. The opinion is decided based on the following approaches,

- For the Direct (Category 1) and Indirect GHG emissions from imported energy (Category 2), the reliability of the information within the Inventory Report (2023) were verified with reasonable level of assurance.
- For the other indirect GHG emissions, the involved information was verified and tested using agreed-upon procedures, AUP, defined in Inventory Report.

Also, the GHG information as stated in Appendix B has been verified during the process.

Jia Hong Jesse Wu
GHG Verifier



Place and date:

Taipei, 11 November, 2024

For the issuing office:

DNV Business Assurance Co., Ltd.
29Fl., No. 293, Sec. 2, Wenhua Rd.,
Banqiao District, New Taipei City
220, Taiwan



Management Representative



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Supplement to Verification Opinion

Process and Methodology

The reviews of the Inventory Report and relevant documents, and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

Quantification of Greenhouse Gas Emission

The Inventory Report covering the period 1 January, 2023 to 31 December, 2023, it is DNV's opinion that GHG emissions and removals identified within the Reporting Boundary has been included in the Inventory Report as claimed in accordance with the verification criteria identified as stated above, and results in quantification of GHG emissions that are real, transparent and measurable.

Organizational Boundary of Verification

Financial Control Operational Control Equity Share

GHGs Verified

CO₂ CH₄ N₂O HFC_s PFC_s SF₆ NF₃

The Quantification of GHG emissions:

Category		Emission (ton CO ₂ e)
Category 1	Direct GHG emissions and removals	273.6284
1.1	Stationary combustion emissions	3.8646
1.2	Mobile Emissions	150.1006
1.3	Industry Process	0.0000
1.4	Fugitive emissions	119.6632
Category 2	Indirect GHG emissions from imported energy	6,005.6069
2.1	Indirect emissions from imported electricity	6,005.6069
Total emissions from Category 1 & Category 2		6,279.2353
Category 3	Indirect GHG emissions from transportation	1,864.5732
3.2	Emissions from downstream transport and distribution for goods are emissions	1,853.2837
3.5	Emissions from business travel	11.2895
Category 4	Indirect GHG emissions from products used by an organization	908.7187
4.1	Purchased goods and services (Only purchased energy)	884.7378
4.3	Emissions from the disposal of solid and liquid waste	23.9808
Category 5	Indirect GHG emissions associated with the use of products from organization	60.2646
5.1	Indirect GHG emissions associated with the use of products from the organization	60.2646
Total emissions from Category 3 ~ 5		2,833.5565

(The Imported Energy Indirect Emissions was calculated based on 2023 electricity emission factor of 0.494 kg CO₂-e/kwh, which was announced by Energy Administration, Ministry of Economic Affairs, R.O.C.)

(The Imported Energy Indirect Emissions was calculated based on 2021 average carbon dioxide emission factor for electricity in Jiangsu Province of 0.6451 kg CO₂-e/kwh, which was announced by China Products Carbon Footprint Factors Database)

(The Global Warming Potential (GWP) defined in IPCC AR6 (2021) has been chosen and correctly referred by the Organization.)

Verification Opinion

unmodified modified adverse

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid. This Verification Opinion is based on the information made available to us and the engagement conditions detailed above. Hence, DNV cannot guarantee the accuracy or correctness of the information. DNV cannot be held liable by any party relying or acting upon this Verification Opinion.

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DNV ZNATW-OP-F50, Rev.12, 2024-4



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APPENDIX A

The organization boundary of report:

Plant	Address	Category 1 (Ton CO ₂ e)	Category 2 (Ton CO ₂ e)	Category 3 to 6 (Ton CO ₂ e)
Total Emissions of Top Union Electronics Corporation		273.6284	6,005.6069	2,833.5565
Hsinchu Plante	NO.480,Niupu E.Rd.,Hsinchu City 3000060,Taiwan(R.O.C.)	173.1757	3,218.0182	2262.2037
Shanghai Plante	168 Meisheng Road,Pudong New Area, Shanghai, China,200137	48.7011	991.3845	82.0374
Suzhou Plante	5 Fuyang Industrial Workshop, Fuyang Road, Xiangcheng District, Suzhou City, Jiangsu Province, China,215133	51.7516	1796.2042	489.3154

APPENDIX B

The Reporting Boundary of Top Union Electronics Corporation Greenhouse Gas Inventory Management Report (2023).

Indirect emissions verification procedures:

Category	Subcategory	Verification Procedures
Category 2	2.1 Imported electricity	-Bill and invoice from suppliers (TPC)
Category 3	3.2 Emissions from downstream transport and distribution for goods	-Shipping List and Product Weight. -Distance calculated based on Google Maps or Baidu Maps. -Distance of Air transportation from Overseas Navigation Network Airport to Airport. -Port Shipping Distance Inquiry Using: http://gangkou.00cha.net/licheng/OTlw.html
	3.5 Emissions from business travel	-Business Trip Request Form -Distance calculated based on Google Maps or Baidu Maps. -Boarding Ticket and Receipt. -Air transport uses the Overseas Navigation Network to filter flight departure and arrival points to calculate distances.
Category 4	4.1 Purchased goods and services (including purchased energy)	-Water Bill Certification and invoice. -Bill and invoice from suppliers. (TPC) -CPC Corporation Fuel Card.
	4.3 Emissions from the disposal of solid and liquid waste	-Industrial Waste Reporting and Management Information System. -Distance calculated based on Google Maps or Baidu Maps.
Category 5	5.2 Emissions from downstream leased assets	-Electricity Payment Invoice for Telecommunication Base Stations.
Category 6*	Indirect GHG emissions from other sources	Not Significant Emissions

NOTE: Category 6 was evaluated as Not Significant Emissions base on Top Union Electronics Corporation’s significant emission identification process reported in GHG inventory report.

APPENDIX C

For direct emissions and removals, quantified separately for each GHG as below:

GHG Type	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃	Total
Emissions (ton CO ₂ e)	151.1916	59.4131	2.5160	60.5077	0.0000	0.0000	0.0000	273.6284
Proportion (%)	55.25	21.71	0.92	22.11	0.00	0.00	0.00	100.00

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