

**2023 Asia Union Electronic Chemical
Corporation
Dafa Plant Greenhouse Gas Inventory
Report
ISO 14064-1:2018**

Prepared by: AUECC Dafa Plant

Issue Date: Aug 07, 2025 — Second Edition

Table of Contents

Chapter 1: Organization Overview	1
1.1 Preface.....	1
1.2 Company Profile	1
1.3 Policy Statement	1
Chapter 2: Organizational Boundary	2
2.1 AUECC Organizational Structure	2
2.2 Organizational Boundary	3
Chapter 3: Reporting Boundary and Emissions	5
3.1 Definition of Boundary and Calculation Principles	5
3.2 Significance Assessment Criteria	5
3.3 Calculation Principles	10
3.4 Emission Factor Selection, Management, and Revisions	11
3.5 Direct Greenhouse Gas Emissions (Category 1)	13
3.6 Indirect Greenhouse Gas Emissions (Category 2)	15
3.7 Other Indirect Greenhouse Gas Emissions (Categories 3–6) ...	15
3.8 Total Greenhouse Gas Emissions	16
3.9 GHG Reduction Strategy	19
Chapter 4 Data Quality Management.....	20
4.1 Data Quality Analysis.....	20
4.2 Uncertainty Assessment.....	21
Chapter 5 Baseline Year	24
5.1 Baseline Year Selection.....	24
5.2 Recalculation of Baseline Year	24
Chapter 6 Verification	25
6.1 Purpose of Verification.....	25
6.2 Internal Verification	25
6.3 External Verification	25
Chapter 7 Responsibility, Purpose, and Format of the Report....	26
7.1 Responsibility of the Report.....	26
7.2 Purpose of the Report	26

7.3 Format of the Report	26
7.4 Access and Distribution of the Report	26
7.5 Issuance and Management of the Report.....	26
Chapter 8 References	27

Chapter 1: Organization Overview

1.1 Preface

The sustainable development of an enterprise is founded upon sound management systems and corporate governance. Asia Union Electronic Chemical Corporation (hereinafter referred to as AUECC) continuously focuses on establishing and improving its internal systems. Through ongoing optimization, AUECC aims to enhance global operations and corporate governance practices toward long-term sustainability.

As a responsible global citizen, AUECC complies with the ISO 14064-1:2018 standard by establishing a systematic greenhouse gas (GHG) inventory process. Based on the inventory results, emission reduction plans are formulated to manage GHG emissions scientifically and effectively.

1.2 Company Profile

Founded in 1998, AUECC is dedicated to advancing the development of high-purity chemical supply chains for the microelectronics industry. With production facilities in Taiwan and the United States, AUECC demonstrates leadership in high-purity chemical manufacturing, quality control, and logistics.

Beyond pursuing advancements in production technology, AUECC is also dedicated to providing safer, cleaner, and more environmentally responsible operations. Compliance with regulations and customer expectations is not the endpoint, but rather the minimum standard we hold ourselves to.

We believe that only through constant improvement can excellence be achieved. At AUECC, safety, hygiene, and environmental protection are non-negotiable principles upheld every day.

1.3 Policy Statement

Climate and environmental degradation caused by greenhouse gas emissions is becoming increasingly severe. As a member of the global community and in fulfillment of our corporate responsibility for environmental protection, AUECC commits to conducting annual GHG inventories.

By thoroughly understanding the company's GHG emissions and implementing reduction plans based on inventory results, we aim to support the long-term sustainability of our operations.

Approved by:

Chapter 2: Organizational Boundary

2.1 AUECC Organizational Structure

To ensure the effective implementation of GHG inventory tasks, AUECC Dafa Plant has established a Greenhouse Gas Implementation Task Force. The roles, responsibilities, and authorities of personnel are defined in writing, assigned, communicated, and clearly understood.

The organizational structure of the AUECC Dafa Plant's GHG Implementation Task Force is illustrated in Figure 2.1-1.

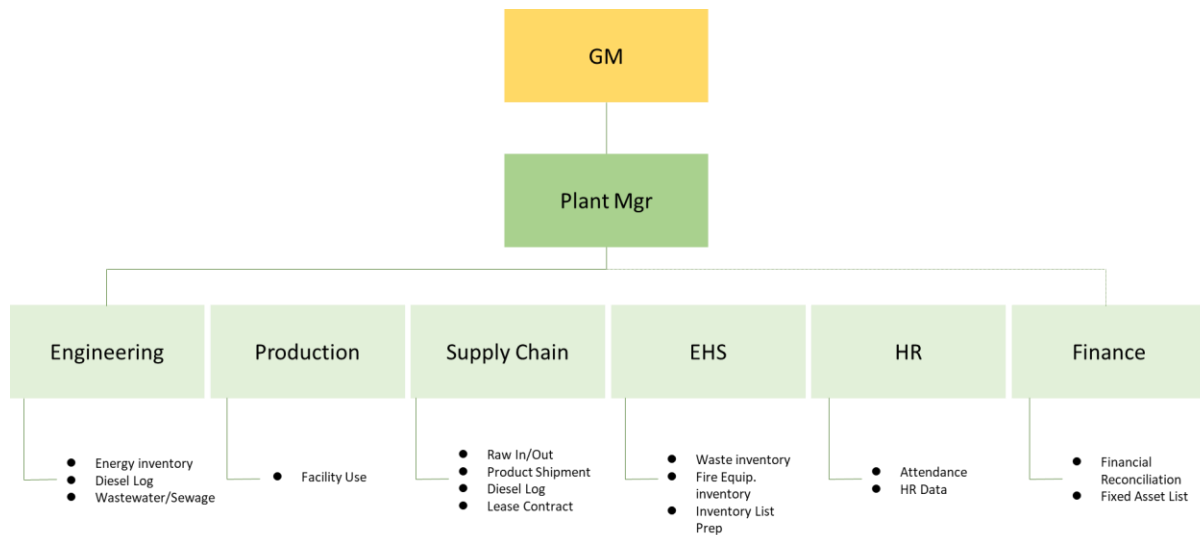


Figure 2.1-1 Organizational Structure of AUECC Dafa Plant's GHG Implementation Task Force

2.2 Organizational Boundary

2.2.1 Organizational Boundary Setting Method

This report defines the organizational boundary in accordance with the ISO 14064-1:2018 standard and the GHG Protocol guidelines. The “Operational Control Approach” is adopted, whereby 100% of the emissions from facilities under the company’s operational control are accounted for.

2.2.2 Inventory Boundary

This report applies to the Dafa Plant of Asia Union Electronic Chemical Corporation (hereinafter referred to as AUECC Dafa Plant), located at No. 31, Jianye Rd., Daliao District, Kaohsiung City, Taiwan. Under the operational control approach, the organizational boundary encompasses all managed processes and facilities, including office areas, production process areas, and warehouses. All emission sources within these areas are included in the inventory. The plant location and boundary maps are shown in Figures 2.2-1 and 2.2-2.



Figure 2.2-1 Location of AUECC Dafa Plant
(Source: Google Maps, captured on 09/30/2024)



Figure 2.2-2 Boundary of AUECC Dafa Plant
(Source: Google Maps, captured on 09/30/2024)

2.2.3 Plant Layout Diagram

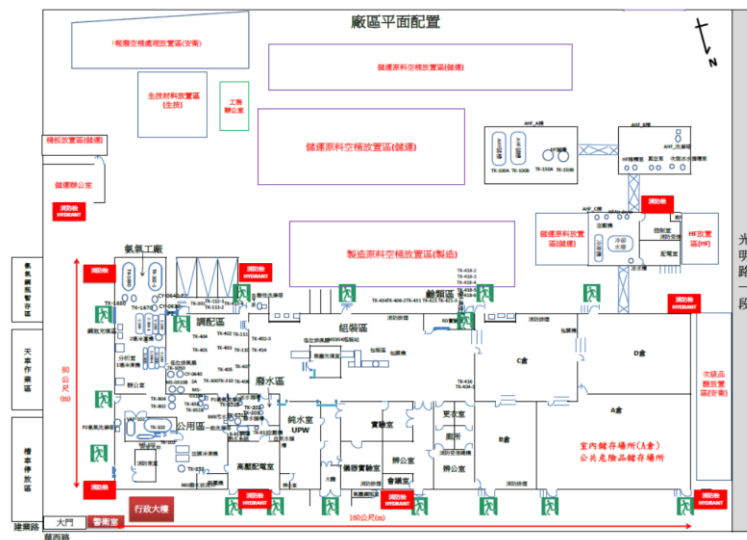


Figure 2.2-3 Layout of AUECC Dafa Plant

Chapter 3: Reporting Boundary and Emissions

3.1 Definition of Boundary and Calculation Principles

To effectively manage GHG emission sources, this report follows the ISO 14064-1:2018 standard. The inventory scope includes all GHG emissions generated within the operational boundary of AUECC Dafa Plant from January 1 to December 31, 2023.

The reporting boundary includes direct GHG emissions (Category 1) and indirect GHG emissions (Categories 2–6). The seven types of greenhouse gases covered are:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF₆)
- Nitrogen trifluoride (NF₃)

This is the company's first year conducting a full Categories 1–6 GHG inventory; therefore, no changes to emission sources (e.g., additions, removals, decommissions) occurred.

3.2 Significance Assessment Criteria

To assess significance, the company considered data accessibility, accuracy, and the relative magnitude of GHG emissions. Each indirect emission category was scored based on three factors:

- A: Activity Data Quality
- B: Emission Factor Quality
- C: Frequency of Occurrence

Scores for each item are calculated as $A \times B \times C$. Any item with a score of 9 or above is deemed material and included in the inventory. If any emission sources within the boundary are excluded, justifications will be provided.

Table 3.2-1 Materiality Assessment Criteria

Score	0	1	2	3
Activity Data Quality (A)	N/A	Self-assessed / No data available	Indirect measurements/ statistics/ surveys	Continuous monitoring/ receipts
Emission Factor Quality (B)	N/A	International factor / No reference	National factor	Site-specific / mass balance / peer facility / manufacturer / regional factor

Frequency of Occurrence (C)	N/A	Less than once per quarter	Weekly or monthly	Daily
------------------------------------	-----	----------------------------	-------------------	-------

Table 3.2-2 Significance Assessment Results

Category	Indirect Emission Activity	Activity Data Quality (A)	Factor Quality (B)	Occurrence/Usage Frequency (C)	Significance (A×B×C)	Quantified or Not
1.1 Stationary Combustion						Disclosure Required
1.2 Mobile Combustion						
1.3 Fugitive Emissions						
1.4 Direct emissions from anthropogenic systems						
1.5 Direct emissions and removals from LULUCF						
2.1 Purchased Electricity	Emissions from purchased electricity	3	2	3	18	Yes
2.2 Secondary Energy	None	0	0	0	0	No
3.1 Upstream Transportation	Emissions from external inspection, chemical products, and service transportation during the reporting year	3	2	2	12	Yes
3.2 Downstream Transportation	Emissions from the transportation of products and services during the reporting year	3	2	2	12	Yes
3.3 Employee Commuting	Emissions from employee commuting, including cars, motorcycles, and public transportation	3	2	3	18	Yes
3.4 Customer and Visitor Transportation	Emissions from customer and visitor travel, including land, sea, and air transportation, such as business trips using public transport	1	2	2	4	No
3.5 Business Travel	Emissions from business travel of employees, customers, and visitors	3	2	2	12	Yes
4.1 Purchased electricity for goods	Indirect carbon emissions from electricity (upstream	3	2	3	18	Yes

Category	Indirect Emission Activity	Activity Data Quality (A)	Factor Quality (B)	Occurrence/Usage Frequency (C)	Significance (A×B×C)	Quantified or Not
	supply chain emissions of electricity suppliers)					
4.2 Purchased energy for goods	Indirect carbon emissions from secondary energy	0	0	0	0	No
4.3 Fuel for goods	Indirect carbon emissions from diesel and gasoline (upstream supply chain emissions of fuel suppliers)	3	2	2	12	Yes
4.4 Resources for goods	Tap water and others	3	2	3	18	Yes
4.5 Primary raw materials for goods	Chemical raw materials (e.g., sulfuric acid, nitric acid, hydrofluoric acid, hydrochloric acid, and phosphoric acid)	3	2	2	12	Yes
4.6 Auxiliary raw materials for goods	Other cleaning supplies, equipment consumables, etc.	3	2	1	6	No
4.7 Packaging materials for goods	Packaging materials (e.g., pallets)	3	1	1	3	No
4.8 Services – non-recyclable waste	Treatment of non-recyclable waste generated during operations (e.g., household waste incineration)	3	2	2	12	Yes
4.8 Services – recyclable waste	Treatment of recyclable waste generated during operations	3	2	2	12	Yes
4.9 Capital goods for goods	Emissions generated during the manufacturing and processing of capital goods and related activities	0	0	0	0	No
4.10 Services – leased assets	Leased assets (e.g., outsourced forklifts)	3	2	1	6	No
4.11 Services – others	Security services	3	0	1	0	No
5.1 Product processing	Emissions from all downstream reprocessing procedures	0	0	0	0	No

Category	Indirect Emission Activity	Activity Data Quality (A)	Factor Quality (B)	Occurrence/Usage Frequency (C)	Significance (A×B×C)	Quantified or Not
5.2 Product use	Emissions from all downstream product usage procedures	0	0	0	0	No
5.3 Downstream leasing	Emissions from all assets leased to other businesses	0	0	0	0	No
5.4 End-of-life treatment of products	Emissions from waste generated after the product reaches downstream, including end-of-life disposal handled by customers	0	0	0	0	No
5.5 Investments	None	0	0	0	0	No
6.1 Maintenance and construction	Contracted maintenance and construction	0	0	0	0	No

3.2.1 Direct GHG Emissions (Category 1)

1. Category 1 emissions from company-owned or controlled sources include:
 - (1). Stationary Combustion: Emergency diesel generator
 - (2). Mobile Combustion: Not included in quantification
 - (3). Process Emissions: None
 - (4). Fugitive Emissions: From refrigerants (e.g., air conditioners, portable air conditioners, water coolers, chillers, refrigerators), septic tanks, fire extinguishers, and gas circuit breakers
 - (5). Land-use Change: None
2. Exclusion Justifications:
 - (1). Three company vehicles are assigned to other sites and used outside the Dafa Plant's reporting boundary.
 - (2). The production process involves purification only, with no combustion or direct GHG emissions.
 - (3). A vending machine on site is operated by a third party and is excluded.

3.2.2 Energy Indirect GHG Emissions (Category 2)

Includes emissions from purchased electricity consumed during operations.

3.2.3 Other Indirect GHG Emissions (Categories 3–6)

- (1) Category 3.1 Upstream Transportation and Distribution
Emissions from transporting externally sourced chemical products via road and sea freight.
- (2) Category 3.2 Downstream Transportation and Distribution
Emissions from transporting products to customers via domestic land and sea routes.
- (3) Category 3.3 Employee Commuting
Includes cars, motorcycles, and electric scooters.
- (4) Category 3.4 Customer and Visitor Travel
No reliable records; excluded from quantification.
- (5) Category 3.5 Business Travel
Includes travel by car, high-speed rail, and airplane for insured employees.
- (6) Category 4.1 Purchased Electricity
Purchased Electricity (Upstream Footprint)
- (7) Category 4.2 Purchased Secondary Energy
None.
- (8) Category 4.3 Fuel Supply Chain
Includes upstream diesel fuel emissions.
- (9) Category 4.4 Water Supply Chain
Emissions from purchased municipal water
- (10) Category 4.5 Key Raw Materials
The top five raw chemicals (e.g., sulfuric acid, nitric acid, hydrofluoric acid, hydrochloric acid, phosphoric acid) comprise over 85% of total raw material usage.
- (11) Category 4.6 Auxiliary Materials
Not quantified due to data limitations.
- (12) Category 4.7 Packaging Materials
Not quantified due to data limitations.
- (13) Category 4.8 Non-Recyclable Waste Disposal
Emissions from the incineration of operational waste.
- (14) Category 4.9 Recyclable Waste Treatment
Includes treatment of hazardous waste.
- (15) Category 4.10 Capital Goods
No qualifying capital goods; excluded.
- (16) Category 4.11 Leased Assets
Electric forklifts leased; emissions counted in Category 2.
- (17) Category 4.12 Other Services
Security staff emissions excluded due to small proportion.
- (18) Category 5
No downstream usage data; excluded.
- (19) Category 6
No contracted maintenance or construction; excluded.

3.3 Calculation Principles

The company primarily adopts the **Emission Factor Method** to calculate greenhouse gas emissions. The general formula used is:

$$\text{Activity Data} \times \text{Emission Factor} \times \text{Global Warming Potential (GWP)}$$

All calculated results are converted into **carbon dioxide equivalent (CO₂e)** and expressed in **metric tons (tCO₂e)**.

- Activity data are converted to appropriate units (e.g., tons, kiloliters, kWh).
- Emission factors are chosen based on the most relevant unit and data source.
- GWP values are based on the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6, 2021)

In addition to emission factor calculations, mass balance methods are used for:

- **Refrigerants:** GHG emissions are calculated based on the original refrigerant charge × equipment leakage rate × GWP. Leakage rates are derived from operational emission factors in the IPCC 2006 guidelines. When original charge amounts are not available, data from comparable equipment is used.
Note: For refrigerants regulated under the Montreal Protocol (e.g., R22), only identification and documentation are conducted; emissions are not included in the total.
- **Fire Extinguishers:** For existing CO₂ fire extinguishers, emissions are estimated based on the number of extinguishers purchased or used during the reporting year and their actual filling or discharge volume.
- **Septic Tanks:** CH₄ emissions are calculated using the methane emission factor published in the EPA's GHG Emission Management Table (Version 6.0.4). The formula applied is: BOD emission factor × average sewage concentration × working days × (personnel daily working hours × wastewater generation per hour [L/h]) × septic tank treatment efficiency.)
- **Gas-Insulated Switchgear (SF₆):** Emissions are estimated based on the original gas weight × average annual leakage rate × GWP.

Table 3.3-1 Annual Leakage Rates of Refrigeration and Air Conditioning Equipment

IPCC Name	Emission Factor (%*) Emission Factors(x) (% of initial charge/year)	Facility Equipment Leakage Rate (%)
Domestic Refrigeration	$0.1 \leq x \leq 0.5$	0.3
Stand-alone Commercial Applications	$1 \leq x \leq 15$	8
Chillers	$2 \leq x \leq 15$	8.5
Residential and Commercial A/C, including Heat Pumps	$1 \leq x \leq 10$	5.5
Mobile A/C	$10 \leq x \leq 20$	15

3.4 Emission Factor Selection, Management, and Revisions

3.4.1 Principles for Selecting Emission Factors

The following hierarchy is adopted when selecting emission factors to ensure data accuracy and relevance:

- 1) Emission factors developed by the company through mass balance or direct measurement
- 2) Emission factors provided by suppliers
- 3) Emission factors from facilities with similar processes or equipment
- 4) Emission factors published by regional governmental authorities
- 5) Emission factors derived from national studies and publications
- 6) Emission factors from international organizations or research institutions

3.4.2 Emission Factor Management

The following data sources were referenced for emission factors used in this report:

- 1) Taiwan Ministry of Environment (MOENV) GHG Emission Factor Management Table, Version 6.0.4
- 2) Bureau of Energy, Ministry of Economic Affairs – 2023 national electricity emission factor
- 3) Carbon footprint databases, including MOENV's Product Carbon Footprint Information Platform
- 4) IPCC 2006 Guidelines
- 5) IPCC AR6 (2021) for GWP values
- 6) Detailed factors are shown in Table 3.4-1

Table 3.4-1: GHG Emission Factors Used by the Organization

Source	Factor Name	Emission Factor	Unit
MOENV v6.0.4	Stationary Source – Diesel (CO ₂)	2.6060317920	kg(CO ₂)/liter
MOENV v6.0.4	Stationary Source – Diesel (CH ₄)	0.0001055074	kg(CH ₄)/liter
MOENV v6.0.4	Stationary Source – Diesel (N ₂ O)	0.0000211015	kg(N ₂ O)/liter
MOENV v6.0.4	Mobile Source – Diesel (CO ₂)	2.6060317920	kg(CO ₂)/liter
MOENV v6.0.4	Mobile Source – Diesel (CH ₄)	0.0001371596	kg(CH ₄)/liter
MOENV v6.0.4	Mobile Source – Diesel (N ₂ O)	0.0001371596	kg(N ₂ O)/liter
MOENV v6.0.4	HCFC-22(HFCs)	1.0000000000	ton(HFCs)/ton

Source	Factor Name	Emission Factor	Unit
MOENV v6.0.4	HFC-134a/R-134a(HFCs)	1.0000000000	ton(HFCs)/ton
MOENV v6.0.4	HFC-32/R-32 (HFCs)	1.0000000000	ton(HFCs)/ton
MOENV v6.0.4	R-410A(HFCs)	1.0000000000	ton(HFCs)/ton
MOENV v6.0.4	R-600A, (CH ₃)CHCH ₃	1.0000000000	ton(HFCs)/ton
BOE (2023)	Purchased Electricity Emission Factor	0.4940000000	kg(CO ₂ e)/kWh
MOENV CFP	Heavy truck (business usage, diesel)	0.1310000000	kg(CO ₂ e)/ tkm
MOENV CFP	Transport, ocean freighter, residual fuel oil powered	0.0198000000	kg(CO ₂ e)/ tkm
MOENV CFP	Private passenger car (gasoline)	0.1150000000	kg(CO ₂ e)/pkm
MOENV CFP	Motorcycle(gasoline)	0.0951000000	kg(CO ₂ e)/pkm
MOENV	Electric Scooters	0.0252000000	kg(CO ₂ e)/pkm
MOENV CFP	Air transport services of passengers (TSA-KNH)	0.2810000000	kg(CO ₂ e)/pkm
Taiwan High-Speed Rail	HSR Passenger Transport	32.0000000000	公克(CO ₂ e)/pkm
MOENV CFP	General waste clearance transport, diesel powered	1.3100000000	kg(CO ₂ e)/tkm
MOENV CFP	Waste incinerated services (Gangshan refuse incineration plant)	360.0000000000	kg(CO ₂ e)/ton
SimaPro	Market for spent solvent mixture	1.2200000000	kg(CO ₂ e)/kg
MOENV CFP	Taiwan tap water (2020)	0.2330000000	kg(CO ₂ e)/m ³
MOENV CFP	Wastewater treatment services (Southern Taiwan Science Park Bureau, Ministry of Science and Technology Kaohsiung Park wastewater treatment plant)	0.3000000000	kg(CO ₂ e)/m ³
MOENV CFP	Indirect electricity carbon	0.0973000000	kg(CO ₂ e)/kWh

Source	Factor Name	Emission Factor	Unit
	footprint (2021)		
MOENV CFP	Concentrated sulfuric acid	0.2890000000	kg(CO ₂ e)/kg
MOENV CFP	Nitric acid, 98%	1.3700000000	kg(CO ₂ e)/kg
MOENV CFP	Hydrochloric acid, 37%	1.6900000000	kg(CO ₂ e)/kg
MOENV CFP	Phosphoric acid, 85%	4.6500000000	kg(CO ₂ e)/kg
MOENV CFP	Hydrofluoric acid, 49%	3.9400000000	kg(CO ₂ e)/kg
MOENV CFP	Diesel oil (unburnt, 2021)	0.6730000000	kg(CO ₂ e)/liter

3.4.3 Explanation of Emission Factor Changes

Should emission factor values change in future reporting years—due to updates from IPCC, MOENV, or the Bureau of Energy—the organization will:

- Recalculate all affected GHG data
- Document and disclose differences between old and new factors

As this is the base year (2023), no changes to emission factors have occurred in this report.

3.5 Direct Greenhouse Gas Emissions (Category 1)

This section presents the calculation of direct greenhouse gas emissions originating from sources owned or controlled by the organization. The emission sources and relevant details are listed in Table 3.5-1.

Table 3.5-1 Category 1 GHG Emission Sources

Emission Type	Facility	Emission Source	GHG Type(s)	Data Source
Stationary	Backup generator	Diesel combustion	CH ₄ , CO ₂ , N ₂ O	Fuel receipts
Mobile	Fleet vehicles (operations)	Diesel combustion	CH ₄ , CO ₂ , N ₂ O	Fuel receipts
Fugitive	Chillers, refrigerators, liquid cooling systems, air conditioning systems, fire extinguishers, gas circuit breakers	Refrigerants (HCFC-22, HFC-134a/R-134a, HFC-32/R-32, R-410A, R-600A), CO ₂ , SF ₆	Equipment nameplate, supplier data, refill records	Nameplate charge amount or amount provided by the supplier; Actual amount charged or replaced for fire extinguishers; Actual amount charged or replaced for circuit breakers

Based on the 2023 inventory, the company's total Category 1 emissions amounted to 152.9414 metric tons of CO₂e. Since the company does not operate biomass combustion or biogenic emission sources, biogenic CO₂ emissions are reported as zero.

Table 3.5-2 Emissions of Each Greenhouse Gas (Category 1)

GHG Type	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃	Total (tCO ₂ e/year)
Emissions	50.2011	11.9387	0.6552	90.0702	0.0000	0.0762	0.0000	152.9414

3.6 Indirect Greenhouse Gas Emissions (Category 2)

This section presents the indirect GHG emissions resulting from purchased electricity consumption by the organization. The emission source and calculation basis are summarized below.

Table 3.6-1 Category 2 Emission Source

Emission Type	Source	Data Source
Purchased Electricity	Electricity used during operations (2023)	Electricity bills and utility statements

Based on the 2023 inventory, Category 2 emissions totaled 3,564.8858 metric tons of CO₂e. The emissions of each type of greenhouse gas are shown in Table 3.6-2.

Table 3.6-2 Category 2 GHG Emissions by Gas Type

GHG Type	CO ₂ e	Total (tCO ₂ e/year)
Emissions	3,564.8858	3,564.8858

3.7 Other Indirect Greenhouse Gas Emissions (Categories 3–6)

This section presents emissions from upstream and downstream value chain activities not directly owned or controlled by the organization.

Based on the 2023 inventory results, total emissions from Categories 3 to 6 were 77,298.4748 metric tons of CO₂e. The emissions of each type of greenhouse gas are shown in Table 3.7-1.

Table 3.7-1 Summary of Category 3-6 GHG Emissions

Scope Category	Category 3	Category 4	Category 5	Category 6	Total (tCO ₂ e/year)
Emissions	2,697.1916	74,601.2832	0.0000	0.0000	77,298.4748

3.8 Total Greenhouse Gas Emissions

In 2023 (base year), the total GHG emissions from AUECC Dafa Plant amounted to 81,016.302 metric tons of CO₂e. The emissions by category are as follows:

- **Category 1** (Direct emissions): 152.9414 tCO₂e (0.19%) – Primarily from fugitive emissions.
- **Category 2** (Energy indirect emissions): 3,564.8858 tCO₂e (4.40%) – Resulting from purchased electricity
- **Category 3** (Other indirect emissions: transportation, commuting, business travel): 2,697.1916 tCO₂e (3.33%)
- **Category 4** (Other indirect emissions: purchased goods, utilities, and waste treatment): 74,601.2832 tCO₂e (92.08%)
- **Categories 5 and 6:** 0 tCO₂e (0.00%)

The company's greenhouse gas emission sources for Categories 1 to 6 are listed in Table 3.8-1, and the emission results for each greenhouse gas category are presented in Table 3.8-2.

Table 3.8-1 Total Greenhouse Gas Emissions

EMISSIONS		Notes	Emissions (tCO ₂ e/year)
Category 1: Direct GHG Emissions and Removals			152.9414
1.1	Stationary Combustion	Diesel engine	1.4988
1.2	Direct emissions and removals from industrial process	None	0.0000
1.3	Mobile Combustion	Diesel engine	49.4112
1.4	Direct fugitive emissions from anthropogenic systems	Refrigerant, gas circuit breaker, CO ₂ fire extinguisher, septic tank	102.0314
1.5	Direct emissions and removals from LULUCF	None	0.0000
Biomass-related direct emissions			0.0000
Category 2: Indirect GHG Emissions from Imported Energy			3,564.8858
2.1	Purchased Electricity	Electricity use	3,564.8858
2.2	Secondary Energy	Greenhouse gas emissions generated from purchased energy (e.g., steam, heat, cooling, high-pressure air)	0.0000
Category 3: Indirect GHG Emissions from Transportation			2,697.1916
3.1	Upstream Transportation	Transportation of purchased raw materials, supplies, including waste removal	1,834.8399
3.2	Downstream Transportation	Product delivery	766.9542

EMISSIONS		Notes	Emissions (tCO ₂ e/year)
3.3	Employee Commuting	Personal and public transport	84.8912
3.4	Customer and Visitor Transportation	Cars, motorcycles, public transit	0.0000
3.5	Business Travel	Land, air, rail	10.5063
Category 4: Indirect GHG Emissions from Products Used by the Organization			74,601.2832
4.1	Purchased Goods	Raw materials and supplies for production; lifecycle emissions from purchased energy not included in Category 1 or 2	74,468.2362
4.2	Capital Goods	Equipment purchased during the inventory year	0.0000
4.3	Upstream Leased Assets	Leased assets emissions categorized under Category 1 and 2	0.0000
4.4	Waste Treatment	GHG emissions from waste treatment	133.0470
4.5	Other Services	Emissions from consulting, cleaning, maintenance, mail, banking, etc.	0.0000
Category 5: Indirect GHG Emissions from Use of Sold Products			0.0000
5.1	Use of Sold Products	Emissions during downstream processing or use	0.0000
		Emissions generated during the sale and use phase of products	0.0000
5.2	End-of-Life Treatment	Emissions from final disposal of products	0.0000
5.3	Downstream Leased Assets	Emissions from items leased out by the company	0.0000
5.4	Investments	Emissions related to private or public financial investments	0.0000
Category 6: Other Indirect GHG Emissions Not Included Above			0.0000

Table 3.8-2 2023 Greenhouse Gas Emissions by Category and Gas Type for the Company

GHG by category (tCO ₂ e/year)	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃	CO ₂ e	Total emission	Percentage (%)
Category 1	50.2011	11.9387	0.6552	90.0702	0.0000	0.0762	0.0000	0.0000	152.9414	0.19%
Category 2								3,564.8858	3,564.8858	4.40%
Category 3								2,697.1916	2,697.1916	3.33%
Category 4								74,601.2832	74,601.2832	92.08%
Category 5								0.0000	0.0000	0.00%
Category 6								0.0000	0.0000	0.00%
Total	50.2011	11.9387	0.6552	90.0702	0.0000	0.0762	0.0000	80,863.3606	81,016.302	100.00%
Percentage (%)	0.06%	0.01%	0.00%	0.11%	0.00%	0.00%	0.00%	99.81%	100.00%	

3.9 GHG Reduction Strategy

AUECC Dafa Plant is committed to environmental responsibility and actively pursues strategies to reduce greenhouse gas emissions. Based on the results of the 2023 GHG inventory, Category 2 emissions (from purchased electricity) far exceed Category 1. Therefore, energy-saving measures are the most effective reduction strategy. Future plans will focus on reducing electricity use in the plant and offices to lower greenhouse gas emissions. AUECC is committed to workplace safety, employee respect, environmental responsibility, and ethical business practices — both within the company and across its supply chain. To achieve social responsibility and sustainable growth, we expect our suppliers to uphold the same values.

Environmental responsibility is essential to producing high-quality products. AUECC and its suppliers must identify and minimize environmental impact, protect public health and safety, and reduce harm to communities, ecosystems, and natural resources.

To meet social responsibility and succeed in the market, AUECC, its suppliers, and agents must follow high ethical standards, including: integrity, no improper gain, transparency, protection of intellectual property, fair business and competition, whistleblower protection, responsible mineral sourcing, and data privacy.

Suppliers should adopt or establish management systems aligned with the RBA (Responsible Business Alliance) Code of Conduct to:

- (a) comply with relevant laws, regulations, and customer requirements,
- (b) meet RBA standards, and
- (c) identify and manage risks related to this Code.

Chapter 4 Data Quality Management

4.1 Data Quality Analysis

4.1.1 Emission Source Data Quality

- To ensure data accuracy throughout the entire inventory process, all responsible units must clearly specify the data sources they provide. Examples include relevant purchase orders, flow meter records, requisition logs, and computerized database (report) records. Any supporting documents that can verify and substantiate data reliability should be investigated and retained by the respective units for future audit and traceability purposes.
- The data provided by each responsible unit is scored according to the data error grade system outlined in Table 4.1-1. The error grade for emission source data is calculated using the formula $A1 \times A2 \times A3$, and the resulting score is classified according to the grading criteria in Table 4.1-2.

Table 4.1-1 Data Quality Management – Error Grade Scoring Table

Data Quality Item	Score 1	Score 2	Score 3
Activity Data Type (A1)	Activity data from automated continuous measurement	Activity data from intermittent measurement or financial accounting data	Activity data estimated or derived
Activity Data Reliability (A2)	Externally calibrated instruments or supported by multiple datasets	Internally calibrated instruments or verified by accounting certification	No calibration or data aggregation records
Emission Factor Type (A3)	Emission factors obtained from measurements, mass/energy balance, or process/equipment-specific experience	Emission factors provided by manufacturers or regional emission factors	National or international default emission factors

Table 4.1-2 Data Quality Management – Error Grade Evaluation Criteria

Grade	Scoring Range
Grade 1	$X < 10$ points
Grade 2	$10 \leq X < 19$ points
Grade 3	$19 \leq X \leq 27$ points

4.1.2 Emission Source Data Quality Evaluation Results

The consolidated results of the data error grade assessment for this inventory are summarized in Table 4.1-3.

Table 4.1-3 Summary of Emission Source Data Quality Grades for the Company's GHG Inventory

Data Score	Data Quality Grade
13.13	Grade 2

4.2 Uncertainty Assessment

4.2.1 Uncertainty Quantification Method

In accordance with the ISO 14064-1:2018 standard, AUECC conducted an uncertainty assessment of activity data and emission factors. The quantification of uncertainty primarily adopts the First-Order Error Propagation Method (FOEPM). This method involves quantifying the uncertainty of activity data and emission factors for each greenhouse gas from individual emission sources, and then evaluating the overall uncertainty based on the weighted proportion of total emissions.

4.2.2 Sources of Uncertainty

- Assessment of Uncertainty in Activity Data

For emission sources at AUECC's Dafa Plant, activity data obtained through instrumentation such as fuel flow meters and electricity meters were evaluated for uncertainty based on the maximum permissible error stated in calibration reports, as well as statutory tolerances defined in national standards and specifications. The expanded uncertainty was calculated by multiplying the error percentage by a coverage factor of 2, using the following formula:

$$\text{Uncertainty range of activity data} = \pm (\text{Error} [\%]) \times \text{Expansion factor} = \pm (\text{Error} [\%]) \times 2$$

- Diesel Activity Data:

The uncertainty was derived using the Bureau of Standards, Metrology and Inspection (BSMI) technical specification "Verification and Inspection Technical Regulations for Oil Flow Meters (CNMV 117, 3rd Edition)", section 3.12, which specifies a maximum permissible error of 0.5%. Applying a coverage factor of 2 results in an uncertainty of $\pm 1.0\%$ for diesel activity data.

- Electricity Activity Data:

The uncertainty was determined based on BSMI's "Verification and Inspection Technical Regulations for Electric Energy Meters (CNMV 46, 6th Edition)", section

6.1.1.2. The accuracy class of the electricity meter (watt-hour meter) was identified as Class 0.5 through visual inspection, and assuming a power factor of 1.0, the tolerance is 0.5%. After applying a coverage factor of 2, the uncertainty for electricity activity data is set at $\pm 1.0\%$.

- Assessment of Uncertainty in Emission Factors

- Diesel Emission Factor:

The uncertainty was referenced from the *GHG Emission Factor Management Table, Version 6.0.4*, specifically using the uncertainty values for CO₂ emission factors from the *IPCC 2006 Guidelines*.

- Electricity Emission Factor:

The uncertainty was evaluated based on the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reporting Instructions*, which recommend applying a **7% uncertainty** for emission factors used in the manufacturing and energy sectors.

4.2.3 GHG Uncertainty Analysis Conclusion

AUECC conducted a quantitative uncertainty assessment for Category 1 and Category 2 emission sources using the aforementioned methodology. The results of the GHG uncertainty quantification for the year 2023 are summarized in Table 4.2-1.

Table 4.2-1 Quantitative Assessment Results of Greenhouse Gas Emissions Uncertainty

Confidence Interval	Lower Bound (95% CI)	Upper Bound (95% CI)
Quantified Result	-6.730%	+ 6.730%

For Category 3 to Category 6 emission sources, a qualitative approach was adopted to evaluate their uncertainty. A weighted average was calculated based on the data quality score of individual emission sources and the total emissions of each category. The resulting uncertainty score was then classified according to the evaluation criteria shown in Table 4.2-2, with the grading definitions listed in Table 4.2-3, and the final assessment results presented in Table 4.2-4.

Based on these results, the company will enhance its GHG data quality management practices and strive to improve the overall uncertainty grading level.

Table 4.2-2 Qualitative Uncertainty Levels for Activity Data and Emission Factors

Data Quality Item	Score 1	Score 2	Score 3
Activity Data Type (A1)	Activity data from automated continuous measurement	Activity data from intermittent measurement or financial accounting data	Activity data is estimated
Activity Data Reliability (A2)	Externally calibrated or supported by multiple data sets	Internally calibrated or verified by an accounting certification	No instrument calibration or data aggregation records
Emission Factor Type (A3)	Emission factors obtained from measurements, mass/energy balance, or process/equipment-specific experience	Emission factors provided by manufacturers or regional emission factors	National or international default emission factors

Table 4.2-3 Uncertainty Assessment Scoring Criteria

Grade	Scoring Range
Grade 1	Qualitative uncertainty score < 10
Grade 2	$10 \leq \text{Qualitative uncertainty score} < 19$
Grade 3	$19 \leq \text{Qualitative uncertainty score} \leq 27$

Table 4.2-4 Qualitative Uncertainty Scoring Results

Category	Emissions (tCO ₂ e/year)	Uncertainty Score	Uncertainty Grade
Category 3	2,697.1916	0.57	Grade 1
Category 4	74,601.2832	12.28	Grade 2
Category 5	-	-	-
Category 6	-	-	-

Note: The uncertainty grade of emissions (U) is calculated as the product of the uncertainty grade of activity data (A1), the uncertainty grade of emission factors (A2), and the emission factor type grade (A3), expressed as: $U=A1 \times A2 \times A3$

Chapter 5 Baseline Year

5.1 Baseline Year Selection

The company adopts a fixed baseline year approach, selecting the year in which the company first conducted the Category 1 to 6 greenhouse gas inventory and third-party verification in accordance with the ISO 14064-1:2018 standard. The baseline year for this inventory is set as 2023 and the greenhouse gas emissions for this year are summarized in Table 5.1.

Table 5.1 Total Greenhouse Gas Emissions in the Baseline Year

GHG by Category (tCO ₂ e/year)	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃	CO ₂ e	Total Emissions	Percentage (%)
Category 1	50.2011	11.9387	0.6552	90.0702	0.0000	0.0762	0.0000	0.0000	152.9414	0.19%
Category 2								3,564.8858	3,564.8858	4.40%
Category 3								2,697.1916	2,697.1916	3.33%
Category 4								74,601.2832	74,601.2832	92.08%
Category 5								0.0000	0.0000	0.00%
Category 6								0.0000	0.0000	0.00%
Total	50.2011	11.9387	0.6552	90.0702	0.0000	0.0762	0.0000	80,863.3606	81,016.302	100.00%
Percentage (%)	0.06%	0.01%	0.00%	0.11%	0.00%	0.00%	0.00%	99.81%	100.00%	

5.2 Recalculation of Baseline Year

In future inventory years, if any of the following conditions occur and the resulting discrepancy reaches or exceeds 3% of the total emissions, the baseline year must be re-established and the baseline year greenhouse gas emissions recalculated:

- 1) Structural changes in the reporting boundary or organizational boundary (e.g., mergers, acquisitions, or divestitures)
- 2) Changes in calculation methods or emission factors.
- 3) Discovery of single or cumulative errors that are material in nature.

Chapter 6 Verification

6.1 Purpose of Verification

To enhance the credibility of the inventory results and ensure that the company's calculated greenhouse gas emissions are reliable, accurate, and fair, the company conducts both internal and third-party verifications. These verification processes aim to strengthen the completeness and accuracy of this inventory and increase the confidence of intended users in the greenhouse gas inventory results.

6.2 Internal Verification

To improve the quality of the company's greenhouse gas inventory report, an internal verification was conducted on October 29, 2024 (Year 113). The internal verification focused on the following:

- Verification Standard: ISO 14064-1:2018
- Verification Scope: All emission sources within the company's organizational boundary.

6.3 External Verification

The third-party verification of the company's 2024 greenhouse gas inventory was commissioned to BSI International Certification Co., Ltd. The verification agreement includes:

- Assurance Level: Reasonable assurance for Category 1 and Category 2 emissions (materiality threshold 5%); Limited assurance for Category 3 to Category 6 emissions
- Verification Standard: ISO 14064-1:2018
- Verification Year: 2023
- Verification Scope: Asia Union Electronic Chemical Corporation Dafa Plant

Chapter 7 Responsibility, Purpose, and Format of the Report

7.1 Responsibility of the Report

This report is prepared voluntarily and is not produced to comply with or fulfill any specific legal obligations.

7.2 Purpose of the Report

- 1) To internally manage the company's greenhouse gas performance and proactively respond to national and international trends.
- 2) To clearly disclose the company's greenhouse gas information and enhance the company's social image.
- 3) To provide specific stakeholders, such as government agencies, with information on the company's greenhouse gas emissions.

7.3 Format of the Report

This report is prepared in accordance with the requirements of ISO 14064-1:2018.

7.4 Access and Distribution of the Report

For those who wish to obtain this report or learn more about its content, please contact:

- Contact Unit: Environmental, Health & Safety Department, AUECC
- Contact Person: Mr. Yang Yi-chia
- Phone: +886-7-7878485 ext. 365
- Address: No. 31, Jianye Road, Daliao District, Kaohsiung City, Taiwan

7.5 Issuance and Management of the Report

- The issuance and management of this report follow the company's relevant procedures. The greenhouse gas inventory report is issued annually after the completion of the inventory and revised and reissued as necessary following third-party external verification.
- The report becomes effective upon issuance and remains valid until it is revised or withdrawn.

Chapter 8 References

- ISO 14064-1:2018 — Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals.
- 2023 Statistical Analysis of CO₂ Emissions from Fuel Combustion, Bureau of Energy, Ministry of Economic Affairs, Taiwan.
- Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard (Revised Edition) by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI).
- Greenhouse Gas Inventory Registration and Reporting Guidelines, Environmental Protection Administration, Executive Yuan, Taiwan.
- Verification and Inspection Technical Regulations for Electric Energy Meters (CNMV 46, 6th Edition), Bureau of Standards, Metrology and Inspection (BSMI), Taiwan.
- Verification and Inspection Technical Regulations for Oil Flow Meters (CNMV 117, 3rd Edition), Bureau of Standards, Metrology and Inspection (BSMI), Taiwan.
- Statistical Methods from the Intergovernmental Panel on Climate Change (IPCC) National Greenhouse Gas Inventories Guidelines.
- Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC).

Report No. : (TH24-687 / Version 1)

Greenhouse Gas Verification Report Opinion

THGHG24687-00

Verification Scop Asia Union Electronic Chemical Corporation, Dafa plant
No. 31, Jianye Rd., Daliao Dist., Kaohsiung City, Taiwan (R.O.C.)

Verification Criteria: ISO 14064-1 : 2018

Verification Objectives : According to ISO 14064-3:2019, AFNOR Asia Ltd. (AFNOR ASIA) confirms that the GHG statement (GHG inventory report) of the above-mentioned organization(s) is reported in accordance with the verification criteria agreed by both parties. AFNOR ASIA performs the verification with an objective and fair position and principle (relevant, complete, consistent, accurate, and transparent).

Data Period : January 01, 2023 to December 31, 2023 (The data being viewed is historical in nature)

Verification Data :	Direct GHG Emissions (Category 1):	152.9414	Ton CO₂e
	Energy Indirect GHG Emissions (Category 2):	3,564.8858	Ton CO₂e
	Indirect GHG Emissions (Category 3~6):	77,298.4748	Ton CO₂e

Global Warming Potential (GWP) : Refer to IPCC WGI 6th assessment report, 2021

Statement Basis : This statement must be interpreted as a whole with the following.
GHG Inventory Report (Version: R1, February 26, 2025)
GHG Inventory (Version: R1, February 26, 2025)

Materiality : 5% (Category 1 and Category 2)

Type of Opinion : ☒ Unqualified ☐ Qualified (see the subsequent page) ☐ Disclaim the issuance

Verification Conclusion: To confirm that the organization submits a GHG statement in accordance with the requirements of the verification criteria agreed by both parties, and fairly presents the GHG data and related information, which are consistent with the verification scope, objectives and criteria agreed by both parties.
Declares that the reasonable assurance level of the inventory data is Category 1 and Category 2.

Date of Issuance: May 24, 2025

APPROVED BY



Steven Huang
Director for Certification
ON BEHALF OF
AFNOR ASIA

113-2024/00

Report No. : (TH24-687 / Version 1)

Emissions Data for Each Category :

Category	Description of Content	GHG Emissions (Ton CO ₂ e)	Note
(Category 1) Direct GHG emissions	Stationary combustion, mobile combustion, direct fugitive emissions from the release of GHGs in anthropogenic systems	152.9414	
(Category 2) Indirect GHG emissions from imported energy	Imported electricity	3,564.8858	Location-based standard
(Category 3) Indirect GHG emissions from transportation	Upstream transport for goods, downstream transport and distribution for goods, employee commuting, business travel	2,697.1916	
(Category 4) Indirect GHG emissions from products used by organization	Purchased goods, transportation and disposal of waste	74,601.2832	
(Category 5) Indirect GHG emissions associated with the use of products from the organization	NS	NS	
(Category 6) Indirect GHG emissions from other sources	N/A	N/A	

Biomass Burning Emission : 0.0000 Ton CO₂e

Report No. : (TH24-687 / Version 1)

Other Related Verification Information

Organization Boundaries :	Operational control
GHG Type :	Carbon dioxide (CO ₂), Methane (CH ₄), Nitrous oxide (N ₂ O), Hydrofluorocarbon (HFCs), Perfluorocarbon (PFCs), Sulfur hexafluoride (SF ₆), Nitrogen trifluoride (NF ₃)
Purpose of Intended Use:	Voluntarily understanding greenhouse gas emissions status as the basis for reduction strategies. (This statement of responsibility applies only to the purpose of intended use mentioned above and not to any other purpose.)
Criteria For Significance of Indirect Emissions :	- Identified stakeholder requirements: ☐ Yes ☒ No - Identified regulation requirements : ☐ Yes ☒ No - Identified magnitude of emissions : ☐ Yes ☒ No - Others :
Purchased Power Factor:	Refer to the 2023 annual power factor announced by the Energy Administration, Ministry of Economic Affairs Taiwan on April 26, 2024
Data Sources :	☒ The primary data is collected from on-site operation activities. ☒ Category 3~6 emissions are calculated with estimated data. The secondary data sources are: Carbon Footprint Information Platform (MOENV, Taiwan), SimaPro ☐ Others :
Verification Method:	☒ On-site
Qualified Opinion :	No
Others :	No
Verification Date :	February 17-18, 2025 February 26-27, 2025
Report Date :	March 09, 2025



Certificate

Certificat

Report No. : (TH24-687 / Version 1)

Verification Team and Technical Review

Lead Verifier : Wen Yi, Yen

Signature : *Wen Yi Yen*

Independent Review : Yi-Ching Chen

Signature : *Nancy Chen*

Verification Processes

AFNOR ASIA is based on risk assessment methods and controls. Evidence collection procedures are including pre-trip assessment, on-site visits, interviews with site personnel, confirmation of documented evidence provided, sampling of emission data, evaluation of data management systems, confirming the collection and compilation of emission data, analysis between production and energy consumption, and confirmation of whether the terms of the agreement referred to are properly applied.

Roles and Responsibilities

The verified organization is responsible for preparing and submitting a GHG statement in accordance with the verification criteria. This responsibility includes the planning, implementation and maintenance of data management systems related to GHG declarations, GHG inventory and GHG inventory reports.

AFNOR ASIA provides independent third-party verification of the reported GHG emissions and issues verification opinions for the organizational GHG emissions. The verification team is independent and impartial, and there is no conflict of interest.

報告編號：(TH24-687 / 第 1 版)

溫室氣體查證報告意見書

THGHG24687-00

查證範圍： 聯仕電子化學材料股份有限公司大發廠
高雄市大寮區建業路 31 號

查證準則： ISO 14064-1：2018

查證目標： 法標國際根據 ISO14064-3：2019 標準，確認上述組織之溫室氣體聲明(溫室氣體盤查報告書)依據雙方協議之查證準則進行盤查並提出報告，法標國際以客觀公正的立場及原則(相關性、完整性、一致性、準確性、透明度)執行查證。

數據期間： 2023 年 01 月 01 日至 2023 年 12 月 31 日 (檢視的數據為歷史性質)

查證數據： 直接溫室氣體排放量(類別 1)： 152.9414 公噸 CO₂e
能源間接溫室氣體排放量(類別 2)： 3,564.8858 公噸 CO₂e
間接溫室氣體排放量(類別 3~6)： 77,298.4748 公噸 CO₂e

全球暖化潛勢值(GWP)：引用 IPCC 2021 年第 6 次評估報告。

聲明依據：本聲明必須與下列文件作為一個整體以進行解釋說明。

溫室氣體盤查報告(版次：R1；日期：2025 年 02 月 26 日)

溫室氣體盤查清冊(版次：R1；日期：2025 年 02 月 26 日)

實質性： 5% (類別 1 及類別 2)

意見類型： ☒ 不含保留意見 ☐ 含保留意見(請見附頁) ☐ 放棄簽發

查證結論： 確認組織依據雙方協議查證準則之要求提出溫室氣體聲明，並公正地呈現溫室氣體數據及相關資訊，與雙方協議的查證範圍、目標和準則一致。
聲明盤查數據之合理保證等級為類別 1 及類別 2。

本文件核發日期： 2025 年 05 月 24 日

APPROVED BY



Steven Huang
Director for Certification
ON BEHALF OF
AFNOR ASIA

報告編號：(TH24-687 / 第 1 版)

各類別排放量數據：

類別	內容說明	溫室氣體排放量 (公噸 CO ₂ e)	備註
(類別 1) 直接溫室氣體排放	固定式燃燒源、移動式燃燒源、 逸散性排放源	152.9414	
(類別 2) 輸入能源之間接溫 室氣體排放	電力	3,564.8858	所在地基準
(類別 3) 運輸之間接溫室氣 體排放	原物料上游運輸、產品下游運輸、 員工通勤、商務旅行	2,697.1916	
(類別 4) 組織使用的產品之 間接溫室氣體排放	購買產品、廢棄物清運與處理	74,601.2832	
(類別 5) 使用組織的產品之 間接溫室氣體排放	NS	NS	
(類別 6) 其他來源之間接溫 室氣體排放	N/A	N/A	

生質燃燒排放： 0.0000 公噸 CO₂e

報告編號：(TH24-687 / 第 1 版)

其他查證相關資訊

組織邊界：	營運控制權
溫室氣體類型：	二氧化碳(CO ₂)、甲烷(CH ₄)、氧化亞氮(N ₂ O)、氫氟碳化物(HFCs)、全氟碳化物(PFCs)、六氟化硫(SF ₆)、三氟化氮(NF ₃)
預期使用目的：	自願理解溫室氣體排放狀況做為減量策略依據。 (本聲明責任僅適用於上述預期使用目的，不適用其他任何目的。)
間接排放重大性準則：	- 已鑑別利害相關者要求： ☐ 是 ☒ 否 - 已鑑別法規要求： ☐ 是 ☒ 否 - 已鑑別排放量大小： ☐ 是 ☒ 否 - 其他說明：
電力係數：	引用 2024 年 04 月 26 日能源署公告之 2023 年度電力排碳係數
數據來源：	☒ 初級數據來源於現場營運活動的數據蒐集。 ☒ 類別 3~6 排放量計算為使用估算數據。 次級數據來源為：產品碳足跡資訊網(台灣), Simapro ☐ 其他說明：
查證方法	☒ 現場查證
保留意見：	無
其他：	無
查證作業實施日期：	2025 年 02 月 17-18 日 2025 年 02 月 26-27 日
報告日期：	2025 年 03 月 09 日



Certificate

Certificat

報告編號：(TH24-687 / 第 1 版)

查證團隊與技術審查

主導查證員： 顏文義

簽名：

獨立審查者： 陳怡靜

簽名：

查證程序

法標國際以風險評估方法及管制為基礎，證據蒐集程序包括：行前評估、現場訪視、與場址的人員訪談、確認所提供的文件證據、對排放數據進行抽樣、評估數據管理系統、確認排放數據的蒐集與彙總、生產與能源消耗之間的分析，並確認所參考的協議條款是否被適當應用。

角色與職責

受查組織責任方依據查證準則規定，負責準備並提出溫室氣體聲明。此項責任包括規劃、實施及維護與溫室氣體聲明有關的數據管理系統，溫室氣體盤查清冊和盤查報告確認。

法標國際對所報告的溫室氣體排放量提供獨立的第三方查證，出具本次查證組織型溫室氣體排放量之查證意見。查證團隊具獨立及公正性，不存在任何利益衝突。

113-2024/00