

Certificate

Inventory Standard **ISO 14064-1:2018**

Certificate Registr. No. **CF 50622083 0001**

Report No. **70370368 001**

Certificate Holder: **AVARY HOLDING (SHENZHEN) CO., LTD.**

27th Floor, Block A, Avary Times Building, No. 2038, Haixiu Road, Haibin Community, Xin'an Street, Bao'an District, Shenzhen City, 518101 Guangdong, P.R. China

Verification Site: **AVARY HOLDING (SHENZHEN) CO., LTD.**

- AVARY Site, Songluo Road, Yan Chuan Community, Yanluo Street, Bao'an District, Shenzhen City, Guangdong Province, China.

- Avary Times Center, No. 2038, Haixiu Road, Haibin Community, Xin'an Street, Bao'an District, Shenzhen City, Guangdong Province, China

- Shenzhen No. 2 Site, No.5, Niujiao Road, Yanchuan Community, Yanluo Street, Bao'an District, Shenzhen City, Guangdong Province, China

- Dist. B in 2F,3-4F, Bldg A2; Dist. A in 4F, Bldg9, AVARY Park, Songluo Rd., Yanchuan community, Yanluo St., Baoan Dist, Shenzhen, Guangdong Province, China.; 2F,Bldg SB02,Shenzhen No.2 Park,No.5,Niujiao Rd., Yanchuan community, Yanluo St.

Verification Method: Verification Body: TÜV Rheinland (China) Ltd.


- Process: Document review, interview, site visit and recalculation
- Verification Standard: ISO 14064-3:2019

Verification Scope: Based on the information we have received and evaluated that:

- Programme: Voluntary GHG scheme
- Organizational Boundary: Operational Control
- Level of Assurance: Reasonable
- Materiality: 5%
- Global warming potential (GWP): IPCC 2021
- Base year: 2021 (2021.01.01~2021.12.31)
- Inventory year: 2023 (2023.01.01~2023.12.31)
- The total carbon emission is 73,412.61 tonnes CO₂ equivalent (tCO₂e)
 - Category 1 Direct emission is 23,096.04 tCO₂e
 - Category 2 Indirect imported energy emission is 47,622.67 tCO₂e (Market-based approach 264436 MWh)
 - Category 3 Indirect transportation emission is 2,637.30 tCO₂e
 - Category 4 Indirect products used by organization emission is 56.61 tCO₂e
 - Category 5 Indirect associated with the use of products from the organization emission is not quantified
 - Category 6 Indirect other sources emission is not quantified
- Data and information
 - Historical in nature: Category 1 / 2
 - Historical in nature with scenario models: Category 3 / 4
- The inventory uses South China Power Grid Emission Factor of 2012 Chinese Regional Average Grid Emission Factor for calculation.

Validity: This certificate only reviewed the emissions data of inventory year, this certificate is not for the management systems certification.

2024-03-14


TÜV Rheinland (China) Ltd.

Room 301, 3F and Room 1203, 12F, Building 4, No.15, Ronghua South Road, Beijing Economic-Technological Development Area, Beijing (Yizhuang group in high-end industrial area of Beijing Pilot Free Trade Zone), 100176, P. R. China

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Certificate

Inventory Standard **ISO 14064-1:2018**

Certificate Registr. No. **CF 50622085 0001**

Report No. **70370377 001**

Certificate Holder: **HongQiSheng Precision Electronics (Qinhuangdao) Co., Ltd.**
No.18, Tengfei Road, Qinhuangdao Economic and Technological
Development Zone, Hebei, P.R.China

Verification Site: **HongQiSheng Precision Electronics (Qinhuangdao) Co., Ltd.**
No.18, Tengfei Road, Qinhuangdao Economic and Technological
Development Zone, Hebei, P.R.China

Verification Method: Verification Body: TÜV Rheinland (China) Ltd.
- Process: Document review, interview, site visit and recalculation
- Verification Standard: ISO 14064-3:2019

Verification Scope: Based on the information we have received and evaluated that:

- Programme: Voluntary GHG scheme
- Organizational Boundary: Operational Control
- Level of Assurance: Reasonable
- Materiality: 5%
- Global warming potential (GWP): IPCC 2021
- Base year: 2021 (2021.01.01~2021.12.31)
- Inventory year: 2023 (2023.01.01~2023.12.31)
- The total carbon emission is 46015.89 tonnes CO₂ equivalent (tCO₂e)
 - Category 1 Direct emission is 27857.45 tCO₂e
 - Category 2 Indirect imported energy emission is 11988.24 tCO₂e (Market-based approach 372107.00Mwh)
 - Category 3 Indirect transportation emission is 5854.26 tCO₂e
 - Category 4 Indirect products used by organization emission is 315.94 tCO₂e
 - Category 5 Indirect associated with the use of products from the organization emission is not quantified
 - Category 6 Indirect other sources emission is not quantified
- Data and information
 - Historical in nature: Category 1 / 2
 - Historical in nature with scenario models: Category 3 / 4
- Purchased: Renewable energy 36,226.00 Mwh
- The inventory uses North China Power Grid Emission Factor of 2012 Chinese Regional Average Grid Emission Factor for calculation.

Validity: This certificate only reviewed the emissions data of inventory year, this certificate is not for the management systems certification.

2024-03-14


TÜV Rheinland (China) Ltd.

Room 301, 3F and Room 1203, 12F, Building 4, No.15, Ronghua South Road,
Beijing Economic-Technological Development Area, Beijing (Yizhuang group in
high-end industrial area of Beijing Pilot Free Trade Zone), 100176, P. R. China

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Inventory Standard **ISO 14064-1:2018**

Certificate Registr. No. **CF 50622084 0001**

Report No. **70370373 001**

Certificate Holder: **HongHengSheng Electronical Technology (Huai'an) Co., Ltd.**
No.168, Fushikang Road, Huai'an Economic and Technological Development Zone, Jiangsu, P.R.China (Inside of Integrated Free Trade Zone)

Verification Site: **HongHengSheng Electronical Technology (Huai'an) Co., Ltd.**
No.168, Fushikang Road, Huai'an Economic and Technological Development Zone, Jiangsu, P.R.China (Inside of Integrated Free Trade Zone)


Verification Method: Verification Body: TÜV Rheinland (China) Ltd.
- Process: Document review, interview, site visit and recalculation
- Verification Standard: ISO 14064-3:2006

Verification Scope: Based on the information we have received and evaluated that:

- Programme: Voluntary GHG scheme
- Organizational Boundary: Operational Control
- Level of Assurance: Reasonable
- Materiality: 5%
- Global warming potential (GWP): IPCC 2021
- Base year: 2021 (2021.01.01~2021.12.31)
- Inventory year: 2023 (2023.01.01~2023.12.31)
- The total carbon emission is 112176.41 tonnes CO₂ equivalent (tCO₂e)
 - Category 1 Direct emission is 4292.43 tCO₂e
 - Category 2 Indirect imported energy emission is 98722.63 tCO₂e (Market-based approach 10577.76Mwh)
 - Category 3 Indirect transportation emission is 8937.01 tCO₂e
 - Category 4 Indirect products used by organization emission is 224.34 tCO₂e
 - Category 5 Indirect associated with the use of products from the organization emission is not quantified
 - Category 6 Indirect other sources emission is not quantified
- Data and information
 - Historical in nature: Category 1 / 2
 - Historical in nature with scenario models: Category 3 / 4
- The inventory uses East China Power Grid Emission Factor of 2012 Chinese Regional Average Grid Emission Factor for calculation.

Validity: This certificate only reviewed the emissions data of inventory year, this certificate is not for the management systems certification.

2024-03-14


TÜV Rheinland (China) Ltd.

Room 301, 3F and Room 1203, 12F, Building 4, No.15, Ronghua South Road, Beijing Economic-Technological Development Area, Beijing (Yizhuang group in high-end industrial area of Beijing Pilot Free Trade Zone), 100176, P. R. China

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Inventory Standard **ISO 14064-1:2018**

Certificate Registr. No. **CF 50622086 0001**

Report No. **70370380 001**

Certificate Holder: **QingDing Precision Electronics (Huai'an) Co., Ltd.**
No. 8 Pengding Road, Huai'an Economic and Technological Development Zone, Jiangsu, P.R. China

Verification Site: **QingDing Precision Electronics (Huai'an) Co., Ltd.**
No. 8 Pengding Road, Huai'an Economic and Technological Development Zone, Jiangsu, P.R. China
YuDing Precision Electronics (Huai'an) Co., Ltd.
No.18, Pengding Road, Huai'an Economic and Technological Development Zone, Jiangsu, P.R. China

Verification Method: Verification Body: TÜV Rheinland (China) Ltd.
- Process: Document review, interview, site visit and recalculation
- Verification Standard: ISO 14064-3:2019

Verification Scope: Based on the information we have received and evaluated that:
- Programme: Voluntary GHG scheme
- Organizational Boundary: Operational Control
- Level of Assurance: Reasonable
- Materiality: 5%
- Global warming potential (GWP): IPCC 2021
- Base year: 2023 (2023.01.01~2023.12.31)
- Inventory year: 2023 (2023.01.01~2023.12.31)
- The total carbon emission is 176259.18 tonnes CO₂ equivalent (tCO₂e)
- Category 1 Direct emission is 6140.91 tCO₂e
- Category 2 Indirect imported energy emission is 168280.51 tCO₂e (Market-based approach 116918.09Mwh)
- Category 3 Indirect transportation emission is 1746.04 tCO₂e
- Category 4 Indirect products used by organization emission is 91.72 tCO₂e
- Category 5 Indirect associated with the use of products from the organization emission is not quantified
- Category 6 Indirect other sources emission is not quantified
- Data and information
- Historical in nature: Category 1 / 2
- Historical in nature with scenario models: Category 3 / 4
- The inventory uses East China Power Grid Emission Factor of 2012 Chinese Regional Average Grid Emission Factor for calculation.

Validity: This certificate only reviewed the emissions data of inventory year, this certificate is not for the management systems certification.

2024-03-14



TÜV Rheinland (China) Ltd.

Room 301, 3F and Room 1203, 12F, Building 4, No.15, Ronghua South Road, Beijing Economic-Technological Development Area, Beijing (Yizhuang group in high-end industrial area of Beijing Pilot Free Trade Zone), 100176, P. R. China

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LRQA Independent Assurance Statement

Relating to Boardtek Electronics Corporation.'s GHG Report for the calendar year 2023

服務條件

本保證聲明書乃為先豐通訊股份有限公司所準備。

英商勞盛股份有限公司台灣分公司(以下簡稱 LRQA)受先豐通訊股份有限公司(以下簡稱 BOARDTEK)之委託以查證其 2023 年日曆年度(2023 年 1 月 1 日~12 月 31 日)期間溫室氣體盤查報告(發行日期:2024 年 03 月 18 日, 第二版), 以下簡稱為”溫室氣體盤查報告”。

此溫室氣體盤查報告包含直接、能源間接以及其其他間接(由運輸產生之間接溫室氣體排放)之溫室氣體排放, 先豐通訊股份有限公司包含下列的地址範圍內的印刷電路板製造相關活動, 與其他相關設施設備活動, 如溫室氣體盤查報告中所描述。

溫室氣體報告: 先豐通訊股份有限公司觀音廠溫室氣體報告書

地址: 桃園市觀音工業區經建一路 16、27 號

Terms of Engagement

This Assurance Statement has been prepared for Boardtek Electronics Corporation, No. 16 and 27, Ching Chien 1st Rd. Kuan-Yin Industrial Park, Taiwan.

LRQA was commissioned by Boardtek Electronics Corporation. (hereafter referred to as the “BOARDTEK”) to assure its GHG Report¹ for the calendar year 2023 (01 January 2023 ~31 December 2023) (hereafter referred to as “the Report”).

The Report relates to direct GHG emissions, energy indirect GHG emissions and other indirect GHG emissions (Indirect emissions from transportation). The GHG emissions have been consolidated using ‘Operational’ control approach.

BOARDTEK’s geographical boundary includes the operations and activities relevant with the manufacturing of printed circuit board, and the associated facilities & equipment as set out in the GHG Inventory Report.

管理責任

先豐通訊股份有限公司觀音廠的管理階層對本溫室氣體盤查報告之準備及維持有效的內部控管, 包含溫室氣體盤查報告中揭露之資料負責。LRQA 的責任為依據我們與先豐通訊股份有限公司觀音廠間的合約執行查證。

最終的, 溫室氣體盤查報告由先豐通訊股份有限公司觀音廠所核准並負有責任。

Management Responsibility

¹ Final_GHG report_ISO14064-1-2018_Clendar year (2023)_BOARDTEK, dated 18 March, 2nd Edition.



BOARDTEK's management was responsible for preparing the GHG Inventory Report and for maintaining effective internal controls over the data and information disclosed. LRQA's responsibility was to carry out an assurance engagement on the GHG Inventory Report in accordance with our contract with BOARDTEK.

Ultimately, the GHG Inventory Report has been approved by, and remains the responsibility of BOARDTEK.

LRQA 的方法

LRQA 查證已依循 ISO 14064-3:2019 (溫室氣體主張之確証與查証附指引之規範)，以提供對先豐通訊股份有限公司符合 ISO 14064-1:2018 (組織層級溫室氣體溫室氣體排放與移除之量化及報告附指引之規範) 規定所準備的溫室氣體盤查報告之類別一與二之合理保證查證以及類別三有限保證等級查證。

為作成結論，本保證以抽樣方式執行並涵蓋下列的活動：

- 依溫室氣體盤查報告中所界定的設施設備，進行現場查訪；同時審查與溫室氣體排放數據及資料管理相關的過程；
- 訪談組織中對於相關溫室氣體排放數據與紀錄管理與維持之權責人員；
- 查核來自於行政院環境部之相關係數與 IPCC 2021 年第六次評估報告之 GWP 值；
- 查證類別一與類別二的歷史數據及資料來源；
- 查證類別三之上游依據關務系統所輸出的進出口資料進行原料(進貨後尚須加工之基板、膠片、油墨等)與產品退貨運輸、以及下游空/海運運輸與配送產品之活動數據彙整，未包含其餘例如其他原料、國內購買原料、上下游運輸陸運、商務旅行之活動數據彙整；以及
- 查證報告排放類別之重大性原則。

LRQA's Approach

Our verification has been conducted in accordance with ISO 14064 – 3:2019, 'Specification with guidance for verification and validation of greenhouse gas statements' to provide reasonable assurance for Categories 1 and 2 and limited assurance for Category 3, that GHG data as presented in the Report have been prepared in conformance with ISO 14064 – 1:2018, 'Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals'.

To form our conclusions the assurance engagement was undertaken as a sampling exercise and covered the following activities:

- Conducted site tour of the facilities and reviewed processes related to the control of GHG emissions data and records;
- Interviewed relevant staff of the organization responsible for managing GHG emissions data and records; and
- Verified emission factors sourced from EPA and the Global Warming Potentials (GWPs) from the Sixth Assessment Report of the Intergovernmental Panel on Climate Change 2021 (AR6).
- Verified the historical GHG emissions data and records back to source for Categories 1 and 2 emissions.
- Verified an aggregated level GHG emissions data for Category 3 from upstream collects activity data on raw materials (substrates, films, inks, etc. that still need to be processed after purchase) and product return transportation, as well as downstream air/sea transportation and product distribution based on the import and export data output by the customs system. , does not include other activities such as other raw materials, domestic purchased raw materials, upstream and downstream transportation, land transportation, and business travel ; and
- Confirmed significance criteria on reporting of emission categories



查證等級及實質性

本查證聲明書的查證意見基於合理保證等級(類別一與二)，有限保證等級(類別三)及 5%的實質性等級。

Level of Assurance & Materiality

In accordance with our contract agreement, the assurance was conducted at a reasonable level of assurance at a materiality of 5% for Categories 1 and 2 and at a limited level of assurance at a materiality of 5% for Category 3. The opinion expressed in this Assurance Statement has been accordingly formed.

LRQA意見

基於 LRQA 的方法，依溫室氣體盤查報告中揭露日曆年西元 2023 年度之全部直接及能源間接的溫室氣體(類別一與類別二)排放總量實質正確，其他間接溫室氣體排放(類別三)沒有任何情形引起我們注意到計算沒有實質正確；溫室氣體盤查報告之準備也符合 ISO 14064-1:2018 (組織層級溫室氣體溫室氣體排放與移除之量化及報告附指引之規範)相關要求。

LRQA' s Opinion

Based on LRQA' s approach,

- The GHG emissions for Categories 1 and 2 disclosed in the Report as summarized in Table 1 below are materially correct.
- Nothing has come to our attention that would cause us to believe that the GHG emissions for Category 3 disclosed in the Report as summarized in Table 1 below is not materially correct

and that the Report has been prepared in conformance with ISO 14064-1:2018.

LRQA' s 建議

先豐通訊股份有限公司需考量:

- 對於設備冷媒排放量之溫室氣體計算，應考量使用實際補充量替代「設備冷媒逸散率」方式進行。
- 改進關於生產線上，四氟化碳的氣體鋼瓶消耗的數據收集，以提高數據準確性。
- 依據製程方法，電漿製程中 CF₄ 的使用後，後續製程氣體導入廢氣處理設施，處理氟化物，雖然空氣污染 M01 許可證中登載前述污染防治設備之總氟量處理效率應達 80%以上，但是未能提出佐證說明，因此，本年度先豐通訊公司主張 CF₄ 於鹼性水洗塔中處理率為 0。先豐通訊公司應建立適當的污染處理設備的檢測方法，以決定未來的處理效率。
- 強化人員對於活動數據蒐集之知識與技巧。

LRQA' s Recommendations

BOARDTEK should:

- For the GHG calculation of the greenhouse gas emissions of equipment refrigerants, it should be considered to use the actual replenishment amount instead of the "equipment refrigerant emission rate" method.
- Improved data collection on production line consumption of carbon tetrafluoride gas cylinders to improve data accuracy.
- According to the process method, the subsequent process gas is introduced into the waste gas treatment equipment to treat fluoride, after using CF₄ in the plasma process. The total fluorine treatment efficiency of the equipment should reach more than 80% and listed in the air pollution M01 permit, however no supporting evidence was provided. BOARDTEK claimed that the treatment rate of CF₄ in the equipment was 0, this year. BOARDTEK shall establish appropriate testing methods for pollution treatment equipment to determine efficiency.
- Strengthen staff's knowledge and skills in activity data collection.



Signed

Sean Chiang 江玄秋

Sean Chiang

Lead Verifier 主導查驗員

日期 Dated: 29 Mar 2024

Chiang-shan Chen

General Manager 總經理

On behalf of LRQA Group Limited Taiwan
CIT, No. 1, Yumen St.,
Zhongshan Dist., Taipei City, Taiwan.
台北市中山區玉門街 1 號 台北創新中心(CIT)

LRQA reference number: TWN00000317/O_2023/Date Issued: 12 April 2024





Table 1. Summary of Boardtek Electronics Corporation, GHG Report for the calendar year 2023 (01 January ~31 December 2023)

先豐通訊股份有限公司 2023 年度溫室氣體清冊

Scope of GHG emissions(溫室氣體排放之範疇)	Tonnes CO₂e 當量噸
Direct GHG emissions (Category 1) 直接溫室氣體排放	17,599.8133
Direct GHG emissions from the combustion of biomass (生質燃燒溫室氣體排放)	None
Indirect GHG emissions from imported energy (purchased electricity) 輸入能源產生之間接溫室氣體排放(電力採購) (Category 2, Location-based 地區基礎)	42,352.5960
Indirect GHG emissions from imported energy (Category 2, Market-based 市場基礎)	None
Indirect GHG emissions from transportation (Category 3) 由運輸產生之間接溫室氣體排放	3,863.1647
Indirect GHG emissions from products used by the organization (Category 4) 由組織使用的產品所產生之間接溫室氣體排放	Not significant
Indirect GHG emissions associated with the use of products from the organization (Category 5) 與組織的產品使用相關連之間接溫室氣體排放	Not significant
Indirect GHG emissions from other sources (Category 6) 由其他來源產生的間接溫室氣體排放	Not identified
Location based and Market based are terminologies from Annex E of ISO 14064-1:2018.	

Note 1: The national electricity emission factor of year 2022 was quoted, the factor was taken from Taiwan Energy Administration as published on 21 June 2023.

Note 2: GHG emission figures above are being reported with four decimal places as required by Taiwan Ministry of Environment.

備註 1：國家電力溫室氣體排放係數引用能源署在 2023 年 6 月 21 日公佈之民國 111 年度電力排碳係數作為外購電力之排放係數。

備註 2：溫室氣體盤放數據相關小數點規定依據行政院環境部規定執行。

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