

# Independent Verification Opinion

Verification Opinion No.:  
C769826-2024-AG-TWN-DNV

Issued Place and Date:  
Taipei, 17 June, 2025

Page 1 of 2

This is to verify initiate reporting of Greenhouse Gas Inventory Management Report (2024) of

## MANDARIN AIRLINES CO., LTD.

### Scope of Verification

DNV Business Assurance (DNV) has been commissioned by MANDARIN AIRLINES CO., LTD. (hereafter "the Organization") to perform a verification of the greenhouse gas statements of Greenhouse Gas Inventory Management Report (2024) (hereafter the "Inventory Report") in Taiwan, R.O.C. with respect to the sites listed as below and Appendix A.

Site	Address
Headquarters	No. 3, Aly. 123, Ln. 405, Dunhua N. Rd., Songshan Dist., Taipei City 105, 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 and indirect GHG emissions from products used by the Organization. The further descriptions for the Reporting Boundary listed in Appendix B.

### Verification Criteria and GHG Programme

The verification was performed on the basis of with Financial Supervisory Commission Sustainable Development Roadmap Scheme and ISO 14064-1:2018, CNS 14064-1:2021 as well as criteria given to provide for consistent GHG emission identification, calculation, monitoring and reporting. The verification was conducted in accordance with ISO 14066:2023, ISO 14065:2020, ISO14064-3:2019.

### Verification Opinion

It is DNV's opinion that the Inventory Report (2024), which was published on May 28, 2025 (Version 1), 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) GHG emissions and Indirect GHG emissions from imported energy (Category 2), the reliability of the information within the Inventory Report (2024) was verified with reasonable level of assurance.
- For the other indirect GHG emissions, the involved information was verified with limited level of assurance.

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

GHG Verifier :  
Alvin Chen



For the issuing office:  
DNV Business Assurance Co., Ltd.



Management Representative



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Page 2 of 2

## 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 1st January, 2024 to 31st December, 2024, 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 Management Control;  Operational Management Control;  Equity Share

### GHGs Verified

CO<sub>2</sub>  CH<sub>4</sub>  N<sub>2</sub>O  HFC<sub>s</sub>  PFC<sub>s</sub>  SF<sub>6</sub>  NF<sub>3</sub>

### Quantification of Emissions (in tonnes CO<sub>2</sub>e)

The Global Warming Potential (GWP) defined in IPCC AR6 WGIII (2023) has been chosen and correctly referred by the Organization.

Category	Total
1: Direct emissions	119,861.1354
2: Imported energy indirect emissions*	735.1012
3: Indirect GHG emissions from transportation	18.4262
4: Indirect GHG emissions from products used by organization	27,063.0048
5: Indirect GHG emissions associated with the use of products from the organization	-
6: Other Emission Sources	-
Total Emissions	147,677.6676

(\*The Imported Energy Indirect Emissions was calculated based on 2024 electricity emission factor of 0.474 kg CO<sub>2</sub>e/kwh, which was announced by Energy Administration, Ministry of Economic Affairs.)

### Type of Opinion

unmodified  modified  adverse

The Appendix forms an integral part of this Certificate, which shall be invalid when used without the Appendix.

Lack of fulfilment of conditions as set out in the Verification Agreement may render this Verification 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.

The issuing office : 29Fl., No. 293, Sec. 2, Wenhua Rd., Banqiao District, New Taipei City 220, Taiwan Tel.: +886-2-82537800. <https://www.dnv.com/tw/>  
DNV ZNATW-OP-F50, Rev.14, 2025-03

## APENDIX A

The organization boundary of MANDARIN AIRLINES CO., LTD.

No.	Sites	Address
1	華信航空總公司 Mandarin Airlines Headquarters	台北市松山區敦化北路 405 巷 123 弄 3 號 No. 3, Aly. 123, Ln. 405, Dunhua N. Rd., Songshan Dist., Taipei City 105, Taiwan (R.O.C.)
2	台北站(含台北維護組及聯管中心) Taipei Station	台北市松山區敦化北路 340-9 號 No. 340-9, Dunhua N. Rd., Songshan Dist., Taipei City 105, Taiwan (R.O.C.)
3	台中站(含台中維護組及台中倉儲) Taichung Station	台中市沙鹿區中航路一段 168、200 號 No. 168、200, Sec. 1, Zhonghang Rd., Shalu Dist., Taichung City 433, Taiwan (R.O.C.)
4	高雄站(含高雄維護組) Kaohsiung Station	高雄市小港區中山四路 2 號 No. 2, Zhongshan 4th Rd., Xiaogang Dist., Kaohsiung City 812, Taiwan (R.O.C.)
5	花蓮站 Hualien Station	花蓮縣新城鄉嘉里村嘉里路機場 1 號 No. 1, Jichang, Jiali Rd., Xincheng Township, Hualien County 971, Taiwan (R.O.C.)
6	台東站 Taitung Station	台東縣台東市民航路 1100 號 No. 1100, Minhang Rd., Taitung City, Taitung County 950, Taiwan (R.O.C.)
7	金門站 Kinmen Station	金門縣金湖鎮尚義機場 2 號 No. 2, Kinmen Airport, Jinhu Township, Kinmen County 891, Taiwan (R.O.C.)
8	馬公站(含馬公勤務組) Makung Station	澎湖縣湖西鄉隘門村 126-5 號 No. 126-5, Aimen, Huxi Township, Penghu County 885, Taiwan (R.O.C.)
9	南竿站 Nangan Station	連江縣南竿鄉復興村 220 號 No. 220, Fuxing Vil., Nangan Township, Lienchiang County 209, Taiwan (R.O.C.)

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## APENDIX B

The Reporting Boundary of MANDARIN AIRLINES CO., LTD. Greenhouse Gas Inventory Management Report (2024):

Category	Subcategory	Verification Procedures
3	3.5 Business travel	- Business travel by high-speed rail in Taiwan. - Emission factor form Taiwan HSR website.
4	4.1.1 Upstream purchased goods	- Purchasing city water. - Bill and invoice of water suppliers.
	4.1.2 Purchase Fuel and Energy Emission (Indirect emissions not included in Cat.1 & Cat.2)	- Including Electricity, gasoline, Diesel and aviation fuels. - Bill and invoice from suppliers.
	4.3 Waste treatment and transportation	- Weights of solid and liquid wastes from contractors contract and bills. - Distance of transportation from operation sites to treatment sites.
5*	Indirect GHG emissions associated with the use of products from the organization	Non-Significant Emissions.
6*	Indirect GHG emissions from other sources	Non-Significant Emissions.

NOTE: \*The scope of indirect emissions, other than Imported Energy with specified/limited list of sources, was defined by MANDARIN AIRLINES CO., LTD. 's own pre-determined criteria for significance of indirect emissions, considering the intended use of the GHG inventory.

## APENDIX C

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

GHG Type	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	NF <sub>3</sub>	Total
Emissions (ton CO <sub>2</sub> e)	119,284.7171	140.2180	275.6553	160.5450	0.0000	0.0000	0.0000	119,861.1354
Proportion (%)	99.52%	0.12%	0.23%	0.13%	0.00%	0.00%	0.00%	100.00%