



# Greenhouse Gas Emissions Report 2023

ESPEC Co., Ltd.

ESPEC has obtained third-party assurance by KPMG AZSA Sustainability Co., Ltd. for our FY2022 results. The scope of the assurance covered SCOPE 1 and SCOPE 2 emissions (Market-based, Location-based), SCOPE 3 - category 1 "Purchased goods and services", category 11 "Use of sold products" and category 12 "End-of-life treatment of sold products".

Third-party assured

Scopes/Categories		FY2022 Actual (t-CO <sub>2</sub> e)	Basis for calculation
<input checked="" type="checkbox"/> SCOPE 1		3,576	CO <sub>2</sub> emissions from fuel use and Fluorinated gases (F-gases) emissions leaked from manufacturing processes and facilities owned by sites in Japan. <b>Calculation method:</b> Calculated based on the "Greenhouse Gas Emissions Calculating and Reporting Manual (Ver. 4.9)" (Ministry of the Environment and Ministry of Economy, Trade and Industry, Government of Japan (MOE and METI)). <b>CO<sub>2</sub> emission coefficients:</b> For fuel-derived CO <sub>2</sub> , coefficients from the "List of Calculation Methods and Emission Coefficients in the Calculation, Reporting, and Publication System_2020" (MOE and METI) were used. GHG emissions from F-gases leakage were converted based on the GWP value described in the "Fourth Assessment Report" (Intergovernmental Panel on Climate Change (IPCC)).
SCOPE 2	<input checked="" type="checkbox"/> Market-based	3,717	CO <sub>2</sub> emissions from electricity use <b>Calculation method:</b> Calculated based on the "GHG Emissions Calculating and Reporting Manual (Ver. 4.9)" (MOE and METI). <b>CO<sub>2</sub> emission coefficients:</b> For Espec and its subsidiaries in Japan (Japanese Group Companies), the "List of Emission Factors by Electric Utility (for submission in 2023)" (MOE and METI) were used. For Group companies outside Japan, the coefficients from the International Energy Agency's (IEA) Emissions Factors (2022) for 2020 were used.
	<input checked="" type="checkbox"/> Location-based	11,541	CO <sub>2</sub> emissions from electricity use <b>Calculation method:</b> Calculated based on the "GHG Emissions Calculating and Reporting Manual (Ver. 4.9)" (MOE and METI). <b>CO<sub>2</sub> emission coefficients:</b> For Japanese Group Companies, the "List of Emission Factors by Electric Utility (for submission in 2023)" (MOE and METI) was used. For Group companies outside Japan, the coefficients from the Emissions Factors (2022) for 2020 (IEA) were used.
SCOPE 3		1,091,612	Calculated using the "Emission Intensity Database for Calculating Greenhouse Gas Emissions of Organizations through Supply Chains (Ver. 3.3)" (MOE) and the "LCI Database IDEA Ver.2.3" (National Institute of Advanced Industrial Science and Technology, Japan) based on the "Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Ver.2.5)" (MOE and METI).
1	<input checked="" type="checkbox"/> Purchased goods and services	107,925	Calculated by the raw materials, parts, etc. procured amount for manufacturing. In response to the description in "Emission Intensity Database for Calculating Greenhouse Gas Emissions of Organizations through Supply Chains (Ver. 3.3)" (MOE) that "Consumption tax shall be included in the basic unit based on the input-output table", the amount of consumption tax was adjusted in the calculation for Japanese Group Companies. For Group companies outside of Japan, the calculation was based on the transaction amount without taking into account value-added tax (VAT).
2	Capital goods	3,173	Calculated based on the fixed assets cost amount.
3	Fuel- and energy-related activities (Excluding SCOPE 1-2)	2,058	Calculated using energy consumption, "Emission intensity per unit of electricity and heat consumption" and "LCI database IDEA ver. 2.3".
4	Upstream transportation and distribution	506	Calculated only for ESPEC, using the fuel efficiency method for transportation in Japan where ESPEC is the consigner. Transportation where the consigners are customers was calculated at Category 9.
5	Waste generated in operations	22	Calculated only for Japanese Group companies, based on the weight of waste generated from their business operations.
6	Business travel	609	For Japanese Group companies, calculated based on the business travel cost. For Group companies outside of Japan, calculated based on the number of employees using "emission intensity per employee".
7	Employee commuting	1,518	For Japanese Group companies, calculated based on commuting cost. For Group companies outside of Japan, calculated based on the number of employees and the number of working days using the "emissions intensity per number of employees and working days".
8	Upstream leased assets	—	Not applicable.
9	Downstream transportation and distribution	537	Calculated only for ESPEC, using the fuel efficiency method for transportation in Japan where the customer is the consigner. Transportation where the consigner was ESPEC was calculated at Category 4.
10	Processing of sold products	—	Not applicable.
11	<input checked="" type="checkbox"/> Use of sold products	943,317	Energy consumption of sold products in use at customer sites was calculated using the formula: "number of units sold x power consumption (kW) by product group x 24 hours x 365 days x operating years x operating rate x CO <sub>2</sub> emission coefficient of electricity". Operating years and operating rate were assumed to be 7 years and 80% based on the Design for Environment Guidelines (7th Edition) established by ESPEC. The target products were all major products sold by the top 80% of ESPEC's sales and all products sold by group companies. For the CO <sub>2</sub> emission factor of electricity, the emission factor by destination region (national average factor for Japan and IEA country-specific factor* <sup>1</sup> for other countries) was used for Japanese Group Companies, and the IEA country-specific factor of the country where the company is located was used for Group companies outside of Japan. *1: Destination regions are divided into the Americas, Europe, China, Korea, and Asia (excluding Japan, China, and Korea), and IEA country-specific coefficients are used for each. For the Americas, Europe, and Asia, the country coefficients for the U.S., Germany, and Thailand are used, respectively.
12	<input checked="" type="checkbox"/> End-of-life treatment of sold products	31,947	Calculated based on the weight of the equipment, assuming that the number of units disposed of from the market is the same as the number of units sold per year. Calculated the F-gases leakage amount released into the atmosphere at the time of product disposal in countries with insufficient F-gases recovery/destruction systems. For Group companies outside Japan, calculated assuming that the country where it is located as the delivery destination. (Converted based on GWP values in the IPCC Fourth Assessment Report). ESPEC: Calculated based on dividing the material composition of major products in the top 80% of sales by type and by disposal method. Espec Mic Co., Ltd. and Group companies outside of Japan: Calculated for all products sold based on the results of ESPEC's calculation for each product group. Excluding (1) ESPEC THERMAL TECH SYSTEM Co., Ltd., (2) F-gases leakage in some special products for which detailed specification information was not collected.
13	Downstream leased assets	—	Not applicable.
14	Franchises	—	Not applicable.
15	Investments	—	Not applicable.
SCOPE 1, 2*, 3 Total		1,098,905	*SCOPE 2 is calculated using the market-base.



## Independent Assurance Report

To the Representative Director and President of ESPEC CORP.

We were engaged by ESPEC CORP. (the “Company”) to undertake a limited assurance engagement of the environmental and social performance indicators marked with “” (the “Indicators”) for the period from April 1, 2022 to March 31, 2023 included in its Greenhouse Gas Emissions Report 2023(the “Report”) for the fiscal year ended March 31, 2023.

### The Company’s Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the “Company’s reporting criteria”), as described in the Report.

### Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the ‘International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information’ and the ‘ISAE 3410, Assurance Engagements on Greenhouse Gas Statements’ issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Report, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company’s responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company’s reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company’s reporting criteria, and recalculating the Indicators.
- Visiting one of the Company’s domestic offices selected on the basis of a risk analysis.
- Evaluating the overall presentation of the Indicators.

### Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Report are not prepared, in all material respects, in accordance with the Company’s reporting criteria as described in the Report.

### Our Independence and Quality Management

We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Management 1, we design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

*Shinnosuke Kayumi*

Shinosuke Kayumi, Director  
KPMG AZSA Sustainability Co., Ltd.  
Osaka, Japan  
July 14, 2023