

Scope 3 GHG Emissions report



2023

Mint Tek Circuits

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Scope 3 Emissions : Mint Tek Circuits

Introduction

Organisation Name: Mint Tek Circuits
Reporting Period: January to December 2023
Assessor: White Spire

Mint Tek Circuits is a hardware prototyping company partnering in innovation with leading technology and hardware organisations. They have a focus on quality, efficiency, and customer satisfaction. Mint Tek Circuits is committed to sustainability and social responsibility, and aims to integrate environmental, social, and governance (ESG) factors into its operational framework and reporting practices.

The Scope 3 assessment for Mint Tek Circuits was completed by White Spire, an independent third party, to ensure alignment with the GHG Protocol Scope 3 standard of reporting. To support Mint Tek in achieving its sustainability goals and in helping their customers to comply with the Corporate Sustainability Reporting Directive (CSRD), White Spire has completed a Carbon Emissions Inventory focusing on a Scope 3 Green House Gas (GHG) Assessment of its indirect emissions sources.

The reporting period is the first year for which a carbon emissions assessment has been completed for Mint Tek Circuits and so no comparable base year is available. The activities of 2023 are largely representative of the type of activities undertaken by the organisation so the output of this report is reflective of the ongoing carbon impact of the business. The total CO₂e for Mint Tek for 2023 was **28,041kg**.

This document outlines the context, methodology, data and results of that assessment.



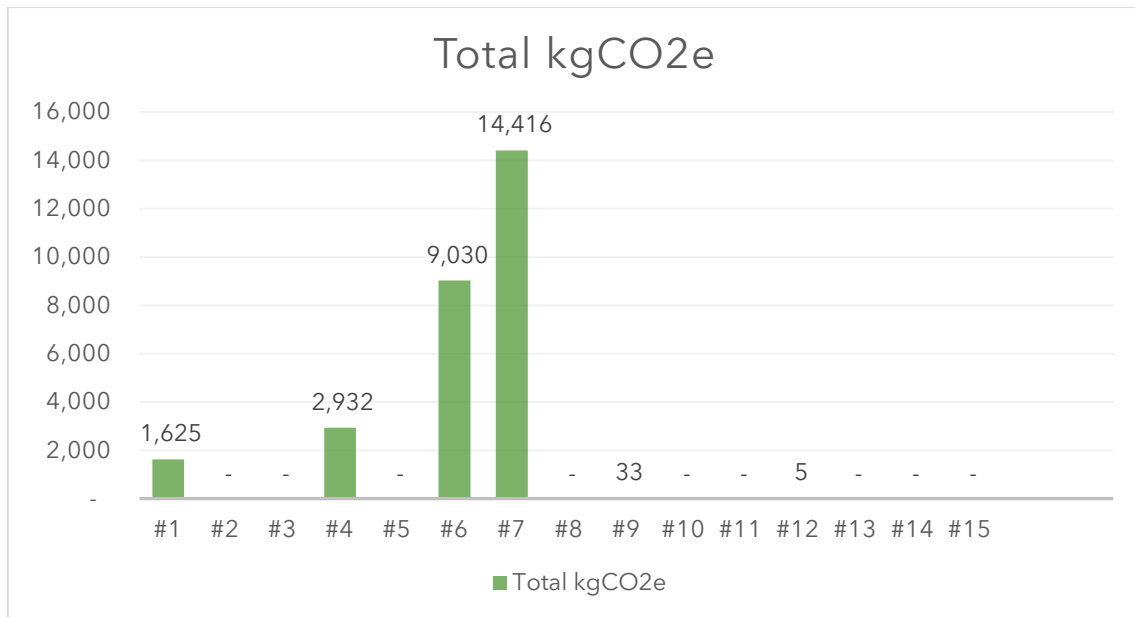


Figure 1 Total kgCO₂e

Operational Boundary

Mint Tek Circuits is a small company that consists of a team of seven employees who work predominantly in a hybrid mode, combining remote and on-site work. Mint Tek Circuits does not have its own offices, but rather rents shared office space from Udaras na Gaeltachta, a regional development agency. Mint Tek Circuits does not engage in any in-house manufacturing or other activities that require physical premises. Therefore, for the purpose of this assessment, we chose to set an operational boundary based on the operational control approach, which means that Mint Tek Circuits accounts for the emissions from the sources that it has the authority to introduce and implement operating policies. This includes the emissions from business travel and commuting of its employees.

Greenhouse Gas Emissions Data

This project will use the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard as the main reference and guidance for the Scope 3 emissions assessment. The GHG Protocol is the most widely used and internationally recognised framework for GHG emissions accounting and reporting. The GHG Protocol defines Scope 3 emissions as "all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions". The GHG Protocol further divides Scope 3 emissions into 15 categories, as shown in the table below.

As Mint Tek Circuits has no owned or privately leased premises and does not conduct any manufacturing at scale. Mint Tek Circuits operates from a shared innovation hub where utilities are included in the rental expense and so there was no Scope 1 or 2 calculated.

Below is the complete list of Scope 3 categories used to evaluate Mint Tek Circuits. For each category, either calculations or reasons for exclusion have been documented.

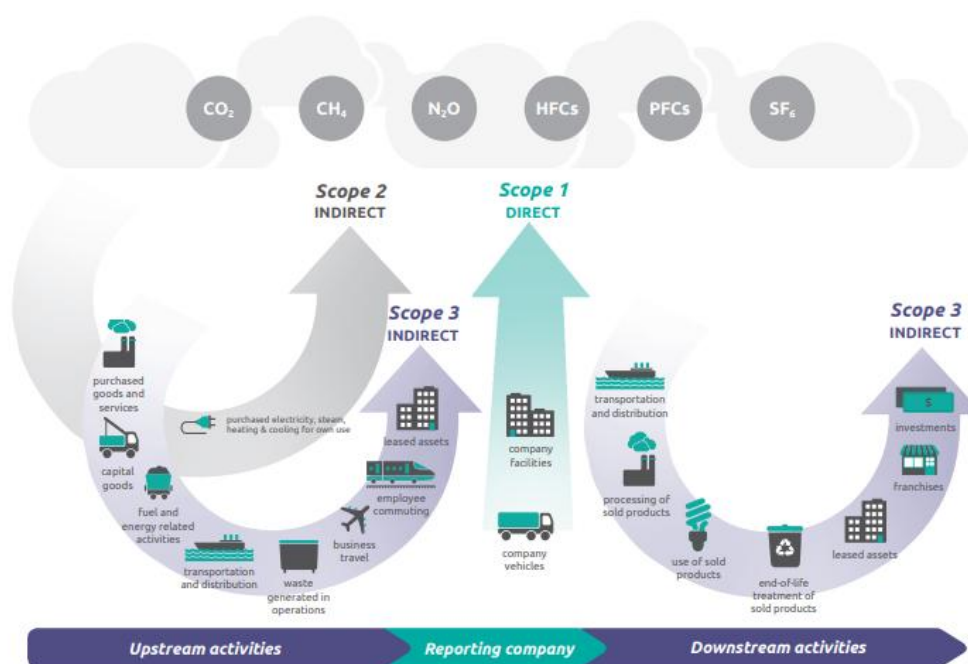


Figure 2 Overview of GHG Protocol scopes and emissions across the value chain

- Category 1: Purchased Goods and Services
- Category 2: Capital Goods
- Category 3: Fuel- and Energy-Related Activities (Not Included in Scope 1 or Scope 2)
- Category 4: Upstream Transportation and Distribution
- Category 5: Waste Generated in Operations
- Category 6: Business Travel
- Category 7: Employee Commuting
- Category 8: Upstream Leased Assets
- Category 9: Downstream Transportation and Distribution
- Category 10: Processing of Sold Products
- Category 11: Use of Sold Products
- Category 12: End-of-Life Treatment of Sold Products
- Category 13: Downstream Leased Assets
- Category 14: Franchises
- Category 15: Investments

Scope 3 Activities included in Inventory

Scope 3 Category	Description of Types and Sources of Data used to
1. Purchased goods and services	Emissions from the extraction, production, and transportation of goods and services purchased or acquired by the reporting company in the reporting year.
4. Upstream transportation and distribution	Emissions from the transportation and distribution of products, materials, and waste in vehicles or facilities not owned or controlled by the reporting company.
6. Business travel	Emissions from the transportation of employees for business-related activities in vehicles not owned or controlled by the reporting company.
7. Employee commuting	Emissions from the transportation of employees between their homes and their worksites in vehicles not owned or controlled by the reporting company.
9. Downstream transportation and distribution	Emissions from the transportation and distribution of products sold by the reporting company in vehicles or facilities not owned or controlled by the reporting company.
12. End-of-life treatment of sold products	Emissions from the disposal and treatment of products sold by the reporting company at the end of their life.

Scope 3 Activities excluded from Inventory

Scope 3 Category	Description of Types and Sources of Data used to	Exclusion Justification
2. Capital goods	Emissions from the extraction, production, and transportation of capital goods purchased or acquired by the reporting company in the reporting year.	Capital acquisition during the period was immaterial and not included in the carbon inventory.
3. Fuel- and energy-related activities (not included in scope 1 or scope 2)	Emissions from the extraction, production, and transportation of fuels and energy purchased or consumed by the reporting company in the reporting year, and the generation of electricity, heat, steam, and cooling purchased or consumed by the reporting company in the reporting year.	This exclusion is justified as Mint Tek Circuits does not engage in any activities involving the extraction, production, and transportation of fuels and energy, nor do they consume electricity, heat, steam, or cooling that would otherwise be accounted for in Scope 3
5. Waste generated in operations	Emissions from the disposal and treatment of waste generated in the reporting company's operations in the reporting year.	Mint Tek Circuits, as a company that operates from a shared innovation hub where utilities are included in the rental expense, does not generate waste in its operations. Therefore, Category 5 of Scope 3, which pertains to waste generated in operations, is excluded from their inventory. This exclusion is justified as Mint Tek Circuits does not have any waste disposal or treatment activities that would otherwise be accounted for in Scope 3.
8. Upstream leased assets	Emissions from the operation of assets leased by the reporting company (lessee) in the reporting year.	Mint Tek Circuits is a lessee of an innovation hub but does not exercise operational control over the premises. As such, emissions related to the operation of the leased space fall outside the scope of our reporting, given our limited influence over the facility's environmental management and activities.
10. Processing of sold products	Emissions from the processing of intermediate products sold by the reporting company in the reporting year.	Mint Tek Circuits, which provides circuits exclusively for R&D purposes and not for further processing and resale, is justified in excluding Category 10 of Scope 3 from their emissions inventory.

Scope 3 Category	Description of Types and Sources of Data used to	Exclusion Justification
11. Use of sold products	Emissions from the use of goods and services sold by the reporting company in the reporting year.	In our Scope 3 Category 11 assessment, we evaluated the potential GHG emissions from the use of sold PCBs. Given the low-power nature of these components, we estimate that the emissions associated with their use are immaterial. Based on industry benchmarks and proxy data, these emissions likely contribute less than 1% to our total Scope 3 emissions. Due to the difficulty in obtaining precise data and the likely de minimis impact, we have decided not to include this category in our Scope 3 inventory.
13. Downstream leased assets	Emissions from the operation of assets leased to others (lessor) by the reporting company in the reporting year.	Mint Tek Circuits does not operate as a lessor. This category is excluded from calculation.
14. Franchises	Emissions from the operation of franchises in the reporting year.	Mint Tek Circuits, which does not engage in any franchising activities, is justified in excluding Category 14 of Scope 3 from their emissions inventory. This category pertains to emissions from franchises owned by the reporting company. Since Mint Tek Circuits does not participate in any franchise model, they do not have emissions from franchises to report or calculate, thus warranting this exclusion from their Scope 3 reporting.
15. Investments	Emissions from the operation of investments in the reporting year.	Mint Tek Circuits, which does not engage in any investment activities and has no investment portfolio, is justified in excluding Category 15 of Scope 3 from their emissions inventory. This category pertains to emissions from investments in the reporting company. Since Mint Tek Circuits business model does not include any material investments, they do not have emissions from investments to report or calculate, thus warranting this exclusion from their Scope 3 reporting. Mint Tek Circuits focus on their core business activities, without any diversification into investment holdings, supports this exclusion.

Scope 3 Activity Data

The Scope 3 Inventory assessment, conducted by White Spire, used a combination of data sources and methods to estimate Mint Tek Circuits Scope 3 emissions for each category, depending on the availability and quality of the data. The assessment used the following hierarchy of methods, from the most to the least preferred:

- **Specific data:** Data that is directly measured or collected from Mint Tek Circuits value chain partners, such as books of record, suppliers, customers, transporters and documentation.
- **Average data:** Data that is obtained from industry averages, benchmarks, or representative samples, such as emission factors, fuel consumption rates, and product lifetimes.
- **Generic data:** Data that is derived from generic sources, such as national or global averages, default values, or assumptions, such as emission intensities, market shares, and allocation factors.

The assessment followed the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, which provides a framework for identifying, quantifying, and reporting Scope 3 emissions from 15 categories of upstream and downstream activities. The assessment used emission factors from various sources, such as the Environmental Protection Agency (EPA), The GHG Protocol industry specific emissions tables and regionally relevant factors published by the UK government to estimate the emissions associated with Mint Tek Circuits value chain. The sources of emission factors are referenced in the data collection and calculation worksheets.

The following activity data was collected for the time period January 1st 2023 to December 31st 2023.

- Component purchase lists
- P&L activity
- Relevant Invoice data
- Transportation and Distribution reports
- Employee commute surveys

Category 1: Purchased Goods and Services

An evaluation of vendor expenditures was conducted to identify significant purchasing categories, with a materiality threshold set at €10,000 for 2023. Suppliers exceeding this threshold were primarily associated with the procurement of Printed Circuit Boards (PCBs) and their assembly. To accurately assess the emissions related to these purchases, a Bill of Materials (BOM) was compiled, and components were evaluated based on their weight. Three calculation methods were employed to estimate the associated emissions, resulting in a range of values from 13 to 1,625 kg CO₂e.

The first method involved multiplying the upstream weight shipped by the emissions factor for small electrical items, yielding the highest estimate and providing a comprehensive view of potential emissions. The second method focused on the main component weight, particularly plastics, and resulted in a lower estimate, which may not fully capture the complexity of the product. The third method, based on the total weight of components per BOM, produced the lowest estimate but may underrepresent total emissions if the weight is artificially low.

Given the need for a conservative approach to avoid underreporting emissions, we have determined that the most appropriate estimate is derived from the first method, which applies the emissions factor for small electrical items to the upstream weight of the components. This approach, yielding an estimate of 1,625 kg CO₂e, ensures that all significant emissions are adequately accounted for, providing a robust and cautious estimation of our Scope 3 Category 1 emissions.

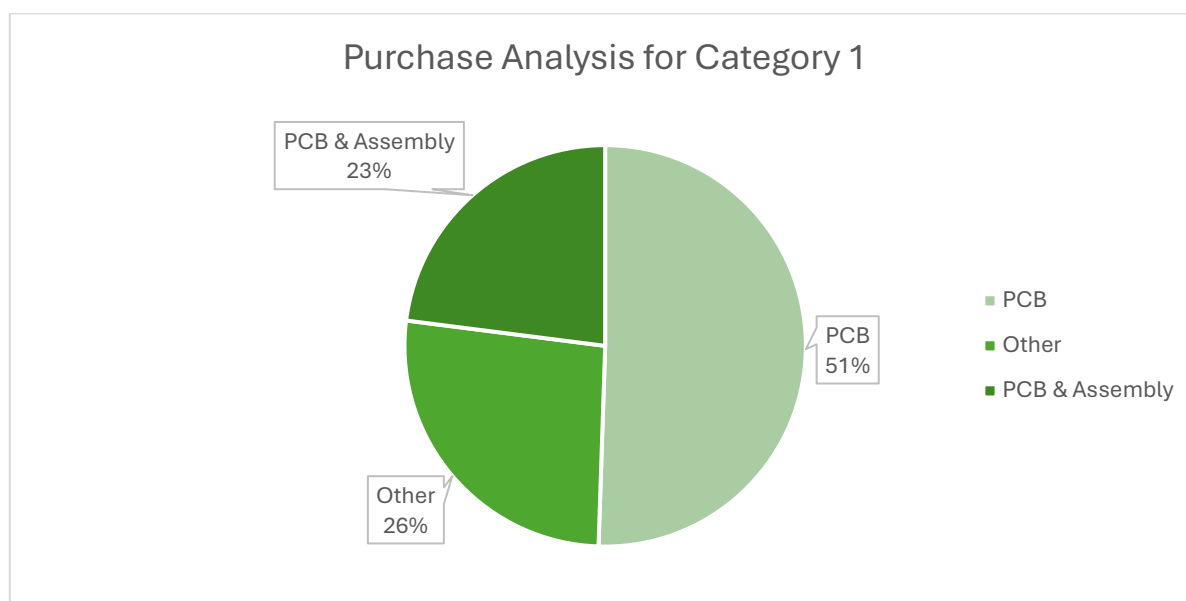


Figure 3 Purchase Analysis for Category 1

Category 4 & 9: Transportation and Distribution

The procurement analysis also included a detailed review of transportation and distribution expenditures, split into upstream and downstream categories to ensure accurate emissions reporting. Two primary DHL accounts were analyzed: the Domestic Account and the International Account.

Assumptions were based on a representative period in 2024 to gain insights into shipment types and allocate emissions appropriately across upstream and downstream activities. The cost per kilogram of shipment was calculated and applied to the 2023 data. The cost distribution was determined to be 40% domestic (downstream) and 60% international (upstream).

Category 4: Upstream Transportation and Distribution

Category 4 - Transport and Distribution of products relates to products purchased i.e. between suppliers and Mint Tek Circuits. They are transported in vehicles not owned or operated by Mint Tek Circuits. All inbound transport controlled and paid for by Mint Tek Circuits is included in this category. The International Account, predominantly consisting of shipments from China to Mint Tek Circuits and has been classified as upstream emissions. Given the nature and low weight of the products, air travel was assumed for these shipments. Shenzhen to Shannon (SNN) was identified as a key route, covering a distance of roughly 10,000 km by air.

Category 9: Downstream Transportation and Distribution

The Domestic Account primarily involved shipments from Mint Tek Circuits to local companies, which were classified as downstream emissions. It was assumed that all domestic shipments utilized land transport, specifically vans rather than heavy goods vehicles (HGVs), due to the nature of the products. A key destination identified was Cork, approximately 216 km from the point of origin and used as an indicative distance of travel.

Category	Mode	Activity Data	Vehicle Type	Unit: tonne.km	Total kg CO2e
Category 4: Upstream Transportation & Distribution	Air	Weight Distance	Air Long Haul	2877.416	2932
Category 9: Downstream Transportation & Distribution	Road	Weight Distance	Van >1.74 tonnes	54.788	33

Category 6: Business Travel

Activity data for business travel is based on claims from employees and purchase expenses booked in Travel and Mileage general ledgers. Air miles are calculated based on origin and destination airports and road mileage is based on claims utilising the average civil service approved rates.

In 2023 there was a total of 57,353 km travelled for business purposes.

Transportation Method	Distance (Km)
Air	45,460
Road	11,893
Total	57,353

Category 7: Employee Commuting

At Mint Tek Circuits, a team of seven utilizes a hybrid working arrangement, splitting their time between remote work and on-site presence at the communal office space. After conducting an employee survey to determine responses proportionate to the staff size, we've applied those insights to calculate the annual mileage estimates.

Based on an average one way commuting distance of 69km (assessed from employee responses), annualised over 231 working days in 2023 and 2 days in the office per employee per week, this results in a total driven distance of 89,000 km.

Category 12: End-of-Life treatment of sold product

The approach for calculating the end-of-life treatment of the sold product hinges on several key assumptions. First, the volume of the product sold can be derived from the transportation calculation. Secondly, given the nature of Mint Tek Circuits products which are utilised in R&D activities, it is anticipated that end-of-life (EOL) treatment for the products will primarily involve incineration rather than landfill disposal.

It's important to highlight that the CO₂e impact from incineration to landfill rises significantly. Emissions increase by 20 times if products went to landfill, however without detailed research on customers' waste treatment methods, these assumptions can't be more precisely confirmed.

Category	Activity Data	Est KG shipped	Est Tonne Waste	Total kg CO ₂ e
Category 12: End-of-life treatment of sold products	tonnes	254	0.254	5

Measurement Accuracy & materiality

As the process of measuring emissions from operations is a relatively new activity for most global businesses, many of Mint Tek Circuits suppliers and customers are not yet carrying out emissions calculation activities. The assessor has used accepted standards or generalisations that are compliant with the Greenhouse Gas Protocol Initiative.

Conversion factors have all been obtained from The UK Government 2022 "full set" of factors.

References

The Greenhouse Gas Protocol 'A corporate accounting and reporting standard - revised edition, March 2004.

Overland distance travel calculator - <https://maps.google.com>

Long haul air distance travel calculator - <https://airplanemanager.com/flightcalculator.aspx>

Emissions Factors <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>

National Atmospheric Emmissions Inventory <https://naei.beis.gov.uk/data/ef-all>