Life Cycle Assessment for Galaxy Watch6 40mm

Background

Samsung has developed strong technical experience in assessing the life cycle environmental impacts of its products. The assessment considers potential environmental impacts across the whole life cycle including; product manufacturing; distribution; product use; and disposal phase. To ensure technical quality; the analysis methodology has been completed according to international standard ISO 14040 series. Samsung has used SimaPro 9.5.0.0 software and a dedicated LCA S/W database to measure environmental impacts using a wide range of data categories including; Product bill of material(BOM), parts and components logistics, energy consumption in product use and end-of-life scenario data in order to attain the highest level of accuracy. The outcome of the LCA confirmed and quantified 10 potential environment impact categories including; global warming; abiotic depletion; ocean acidification; eutrophication; and ozone layer depletion; where each impact category has been assessed for each life cycle stage. These LCA results will continue to be considered during product development phase as we aspire to improve the environmental specifications of our products.

Calculation basis

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<tr>
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<tbody>
<tr>
<td>Database</td>
<td>Ecoinvent 3.9</td>
</tr>
<tr>
<td>Method for impact assessment</td>
<td>Life cycle impact assessment classification and characterization factors according to CML 2 baseline 2000 V3.09 / the Netherlands, 1997 as provided in the SimaPro 9.5.0.0 LCA tool</td>
</tr>
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<td>LCA software</td>
<td>SimaPro 9.5.0.0</td>
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System boundary of LCA

<table>
<thead>
<tr>
<th>Pre-manufacturing</th>
<th>Parts and materials constituting the products and its transportation</th>
</tr>
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<tbody>
<tr>
<td>Manufacturing</td>
<td>Product assembly by Samsung Electronics Vietnam</td>
</tr>
<tr>
<td>Distribution</td>
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</tr>
<tr>
<td>Use</td>
<td>3 years use</td>
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</tbody>
</table>

Critical review for LCA study was done by internal expert in Global CS Center of Samsung Electronics. (ecodesign@samsung.com)
- **Product Features**

<table>
<thead>
<tr>
<th>Model name</th>
<th>SM-R935U</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimension</strong></td>
<td>40.4 x 38.8 x 9.0t</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>1.31” (432x432), 330PPI</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Product &amp; Acc. : 79.73g Packages : 162.21g</td>
</tr>
<tr>
<td><strong>Energy consumption</strong></td>
<td>2.85 kWh / year</td>
</tr>
</tbody>
</table>

- **Characterized Environment Impact**

- **Global Warming Impact Profile**

- **Life Cycle Carbon Emissions**

* The results differ from to region, But not by much.
Life Cycle Assessment for Galaxy Watch6 44mm

**Background**

Samsung has developed strong technical experience in assessing the life cycle environmental impacts of its products. The assessment considers potential environmental impacts across the whole life cycle including; product manufacturing; distribution; product use; and disposal phase. To ensure technical quality; the analysis methodology has been completed according to international standard ISO 14040 series. Samsung has used SimaPro 9.5.0.0 software and a dedicated LCA S/W database to measure environmental impacts using a wide range of data categories including; Product bill of material(BOM), parts and components logistics, energy consumption in product use and end-of-life scenario data in order to attain the highest level of accuracy. The outcome of the LCA confirmed and quantified 10 potential environment impact categories including; global warming; abiotic depletion; ocean acidification; eutrophication; and ozone layer depletion; where each impact category has been assessed for each life cycle stage. These LCA results will continue to be considered during product development phase as we aspire to improve the environmental specifications of our products.

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Critical review for LCA study was done by internal expert in Global CS Center of Samsung Electronics. (ecodesign@samsung.com)
### Product Features

<table>
<thead>
<tr>
<th>Model name</th>
<th>SM-R945U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension</td>
<td>44.4 x 42.8 x 9.0t</td>
</tr>
<tr>
<td>Display</td>
<td>1.47&quot;(480x480), 327PPI</td>
</tr>
<tr>
<td>Weight</td>
<td>Product &amp; Acc.: 85.55g Packages: 163.61g</td>
</tr>
<tr>
<td>Energy consumption</td>
<td>2.92 kWh / year</td>
</tr>
</tbody>
</table>

### Characterized Environment Impact

#### Abiotic depletion
- Sb: 0.001 kg
- SO₂: 0.10 kg
- NOx: 0.07 kg
- CO₂: 23.0 kg
- CFC-11: 0.000003 kg
- 1,4-DB: 47.14 kg
- 1,4-DB: 97.20 kg
- 1,4-DB: 0.26 kg
- 1,4-DB: 0.004 kg

#### Acidification
- Sb: 0.001 kg
- NOx: 0.10 kg
- SO₂: 0.07 kg
- CO₂: 0.000003 kg
- 1,4-DB: 47.14 kg
- 1,4-DB: 97.20 kg
- 1,4-DB: 0.26 kg
- 1,4-DB: 0.004 kg

#### Eutrophication
- Sb: 0.001 kg
- NOx: 0.10 kg
- SO₂: 0.07 kg
- CO₂: 23.0 kg
- CFC-11: 0.000003 kg
- 1,4-DB: 47.14 kg
- 1,4-DB: 97.20 kg
- 1,4-DB: 0.26 kg
- 1,4-DB: 0.004 kg

#### Global warming (GWP100)
- CH₄: 0.83 kg
- N₂O: 2.69 kg
- CFC-11: 0.000003 kg
- 1,4-DB: 2.04 kg
- 1,4-DB: 0.5 kg
- 1,4-DB: 0.26 kg
- 1,4-DB: 0.004 kg

#### Human toxicity
- Sb: 0.001 kg
- NOx: 0.10 kg
- SO₂: 0.07 kg
- CO₂: 23.0 kg
- CFC-11: 0.000003 kg
- 1,4-DB: 47.14 kg
- 1,4-DB: 97.20 kg
- 1,4-DB: 0.26 kg
- 1,4-DB: 0.004 kg

#### Marine aquatic ecotoxicity
- Sb: 0.001 kg
- NOx: 0.10 kg
- SO₂: 0.07 kg
- CO₂: 23.0 kg
- CFC-11: 0.000003 kg
- 1,4-DB: 47.14 kg
- 1,4-DB: 97.20 kg
- 1,4-DB: 0.26 kg
- 1,4-DB: 0.004 kg

#### Marine terrestrial ecotoxicity
- Sb: 0.001 kg
- NOx: 0.10 kg
- SO₂: 0.07 kg
- CO₂: 23.0 kg
- CFC-11: 0.000003 kg
- 1,4-DB: 47.14 kg
- 1,4-DB: 97.20 kg
- 1,4-DB: 0.26 kg
- 1,4-DB: 0.004 kg

#### Photochemical oxidation
- Sb: 0.001 kg
- NOx: 0.10 kg
- SO₂: 0.07 kg
- CO₂: 23.0 kg
- CFC-11: 0.000003 kg
- 1,4-DB: 47.14 kg
- 1,4-DB: 97.20 kg
- 1,4-DB: 0.26 kg
- 1,4-DB: 0.004 kg

### Global Warming Impact Profile

- 53.2% HRM MODULE
- 39.9% MAIN B’D
- 13% DISPLAY
- 1.6% WIRELESS CHARGER
- 1.5% BATTERY
- 0.6% BAROMETER
- 0.6% FRONT
- 0.1% MOTOR
- 0.6% Others

### Life Cycle Carbon Emissions

- **Total Emission for 3 years:** 15.9 kg CO₂ eq.
  - Manufacturing: 4.2 kg CO₂ eq.
  - Distribution: 2.7 kg CO₂ eq.
  - Use: 0.1 kg CO₂ eq.
  - Disposal: 15.9 kg CO₂ eq.

*The results differ from to region, but not by much.*
Life Cycle Assessment for Galaxy Watch6 Classic 43mm

**Background**

Samsung has developed strong technical experience in assessing the life cycle environmental impacts of its products. The assessment considers potential environmental impacts across the whole life cycle including; product manufacturing; distribution; product use; and disposal phase. To ensure technical quality; the analysis methodology has been completed according to international standard ISO 14040 series. Samsung has used SimaPro 9.5.0.0 software and a dedicated LCA S/W database to measure environmental impacts using a wide range of data categories including; Product bill of material(BOM), parts and components logistics, energy consumption in product use and end-of-life scenario data in order to attain the highest level of accuracy. The outcome of the LCA confirmed and quantified 10 potential environment impact categories including; global warming; abiotic depletion; ocean acidification; eutrophication; and ozone layer depletion; where each impact category has been assessed for each life cycle stage. These LCA results will continue to be considered during product development phase as we aspire to improve the environmental specifications of our products.

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**Product Features**

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<tbody>
<tr>
<td>Model name</td>
<td>SM-R965U</td>
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<tr>
<td>Dimension</td>
<td>46.5 x 46.5 x 10.8t</td>
</tr>
<tr>
<td>Display</td>
<td>1.47”(480x480), 327PPI</td>
</tr>
<tr>
<td>Weight</td>
<td>Product &amp; Acc. : 110.43g</td>
</tr>
<tr>
<td>Energy consumption</td>
<td>2.93 kWh / year</td>
</tr>
</tbody>
</table>

**Global Warming Impact Profile**

- HRM MODULE: 48.6%
- MAIN B'D: 42.5%
- DISPLAY: 4.7%
- WIRELESS CHARGER: 4.7%
- BATTERY: 4.7%
- UNIT BOX: 0.6%
- MASTER BOX: 0.5%
- STRAP: 0.5%
- FRONT: 0.4%
- OTHERS: 0.3%
- Life Cycle Carbon Emissions: 17.4 kgCO₂ eq.

**Characterized Environment Impact**

- Atlantic depletion
- Acidification
- Eutrophication
- Global warming (GWP100) kg CO₂ eq.
- Human toxicity
- Photochemical oxidation
- Marine aquatic ecotoxicity
- Freshwater aquatic ecotoxicity
- Terrestrial ecotoxicity
- Manufacture

**Life Cycle Carbon Emissions**

- Disposal: 2.9 kgCO₂ eq.
- Use: 4.2 kgCO₂ eq.
- Distribution: 0.2 kgCO₂ eq.

*The results differ from to region, But not by much.*