

# Certificate

Inventory Standard **ISO 14040:2006/AMD 1:2020, ISO 14044:2006/AMD 2:2020, IEEE 1680.1-2018 4.8.1.1**  
Certificate Registr. No. **CO 50612139 0001**  
Report No. **48225254 001**

Certificate Holder: **Micro-Star International Co., Ltd.**  
No. 69, Lide St., Zhonghe Dist., New Taipei City 235030, Taiwan

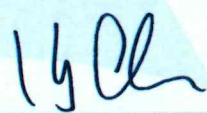
Verification Site: **MSI Electronics(Kunshan) Co. Ltd.**  
No 88, East Qianjin Road, Kunshan City, Jiangsu Province, P.R.China (215300)

Verification Method: Verification Body: TÜV Rheinland Taiwan 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 scheme  
- Product Category Rule: N/A  
- Organizational Boundary: Operational Control  
- Level of Assurance: Reasonable  
- Materiality: 5%  
- Analysis method: ReCiPe 2016 Midpoint (E) V1.08 / World (2010)E  
- LCA software or database: SimaPro Ver. 9.5.0.0 / Ecoinvent 3.8  
- Product: MS-15H1 Laptop  
- Model no.: Modern 15 B12MOG/B13MG  
- Boundary: Cradle to Grave  
- Data period: 2023.02.01~2023.03.31  
- Functional unit: one set ( including package 2.850 Kg/set )  
- Result: according to annex

Validity: This certificate is valid from 2023/12/23 until 2025/12/22  
This certificate only verified the target product, this verification does not include review of external communication.

2023-12-23

  
TÜV Rheinland Taiwan Ltd.  
11F., No. 758, Sec. 4, Bade Rd., Taipei  
105, Taiwan

This verification and validation is based on the information made available to TÜV Rheinland and the engagement conditions detailed above. Therefore, TÜV Rheinland cannot guarantee the accuracy or correctness of this information. TÜV Rheinland cannot be held liable by any party relying or acting upon this verification and validation.

# Annex to certificate

Inventory Standard **ISO 14040:2006/AMD 1:2020, ISO 14044:2006/AMD 2:2020, IEEE 1680.1-2018 4.8.1.1**  
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## Result:

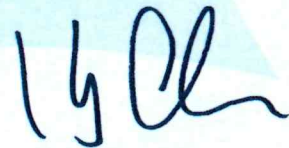
Stage	Raw materials	Production	Distribution / Retail	Consumer use	Disposal / Recycling	Total
Climate change (kg CO <sub>2</sub> eq)	5.00E+01	4.54E+00	1.77E+00	3.87E+01	8.63E-02	9.52E+01
Stratospheric ozone depletion (kg CFC11 eq)	4.54E-05	1.74E-06	7.41E-07	2.67E-05	2.02E-08	7.46E-05
Ionising radiation (kBq U235 eq)	7.04E+00	1.22E-01	1.49E-01	8.04E+00	1.92E-03	1.54E+01
Ozone formation, Human health (kg NO <sub>x</sub> eq)	1.57E-01	1.50E-02	1.13E-02	9.32E-02	5.21E-05	2.76E-01
Fine particulate matter formation (kg PM <sub>2.5</sub> eq)	1.38E-01	8.34E-03	2.79E-03	9.35E-02	2.62E-05	2.42E-01
Ozone formation, Terrestrial ecosystems (kg NO <sub>x</sub> eq)	1.59E-01	1.50E-02	1.14E-02	9.39E-02	5.28E-05	2.79E-01
Terrestrial acidification (kg SO <sub>2</sub> eq)	3.02E-01	1.87E-02	8.24E-03	1.47E-01	7.87E-05	4.75E-01
Freshwater eutrophication (kg P eq)	7.67E-02	1.02E-03	1.17E-04	2.07E-02	5.68E-05	9.86E-02
Marine eutrophication (kg N eq)	2.39E-02	6.52E-05	4.87E-06	1.52E-03	1.33E-04	2.56E-02
Terrestrial ecotoxicity (kg 1,4-DCB)	1.15E+01	3.61E-01	4.01E-01	6.51E+00	4.01E-03	1.88E+01
Freshwater ecotoxicity (kg 1,4-DCB)	1.97E-01	1.07E-02	8.19E-04	7.41E-02	1.39E-06	2.83E-01
Marine ecotoxicity (kg 1,4-DCB)	8.15E+02	5.39E+01	5.02E+00	3.70E+02	1.80E-02	1.24E+03
Human carcinogenic toxicity (kg 1,4-DCB)	2.31E-02	3.69E-04	1.70E-04	4.51E-03	7.65E-06	2.82E-02
Human non-carcinogenic toxicity (kg 1,4-DCB)	5.84E+01	3.84E+00	3.62E-01	2.64E+01	1.31E-03	8.90E+01
Land use (m <sup>2</sup> a crop eq)	2.17E+00	6.57E-02	3.84E-02	8.34E-01	0.00E+00	3.10E+00
Mineral resource scarcity (kg Cu eq)	1.57E+00	3.45E-03	1.16E-03	4.60E-02	1.09E-03	1.62E+00
Fossil resource scarcity (kg Oil eq)	1.41E+01	1.05E+00	5.83E-01	1.08E+01	7.56E-03	2.65E+01

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Water consumption (M <sup>3</sup> )	5.03E-01	1.37E-02	1.21E-03	3.41E-01	-7.05E-04	8.58E-01
Geography boundary	China	China	China / worldwide	worldwide	worldwide	
Analysis method	ReCiPe 2016 Midpoint (E) V1.08 / World (2010) E			System boundary of product	Cradle to Grave	

2023-12-23



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