FULL TECHNICAL DATA SHEET

LUMIO — LED Insect Light Trap & LED Light Module

Consolidated Technical Dossier · Device TDS + LED Module TDS + MSDS · Prepared by Innotech Co., Ltd.

Manufacturer	Innotech Co., Ltd. (Jinju, Republic of Korea)
Device TDS Reference	LUMIO-TDS-SA-001 | Revision 1.0
LED Module TDS Reference	TDS-LUMIO-LED-001 | Revision 2.0 | Issued 2026-02-11
Consolidated Issue Date	2026-08-07 | Revision 1.0
Status	Released — For Regulatory Submission / Customer Reference

PART A — LUMIO Insect Light Trap (Device)

A1. Product Identification

Product Name	LUMIO PLUS
Product Category	Electric Insect Light Trap — Adhesive (Glue Board) Capture Type
Brand	LUMIO
Manufacturer	Innotech Co., Ltd.
Country of Origin	Republic of Korea
Year Established	1993
Intended Application	Indoor flying insect monitoring and capture
Installation Environment	Commercial Indoor Use Only (restaurants, hotels, food facilities, retail)
Capture Principle	UV/LED light attraction + replaceable adhesive glue board
HS Code	8543.70.0000 (Electrical machines and apparatus, having individual functions)

A2. Product Description & Operating Principle

LUMIO is a silent, chemical-free indoor insect light trap designed for commercial front-of-house environments. It uses a dual-wavelength UV-Enhanced LED array to attract flying insects, which are then captured on a replaceable adhesive glue board housed within the unit. The device operates with zero electric discharge — no high-voltage grid, no zapper mechanism — making it a fundamentally different product category from electric insect killers (zappers) covered by IEC 60335-2-59.

Operating sequence:

- **Stage 1 — Attract:** UV-Enhanced LED (365 / 450 nm dual wavelength) emits light in spectra that attract flying insects toward the unit.
- **Stage 2 — Capture:** Insects that approach the unit adhere permanently to the replaceable adhesive glue board inside. No electrical contact with the insect occurs at any stage.
- **Stage 3 — Maintain:** The glue board is replaced monthly in a tool-free operation, maintaining full hygiene.

IMPORTANT — Product Classification Note: LUMIO is an Insect TRAP, not an Insect Killer. It contains NO high-voltage grid and NO electric discharge mechanism. It does not fall within the scope of IEC 60335-2-59 (insect killers by electric discharge).

A3. Electrical Specifications

Rated Input Voltage	AC 100 V – 240 V
Frequency	47 – 63 Hz
Rated Power Consumption	16 W
Light Source	UV-Enhanced LED — Dual Wavelength: 365 nm / 450 nm
LED Operating Principle	Low-voltage UV/visible LED array — no electric discharge
Noise Level	Silent Operation (0 dB — no fan, no discharge sound)
Mounting	Wall Mount — fixed installation

A4. Physical Specifications

Product Dimensions (W × H × D)	450 mm × 350 mm × 96 mm
Net Weight	2.5 kg
Housing Material	ABS Engineering Plastic — Recyclable
Coverage Area	70 m² per unit
Mounting Type	Wall Mount — screw fixing (hardware included)
Recommended Installation Height	1.5 m – 2.5 m from floor level

A5. Glue Board — Replaceable Capture Element

Capture Method	Adhesive Glue Board (Passive physical capture — no chemicals)
Glue Board Dimensions	Approx. 400 mm × 290 mm (Main panel) + strip section
Chemical Content	None — pesticide-free, chemical-free adhesive
Insect Retention	Physical adhesion only — insects captured alive or on contact
Recommended Replacement	Every 1 month (or earlier if adhesive surface is full)
Replacement Operation	Tool-free — no specialist required
Disposal	Sealed glue board with trapped insects — standard waste disposal

A6. Packaging & Logistics Information

Packing Unit	1 Unit per Carton
Packaging Type	Corrugated Carton with internal protective cushioning
Gross Weight (per unit)	Approx. 3.5 kg (unit + packaging)
Carton Dimensions	552 × 400 × 110 mm
Carton Label Language	English

Country of Origin Mark	Made in Korea (Republic of Korea)

A7. Product Classification Rationale — Regulatory Reference

A7.1 International Classification Reference

U.S. Customs and Border Protection (CBP) formally classified a **UV LED insect trap with a glue board** under HS 8543.70 in Ruling NY N324186 (February 2022), explicitly recognizing this product type as distinct from electric insect killers. This ruling supports the **classification of LUMIO as a non-discharge insect capture device**.

A7.2 IEC 60335-2-59 Scope Statement

The scope of IEC 60335-2-59 states: "This standard applies to electric appliances for killing insects and other arthropods by means of an electric discharge, for household and similar purposes." LUMIO satisfies neither condition — it does not kill insects, and it does not use electric discharge.

A7.3 Distinction from Electric Insect Killers (Zappers)

Feature	Electric Insect Killer (Zapper)	LUMIO — Insect Trap
Operating mechanism	High-voltage electric grid discharge	UV/LED light + adhesive glue board
Effect on insect	Killed by electric shock	Physically captured (no electric contact)
Electric discharge	YES — central mechanism	NO — not present
High voltage hazard	YES	NO
IEC 60335-2-59	Directly applicable	Outside scope — no electric discharge
Chemical use	None (electrical kill)	None (physical adhesion)

PART B — LUMIO LED Light Module (Component)

B1. Module Identification

Product Name	LUMIO PLUS LED Light Module (UV Attraction Lamp)
Model Number	LUMIO-LED-365/450
Compatible Device	LUMIO LED Flying Insect Trap
Manufacturer	Innotech Co., Ltd.
Country of Origin	Republic of Korea
Connection Type	USB-C
Document No. / Revision	TDS-LUMIO-LED-001 / Rev. 2.0 (Issued 2026-02-11, Status: Released)

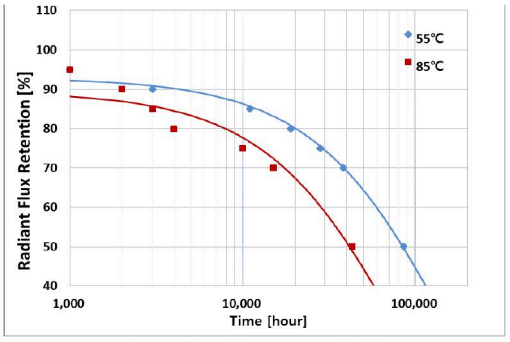
B2. Optical Characteristics

LED Type	SMD LED (Surface Mount Device)
Wavelength (Peak)	365 nm / 450 nm (Dual Wavelength)
Wavelength Tolerance	365 nm ±5 nm / 450 nm ±10 nm
Attraction Method	Direct + Indirect UV attraction (Dual-mode)

Beam Angle	120° (typical)
LED Chip	High-efficiency UV-A LED (365 nm)
LED Chip Lifespan	R50 (L50) > 60,000 h at Tc 55 °C; R70 = 38,000 h at Tc 55 °C (see Figure 1)
Lamp Service Life	5+ years — derived from chip reliability data (typical commercial indoor use)
Coverage Area	70 m² (in dark conditions, open space)

Chip Verification Data — LED Reliability & Lifetime

Lifetime is based on accredited reliability test data for the UV-A LED chip (365 nm @ 500 mA). At case temperature Tc = 55 °C the chip retains at least 50% radiant flux (R50 / L50) for more than 60,000 hours (R70 = 38,000 hours). This supports a lamp service life of 5+ years under typical commercial indoor operation. As LUMIO is a low-voltage device (LVD), the L50 criterion (50% radiant-flux retention) is applied as the lamp lifetime basis for this UV attraction application.



Tc	55℃	85℃
R90	3,000	2,000
R80	19,000	5,000
R70	38,000	15,000
R50	>60,000	43,000

Figure 1. UV-A LED chip (365 nm @ 500 mA) — radiant-flux retention vs. operating time at Tc 55 °C and 85 °C, with predicted R90 / R80 / R70 / R50 lifetimes. R50 (L50) > 60,000 h at 55 °C. (Accredited reliability test data.)

Note: The reliability data above applies to the LED chip, not the complete LUMIO lamp, and is cited as a reference. Whole-lamp lifetime has not been separately tested.

B3. Electrical Characteristics

Operating Voltage	DC 12 V
Operating Current	1.5 A (max)
Power Consumption	16 W (typical, including device)
Input Voltage (via adapter)	AC 100–240 V, 50/60 Hz (Universal)

B4. Physical Characteristics

Module Construction	Aluminum housing / FPCB / AL PCB
Dimensions (Module)	Ø 120 mm (nominal) — see dimensioned drawing below
Weight (Module)	330 g
Mounting	Snap-in with USB-C electrical connection
Color (Housing)	Black

External Dimensions

Symbol	Description	Size (mm)
H	Height / Depth	32.24
O.D	Outer Diameter	119.56
I.D	Inner Diameter	79.16

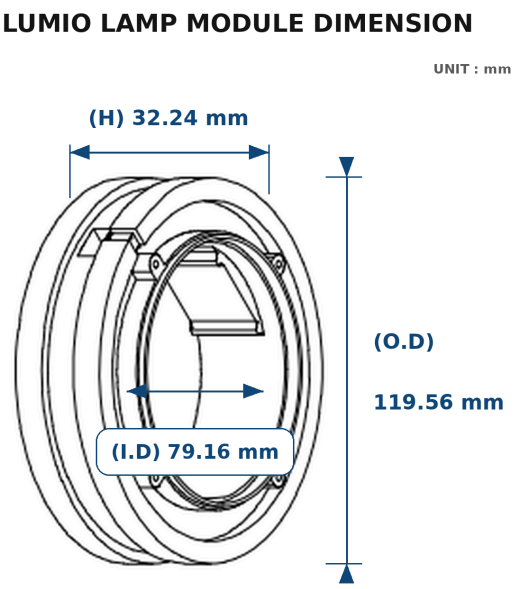


Figure 2. LUMIO LED Light Module — external dimensions (H · O.D · I.D). Nominal module diameter ≈ 120 mm.

B5. Environmental & Operating Conditions

Operating Temperature	0 °C to +40 °C
Storage Temperature	-20 °C to +60 °C
Operating Humidity	20% to 85% RH (non-condensing)
Storage Humidity	10% to 90% RH (non-condensing)

B6. Material Composition & Safety

The LUMIO LED Light Module is a solid-state electronic component and does not contain any hazardous liquids, gases, or volatile substances. It is not classified as a dangerous good under any international transport regulation.

Component	Material	Hazardous?	Compliance
PCB (Circuit Board)	FPCB / AL PCB	No	RoHS
LED Chips	InGaN (Indium Gallium Nitride)	No	RoHS
LED Coating	Transparent Silicone	No	RoHS
Housing / Heat Sink	Aluminum alloy (Powder Coating)	No	RoHS
Solder	Lead-free solder (Sn-Ag-Cu)	No	RoHS
Connector	USB-C (Copper alloy contacts)	No	RoHS
Double-side Adhesive Tape	Acrylic, high-temperature-resistant material	No	RoHS

B7. RoHS — Hazardous Substance Declaration

Fully compliant with the EU RoHS Directive (2011/65/EU) and its amendment (EU 2015/863). The product does not contain any of the following restricted substances above the maximum concentration values (MCV):

Restricted Substance	MCV (ppm)	Status
Lead (Pb)	1,000	Compliant
Mercury (Hg)	1,000	Compliant
Cadmium (Cd)	100	Compliant
Hexavalent Chromium (Cr6+)	1,000	Compliant
PBB (Polybrominated Biphenyls)	1,000	Compliant
PBDE (Polybrominated Diphenyl Ethers)	1,000	Compliant
DEHP (Bis(2-ethylhexyl) phthalate)	1,000	Compliant
BBP (Benzyl butyl phthalate)	1,000	Compliant
DBP (Dibutyl phthalate)	1,000	Compliant
DIBP (Diisobutyl phthalate)	1,000	Compliant

B8. Safety Data Sheet (SDS) Applicability

SDS Requirement	LUMIO LED Module Status
Product Classification	Solid-state electronic article, not a chemical substance or mixture
GHS Classification	Not classified as hazardous under GHS (Globally Harmonized System)
OSHA HCS 2012	Exempt from SDS requirement — manufactured article per 29 CFR 1910.1200(b)(6)(v)
EU REACH	Article under REACH — no SVHC above 0.1% (w/w) identified
Transport	Not classified as dangerous goods for transport (IATA / IMDG / ADR)

In lieu of an SDS, this Technical Data Sheet (Sections B6–B7: Material Composition & Safety) provides equivalent safety-relevant information including material composition, RoHS compliance, and hazardous-substance declaration.

B9. Safety & Handling Information

UV Light Safety

UV Output	Low-intensity UV-A (365 nm) + visible blue (450 nm)
Eye Safety	Do not stare directly into illuminated LEDs for extended periods
Skin Exposure	No significant risk at normal operating distance (>0.5 m)

Handling & Storage

Handling	Handle with care to avoid physical damage to LEDs and PCB
ESD Protection	ESD-sensitive component — handle with appropriate precautions
Storage	Store in original packaging, dry and cool environment
Shelf Life	No expiration — shelf life limited only by storage conditions

Disposal & End-of-Life

Classification	Waste Electrical and Electronic Equipment (WEEE)
Disposal Method	Dispose in accordance with local WEEE / e-waste regulations
Recyclability	Aluminum housing and PCB are recyclable through e-waste facilities

Hazardous Waste	Not classified as hazardous waste

B10. Warranty & Replacement

Warranty Period	12 months from date of delivery
Warranty Terms	1:1 free replacement for LED failure within the warranty period
Field Reliability	12 months in market with zero LED failure claims reported

PART C — International Certification Status

Consolidated certification status for LUMIO across target markets. Test reports and certificates are available on request.

Market / Standard	Scope	Status
CE Marking (EU)	LVD 2014/35/EU · EMC 2014/30/EU	Obtained
EMC Test Report	Electromagnetic compatibility	Obtained
RoHS (EU 2011/65 + 2015/863)	Restriction of hazardous substances	Obtained
REACH (EU)	SVHC — none above 0.1% (w/w)	Compliant
IEC 62471	Photobiological (UV) safety	Report available
IEC 60335-1 / CB Test Report	Electrical safety (incl. adapter, 62368-1)	Obtained
IEC 60335-2-59	Electric insect killers (discharge)	Not applicable — no electric discharge
FCC / ISED SDoC (USA / Canada)	EMC — supplier declaration	Obtained
KC Certification (Korea)	National electrical safety	Certified
ISO 9001	Quality management (manufacturer)	Certified
NRCS / VC 8008 (South Africa)	Compulsory specification	Completed

Status as of August 2026. Certification scope may differ between the complete LUMIO device and the LED module; details available upon request.

PART D — Material Safety Data Sheet (MSDS) Summary

Innotech LED Lamp — Material Safety Data Sheet (MSDS). Note: Lamps are manufactured articles and are exempt from OSHA SDS requirements (29 CFR 1910.1200). The following is provided as a service to customers; no material contained in a lamp is released during normal use and operation.

Section	Statement
1. Manufacturer & Contact	Innotech Co., Ltd., Jinju, Republic of Korea. E-mail: info@smartcatch.kr · Web: www.smartcatch.kr/en

Section	Statement
2. Hazardous Ingredients / Applicability	SDS (formerly MSDS) requirements of OSHA for chemicals are not applicable to manufactured articles such as lamps; lamps are exempt under 29 CFR 1910.1200. No material is released during normal use. No substances within an LED lamp would cause it to be classified as hazardous waste or universal waste.
3. Composition / Information on Ingredients	No known health hazards from exposure to intact lamps. All lamps contain solid-state LEDs as the light source, constructed of aluminum, plastic, wires or a combination, with driver circuitry. Bases/pins are aluminum, nickel-plated tin, nickel-plated brass, plastic, or a combination.
4. First-Aid Measures	Not applicable to intact lamps during normal use and operation.
5. Fire & Explosion Hazards	No special precautions necessary for fire fighters.
6. Health Hazards	There are no known health hazards from exposure to lamps that are intact.
7. Lamp Disposal	This item is not considered a hazardous waste. Consult all Federal, State and Local Regulations.
8. Handling & Storage	New lamps should remain in their original or protective packaging and be placed in a dry storage area that minimizes any risk of accidental breakage.
9. Physical & Chemical Properties	No applicable information available.
10. Stability & Reactivity	No applicable information available.
11. Toxicological / Regulatory Information	No applicable information available. These lamps do not contain any materials that would subject them to special waste disposal or transportation requirements.

Although Innotech Co., Ltd. attempts to provide current and accurate information herein, it makes no representation regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may result from or arise out of the use of / or reliance on the information by any person.

Manufacturer's Declaration

Innotech Co., Ltd. hereby declares that:

(a) The information contained in this Technical Data Sheet is accurate and complete to the best of our knowledge.

(b) LUMIO is an electric indoor insect trap utilizing LED light attraction and adhesive glue board capture.

(c) The product does not contain chemical pesticides, insecticides, or any hazardous emission source.

(d) The product does not incorporate an electric discharge mechanism and does not fall within the scope of IEC 60335-2-59.

Authorised Signatory	Jeany Cheong
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Date	August 2026
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