

COMPLIANCE ESSENTIALS

Asia Sourcing & Compliance Checklist for commercial lighting fixture

Why the "Same Spec, Lower Price" Supplier is Your Biggest Risk?
A Decision Protection Briefing for Commercial Lighting Fixtures.

Who This Guide Is For

Target Audience

- U.S. LED lighting brands
- 10–50 employees, \$3M–\$15M revenue
- Heavy OEM reliance, no in-house compliance team
- Procurement and operations leads managing trial orders

Key Objectives

- Navigate small MOQ trial orders to volume production
- Meet 2–4 week delivery timelines
- Secure UL/ETL, DLC, LM-79/80/TM-21 documentation
- Mitigate compliance and sourcing risks

Six Potential Risk You need to know before order



Country of Origin Compliance

You think “shipping from Vietnam” = “Vietnam origin”, but U.S. Customs demand a full Vietnam COO/CO file for every container.



Color Consistency

2pcs 4000K lights share similar report but but a project can still land with clean white in one zone and green/pink in the next.



Aging Testing

You think the aging testing costs a extra \$1USD, but it can save a \$100k project.



Package

Your preferred strong cartons quietly kill margins on every single shipment, which directly increase your landed cost.



0-10V Dimming

You think 0-10V is a standard feature, but the most common failure is “it mostly works”—flicker at low end, pop-on, dropout, inconsistent trim.



Order Traceability

You assume warranty is manageable, until one field complaint forces the question you can't answer.



Who pays for above risks?The distributor, Installers never fight factories-they fight whoever sold them the lighting fixtures.

“Made in Vietnam” ≠ “Vietnam origin”

Trigger That Causes the Failure

Origin is judged on value, transformation, and process depth—not location alone. Simple assembly or repackaging can't issue COO from Asia country.

Essential Process & Documentation

- Detailed BOM with local sourcing or manufacturing value scale, for example: Vietnam CO request the local value scale is bigger than 35%.
- Process flow chart demonstrating actual transformation steps with before/after form changes.
- Manufacturing Complexity, such as SMT is a example: LEDs, resistors, and PCB become a functional module, which is a materially different article than simple assembly or repacking.

Note: U.S. Custom requires a Country of CO for every container.



"Same CCT" Doesn't Mean Same Color

❏ Trigger That Causes the Failure

Different LED manufacturers = different tint DNA: even at the same CCT, one maker's 4000K can land more green, another more pink.

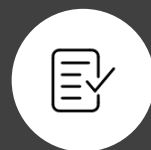
Different LED lots = tint drift: the same maker, same spec, but a new lot shifts Duv—still "4000K," visibly different on-site.

How OEM Suppliers Avoid Color Disasters?



SDCM

- Lock acceptance to SDCM (5-step) plus a defined Duv window—per lot, per PO.
- Lit-up the pre-production LED for comparison



Consistency Rules

- Lock LED supply: one approved LED manufacturer + defined binning rules + no mixing across lots inside one PO.
- Any LED change/lot change require sample comparison for approval.



Golden Sample Protocol

Keep sealed golden samples for each CCT and run **A/B visual match** against production before shipment.

Your SKU gets labeled 'don't mix lots'—inventory becomes batch-locked and harder to sell.

Aging Testing = Avoid Mass Failures

You might think: If the sample passed, mass production will be fine.

Reality: Most early failures don't show on day 1—they show after heat, hours, and cycles expose weak drivers, bad solder joints, and thermal issues.

Trigger That Causes the Failure

No real burn-in: drivers/fixtures ship without enough run-time to screen infant mortality.

Thermal not proven: hotspot temps rise in real ceilings (plenum heat + long runtime), accelerating lumen drop, color shift, and driver stress.

Process variation: SMT/solder quality, adhesive/potting cure, thermal paste/contact inconsistency creates hidden weak units.

How OEM Suppliers Control It

Burn-in program: define time/temperature/load and run burn-in + on/off cycling on production lots, with clear pass/fail gates.

Thermal verification: set max component temperature limits and validate worst-case conditions (120/277V, high ambient, sealed ceiling).



PACKAGE

Your preferred cartons quietly kill margins

You might pay more freight to cause you losing your advantage.



Common Failure Mode

You thought: “Stronger packaging = fewer problems.”

Reality: Oversize cartons ship air, destroy pallet density, and raise landed cost until your margin evaporates silently.

The insult: you pay more freight on the each unit.



Trigger That Causes the Failure

No pallet/container math—packaging designed for “safe-looking,” not for units per pallet / pallets per container.

Carton creep—small dimension changes across batches break stacking plans and logistics predictability.

How OEM Suppliers Control It?

1

Container-First Carton Design

Set carton L×W×H based on container + pallet math first, then design inner protection to fit that cube.

2

Two Tests Before Approval

New packaging must pass **both**:

Protection test

(drop/impact/vibration)

Loading test (verified pieces per container + stable stacking)

3

Packaging Change Control

Any change to carton/foam/inserts needs **revision + sign-off**, and need to estimate the loading QTY.

☆ DIMMING SYSTEM

“0–10V dimming” is the biggest lie we all agreed to treat like a standard.

Common Failure Mode

You thought: “0–10V is universal.”

- Reality: two drivers can both be “0–10V compatible” but feel totally different—one goes smooth to low-end, the other stalls, steps, or drops out.
- The real cost: not the driver—the second site visit.

Trigger That Causes the Failure

Different driver suppliers, different tuning: both support 0–10V, but their internal calibration and response curves aren’t aligned.

Different control chips, different solutions: chip/platform differences change dimming logic (curve, sink current behavior, low-end stability), so “same spec” doesn’t mean same performance.

How OEM Suppliers Control It?

01

One acceptance standard

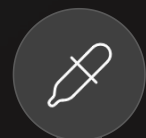
Require the same dimming target for all builds (e.g., **stable to 5%** with no flicker/pop/dropout) under a defined test setup..

02

One dimmer for validation

when changing driver components or switching suppliers, re-tune and re-test using the **same dimmer model** and the same conditions before release.

Order Traceability



Common Failure Mode

You thought: “Warranty is manageable—swap a few failures.”

Reality: One complaint forces the question that decides the outcome: which PCB revision and driver lot is inside that unit?

If you can’t answer: the incident becomes “maybe the whole batch,” and you replace blind.



Trigger That Causes the Failure

No hard date-code discipline—PCB/LED board and driver lack readable silkscreen date codes / lot codes.

Lot mixing under one PO—multiple driver lots/PCB revisions blended, no clean boundary.

Records don’t reconcile—label vs internals mismatch with no trace map.



How OEM Suppliers Control It?

Date Code (UL-Ready)

Product must carry a **readable date code + build code** (on product label and master carton) to meet UL trace expectations and enable fast containment.

Coded Materials + ERP Trace Map

All key materials (driver, PCB/LED board, connectors, wire) must have **part codes + lot/date codes**, then be scanned into an ERP trace map that links:
Unit serial/build code → BOM revision → material lot codes → final test record.

Approved Mixing” With Proof

Mixing is allowed **only within an approved equivalency list** (sample-approved components), and it must remain traceable.

5 Critical Questions That Prevent Failures Before Order

1 Can you issue a PO-specific COO defense pack?

Purpose: Is DLC rebate qualification required? If yes, which state or utility program, and what is the project deadline for QPL listing?

2 Are you selling me '4000K' in a consistent color?

Purpose: Stop the classic trap where everything is "in spec" but the ceiling turns green/pink and you eat rework.

3 Can you prove 0-10V performance to a defined low end (e.g., stable to 5%) using *one specified dimmer model*?

Purpose: Turn '0-10V compatible' from a checkbox into **jobsite-stable behavior**, so dimming doesn't become your #1 return reason.

4 Will the packaging be engineered for *container math* first—pcs/container + pallet pattern?

Purpose: Prevent 'stronger packaging' from quietly shipping air, inflating landed cost, and killing bids without obvious warning.

5 If I give you one failed unit's label code, can you tell me exactly which PCB revision and driver lot is inside?

Purpose: Make warranty **containable** (traceability), so one complaint doesn't escalate into 'maybe the whole batch' panic and blind replacements.