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Electronics Sourcing SOP: 8 Steps, BOM Lock and 40-Point QC

A printable field pack from LeelineGroup: the 8-step electronics sourcing SOP, a controlled-BOM lock sheet, the 40-checkpoint factory audit scorecard, a gold-sample sign-off, a certificate field check and an AQL release log.

www.leelinegroup.com

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DISCLAIMER

This SOP is a field tool drawn from LeelineGroup sourcing and QC work. It is provided for information only and is not a substitute for accredited lab testing, product certification, legal advice or customs advice. An inspector can confirm that units match an approved sample; they cannot confirm that the sample is compliant. AQL limits, critical items and inspection scope must be agreed in the purchase order before production. LeelineGroup sells sourcing and inspection services; no factory paid for this guide and we take no factory kickbacks.

1. The 8-Step Electronics Sourcing SOP

Each step ends with a gate. Do not move to the next step on a verbal assurance - record the evidence and the person who confirmed it.

#	Step	Done when (the gate)
1	Classify the product and pick the route	Named risk class, route and a written list of the evidence you still need.
2	Lock the spec sheet and controlled BOM	Signed BOM lock sheet, ECN log, approved vendor list and sample sign-off.
3	Build the shortlist and screen out middlemen	Business license, legal-name match, export records and quote-issuer ID before deposit.
4	Audit the factory on site (40 checkpoints)	Score at least 85/100 with zero critical failures before sample or pilot approval.
5	Run the tactile sample review and lock a gold sample	BOM, PCB revision, firmware, cell lot, test fixture and a signed gold sample all match.
6	Run forensic checks on every certificate	Every report field matches your SKU, BOM revision and gold sample.
7	Turn the sample into a manufacturing-control system	ECN workflow, first-article signoff, and checks at 25%, 50% and 75% in-process.
8	Release only after inspection and hazmat clearance	AQL limits met, and the UN38.3 summary is present before release.

2. Readiness Checklist - Before You Request Quotes

Tick every item before you ask for quotes. If one is missing, shortlisting stalls and a silent swap becomes more likely.

- ☐ **1. Minimum inputs**
  Target SKU, market, forecast volume, landed-cost target, Incoterm, launch date, compliance markets.
- ☐ **2. Spec packet**
  PRD, target BOM or teardown notes, packaging notes, acceptance criteria at AQL 1.5/2.5.
- ☐ **3. Access and authority**
  Named procurement owner, engineering approver, compliance owner and ECN sign-off authority.
- ☐ **4. Product risk class**
  Each SKU assigned to a type (accessory, battery, wireless, app/firmware) before quoting.
- ☐ **5. Route decision**
  Direct, managed, agent or market route chosen with the trade-offs recorded.
- ☐ **6. Controlled BOM rules**
  Approved vendor list, alternate policy and ECN approval path defined in writing.
- ☐ **7. Defect definitions**
  Written critical/major/minor rules with concrete electronics examples, agreed in the PO.
- ☐ **8. AQL plan**
  Lot size, inspection level, sample size and accept/reject numbers written into the PO.
- ☐ **9. Inspection access**
  A contract clause granting the buyer or a named third party the right to inspect and sample.
- ☐ **10. Release authority**
  One named procurement owner and QA approver who sign the release.

3. Controlled-BOM Lock Sheet

Lock every non-negotiable line in writing before the deposit. Any substitution needs buyer sign-off through the ECN path.

Field	What to lock
Product and SKU	Model name, SKU and the exact unit this BOM belongs to.
PCB revision	Board revision code that matches the drawing and the gold sample.
Chipset / module	Primary chipset or wireless module family and exact MPN.
Battery cell	Cell brand, capacity, configuration and UN38.3 reference.
USB / charging	USB version, connector type and charging protocol.
Firmware version	Locked firmware version and the update/OTA path.
Antenna / wireless	Antenna type, keep-out and the wireless stack with its approval.
Plastics / housing	Material grade, finish and tool ownership.
Packaging and labels	Carton, label text, barcode format and required marks.
Approved vendor list	Approved vendors per line, with the alternate policy.
ECN path	Who approves a change, and how a change is logged and communicated.

Attach the signed BOM lock sheet, the ECN log and the approved vendor list to the PO.

4. 40-Checkpoint Factory Audit - 8 Groups

Score each of the 40 checkpoints, weighted to a 100-point total. A defined set of items are critical: one critical fail stops the audit, even at 90/100. Approve only at 85/100 with zero critical failures.

Audit group	What to check	Score
1. Facility and legal identity	License, legal name, export history and factory-address proof.	
2. SMT ownership and capacity	In-house SMT vs outsourced PCBA, line count, feeder and smallest passive size.	
3. ESD controls	ANSI/ESD S20.20 or IEC 61340-5-1, wrist-strap and floor test logs.	
4. Incoming quality (IQC)	Component verification, counterfeit screening and lot traceability.	
5. Test capability	AOI, ICT/FCT, X-ray access and calibration records.	
6. Process traceability	Lot stickers, reflow profile logging and first-article signoff.	
7. Environment and burn-in	Dry storage and bake records (J-STD-033), aging room and humidity logs.	
8. Corrective action	CAPA process, defect-class definitions and an escalation path.	

On the floor: count SMT lines, confirm BGA and reflow logging, review AOI/ICT/X-ray, pull IQC and calibration logs, and verify ISO 9001 scope.

5. Gold-Sample Sign-off

Tear down the sample, match it to the BOM and spec line by line, then seal a gold sample with a version number. Any mismatch blocks approval.

Item	Evidence
BOM and spec match	Every MPN, tolerance and label ticked against the BOM.
PCB revision	Silk-screen revision matches the controlled BOM.
Firmware version	Recorded and locked.
Cell brand / lot	Matches the approved cell and lot.
Test fixture	Factory can show the fixture, steps and pass/fail limits.
Signed gold sample	Version number, sealed unit and photo set.

Sign-off:

Procurement owner _____ Engineering approver _____ Date _____

6. Certificate and Test-Report Field Check

A certificate is only useful if it matches the exact SKU, PCB revision, wireless and battery configuration, and approved BOM. Map every report back to the gold sample.

Field	What must match
Model / SKU	Matches the unit, not a similar shell.
Applicant and manufacturer	Legal names match the license and the quote issuer.
Test standard	Correct family for the product (e.g. FCC, CE-RED, UL, IEC 62133).
Issue date	Newer than the PCB revision it claims to cover.
Sample photos	Show your exact SKU and revision.
Lab identity	Real, accredited lab; verify the seal is not a photocopy.
Report scope	Covers your market, wireless config and battery config.
Battery / wireless	UN38.3 for the exact cell; FCC ID and RF exposure for wireless.

7. AQL Release Log

Sample under ISO 2859-1 at General Inspection Level II. Critical defects are zero tolerance; major AQL 1.5 (1.0 for safety-critical SKUs); minor AQL 2.5. Write the limits into the PO. Source: ISO 2859-1.

Lot size	Code	Sample	AQL 1.5 Ac/Re	AQL 2.5 Ac/Re
151-280	G	32	1/2	2/3
281-500	H	50	2/3	3/4
501-1,200	J	80	3/4	5/6
1,201-3,200	K	125	5/6	7/8
3,201-10,000	L	200	7/8	10/11
10,001-35,000	M	315	10/11	14/15

Defect classes

Class	Definition	Examples
Critical	Harms the user or breaks a regulation	Exposed cell; missing battery label; short that overheats
Major	Prevents use or causes a return	Dead port; boot failure; wrong firmware
Minor	Cosmetic flaw, no function impact	Small housing scuff; off-center logo

Release decision:

Only the procurement owner and QA approver can release. A missing UN38.3 summary blocks a battery shipment.

8. Sources and Official Standards

Verify every standard against the issuing body. Rules and editions change; check the current version before you rely on them.

• ISO 2859-1 - sampling by attributes

The standard behind the AQL table: lot size, inspection level, sample size and accept/reject numbers. (https://www.iso.org/standard/1141.html)

• ANSI/ESD S20.20 - ESD control program

The ESD control standard for handling sensitive electronics on the factory floor. (https://www.esda.org/esd-overview/esd-standards/)

• J-STD-033 - handling of moisture-sensitive devices

Dry-storage, bake and floor-life rules for moisture-sensitive chips (JEDEC). (https://www.jedec.org/standards-documents)

• IPC-A-610 - acceptability of electronic assemblies

The workmanship standard (Class 2 / Class 3) used to judge soldering and assembly quality. (https://www.ipc.org/)

• FCC equipment authorization

US radio and emissions approval rules for wireless products. (https://www.fcc.gov/engineering-technology/laboratory-division/general/equipment-authorization)

• UN Model Regulations, Rev. 24

Dangerous-goods rules for lithium batteries (UN3480/3481/3090/3091, Class 9). (https://unece.org/transport/publications/un-model-regulations-rev-24-2025)

• IATA Dangerous Goods Regulations

Air-freight rules that apply on top of the UN Model Regulations. (https://www.iata.org/en/programs/cargo/dgr/)

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