

Trace-ability Matrix

Traceability Method	Finished Product Traceability	Internal Component Traceability	Typical TEC Product Types	AS9100 / Aviation Application	Nuclear / 10CFR50, App. B / Part 21 Application	A2LA / Calibration Application
Level 1 – Identification	Product identified by part number, description, work order, purchase order, asset number, or equivalent means.	Non-critical components controlled through approved supplier, purchasing, receiving, BOM, and configuration records. Individual lot, batch, heat, or serial traceability is not required unless elevated by requirement or risk.	Portable maintenance tools, hand tools, carry-on maintenance equipment, fixtures, test leads, packaging materials, office supplies, facility maintenance items.	Acceptable where traceability is not required and identification is sufficient to prevent mix-up.	Acceptable only for non-safety-related items or non-critical components with no Part 21, safety-related, dedication, or procurement traceability requirement.	Acceptable for non-measurement-impacting items that do not affect accredited results.
Level 2 – Batch/Lot Traceability	Product identified by lot, batch, heat, melt, receiving lot, or manufacturing lot number.	Critical components requiring containment, supplier notification, recall support, or material pedigree shall be controlled by batch or lot. Non-critical components remain Level 1.	Maintenance kits, GSE, maintenance support devices, non-flight hardware, selected support equipment.	Used when group-level containment is sufficient and individual unit traceability is not required.	Used where lot-level pedigree supports procurement control, material control, or evaluation of affected items. Supports Part 21 screening when serial-level traceability is not required.	Used for consumables, standards, or materials where lot control affects measurement results or calibration validity.
Level 3 – Serialization	Finished products shall be uniquely serialized. Internal critical components may be serialized when required by engineering, customer, regulatory, configuration management, or	Critical components requiring individual lifecycle, service, configuration, or pedigree control shall be uniquely serialized. Non-critical components remain Level 1 unless otherwise required.	TEC manufactured analyzers, onboard aircraft systems, avionics units, repairable assemblies, flight hardware, aircraft-installed monitoring systems.	Default level for TEC-manufactured serialized products and aircraft-installed systems unless contract requirements impose more.	Used for safety-significant or controlled items where unit-level history is needed to identify affected products, support defect evaluation, or maintain configuration.	Used for calibrated equipment, reference standards, measurement devices, and equipment where calibration status and history are controlled by serial number.

	contractual requirements.					
Level 4 – Contract-Specific / Regulatory Traceability	Traceability established exactly as required by customer, regulatory, military, OEM, FAA, EASA, NRC, ASME NQA-1, A2LA, or contractual requirements.	Critical and non-critical component traceability maintained as required by contract, specification, regulation, dedication plan, configuration plan, or flowed-down requirement.	Flight-safety hardware, life-limited parts, customer-controlled hardware, military systems requiring enhanced pedigree, serialized flight-safety items, contract-controlled items, nuclear safety-related items, commercial-grade dedication items, Part 21 basic components, accredited calibration standards.	Applies when customer, FAA/EASA, OEM, military, or contract requirements exceed TEC's standard traceability levels.	Applies to safety-related items, basic components, commercial-grade dedication, NQA-1 procurement requirements, Part 21 evaluations, and items requiring pedigree or enhanced configuration control.	Applies to accredited calibration standards, reference standards, and measurement equipment requiring documented metrological traceability to recognized standards.