



communications

Electrodynamics, Inc.

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SUPPLIER QUALITY ASSURANCE REQUIREMENTS (SQARs)

Printed versions may not be the latest. Suppliers shall utilize the latest version which can be found on our website at www.L-3com.com/EDI following the Supplier Information link.

The following applicable L-3 Communications Electrodynamics, Inc. SQAR clauses of this document are referenced on the face of the Purchase Order (PO) and are expressly made a part thereof. All specifications and standards referenced in this document shall be the latest issue in effect at time of PO placement, unless otherwise specified. L-3 Communications Electrodynamics, Inc. is hereinafter referred to as the "Buyer" and the supplier is hereinafter referred to as the "Seller".

1. Seller Quality System.

Products supplied shall conform with Buyer's Workmanship Manual, 6310034, and below:

- A. Quality System Program.** The materials and services processed by the Seller for this PO must be controlled by a documented "Quality System Program" that complies with AS 9100, ISO 9001, MIL-Q-9858A, or Buyer acceptable equivalent.
- B. Inspection Quality System.** The materials and services processed by the Seller for this PO must be controlled by a documented "Inspection Quality System" that complies with AS 9100, ISO 9001, MIL-I- 45208, or Buyer acceptable equivalent.
- C. Quality System.** The materials and services processed by the Seller for this PO must be controlled by a documented "Quality System" acceptable to Buyer.

2. Source Surveillance and Inspection.

- A. Surveillance.** Seller's quality system, procedures, facilities, material and products are subject to inspection and surveillance by Buyer, Buyer's customer and/or the Government at all times during the performance of this PO.
- B. Buyer Source Inspection/Acceptance.** Inspection/Acceptance by Buyer is required prior to shipment from Seller's plant. Seller shall notify Buyer at least 48 hours in advance of need for inspection/acceptance.
- C. Government Source Inspection.** Inspection by Government is required prior to shipment from Seller's plant. Seller shall furnish necessary information to the Government representative whom normally services Seller's plant. Seller shall notify the Government representative at least 48 hours in advance of need for inspection.

3. Certification.

- A. Certificate of Conformance.** A Certificate of Conformance, Buyer Form 1006 or Seller equivalent must accompany all shipments. The certificate must state the PO number, Buyer part number and revision, Buyer approved nonconformance (if applicable), quantity in shipment, and the date.

The Buyer has available for Seller's usage a Certificate of Conformance (Form 1006), which provides a template and check sheet to facilitate the certification process. Form 1006 can be found on Buyer's website at www.L-3com.com/EDI following the Supplier Information link, or can be obtained via Buyer's purchasing agent specified on the PO.

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3. Certification – Cont'd.

- B. Physical and Chemical Test Report.** Physical and chemical analysis test data of the material supplied on this PO and a certified statement that the test results are within specified limits are required and shall be furnished by Seller. The test data shall provide objective evidence that the material supplied meets the chemical and physical requirements of the drawing (s) and / or specification (s) cited on the PO.
- C. Physical and Chemical Properties.** Seller shall list and certify to physical and chemical properties of material supplied on this PO. The properties listed shall include those specified on the drawing (s) and/or specification (s) cited on the PO.
- D. Special Processes (Heat Treat, Chemical Film Conversion, Plating, Painting, Testing etc.)** Certification shall include the Buyer's drawing/specification (s) used to perform these special processes all grades, classes, types, or specification (s) cited on the PO. Heat-treated material must state actual hardness reading on certification after processing.
- E. Buyer's Customer Approved Special Process Supplier.** Seller shall use Buyers customer approved Special Process supplier as cited on the PO. In addition to the requirements of 3D, the certification shall include the name and address of the special process supplier used.
- F. Actual Test/Inspection Data.** Actual test/inspection measurements of items on this PO shall be recorded and included with each shipment.
- G. Attribute Test/Inspection Data.** Attribute test/inspection measurements of the items on this PO shall be recorded and included with each shipment.
- H. Calibration Services Certificate.** A certificate, report, or data sheet attesting to the date, the environmental condition under which the results furnished were obtained, specification(s) to which calibrated, identification or serial number of item to which report pertains, evidence of traceability calibration(s) to the National Institute of Standards and Technology (NIST) shall be supplied for each item calibrated under this PO. The report/certificate shall attest to the fact of the accuracy of the standards used in obtaining the results shall be compared at planned intervals with the National Institute of Standards and Technology (NIST), which has been derived from accepted values of natural physical constants, or has been derived by the ratio-type of self-calibration techniques.
- 4. Nonconforming Material.** Seller shall maintain an effective and positive system for controlling nonconforming material, including procedures for the identification, segregation, and disposition of reworked or repaired supplies. Repair of nonconforming supplies shall be in accordance documented procedures approved by Buyer. Seller shall not ship, nor Buyer accept, nonconforming supplies, less authorized in writing by Buyer. Buyer approved nonconformances shall be identified on the applicable certification(s). If requested by Buyer, Seller shall submit a failure report for any lot that which fails to meet the quality requirements of the PO. The report shall include a complete failure analysis, reasons for the failure, and corrective action taken to prevent recurrences within 30 days from issuance.

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5. Solder/Solderability of Parts.

- A. Electronic and Circuit Card Assemblies.** Electronic and electronic circuit card assemblies shall be soldered to the requirements of IPC J-STD-001 or Buyer acceptable equivalent as applicable to this PO. The Seller shall implement and maintain a system that includes adequate process controls to assure conformance to the material handling, storage, and shipping requirements.
- B. Component & PCB Solderability.** The Seller (manufacturer or distributor) shall ensure that all parts: leads, lugs, terminal, wires and terminations cited on this PO shall meet the component solder requirements of IPC J-STD-001 and the solderability requirements of IPC J-STD-002 or Buyer acceptable equivalent, and Printed Circuit Boards shall meet the solderability requirements of IPC J-STD-003 or Buyer acceptable equivalent.
- C. Pre-Tinning.** Component leads or the like shall be tinned with SN63PB37 or SN60PB40 solder per IPC J-STD-006 and properly cleaned to remove flux residue. Leads shall meet the solderability requirements of IPC J-STD-002, Category 3 or Buyer acceptable equivalent.
- D. Solderability Test Samples.** To assure the solderability of plated parts are acceptable, Seller shall furnish with each shipment a minimum of three samples from the same lot, which have been subjected to the solderability test of MIL-STD-202, Method 208.
- E. Fluxes, Solder and Solder Paste.** Fluxes, solder alloys, and solder pastes shall meet the J-STD requirements. Fluxes IPC J-STD-004, Solder Pastes IPC J-STD-005 and Solder Alloys IPC J-STD-006 or Buyer acceptable equivalent.
- F. Under Plating & Solder Coating Test Coupons.** Test coupons shall be furnished by the Seller for under plating (qty. 4) and solder coating (qty. 4) with each lot supplied as specified on the drawing(s) and /or specification(s) cited on the PO.

6. Calibration Services. Seller test equipment services must have a calibration system in compliance with the requirements of MIL-STD-45662A, ISO 10012 or ANSI/NCSL Z540. Calibration procedures must be maintained which provide sufficient information for periodic calibration of inspection, measuring, and test equipment (IM&TE).

7. Electrostatic Discharge Damage (ESD) Protection. Components and assemblies, which are susceptible to electrostatic discharge damage, shall be handled and packaged to prevent ESD damage utilizing MIL-STD-1686 as a guideline or Buyer acceptable equivalent. Containers shall be marked as containing ESD devices.

8. Seller Quality Assurance Program Requirements. The Seller shall implement and maintain a system that complies with the requirements of MIL-STD-1535 or applicable specification. When items are classified as Group 1, Group 2, Group 3, or as "registered components" on face of this PO, the following applies:

- A. Group 1 Purchases.** Group 1 purchases are products or services which are complex or critical, or which require direct shipment to Buyer's customer. Strict adherence to the quality program/inspection system designated in Clause 1 of this document is required. Source inspection by Buyer or Buyer's customer is required prior to shipment from Seller's plant.

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8. Seller Quality Assurance Program Requirements – Cont’d.

B. Group 2 Purchases. Group 2 purchases are products or services for which the requirements of the quality program/inspection system designed in Clause 1 of this document apply, but source inspection by Buyer or Buyer’s customer is not required, unless otherwise specified in the PO.

C. Group 3 Purchases. Group 3 purchases are products or services for which the requirements of MIL-STD-1535 does not apply and source inspection is not required.

D. Registered Components. Components, which are identified on the PO as “registered components” are complex or critical, and require documentation of the methods and processes used in their manufacture. The following information shall be furnished to and approved by the Buyer prior to manufacture of component. No revision or variation of approved methods and processes are allowed unless approved by the Buyer.

1. The methods and type of critical processing to be used (subject to limitations imposed because of proprietary information).
2. The location within the processing cycles where the inspections will take place.
3. The attributes of the products that will be inspected at each inspection point.
4. The materials and methods of preservation and packaging to be used to protect product.
5. The handling and transportation precautions necessary to protect the product.

9. Tool Proofing. Dimensional part samples from tooling to be used for production shall be furnished to and approved by the Buyer prior to fabrication of production parts. Production parts fabricated in advance of Buyer approval shall be at the Seller’s risk. (Ref: Clause 13 First Article Inspection)

10. Changes. Seller shall not make any changes in materials, design, processes, or relocation of facility to items on this PO without prior notification and approval of the Buyer. Production parts fabricated in advance of Buyer approval shall be at the Seller’s risk.

11. Material Traceability.

A. Components (Electrical, Electronic, and Mechanical). All components used on this PO shall be traceable to the original manufacturer’s lot or date codes and supporting approval documentation (e.g., PO’s & certificates of conformance). This also applies to test data and reports, as specified in the applicable PO, contract or specification. The Seller must be able to trace these components to all delivered items.

B. General. The Seller shall establish and maintain a system for documenting the history of item from receipt of raw material through all stages of manufacture, inspection, test and shipment by such means as a lot number, date code, or serial number control. The means used shall relate the item to the particular lot of raw material, manufacturing process, specification, drawing, heat number, cure date, etc., to provide a complete history traceable to Seller’s records and data. Seller shall furnish the lot, date code, serial number or other traceable identification with each shipment of material.

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- 12. Qualification Testing.** Qualification testing in accordance with Buyer's drawing or applicable specification (s) is required. Seller shall submit qualification test data to Buyer, seller and must receive Buyer's approval prior to the start of production. All units produced or material purchased by Seller for production purposes prior to Buyer's qualification approval shall be at the Seller's risk.
- 13. First Article Inspection.** A First Article Inspection Report (FAIR) is required for the initial lot of product. The Seller shall record all identified measurable characteristics including applicable drawing notes. All multi-cavity molds/dies require first article inspection reports for each cavity. The Seller shall forward this information along with any material certifications (e.g., painting, plating, composition, etc.) with the lot. A representative of the Sellers Quality Assurance Department shall sign and date the report. AS9102 Aerospace First Article Inspection Requirement may be used as a guide and contains a Buyer-acceptable FAIR form. Copies of AS9102 may be obtained from the Society of Automotive Engineers (SAE) at www.sae.org. The AS9102 FAIR form can be found on Buyer's website at www.L-3com.com/EDI by following the Supplier Information link, or can be obtained via Buyer's purchasing agent specified on the PO.
- 14. Shelf Life/Hazardous Material/Explosives.** Material with limited life shall be supplied with accompanying effective date of manufacture or date of expiration and at time of receipt at Buyer, shall have at least 75% of their shelf life remaining. Materials shall be labeled with correct shipping or HMIS markings, item description, part number, and date of manufacture and/or expiration date, storage temperature, and name of manufacture. The Seller shall provide Safety/Hazard Data Sheets with all shipments of material requiring such special handling.
- 15. Buyer/Customer-Furnished Material.** When material is furnished by Buyer or Buyer's customer, Seller shall: (1) verify quantity and inspect upon receipt, (2) functionally test prior to and/or following unit installation as required by the PO, (3) segregate from other material to assure proper use on end product, and (4) document the receipt, inspection, test, handling, and disposition of the material.
- 16. Special Processes.** Special Processes such as painting, plating, x-ray, welding, heat treating, etc. shall be in accordance with specification(s) and standards stated on the drawing and procurement documents. Buyer and/ or its customers may require prior certification and approval of special processes and/or process suppliers.
- A. Lockheed Martin Aeronautics Special Processes.** The following is applicable and shall be flowed down for Lockheed Martin Aeronautics' contracts (e.g., F/A-22, JSF F-35) requiring Quality Appendix QR or QX, and for which Special Processes are applicable.
1. Work to be accomplished in performance of this PO is directly related to a Lockheed Martin Aeronautics Company PO and must be accomplished in accordance with the process specification on this PO and Lockheed Martin Aeronautics Company Appendix QJ.
 2. Seller shall file and maintain a copy of all PO's containing the above statement and make these available for review, upon request.
 3. Seller shall submit a Certificate of Conformance (C of C) with a unique certification number containing the information as specified in sub-paragraphs (a) – (h):
 - a. Title and specification number (including revision letter) of the process;
 - b. Name and address of the process or Non-Destructive Test (NDT) facility;

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16A. Lockheed Martin Aeronautics Special Processes. – Cont'd

- c. Lockheed Martin assigned processor number;
 - d. Date the C of C was issued;
 - e. Part number listed on PO;
 - f. Quantity of parts (to include quantity accepted/rejected);
 - g. Signature and title of authorized quality agent of Seller; and
 - h. Fracture durability classification or serialization when required.
- 4. Seller shall ensure parts are suitably wrapped, boxed or racked to guard against shipping damage and apply rust or corrosion protection.
 - 5. Seller shall identify the specification(s) title and specific revision level(s) and drawing(s) requirement(s) to be performed by the QCS-001 source.

17. Sub-tier Supplier Control. Seller shall flow down the applicable clauses of this document to sub-tier suppliers for this PO. Seller shall furnish the Buyer with the name and address of each sub-tier supplier for this PO prior to issuance of the sub-tier PO.

18. Software Control. Seller shall establish and maintain a software quality assurance system suitable for this PO. Buyer approval of Seller's software quality assurance system must be obtained prior to starting work.

- A. Seller shall submit the following documents for approval within 60 days after date of this PO: (1) Software Quality Assurance Plan, (2) Computer Program Development Plan and (3) Software Configuration Management Plan.

19. Packaging Requirements.

- A. **Unique Packaging.** Unique packaging is in effect as cited on the PO. Contact Buyer if further clarification is required.
- B. **Moisture/Re-Flow Sensitive Devices.** Moisture/Re-Flow Sensitive Devices shall be adequately packaged per ANSI/J-STD-33, or Buyer acceptable equivalent. These devices shall be dry and sealed in moisture barrier bags/containers with desiccant, a humidity indicator card and appropriate caution label applied to the exterior of the moisture barrier bag or container.
- C. **Hazardous Material/Explosives.** Hazardous Material/Explosives on this PO shall be properly packaged and labeled per appropriate Federal regulation (s). The Seller is responsible to ensure that all Federal regulations are met.

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- 20. Contractor Safety Program.** Contractors are obligated to comply with all applicable provisions of the Contractor Safety Manual as a term and condition of their respective PO and purchase agreements. It is the policy of Buyer to ensure that outside contractors performing work at our facility comply with all applicable environmental, health, and safety (EHS) regulations and perform their work in a manner which ensures their own safety, and that of our employees.
- 21. Preference for Domestic Specialty Metals.** This clause requires compliance to DFARS 252.225-7014 (Alternate I) and applies to all Orders in which specified, regardless of its acquisition threshold (DFARS 225.7002-2). In the case of conflict between this SQAR clause and L-3 Communications Terms and Conditions, the former shall apply. Unless otherwise stated, all references to “Contracting Officer” will mean the L-3 EDI procurement agent.

The Seller shall reference DFARS 252.225-7014 (Alternate I) on all applicable sub-tier orders.

DoD’s interpretation of this specialty metals clause, DFARS Subpart 225.7002-2, is that it prohibits the contractor (including its suppliers at every tier) from incorporating into military parts, components, and/or end item deliverables “specialty metals” (including specific titanium and stainless steel alloys as specified therein) which have been melted outside the United States, its possessions, or Puerto Rico, unless certain limited exceptions set forth in the clause or DFARS Subpart 225.7002-2 (exclusive of acquisition threshold) apply. One such exception is for specialty metals melted in a qualifying country or incorporated into an article manufactured in a qualifying country. Those countries are listed at DFARS 225.872-1 (a) or (b). Since the United States is not listed as a qualifying country, DoD does not consider it to be qualifying country. You must comply with this clause unless you apply for and are granted in writing through the Buyer one or more of the limited exemptions authorized under the specialty metals clause.

The following is strongly encouraged of the Seller to ensure compliance with this clause:

- a.) Contact your procurement and quality assurance personnel including receiving inspection, (i.e. where in-coming material and certifications are verified), to make them aware of this specialty metals clause’s requirements, and to ensure that no foreign melted specialty metals are utilized to fabricate any components for use on a product to be supplied to the Buyer unless they are melted in a qualifying country.
- b.) If a distributor or other subtler supplier is the source of your material, ensure that the specialty metals clause requirements have been flowed down. Also take the necessary steps to ensure that your supplier provides only specialty metals (such as titanium or stainless steel) that have been melted within the United States or a qualifying country.

With each shipment the Seller shall specifically state on the Certificate of Conformance (ref. SQAR clauses 3A - H) provided or other accompanying shipment documentation to the Buyer the following or similar statement attesting compliance with DFARS 252.225-7014 (Alternate I):

“This shipment complies with the requirements specified in DFARS 252.225-7014 (Alternate I).”

If the Seller needs further information and/or assistance, please contact the procurement agent identified in your Order. Note, the aforementioned DFARS can be found at www.acq.osd.mil/dpap.

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