

# FRONTIER ELECTRONIC SYSTEMS

## PURCHASE ORDER QUALITY REQUIREMENTS

- Q1. Quality System** - The Supplier shall maintain an inspection or quality system that:
- Meets MIL-I-45208A or ISO 9000 series.
  - Meets MIL-Q-9858A or ISO 9000 series.
  - Satisfies standard inspection requirements of FAR 52.246-2.
  - Meets AS9100 series
- Q2. Equipment Calibration**
- Product acceptance inspections and tests, conducted in fulfillment of this order, shall be performed with calibrated equipment traceable to NIST.
  - Seller shall provide and maintain a calibration program that is in conformance with MIL-I-45208A AND ISO 10012-1 "Quality Assurance Requirements for Measuring Equipment", ANSI/NCSL Z540-1 "General Requirements for Calibration Laboratories and Measuring and Test Equipment", or comparable standards as alternatives to MIL-STD-45662, "Calibration Systems Requirements".
- Q3. Welder Certification** - Shall be in accordance with MIL-STD-1595.
- Q4. Substitutions** - Substitutions and changes are not permitted unless authorized by Change Order Notice to the FES PO. (Always Required)
- Q5. Required Vendors** – Parts or materials may be purchased only from vendors listed on approved engineering documentation.
- Q6. OPL Listed Suppliers** - Items ordered are to be supplied from a qualified manufacturer appearing in the applicable Qualified Products List (QPL).
- Q7. Test Data/Report Submittals**
- Test Data** - Functional assemblies furnished here under shall be accompanied by lot acceptance test data showing full conformance with the acceptance test or other functional requirements of the drawing.
  - Test Reports** - A test report shall be furnished giving the military, federal, or industrial specifications by which the described item on the PO is tested and the actual test data measured. The test report shall be signed by an authorized agent of the supplier or laboratory and the title of the person stated.
  - Inspection Results** - A list of all characteristics checked and the results are provided to FES.
  - Test Data/Inspection Results** - A list of all characteristics checked and the results are retained on file by the supplier for a period of five years upon PO completion and made available for FES inspection upon request.
  - Test Data/Inspection Results** – A list of all characteristics checked and the results are provided to FES.
- Q8. First Piece Inspection (First Article Inspection)**
- The first pieces of material furnished here under shall be accompanied by variables measurement data showing full compliance of each dimension shown in the corresponding drawing. Attributing data shall be furnished for each dimension accepted with functional gauging.
  - The first pieces of material furnished here under shall be accompanied by a First Article Inspection and shall be completed in accordance with AS9102 "Aerospace First Article Inspection Requirements".**
- Q9. Chemical/Physical Certification** - Quantitative chemical and physical data showing conformance with the applicable raw material specification (material test reports) shall be furnished with product delivered here under. This data shall be signed and certified to be accurate by an official of the testing agency.
- Q10. Certification Required**
- Certificate of Compliance** - A certificate of compliance is required. One shall be completed and returned with each shipment and shall identify as a minimum the following:
    - Part number.
    - FES PO number and line number.
    - Serial number and revision (if applicable).
    - Statement certifying that all material delivered under the referenced PO complies with specifications/drawings noted and was inspected as stated and available for review.
  - Certification of Compliance** – A certificate of compliance is required. One shall be completed and shall identify as a minimum the following:
    - Part number.
    - FES PO number and line number.
    - Serial number and revision (if applicable).
    - Statement certifying that all material delivered under the referenced PO complies with specifications/drawings noted and was inspected as stated and available for review.

The certificate of compliance shall be retained by the supplier for a period of five years upon PO completion and made available for FES inspection upon request.
  - Certificate of Compliance – Is required from both manufacturer and distributor. One shall be completed and shall identify as a minimum the following:**
    - Part number.**
    - FES PO number and line number.**
    - Serial number and revision (if applicable).**
    - Statement certifying that all material delivered under the referenced PO complies with specifications/drawings noted and was inspected as stated and available for review.**
- Q11. Traceability for MIL-PRF-38535C and MIL-PRF-19500 Devices**
- Articles to be delivered under this purchase agreement are required to meet the requirements of MIL-PRF-19500 (General Specification for Semi-Conductor Devices) or MIL-PRF-38535C (General Specification for Microcircuits). Traceability for microcircuits shall comply to MIL-PRF-38535C, paragraph 3.4.6 and 30.1.2.8, and record shall be maintained as required in paragraph 3.1.2 (Records) of Appendix A of MIL-PRF-38535C. Traceability for semiconductor devices shall comply to MIL-PRF-19500, paragraph 4.3.1.4.
- Evidence shall be retained on file and available for review and/or delivery to FES for a period of five years upon completion of FES's PO.
  - Shipment of electronic devices using semiconductors shall be accompanied by a certification of conformance from Seller, stating as a minimum:
    - The name and location of the original manufacturer of any semiconductor used in fabrication of the end item.
    - The semiconductor lot number.

# FRONTIER ELECTRONIC SYSTEMS

## PURCHASE ORDER QUALITY REQUIREMENTS

**Q12. Objective Quality Evidence** - Evidence consisting of data/certifications showing complete product and raw material specification conformance for all items used in product manufacturing and/or traceability to such data/certifications at a sub-supplier's facility shall be:

- a. Retained on file and available for review and/or delivery to FES for a period of five years upon completion of FES's PO.
- b. Delivered with each shipment here under.

**Q13. Plastic Encapsulated Devices**

- a. The supplier shall ensure plastic devices delivered under this purchase order have been classified in accordance with J-STD-020.
- b. Plastic encapsulated parts shall be appropriately packaged (dry baked and sealed in a moisture barrier bag with desiccant and a humidity indicator card) and labeled to ensure maximum shelf life upon receipt at FES.
  1. Packaging materials shall be in accordance with EIA-583, MIL-B-81705, MIL-B-131, or equivalent.
  2. Labeling of packaging shall be in accordance with the EP113 or equivalent.
  3. Desiccant materials shall be in accordance with MIL-D-3464 or equivalent.
  4. Humidity indicator cards shall be in accordance with MIL-I-8835 or equivalent.

**Q14. Government/Customer Source Inspection** -

- a. Government/Customer inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government/Customer representative who normally services your plant so that appropriate planning for Government/Customer inspection can be accomplished.
- b. On receipt of this order, promptly furnish a copy to the Government/Customer representative who normally services your plant, or if none, to the nearest Army, Navy, Air Force, or Defense Supply Agency inspection office. In the event the representative or office cannot be located, FES's purchasing agent should be notified immediately.

**Q15. ESD Protection** - Electrostatic discharge protection per ANSI/EIA-625, ANSI 2020, MIL-STD-1686, MIL-HDBK-263, or equivalent is required. Seller electrostatic discharge control program is subject to review and approval by the Buyer.

**Q16. Packaging** - Material delivered here under shall be packaged in accordance with:

- a. Standard Commercial Practice - All material shall be protected against corrosion, contamination, deterioration, or other spoilage during transit. All material shall be packed with suitable protection as to prevent damage through handling, transit, and during storage prior to use. Packaging will be in accordance to "Best Commercial Practice" unless otherwise stated.
- b. The stated item shall be packaged in accordance with the given military specification at level C/C, unless stated otherwise on the PO. (Define item and military specifications as required.)

**Q17. Certification of Calibration** -

- a. Certificate of Calibration shall be furnished with each unit supplied under this purchase agreement. The Certificate of Calibration shall be traceable to the National Institute for Standards and Technology (NIST) and calibrations shall be performed in accordance with ANSI/NCSL Z540-1-1994 and/or ISO 10012-1.
- b. The supplier shall notify FES, in writing, of any out of tolerance condition as it is encountered.

**Q18. Government/Customer Furnished Equipment (GFE/CFE)** - The supplier is required to maintain a program for the positive material identification, segregation, and control of Government/Customer Furnished Equipment (GFE/CFE). This program shall provide for the timely notification of FES's purchasing agent of any deficiency or failure noted upon receipt.

**Q19. Shipment to FES's Contractors** - Material ordered on this PO is to be drop-shipped to a destination other than Frontier Electronic Systems Corp, Stillwater, Oklahoma. The quality data required by this contract shall accompany the shipment and copies of such data shall be mailed to FES, attention "Receiving Inspection," the same date that material shipment is made.

**Q20. Critical and Limited-life Items (Sundry Items)** - Materials or items having characteristics susceptible to quality degradation with age must be marked in a manner indicating the date at which the critical life was actually initiated or the useful life will be expended. Material such as paint, rubber, adhesives, liquid-locking materials, lubricants, etc., shall not be used after its expiration date unless the vendor can produce documented evidence of revalidation. Rubber goods must have the package/container stamped with its cure date or date of assembly.

**Q21. Order of Precedence** - In the event of conflict between specifications, drawings, and PO, the following order shall take precedence:

- a. Purchase order
  - b. Directed attachments
  - c. Drawings
  - d. Specifications
  - e. Referenced documents
- (Always Required)

**Q22. Responsibility for Conformance** - Neither inspection and/or tests made by FES or by Government representatives shall relieve Supplier of the responsibility to furnish an item that conforms to the requirements of the procurement document.

Seller will notify Buyer in writing when discrepancies in the Seller's process or product are discovered or suspected which may affect parts or assemblies Seller has delivered or will deliver under this contract

**Q23. Frontier Electronic Systems Surveys, Surveillance Audits, and Inspection** - FES has the right to conduct surveys, audits and inspection of Supplier's facilities, and those of sub-tier suppliers with prior coordination with Supplier, to determine capability to comply, and to verify continuing compliance, with the requirements of the procurement document.

During performance on this contract, your quality control or inspection system and manufacturing processes are subject to review, verification, and analysis by FES Customers with prior coordination by an authorized FES Representative.

**Q24. Corrective Action Request** - When a quality problem exists with any Supplier item, FES may forward a "Corrective Action Request" to Supplier, requiring timely response that shall include the following information: analysis of the cause of the problem, statement of the action taken to prevent recurrence, and the effectivity of the action. When corrective action is required for Government source inspected

# FRONTIER ELECTRONIC SYSTEMS

## PURCHASE ORDER QUALITY REQUIREMENTS

items, Supplier shall coordinate such action with the Government quality representative assigned to administer Supplier facility. Lack of timely and/or effective Supplier Corrective Action response within given deadline as documented on FES SCA form Fm7.4-2a (unless deadline extended in writing by FES Quality) could result in one of the following: probation, suspension of placement of new purchases, and/or Supplier's removal from the FES Approved Supplier List. (Always Required)

**Q25. Frontier Electronic Systems In-process Inspection** - Supplier performance of in-process operations to FES requirements shall be verified by FES quality field engineering during item manufacture at one or more of the following, as specified by the document:

- a. Prior to encapsulation/conformal coating
- b. Prior to cleaning
- c. Prior to plating
- d. Prior to assembly close-up
- e. As specified by \_\_\_\_\_

**Q26. Frontier Electronic Systems Suppliers** - Supplier shall use only sub-tier suppliers approved by FES. Supplier shall control sub-tier supplier procurements to the extent necessary to ensure quality requirements specified in the procurement document are satisfied.

**Q27. Material Shelf Life**

Material, chemical or item received shall have a minimum of 75% of its original shelf life upon receipt in our facility and MSDS sheet shall be included with item.

**Q28. Printed Circuit Board Requirements**

- a. Items shall meet requirements of IPC-A-600 (current revision) and shall include Net List Testing.
- b. Items shall meet requirements of MIL-P-55110 and shall include Net List Testing. Manufacturer not required to be certified to MIL-P-55110.
- c. Items shall meet and be certified to the requirements of MIL-P-55110 and shall include Net List Testing and test coupon(s). Manufacture shall be certified to the requirements of MIL-P-55110.
- d. Items shall meet requirements of IPC 6012 Class 3, Type 3.

**Q29. Domestic/ Qualified Specialty Metals Only**

As per requirements of DFARS 252.225-7014, Alt. I (June 2005), Contractor is prohibited from incorporating into military parts, components, and/or "end-item deliverables", specialty metals which have been melted outside of the United States, its possessions, or Puerto Rico, unless certain limited exceptions as set forth in the clause or DFARS subpart 225.7002-2 apply. Compliance to the DFARS 252.225-7014 shall be stated in the Supplier's standard Certificate of Conformance or by a separate certificate.

**Q42. Counterfeit Part Prevention** - As part of a counterfeit prevention practice, material/components shall be procured from an Original Equipment Manufacturer (OEM) or a first-tier OEM authorized distributor. For items procured from an OEM or a first-tier OEM authorized distributor, the Seller shall provide the OEM name, authorized distributor name (as applicable), part number, lot number, serial number, and/or date code of items shipped. If the Seller cannot procure the part directly from the OEM or first-tier OEM authorized distributor, Buyer approval is required. Seller shall maintain a method of traceability that ensures tracking of the supply chain back to the OEM manufacturer and shall supply records of this traceability to Buyer on request.

**Q43. Non-ROHS Compliant Parts Only** - All finishes shall contain tin/lead solder conforming to J-STD-006. Solder coated finishes applied over pure tin surfaces are not acceptable unless approved by the Buyer at time of purchase order placement. Documentation sent

with shipment shall show in some manner that the part is non-ROHS compliant.

**Q44. Prohibited Material** - All constructions and finishes containing pure cadmium or pure zinc are prohibited. In addition, constructions and finishes containing pure tin are prohibited unless they contain a minimum of 3-weight percent alloying element(s) (i.e. lead, silver, etc.). Seller shall submit a certificate with each shipment stating that no prohibited materials are present in their deliverable product per Q44.

**Q51. Contamination/Foreign Object Debris (FOD) Control** - Seller shall maintain a FOD prevention program. Seller's FOD prevention program shall include the review of design and manufacturing processes to identify and eliminate foreign object entrapment areas and paths through which foreign objects can migrate. Articles shall be protected by Seller from contamination or damage from foreign objects during processing, testing, inspection, handling, and packaging prior to delivery to Buyer. Buyer shall have the right to perform inspections, verifications, and FOD prevention program audits at Seller's facility to ensure program documentation and effectiveness.

- a. Seller shall submit a certificate with each shipment stating that a FOD prevention program was in place at time of fulfillment.
- b. Seller shall submit most recent audit records of the FOD prevention program at time of fulfillment.