



TELEDYNE ELECTRONIC MANUFACTURING SERVICES (TEMS) SUPPLIER QUALITY REQUIREMENTS

Quality Program provisions are an integral part of the Purchase Order. Section I (A –S) is applicable to all Purchase/Subcontract Orders. The applicable Section II Quality Program provisions are indicated by number on the first page of the Purchase Order or Purchase Change Order in the description block labeled “Q.P. Rider Provisions”. The text for the numbers identified is defined in Section II herein, in numerical sequence. The term “Buyer” means Teledyne Electronic Manufacturing Services and the term “Seller” means the legal entity, which is the contracting party with the Buyer with respect to the purchase order.

SECTION I: GENERAL QUALITY ASSURANCE REQUIREMENTS APPLICABLE TO ALL PURCHASE / SUBCONTRACT ORDERS (MANDATORY):

- A. RESPONSIBILITY FOR COMPLIANCE** Seller is fully responsible for ensuring compliance to all the requirements of the Purchase Order including referenced Section II Quality Rider Provisions listed herein as specified on the Purchase Order. Performance of inspection and test by the Buyer's representatives or the Buyer's Customer representatives at either the Buyer's or Seller's facility shall not relieve the Seller of responsibility to furnish items which conform to the requirements of the procurement document. Seller shall control sub-tier procurements. Quality Riders included in the Teledyne Purchase Order, where applicable, shall be flowed down to Seller's sub-tier suppliers. Objective evidence of sub-tier control shall be available for review by Teledyne at reasonable requested times.
- B. NONCONFORMING MATERIAL** Seller is not authorized to perform Material Review Board (MRB) disposition of nonconforming material, with the intent of delivering such nonconforming materials without expressed written authorization from the Buyer. Departures from drawings and specifications shall be approved by Buyer's Material Review Board prior to shipment. Supplier to submit a Supplier Deviation Request (SDR) Form to the Buyer/Subcontract Administrator for Material Review Board processing at the Buyer's facility.
- C. RESUBMITTAL OF REJECTED MATERIAL** All material rejected by the Buyer and subsequently resubmitted by the Seller shall bear adequate identification of such resubmission either with the material or the Seller's shipping document. Reference shall be made to the Buyer's rejection document and evidence given at the time of shipment or at Final Source Inspection that the causes for rejection have been corrected. Government Source inspected material shall have evidence that the resubmission has also been reinspected by the Government Representative.
- D. CHANGE OF PRODUCT, PROCESS OR FACILITIES** The Seller/Manufacturer shall not implement any major changes in design, materials, processes or control without prior submission to the Buyer for review and approval. Major changes shall be defined as any change affecting performance, quality, reliability, ESD class or interchangeability. The intent of this requirement is to ensure all material supplied under this order will be homogeneous and the performance, reliability, and quality of the material is not degraded. Changed items shall be clearly identified and in a manner different from the original items. Buyer shall be notified of any production/manufacturing change in facilities locations.
- E. DOCUMENTATION REVISIONS** Unless specifically noted, specifications and/or drawings referred to in the Purchase Order shall be the revision in affect as of the date of the Purchase Order acceptance.
- F. CLEAN AIR ACT COMPLIANCE** The use of Ozone Depleting Chemicals (ODC's) in the processing of materials or products delivered for this order is not allowed. If the product requires the use of ODC's, the Teledyne buyer must be notified prior to the initiation of work on the order. If ODC's are used, Teledyne requires that they must be used in compliance with existing laws, and delivered items must be labeled in accordance with those laws.
- G. PREFERENCE FOR DOMESTIC SPECIALTY METALS (MILITARY ORDERS)** Any specialty metals incorporated in articles delivered under this contract shall be melted in the U.S., its outlying areas, or a qualifying country listed in DFARS 252.225.7008 & 252.225.7009 is imposed in regards to specialty metals as applicable. Exemptions to requirements of the above clauses may exist, as outlined in the clauses themselves or by operation of applicable Department of Defense Domestic Non-Availability Determinations (DNAD) posted on its public web site for that purpose.
- H. COUNTERFEIT RISK MITIGATION** Seller shall maintain a counterfeit item risk mitigation process internally and with its suppliers in compliance with the requirements set forth within. Seller represents and certifies that any and all electrical, electronic, and electromechanical parts (hereinafter "Parts") supplied and delivered to Buyer by Seller under this purchase order are new and authentic and are not counterfeit and that the Parts have not been marked or remarked to disguise or falsely represent the identity of the manufacturer. Seller is not authorized to deliver any item procured from sources other than the Original Component Manufacturer (OCM), or their authorized distributors without prior written authorization from Buyer in writing. Seller shall demonstrate that parts are new and authentic by providing an unbroken supply chain trail from original manufacturer via original Certificate of Conformance (C of C). Use of Un-franchised parts is prohibited unless Buyer authorizes procurement in writing.
- I. SAMPLING** The Buyer reserves the right to use either MIL-STD-105(E) or ANSI Z1.4 Sampling Plan for acceptance or rejection of supplies under this order.
- L. CALIBRATION SYSTEMS REQUIREMENTS** The Supplier is responsible for the calibration, accuracy, validation, and maintenance of any equipment, tooling, or gages utilized by the Supplier to produce, inspect, or test articles to be delivered under this Purchase Order. The calibration system shall be in accordance with documented standards such as MIL- STD-45662A, ANSI/NCSL-Z-540-1, or ISO 10012-1. Traceability of such system shall be traceable to the National Institute of Standards and Technology (NIST).
- K. PACKAGING, PRESERVATION AND STORAGE** The Supplier shall control all preservation, packing, storage, shipping and handling to assure that all materials are adequately protected during all phases of Procurement performance and assure compliance with any special handling and shipping requirements further delineated in Section II or Procurement document.
- L. EXPORT COMPLIANCE** Information provided may be considered a US Export controlled item(s) and the release of technology or source code, subject to the United States export rules and regulations is prohibited unless the appropriate authorization(s) are obtained prior to release to a foreign entity. The recipient of any controlled information must comply with all applicable export regulations and export licensing requirements.
- M. ACCESS TO FACILITY** Seller shall allow Access to Teledyne EMS, its Customer, and any Regulatory authorities to all facilities involved in the order and to all applicable records. A formal Request of the visit would be coordinated in a timely manner for all parties.
- N. FOREIGN OBJECT DAMAGE / ELIMINATION (FOD) CONTROL** The Seller shall establish and maintain an effective Foreign Object Damage (FOD) Prevention Program to reduce FOD. NAS 412 may be used as a guideline. The program shall utilize effective FOD prevention practices. The program shall be proportional to the sensitivity of the design of the product(s) to FOD, as well as, to the FOD generating potential of the manufacturing methods.
- P. REQUIREMENTS FOR ELECTRONIC GRADE SOLDER ALLOYS AND FLUXED AND NON-FLUXED SOLID SOLDERS** The supplier shall be in full accordance with J-STD-006 and meet the alloy composition and impurity level classified when TEMS is ordering any Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders.
- Q. SOLDERING FLUXES** The supplier shall be in full accordance with J-STD-004 and meet the requirements for the classification and characterization of fluxes for high quality solder interconnections when TEMS is ordering soldering fluxes.

R. SOLDERING PASTE The supplier shall be in full accordance with J-STD-005 and meet characteristics of solder paste through the definitions of properties and specification of test methods and inspection criteria when TEMS is ordering soldering paste.

S. COMPONENT EXTERNAL LEAD/TERMINATION SOLDERABILITY IPC/EIA-J-STD-002 If an item on this Purchase Order contains solderable external leads/terminations; the seller shall comply with the solderability requirements of J-STD-002.

T. QUALITY MANAGEMENT SYSTEM The Seller's Quality Management System shall be in accordance with the current revision of AS9100, ISO 9001 or equivalent approved Quality Management System. Sellers that are not certified to such shall be audited by Teledyne Quality Assurance. If Seller loses its registration status by third party, it shall notify Teledyne's Quality Assurance within three (3) days of receiving such notice.

SECTION II: QUALITY RIDER PROVISIONS AS ASSIGNED PER PO

013. SOLDERABILITY / PRE-TINNING TESTING REQUIREMENT The seller, in performance of this order, is to certify that the external lead pins and terminals of all components and parts have been tested to satisfy the solderability requirement of all parts, pins, terminals, and wires of this purchase order per J-STD-002.

014. SOLDERABILITY TEST CERTIFICATION The supplier shall certify that the external lead pins and terminals of all components and parts have been tested to satisfy the solderability requirement of ANSI/J-STD-002 Category 1. This certification shall accompany each lot of product.

112. GOVERNMENT SOURCE INSPECTION – MILITARY CONTRACTS Government Inspection is required prior to shipment from your facility. Upon receipt of this order, promptly notify the Government Representative who normally services your plant so that appropriate planning for Government Inspection can be accomplished.

113. GOVERNMENT / CUSTOMER SURVEILLANCE The Government and/or Teledyne Customer have the right to inspect any or all of the work included in this order at the Supplier's Plant. During performance of this order, your Quality Control or Inspection System and Manufacturing Processes are subject to review, verification and analysis by authorized Government/Customer Representatives. Government/Customer Inspection or release of product prior to shipment is not required unless you are otherwise notified.

114. TELEDYNE IN PROCESS / FINAL SOURCE INSPECTION Teledyne will perform In-Process or Final Source Inspection at a mutual agreed process. Notification of Source Inspection dates shall be made through Teledyne Purchasing and shall allow a minimum of three (3) working days for allocated travel for the Teledyne Quality Representative.

222. FIRST ARTICLE (AS 9102 or equivalent) A unit of the product being purchased, representative in every way of the product to follow, shall be identified and designated "First Article" and shall be approved by Teledyne Quality Assurance One (1) legible and reproducible copy of the Supplier's Inspection Report shall accompany the "First Article" submitted. This report shall contain, as a minimum, the following:

- (1) The Teledyne Purchase Order Number.
- (2) The Specification or Drawing Number, including the Revision Level to which the product was built.
- (3) A list of actual measurement data taken from the "First Article" on a form and in a format which can be used to verify the results. If the report is not 100% complete, please explain the omissions.

If the product on which the "First Article" report was manufactured changes in any way, a new report is required. The new "First Article" report may cover only the changed items and those items affected by the change. Specific details on those items proposed for inspection shall be submitted with the request for the abbreviated/delta "First Article".

Inspection performed on a prototype product is not considered a "First Article" and cannot be used in lieu of one without written concurrence of Teledyne prior to any further submittal of the purchase quantity of the same product. Any additional submittal of the purchased quantity shall be at the Supplier's risk.

230. PART SUBSTITUTION NOT PERMISSIBLE The Substitution of "better than" parts is NOT permissible on this Purchase Order.

232. PRINTED WIRING BOARDS PWB's supplied under this order shall conform to IPC-A-600 "Acceptability of Printed Wiring Boards" and the Teledyne document T/L-40A266, "Specification for the Purchase of printed Wiring Boards". The classification shall be class 3 (unless specifically designated otherwise). Cross-sections, thermally stressed coupons, test coupons and solder sample are to be provided with every lot and/or date code.

235. TIN LEAD FINISH REQUIRED The product provided on this order must have a finish that consists of tin/lead coated soldering with at least a 3% (minimum) lead content. The Supplier shall not provide any products on this order that contains a pure tin finish to the component surface without written directions from the Buyer.

331. TRACEABILITY OF MATERIALS GENERAL The Supplier shall provide traceability information to Teledyne on all materials, parts and assemblies used in fabricating the product. Traceability shall be maintained to the Supplier's procurement documents for materials used on this order.

336. LOT CONTROL Lot control is required. Lot number/date code is to be identified on outside of intermediate and/or unit packages. When more than one lot/date code are shipped together, individual lot/date codes are to be segregated and identified on outside of intermediate packages.

338. CONTROL OF FACTORY REELED PRODUCT This order requires the Vendor/Distributor to only furnish factory reeled product. No sub-tier tape and reel services desired. Written Authorization from TEMS QA required to deviate on this order.

339. OUTSIDE VENDOR SERVICES (OSV) – TINNING The Seller shall ensure that all tinned parts meet the cleanliness requirements as specified in IPC-A-610 Para. 10.6.1. Processing using no-clean flux is exempt from this requirement. Components must be dried so as to remove any residual moisture and baked to meet the MSL requirement on the Manufacturers original packaging. Components are to be repackaged in a manner consistent with the original Manufacturers packaging, including tape and reel, matrix trays, waffle packs, etc., and sealed in an ESD safe package consistent with the manufacturer's MSL specification. Over packing shall be such as to insure arrival at Teledyne in satisfactory condition.

441. LIMITED (SHELF) LIFE AND TEMPERATURE OR LIGHT SENSITIVE MATERIAL The Supplier shall, in addition to the prescribed identification of the deliverable items, label each container with the date from which the specified life period begins. Any other special handling, storage or identification requirements shall also be described on the container. These identification requirements shall be recorded on any required certifications and on the shipping documents for the material. The Manufacturer's batch or lot number shall be marked on each unit package. Upon receipt of this material at Teledyne, a minimum of 75% of its shelf life must remain. Moisture Sensitive Level components greater than 1 must be packed in a sealed Moisture Barrier Bag (MBB) with a desiccant and moisture level indicator. The MBB must have a moisture sensitive label indicating the MSL of the component inside.

443. MATERIALS /PARTS / WIRE IDENTIFICATION Materials, parts and spools of wire on this order must be legibly and permanently identified with:

- (1) Purchase Order Number
- (2) Gauge (Wire Only)
- (3) Military Specification Number (if applicable)
- (4) Teledyne Specification / Part Number
- (5) Manufacturer
- (6) Lot Number/Date Code

444. STATIC SENSITIVE DEVICES – HANDLING PACKAGING AND MARKING The Seller shall implement an electrostatic discharge control program in accordance with ANSI/ESD-S-20.20 or equivalent. The seller shall have a Compliance Verification Plan in place showing they are performing process monitoring (measurements) and shall be made available to the buyer upon request. Product shall be processes in a manner to protect from ESD damage. Product packaged for shipping shall be labeled to alert all handlers that the devices require special handling.

448. SERIAL NUMBER CONTROL Serial Number control is required. All parts, shipping documents and unit container shall be identified with the Serial Number assigned.

550. CERTIFICATE OF COMPLIANCE – GENERAL The Supplier shall provide a legible and reproducible signed statement certifying that the product or service meets the requirements of Purchase Order, unless otherwise disclosed. All exceptions shall be traceable to a Teledyne approved deviation or waiver.

551. CERTIFICATE OF CONFORMANCE – MILITARY ORDERS Each shipment shall be accompanied by a legible and reproducible certificate of conformance to the procurement requirements, authenticated by the signature of an authorized representative, which shall include as a minimum:

- (1) Seller's name and address
- (2) Manufacturer's name, if different from Seller's
- (3) Purchase Order Number, Part Number, and Manufacturer's Lot Number/Date Code

554. TEST CERTIFICATION Each shipment shall be accompanied by a legible and reproducible Supplier's Certification, identifiable with the submitted material, stating that test reports for the material are on file and available for examination by Teledyne. The certification shall be authenticated with the signature of an authorized representative of the Supplier or the agency performing the test.

559. ORIGINAL MANUFACTURER'S CERTIFICATE OF CONFORMANCE Each shipment shall be accompanied by a legible Certificate of Conformance stating that the product ordered complies with the requirements of the Purchase Order and shall also be accompanied by a Certificate of Conformance by the original Manufacturer of the product being procured. The Certificate of Conformance shall include as a minimum:

- (1) Manufacturer's name and address
- (2) Part Number, Lot Number/Date Code

661. TEST REPORTS Each shipment shall be accompanied by a legible and reproducible copy of actual test results of the material submitted, identified with specified test parameters defined as operational, mechanical, electrical, hydraulic, inspection, etc. when the data is submitted in a format that is not comparable to the Teledyne specification. A parameter and test condition cross reference sheet must be supplied. These reports shall be authenticated by the signature of an authorized representative of the agency performing the tests.

662. NADCAP APPROVAL (NGC ORDERS) Supplier shall be responsible to ensure that all special processes performed either by Supplier or Sub-contractor, be accredited by the National Aerospace and Defense Contractors Accreditation Program (NADCAP) OR provide evidence that process is approved by Northrop Grumman Corporation. Retain all Nondestructive Testing (NDT) records and results, including X-ray film, for a minimum of four (4) years from product shipment. Certification approval shall be provided to Teledyne upon request.

663. NADCAP OR RAYTHEON APPROVAL (RAYTHEON ORDERS) Plating, surface finishes, conditioning specifications, or heat treatment required by Raytheon Technical Data Packages shall be performed by approved National Aerospace and Defense Contractors Accreditation Program (NADCAP) Processors, Raytheon Approved Processors, or Raytheon Approved Manufacturers. Suppliers shall provide, in writing, the company name performing the process and state whether it was NADCAP or Raytheon approved for that process at the time it was performed.

664. NADCAP APPROVAL OR A2LA (UNITED TECHNOLOGIES ORDERS) Supplier shall be responsible to ensure that all special processes performed by Supplier or Sub-contractor, be accredited by the National Aerospace and Defense Contractors Accreditation Program (NADCAP) OR have American Association Laboratory Accreditation (A2LA).

669. LOT SCREENING AND BURN IN ATTRIBUTE DATA Seller shall include one copy of lot screening and Burn-In summary with each shipment. The summary shall include the conditions of test, quantity tested, and quantity rejected at each test or screen.

774. BEST COMMERCIAL PACKAGING Packaging and packing shall be in accordance with best commercial practices. Methods used shall be sufficient for protection against damage from normal handling, shipping, and storage conditions. ESD precautions shall apply as applicable per QP Rider 444.

779. INDIVIDUAL PACKAGING Finished parts shall be adequately protected to prevent damage during handling and shipment. Parts shall be individually wrapped, bagged, or otherwise protected to prevent part-to-part contact/damage when packaged within a larger pack. The Supplier shall be responsible to determine method of packaging to assure adequate protection during transit.

886. RECORD RETENTION The supplier and his sub-tier suppliers shall retain all of their inspection, examination, test, and certification records for a period of at least seven (7) years after the completion of this purchase order.

887. SPECIAL FLOW DOWN REQUIREMENT FOR NORTHROP GRUMMAN CORPORATION PROGRAMS The requirements of specification 2372A30 (Compliance Program) apply to this order. Vendor is responsible for compliance to this document.

900. RoHS COMPLIANCE The supplier shall be in full accordance with RoHS regulations (Directive 2002/95/EC) and documenting their testing results for RoHS controlled substances.