1.0 PURPOSE

1.1 This document establishes basic Quality Control Requirements for the Seller necessary to ensure that the products/services purchased from the Seller meet the required quality levels.

2.0 DEFINITIONS

2.1 Miltope Corporation is herein called the “Buyer”.

2.2 “SELLER” means the vendor/supplier or distributor performing the work/supplying materials, parts, assemblies, subassemblies, systems or services applicable to the purchase order.

2.3 Items classified with an asterisk **(*)** are in relation to requirements of EN ISO/IEC 80079-34 additional to ISO9001:2015 for products, processes, or services provided for end use in a product under named standard.

3.0 GENERAL REQUIREMENTS

3.1 The SELLER’s Quality Control System shall conform to an appropriately approved QMS.

4.0 QUALITY CONTROL PURCHASE ORDER ATTACHMENTS

4.1 The following special clauses are applicable when so indicated on the purchase order.

Clause 1. Quality Program Requirements

The requirement of these clauses and any procedure or reports executed in implementation thereof, shall be in addition to and not in derogation of other purchase order requirements. Compliance with the requirements of these clauses does not relieve the Seller of his responsibility for furnishing materials and services which fully comply with applicable drawing and specification requirements, nor does it guarantee acceptance of materials and services. References to Contract Number and DO/DX Rating only apply when stated on Purchase Order. Seller shall require their sub- suppliers to comply with quality assurance requirements comparable to those contained in the Purchase Orders. Seller shall assume responsibility for the quality of all procured material and workmanship. Seller shall include this clause in its subcontracts with sub-suppliers and require them to flow down this clause to their sub-tier suppliers.

Clause 2. Request for Deviation

All material discrepancies detected and not corrected by the Seller must be processed on “Request for Deviation/Waiver” DD Form 1694 internal ISO form QA-13-F003 prior to shipment of material. The discrepant material must be held by the Seller until disposition is made by the Buyer’s Quality Assurance Department and the signed form is returned to the Seller. These forms may be obtained from the Purchasing Department.

Clause 3. Department of Defense (DOD) Qualified Product/Supplier

This part must be manufactured by an approved DOD qualified Supplier and/or be a DOD qualified product. Qualified Suppliers and/or products are listed on the applicable DOD Qualified Products List (QPL). Unless otherwise specified on this purchase order, the revision status of all applicable military specifications and standards shall be that issue in effect on the date of this purchase order as determined by the Department of Defense (DOD) Index of Specifications and Standards. A Certification of Compliance stating this is required with this order. When products are supporting a Government Prime Contract, POs shall include Prime Contract Flowdowns and Defense Priority Rating System (DPAS) ratings, as applicable.

Clause 4. Supplier Quality Manual Requirements

Refer to the Buyer's Supplier Quality Manual for specific details on supplier requirements. If you require a copy contact the Buyer or download from www.mymiltope.com.

Clause 5. Authority for Changes

The Seller does not have authority to change any requirement of this purchase order. Only those changes submitted and approved in writing on Deviation Waiver (D/W) form QA-13-F003 shall be considered contractually binding. All other forms of requests such as emails shall not be accepted.

a. Supplier will make no changes in the design, materials, manufacturing location, manufacturing equipment, production processes, changes between a manual and automated process, or any other process related to the Goods, without the advance written approval of the organization's Authorized Representative. This requirement applies whether or not the change affects costs and regardless of the type of change, including product improvements.

b. To request approval to change a manufacturing location or subcontracting of process required to manufacture the Goods, supplier must provide the organization with a plan at least 240 days prior to the proposed start date of implementing such change in the manufacturing location or subcontracting of processes required for the Goods. Any such plan is subject to written approval, and must result in a reduction in the prices charged by supplier to the organization for Goods, and must demonstrate that supplier has taken all necessary actions to avoid negative impacts to the organization, including, but not limited to, maintaining additional inventory, overlapping production schedules, etc. Such price reductions will be agreed to by supplier and the organization prior to implementation.

c. Supplier will notify the organization of any potential changes to the program, Goods, or schedule promptly as it becomes aware of them.

d. Supplier will be responsible for any and all of the organization's costs incurred as a result of changes implemented by supplier including but not limited to all customer charges; all labor costs, including engineering costs, travel and lodging; all costs to transition to an alternative source of supply; redesign and/or recertification; and all corrective action costs (e.g., costs of additional inspection or quality-control systems).

e. Supplier will not deliver, ship, or substitute Goods that have had a process change in its manufacture until all required technical documentation and change approvals have been received from the organization.

f. Suppler will flow down this requirement in all its subcontracts and purchase orders for purchased goods or process-related services required for the Goods, whether such Goods are supplied to supplier as an end item, a component part of an end item, or an individual piece part.

Clause 6.

Clause 7.

Clause 8. Marking & Packaging

Material on this order shall be marked with the Buyer's drawing number and revision per drawing requirements. Catalog items shall be marked with the original manufacturer's part number or the Part Number listed on the Purchase Order. Material which cannot be marked by reason of size shall be suitably marked with individual string tags or on the individual bag, carton, or container used for packaging. Mil Spec items must include Mil Spec part number on label. Metal connectors that are susceptible to scratches shall be protected with protective covers provided by the Seller and/or static shielding bags sealed with anti-static tape. Connectors with protruding pins shall be inserted into anti-static foam and inserted into static shielding bags sealed with anti-static tape. Harnesses and cable assemblies shall be packaged separately into static shielding bags only when populated with active components. Packaging shall be in accordance with ASTM D3951-98 (2004) unless otherwise specified. (No peanuts or equivalent.)

Clause 9. Deleted

Clause 10. Deleted

Clause 11. Deleted

Clause 12. Deleted

Clause 13. Miltope Source Inspection

The items on this Purchase Order are subject to source inspection at point of manufacture. When the items are ready for inspection, or if practical, ten days in advance thereof, notify your procurement representative.

Clause 14. Government Source Inspection

Articles furnished under this Purchase Order are subject to Government inspection at point of manufacture. Upon receipt of this order, promptly notify the Government representative who normally services your plant or the nearest DCMA office in your locality so that appropriate planning for Government inspection can be accomplished. When material is ready for inspection, or if it is practical, ten days in advance thereof, notify the Government Representative or DCMA office. In the event the DCMA representative or office cannot be located, notify the Buyer immediately. Government Quality Assurance Representative at point of manufacture may use drawings or other pertinent data, which may be required for adequate source inspection, available at Seller's plant.

Clause 15. Certification of Compliance

This certificate shall accompany each shipment and must include the following:

1. A. The Buyer's Purchase Order Number, part number and revision
   B. Seller's name, the quantity shipped and serial numbers (if applicable)
   C. When applicable, the contract number, DO/DX rating, and military specification designations
   D. The reference number of any accompanying Material certifications, Certificates of Analysis, etc.
   E. Product and/or Materials Countries of Origin
   *F. Specifically state compliance to the purchase documents, (e.g., a quality plan, Safety Critical Components List, etc., that lists the factors that together demonstrate conformity of the product).
2. The following notation or equivalent text shall appear on the certificate "We hereby certify that the parts and/or materials supplied in accordance with the purchase order were produced in compliance with the specified requirements and Military specifications. Test data and/or other evidence to substantiate this certification is on file and available upon request."
3. The document shall be signed by a responsible Seller official.

Clause 16. Chemical and Physical Test Reports

One copy of the actual chemical and/or physical test reports, as required by specification for each lot, batch, or heat, whichever is applicable, must accompany each shipment. These reports are to reference the following: Purchase Order number, contract number, DO/DX rating, packing list number, military specification designations, date, part number and revision, part name, serial number(s), quantity, origin of materials, material test data.

Clause 17. Functional Test Report

Actual functional test data referencing customer, Purchase Order number, contract number, DO/DX rating, packing list number, military specification designation, date, part number and revision, part name, serial number(s), quantity and run time of units if applicable must be available for each delivery upon request. These data shall be validated by an authorized representative of the Seller's quality control department. The drawing specification will define functional test data items.

Clause 18. Quality Control Lot Test Data

Functional test data used for the Seller quality control acceptance of the manufacturing lot from which this shipment was derived must accompany each delivery under this Purchase Order. This data shall be identifiable to the devices being delivered by manufacturing date code, serialization or other suitable method and shall be both qualitative and quantitative. All data submitted must show that the sampling inspection performed demonstrates that the product being delivered was derived from a lot which was in strict conformance with the requirements of the article being purchased. These data shall be validated by authorized representative of the Seller's quality department. These data must reference customer, purchase order number, contract number, DO/DX rating, packing list number, military specification designation, date, part number, and revision.

Clause 19. Special Processes

A Special Process is defined as a process where the resulting output cannot be verified by subsequent monitoring or measurement. Use of Nadcap or Customer approved sources of supply does not absolve the Seller of their responsibility to monitor supplier performance, provide acceptable processes, products, and services, and to comply with all specification and quality requirements.

REQUIREMENTS

1. The below requirements are applicable in full to all items (including lower-level items) that carry a Miltope or Customer part number:

   1.1. Special Process Controls are required for the processes listed in section 3 below.

   1.2. This requirement is applicable to all parts processed, assembled, manufactured, inspected, or tested at Seller's facility or its sub-tier suppliers.

2. Exceptions:

   2.1. Piece parts, components and/or assemblies that are manufactured in accordance with (or manufactured to meet the requirements of) a Military, Federal or Commercial Specification Part Number are exempt from the requirements of this clause. Examples include JANTX, M39014, MS15795, NAS, RNR, MIL-PRF-39012, etc.

      2.1.1. This exemption includes all Commercial-off the-Shelf (COTS) parts, except when a Seller's COTS item has been modified in any way to meet a requirement, i.e., modified or militarized COTS, as prescribed in a drawing, Technical Data Package (TDP), Statement of Work, or Purchase Order, in which case paragraph 1.2 applies.

   2.2. Special Process suppliers designated by name/location as a required source within a TDP requirement are exempt from the requirements of this document.

   2.3. Sellers who are the design authority for the product being procured by Miltope are exempt from the requirements of this document. This exemption is extended to materials procured against a performance-based Statement of Work or performance-based specification.

   2.4. Where a general special process category (ex: heat treating) is being performed, but the specification is not listed in an Approved Supplier List (ASL), the requirements of this document shall be managed by the Seller in accordance with their Quality Management System.

3. Special Process Control Requirements shall apply as follows:

   3.1. Sellers performing a Special Process on a component or Product to be provided to Miltope shall be Nadcap accredited for the specification as defined with the exception of the Painting Special Process (see the Paint Application Process section below). If The Seller or outsourced sub-tier is not Nadcap accredited, approved use authorization in writing from the buyer must be provided prior to delivery only after acceptable verification is provided by Seller confirming drawing special process specification standards have been complied with (e.g., CoC, testing reports, certifications, etc.).

   3.2. Sellers performing a Special Process on a component or Product to be provided to Raytheon as/or inclusive in an end item shall meet the requirements of Qnote SL current revision which can be found on the Raytheon Quality Notes website: http://qnotes.raytheon.com

   3.3. Special Process Control Requirements shall apply to the following processes:

      3.3.1. Plating and Chemical Finishing Processes:

      - Examples include, but are not limited to: Conversion Coating, Passivation, Oxide Coating, Anodic Coating, Vapor Deposited Coating, and Plating.

      3.3.2. Welding and Brazing Processes:

      - Examples include, but are not limited to: Fusion Welding, Spot Welding, Arc Welding, Resistance Welding, Friction Stir Welding, Electron Beam Welding, Brazing, and Diffusion Bonding.

      3.3.3. Non-Destructive Testing (NDT) Processes:

      - Penetrant, Magnetic Particle, Radiography, Ultrasonic, and Eddy Current.

      3.3.4. Heat Treating Processes:

      - Examples include, but are not limited to: Annealing, Hardening, Tempering, Precipitation Hardening, Aging,

and Case Hardening. Also included are thermal treatments specified by drawing callout such as Stress Relieving, Thermal Cycling and Stabilization Treatments.

- This requirement does not apply to heat treatment processing that is controlled by an Industry/Military material specification. Examples include Aluminum Forging: 7075-T7352 IAW AMS 4117, Aluminum Plate: 6061-T651 IAW ASTM B209, Aluminum Casting: A356-T6 IAW AMS 4218

3.3.5. Paint Application Processes:

- Examples include but are not limited to: Paint Application in accordance with MIS-41252, MIS-47255, WS-9778, or WS-9780.
- ·Nadcap accreditation of paint suppliers is not accepted at this time.

Clause 20. Packing List Documentation

The following are requirements (as applicable) to be included with each shipment.

Seller's name and address
Purchase Order number
Contract number and DO/DX rating
Item description
Applicable certifications
Date of shipment
Miltope Part number and revision letter
Serial number(s)
Quantity
Copies of test(s) performed

Clause 21. AS9145 APQP and PPAP Requirements

AS9145 Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) per AS9145 required when this clause is invoked on Purchase Order. In case of conflicting PPAP requirements, those listed within the Supplier Quality Manual supersede AS9145**.** Supplier shall flow down to sub tiers.

Clause 22. Age Control Information

Cure date and/or shelf-life expiration date and pot life information is required with each shipment. Shelf-life items/material will have not less than 85% (allowing for rounding to whole months) of shelf life remaining at time of receipt by the Buyer. The 85% requirement applies to raw/base/materials that typically have an "M" number associated with the product. Materials / fabrications that have a six digit or more part number are excluded from the 85% shelf-life requirements. Material Safety Data Sheets (MSDS) and Product Technical data sheets are required if applicable with each shipment.

Clause 23. Electro-Static Discharge Control

Seller must have electrostatic discharge controls when handling or packaging electrostatic sensitive parts or assemblies. Reference DOD-STD-1686 and DOD-HDBK-263. See attachment (ELECTROSTATIC PROTECTION) for packaging and marking Electrostatic Sensitive Items.

Clause 24. First Article Inspection

The First Article Inspection will be required when the clause 24 is identified on the purchase order. The format must comply with the AS9102 in its entirety. The inspection report and the first piece used for dimensional evaluation shall be identified when delivered to the Buyer. Some examples of justification for this requirement, but not limited to, are new suppliers for parts, significant modification via ECN, or out of production (last production day to start of next production day) for the designated period identified in the most current AS9102 standard.

All PCB FAIs shall have bare board FAIs submitted with them, under the same AS9102 requirements as assigned to the PCB.

Clause 25. Entry to Supplier's Facilities

Representatives of this organization, the organization's Customers, Organization's Certification Agencies, and/or the Federal Aviation Administration may inspect and evaluate the Supplier's facilities, operations, systems, data, equipment, personnel, and all completed articles manufactured for this organization.

Verification by the customer shall not be used by the organization as evidence of effective control of quality by the supplier and shall not absolve the organization of the responsibility to provide acceptable product, nor shall it preclude subsequent rejection by the customer.

Clause 26. Prohibited Materials

The product(s) to be delivered under this contract or purchase order may contain or be manufactured using Class 1 Ozone Depleting Substances and the following warning statement shall apply to such product(s):

WARNING; MANUFACTURED WITH OR CONTAINS CFC-11, 12, 13, 111, 112, 113, CARBON TETRACHLORIDE OR METHYL CHLOROFORM SUBSTANCES WHICH HARM PUBLIC HEALTH AND ENVIRONMENT BY DESTROYING OZONE IN THE UPPER STRATOSPHERE.

It is agreed that the above warning statement satisfies the requirements of the Clean Air Act Amendments of 1990 (Section 611), Title 40 CFR PART 82.

Clause 27. Deleted

Clause 28. Deleted

Clause 29. PCB/PWA Requirements

- All PCBs must conform to IPC-6011/IPC- 6012 Class 2 and PWA's must be fabricated to conform to J-STD-001 Class 2 and inspected to IPC-A-610 Class 2 unless indicated otherwise by Miltope P.O. or engineering drawings. If there is a conflict between J-STD-001 and IPC-A-610, the J-STD-001 shall take precedence.
- Printed wiring assemblies and flex circuits must be serialized by the Seller so as to facilitate identification and possible recall in the event a non-conformance is identified. Location of the marking and nomenclature are up to the Seller's discretion if not specified on the drawing/print. In the event a board cannot be marked due to size constraints, marking the ESD bag with the serial number may be substituted. In addition to board serialization, the C of C or attachment to the C of C must list all of the serial numbers in the shipment. If these requirements cannot be complied with, a written deviation/waiver must be submitted to the Buyer's procurement for approval.

Physical Requirements

- Cross-section per IPC-TM-650, Methods 2.1.1 or 2.1.1.2. The cross-section should contain the smallest vias commonly used on the board.
- Solder samples (2) – Solderability to be compliant with the requirements of ANSI/J-STD-003
- Dimensional Report including Bow/Twist per TM-650 2.4.22.1C
- Max bow/twist .007 inch per inch diagonal length.
- When required, all boards electrically tested must be stamped to indicate they passed.
- Controlled Impedance Results as required. (TDR or equivalent)
- Visually examine all samples for the following:
    a. Markings including part number and revision
    b. Hold fill materials and condition
    c. Edge conditions
    d. Laminate imperfections
    e. Soldermask registration and adhesion (IPC-TM-650 method 2.4.28.1)
    f. Drill registration as indicated by external annular rings
    g. Component land conditions
    h. Conductor definition, size and spacing
    i. Edge connector condition

First Article Retention and Sample Retention:

The sample board(s) that was actually inspected and ultimately approved will be identified as such and delivered to the materials department. The method of identification is to be appropriate for that specific board but will ideally be physically on the board. When this is not possible, an alternative ID method assuring the board will be used on the first assembly article will be used. Solder samples and cross sections are retained in the material department following the inspection.

Special Instructions and Continued Conformance:

In all cases where this specification is not met or where other defects are found the inspection instructions will be amended for that board or Seller. Corrective and Preventive actions, MRB's dispositioned RTV and Failed cross section analysis are typical inputs to ongoing and specific inspection instructions. All such records are made a part of those Sellers or that boards history and are included in the inspection requirements per this procedure. Special inspection instructions can also be a result of a PAC or PAR review. The current PAC/PAR process supports these special quality requirements, and the requirements will be made available to the proper inspection personnel. The participant requesting the special inspection instructions will note that requirement on the Buyer's form CS-0002 as a special quality requirement at the PAR meeting. Under the PAC/PAR procedure the job cannot proceed until all the requirements of the participants are adequately addressed. Therefore, the PAC section cannot be signed until the inspection instructions are developed.

*On manually assembled PCBs, specified distances and clearances should be verified on a 100% basis. This may be conducted by one of the following methods:

a. a visual verification
b. for surface mount components, by ensuring correct loading of the "pick and place" machines and a visual verification of correct placement
c. by automatic test equipment (ATE) if the ATE addresses each individual safety critical component and by visual verification conducted to verify type number of components in shunt Zener diode/diode assemblies

Where the surface mount component "pick and place" machine selects the component reel based on measuring the component value, the measuring function should be calibrated.

* Manufacturer shall maintain a list of safety critical components used in production (e.g., resistors and Zener diodes) determined by the organization. The safety critical components placed on the PCB shall be verified on a 100 % basis.

Clause 30. Supplier Quality Records

The Seller shall maintain all records associated with the procurement, manufacture, inspection, & test of parts manufactured/sold to this organization as defined on the purchase order. Records must be retained for 20 years and remain legible, readily identifiable and retrievable.

*Where the supplier requires training or specialist skill or knowledge to carry out a verification, then the training material, specialist skill, knowledge or background shall be documented and training records maintained, and readily accessible and provided upon request.

Clause 31. Root Cause Analysis and Corrective Action Requirement

When it is determined that defective material has been delivered to the Buyer, the Seller will be responsible for root cause analysis and corrective action.

Clause 32. Supplier Repair Reports

In the event materials used in production of the Buyer's final product are returned to the Seller for repair, a Repair Report must be submitted upon repair/return of the materials. This report shall include, but not limited to the following:

1. Report Number (RMA)
2. Return Material Purchase Order Number
3. Part Name
4. Part Number
5. Serial Number
6. Failure Mode
7. Methods Used to Analyze Failure

8. Cause of Failure
9. List of Parts used to correct Failure
10. Repair action
11. Signature and Date of person performing the repair
12. Date

Clause 33. Charge Back

In the event material submitted to receiving inspection is rejected and that rejection impacts the Buyer's production schedule, the following apply:

1. The Buyer shall sort and charge the Seller.
2. The Seller may send appropriate personnel to the Buyer's facility to conduct the sort (must be agreed to by the Purchasing and Quality Departments).
3. The Seller may have a 3rd party conduct the sort on-site (must be agreed to by the Buyer's Purchasing and Quality Departments).

Clause 34. In the event a Seller elects to sub out materials for fabrication to a sub-tier supplier, the following shall apply:

Seller shall contact the Buyer's Purchasing and receive written permission to sub out the material or assembly.

Seller shall flow down to the sub-tier supplier all applicable requirements in the purchasing documents, including key characteristics where required.

Clause 35. Calibration

Subcontractors that supply calibration services are required to follow a set of guidelines for the items they calibrate whether they work on the equipment in their facility or in the Buyer's facilities. The requirements are listed below:

- Calibration subcontractors shall utilize calibration methods and processes that are in compliance with the equipment manufacturers' standards or generally accepted industry standard ISO / IEC 17025 (whichever is appropriate for the equipment). These processes should be available for review by the Buyer if requested. Any deviation from such shall be approved by Miltope Buyer through Miltope QA authorization prior to calibration commencement.
- Calibration subcontractors are required to use acceptance criteria as prescribed by manufacturers' specifications, industry standards, national standards, and/or federal standards (whichever standard or specification is appropriate for the equipment). The only exception allowed would be a case in which the Buyer requests the use of some other acceptance criteria.
- Calibration subcontractors are required to provide certifications of calibration that are traceable to NIST.
- Certificates of calibration should contain all relevant information including calibration measurement data with the applicable acceptance criteria.

Clause 36. Electronic Parts Management:

IMPLEMENTATION OF DFARS 252.246-7007 CONTRACTOR COUNTERFEIT ELECTRONIC PART DETECTION AND AVOIDANCE SYSTEM

This clause implements Department of Defense and Federal Aviation Authority regulatory requirements relating to the acquisition of electronic parts. Sellers supplying electronic parts, end items, components, parts, or assemblies containing electronic parts, or services where the Seller will supply electronic parts or components, parts, or assemblies containing electronic parts as part of the service, shall comply with the requirements set forth in D6-55583 "Electronic Parts Management" and the following:

a) *Definitions*. As used in this clause:

"Counterfeit electronic part" means an unlawful or unauthorized reproduction, substitution, or alteration that has been knowingly mismarked, misidentified, or otherwise misrepresented to be an authentic, unmodified electronic part from the original manufacturer, or a source with the express written authority of the original manufacturer or current design activity, including an authorized aftermarket manufacturer. Unlawful or unauthorized substitution includes used electronic parts represented as new, or the false identification of grade, serial number, lot number, date code, or performance

characteristics.

"Electronic part" means an integrated circuit, a discrete electronic component (including, but not limited to, a transistor, capacitor, resistor, or diode), or a circuit assembly (section 818(f)(2) of Pub. L. 112-81). The term "electronic part" includes any embedded software or firmware.

"Obsolete electronic part" means an electronic part that is no longer in production by the original manufacturer or an aftermarket manufacturer that has been provided express written authorization from the current design activity or original manufacturer.

"Suspect counterfeit electronic part" means an electronic part for which credible evidence (including, but not limited to, visual inspection or testing) provides reasonable doubt that the electronic part is authentic.

b) *Acceptable counterfeit electronic part detection an avoidance system*. The Seller shall establish and maintain an acceptable counterfeit electronic part detection and avoidance system.

c) *System criteria*. A counterfeit electronic part detection and avoidance system shall include risk-based policies and procedures that address, at a minimum, the following areas:

1) The training of personnel.

2) The inspection and testing of electronic parts, including criteria for acceptance and rejection. Tests and inspectors shall be performed in accordance with accepted Government- and industry-recognized techniques. Selection of tests and inspections shall be based on minimizing risk to Boeing and its customers. Determination of risk shall be based on the assessed probability of receiving a counterfeit electronic part; the probability that the inspection or test selected will detect a counterfeit electronic part; and the potential negative consequences of a counterfeit electronic part being installed (*e.g.,* human safety, flight safety, property damage, system failure) where such consequences are made known to the Seller.

3) Processes to abolish counterfeit parts proliferation.

4) Processes for maintaining electronic part traceability (e.g., item unique identification) that enable tracking of the supply chain back to the original manufacturer, whether the electronic parts are supplied as discrete electronic parts or are contained in Products. This traceability process shall include certification and traceability documentation developed by manufacturers in accordance with Government and industry standards; clear identification of the name and location of supply chain intermediaries from the manufacturer to the direct source of the product for the seller; and, where available, the manufacturer's batch identification for the electronic part(s), such as date codes, lot codes, or serial numbers. If IUID marking is selected as a traceability mechanism, its usage shall comply with the item marking requirements of DFARS 252.211-7003, Item Unique Identification and Valuation.

5) Use of suppliers that are the original manufacturer, or sources, with the express written authority of the original manufacturer or current design activity, including an authorized aftermarket manufacturer or suppliers that obtain parts exclusively from one or more of these sources. When parts are not available from any of these sources, use of suppliers that meet applicable counterfeit detection and avoidance system criteria.

6) Reporting and quarantining of counterfeit electronic parts and suspect counterfeit parts. Reporting is required to Boeing when the Seller becomes aware of, or has reason to suspect that, any electronic part or end item, component, part, or assembly containing electronic parts purchased by Boeing, or purchased by a Seller for delivery to, or on behalf of, Boeing, contains counterfeit electronic parts or suspect counterfeit electronic parts. Seller shall follow the procedures of AS5553, Fraudulent/Counterfeit Electronic Parts: Avoidance, Detection, Mitigation, and Disposition, for counterfeit electronic parts and suspect counterfeit electronic parts.

7) Methodologies to identify suspect counterfeit parts and to rapidly determine if a suspect counterfeit part is, in fact, counterfeit.

8) Design, operation, and maintenance of systems to detect and avoid counterfeit electronic parts and suspect counterfeit electronic parts. The Seller may elect to use current Government- or industry-recognized standards to meet this requirement.

9) Flow down of counterfeit detection and avoidance requirements, including applicable system criteria provided herein, to subcontractors at all levels in the supply chain that are responsible for buying or selling electronic parts or Products containing electronic parts, or for performing authentication testing.

10) Processes for keeping continually informed of current counterfeiting information and trends, including detection and avoidance techniques containing in appropriate industry standards, and using such information and techniques for continuously upgrading internal processes.

11) Process for screening credible sources of counterfeiting information to avoid the purchase or use of counterfeit electronic parts.

12) Control of obsolete electronic parts in order to maximize the availability and use of authentic, originally designed, and qualified electronic parts throughout the product's life cycle.

d) Boeing shall have the right to review and evaluate the Seller's policies and procedures relating to its counterfeit electronic part detection and avoidance system.

e) The Seller shall include the substance of this clause, including paragraphs (a) through (e), in subcontracts, including subcontracts from commercial items, for electronic parts or Products containing electronic parts.

Clause 37. DFARS 252.225-7009

DFARS 252.225-7009 preference for domestic specialty metals applies to all materials fabricated for the Buyer. The only exception is for specialty metals metal in a qualifying country per DFARS Subpart 225-7002-2.

Clause 38. Foreign Object Debris / Damage (FOD) Prevention

Seller shall maintain a FOD prevention program in accordance with AS9146 Foreign Object Damage 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. Seller shall ensure work is accomplished in a manner preventing foreign objects or material in deliverable items. Seller shall maintain work areas and control tools, parts and materials in a manner sufficient to preclude the risk of FOD incidents. Seller shall document and investigate each FOD incident and ensure elimination of the root cause of each such incident.

Buyer shall have the right to perform inspections, verification and FOD Prevention Program audits at Seller's facility to ensure program documentation and effectiveness. Seller shall identify FOD control person responsible for implementing FOD prevention, awareness and training.

Seller's FOD prevention program shall provide annual FOD training to Seller's employees. At Buyer's request, Seller shall provide records of such self-assessment and training to Buyer, upon request.

Clause 39 thru 42. Deleted

Clause 43. Counterfeit Electronic Parts Control Plan

A Suspect Counterfeit Item means an item for which credible evidence (including, but not limited to, visual inspection or testing) provides reasonable doubt that the item is authentic. Seller warrants that it will not act as or engage an independent distributor, non-authorized distributor, non-franchised distributor, non-authorized supplier, or non-authorized re-seller (collectively, Broker), to assist it in delivering goods pursuant to this Purchase Order unless the Buyer provides prior written approval to do so.

The Seller shall develop and implement a counterfeit electronic parts prevention control plan that documents its processes used for risk avoidance, detection, mitigation, disposition, and reporting of counterfeit parts in accordance with the latest revision of AS5553. For distributors, they shall follow requirements in accordance with the latest revision of AS6081. For Authorized/Franchised Distributors they shall follow requirements in accordance with the latest revision of AS6496. Buyer shall have the right to audit, inspect, and / or approve the processes at any time before or after delivery of the goods ordered hereunder. Seller shall provide evidence of the Seller's risk mitigation process to Buyer upon request. Buyer shall have the right to require changes to the processes to conform to Buyer's defined standards, if any.

The Seller and sub-tier suppliers of electronics that are allowed access to the US Government Industry Data Exchange Program (GIDEP) shall participate in monitoring GIDEP reports and the Seller shall act on GIDEP reports that affect product delivered to the Buyer. The Seller shall issue a GIDEP report when suspect or confirmed counterfeit items associated with the Purchase Order are discovered and ensure suspect counterfeit items are not delivered to the Buyer.

The Seller shall immediately notify the Buyer with the pertinent facts if the Seller becomes aware or suspects that items delivered in accordance with the Buyer purchase order are or contain suspect or confirmed counterfeit items.

Test and Inspection Requirements

The Seller shall establish and implement test and inspection activities necessary to assure the authenticity of purchased product, including:

- Traceability and documentation verification
- Visual examination
- X-Ray Inspection
- X-Ray Fluorescence
- Destructive Physical Analysis
- Thermal Cycle Testing
- Electrical Testing
- Burn-In
- Hermeticity Verification (Fine and Gross Leak)

Tests and inspections shall be performed in accordance with clearly delineated accept/reject criteria provided or approved by the Buyer. The Seller shall prepare and provide to the Buyer records evidencing tests and inspections performed and conformance of the product to specified acceptance criteria.

Tests and inspections shall be performed by persons that have been trained and qualified concerning types and means of electronic parts counterfeiting and how to conduct effective product authentication

Manufacturers Requirement for Material Traceability of Components

The Seller shall maintain a Material Authenticity program that aligns and is consistent with the intent of SAE AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition. Seller shall maintain evidence of supply chain traceability to the original component manufacturer (OCM)/original equipment manufacturer (OEM), authorized aftermarket manufacturer (AAM), or manufacturer-authorized distributor that identifies the name and location of all of the supply chain intermediaries from the component manufacturer to the direct source of the component(s) for the Seller for any components procured in support of this purchase order. Examples of traceability documents indicating proper component transfer from one company to another in the supply chain include but are not limited to: packing slips, receiving documents, purchase orders, and shipping documents. Certificates of Conformance from non-franchised distribution sources are not adequate to meet the supply chain traceability requirements. The Seller shall request and obtain through the Buyer's Authorized Purchasing Representative (the Buyer), the Buyer’s authorization prior to shipping product with acquisition history that includes distribution sources outside of the United States.

If component(s) is (are) procured from an OCM/OEM-authorized distributor, the OCM/OEM-authorized Distributor must obtain the component(s) to be delivered under this contract from the OCM/OEM. Seller shall maintain evidence of supply chain traceability, electronic or hardcopy purchase records for these procurements. If evidence of supply chain traceability to the OCM/OEM/AAM is not available, then the Seller shall have all components submitted to an inspection/test service provider to verify for authenticity prior to shipment.

Any Seller request to procure from a Broker shall include complete and compelling support for such request and shall include all actions completed by Seller to ensure the goods thus procured are not Counterfeit Items. When so authorized by Buyer, Seller shall be responsible for counterfeit risk mitigation testing and providing traceability identifiers (e.g., Date Code / Lot Code, Serial number) for Broker procured parts, and identifying items delivered to Buyer that contain such parts. Seller shall include the substance of this Clause, including this flow down requirement, in procurements for goods at all tiers. Seller shall retain test samples as part of the quality record associated with this purchase order.

Certificate of Conformance and Traceability (Government Contracts)

This clause is applicable to all contracts for QPL or QML integrated circuits or hybrid semiconductor devices procured in accordance with MIL-PRF-38534 or MIL-PRF-38535 and semiconductor devices procured in accordance with MIL-PRF-19500. This clause applies regardless of the point of inspection designated in the contract award. This clause applies both to contracts awarded directly to a manufacturer listed on the applicable QPL/QML and to suppliers (e.g., distributors) not listed as approved manufacturers on the applicable QPL/QML. The parts supplied must be in strict conformance to the requirements set forth and/or referenced in the item description, including applicable revisions and slash sheets. To ensure this conformance, the contractor must provide a Certificate of Conformance and Traceability (CoC/T) with the information and documentation required by the applicable military specification. This documentation must reference the contract number and include a certification signed by the

approved QPL/QML manufacturer. In addition, if the material is not procured directly from the approved manufacturer, all additional documentation required by the specification must be provided to establish traceability from the QPL/QML manufacturer through delivery to the Government. The CoC/T is required to determine acceptability of the supplies. If the CoC/T is not provided, is incomplete or otherwise unacceptable, the supplies will be determined not to meet contract requirements and will be rejected. If the contract requires inspection and acceptance at origin, the contractor shall furnish the original and two copies of the CoC/T to the Government Quality Assurance Representative (QAR) with the items offered for acceptance. The CoC/T must clearly reference the applicable contract number. Upon acceptance, the QAR shall sign all copies indicating approval of the certification and acceptance of the supplies. The contractor shall submit one signed copy to DSCC-FMTA. The second copy shall be retained by the QAR. The original shall be maintained by the contractor. If the contract requires inspection and acceptance at destination, the contractor shall mail one copy of the CoC/T to DSCC-FMTA upon shipment/delivery. The CoC/T must clearly reference the applicable contract number.

Seller shall maintain the following internal processes to control and prevent malware, defined as viruses, malicious code, Trojan horse, worm, time bomb, self-help code, back door, or other software code or routine designed ti a) damage, destroy or alter any software or hardware; b) reveal, damage destroy or alter any data; c) disable any computer program automatically; or d) permit unauthorized access to any software or hardware.

Seller shall maintain a malware management process for the underlying manufacturing information systems used in building the electronic assembly. This process shall consist of continuously monitoring the manufacturing information systems to ensure absence of malware using up-to-date commercially available anti-virus software. The Seller shall maintain evidence of the continuous monitoring (including name/version of the anti-virus software, and scanning machine name/serial number)

For deliverable assemblies that are running commercially available operative systems (e.g., Windows, Linux, Mac) the Seller shall implement a process of scanning these assemblies to ensure that they are free of malware, using up-to-date commercially available anti-virus software. The Seller shall maintain evidence of the scan occurrences (including date of scan, assembly part number, name/version of the anti-virus software, and scanning machine name/serial number).

Seller shall immediately notify the Buyer with the pertinent facts if the Seller becomes aware or suspects that assemblies delivered in accordance with this purchase order contain any malware.

Seller shall provide evidence of these two processes to the Buyer upon request.

Certificate of Conformance

The Seller shall approve, retain, and provide copies of Electrical, Electronic, and Electromechanical (EEE) part Manufacturer Certificates of Conformance (CoC).

Manufacturer CoCs shall, at minimum, include the following:

a. Manufacturer name and address
b. Manufacturer and/or buyer's part number and dash number
c. Batch identification for the item(s) such as date codes, lot codes, serializations, or other batch identifications.
d. Product / Material country of Origin.
e. Signature or stamp with title of Seller's authorized personnel signing the certificate.

NOTE: Distributors shall, in addition to the above, include their name for each part shipped.

Quality Management System

The Seller shall have a quality management system that complies with Society of Automotive Engineers (SAE), AS9120 Quality Management Systems - Aerospace - Requirements for Stock list Distributors. Independent certification/registration is not required unless specified by buyer. Sellers that obtain certification/registration to AS9120 and subsequently change certification/registration bodies (CRB), lose registration status, or are put on notice of losing registration status, shall notify the buyer's procuring organization(s) within three days of receiving such notice from its CRB.

Verification

- For all packaged active electronic components, verify that component marking and packaging labeling are consistent (100% of parts) and that component marking meets permanency and black topping tests (3 parts per date code). Capture high magnification digital photographs of top and bottom of one component for each date code provided in the delivery and a photograph of the packaging. Component marking and packaging labeling (when original labels are available) shall be clearly legible in the photographs.

- For all packaged components, inspect for manufacturer and Mil- Spec required markings and dimensions (3 parts per date code) (e.g., external visual per Mil-Std-883, Method 2009), and for external counterfeit criteria per IDEA-STD-1010 (100% of parts).

- For all packaged components, 100% of the components shall be tested to all specified limits of all Group A static DC parameters at ambient temperature specified per the applicable drawing or in accordance with the applicable industry/military requirements or manufacturer's data sheet. The Seller shall hold the lot for the Buyer's review if 100% (Group A) test failures exceed 10% of the lot quantity. Product containing these components may not be shipped unless authorized in writing by the Buyer.

- For packaged components with internal die cavities, unless the Seller requests and obtains approval of an exception from the Buyer, both De-Cap and X-Ray are required as follows:

- De-cap internal visual on at least one component for each date code performed in accordance with Mil-Std-883, Method 2014 and IDEA- STD-1010, with digital photograph(s). Seller shall verify die topology and markings are authentic with the OCM/OEM/AAM or by comparison to other authentic components or images.

- 100% X-Ray inspection per Mil-Std-883 Method 2012 (digital format preferred).

NOTE: Seller shall verify any mixed construction and/or construction anomalies within a single date code identified in the De-cap or X-ray inspection to be authentic by the OCM/OEM/AAM or validated against a known authentic component prior to shipment.

- For bare die products, inspect for consistent markings on the die and the wafer packaging and verify die size and geometry (visual inspection per Mil-Std-883, Method 2010). The Seller shall verify die topology and markings are authentic with the OCM/OEM/AAM or by comparison to other authentic components or images. Mixed construction shall be cause for rejection. The Seller shall maintain verification records and results, including a copy of X-ray and digital photographs, for the components that pass the inspection and tests above. The Seller shall not ship components which fail these tests/inspections nor utilize such components in circuit card assemblies or other products delivered to the Buyer, may not be shipped unless authorized in writing by the Buyer.

Product Impoundment and Financial Responsibility

If counterfeit parts are furnished under this purchase agreement, such items shall be impounded. The Seller shall promptly replace such items with items acceptable to the Buyer and the Seller may be liable for all costs relating to impoundment, removal, and replacement. The Buyer may turn such items over to US Governmental authorities (Office of Inspector General, Defense Criminal Investigative Service, Federal Bureau of investigation, etc.) for investigation and reserves the right to withhold payment for the items pending the results of the investigation.

Federal Penalties Associated with Fraud

This purchase order and activities hereunder are within the jurisdiction of the United States Government. Any knowing and willful act to falsify, conceal or alter a material fact, or any false, fraudulent or fictitious statement or representation in connection with the performance of work under this purchase order may be punishable in accordance with applicable Federal statutes. Seller employees engaged in the performance of work under this purchase order shall be informed in writing prior to performance of work that there is a risk of Federal criminal penalties associated with any falsification, concealment, or misrepresentation in connection with work performed under this purchase order. Seller shall include the following statement preprinted on each Certificate of Conformance initiated by the Seller and provided to the Buyer in conjunction with this purchase order.

NOTE: The recording of false, fictitious, or fraudulent statements or entries on this document may be punishable as a felony under Federal statute.

Seller shall include all provisions of this contract clause, including this sentence, in all lower tier contracts under this order. Any inability or unwillingness of a lower-tier supplier to comply with this provision should be documented in writing and submitted to the Buyer.

APPLICABLE FARS / DFARS

FAR 52.244-6 Subcontracts for Commercial Items (JUN 2016)

FAR 52.209-06 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (OCT 2015)

FAR 52.222-50 Combating Trafficking in Persons (MAR 2015)

DFARS 252.244-7000 SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DOD CONTRACTS) (JUN 2013).

DFARS 252.204-7012 Safeguarding Covered Defense Information and Cyber Incident Reporting (DEC 2019).

DFARS 225.204-7018 Prohibitions on the Acquisition of Covered Defense Telecommunications Equipment or Services (DEC 2019)

DFARS 252.223-7008 Prohibition of Hexavalent Chromium (JUN 2013).

DFARS 252.225-7007 Prohibition on Acquisition of Certain Items from Communist Chinese Military Companies (DEC 2018).

DFARS 252.227-7015 Technical Data – Commercial Items (FEB 2014), applies if any technical data related to commercial items developed in any part at private expense will be obtained from Seller for delivery to the Government.

DFARS 252.227-7037 Validation of Restrictive Markings on Technical Data (SEP 2016).

DFARS 252.246-7003 Notification of Potential Safety Issues (JUN 2013).

IMPLEMENTATION OF DFARS 252.246-7007 CONTRACTOR COUNTERFEIT ELECTRONIC PART DETECTION AND AVOIDANCE SYSTEM (MAY 2014) REVISED JUN 2015

Clause 44. Nonconforming Material

Nonconformance detected during manufacturing or during Seller's inspections shall be dispositioned using one of the following methods:

Rework: Discrepant material can be reworked to full conformance with all drawing specifications. Reworked items must be resubmitted to normal Seller inspection and/or test operations.

Scrap: Discrepant material obviously unfit for use. Items shall be scrapped in accordance with the Seller's scrap procedures.

Submit for the Buyer's Preliminary Review: The Buyer preliminary review action is required for any discrepant material that cannot be reworked to print, but either is functional or could be made functional via a repair. Such material shall be segregated and controlled to ensure that no further work is performed until a completed Nonconforming Product Report (QA-13-F001) is obtained. The Buyer review should be requested through Purchasing. Disposition instructions will be selected by the Material Review Board. A copy of the completed Nonconforming Product Report form must accompany each shipment of related parts.

Notification of Escapement (NoE) Process:

Seller shall provide written notification to the Buyer when a non-conformance is determined to exist or is suspected to exist on product already delivered to the Buyer. Written notification shall include:

- Part Number and description
- Description of the non-conformance and the requirement on the engineering documents
- Quantity and dates of shipments
- If applicable, serial number / or date codes

Notification must occur within three (3) business days of knowing the above information. However, if the condition is a possible safety of flight, vendor shall submit the information immediately.

Clause 45. Lead Free Control Plan

Seller shall establish and maintain a Lead-Free Control Plan.

Clause 46. Request for Certificate of Analysis

When clause 46 appears on the purchase order, the Seller is required to provide objective evidence of raw material verification.

This requirement shall be imposed on but not limited to metal, plastic, cast, or thixomolded parts.

Clause 47. Packing Materials

The following forms of packing materials are not allowed when shipping product to this organization:

- Styrofoam Packing Peanuts
- Biodegradable Packing Peanuts
- Cornstarch Packing Peanuts
- Shredded Paper

ELECTROSTATIC PROTECTION

FOR ELECTROSTATIC SENSITIVE DEVICES ASSEMBLIES

When the Buyer's Purchase Order lists clause 15 as one of the QA clauses, the following minimum E.S. protective packaging and labeling is required:

1. All microcircuits meeting the requirements of MIL-M-38510 shall be packaged as follows:
   DIPS shall be packaged inside conductive vials, then packaged in conductive field shielding material for unit packaging.

2. All non-standard microcircuits shall be packed in antistatic or conductive bags and antistatic cushioning or antistatic rails used to prevent lead distortion. The protected components shall then be inserted into a conductive bag for the unit package.

3. Components manufactured to MIL-S-19500, crystal oscillator, MIL-O-55310 chip capacitors, MIL-R-55182 film resistors shall be packaged as follows:

Component leads shall be inserted into conductive foam conductive vials or containers which provide electrostatic and physical protection for the unit packaging.

NOTE: All static generating material such as:

Common plastic, bags, wraps, envelopes, bubble pack, popcorn, foams or cartons shall be eliminated from use as inner wrapping. Only conductive material is acceptable as cushioning around the inner wrap.

4. Assemblies containing Electro Static Sensitive devices shall have external connectors fitted with a conductive shunt from pins to the connector shell. The parts shall then be wrapped in a conductive outer wrap for protection from Electro Magnetic fields or Electro Magnetic interface.

Use of E.S.D. symbol and caution label.

Unit packs: The initial protective wrap around the components or assembly will be marked with a sensitive Electronic device symbol and the statement "Handle only at static safe workstations". See Figure 1.

Intermediate and exterior packs: the intermediate pack will be identified with a sensitive electronic device caution label, (See Figure 2), on one side of the container while exterior containers require 2 Sensitive Electronic Devices.

FIGURE 1: SENSITIVE ELECTRONIC DEVICE

The Buyer's receiving inspection will not accept any electrostatic sensitive components received without the minimum protective packaging and labeling per Verification on page 13.

FIGURE 2: SENSITIVE ELECTRONIC DEVICE (TYPICAL EXAMPLE)

CAUTION LABEL

5.0 REVISION HISTORY

Rev.	Description of Change	Originator	Effective Date
A – N	History		
P	Add clause 34	Richard Blower	5/11/2006
R	Add revision history page, update clause 25	Richard Blower	6/20/2006
T	Updated clause 27	Richard Blower	11/20/2006
U	Added clause 35	Brian Jones	12/15/06
V	Add clause 36, update clause 29	Richard Blower	4/3/07
W	Add A thru C to Clause 15.	Deborah Kilpatrick	5/25/2007
W1	Update Clause 20	Maria Palmer	6/12/2007
W2	Update Clause 8.	Maria Palmer	12/10/2007
W3	Update Clause 8. Add “only when populated with active components”	Deborah Kilpatrick	5/30/2008
W4	Update Clause 30. Add “Records must remain legible, readily identifiable and retrievable”	Richard Blower	1/7/2009
Y	Add clause 37	Richard Blower	8/5/2009
AA	Update Clause 29 per attached redlines	David Nordgren / Bob Kaseta	10/9/2009
AB	Update clause 35 to include additional requirements for calibration method; formatted clause 35 to include bullet points. Add clause 38	Richard Blower / Brian Jones	11/23/2009
AC	Updated Clause 22	Deborah Kilpatrick	5/13/10
AD	Add Clause 39, 40, and 41	Mike Demoss	12/9/10
AE	Update clause 22	Richard Blower	7/7/11
AF	Update clause 24	Richard Blower	9/1/11
AG	Added Clause 42	James Newell	10/7/11
AH	Delete clause 28, update clause 37	Deborah Kilpatrick	11/22/11
AJ	Add clause 43	Maria Palmer	2/23/12
AK	Update clause 8	Maria Palmer	5/7/12
AL	Update clause 36, add clause 44	Andy Marulis	10/29/12
AM	Update para 3.1, add clause 45	Maria Palmer	3/7/13
AN	Update clause 44 to add NoE Process	Maria Palmer	5/3/13
AP	Update clause 43	Andy Marulis	9/23/13
AR	Full Revision with ESD Updates	Andy Marulis	4/4/14
AT	Update clause 30 to reflect 20 year retention	David Nordgren	9/10/14
AU	Reinstate clause 24	Danny Morris	3/23/15

Rev.	Description of Change	Originator	Effective Date
AV	Modify clause 5 and add clause 46	Richard Blower	7/23/15
AW	Added clause 47. “Packing Material”	Daphne Fields	9/21/16
AY	Add subsection “D” to clause 15.	Daphne Fields	6/6/18
AAA	Updated clause 43 for Distributors	Luca Bologna	2/5/19
AAB	Updated clause 1, 15, 43 with flowdown requirements including country of origin, counterfeit, subsupplier Quality requirements	Luca Bologna	2/13/2020
AAC	Updated to reflect Miltope name change	Daphne Fields	7/28/2020
AAD	Updated clause 24 to match AS9102 FAI requirement for minimum time out of production	Luca Bologna	9/1/2020
AAE	Updated clauses 5 for customer flowdowns, Clause 43 with GIDEP and Malware. Added Clause 19	Luca Bologna	11/05/2020
AAF	Updated nomenclature, updated clauses 5 and 7, added clause 32	Daphne Fields	3/11/2022
AAG	Updated clauses 3, 35, 38, and 43	Daphne Fields	4/09/2024
AAH	Added clause 21, AS9145 requirement	Daphne Fields	10/29/2024
AAJ	Added clause 36 EEE Parts Management; FARs & DFARs to clause 43 Added requirements of EN ISO/IEC 80079-34: standard; updated clause 24 to add bare boards FAI requirements	D.Fields L.Bologna	11/03/2025