



QuinStar Technology , 24085 Garnier Street, Torrance, California 90505, Phone (310) 320-1111/Fax (310) 320-9135

Approver:
M. Ramos
 QA Engineer

Approver:
L. Wasai
 Purchasing Supervisor

Approver:
R. Hernandez
 QA Manager

Approver:
R. Lieu
 QA Engineer

Approver:

Quality Flow Down Requirements

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1.0 Purpose

This document establishes the Quality Assurance requirements (QA Clauses) which are applicable as specified on the Purchase Order.

2.0 Definitions

- **QuinStar Technology** - The legal entity which is the contracting party with Seller with respect to the Purchase Order.
- **Buyer**- The QuinStar authorized procurement representative that originates the Purchase Order with the Seller.
- **Seller**- The legal entity which is the contracting party with QuinStar with respect to the Purchase Order.
- **Material** – Materials used to create products typically raw metals, plastics, elastomers, adhesives, etc.
- **Service** – Services are manufacturing operations, consulting, skilled labor, utilities and other commodities,
- **Product** – Products are an aggregate of material and services transformed into components, assemblies, and other tangible items.
- **P.O. – Purchase Order.** The contractual vehicle used to procure services, products, and materials from a seller. Supplier/Sub tier Supplier – An entity that supplies services, products, or materials to the Seller.
- **OEM – Original Equipment Manufacturer.** OEMs manufacture others designs.
- **OCM – Original Component Manufacturer**
- **Franchised Distributor** – An entity that supplies services, products, or materials to the Seller under expressed authorization by the OEM.
- **Non-Franchise Distributor** – An entity that supplies services, products, or materials to the Seller without expressed authorization by the OEM.
- **COTS- Commercial off the shelf.**
- **Customer Furnished Equipment/Material (CFE/CFM)**- Customer-furnished equipment/material acquired by the Customer and delivered or otherwise made available to the contractor as part of a contractual requirement. Government Furnished Property (GFP)- “Government-furnished property” means property in the possession of, or directly acquired by, the Government and subsequently furnished to the Contractor for performance of a contract. Government-furnished property includes, but is not limited to, spares and property furnished for repair, maintenance, overhaul, or modification. Government-furnished property also includes contractor-acquired property if the contractor-acquired property is a deliverable under a cost contract when accepted by the Government for continued use under the contract. (FAR 52.245-1).

3.0 Quality Assurance Requirements

If this form is referenced on the Purchase Order, the following Quality Assurance Clauses are a requirement of the procurement only when specified by number and letter designation paragraph (QAC-XX), as applicable on the face of the Purchase Order. The general Quality Assurance requirement, QAC-1, applies to all purchase orders.

3.1. QAC-1 Quality Control General (Applies to All Purchase Orders)

GENERAL

- If the Seller is unable to comply with this or any other Supplemental Quality Purchase Order Condition (QA-Clause) they shall contact the Buyer immediately and not accept the Purchase Order until they have either received a written deviation/waiver from QuinStar buyer or have achieved compliance through changes within their processes and or subcontractors. Approval requests shall be submitted to the Buyer via email.
- When the Seller is unsure about QA-Clause applicability they should contact QuinStar Technology Quality Assurance for clarification/ consensus.
- Changes to this Purchase Order can only be approved by the Buyer.

3.2. Quality Management System

The Seller shall maintain a quality program that assures that all supplies and services furnished to QuinStar Technology conform to contractual requirements. The quality program shall be documented and available for review by QuinStar Technology throughout the life of the P.O.

3.3. Change in Approved Drawings, Processes, Materials or Procedures

This section is not relevant for Commercial and/or Military Part Numbers.

- Seller shall not change any drawing, process, material, or procedure without prior written approval QuinStar Technology, if such drawing, process, material, or procedures were originally approved by QuinStar Technology.
- In the event of a change, QuinStar Technology, under this Article, reserves the right to request and receive first article samples for evaluation and to examine the associated distributors, facilities, drawings, processes, material, or procedures to access their suitability for provision of compliant products and services.
- Failure to notify QuinStar Technology of changes may result in rejection of the material.
- Part Substitution shall not be allowed unless otherwise specifically authorized in the Purchase Order.

3.4. Responsibility for Conformance

The Seller named on the Purchase Order retains full responsibility for ensuring products, catalog items, or services furnished here under; comply with all applicable specification and standard requirements for design, construction, and workmanship. All Industry Standards/Specifications and flow downs shall be to the latest revision unless otherwise stated on the Purchase Order. The Seller shall:

- Provide (flow-down) of applicable specification and standards requirements to sub-tier suppliers.
- Be aware of their contributions to product conformity and product safety.
- Be aware of the importance of ethical behavior.
- Ensure, by performing physical and/or functional inspections that sub-tier Suppliers have complied with the requirements of this Purchase Order. Upon request, Seller shall provide objective evidence to QuinStar Technology Quality personnel of compliance to this provision.
- No one except the Buyer or their immediate management, has authorization to approve changes to the Purchase Order. The Seller is liable for any changes made without prior written approval from the Buyer.
- All relevant Purchase Order requirements (key characteristics, supplemental quality Purchase Order notes, etc., as applicable) required to assure that QuinStar Technology's quality requirements are satisfied shall be flowed down to their sub-tier suppliers. Seller shall notify Buyer promptly when nonconformance is discovered that may affect delivered products. Notification shall include sufficient traceability information to identify and locate affected parts/material.

- The Seller's quality program shall assure that completed items are tested and inspected. Inspection status shall be known at all times. When all characteristics cannot be verified at final inspection or test, in-process verifications shall be utilized. If the product is reworked or repaired, any characteristics affected must be verified as conforming to requirements by test and/or inspection as appropriate. Rework that is not totally compliant with the drawings and specifications are not permitted unless specifically authorized by QuinStar Technology.

3.5. Surveys, Surveillance, Audits, and Inspection

QuinStar Technology, QuinStar Technology's Customer, and Authorities have the right to conduct surveys, audits, and surveillance of Seller's facilities, or those of Seller's subcontractors, or Suppliers with prior coordination with Seller to determine the capability to comply and to verify continuing compliance with the requirements of the Purchase Order.

3.6. Corrective Action Requests

The Seller and their sub-tier suppliers are to take prompt action to correct conditions that have or could result in the shipment of nonconforming material. When a quality problem exists with Seller's items, QuinStar Technology may forward a Corrective Action Request to Seller. Corrective Action Requests require timely responses and must address the following at a minimum:

- The short-term containment of suspect parts (if applicable);
- Analysis of the root cause of the problem;
- Action(s) taken to prevent recurrence and effectivity of said action(s);

3.7. Measuring and Test Equipment

When test equipment and calibrated tools are used, Seller shall be responsible for validating the accuracy and stability of tools, gages, and test equipment used to demonstrate that items conform to the Purchase Order. Traceability of calibration of equipment and gages shall be performed in accordance with an industry recognized calibration standard unless stated otherwise in the Purchase Order.

3.8. Nonconforming Material

The Seller shall maintain a system for controlling nonconforming material, including procedures for the identification, segregation and disposition of reworked or repaired material. All nonconforming material must be positively identified to prevent use, shipment and intermingling with good material. Nonconforming material shall be held in a designated area. Any request for acceptance of nonconforming material shall be coordinated by QuinStar Technology.

3.9. Inspection Records

The Seller and their sub-tier suppliers shall maintain records of all essential inspections and tests for a minimum period of 4 years unless otherwise stated on the Purchase Order. These records shall indicate what was observed, the number of observations, the number and type of deficiencies, the quantity accepted and rejected, and the nature of any corrective action taken. Records shall also include material, process and finish certifications when applicable. Records are to be maintained and made available to QuinStar Technology and other regulatory entities upon request. After the retention period, all records shall be archived or destroyed as required by the Purchase Order, or at the discretion of the Seller if no further requirements exist.



3.10. Packaging

The Seller is responsible for assuring that all items are delivered without damage or deterioration and are efficiently and economically packed for the method of transportation and type of handling involved. Unit and intermediate packaging shall be employed as necessary to prevent damage or deterioration. Material shall be packaged or segregated in such a way as to assure lot integrity.

3.11. Identification:

Each shipping container and intermediate package shall be identified with:

- Procurement document number
- Part Number/Drawing Number and Revision (when applicable)
- Quantity
- Manufacturer name (if known)
- Manufacturer date (if known)
- Cure Date (if known)
- Serial number (when applicable)
- Batch or Lot number (when applicable)
- Expiration Date (when applicable)
- Electrical components shall be kept from direct contact with cardboard and other paper products.
- Electrostatic Discharge sensitive component shall be packaged in static shielding packaging which meets the requirements of MIL-PRF-81705, EOS/ESD S11.31, MIL-STD-1686 or equivalent. A label identifying that the parts are static sensitive shall be attached to the package.
- Perishable items or those with limited shelf life must be handled/preserved in accordance with recommendations of the manufacturer.
- Machine/Fabricated Parts shall be clean, free of oil, FOD and other contaminants prior to packaging. Packaging shall be IAW ASTM D3951 unless otherwise specified on the purchase order. Parts shall be packaged using materials IAW ASTM D3951, reference APPENDIX X1.4 – X1.5 with material selection based on part size, mass and fragility prior to packaging in shipping box.

3.12. Electrostatic Discharge Protection (ESD)

For the contractual requirements of parts that are ESD sensitive, the Seller shall have an Electrostatic Sensitive Discharge (ESD) control program subject to review and approval by QuinStar Technology in compliance to the requirements of the applicable standard specified by the Purchase Order.

3.13. Obsolescence

When Seller has knowledge that any material or hardware item to be provided in performance of this purchase order is obsolete, is marked for impending obsolescence, or has an established end of production date, Seller shall immediately give initial notice thereof, including all relevant information with respect thereto, to Buyer. Such notice shall include, but not be limited to (1) complete details of which parts are affected; (2) date of obsolescence; (3) end of production date; (4) reason for obsolescence; (5) pricing and availability of last-time buy; and (6) Supplier's recommendation for replacement parts inclusive of known impacts to performance, pricing, availability, and lead time.

3.14. Conflict Minerals

This section is not applicable to distributors of COTs or OEM products (i.e. electronics, hardware, etc.). If seller is providing goods to buyer under this purchase order, seller agrees to comply with the conflict mineral policy outlined in section 1502 of the Dodd-Frank Act and to use commercially reasonable efforts to:



- Identify whether such goods contain Tantalum, Tin, Tungsten or Gold
- Conduct a reasonable country of origin inquiry regarding the origin of such minerals in such goods to determine whether the minerals originated in the covered countries, as defined in section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act: and
- If such minerals originated in covered countries, conduct due diligence on the chain of custody of the source of such mineral for the purpose of identifying the smelter of the minerals and
- Assist buyer in conducting reasonable due diligence concerning the smelters of such minerals. Seller shall include the substance of this section in any agreement between seller and its lower tier suppliers. Seller shall provide buyer with reasonable documentation of seller's and its lower tier suppliers' due diligence efforts.

3.15. Foreign Object Debris/Damage (FOD) Prevention Program

A FOD prevention program shall be maintained. The 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. The Seller shall ensure work is accomplished in a manner preventing foreign objects or material in deliverable Items. The Seller shall maintain work areas and control tools, parts and materials in a manner sufficient to preclude the risk of FOD incidents.

3.16. Prohibited Materials

Articles supplied on this Purchase Order shall not be exposed to functional mercury or mercury compounds.

3.17. Monitoring Supplier's Performance

QuinStar Technology reserves the right to monitor Seller's performance including:

- Seller Risk of product or service
- Quality of product or service delivered
- On-time delivery of product or service

3.18. QAC-10 General Certificate of Conformance

A legible and reproducible Certificate of Compliance (C of C), attesting that the articles provided conform to the Purchase Order requirements, is required with each shipment including shipments from distributors. Certifications shall include:

- Supplier's Name
- Purchase Order Number
- Quantity
- Line number as shown on the Purchase Order (provided Purchase Order has multiple line items)
- Part Number and Part Revision or identification as shown on the Purchase Order.
- Material Traceability Identification: Serial Numbers, Date Codes, Heat Lots, Batch number, Shop/Job Numbers, other pertinent traceability data of QuinStar Technology supplied materials contained in the shipment, etc. (if applicable)
- Statement of conformity

Certifications must be signed and dated by an authorized agent of the Seller. If it is an electronic certification, an electronic signature is required from an authorized agent of the Seller.



3.19. QAC-20 Record Retention

Seller shall maintain records of all inspections and tests performed on items delivered to QuinStar Technology. Records include, assembly, test, inspection and verification/ validation data identifying conformance to each of the requirements specified in the referenced drawing and/or specification as applicable. All records and test samples shall be made available to QuinStar Technology and/or Government/Regulatory Representative upon request. Period of retention is XX years (see below) from close of order. This retention period supersedes retention periods identified in other clauses unless otherwise specified on the Purchase Order.

- A. Record Retention – 5 Years
- B. Record Retention – 7 Years
- C. Record Retention – 10 Years
- D. Record Retention – 15 Years
- E. Record Retention – 20 Years

3.20. QAC-30 Quality Management Systems and Inspection Practices

Third Party registration is required for the QMS identified below. Copies of the registration certificates shall be provided to QuinStar Technology upon origination or recertification. If the Seller is registered and they lose their registration, changes registrars, or decide to let the registration lapse; the Seller shall notify QuinStar Technology within 7 business days after such changes.

- A. ISO-9001.** Seller shall provide and maintain a system that complies with ISO 9001, “Quality System Requirements.” Compliance with the provisions of this clause in no way relieves the Seller of the final responsibility to furnish acceptable supplies or services as specified.
- B. CONTROL OF QUALITY SAE AS9100.** Seller shall provide and maintain a system that complies with SAE AS9100, “Quality System Requirements.” Compliance with the provisions of this clause in no way relieves the Seller of the final responsibility to furnish acceptable supplies or services as specified.

3.21. QAC-40 Sub-Tier Supplier Management

This Purchase Order requires that all requirements that are invoked or applied to the suppliers purchasing document and its associated documents, including key characteristics where applicable, be flowed down to all sub-tier suppliers. The Seller shall maintain a supplier control system ensuring all sub-tier Suppliers can meet the requirements of the Purchase Order. QuinStar Technology retains the right to approve any sub-tier Suppliers considered for use on deliverable hardware. The Seller shall notify the Buyer of any intentions to subcontract work required to complete the Purchase Order requirements.

3.22. QAC-50 First Article Inspection (FAI) I.A.W. AS9102

The processes and requirements of AS9102 apply to this First Article Activity and the report shall be compliant to all AS9102 requirements. The revision of AS9102 to be used shall be the released revision at the time of purchase order acceptance.

A FAI is required if:

- New part number for the seller
- A FAI has never been submitted/approved before for the part number
- After a 2 year break in production
- After a manufacturing site change (including subcontractor locations)
- After a change on part number, material, hardware, process, design media revision(s)—these items may require partial FAI’s



The First Article(s) shall be produced on production equipment using processes and materials which shall be utilized on production runs. AS9102 Forms 1, 2, and 3 are required. Fields not applicable shall be filled in as "N/A" to demonstrate the FAI has been completely reviewed by the Seller. Seller shall not submit parts from a production run for QuinStar Technology inspection prior to QuinStar Technology acceptance of the associated FAI Report. QuinStar Technology reserves the right to verify First Article results at the Sellers facility.

3.23. QAC-60 Material Certificate of Conformance

Seller shall include with each shipment a legible copy of the manufacturer's certification. The certification shall include the following information:

- A) Name and address of the manufacturer.
- B) Part number and the ordering and procurement specification, including revision levels that controlled the manufacture of the goods.
- C) Manufacturer's production order/lot number.
- D) Raw material data:
 - Material specification.
 - Alloy class, type, or grade.
 - Raw material heat, lot, or melt number.
 - Name of raw material producer.
- E) Chemical analysis report.
- F) Mechanical test report as defined by the applicable specification (e.g. Tensile and/or single/double shear strength).
- G) Metallurgical examination report as defined by the applicable specification (e.g. microstructure and/or macrostructure).
- H) NDT test results: dye, penetrant and magnetic particle results, when required by applicable specification. If Seller is not the manufacturer, Seller's name and Purchase Order shall be referenced on the manufacturer's certification.

3.24. QAC-70 Raw Material Certificate of Analysis

The Seller shall include with each a legible copy of the manufacturer's test report (e.g., mill test report) that states that the lot of material furnished has been tested, inspected, and found to be in compliance with the applicable material specifications. The test report shall list the specifications, including revision numbers or letters, to which the material has been tested and/or inspected and the identification of the material lot to which it applies. When the material specification requires quantitative limits for chemical, mechanical, or physical properties, the test report shall contain the actual test and/or inspection values obtained. These reports must contain the signature and title of an authorized representative of the agency performing the tests and must assure conformance to specification requirements. For aluminum mill products (except castings), certifications for chemistry may indicate compliance within the allowed range. Each Shipment of metallic raw material must be accompanied by:

- A) Manufacturer or mill inspection/test report for the raw material containing:
 - Name and location of the raw material manufacturer or mill.
 - Material identification by specification number and material condition.
 - Manufacturer or mill lot identification number of the raw material.
 - Actual chemical and physical test results as specified in the applicable specification.
 - Actual size and form of billets if required by the applicable standard.
 - A statement that the raw material meets applicable specification requirements.



- B) Each Shipment of nonmetallic raw material must be accompanied by Chemical inspection/test report for the raw material containing:
- Name and location of the raw material manufacturer.
 - Material identification by specification number.
 - Manufacturer lot or batch number of the raw material.
 - Actual chemical test results as specified in the application specification.
 - A statement that the raw material meets applicable specification requirements.
 - Shelf life information (if applicable)

3.25. QAC-80 Specialty Metals DFARS Subpart 252.225-7009 Certification

The items/components contained in this Purchase Order are in support of a DOD contract and have been identified as having the potential to contain “Specialty Metals” pursuant to DFARS 252.225-7009. Acceptance of this P.O. requires the Seller to conform to the requirements of DFARS 252.225-7009. Upon request by QuinStar Technology, Seller shall provide a (CofC) or an approved report certifying that the items/components provided conforms to DFARS 252.225-7009 requiring items/components be melted or produced in the United States, its outlying areas, or a qualifying country.

3.26. QAC-90 Special Process Requirements

- A) Special Processes shall be accredited by NADCAP. Any special processes that are used shall be documented on the supplier’s or sub tier’s C of C. The certification will be verified upon receipt of the hardware by QuinStar Technology.
- B) Seller shall use only QuinStar Technology approved sources.

Process certification shall be provided with each shipment of item(s) delivered on this contract. Special Process Certifications may be in Seller format and shall include the following:

- Purchase Order number
- Part number(s) Serial and/or lot numbers, of the hardware processed (if applicable,)
- Special process specification and revision
- Objective evidence demonstrating compliance with the applicable process, (i.e. temperature charts and hardness test results for heat treatment, destructive test results, etc.....)
- A certification stating the special process was performed per the applicable drawing/specification requirements with a date, and signature of a responsible agent.
- Name and address of entity that performed the special process.

The list of Nadcap approved Sellers can be found at <https://www.eauditnet.com> by creating an account. Upon access, refer to Buyer’s Guide in the Public Documents.

3.27. QAC-100 Counterfeit Parts Prevention – CS

- Seller shall deploy a Counterfeit Item risk mitigation process internally and with its sub tier Sellers. Seller’s process shall be modeled after or exceed SAE AS6174, AS6081 and AS5553 recommendations and requirements.
- Upon request, Seller shall provide evidence of counterfeit item risk mitigation process implementation such as certifications by an accredited auditing organization and /or applicable Seller Quality Management System documentation.



- If Seller is a US or Canada based entity, Seller shall participate in the Government Industry Data Exchange Program (GIDEP) monitoring and acting on GIDEP reports which affect product delivered to QuinStar Technology.
- Seller shall purchase material directly from Authorized Sellers. Any deviation to this policy shall require prior approval from QuinStar Technology.
- Seller shall flow down to their sub tier suppliers and subcontractors, at any level, these requirements.
- If seller is a distributor., Seller shall provide OCM/OEM documentation that authenticates traceability and chain of custody of the affected items to the applicable OCM/OEM.
- Seller shall immediately notify QuinStar Technology with the pertinent facts if Seller suspects items delivered in accordance with the QuinStar Technology Purchase Order contain suspect or confirmed counterfeit items. Seller shall notify buyer or Quality Assurance via e-mail or telephone immediately upon discovery of suspect material.
- Counterfeit parts are deemed to have no monetary value. Counterfeit material is considered to be non-conforming product and a Supplier Corrective Action Request (SCAR) shall be issued to the seller. The parts will not be returned. The US government has dictated through legislation NDAA 2012 section 818 that suspect counterfeit material shall not be reintroduced into the supply chain.

3.28. QAC-110 Counterfeit Parts Risk Mitigation—COTS Items

QuinStar Technology considers COTS items as those that are commercially available to any and all customers without any special modifications.

- All Mechanical components, including but not limited to Screws, washers, pins, rivets, stand offs, are acceptable with a C of C from the Seller indicating parts delivered to QuinStar Technology are those requested by QuinStar Technology representative. Seller therefore certifies that no part replacements or equivalent parts were used to fulfill requirements. Such parts are exempt from functional, Material, or mechanical test data requirements.
- All Passive Electronic components, including resistors, non-electrolytic capacitors, fuses, and wires are acceptable with a C of C from the Seller indicating parts delivered to QuinStar Technology are those requested by QuinStar Technology representative. Seller therefore certifies that no part replacements or equivalent parts were used to fulfill requirements. Seller however shall maintain traceability records and will make such records available to QuinStar Technology upon request.

NOTE: For all active electronic components and other types of COTS items not listed above, requirements of QAC-1 apply.

3.29. QAC-120 Authorized Distributor's Certification

The EEE Component or device Manufacturer's authorized distributor shall be used for this procurement. The manufacturer's authorized distributor shall, at a minimum, provide the following information with each shipment of product to QuinStar Technology:

- Authorized Distributor's Name and address.
- Authorized Distributor's and Manufacturer's part number (if different).
- Batch Identification for the item(s) such as lot and/or date codes, serialization, or other batch identification and the quantity for each lot or date code shall be annotated on the Certificate of Conformance/Compliance.
- Signature or stamp on the C of C with title of Seller's authorized personnel signing the Certificate of Conformance/ Compliance to accompany product for shipment shall be included.



- Authorized Distributor's shall, in addition to the above, include the actual Manufacturer's name for each product shipped to QuinStar Technology
- If available, supply Manufacturer's certification and associated data submitted to authorized distributor at time of purchase.
- Substitution of equivalent part from another OEM is not authorized.

3.30. QAC-130 Electrostatic Discharge Controls

- A) Seller shall provide and maintain a program for electrostatic discharge control for applicable ESD sensitive hardware items to be furnished on this procurement. Buyer requirements are as specified in the Purchase Orders. The Seller's electrostatic discharge control program is subject to review and approval by QuinStar Technology. As a minimum, MIL-STD-1686, ANSI/EIA-625, ANSI/ESD S20.20, or JESD 625 shall be complied with. Areas in which ESD items are handled shall be equipped with humidity monitoring devices. When the relative humidity drops below the permitted lower limit of 30%, all work on ESDS items shall cease until either:
- The relative humidity increases to at least the lower limit or,
 - Ionization equipment utilized at the ESD workstation must be turned on and properly positioned with respect to the product and operated in accordance with the manufacturer's operating instructions.

The Sellers' ESD program shall flow down to their Subcontractors and Distributors, to the extent necessary, to ensure continuation of the manufacturer's ESD control and safe delivery to QuinStar Technology. Minimal flow down requirements shall address handling, storage, packaging, and marking of items under an ESD control program.

- B) Seller shall provide and maintain a program for electrostatic discharge control for all Electronic items furnished on this procurement. Electrostatic discharge control shall be per ANSI/ESD S20.20. All electrostatic sensitive devices shall be packaged in static shielding packaging that meets the requirements of ESD ANSI/STM 11.31 and ANSI/ESD S541.

The Sellers ESD control program is subject to review and approval by QuinStar Technology. Leads shall be shorted together as appropriate using closed cell non sloughing conduction foam, packaged in sealed static shielding containers or bags designed for ESD protection. Each individual package shall include a destructible ESD precautionary label (ANSI/ESD S8.1 or Mil-STD-129P), applied over the closure area of the packaging item.

3.31. QAC-140 Electronic Component Packaging

Unless otherwise specified on the P.O., SOW, Design Media, and Mil-Standard; the following are the default packing requirements for Electronic components.

- Bulk packaging is prohibited
- Packaging shall be in accordance with acceptable commercial practices and as indicated i.e., tubes, tape and reel, JEDEC matrix trays, etc. Parts shall be packaged in such a manner as to prevent damage to components.
- Packages shall be marked with part number, lot/date code, and Sellers Name or CAGE CODE as a minimum
- Packing Slip shall contain the Purchase Order number, part number, Sellers name or CAGE code as a minimum.
- Use tape (& reel as applicable) or waffle pack as originally packaged from the Manufacturer for all electrical components where applicable, in accordance with ESD (ANSI/ESD S20.20) or equivalent. Bulk packaging or repackaging from bulk pack to tape or waffle pack is prohibited. In lieu of bulk packaging, parts can be individually packaged.



- Packaging constituents shall not contain amine based or ionic antistatic chemistry – meaning no pink poly, no pink foam, or equivalent, etc. It is required that packaging for all electrostatic discharge sensitive material must be packaged in ESD-shielding in accordance with ANSI/ESD S541. Packaging shall be designed to provide physical protection for device case and leads.
- Preservation, packaging, packing, handling, and shipment of items shall be in accordance with appropriate procedures to prevent damage and ensure that original quality is maintained. All electrostatic discharge sensitive material must be packaged in ESD-shielding in accordance with ANSI/ESD S541.
- Packaging shall be designed to provide physical protection for device case and leads. Leads must be protected with conductive foam to prevent puncturing of ESD bag.
- Individual unit containers (including waffle carriers) shall be marked with ESD Caution Symbol (i.e. EOS/ESD S8.1).

3.32. QAC-150 Deliverable Inspection/Test Data

Subcontractor shall include with each shipment a copy of the results of the lot or item acceptance tests required by the applicable specification. The report shall include the principal specifications including revision numbers or letters which govern the production of the item. Seller records are also to include parts & materials data, certifications, inspection results, and are to be associated with the part or material manufacturer's lot/batch number/and or date codes as well as the seller's lot number. Where quantitative limits are established by the specification, the report shall indicate the actual values obtained. Required data to be supplied shall be:

- A) QC Attributes data for lot specific screening tests in accordance with the Purchase Order part number.
- B) Variable data for all burn-in and operations life tests.
- C) Dimensional measurement data (actual readings) covering mechanical parameters of the referenced drawing and/or specification. This data shall contain readings of the dimensions selected by the Seller to demonstrate item conformance.
- D) Lot specific final electrical parameter test data.
- E) Data specified in the referenced drawing.
- F) Provide test measurement/inspection data (actual readings) covering the functional (defined as operative inspections, e.g., mechanical, electronic, hydraulic etc.) parameters of the referenced drawing and/or specification. This data shall contain, as a minimum, readings of the parameters listed on the Purchase Order, and/or readings of the parameters selected by the Seller to demonstrate item conformance.
- G) Environmental Test Reports (defined as vibration, temperature, salt fog, dust, etc.). Data must be provided showing that all equipment is capable of meeting specifications when subjected to the environmental extremes/requirements listed on the QuinStar Technology drawing, R.F.Q., P.O. or S.O.W. with shipment of the material.
- H) Pressure or Leak Test report.
- I) 100% VSWR and Continuity Test. Where testing is not specified by the drawing, test data confirming that 100% VSWR and Insertion Loss Testing was successfully performed for all RF cables and 100% Continuity check was successfully performed for all DC cables, shall be recorded and retained (electronically preferred) by Seller for each shipment and shall indicate acceptance by seller's stamp (or signature) and date performed.
- J) Inspection documentation stamped by the responsible quality inspector showing 100% inspection for all attributes noted on the drawings, for all parts submitted under this Contract/Purchase Order.
- K) Items A through J as appropriate to the items being tested and requirements of the Purchase Order.



3.33. QAC-160 Dimensional Inspection Sampling

For dimensional inspection, sampling per ANSI/ASQ z1.4, level iii, AQL xx (except all sample sizes shall be accept on "0" reject on "1") is acceptable.

- a) AQL = 1.0
- b) AQL = 2.5
- c) AQL = 4.0

3.34. QAC-170 Seller 100% Inspection Reporting Requirements

- A) Seller is required to submit with each shipment of items one copy of an inspection report reflecting 100 percent inspection (of all drawing characteristics for each part in the order). Seller shall inspect and report on everything called out on the drawing characteristics. Items with a total tolerance $>.010$ or threaded features, shall allow, at the manufacturer's discretion, the use of an attribute gauge for inspection. If an attribute gauge is used the manufacturer may record the dimension as "OK" or acceptable in the inspection report. The report shall delineate each drawing characteristic, location (sheet and zone), tolerance, and specify actual measurement results for all drawing characteristics including all out-of-tolerance conditions. The only exception to the above procedure applies to items machined under tape control or automated conditions. The inspection data shall be keyed to unique serial numbers assigned to each item (check the Purchase Order for pre-assigned serialization). Serial numbers shall be affixed to each item with a tag and are not to be physically scribed or stamped into the items unless directed by QuinStar Technology, PO, or drawing.
- B) Seller is required to submit with each shipment of items one copy of an inspection report reflecting all drawing characteristics as required. This report shall be limited to the first, middle and last item produced from one continuous set-up. If a sampling plan is specified by QuinStar Technology, inspection of a lot to that sampling plan is allowed. The document number of the sampling plan and relevant sampling plan information used shall be recorded on the inspection report.
- C) Only documented drawing characteristics required on the inspection report are those characteristics and notes identified as Critical. Seller is responsible for compliance to dimensions and notes on the drawing.
- D) Provide normal inspection/test data covering parameters identifying conformance to the requirements of the referenced drawing and/or specification
- E) Provide test measurement data (actual readings) covering the functional parameters of the referenced drawing and/or specification.
- F) Provide dimensional measurement data (actual readings) for each part in this order, covering the mechanical parameters of the referenced drawing and/or specification.

3.35. QAC-180 Government Inspection

All work on this Purchase Contract is subject to inspection, test, or other Government procurement quality assurance activities by the Government at any time and any place. Government inspection is required on this order prior to shipment from Seller's facility. Government inspections performed Shall be determined by the delegated Government inspection representative and may be conducted during processing, fabrication, or final inspection. Upon receipt of this Purchase Contract, promptly notify and provide a copy of the order to the Government representative who normally services your plant so that appropriate Government inspection planning can be accomplished. If your facility is not serviced by Government inspection and/or the area Government inspection representative or agency cannot be located, immediately notify Customer. NOTE: Do not proceed with fabrication/manufacture processing until Government mandatory inspection points (GMIPs) are added to Seller's manufacturing planning. GMIPs shall not be by-passed unless authorized in writing by the Government inspection representative. The period and method for the advance notification shall be identified in the Governments



delegation letter. Typically, request shall not require more than 2 workdays of advance notification of the Government representative who is in residence in the Contractors plant, nor more than 7 workdays in other instances. Without additional charge to QuinStar Technology, the Seller shall provide all reasonably required facilities and assistance (applicable drawings, specifications, change orders, inspection and/or test equipment) for the US Government representative to perform their duties. The Seller shall ensure that Government inspection acceptance is evident for every individual GMIP and that completion of Government inspection is evident on Sellers shipping document/packing list. Evidence may be the signature of Government inspection representative with printed name and office, or application of the representative's stamp. The Government shall accept or reject supplies as promptly as practical after their activities, unless otherwise provided in the contract. Government failure to inspect and accept or reject the supplies shall not relieve the Contractor from responsibility, nor impose liability on the Government, for nonconforming supplies. When manufacturing processing affected by GMIPs is subcontracted by Seller, the provisions of this Clause shall be included in the Seller's Purchase Order verbatim.

3.36. QAC-190 Government Source Inspection

Government inspection is required prior to shipment from Seller. 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. On receipt of this order, promptly furnish a copy to the Government Representative who normally services your plant, or, if none, to the Army, Navy, Air Force, NASA or Defense Supply Agency inspection office. In the event the representative or office cannot be located, QuinStar Technology shall be notified immediately. The Seller, without additional charge, shall provide all reasonable facilities and assistance for the safety and convenience of the Government representative in the performance of their duties. The Seller Shall also provide the government quality representative with all drawings, specifications, or other documents necessary to satisfactorily inspect the material. During performance on this order, your quality control or inspection system and manufacturing processes are subject to review, verification and analysis by authorized Government representatives. Government inspection or release of product prior to shipment is not required unless you are otherwise notified. All work on this procurement is subject to inspection and test by the Government at any time and place. The Government representative who has been delegated Quality Assurance functions on this procurement shall be notified immediately upon receipt of this Purchase Order. In the event that the Government representative cannot be contacted, Buyer shall be notified immediately. The period and method for the advance notification shall be identified in the Governments delegation letter. Typically request shall not require more than 2 workdays of advance notification of the Government representative who is in residence in the Contractors plant, nor more than 7 workdays in other instances. All shipments Shall be accompanied by the Seller's shipping documents noting the assembly or drawing number and applicable revisions, quantity, serial number(s) if applicable, and objective evidence of government inspection. When corrective action is required for Government Source Inspected items, Seller shall coordinate such action with QuinStar Technology and Government Quality Assurance Representative assigned to Seller's facility.

3.37. QAC-200 Precap Inspection

Items on this procurement require precap inspection by QuinStar Technology Source Inspector subsequent to 100 percent precap visual inspection performed by the Seller. Seller shall notify QuinStar Technology' Procurement or Quality Organization representative no less than five (5) working days prior to the time that the items are ready for inspection. Evidence of precap inspection shall be included with shipment.

3.38. QAC-210 Surveys, Surveillance, Audits, and Inspections

QuinStar Technology reserves the right to:



- Perform inspections at Seller's facilities or those of Seller's subcontractors or sub-tier Suppliers with prior coordination with the Seller, during the period of manufacture and inspection prior to shipment.
- Establish a resident inspector or contracted inspector at the Seller's facility.
- Use QuinStar Technology selected sampling plans (i.e. MIL-STD-1916 or equivalent) for the acceptance or rejection of items
- Waive QuinStar Technology source inspection by notifying the Seller in writing.
- Make use of Sellers facility, documentation and instrumentation as required
- During performance on this order the sellers' or sellers' subcontractors' quality control or inspection system and manufacturing processes are subject to review, survey, verification, audit, and analysis by QuinStar Technology or authorized Government/NASA/Regulatory representatives with prior coordination with Seller to determine the capability to comply and to verify continuing compliance with the requirements of the Purchase Order. The Seller shall provide a copy of this Purchase Order to the Government/NASA/Regulatory representatives upon request. QuinStar Technology /Government/NASA/Regulatory representative inspection or release of product prior to shipment is not required unless you are otherwise notified. This shall be done at no cost to QuinStar Technology.

3.39. QAC-220 SDS Requirement (Per Item)

The Seller is required to provide a Safety Data Sheet (SDS) for each of the items included in each shipment in accordance with the Federal Hazard Communication Standard. The SDS Shall include chemical and common names of all ingredients, physical and chemical properties, information on potential physical and health hazards, primary routes of entry, exposure limits and safe handling, control, first aid, and emergency procedures. Each SDS must include the date the document was prepared or revised.

3.40. QAC-230 Limited Life Product Requirements

Minimum Age (75% Shelf Life): Product that has a shelf life requirement shall be supplied according to the following minimum requirements: Shelf Life:

1. All materials furnished under this Purchase Order shall have, as a minimum, 75% of the useable product shelf life remaining.

Documentation Requirements: Required to be supplied on the certifications and shipping documents for each item, package or container (based on the OEM method to determine useful life):

- a) Buyers P.O. number
- b) Batch number
- c) Chemical name and part or code number, type, size, and quantity
- d) Specification number,
- e) Date of manufacture or cure date
- f) Date of shipment or expiration date
- g) Storage and special handling information (when specified material has variable shelf life periods based on specific storage conditions, ex. 1 year at -40oC or 6 months at 0oC)
- h) Environmentally Sensitive Material (Temperature, Humidity, Barometric Pressure, Ambient Light, other) must be identified with the Storage Conditions (Temperature, Humidity, Barometric Pressure, Ambient Light, other), as applicable on the outside shipping container and the lowest level packages containing the material

3.41. QAC-240 Calibration Process General

The Seller shall acquire and maintain gauges, inspection and test equipment to assure that material conforms to the P.O. These devices shall be calibrated at established intervals, before they become inaccurate, against certified



standards that have known relationships to national standards. The level of accuracy shall be a minimum of 4 to 1 greater than the tolerance measured. In cases where the level of accuracy cannot be achieved please provide written justification to QuinStar technology for deviation consideration. The Seller must maintain records of calibration for all measuring and test equipment and made available to QuinStar Technology for review upon request. Reference ISO 9001-2015, ISO 10012, ANSI/NCSL Z540-1, ISO/IEC 17025, or MIL-STD-45662A (canceled).

3.42. QAC-250 Calibration Services

Seller shall provide and maintain a calibration system that complies with ANSI/NCSL-Z-540-1, ISO 10012, and/or ISO/IEC 17025. The most current version of these standards shall apply. A certificate or report providing traceability to the National Institute of Standards and Technology shall accompany each instrument calibrated. This system shall be subject to audit by QuinStar Technology. The Seller shall submit for each item calibrated, one reproducible record of actual calibration results, including applicable graphic and tabular data. Records shall be traceable to the individual item tested, by part number, serial number and customer's order number for the item shipped. Prior to adjustment, verify any out-of-tolerance condition. The certificate shall also state the operating error per specification, the degree of correction of out of tolerance condition and remaining uncorrected out of tolerance condition, if applicable.

3.43. QAC-260 Cable and Wire Harness Assemblies, Acceptance Requirements

Requirements and Acceptance for Cable Assemblies shall be in accordance with IPCWHMA-A-620, Class 3. Solid conductor wire shall not be crimped regardless of any manufacturer/document allowance; solid conductor wire shall be soldered coated and soldered to de-golded contact. This requirement does not apply to Commercial Off The Shelf (COTS) Cable Assembly, Fiber Optic Cable Assembly, bare PWBs, and Flex Circuit (Polyimide "Kapton" Laminate) Cable Assembly.

3.44. QAC-270 Soldering Process Requirements

This item requires that all processes, material, cleaning, coating, encapsulation, product assurance, and personnel certification meet the requirements of:

- A) Soldering shall comply with NASA Standard 8739.2. Requirements for Surface Mount.
- B) Soldering shall comply with NASA Standard 8739.3. Requirements for Soldered Electrical Connections.
- C) Soldering shall comply with IPC-A-610 Class 3
- D) Soldering shall comply with IPC-A-610 Class 2
- E) Soldering shall comply with IPC J-STD-001 Class 3
- F) Soldering shall comply with IPC J-STD-001 Class 2
- G) Soldering shall comply with IPC J-STD-001 XS Space Applications

3.45. QAC-280 Printed Wiring Boards Construction and Test General

Printed wiring boards shall be constructed and tested in accordance with:

- A) MIL-PRF-31032 (Rigid and Flex) or MIL-PRF-55110
- B) MIL-P-50884
- C) IPC 6010 Series:
 - IPC 6010
 - IPC 6011
 - Rigid Printed Board Fabrication shall be per IPC 6012. If Class is not specified, Class 3 shall apply.
 - Flexible printed boards shall be per IPC-6013/MIL-P-50884. If Class is not specified, Class 3 shall apply.
 - IPC 6014



3.46. Reserved

3.47. QAC-300 Product Homogeneity

- A) All product supplied to this Purchase Order line item shall be from manufacturer's single lot and/or date code.
- B) All product supplied to this Purchase Order line item shall be from manufacturer's single lot and/or date code and be less than 3 years old upon receipt.
- C) All product supplied to this Purchase Order line item shall be from manufacturer's single lot and/or date code and be less than 5 years old upon receipt.
- D) All product supplied to this Purchase Order line item shall be from manufacturer's single lot and/or date code and be less than 16 months old upon receipt.

3.48. QAC-310 Traceability Documentation

Traceability documentation shall be provided to the following requirements:

- A) MIL-PRF-19500 (Semiconductors)
- B) MIL-PRF-38534 (Hybrid Microcircuits)
- C) MIL-PRF-38535 (Microcircuits)
- D) Manufacturer's heat, lot, or batch number and the Buyers Purchase Order number shall be included with the material.
- E) All electronic components or electronic subassemblies are required to be accompanied by OEM/OCM certificate of authenticity, indicating the part number as marked on the component or subassembly. If an OEM/OCM certificate is not available, and if contractual requirements allow, and with the approval of Quality team, a manufacturer/distributor's COC and a counterfeit prevention plan can be substituted in lieu of OEM/OCM Certificate of authenticity.
- F) When items are serialized, the serial number shall be listed on any certifications.
- G) For material with date codes, the Seller must supply documentation detailing the quantities supplied of each date code in each incoming lot or be able to furnish that information within 48 hours of request.
- H) Materials furnished by QuinStar Technology for production of items shall reference the shipper number on which the materials were received.
- I) In absence of traceability, and with written authorization from QuinStar Technology Supply Chain prior to shipment, all pertinent test data/authenticity documentation shall accompany each shipment.
- J) Traceability Documentation – Certification indicating compliance with the Specialty Metals clause as defined by DFAR 225.7002.
- K) JAN Device Traceability from Mfr. (per MIL-PRF-19500) (Direct Mfr/Distributor) to be supplied with the shipment:
 - a. Manufacturer's name and address
 - b. Name and address of original customer (QuinStar Technology or distributor)
 - c. Device type and product assurance level (i.e., JAN, JANTX, JANTXV, JANS)
 - d. Lot identification code (including assembly plant code)
 - e. Inspection data or latest re-inspection date on the documentation (Must be less than 24 months old on receipt at QuinStar Technology)
 - f. Quantity of devices in shipment (from manufacturer to original customer). • Manufacturer authorized signature and date.
- L) Shipment must include the approved OEM/Manufacture's certification document or the distributor's certificate of compliance when lot traceability is maintained.
- M) Seller shall maintain a method of item traceability that ensures tracking of the supply chain back to the manufacturer of all Electrical, Electronic, and Electromechanical (EEE) parts included in assemblies and



subassemblies being delivered per this order. This traceability method shall clearly identify the name and location of all of the supply chain intermediaries from the manufacturer to the direct source of the product for the Seller and shall include the Manufacturer's batch identification for the item(s) such as date codes, lot codes, serializations, or other batch identifications.

3.49. QAC-320 As Built List

An "As Built List" shall be provided as required per PO requirements. QuinStar Technology shall provide to Seller the adequate format for the report. A copy of this document shall be supplied with each unit delivered to this Purchase Order.

3.50. QAC-330 Contamination Control Program

The Seller shall provide and maintain a program for contamination control approved by QuinStar Technology. QuinStar Technology retains the right to audit any of the Seller's CC procedures, documents, certifications, and clean room/clean bench environments. Requirements include, but are not limited to, meeting one of each of the following sets of standards.

- Federal Standard 209E and/or ISO 14644-2
 - i. Clean rooms and associated controlled environments – Part 2:
 - ii. Seller Quality Requirements or Specifications for testing and monitoring to prove continued compliance with ISO 14644-1
- IEST-STD-CC1246D (formerly Mil.Std.1246D). Product Cleanliness Levels and Contamination Control Program and/or JSC SN-C-0005D.

3.51. QAC-340 Outgassing Requirement

Outgassing: All nonmetallic and organic materials shall be tested per ASTM E 595. Materials shall exhibit a total mass loss (tml) of not more than 1.0 percent and a collected volatile condensable material (cvcm) of not more than 0.1 percent. Data listed in the NASA reference publication 1124 for applicable materials may be used in lieu of actual testing. Materials having an outgassing characteristic in excess of these limits shall require QuinStar Technology approval, in writing, at least sixty (60) days prior to start of assembly of the first lot of parts.

3.52. QAC-350 Prohibitive Materials and Platings

- A) Space Prohibited Material- Verification Testing Required by Supplier. The following materials shall not be contained in any deliverable product except where specified on drawing or material specification: All metals (internal as well as external) shall be such that they shall not promote the growth of whiskers, dendrites, intermetallic formation or Kirkendall voids, corrosion, and shall not sublime in the intended application conditions.
- Pure, unalloyed cadmium or alloys containing 5 percent by weight or greater cadmium not completely over-plated by a QuinStar Technology approved material.
 - Pure, unalloyed zinc or alloys containing 20 percent by weight or greater zinc not completely over-plated by a QuinStar Technology approved material.
 - Compound (e.g., plating, paint, other surface finishes) containing greater than 1 percent by weight of cadmium or zinc. Only applies to EEE components; excludes connectors, contacts, wire, lugs, and other mechanical or structural components.
 - Corrosive solder fluxes, unless detailed cleaning procedures are specified, along with appropriate verification methods to insure removal of residual contaminant.
 - Pure tin, or >97 percent tin by weight, internally or externally. Tin-Lead finishes and connections shall be alloyed with a minimum of 3 percent lead (Pb) by weight. Note that Sn96/Ag4, Au80Sn20,



and Sn95/Sb5 are standard solder-attach materials used in high temperature soldering applications and are acceptable for those applications only.

- Magnesium or selenium shall not be used unless inside a hermetically sealed device.
- Mercury, alloys of mercury, or compounds of mercury.
- Materials exhibiting or known to exhibit natural radioactivity such as uranium, potassium, radium, thorium, and/or any alloys thereof.
- Materials exhibiting or known to exhibit health hazards such as unalloyed beryllium, toluene, lithium, and/or any alloys thereof.
- Gold plating over silver without a nickel barrier coating, silver under plate on gold contacts and silver-plated terminals and contacts, except movable contacts.

Upon request by QuinStar Technology verification testing, such as XRF testing, shall be required to demonstrate the surface of the item complies with the requirements listed above as a minimum. At a minimum, a single sample shall be tested for each lot/date code. Non-metallic items (e.g., tape, labels) are exempt from the verification testing requirement. The Seller shall supply the test results. The Seller shall alert QuinStar Technology of the presence of any restricted or prohibited materials prior to the execution of the purchase order. Incompatible Dissimilar Metals used in conjunction with each other is discouraged. The Seller shall notify the Buyer of any instances in which incompatible dissimilar metals are used in conjunction with each other.

B) Pure Tin Prohibited Material

All Products Supplied on this Purchase Order shall be free of solder, platings, coatings, and claddings that exhibit either of the following:

- Material composition greater than 97% tin by weight.
- Tin-lead alloy with composition of less than 3% lead by weight. This requirement is applicable to the internal and external configuration of the products.

C) Pure Tin Prohibited Material – With Analysis All Products Supplied on this Purchase Order shall be free of solder, platings, coatings, and claddings that exhibit either of the following:

- Material composition greater than 97% tin by weight.
- Tin-lead alloy with composition of less than 3% lead by weight. This requirement is applicable to the internal and external configuration of the products.

The Seller shall perform finish verification testing, such as XRF testing. At a minimum, a sample of at least two parts shall be tested for each lot/date code. The Seller shall supply the test results with each shipment.

D) Space Prohibited Material – Verification Testing Not Required by Supplier

The following materials shall not be contained in any deliverable product except where specified on drawing or material specification: All metals (internal as well as external) shall be such that they shall not promote the growth of whiskers, dendrites, intermetallic formation or Kirkendall voids, corrosion, and shall not sublime in the intended application conditions.

- Pure, unalloyed cadmium or alloys containing 5 percent by weight or greater cadmium not completely over-plated by a QuinStar Technology approved material.
- Pure, unalloyed zinc or alloys containing 20 percent by weight or greater zinc not completely over-plated by a QuinStar Technology approved material.
- Compound (e.g., plating, paint, other surface finishes) containing greater than 1 percent by weight of cadmium or zinc. Only applies to EEE components; excludes connectors, contacts, wire, lugs, and other mechanical or structural components.
- Corrosive solder fluxes, unless detailed cleaning procedures are specified, along with appropriate verification methods to insure removal of residual contaminant.

- Pure tin, or >97 percent tin by weight, internally or externally. Tin-Lead finishes and connections shall be alloyed with a minimum of 3 percent lead (Pb) by weight. Note that Sn96/Ag4, Au80Sn20, and Sn95/Sb5 are standard solder-attach materials used in high temperature soldering applications and are acceptable for those applications only. Magnesium or selenium shall not be used unless inside a hermetically sealed device.
 - Mercury, alloys of mercury, or compounds of mercury.
 - Materials exhibiting or known to exhibit natural radioactivity such as uranium, potassium, radium, thorium, and/or any alloys thereof.
 - Materials exhibiting or known to exhibit health hazards such as unalloyed beryllium, toluene, lithium, and/or any alloys thereof.
 - Gold plating over silver without a nickel barrier coating, silver under plate on gold contacts and silver-plated terminals and contacts, except movable contacts. The Seller shall alert QuinStar Technology of the presence of any restricted or prohibited materials prior to the execution of the purchase order. Incompatible Dissimilar Metals used in conjunction with each other is discouraged. The Seller shall notify the Buyer of any instances in which incompatible dissimilar metals are used in conjunction with each other. Vinyl and Polyvinyl chloride (PVC) shall not be used as wire insulation or in any other product usage. No silicone is allowed on exterior component surfaces. If silicone is used internally by design, the product shall be hermetic to not introduce silicone contamination. Verification Testing will be performed at QuinStar Technology. Data from the supplier may be submitted but is not required.
- E) Space Prohibited Material –All products on this Purchase Order shall meet the requirements of QAC-350-A with the exception of the conditions listed below
- Alloys containing Cadmium, Zinc, Mercury, or Selenium in concentrations greater than 10% (Purity>10%) shall not be used unless suitably covered with a flight approved plating (e.g. gold, nickel, or copper) or inside a hermetically sealed device or in a Space Proven Detector Device.
 - In addition, the following plating shall not be used: Silver Plated Copper Wire with less than 40 microinches of Silver Plate, Gold Plating over Silver or Copper without a Nickel Barrier for Electrical Contacts (except nonmagnetic electrical contacts which do not require a nickel barrier), and Zinc plating without an overcoat of a suitable flight approved metal.

3.53. QAC-360 Passive Element Evaluation for Hybrids and Assemblies

All required test information and data below shall be provided as part of the data package supplied with the parts.

- A) All passive elements shall meet the evaluation requirements of MIL-PRF-38534, Appendix C.
- B) Ceramic chip capacitors shall be M123 per MIL-PRF-123.
- C) Chip resistors shall be M55342 at FR T per MIL-PRF-55342.
- D) Discrete semiconductors shall be JANKC or JANS according to MIL-PRF-19500.
- E) Monolithic microcircuits shall be QML V or JAN Class S according to MIL-PRF-38535.
- F) Silicon substrate, metal element, chip resistors, with wire bond terminals must be compliant with MILPRF-55342. The only exception to this is Power Conditioning; which may be done, with Buyer approval of sample size, on a sample basis.
- G) Hybrid packages shall be hermetic and meet all MIL-PRF-38534 package requirements.
- H) Any hybrids contained as elements of a hybrid or assembly ordered from the Seller shall meet all of the requirements of this Quality Assurance Code.
- I) The use of commercial parts is strongly discouraged. Buyer approval of such parts shall require strong technical justification and a strong quality assurance/reliability assurance plan from the Seller. The judgment as to the efficacy of the aforementioned justification and plan rests solely with the Buyer.



- J) A complete As-Designed EEEE Parts list shall be provided to the Buyer for approval before purchasing or parts or hybrid/assembly build begins.
- K) A complete As-Built EEEE Parts list shall be provided to the Buyer with the data pack shipped with the finished hybrids or assemblies.
- L) Passive elements supplied on this order shall conform to the requirements of Buyer's specification.

3.54. QAC-370 PIND Testing

PIND testing required for microcircuit devices with cavities, when it is not performed during standard product flow. PIND test per MIL-STD-883 TM 2020A PDA less than or equal to 1%. Single pass not allowed.

3.55. QAC-380 Variation Management of Key Characteristics

The following requirements apply if Key Characteristics are identified on QuinStar Technology drawings:

- Supplier shall develop and maintain a Variation Management Program in accordance with AS9103.
- Supplier procedures shall include Process Control Documents (PCDs) which detail how key characteristics are manufactured, critical process steps identified, and how variation shall be analyzed, evaluated, and controlled.
- Supplier shall provide evidence of analysis of data and actions taken in response to identified variations, outside of established statistical control limits
- Supplier shall flow down to sub tier suppliers the applicable requirements in the purchase order, including key characteristics, when the control of key characteristics are a requirement of this order.

3.56. QAC-390 RoHS Compliance

Articles supplied under this purchase order must be RoHS compliant to the latest RoHS directive. Certificate of RoHS Compliance is required with each shipment.

3.57. QAC-400 Reach Compliance

Articles supplied under this purchase order must be REACH compliant to the latest REACH directive. Certificate of REACH Compliance is required with each shipment.

4.0 Supplementary Documentation

- **QMF 1725** QA Flow downs by Procurement Commodity



Revision History

Rev	Date	Description	Initiator
Q	09/08/22	CO# 4749, Added first sentence to Conflict Materials & Added Supplementary Documentation section, remove 3.46 QAC-290 MRB Authority and marked as Reserved.	M. Ramos
P	07/16/20	CO# 4688, Entire document updated and reformatted, though primarily the highlighted sections on ESD pages 5,10, and 11.	M. Ramos