

History of Revisions			
Revision	Date	Change Activity	Revised by:
IR	09-29-2017	Initial Release	C. Simmons
A	4-18-2018	SQC 112 CONTROL OF QUALITY RECORDS:	J. Sands
B	08-08-2018	ADDED 206,500. Revised 103,105,111.	J. Sands

PURPOSE

This document has been established to provide the quality flow-down requirements to applicable Suppliers listed on the Approved Supplier List (ASL). This document outlines requirements for suppliers of materials, products or services provided to AVALEX Technologies. It is intended to clearly communicate to the Supplier the requirements they are responsible for meeting in relation to quality.

SCOPE

It is understood by both AVALEX Technologies and the Supplier that this document is applicable to every purchase order/contract where the procured product, services or processes are deliverable/consumable by AVALEX Technologies customers. Suppliers of specific component parts or special processes must meet the quality system requirements contained herein when performing to an AVALEX Technologies purchase order/contract which contains reference to this document.

DEFINITIONS AND ABBREVIATIONS

- 1) **Contract** – The Contract, Sub-Contract, Purchase Order or other written agreement between AVALEX and the Supplier.
- 2) **Product** – The result of activities or processes. A product shall include, but not be limited to: services, hardware, software, processed material, or a combination thereof.
- 3) **PO** – Purchase Order issued by AVALEX.
- 4) **Supplier** – The person(s) and/or Company/Corporation providing goods and or services to AVALEX.

QUALITY CLAUSE LIST

SQC 100 CERTIFICATE OF CONFORMANCE (CoC) SQC 101

PACKAGING

SQC 102 SUPPLIER SUB-TIER CONTROL

SQC 103 FOREIGN OBJECT DEBRIS / DAMAGE (FOD) PREVENTION

SQC 104 AGE / ENVIRONMENT SENSITIVE MATERIAL (SHELF LIFE

SQC 105 QUALITY MANAGEMENT SYSTEM

SQC 106 ZERO DEFECT GOAL

SQC 107 COUNTERFEIT PARTS MATERIAL AVOIDANCE

SQC 108 CONTROL OF CHANGES

SQC 109 WORKMANSHIP

SQC 110 CORRECTIVE ACTION

SQC 111 NON-CONFORMING MATERIAL AND SUPPLIER PERFORMANCE

SQC 112 CONTROL OF QUALITY RECORDS

SQC 113 CALIBRATION SYSTEM

SQC 200 CERTIFICATE OF CONFORMANCE (Special Process Approved Supplier)

SQC 201 CONTROL OF SPECIAL PROCESSES

SQC 202 SPECIAL PROCESS CERTIFICATIONS

SQC 203 CERTIFIED PROCESSES

SQC 204 CHEMICAL / PHYSICAL TEST REPORTS

SQC 205 DIMENSIONAL INSPECTION DATA SQC

SQC 205 RAW MATERIAL CERTIFICATION

SQC 206 MATERIAL SUBSTITUTION PROHIBITIONS

SQC 300 ELECTROSTATIC DISCHARGE (ESD) CONTROL AND PACKAGE

SQC 301 RESTRICTIONS OF HAZARDOUS SUBSTANCES (RoHS)

SQC 302 SOLDER ABILITY

SQC 303 CIRCUIT CARD ASSEMBLY (CCA) / PRINTED WIRING BOARD (PWB)

SQC 400 FIRST ARTICLE INSPECTION (FAI)

SQC 401 TEST DATA

SQC 402 SOURCE INSPECTION

SQC 403 GOVERNMENT SOURCE INSPECTION (GSI)

SQC 405 MATERIAL SAFETY DATA SHEET (MSDS) / (TSCA)

SQC 500 Affirmative Action and Nondiscrimination Obligations of Contractors and Subcontractors Regarding Individuals with Disabilities and Veterans.

- SQC 406** TRACEABILITY
- SQC 407** LOT CONTROL
- SQC 408** SERIALIZATION
- SQC 409** FUNCTIONAL TEST REPORTS
- SQC 410** RADIOGRAPHIC INSPECTION
- SQC 411** FUNGUS
- SQC 413** EXCLUSION OF MERCURY
- SQC 414** PREFERRED LEAD FINISH TIN-LEAD
- SQC 415** PRINTED WIRING BOARD (PWB) TESTING

QUALITY CLAUSES

The following 100 series quality clauses apply to all purchase orders from AVALEX. All other quality clause, if applicable, will be indicated on the Request for Quote and any resulting Purchase Order (PO).

SQC 100 CERTIFICATE OF CONFORMANCE (CoC)

The Supplier shall submit a Certificate of Compliance stating that the products(s) furnished on this contract conform to the quality assurance requirements, drawings, materials, processes, test specifications and other applicable specifications. The Certificate of Compliance shall accompany each shipment. The Supplier shall have records on file to substantiate product compliance to the contract and will furnish copies of these records upon request of AVALEX, AVALEX's customer representative(s). All Certificates of Compliance shall contain the following information, when applicable, and shall be validated by an authorized Supplier's representative, by either an inspection stamp or a signature:

- Supplier's name and address
- AVALEX PO number / contract number
- AVALEX part number, revision level, description
- Identification of the lot number, batch and/or date codes, and serial number, if applicable
- Heat lot, if applicable
- Material and/or process specifications
- Actual measurements or reference to test inspection documentation as applicable
- Shelf Life requirements, if applicable
- Statement of Conformance by the Supplier declaring the product or service has met the requirements of the purchase order including drawings and specifications at the prescribed revision level
- Authorized Quality Representative Signature and date

Note 1: CoC shall be supported by inspection and test data, material analysis, or certification from the raw material producer or processor and shall be made available as requested for specifications such as raw material, processed material, processes, etc.

Note 2: When the items on this purchase order are supplied by a distributor, a copy of the manufacturer's certification and the distributor's certification stating compliance and the manufacturer's name and address shall be provided. (e.g., raw material, pan stock, COTS (commercial off the shelf))

SQC 101 PACKAGING

The Supplier is responsible for ensuring that product is packaged and preserved in container(s), bags, boxes, crates, as applicable for the type of product to prevent damage and/or deterioration. Each item shall be packaged individually and identified with the following information: (by label or tag)

- Supplier's name and address
- Purchased Part Number

- Revision Level
- Manufacturer's part number (if different from the purchased part number)
- Purchase Order Number
- Date
- Quantity
- Serial Number (if applicable)
- Lot Number (if applicable)
- Cute Date (if applicable)
- Country of Origin

For those items where individual packaging is not practical (such as with electronic discrete components, MIL-SPEC or NAS nuts / bolts / screws, or other commercially available bulk packaged items) the packaging must also show the quantity of item contained in addition to the items listed above.

Do not combine items from different purchase orders in the same shipping container or on the same packing slip.

All items received at AVALEX must have shipping documentation or may be refused and returned to the Supplier at the Supplier's expense.

SQC 102 SUPPLIER SUB-TIER CONTROL

The Supplier is responsible for insuring all items produced from its subcontractors conform to all requirements of the purchase order. Supplier shall ensure all applicable provisions of this document are flowed down to its subcontractors.

SQC 103 FOREIGN OBJECT DEBRIS / DAMAGE (FOD) PREVENTION

The Supplier shall establish and maintain an effective FOD prevention program in compliance with AS/EN/SJAC 9146 FOD Prevention Program- Requirements for Aviation, Space, and Defense Organizations to control and eliminate FOD and/or contamination assuring work is accomplished in a manner preventing foreign objects or material from entering and remaining in deliverable products. The Supplier's program shall utilize effective FOD prevention practices. NAS 412 may be used as a guide to establish and implement the External Provider's FOD program.

Maintenance of the work and control of tools, parts, and materials shall preclude the risk of FOD incidents. Prior to closing inaccessible or obscured areas and compartments during assembly, the Supplier shall inspect for foreign objects/materials. The written procedures or policies developed by the Supplier shall be subject to review and audit by AVALEX Quality Assurance and approved or disapproved when the Supplier's procedures or policies do not accomplish their objectives.

SQC 104 AGE / ENVIRONMENT SENSITIVE MATERIAL (SHELF LIFE)

The Supplier shall identify all materials and articles which have definite characteristics of quality degradation with age and/or environment. Identification shall include the date useful life was initiated and the date and/or the cycle at which the useful life will be expended. When environment is a factor in determining useful life, the identification shall include storage conditions required to achieve the stated useful life. Limited shelf life material containers shall be marked with the date of manufacture and the shelf life expiration date. The shelf life shall not exceed the requirements and a minimum of 75% of the shelf life shall remain at the time of shipment. Special storage requirements, if required, shall be provided with each shipment.

SQC 105 QUALITY MANAGEMENT SYSTEM

The Supplier shall provide and maintain a Quality Management System (QMS) acceptable to AVALEX. AVALEX acceptance of supplier's quality system shall be formally documented. The supplier's QMS shall ensure all items delivered are in full compliance with the requirements of the purchase order. The supplier QMS may be subject to review by AVALEX at any time.

OR

The supplier shall provide and maintain a Quality Management System that is registered to AS9100 or ISO 9001 most current revision. The certification must be current.

Buyer reserves the right to conduct surveillance at Seller's facility to determine that Seller's quality system conforms to the requirements of AS9117.

SUPPLEMENTAL QUALITY REQUIREMENTS

1. Change in Quality Management Representative

Seller shall promptly notify Buyer's Authorized Procurement Representative and Supplier Quality Representative of intended or actual changes in the management representative with assigned responsibility and authority for its quality management system.

2. Change in Quality Management System

Seller shall promptly notify Buyer's Authorized Procurement Representative and Supplier Quality Representative in writing of intended or actual major change to its quality management system that may affect the conformity of its goods or services. Each change to Seller's quality management system is subject to review by Buyer. Seller shall include, as part of the written notification of change to its quality management system, a list of changed procedures identified by revision level, a description of the intent of the changes and a signed statement that compliance with Buyer's quality system approval has not been diminished.

3. Change in Manufacturing Line, Facility Location or Process

Seller shall promptly notify Buyer's Authorized Procurement Representative in writing of intended or actual change to the manufacturing processes that may affect the quality of delivered goods and services. This includes changes to Seller's and Seller's subcontractors manufacturing facility location for the contracted goods or services, equipment, or processes for which the product was qualified. Seller shall promptly notify Buyer's Authorized Procurement Representative in writing of change to its quality control process that may affect the inspection verification of conformity or airworthiness. Notification shall document effect of change to inspection with respect to fit, form, reliability, function, conformity, airworthiness of the Seller's goods or services. Each change to Seller's quality control system is subject to review by Buyer.

4. Natural Disaster Occurrence

Seller shall promptly notify Buyer's Authorized Procurement Representative of any occurrence of natural disaster that diminishes Seller's ability to deliver conforming goods or services.

5. English Language

When specifically requested by Buyer, Seller shall make specified quality data and/or approved design data available in the English language. Seller shall maintain an English language translation of (1) its quality manual, (2) the operating instructions that implement the quality manual requirements, and (3) an index of Seller's procedures that contain quality requirements. Buyer may require additional documentation to be translated, including but not limited to: shop orders, technical specifications, certificates, reports, and nonconformance documents.

6. Seller's Subcontractors

Seller shall impose all the aforementioned requirements on Seller's Subcontractors.

7. Seller's Change Notification Process

Seller shall document a process for notifying Buyer of intended or actual changes described in the aforementioned requirements.

SQC 106 ZERO DEFECT GOAL

It is the goal of AVALEX to receive 100% acceptable product from its supplier base. This is necessary to ensure AVALEX receives product which will be processed through assembly and test with no interruptions due to defects which result in extra cost and delays due to rework, return to supplier or repair and Use As Is MRB actions. It is imperative that our suppliers understand the need to pay special attention to part and Purchase Order details to ensure total compliance.

SQC 107 COUNTERFEIT PARTS MATERIAL AVOIDANCE

All parts and materials shall be procured only through original equipment manufacturers (OEMS) / original component manufacturers (OCMS) or their franchised dealer or distributors. a) Supplier shall verify the procurement source and associated certifying paperwork and materials. b) The supplier shall flow this requirement down to all sub-tier suppliers to prevent the inadvertent use of counterfeit parts and materials c) The supplier shall not use unapproved brokers (any company, person, or entity who is not an OEM / OCM or not an OEM / OCM authorized franchised dealer or distributor) for the purchase of components /- materials / parts unless pre-approval has been grant.

Seller shall meet the following additional requirements for electronic parts procured by or on behalf of Seller:

- i. Seller shall implement a counterfeit electronic parts detection and avoidance system consistent with the requirements of the latest dated version of SAE standard AS5553, as of the effective date of this contract.
- ii. Seller shall include the substance of this article, including this flow down requirement, in all subcontracts for electronic parts awarded by Seller for work under this Contract.

SQC 108 CONTROL OF CHANGES

The Supplier and their sub-tier suppliers shall not make changes to the design, configuration, material, part, or manufacturing process that result in an impact to form, fit, or function of the supplied product. These changes must be submitted to the Buyer and require the approval of AVALEX.

SQC 109 WORKMANSHIP

Workmanship shall be in accordance with the drawing requirements, specifications and any requirements of the detail equipment specification applicable to manufacturing, processing, marking of parts and assemblies, wiring, soldering, welding and brazing, plating, riveting, finishing, machine operations and shall be reviewed for the detection and removal of foreign objects to include product to free from burrs, sharp edges, tooling marks, mismatch conditions, warped and/or bowed conditions or any other damage or defect that could make the product or equipment unsatisfactory for the intended purpose.

SQC 110 CORRECTIVE ACTION

If the Supplier is issued a Supplier Corrective Action Request (SCAR), the Supplier shall complete the applicable sections of the SCAR to include: Root Cause, containment action, corrective action and verification of the corrective action. The SCAR must be signed by an authorized representative of the company and returned to AVALEX within the response due time frame. If the Supplier requires more time to identify and implement corrective actions the Supplier must contact AVALEX purchasing and request an extension of the response due date. Failure to respond in a timely manner may result in the removal of Supplier from the Approved Supplier List (ASL). Upon notification of the nonconformance, shipments may be suspended until containment processes are enacted.

SQC 111 NON-CONFORMING MATERIAL AND SUPPLIER PERFORMANCE

****Suppliers do not have MRB authority on behalf of AVALEX TECHNOLOGIES****

The supplier shall not deliver any material that departs from drawing, specification or maintenance requirements. Non-conforming material is to be submitted for review and disposition by AVALEX. Non-conformances discovered at AVALEX (receiving inspection, in process build, final inspection, testing), that are supplier caused, are subject to a processing fee –per rejection. Suppliers are responsible for all parts, processes, and services rendered by sub-tier suppliers.

Any quality concerns or rejections as a result of the sub-tier supplier are the responsibility of the supplier. AVALEX may chargeback a supplier for rework, repair, analysis and/or travel related to nonconforming product where it has been determined that the non-conformance is supplier caused and the suppliers schedule to complete the rework/repair does not support AVALEX's scheduled need for the product. The supplier shall notify AVALEX of any systemic quality concerns that may affect the quality or performance of product already delivered to AVALEX. The supplier shall provide a Notification of Escapement (NoE) within three (3) business days of when the nonconformance was determined. If the nonconformance affects safety of flight or is mission critical; Supplier shall immediately provide the NoE and all required information to Buyer.

SQC 112 CONTROL OF QUALITY RECORDS All records related to the manufacturing, testing and inspection of parts supplied to Buyer purchase order will be maintained for a minimum of 10- years from delivery, unless otherwise specified in writing. The records shall be accessible, upon request to Buyer, Buyer's Customer or to regulatory and statutory authorities. All records submitted are subject to Buyer review and approval prior to acceptance.

SQC 113 CALIBRATION SYSTEM

The Supplier 's calibration system for measuring and test equipment shall be in accordance with the requirements of ANSI/NCSL Z540-1 or ISO 10012 Calibration Systems. The Supplier's Calibration System standards shall be traceable to NIST. The Supplier's Calibration System is subject to review and

approval by AVALEX and AVALEX's customer representative(s) and/or Government representative(s) at all times. The Supplier retains full responsibility for ensuring that all products, lower-tier Suppliers, supplies used, and/or services furnished hereunder, comply with all applicable calibration requirements. A copy of the Suppliers current ISO 9001 or AS9100 registration, if available, shall be sufficient for compliance to this provision and shall be supplied to AVALEX when the registration is renewed.

SQC 200 CERTIFICATE OF CONFORMANCE (Special Process Approved Supplier)

For contracts / purchase orders issued to Suppliers that are designated by AVALEX customer requirements as "Special Process Approved Suppliers" all of the requirements of SQC 1 are applicable and the Supplier and/or sub-tier Supplier shall annotate on the Certificate of Compliance the Suppliers approved processor code, if applicable.

SQC 201 CONTROL OF SPECIAL PROCESSES

The Supplier must have on file at their facility, or their sub-tier Supplier's facility chemical and mechanical test data on raw material used on the contract issued by AVALEX. Processes listed below, must satisfy the requirements of applicable drawings and specifications. AVALEX reserves the right to perform surveillance, review or audit of the Supplier and/or Sub-tier Supplier's special processes and certification, prior to and during the performance of any contract issued by AVALEX. Suppliers and sub-tier Suppliers certified by Nadcap for the commodities that they are delivering shall be considered approved and require no further surveillance or audits provided no nonconformance's are detected from their processes. AVALEX reserves the right to deny the use of lower-tier special process Suppliers if they fail to meet the applicable requirements. All processes performed under the contract issued by AVALEX shall be performed by the Supplier or if the Supplier is going to outsource any processes they must contact AVALEX prior to any outsource activity to a sub-tier Supplier for verification of AVALEX customer approved Supplier status.

Plating	Coatings
Heat Treating	Materials Testing Laboratories
Non Destructive Testing	Soldering and PWB Fabrication
Welding (Includes Brazing)	Nonconventional Machining and Chem-Milling
Shot Peening	Cleaning
X-Ray	Bonding

SQC 202 SPECIAL PROCESS CERTIFICATIONS

Any special processing performed, e.g., heat treatments, plating, paint, welding, etc., shall be certified individually and completely, including related data such as thickness of plating, paints, temperatures, hardness results, etc. ...

SQC 203 CERTIFIED PROCESSES

Supplier shall have personnel performing special processes, such as Soldering and Bonding, certified for proof of proficiency.

SQC 204 CHEMICAL / PHYSICAL TEST REPORTS

The Supplier shall provide actual Chemical and/or Mechanical test data for the material(s) being supplied under the contract issued by AVALEX. The test report shall state the actual analysis of the material for the chemical and/or mechanical properties, and shall identify as applicable, the material type, grade, temper, material dimensions, heat / lot number, specification(s) and be signed for certification of compliance. The test report shall identify the AVALEX PO number. The test report shall accompany each shipment; failure to provide the required test reports may be cause for rejection of the material and affect the Supplier rating.

SQC 205 DIMENSIONAL INSPECTION DATA

The Supplier shall perform in-process and final inspection and/or test of the product as applicable to validate compliance of the product to the required drawings, specifications or regulatory standards as defined on the contract issued by AVALEX. Evidence of the inspection and/or test shall be documented in the Supplier's format and be maintained by the Supplier.

Supplier to provide results of inspection performed to determine acceptability of each part delivered.

Inspection results should include:

- AVALEX part number and revision
- AVALEX Purchase Order number

- Supplier part number (if applicable)
- Date of test(s) performed
- Serial number(s)
- Identity of person that performed the inspection(s)
- AQL used for each requirement
- Acceptance criteria used
- Results of inspection(s) performed

NOTE: A Certificate of Conformance does not satisfy the requirements of this code.

SQC 205 RAW MATERIAL CERTIFICATION

A raw material Certificate of Compliance (CoC) is required. The CoC should indicate the material used to fabricate the parts supplied is compliant with all requirements, as specified. Additionally, the Supplier shall supply a test report showing actual chemical and mechanical properties analysis test data on the lot of raw material used to manufacture the items or raw material shipped against this Purchase Order.

SQC 206 MATERIAL SUBSTITUTION PROHIBITIONS

A. Unauthorized Material Substitution (General)

Unauthorized material substitutions are not permitted on Buyer's Goods. Unauthorized material substitution includes any deviation from the engineering definition of a raw material. Engineering definition includes Buyer design drawing and applicable specifications, product specification, form, size, shape, chemistry, melt method, origin, temper/condition, product testing or surface finish. Alternate materials specified in the engineering definition (and often described as approved material substitutions therein) do not constitute unauthorized material substitution. Terms and definitions for metallic materials and processing used herein are clarified in **ARP1917**.

Contact Buyer's Authorized Procurement Representative for details regarding deviations to authorized materials. Seller agrees and understands that such deviations only apply to this purchase contract, and only as indicated in the Buyer's authorized document.

B. Metallic Materials (Specific)

Temper or Condition Conversion - Unless specifically authorized by the engineering definition, conversion of a raw material (i.e. heat treat to change the temper or condition of the material) constitutes material substitution of the condition provided by the manufacturer.

Metallic Raw Materials - Buyer's engineering drawings may refer to obsolete or superseded specifications covering several forms, thicknesses, widths, etc. of the alloy or alloys. The required characteristics of these materials are defined not only by the objective test standards of the specification, but by the processes/methods by which this final form is achieved. These requirements are often captured in the definitions of the required material forms, and may not be explicitly called out in the detailed requirements. The raw material certification results from both the process used to make it and the tests to verify basic properties.

Seller shall ensure that metallic materials covered by current or obsolete/superseded specifications are produced using the standard industry practices designed strictly for the production of stock to the specified thickness, diameter, width or cross sectional area, achieved by thermomechanical processing or casting process. Chemical, electrochemical and mechanical methods used for the removal of surface scale or contamination, or the production of the required surface finish, in accordance with the material specification are acceptable. Raw material must not be re-certified with respect to thickness, diameter, width or cross sectional area or product form. Machining or cutting of thicker product or other product forms shall not be supplied in lieu of specified product unless specifically authorized by Buyer. Raw material certifications for material or parts shall reflect the form and size of the raw material as originally manufactured by the raw material producer.

C. Specification Supersession:

For government specifications and standards canceled after June 1994, Seller and subcontractors at all tiers shall use the last active revision of the canceled specification and standard until an acceptable replacement is included in the requirements of this Contract. Contact the Buyer's Authorized Procurement Representative in the event of any inconsistency in applicable specification or standard.

D. Reports (Full Pedigree from melt to final product) - Raw material certifications shall show clear traceability to the manufacturer(s) of the raw material including ingot source, all thermo-mechanical processing (i.e. forging, rolling, drawing, etc), heat treatment, chemical processing and inspections as required by applicable raw material specification requirements.

E. Chain of Custody (Disguising intermediate ownership) – Suppliers shall not disguise the pedigree of material or chain of ownership by removal of a previous supplier’s name, nomenclature or identification.

F. Source of Additional Information - Addition information and guidance may be found through Buyer’s Supplier Portal or Buyer’s Authorized Procurement Representative.

G. The substance of this Article shall be flowed in all subcontracts at every tier.

SQC 300 ELECTROSTATIC DISCHARGE (ESD) CONTROL AND PACKAGE

The Supplier shall maintain an Electrostatic Discharge Control program in accordance with the most recent version of MIL-STD-1686, ANSI S20.20. The program shall be subject to review by AVALEX. The item shall be packaged in materials that are non-charge generating on the inside surface next to the part as well as providing conductive shielding protection. The protective container shall be labeled with an industry recognized ESD cautionary statement.

SQC 301 RESTRICTION OF HAZARDOUS SUBSTANCES (RoHS)

All components supplied on this order shall be tested for the presence of Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent chromium (Hex-Cr), Polybrominated biphenyls (PBB), and Polybrominated diphenyl ethers (PBDE). For component(s) containing any of the elements listed above they SHALL NOT exceed any limit listed below. For Cadmium and Hexavalent chromium, there must be less than 0.01% of the substance by weight at raw homogeneous materials level. For Lead, PBB, and PBDE, there must be no more than 0.1% of the material, when calculated by weight at raw homogeneous materials. Any RoHS compliant component must have 100 ppm or less of mercury and the mercury must not have been intentionally added to the component.

SQC 302 SOLDERABILITY

Solderability requirement: Solderability testing is required for product furnished in accordance with this Purchase Order or contract. The supplier shall furnish certification with each shipment. This certification shall contain the following information as a minimum:

- Supplier’s name and address
- Purchased Part Number
- Revision Level
- Manufacturer’s part number (if different from the purchased part number)
- Purchase Order Number
- The supplier shall state in that certificate the fact that solderability testing has been successfully performed on the product, the procedure used to perform solderability testing (Mil-Spec, industry standard, company procedure, etc.) and the date(s) that solderability testing was performed or date code(s) of the product.
- Certification is to be signed and dated by an authorized representative of the company (preferably a member of company quality management).

No more than twenty-four (24) months shall expire between performance of solderability testing(s) or date code and arrival of material at AVALEX.

SQC 303 CIRCUIT CARD ASSEMBLY (CCA) / PRINTED WIRING BOARD (PWB)

CCA’s shall comply with IPC-A-610 Acceptability of Electronic Assemblies, unless otherwise specified. CCA’s will comply with IPC-J-STD-001 Requirements for Soldered and Electronic Assemblies unless otherwise specified. All Gerber/Panel files for the bare printed circuit boards shall be provided for review and approval prior to producing the boards.

NOTE: The supplier shall default to Class 2 requirements if the class is not otherwise specified on the Purchase order or other buyer supplied documents.

NOTE: This clause does not apply to COTS items.

The following documentation shall be Included with each shipment of CCA's:

1. CCA Inspection Report (Final Inspection results)
2. Metallurgical Lab Report, if required, consisting of: a. Copper thickness b. Glass to glass board thickness c. Di- electric thickness (all layers)
3. Certificate of Conformance (C of C)
4. Certificate of Electrical Test, if required
5. TDR (Impedance) Report, if required
6. Serialization log of shipped CCA

SQC 400 FIRST ARTICLE INSPECTION (FAI)

AVALEX's acceptance of a first article inspection (FAI) is required prior to acceptance of production parts, unless otherwise authorized by AVALEX. The Supplier shall submit the FAI report and identifiable first article product to AVALEX's inspection department for verification. The Supplier's FAI format shall include, at a minimum, the contract number, product number, revision level, product name, Suppliers name, all drawing requirements (including tolerance), method used to obtain results, actual results of each measurement, pass or fail status of the measurements and proven compliance to each engineering drawing note. *As a guideline AS9102 should be used.*

Occurrence of any of the following conditions shall require an additional FAI:

- a) A material, design, tooling and/or process change(s) affects the original first article inspection of the product. An additional FAI is applicable only to those characteristics affected by the change.
- b) The product has not been produced for a period of 18 months.
- c) A change in facilities has taken place.
- d) Damage and subsequent repair to tooling, fixtures, dies or equipment used in the manufacturing process affects the specification parameters or attributes. An additional FAI is applicable only to those characteristics affected by the repair.
- e) A change has been made to the Supplier's proprietary product purchased by AVALEX or the performance of a higher assembly.

First Article Reports for the items controlled by CAD files shall record actual dimensional data taken by the Supplier to confirm conformance to the CAD file. The Supplier must indicate any operations not performed using the CAD file.

SQC 401 TEST DATA

Actual test data of indication of pass / fail test results shall accompany each shipment. The Supplier's format is acceptable. The Supplier shall provide results of all final acceptance test performed to determine acceptability of each part delivered. Test data shall include:

- Supplier's name and address and/or the name and address of the independent laboratory
- AVALEX purchase order number
- Date of test performed
- Product number, serial number or lot number if applicable
- Identity of the person that performed the test
- Acceptance criteria used
- Results of tests performed
- Supporting documentation
- Supplier's QA representative approval with signature, title, and date

SQC 402SOURCE INSPECTION

AVALEX will perform final inspection and or witness acceptance tests at the Supplier's facility prior to shipment of product under the contract issued by AVALEX. The Supplier shall notify AVALEX's purchasing department at least five (5) working days prior to the date that source inspection is required. If AVALEX waives source inspection, the inspection waiver must accompany the shipment.

SQC 403 GOVERNMENT SOURCE INSPECTION (GSI)

Government inspection of the purchased product is required prior to shipment from the AVALEX's facility. Upon receipt of this contract, the AVALEX shall promptly notify the Government representative(s) who normally services the Supplier facility to establish the plan for GSI. GSI applies to prime & returned material.

The Supplier shall comply with the requirements of Federal Acquisition Regulation (FAR) Clause 52.246-2, "Inspection of Supplies." AVALEX, AVALEX's customer, and the Government have the right to inspect and test all supplies called for by the contract, to the extent practicable, at all places and times including the period of manufacture, and in any event before acceptance

SQC 405 MATERIAL SAFETY DATA SHEET (MSDS) / TOXIC SUBSTANCES CONTROL ACT (TSCA)

The Supplier shall furnish one (1) copy of the MSDS with each shipment of product under the contract issued by AVALEX. The Supplier shall certify that all chemical substances delivered under this contract are on EPA's TSCA inventory and comply with all applicable rules and orders under TSCA.

SQC 406 TRACEABILITY

All documentation must be numerically linked to maintain full traceability. Products furnished under a contract issued by AVALEX must be identified by lot number, material type, specification and revision level and be traceable to the original manufacturer. The traceability documentation and/or records shall accompany each shipment.

Traceability shall also be maintained to the sub-component parts of hybrid, multi-chip modules, crystal oscillators, current sensors, and other small assemblies that are themselves procured as parts. Parts from a single lot and/or date code shall be assembled from homogeneous lots of sub-components wherever possible.

SQC 407 LOT CONTROL

Products furnished under a contract issued by AVALEX must be identified by the manufacturing lot or batch number. The lot or batch number shall be identified on tags or labels and attached to the product or product container. All accompanying documentation such as packing list, certifications, inspection / test reports shall include the lot control number.

SQC 408 SERIALIZATION

Each product furnished on this contract shall be identified by a unique serial number. When specific serial numbers are required, they shall be identified by AVALEX. All inspection and/or test reports and all other applicable documentation shall be traceable to each serial number.

SQC 409 FUNCTIONAL TEST REPORTS

Each shipment shall be accompanied by one legible copy of a report of actual variables test data identifiable to test parameters and serial numbers of items submitted. These reports shall contain the signature and title of a responsible representative of the supplier who performed the test indicating conformance to the specified requirements. The specifications must be listed, including the revision letter.

SQC 410 RADIOGRAPHIC INSPECTION

The items on this order require radiographic inspection by a government or buyer-approved x-ray laboratory. Film will be read and interpreted by the laboratory and the findings reported on an appropriate form. The x-ray film and one copy of the x-ray report must accompany the material. The x-ray film must be identified with the buyer's PO number and the report shall contain the signature and title of a responsible representative of the laboratory.

SQC 411 FUNGUS

All components, equipment or materials used in the procurement of stated purchased items must not result in the evidence of fungus growth on any surface. This requirement must be verified by analysis and/or test. The analysis is to include supplier certifications of potentially fungus-nutrient materials. If supplier certifications are unavailable, a representative sample of exposed coatings, cables, gaskets, and other potentially fungus-nutrient materials shall be subjected to MIL-STD-810, Method 508.5.

SQC 412 PROHIBITED MATERIAL, AMOUNT OF TIN

All tin plating, solder or tin finishes shall have a minimum of 3% lead content by weight. Parts shall also be free of Zinc, Cadmium and Mercury. Supplier shall provide a written/signed Certificate of Compliance (CoC) with each shipment that attests to meeting this requirement.

SQC 413 EXCLUSION OF MERCURY

Supplies furnished shall contain no free mercury (metallic form) or mercury compounds (e.g. mercuric oxide & mercuric chloride) without written approval of AVALEX. Supplier shall perform a review to the extent necessary for a reasonable assurance that mercury is not being used in the supplies (e.g. review of drawing parts lists & material lists).

Mercury bearing instrument & equipment (i.e. those instruments containing free mercury) shall not be used in the manufacture, fabrication, assembly, testing, etc., of any supplies. Note: Supplier shall develop the same assurance & confidence of compliance with the mercury exclusion clause as it does with other specification requirements (e.g. toxic materials, flammable materials, fragile materials & radioactive materials). Certification of compliance or other attesting documentation shall be available if required to be provided to the Buyer and/or Government.

The Subcontractor shall require all sub-tier Subcontractors to comply with the mercury exclusion requirements.

SQC 414 PREFERRED LEAD FINISH TIN-LEAD

The preferred component lead finish coatings are tin-lead plate or hot solder dip in accordance with MIL-PRF-19500. Seller must request authorization from AVALEX if another lead finish must be used.

Gold finished component leads being refinished to meet this preference must be done so using SnPb with a minimum lead (Pb) content of 3 weight percent and applied using a double dip process or a dynamic bath in accordance with IPC J STD-001 DS AMD 1. Documentation must be included with each shipment that provides evidence that one of the acceptable hot solder dip processes has been used.

SQC 415 PRINTED WIRING BOARD (PWB) TESTING

PWB testing (electrical and microsectioning): Supplier is responsible for the performance of electrical testing, inspections and coupon microsectionings in accordance with applicable drawings and / or specifications. Supplier shall maintain records of the performance of each test, inspection or microsectioning for a period of not less than five (5) years or the contract time period plus one year whichever is greater. Unless otherwise specified in the PO or contract, the supplier shall retain the coupons, original copies of the data, etc. at the suppliers facility(ies). AVALEX reserves the right to perform a review of such records and / or performance of tests, inspections or no more than twenty-four (24) months shall expire between performance of solderability testing(s) or date code and arrival of material at AVALEX. Microsectionings at the suppliers facility(ies).

SQC 500 Affirmative Action and Nondiscrimination Obligations of Contractors and Subcontractors Regarding Individuals with Disabilities and Veterans.

This clause is applicable if this contract exceeds \$10,000. Pursuant to the requirements of 41 CFR Part 60-741.5(a) and 41 CFR Part 60-300.5(a):

This contractor and subcontractor shall abide by the requirements of 41 CFR 60- 741.5 (a). This regulation prohibits discrimination against qualified individuals on the basis of disability and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities.

This contractor and subcontractor shall abide by the requirements of 41 CFR 60- 300.5 (a). This regulation prohibits discrimination against qualified protected veterans and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans.