



communications

Electron Devices

960 Industrial Road
San Carlos, CA 94070-4194
Tel. (650) 591-8411
Fax. (650) 591-5623

PROCEDURE FOR SUPPLIER QUALITY ASSURANCE MANUAL

REV.	RELEASE DATE	ECO #	PROCESS OWNER	DISPOSITION	TRAINING REQUIRED?	
-		74415	M. MCALISTER Sign:		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
			Sign:		<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Sign:		<input type="checkbox"/> Yes	<input type="checkbox"/> No

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	1 of 22

UNCONTROLLED COPY - Verify revision before use. Date Printed: 3/3/14



TABLE OF CONTENTS

SECTION 1 – INTRODUCTION 3

1.0 INTRODUCTION 3

1.1 Definitions/Acronyms 4

1.2 Approved Supplier List (ASL) 4

SECTION 2 – MINIMUM SUPPLIER REQUIREMENTS 5

2.0 GENERAL REQUIREMENTS 5

2.1 Supplier Quality System Requirements 5

2.2 Supplier First Article Inspection (FAI) 6

2.3 Part Marking Requirements 7

2.4 Special Process Requirements 7

2.5 Tooling Requirements 8

2.6 Nonconforming Material Control 8

2.7 Source Inspection and Facility Access 8

2.8 Records 9

2.9 Shipping Documentation Requirements 10

2.10 Corrective and Preventive Action 13

2.11 Foreign Object Debris/Damage (FOD) 14

2.12 Supplier Sub-tier Control 14

2.13 Sampling 15

2.14 Material/Process Requirements 15

2.15 Calibration System, Measuring and Test Equipment 16

2.16 Packaging, Preservation, and Storage 16

SECTION 3 – SPECIFIC REQUIREMENTS 18

3.0 SPECIFIC REQUIREMENTS 18

3.1 Workmanship Requirements 18

3.2 Lead Free Mitigation 19

3.3 Electro-Static Discharge Control 20

3.4 Counterfeit Parts Avoidance 20

SECTION 4 – Quality Codes 22

Table 1: Minimum Quality System Requirements.....17

Table 2: Quality Assurance Code – Supplier flowdown22

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	2 of 22



SECTION 1 – INTRODUCTION

1.0 INTRODUCTION

L-3 Communications – Electron Devices Division has established a comprehensive supplier base with exceptional capabilities to assist us in producing Microwave Amplifier products that support the Defense, Communications and Medical marketplace.

As part of an ongoing effort to provide consistent guidelines to our suppliers, Electron Devices Division (EDD) has established an essential series of Quality System requirements for suppliers based on commodity and service type. These requirements are defined in this Supplier Quality Manual.

The requirements within this manual apply to all products and services provided to EDD San Carlos, CA. In some cases, Purchase order and/or Drawing requirements may exceed these requirements and in such cases take precedence.

This Supplier Quality manual has three major sections:

Section 1

This section provides an introduction to this manual and describes the Approved Supplier Listing and supplier performance guidelines.

Section 2

This section includes **minimum quality requirements** required for all deliverable products and services procured by EDD unless otherwise specified in the purchase order, drawing or Statement of Work.

Section 3

This section describes specific requirements based on delivered product type.

Section 4

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	3 of 22



This section includes Quality Code definition – Quality Code are used to flowdown requirements to Suppliers via Quality Codes added to Purchase Orders.

Questions regarding this document should be directed to your applicable Buyer.

1.1 Definitions/Acronyms

- **Commercial (Available) Off The Shelf (COTS)**

An item that had been sold in substantial quantities in the commercial marketplace and offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace; a commercial product.

- **Nadcap**

National Aerospace and Defense Contractors Accreditation Program, <http://www.pri-network.org/Nadcap>.

1.2 Approved Supplier List (ASL)

Supplier performance is monitored on a regular basis by reviewing On-Time Delivery and Incoming Product Quality assessments. Suppliers receive reports concerning their performance on a quarterly basis. Poor performing Suppliers may be restricted from placement of new purchase orders or may be removed from the ASL. Suppliers who have not supplied product to EDD for a period of two years may be removed from the ASL due to inactivity.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	4 of 22



Suppliers are required to be re-evaluated by the EDD Supplier Based Management Team (SBMT) every three (3) years to remain on the ASL. The process involves reviewing performance, capabilities and current needs of the EDD Purchasing Organization.

Delivery and Product Quality performance:

Suppliers are required to maintain a 90% minimum (lot based) on-time delivery rate and a 95% (lot based) quality conformance rate to remain an active supplier on the Approved Supplier Listing. Suppliers not meeting this performance requirement will be classified as conditional suppliers. Failure to meet on-time and quality performance requirements for an extended period may result in removal of the supplier from consideration for further projects.

SECTION 2 – MINIMUM SUPPLIER REQUIREMENTS

2.0 GENERAL REQUIREMENTS

The requirements in this section apply to all procurements.

EDD suppliers and their sub-tiers are expected to comply with the requirements of this section. Suppliers who do not comply with these requirements may be placed under review and may be subject to additional restrictions or approvals prior to placement of orders.

Supplier's Responsibility

EDD requires suppliers to deliver material that is verified prior to shipment to be 100% compliant with all the Purchase Order (PO) requirements. If difficulties are encountered during the manufacturing process that may impact product compliance, or with the contractual requirements of the PO, the Supplier is responsible to notify the applicable buyer so additional measures may be considered. If the product is found to not meet requirements prior to delivery to EDD but a review is desired, Form# 0473073 Supplier Deviation Request, may be submitted. Deviations are granted on a one-time basis and may require financial consideration.

2.1 Supplier Quality System Requirements

Suppliers shall implement and maintain a Quality Management System which complies with the minimum requirements listed in Table 1.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	5 of 22



Registration to a Quality System standard such as ISO 9001/AS9100/AS9120 through an accredited Registrar is highly preferred (Suppliers registered to an externally validated Quality System standard may not require routine EDD Quality System audits for qualification or re-qualification purposes). Suppliers not meeting Table #1 requirements may be qualified as a “conditional” supplier with restrictions and limitations based on that qualification.

Initial and subsequent reviews of supplier’s quality system may be performed at the option of EDD. Objective evidence of Supplier’s compliance, either by submittal of requested evidence or evidence of a third party accreditation, may be acceptable for the purpose of re-survey, but will not preclude the use of on-site evaluations or other review methods.

The supplier shall provide notice to their EDD Buyer Representative of any major changes in key personnel, organizational structure or manufacturing processes affecting quality and/or any major findings uncovered during their registrar’s periodic audits (where applicable) within seven business days. The supplier shall also permit EDD access to all data relating to management of the quality system such as internal audit results and their corrective and preventive actions, and results of management reviews.

2.2 Supplier First Article Inspection (FAI)

When required by Purchase Order, First Article Inspection (FAI) shall be performed on the first items delivered on a given order using the Supplier’s format and a completed First Article Report must be supplied with the initial shipment to EDD. Alternatively, First Article requirements may be specified through the applicable Purchase Order Quality Codes to be in accordance with the requirements of AS9102 (“Aerospace First Article Inspection Requirement”). AS9102 requires the completion of a series of documentation to establish control of materials and processes to be used for Production purposes.

Once invoked through AS9102, the supplier must maintain the same processes established in the First Article sample including all manufacturing, processing, testing and inspection practices. No deviations, including changes to the selection of supplier’s sub-tier suppliers, are permitted without EDD’s written authorization.

Commercial-Off-the-Shelf (COTS) items are not subject to FAI, although a copy of the Supplier’s catalog page, specification, and/or data sheet is required.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	6 of 22



Standard Catalog Hardware manufactured to military/industry specifications shall be accompanied by a Certificate of Conformance to the respective specification.

2.3 Part Marking Requirements

The Supplier shall mark all deliverable products as required by the purchase order, engineering drawing and/or applicable specification.

Unless otherwise stated in applicable engineering drawings/specifications, the supplier shall apply the date of manufacture, date code(s) or other control identifier number (see examples below) to all deliverable hardware. Information must be applied adjacent to the hardware's identification markings and must be traceable to supplier's build documentation. Hardware produced in lots, batches, groups, etc., shall have traceable control information applied. When size of hardware, or supplier's automated stamping process, does not permit data application to individual hardware (such as standard parts), the information shall be similarly placed on bags, tags, or labels as applicable.

Examples of traceable information may include, but are not limited to:

- Date of manufacture
- Serial number
- Lot number
- Control number
- Heat lot number
- Final inspection date
- Batch number
- Work order number

2.4 Special Process Requirements

Suppliers or Sub-Tier suppliers who provide "Special Process" services or product to EDD are required to be reviewed and approved by EDD purchasing, where specified. Special Processes results are often not verifiable following the process; therefore additional process controls are instituted. For many processes, Nadcap accreditation is a preferred method for special process validation. Nadcap accreditation may be imposed by contract as defined by the EDD Statement of Work or

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	7 of 22



purchasing requirements documentation. Examples of special processes include:

- Heat treating
- Chemical processes
- Painting
- Plating
- Non-conventional machining and surface enhancements
- Welding
- Brazing

A listing of all facilities being used must be available for review by EDD which reserves the right of disapproval of those facilities not considered satisfactory. The suppliers shall not substitute their own process specification for the EDD or customer process specification without prior written approval from EDD.

2.5 Tooling Requirements

Special tooling (supplier manufactured or EDD furnished) used as for inspection must be described in the supplier’s process at the applicable operation/sequence where the inspection occurs. Inspection media tooling must be controlled as part of the supplier’s “Periodic or Calibration” system prior to use in production.

2.6 Nonconforming Material Control

Nonconforming material must be identified, segregated, and dispositioned to prevent its unintended release or use. Items found to be nonconforming shall not be provided to EDD under any circumstances unless a Supplier Deviation Request has been approved prior to shipment. Submission of nonconforming material to EDD may result in a Supplier Corrective Action Request (SCAR) being issued to the supplier and removal from the ASL if effective non-recurrence action is not taken.

2.7 Source Inspection and Facility Access

EDD, its customer, and/or their authorized inspection agency or regulatory authorities shall have the right to send representatives to the Supplier’s facilities on a non-interference basis to determine purchase order compliance.

The supplier and/or their subcontractor shall make their facility and applicable records available for these activities and provide all

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	8 of 22



reasonable support for the safety and convenience of these representatives during their stay at the supplier's and/or their subcontractor's plants and facilities.

EDD inspection requirements are stated in the purchase order. Supplier is required to review and verify compliance with the appropriate referenced material requisition codes as called out separately in the purchase order.

Most items are evaluated at EDD's San Carlos, CA facility, however, Source Inspection may be required, as specified on the applicable purchase order, requiring EDD personnel to review and authorize the order prior to shipment.

All shipping documentation and documentation provided to show evidence of conformity to purchase order and SQR requirements shall be made available at the time of source inspection.

NOTE: Source Inspection activity performed by EDD or its customer shall neither be used as evidence of effective control of quality by the supplier nor shall they preclude subsequent rejection by EDD or its customer.

2.8 Records

Supplier shall retain all required records as objective evidence of conformance to Purchase Order requirements, including Supplier's records and certifications of the inspection and test performed in the course of procurement, manufacturing, testing, processing, inspecting, preserving, packaging and shipping product(s) on the purchase order. Supplier shall make records available to Buyer upon request within three business days and at no additional cost.

The supplier shall maintain a documented procedure for record creation, change (handwritten or other), completion, and control of Quality records in accordance with the applicable quality system standard (i.e. – ISO 9001, AS9100).

NOTE: Electronic records have the same requirements, control, and retention as paper records. They must also be capable of maintaining data integrity for the retention period.

The records shall be retained for a period of not less than seven (7) years from completion of purchase order, unless otherwise stated in the PO. The supplier must impose this requirement on their sub-tier suppliers. Records shall include, but not be limited to:

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	9 of 22



- Assembly/manufacturing records/travelers
- Evidence of inspection to assure adherence to applicable drawings or specifications and revisions
- First Article Inspection report
- Records to indicate control of special tooling and special test equipment
- Test data records of all qualification and acceptance tests performed
- Certification of personnel as required by specification and/or contract
- Raw material and process certifications
- Discrepancy/material review reports

2.9 Shipping Documentation Requirements

Packing Slips

Suppliers shall provide a packing sheet or attachments for each separate shipment with the following minimum requirements:

1. Supplier's company name and address.
2. Purchase order number and part numbers.
3. Certificate of Conformance

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	10 of 22



Suppliers will provide a Certificate of Conformance (C of C) assuring that all work conforms to the requirements of the purchase order. The C of C may be a separate document or included on the packing sheet. The supplier's Quality Representative must sign and/or stamp this document (an electronic signature is acceptable).

The C of C must accompany each shipment on the P.O. and, where applicable, certify the following:

- Material content
- Mechanical properties
- Physical properties
- Chemical properties/characteristics
- Electrical properties
- Finish

The revision of the delivered product must be documented on the packing list or C of C.

Unless otherwise specified or as noted below, the supplier shall work to the latest revision process specifications referenced in the purchase order or associated engineering documents.

Age-Sensitive Materials

For Age Sensitive Materials the supplier shall provide on the C of C, the purchase order number, part number, original manufacturing/cure date, lot number(s), and the shelf life expiration date (if indefinite or unlimited, so state). The supplier shall physically identify the shelf life expiration date on the deliverable product or the unit packaging according to the applicable standard.

NOTE: Age sensitive material must have a minimum of 75% of its useful shelf life when received at EDD.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	11 of 22



Hazardous Chemicals

The Supplier shall provide the appropriate Material Safety Data Sheets (MSDS) with each shipment of Hazardous Chemicals. Immediately following an MSDS update, the Supplier will provide an updated MSDS to the Buyer. The shelf life of the hazardous chemical must also be identified.

NOTE: Discrepant material **shall not** be shipped to EDD without prior Supplier Deviation Request approval.

Standard Parts/Hardware

The Distributor/Supplier shall provide with each shipment catalog pages, specifications, and/or data sheets which clearly define and identify the item, manufacturer, dimensional and/or electrical characteristics, etc. The Distributor (a Supplier other than the Manufacturer) **shall** certify that the articles delivered under this Purchase Order conform to the applicable requirements of Buyer's or Manufacturer's specifications for the article ordered. The Distributor certification of conformance **shall** include the following information:

1. The original manufacturer
2. Part number
3. Applicable traceability information (date lot code, etc.)
4. Results of testing or special inspection, as required.
5. Dated signature of authorized Supplier Representative
6. Items identified by Buyer number **shall** have complete information as to the original manufacturer and original manufacturer's part number

Rubber Products

Rubber products shall be identified by cure date as required by the drawing and/or applicable specifications supplied with or referenced in the purchase order. Age sensitive products shall meet the requirements for age sensitive materials noted above.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	12 of 22



Product Calibration

For items requiring calibration, a certification document verifying that the parts on this purchase order have been calibrated shall accompany each shipment. Supplier shall maintain a copy of this document in accordance with the Records retention requirements, and the copy shall be made available to EDD upon request.

2.10 Corrective and Preventive Action

The Supplier shall respond to all requests for supplier corrective action (SCAR) on or before the required response due date.

The Supplier shall maintain a documented system for determining root causes of documented defects and obtaining corrective action and preventive action both internally and from its suppliers. The supplier is accountable for effectiveness of corrective and preventive actions taken. Requests from EDD Purchasing for corrective and preventive action will be issued to the supplier’s representative in the form of, but not limited to,

- Supplier Corrective Action Request, (FORM 0498249) (SCAR),
- Failure analysis reporting when required by engineering specification, or
- Contract data items requirements.

Corrective Action Response Extensions

EDD may grant the supplier an extension for their corrective action response on a case-by-case basis. Suppliers may formally request a time extension at least forty-eight (48) hours prior to the assigned corrective action closure date. Requests must be in writing with adequate justification documenting the status of the investigation, revised corrective action completion date and a listing of previous actions taken toward implementation of effective preventative action, as applicable.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	13 of 22



Verification of Corrective Action Effectiveness

EDD retains the right to conduct corrective action verification at the supplier and supplier’s sub-tier supplier’s facility to assess effectiveness of implemented corrective action.

NOTE: Material currently undergoing corrective action investigation processing up to and including verification of corrective action shall not be shipped without the written authorization of the cognizant EDD Buyer representative.

2.11 Foreign Object Debris/Damage (FOD)

To preclude introduction of foreign objects into any deliverable item, Supplier shall practice good housekeeping, and maintain and comply with a documented Foreign Object Debris/Damage (FOD) prevention program. This program shall follow NAS 412 as a guide. Supplier shall employ appropriate housekeeping practices to assure timely and complete removal of all residue/debris generated during manufacturing operations or tasks. The Supplier shall assure that areas with a high probability for introduction of foreign objects have controls in place within the manufacturing environment to avoid contamination.

2.12 Supplier Sub-tier Control

Supplier is responsible for ensuring the following:

- All items procured from its subcontractors conform to all requirements of the EDD purchase order
- All applicable provisions of this document are flowed to its subcontractors including copies of the latest applicable specification revision(s).
- Specifying on their purchase order for special processes “EDD” as your customer and the latest applicable specification revision(s).

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	14 of 22



Sub-tier supplier quality systems shall be evaluated by EDD Suppliers to assure practices are in place to assure consistent conformance to end item specifications. Records of qualification criteria or other basis by which sub-tier suppliers are authorized for use shall be maintained by the Supplier and provided to EDD upon request.

2.13 Sampling

When the supplier elects to use statistical methods for the acceptance of products or processes, such methods shall be in compliance with the requirements established by ANSI/ASQC Z 1.4 using Acceptance Quality Level (AQL 1.0) or better. Alternative sampling plans may be approved on a case by case basis.

2.14 Material/Process Requirements

Suppliers shall maintain a copy of all certifications for supplier-procured raw material. The supplier shall maintain the original mill certification and any secondary independent test laboratory certification(s) if any additional process was done after original mill certification for procured metallic material that shall include physical properties, chemical analysis and lot number(s). In addition, material must meet any other contractual requirements as stated in the purchase order.

Suppliers shall maintain copies of certifications for all subcontracted special processes per the retention requirements. Supplier shall also flow down a requirement for their sub-tiers to obtain and maintain raw material and process certifications as necessary to meet this requirement.

Raw material suppliers/distributors shall periodically validate selected physical and/or chemical properties documented on mill certification test reports (other than hardness and conductivity) in accordance with internally established requirements for all metallic raw materials. Such validation will be documented and retained for record purposes and must be provided to the buyer when requested.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	15 of 22



2.15 Calibration System, Measuring and Test Equipment

The supplier shall provide and maintain gages and other measuring and testing devices necessary to assure that product(s) conform to the technical requirements. Product Final Inspection and acceptance must be performed using calibrated instruments.

In order to assure continued accuracy, these devices shall be calibrated at established intervals against certified standards traceable to national or international standards. If production tooling such as jigs, fixtures, templates, and patterns are used as a media of inspection, such devices shall also be proved for accuracy at established intervals.

Calibration of inspection equipment shall be in accordance with a nationally or internationally recognized standard (i.e. ISO 17025, ANSI NCSL Z540 or ISO 10012) to the extent necessary to maintain required levels of accuracy and is subject to the buyer's approval. When required, the supplier's measuring and test equipment shall be made available for use by an EDD representative to determine conformance of product(s) with purchase order requirements. In addition, if conditions warrant, supplier's personnel shall be made available for operation of such devices and for verification of their accuracy and condition. (Control of tooling and measuring and test equipment furnished by EDD shall be the responsibility of the supplier.)

2.16 Packaging, Preservation, and Storage

The Supplier shall control all preservation, packing, storage, shipping and handling to assure that all materials are adequately protected during all phases of contract performance. Packaging and packing shall be in accordance with best commercial practices unless special handling and shipping requirements are required by Purchase Order/SOW. Methods used shall be sufficient for protection against damage from normal handling, shipping, and storage conditions. ESD and FOD precautions shall apply as applicable.

Finished parts shall be adequately protected to prevent damage during handling and shipment. Parts shall be individually wrapped, bagged, or otherwise protected to prevent part-to-part contact/damage when packaged within a larger pack. The supplier shall be responsible to utilize a method of packaging that assures adequate protection during transit.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	16 of 22



**TABLE 1
 MINIMUM QUALITY SYSTEM REQUIREMENTS**

MINIMUM QUALITY ASSURANCE SYSTEM REQUIREMENTS	
Control of Documents	Minimum: Supplier must have applicable EDD standards on file
	Minimum: Supplier must have basic traveler system in place and control system of EDD drawings issued
	Minimum: Supplier must protect and maintain production documentation for at least 7 years.
Resource Management	Minimum: Supplier must have a system that assesses/establishes personnel competence through education, training, skills and experience
	Minimum: Supplier must have a training program in place unless all personnel have been established to be competent per above.
Monitoring & Measurement of Product	Minimum: Supplier must perform and document final product inspection to verify product conformance.
	Minimum: If sampling is conducted, it must be to a standardized sampling plan (e.g. ANSI/ASQC Z 1.4 at AQL 1.0 or better)
	Minimum: Supplier must have a verifiable system in place to provide certifications when required by PO
Determination of Requirements	Minimum: Suppliers are required to have a verifiable system by which PO requirements are evaluated prior to order acceptance
ID & Traceability	Minimum: Supplier must have a verifiable system in place to assure materials are not mixed during parts manufacture
	Minimum: Supplier must have a verifiable system in place to clearly identify stocked material
	Minimum: Supplier must have a verifiable system in place to maintain raw material certifications when required by PO
	Minimum: Supplier must have a verifiable system in place to identify parts by batches, orders or other means to assure accurate records of material manufacture can be maintained
Calibration	Minimum: Metrology used for final acceptance purposes must be calibrated and be traceable to NIST or similar industry standard.
	Minimum: Metrology used for final acceptance must be clearly marked to show calibration status and be properly stored & maintained
	Minimum: Supplier must have a verifiable system in place to identify product affected if an out of tolerance tool/equipment is used for final acceptance.
Nonconforming Material Control	Minimum: Supplier must have a verifiable system in place that identifies and segregates nonconforming parts or materials
	Minimum: Supplier verifiable system in place to request a Deviation when they require EDD review of nonconforming material prior to shipment
	Minimum: Supplier must have a verifiable system in place to investigate causes of nonconformances and implement Corrective Action when requested by EDD

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	17 of 22



SECTION 3 –SPECIFIC REQUIREMENTS

3.0 SPECIFIC REQUIREMENTS

The following product specific requirements are applied based on product type and/or Purchase Order.

3.1 Workmanship Requirements

The requirements below are in effect unless specified otherwise in Engineering Specifications/Drawings:

3.2 Circuit Card Assemblies

The supplier’s circuit card assembly (CCA) design and workmanship shall be in compliance with the most recent IPC-2220 series for printed circuit board design and IPC-A-610 Class 3 acceptability specifications. Manufacturing methods shall be in accordance with the current revision of J-STD-001 Class 3. Rigid and flex circuit card assemblies shall meet the requirements of the specified standards as applicable to specific board type.

Printed Circuit Boards (PCBs), including rigid, rigid flex, flex and high density boards shall meet performance requirements specified in the current revisions of the IPC-6010 series as well as the acceptability requirements for IPC-600 class 3. Exceptions to Class 3 specifications must be approved in writing and the following minimum requirements must be maintained for critical features within the PCB design:

1. Minimum annular ring for supported hole:
 - a. External layers .002 preferred, tangency allowed.
 - b. Internal layers .001 preferred, tangency allowed.
2. Solder mask per IPC-SM-840 Class 3.
3. Copper through hole plating thickness average of .001” with a minimum thickness of .0008”.
4. Solderability shall be in accordance to Category 3, J-STD-003.

Suppliers must utilize inspectors certified to IPC-A-600 for EDD procurements.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	18 of 22



3.3 Cable and Harness Assemblies

Suppliers of cables and harnesses' design and workmanship criteria shall be in compliance with IPC-620 Class 3 acceptability requirements, unless otherwise stated.

3.4 Lead Free Mitigation

This section establishes EDD's position on the use of lead (Pb)-free tin in our products.

Pb-free tin finishes and solders are not acceptable.

- EDD's definition of Pb-free tin is any tin-based alloy that does not contain at least 3% lead (Pb) by weight.
- Bright tin finish is **not** to be used on products supplied to EDD.
- The only tin finishes which may be approved by EDD are "matte" tin in accordance with ASTM B545, "Standard Specification for Electrodeposited Coatings of Tin."
- EDD will continue to use Pb-based solders and avoid Pb-free tin finishes and solders in accordance with USAF Airworthiness Advisory AA-05-01, "Lead-Free Solder."

3.2.1 Lead Finish

The use of lead (Pb+) finish components is required unless otherwise authorized by the contract (SOW), drawing or parts list

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	19 of 22



3.5 Electro-Static Discharge Control

Suppliers that handle ESD sensitive items shall have an Electrostatic Discharge (ESD) control program in effect to protect parts during manufacturing, inspection/test, packaging, shipping, rework, and/or failure analysis. The ESD control program shall conform to MIL-STD-1686C. Packaging must be marked with the MIL-STD-129N ESD caution label, "CAUTION - OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE ITEMS."

3.6 Counterfeit Parts Avoidance

This section refers to procurements of electronic or electro-mechanical components or assemblies containing such components.

Counterfeiting often involves cases where parts or assemblies are offered that present a product substitution and quality risk to EDD and to our end customer. A counterfeit or suspect part is one that is a copy or substitute without legal right or authority to do so or one whose material, performance, or characteristics are knowingly or unknowingly misrepresented by the supplier. Examples of counterfeit parts include, but are not limited to:

- Parts which do not contain the proper internal construction (die, manufacturer, wire bonding, etc.) consistent with the ordered part.
- Parts which have been used, refurbished or reclaimed, but represented as new product.
- Parts which have different package style or surface plating/finish than the ordered parts.
- Parts which have not successfully completed the Original Component Manufacturer (OCM)'s full production and test flow, but are represented as completed product.
- Parts sold as up-screened parts, which have not successfully completed up-screening.
- Parts sold with modified labeling or markings intended to misrepresent the part's form, fit, function, or grade, except in cases where performance is better than specified.

It is the supplier's responsibility to ensure they do not deliver counterfeit or suspect product to EDD. Supplier shall develop and use a counterfeit avoidance

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	20 of 22



and substitution control plan. The plan shall address the following, at a minimum:

- Policy and/or procedure for use of approved authorized suppliers and authorized distributors.
- Policy and/or procedure for use and qualification of independent distributors.
- Handling of, and buyer notification of, obsolete part(s).
- Notification and approval of buyer when parts cannot be procured through the authorized supply chain and distribution channels.
- Policy and/or procedure for obtaining objective evidence of traceability to OEM.
 1. Obtaining certificate of conformance from the Original Equipment/Component Manufacturer (OEM/OCM).
 2. Implementing risk mitigation processes such as part inspections, x-rays, destructive analysis and testing, incoming receiving inspection, or third-party test facilities.
- This flow down policy must flow to all organizations that provide parts, materials and assemblies for EDD. The Supplier and its suppliers that are purchasing parts, materials and assemblies for EDD shall have a counterfeit avoidance control plan that documents their processes for risk mitigation, disposition and reporting of counterfeit parts.

The supplier's counterfeit avoidance plan shall be available for review by the buyer upon request. The supplier shall be responsible for development, maintenance, monitoring, and execution of this plan. Supplier's counterfeit parts avoidance and substitution plan records are subject to buyer audit, upon request.

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	21 of 22



SECTION 4 – Quality Codes

4.0 FLOWDOWN OF QUALITY REQUIREMENTS

Specific Quality Assurance program requirements are flowed down to suppliers via Quality Codes applied to the Purchase Order per the table below.

**TABLE 2
QUALITY ASSURANCE CODE – SUPPLIER FLOWDOWN**

QUALITY CODES	DESCRIPTION
A	AS9100/AS9120 QMS Required
B	ISO 9001 QMS Required
N	NADCAP Accreditation Required
P	Special Processes - EDD Approved Sources Only
I	100% Final Inspection required
J	100% Final Inspection required with data
F	First Article Inspection report required
G	First Article IAW AS9102 required
S	Source Inspection required
T	Test Acceptance Data required
D	Inspection Acceptance Data required
C	Test Coupons required
X	Certificate of Analysis required
Y	OEM/OCM materials only – no independent/broker
M	Mill Certificate required

FSCM No. (CAGE Code)	SIZE	DOCUMENT NUMBER	REV	PAGE
80080	A	PO-0190	-	22 of 22