

PROCEDURAL INSTRUCTION

**PROCUREMENT QUALITY ASSURANCE
REQUIREMENT CODES**

Prepared By:

Interiors – Lighting Systems

Cage Code: 55438
3445 South 5th Street
Suite 180
Phoenix, AZ 85040
U.S.A
www.utcaerospacesystems.com

TABLE OF CONTENTS

1.0	PURPOSE	4
2.0	REFERENCES.....	4
2.1	REFERENCE DOCUMENTS.....	4
2.2	ACRONYMS AND TERMS	5
3.0	RESPONSIBILITIES	5
3.1	CONTENT	5
3.2	IMPLEMENTATION	5
4.0	INSTRUCTIONS / QUALITY CODES	5

1.0 PURPOSE

The purpose of this document is to define Quality Assurance requirements for suppliers and sub-tier suppliers of UTAS Goodrich Interiors Lighting Systems, Phoenix Arizona, USA (hereinafter referred to as “the Company”). The term “supplier” is used to reference an organization or entity that provides either product, material or service directly to UTAS Goodrich Interiors Lighting Systems, Phoenix Arizona. The term “Sub-Tier Supplier” is used to reference an organization or entity that provides either product, material or service to the UTAS Goodrich Interiors Lighting Systems, Phoenix Arizona supplier.

2.0 REFERENCES

2.1 Reference Documents

The following documents form a part of this procedure to the extent that they are referenced herein.

Document Number	Title
ASQR-01	Supplier Quality System Requirements
ASQR-02	Supplier Quality System Requirements for Maintenance Organizations
ASQR-01 FORM 3	Supplier Request for Information
ASQR-07.5	Control of Software – Internal Non-Deliverable
ASQR-09.1	Flight Safety Part Program
ASQR-09.2	UTC Production Parts Approval Process (UPPAP)
ASQR-15.1	Foreign Object Damage / Debris prevention, Handling, Storage, Packaging, Preservation and Delivery
ASQR-20.1	Supplier Sampling Requirements
ISO 17025	General Requirements for Competence of Testing and Calibration Laboratories
AWS D17.1	Specification for Fusion Welding for Aerospace Applications
AS/EN/JISQ 9100	Quality Management System Requirements
SAE AS9102	Aerospace First Article Inspection Requirements
SAE AS9103	Variation Management of Key Characteristics
SAE AS9110	Aerospace Requirements Maintenance Organizations
AS/EN/JISQ 9120	Aerospace Requirements for Stocklist Distributors
ASQR-01 FORM 3	Supplier Request for Information

MIL-I-45208	Inspection System Requirements
MIL-STD-1535	Supplier Quality Assurance Program Requirements
SAE AS5553	Counterfeit Electronic Parts; Avoidance, Detection, Mitigation and Disposition.
GLS-VS-WI-ENG 7.3-83	LED Handling - Work Instruction

2.2 Acronyms and Terms

UTC	United Technologies Corporation
UTAS	United Technologies Aerospace Systems
GLS	Goodrich Interiors Lighting Systems
FOD	Foreign Object Damage
MSDS	Material Data Safety Sheet
FAIR	First Article Inspection Report
P.O.	Purchase Order

3.0 RESPONSIBILITIES

3.1 Content

The Quality Assurance Department (Supplier Quality) is responsible for keeping this PI current and up-to-date. Report any comments and/or discrepancies found within this PI to Supplier Quality Assurance.

3.2 Implementation

The following departments and the company suppliers / sub-tier suppliers are affected by the requirements of this document.

- Quality
- Purchasing
- Engineering
- Manufacturing Engineering

4.0 INSTRUCTIONS / QUALITY CODES

APPLICABILITY: The quality assurance requirements are applicable to the company purchase orders when incorporated by reference to the applicable clause or clauses by code numbers in such purchase orders. Acceptance of the articles or material specified on this order will be withheld pending receipt of all required data and documentation.

RESPONSIBILITY FOR CONFORMANCE: Neither surveillance, inspection, and/or tests made by Buyer, or his representatives of the Government at either Suppliers or Buyer's facility, nor Suppliers compliance with all applicable Quality Assurance requirements, shall relieve Supplier of the responsibility to furnish items which conform to the requirements of the Procurement Documents.

SIGNIFICANCE: These requirements shall be in addition to and not in derogation of other purchase order requirements.

REFERENCED MILITARY DOCUMENTS: Unless specifically stated, all military specifications and standards referenced herein shall be the issue in effect on the date of quotation for this order, unless prior written approval had been granted by the company.

QUALITY CODE DESCRIPTION:

Quality codes applicable to each supplier are listed on the purchase order, and/or in BOLD UNDERLINE per this document. The Supplier is responsible for flowing down all said requirements to the sub-tier suppliers, as applicable.

CODE DESCRIPTION

101 SUPPLIER QUALITY REQUIREMENTS

Unless otherwise stated herein or by P.O., all requirements per UTC documents ASQR-01 (Supplier Quality Systems Requirements) and ASQR-02 (Maintenance Organizations) shall apply to all suppliers. All ASQR-XX documents can be located through the following link: <http://www.utc.com/Suppliers/Pages/Aerospace-Quality-Requirement-Documents.aspx>

Supplier is responsible for flowing down requirements to their sub-tiers, as applicable.

102 INSPECTION SYSTEM: The inspection system(s) which the supplier is required to maintain shall be in accordance with the most current revision of specification AS/EN/JISQ 9100 and ASQR-01, section 1.

103 STANDARD INSPECTION: The Government has the right to test all supplies called for by the contract/purchase order, to the extent practicable, at all places and times, including the period of manufacture, and in any event before acceptance.

104 GROUP I PURCHASE - MIL-STD-1535: This group includes (A) purchases or services that are either complex or have critical application and for which conformance to contract/purchase order requirements cannot or should not, for economical reasons, be fully determined upon receipt, and (B) purchases requiring direct shipment from the supplier to the Government.

105 RIGHT OF ENTRY: The company and the company Customer Representatives (Airbus, Boeing, Lockheed Martin, Northrop, DCMA and FAA) reserve the right of entry into a supplier's facility or that of their subcontractors. Entry shall provide access to quality system documentation, quality records as well as the ability to conduct audits and verify product and processes. Suppliers/Subcontractors denying access to manufacturing facilities or refusing to provide required information or providing false information will not be approved sources of supplies or services to the company.

106 The following **COMMERCIAL/EAR DESTINATION CONTROL STATEMENT** applies to this order for all items designed for a civilian/commercial application, or technical data related thereto:
"These commodities, software, or technology were exported from the United States in accordance with the export administration regulation. Diversion contrary to U.S. law is prohibited".

107 The following **DOMESTIC ITAR DESTINATION CONTROL STATEMENT** applies to this order for all items designed or modified for a military application, or technical data related thereto:
"These articles or technical data are controlled by the International Traffic in Arms Regulations (ITAR). They are subject to the export control laws of the U.S. government. They are not to be placed in the public domain, exported from the U.S., or given to any foreign person in the U.S., without the prior, specific written authorization of the company and the U.S. Department of State."

110 GOVERNMENT SOURCE INSPECTION: Government source inspection may be required at supplier/ subcontractor facility prior to shipment. Upon receipt of this order, please furnish a copy of this contract/purchase order to your local DCMA representative. The supplier/subcontractor shipping document must bear a Government source inspection stamp if this requirement is imposed.

111 SOURCE INSPECTION: Source inspection may be required at supplier/subcontractor facility by the company inspection prior to shipment per P.O. requirements. The company QA to be notified at least 48 hrs prior to shipment.

113 FIRST ARTICLE INSPECTION REPORTS

Refer to UTC document ASQR-01 Supplier Quality System Requirements, paragraph 7.5.1.1 in addition to requirements: The first article inspection report (FAIR) shall reflect 100% inspection verification of all drawing characteristics specifying each drawing characteristic and the corresponding actual measurement. This is accomplished by providing a “bubbled” drawing with each characteristic or requirement clearly marked with a unique identifier number which corresponds to the same number listed on the FAIR. The FAIR shall follow the requirements of SAE AS9102.

Initial product builds or supplied product / components from the suppliers, to a UTAS / Goodrich drawing / design, must have a full FAIR completed. The FAIR shall include:

- Raw material certification showing actual chemical and physical requirements for the material used.
- Certifications for any processing (i.e., anodizing, chemical conversion coat, heat treat, welding, etc.). These certifications shall be from the Company or Customer approved supplier when required by drawing or P.O.
- Certifications for any testing (i.e., voltage, thermal shock, chromaticity, etc.) when required by drawing or P.O.
- Certificate of Conformance / Compliance (C of C) & FAIR shall reference the company part number and revision level / index number of product being certified.
- C of C shall, or FAIR will reference specifications and callouts when on the drawing (i.e., material specification for gasket material and the durometer reading)
- FAIR shall include all notes on the drawing with a notation of (“noted”) in the remarks section of the FAIR if there is no actual measurement or other data that can be recorded.
- A replication of product part marking (via photograph or sample) that represents production marking must be included within the FAIR.
- FAIR and C of C shall have signature of responsible person at the supplier.
- The FAIR shall include copies of lower level component certifications / FAIRs (i.e., diodes, PWBs, hardware, sundries), including standard catalog parts.
- The FAIR and associated documentation must be in English.
- SE AS9102 forms used to complete the FAIR may be obtained at <http://www.sae.org/aaq/publications/as9102a-faq.htm>

If the FAIR is for a revision change of product that has previously been purchased from the supplier, the FAIR is only required to address the characteristics that were changed. Ref ASQR-01 and AS/EN/JISQ 9102.

118 NON-CONFORMANCE PRODUCT DEVIATIONS AND WAIVERS: Suppliers are not authorized to disposition non-conforming product, of the company or the company's customer design, unless material review authority is granted in writing. Follow the specific the company location guidelines for disposition and control. **Supplier does not have MRB authority.**

- 120 QUALIFICATION TEST: Supplier shall conduct all tests in accordance with the company specifications. Functional test data records shall be submitted for all items tested. Copies of calibration certifications for all equipment used for testing shall be submitted with the certified test reports.
- 130** FUNCTIONAL TEST DATA: Recorded functional test data will be supplied by the supplier with each lot of material shipped as applicable per drawing or P.O. Submitted data shall be traceable by serial number or other identification to the particular part(s) to which it applies.
- 131 FUNCTIONAL TEST (SUPPLIER): Supplier certifies that functional test requirements will be conducted on each part prior to shipment and that functional test records will be on file subject to examination. Each unit shipped to the company shall be legibly rubber stamped near the production identification label with the supplier's functional test identification and the date on which testing was conducted.
- 132 CERTIFICATE OF CONFORMANCE / COMPLIANCE FOR RAW MATERIALS: Supplier shall furnish certified chemical/physical reports for raw materials supplied or used in the manufacture of articles delivered under this purchase order/contract. The reports shall include actual data for chemical analysis; physical results of testing. Reports must accompany shipment.
- 133** ROOT CAUSE CORRECTIVE ACTION
The supplier shall take action to eliminate the root cause of nonconformities in order to prevent reoccurrence. Corrective actions shall be appropriate to the effects of the nonconformities encountered and Lean tools (i.e.: 5-Why, Flowcharts, Fishbone chart) shall be used to determine root cause. The supplier shall use Mistake Proofing methodologies when initiating corrective actions. A documented process shall be established to accomplish the following:
- 24 Hours: Acknowledgement and containment actions shall be communicated to the Company.
 - Determine root cause of non-conformances and implement corrective action plan within five (5) days.
 - Evaluate the need for and implement preventative actions.
 - Communication to the Company shall Root Cause Corrective Action shall be communicated on form PHX-QA-0001-FRM.
 - Target completion of root cause and corrective action within 30 days.
 - Review corrective action for effectiveness
 - When applicable, request for return material authorization (RMA) shall be responded to within 48 hours.

134 SPECIAL PROCESSES

Refer to UTC document ASQR-01 Supplier Quality Systems Requirements, paragraph 7.5.2, in addition to requirements: Include S Composites (COMP), Surface Enhancements (SE), Product Testing (MTL) and Electronic Assemblies (PCB / CCA / Cable Assemblies) as special processes. When special processing is required, parts must be processed/controlled in accordance with the current revision (at date of contract/purchase order) of the Company or Government specification referenced, unless otherwise specified. The supplier is responsible for all subcontracted supplies/services. The certification automatically attests that all special processing was performed in accordance with the referenced special process document(s) and revision(s). This certification must be submitted with First Article Inspections (FAIR) only. Subsequent processing certifications must be kept on file at the Supplier's facility for a minimum of 10 years unless otherwise directed. Contact the Company buyer for a listing of controlled special processes/materials and listing of approved suppliers/processors.

Specific written authorization must be obtained from the company in absence of accreditation. It is the responsibility of the supplier to ensure sub-tier supplier compliance.

Qualification of a subcontractor to perform a customer controlled process (e.g., a Boeing BAC or DPS specification), requires prior customer approval. Customer listings must be reviewed for approved customer providers.

This does not apply to standard catalog hardware, raw material and commercial off the shelf (COTS) items. There may be other applications where this does not apply. See the Company location for exceptions.

Supplier is responsible for flowing down requirements to their sub-tier suppliers.

135 DIMENSIONING OF PROCESSED PARTS: When the drawing indicates special processes will be performed after machining, the dimensions noted indicate finished product dimensioning unless superseded by the P.O.

136 CERTIFICATE OF CONFORMANCE / COMPLIANCE: A Certificate of Conformance / Compliance (C of C) shall accompany each shipment stating the product or services provided meet all purchase order and drawing requirements and shall contain no qualifying statements, such as "best to our knowledge". The C of C shall provide at a minimum:

- Supplier name and manufacturing address.
- Part number (part number or raw material ordered if not the same as the supplier's internal part number) and Revision letter / Index Number of the product being certified..
- Part name or description (as applicable).
- the company purchase order and line item number.
- Quantity of parts.
- Serial, batch or lot numbers (as applicable).
- Date of certification.
- Government contract number (where applicable).
- Waiver / deviation / non-conformance documentation (as applicable).
- Title and signature of authorized supplier representative attesting to the C of C accuracy.

In addition, original Manufacturer's C of C is required for components made to MIL-Std., components that are specification controlled and/or on the Company source controlled drawing

- 136A **COUNTERFEIT PARTS:** Suppliers must have a counterfeit parts prevention program. The purpose of this program shall be to prevent the delivery of counterfeit parts and control parts identified as counterfeit. Reference SAE AS5553.

Seller shall establish and maintain controls to prevent the purchase of counterfeit parts. Seller shall maintain a method of Item traceability which ensures tracking of the Item(s) back to the Original Equipment Manufacturer (“OEM”) for all components and devices including those Items in assemblies and subassemblies being delivered under this PO.

If a suspect/counterfeit Item(s) is furnished under this PO, Seller shall promptly disclose such Item(s) to Buyer and replace such Item(s) with Item(s) acceptable to Buyer at no increase in price, cost or fee to Buyer. Seller shall be liable for all costs relating to impoundment, removal, and replacement of counterfeit Item(s).

- 137 **EXPORT REGULATIONS:** In order for the company to ensure Compliance with all applicable Export Regulations, it is necessary to have detailed information about all parts being provided to the company by your company. It is important that you provide the company with the Jurisdiction of your product, whether it is controlled under the US Munitions List (USML) in the International Traffic in Arms Regulation (ITAR) by the US Department of State or controlled under the Commerce Control List (CCL) in the Export Administration Regulations (EAR) by the US Department of Commerce. Once the jurisdiction is determined, please provide the USML category for the ITAR controlled commodities or the Export Control Classification Number (ECCN) for EAR Controlled commodities. **In addition, the name of the manufacturer and the country of origin MUST be identified.** For Technical Data related to a CCL or USML controlled commodity, please provide the ECCN or USML category for the associated technical data. This information may be included on the Supplier Certificate of Compliance or on a separate document , but **MUST** include: Part or item number, part or item description, USML or ECCN number, Manufacturer name and country of origin and **MUST** bear the signature and title of the responsible company representative making the determination.

- 138 CONTROL OF DOCUMENTS AND RECORDS:** Refer to UTC document ASQR-01 **Supplier Quality System Requirements, paragraphs 4.2.3 and 4.2.4, in addition to requirements:** Copies of records initiated and indicating the results of manufacturing processes, tests, inspection results, audits and certifications received from sub tier suppliers must be legible, identified, collected, protected, easily retrievable, stored and retained for (10) years at the Supplier’s facility or off-site storage provided the records are easily accessible. Ref. UTC ASQR-01 for retention period requirements.

At the end of the retention period or the supplier ceases trading with the company, or the supplier is unable to maintain the records, the supplier shall provide the option for the company to take possession of the records. Records are not to be destroyed without written approval from the company Supplier Quality Assurance. the company shall maintain the right to access all or any portion of records within the time period specified by each the company location. All records supplied to the company shall be in English.

- 142 PART NUMBER/PROCESS/DESIGN CHANGES:** Supplier shall notify the buyer of any proposed change in design, fabrication method, or process, and obtain approval from the company **before** making the change. Appropriate identification of those articles on which the change is incorporated shall be required. The supplier shall request, in writing, the company approval of any change in part number of nomenclature that differs from contract/purchase order information prior to shipment.

- 143** SOLDERING / WORKMANSHIP REQUIREMENTS: All printed circuit board assemblies shall be manufactured in accordance with the latest IPC-A-610 (Class 2) and ANSI/J-STD-001 specifications. In situations where the company engineering drawing is in conflict with said requirements, the engineering drawing shall take precedence. In situations where IPC-A-610 and ANSI/J-STD-001 conflict, the J Standard shall take precedence.
- 150** SHELF LIFE / SHELF LIFE CURE DATE: Cure date must be shown on the certification of compliance or on the shipping document. In no case shall material or articles be supplied to the company with less than 70% of the useful life remaining.
- 151** HAZARDOUS MATERIALS: Supplier shall mark all containers with appropriate precautions, warnings, instructions, and storage conditions. MSDS documents must accompany each shipment.
- 152** PART IDENTIFICATION: All materials shall be identified by part number, permanently and legibly affixed to the surface of each article. If the size of the material prohibits marking, an identification tag will be affixed to the container.
- 160** PACKAGING: Supplier shall incorporate good practices for preservation and packaging of all articles submitted under the contract/purchase order and shall identify each package permanently and legibly with the purchase order number, date shipped, and packing slip number. Components with fragile leads and items susceptible to breakage; i.e., glass lens, flashtubes shall be packaged in individual compartments to prevent intermingling and damage.
- 161** ESDS PACKAGING: All ESDS sensitive components supplied to the company on this contract/purchase order shall be identified as being ESD sensitive and shall be handled and packaged in such a manner to preclude damage due to static discharge. All packages shall be identified with suitable precautionary labels.
- 167** CALIBRATION: Supplier shall provide certification that calibration is traceable to NIST. Actual test reports supporting verification shall be provided with the item.
- 170** PACKAGING OF SOLDERABLE COMPONENTS: Packaging of solderable components shall be consistent with good commercial packaging; however, heat sealing or plastic bags and paper products containing sulphur or desiccators shall not be utilized.
- 180** VARIATION MANAGEMENT OF KEY CHARACTERISTICS: **Refer to UTC document ASQR-01 Supplier Quality System Requirements for additional requirements**: When specified per purchase order or design data, the company requires implementation of statistical process controls that meet the intent of AS9103 Variation Management of Key Characteristics on specific characteristics, part numbers or processes. Supplier to submit control charts with each lot of material supplied. Each control chart for the key characteristic tracked must be a continuation from the previous chart submitted.
- 186** 100% INSPECTION REQUIRED: The supplier shall perform 100% inspection for compliance of each characteristic of all parts delivered against this contract/purchase order.
- 187** BOEING/THE COMPANY END USE ITEM: Parts delivered against this contract/purchase order are for Boeing/ the company end use. Parts must be in accordance with D590 requirements. All testing required by D590 must be completed per requirements. Results of D590 testing must accompany shipment.
- 188** ORIGINAL PART MANUFACTURER: Supplier must identify the original part manufacturer of the part being supplied, the manufacturer's part number, lot number and serial number if applicable.

- 189 APPROVED SOURCES: Work to be accomplished in performance of this contract/purchase order is directly related to a **Lockheed Martin Corporation** contract/purchase order and must be accomplished in accordance with process specification stated/requested on contract/purchase order and the requirements of **QCS-001**.
- 190 FOREIGN OBJECT DAMAGE: **Refer to UTC document ASQR-01 Supplier Quality System Requirements, paragraphs 7.5.5. in addition to requirements**: A foreign object damage prevention program (FOD) must be maintained to assure prevention, detection and removal of foreign objects during the manufacture, assembly and shipping of item. Supplier shall document and investigate all FOD incidents assuring elimination of the root cause. Buyer shall have the right to perform inspections, verification and FOD Prevention Program audits at supplier's facility to assure program documentation and effectiveness. Supplier shall provide a statement of certification that deliverable products are free of any foreign materials that could result in foreign object damage to the installed product or companion components/systems.
- 192 COTS/INDUSTRY STANDARD FIRST ARTICLE INSPECTION: Supplier shall submit documentation to the company demonstrating compliance with the requirements of the contract/purchase order and referenced documents. This requires a complete Certificate of Conformance from the manufacturer incorporating all specifications and processes listed on the drawing, special processes (i.e., plating, welding, Non Destructive Testing, painting) shall be performed only by Customer approved suppliers when required, and raw material certifications where applicable.
- 193 COUNTRY OF ORIGIN MARKING REQUIRED:
Final Assembly - Every article of foreign origin imported into the United States **and** its container shall be marked in a conspicuous location as legibly, indelibly, and permanently as the nature of the article and container will permit.
Piece parts – The container for individual piece parts of the same part number shall be marked with the country of origin in a conspicuous location as legibly, indelibly, and permanently as the intermediate **and** outer container will permit.
- 194 DFARS clause 252.225-7014, Preference for Domestic Specialty Metals (ALT I) : Where DFARS clause 252.225-7014 (ALT I) is applicable, the company must ensure that any “specialty metals” (regardless of value) incorporated into products sold to the DoD (either directly or through higher-tier contractors) were acquired from within the United States or from one of the “qualifying countries.” “Specialty metals” means (i) Steel (A) With a maximum alloy content exceeding one or more of the following limits: manganese, 1.65 percent; silicon, 0.60 percent; or copper, 0.60 percent; or (B) Containing more than 0.25 percent of any of the following elements: aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, or vanadium; (ii) Metal alloys consisting of nickel, iron-nickel, and cobalt base alloys containing a total of other alloying metals (except iron) in excess of 10 percent; (iii) Titanium and titanium alloys; or (iv) Zirconium and zirconium base alloys.
- 195 APPROVED SOURCES: As Applicable: Work to be accomplished in performance of this contract/purchase order is directly related to a **Boeing Corporation** contract/purchase order and must be accomplished in accordance with process specification stated/requested on contract/purchase order and the requirements of **D1-4426**. Go to http://www.boeing.com/companyoffices/doingbiz/index_quality.html to find the approved process sources.
- 196 **Refer to UTC document ASQR-01: Supplier Quality System Requirements for requirements**: Supplier is responsible for flowing down requirements to their sub-tiers as applicable. See Quality Code 134.

- 197 LEADED COMPONENT REQUIREMENTS: the company shall not allow the use of lead free PWB's or components used to populate the PWB's. The company approval required prior to the use and shipment of any lead free product.
- 198 Defense Priorities and Allocations System (DPAS) : This is a rated order for National Defense use when a DPAS rating is entered, and Seller is required to follow all the provisions of the Defense Priorities and Allocations System Regulation (15 CFR 700).
- 199 ROHS requirements are applicable.
- 200 REACH requirements are applicable.
- 201 MSDS is applicable. Parts to be shipped with MSDS.
- 202** Light Emitting Diodes (LED): Supplier shall follow the handling practices for LEDs per the company specification GLS-VS-WI-ENG-7.2-83. The document serves as a tutorial for proper handling, moving, and storing of individual LEDS as well assembly into the company products.