

STANDARD OPERATING PROCEDURE	Document Title: Supplier Quality Assurance Requirements Manual (SQAR) Manual	Document #: GP07-001	Revision: F
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A	5-Apr-2019	W. Stull	Initial Release
B	23-May-2019	W. Stull	- Moved SQAR's to GF07-008 - Added section pertaining to Supplier Resource Awareness - Added supplier acknowledgement
B	15-Jan-2020	Luis R.	Update release date per GCMS 2020-2301 No rev change needed
C	12-Aug-2020	B. McCourt W. Stull	Updated section 3.1 with SQAR code 600 Revised matrix.
D	29-Apr-2021	W. Stull	- Section 1.12. Added 'Grandfather Clause' as an alternative Quality System approval. - Updated commodity matrix. Removed SQAR 535 from Limited Life Items and COTS. Added SQAR 310 to Limited Life Items. - Removed SQAR 250, 251, & 450 from Manufactured Raw Material required clauses.
E	12-Jul-2023	L. Rodriguez	Correct reference to SQAR 600 in table 3.1 to SQAR 601
F	31-Jul-2023	W. Stull	Moved mandatory SQAR clauses from GF07-008 (SQAR Appendix) to this document to ease understanding.
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This manual contains requirements that are applicable when invoked by Smiths Interconnect Purchase Orders. Requirements include the mandatory use of this manual for Contract Review and Quality Planning activities.

Notice:

The SQAR Manual is a controlled document. It is controlled in electronic format. If a hard copy version is utilized, it is considered to be a reference tool. It is important to verify the currency of a hard copy by viewing the online electronic SQAR Manual. Internal Smiths Interconnect users may access the manual on the internal Smiths Interconnect Intranet:

[Smiths Interconnect Quality SharePoint](#)

Suppliers may access the manual via the Smiths Interconnect Website:

[Smiths Interconnect Supplier Information](#)

It is possible that an unincorporated change may be initiated during the current SQAR revision life cycle. If/when this were to occur, the change will be posted to the above locations only. Thus, it is important to routinely check for any such changes. Changes may be incorporated at the next general SQAR Manual revision/update.

NOTE: *If there are interpretation concerns needing clarification in the SQAR manual, please contact Smiths Interconnect Sourcing organization.*

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Section 1 General Requirements

1.1 Preface

This manual contains requirements that are applicable when invoked by Smiths Interconnect Purchase Orders. Requirements include the mandatory use of this manual for Contract Review and Quality Planning activities. Contents of Sections 1–3 shall be reviewed and complied with in conjunction with the purchase order flow down. The SQAR Manual is controlled in electronic format. Paper copies, and electronic copies downloaded and saved to a local hard drive are uncontrolled. Suppliers shall visit the manual online to check for changes that may be identified in the electronic unincorporated change page at:

[Smiths Interconnect Supplier Information](#)

If the Supplier is working to a Purchase Order pre-dating the most current SQAR Manual release date, the Supplier may request authorization to work to the most current SQAR manual revision by requesting a Purchase Order revision from the Smiths Interconnect Buyer.

1.2 Applicability

The Smiths Interconnect Purchase Order is the official binding contract in the order of precedence described in the Terms & Conditions of Purchase. Commodity specific SQARs are identified per Section 3 of this document, although specific SQAR number(s) and/or text may be added to the PO at the discretion of Purchasing and/or Quality. If conflicts between flow down documents and the Purchase Order are detected, the Supplier shall immediately notify the Smiths Interconnect Buyer.

Handwritten, lined-out or initialed changes to purchase orders are not allowed. Handwritten, lined-out or initialed changes to engineering drawings/specification or technical data are not allowed, except where:

- provided for by Smiths Interconnect site official procedure, and
- signed by a relevant authorized Smiths Interconnect agent.

Verbal and/or email authorizations are not permitted.

Not applicable for purchase orders for Indirect Materials.

1.2.1 Subcontracting Policy

Smiths Interconnect suppliers shall ensure flow down to, and compliance with, all applicable Purchase Order and Engineering requirements to their sub-tier suppliers, including approved Special Process providers.

For Smiths Interconnect designed hardware, Supplier/subcontractor Purchase Orders to special processing providers must contain the following as a minimum:

- Reference to the applicable Smiths Interconnect CAGE Code (if applicable).
- Applicable SQAR number(s).
- Smiths Interconnect part number and nomenclature of subject part, including revision level.
- Special Processes to be performed and the applicable specification(s), revision letter(s) including the type, class, or methods and testing that are required by drawing or specification.
- Any special drawing instructions/notes, as applicable, such as inspection class, inspection grade and inspection acceptance requirements, special handling requirements not otherwise stated, etc.

1.3 Quality Requirements

The core quality requirement is for all features to comply to specifications 100% for all parts produced and shipped. If the process is not capable of meeting 100% yield it is Smiths Interconnect's expectation that all suppliers pursue measurable continuous quality and delivery improvements.

On an annual basis, Smiths Interconnect defines the minimum performance expectation measured in conventional ways such as Parts Per Million (PPM) or Lot Acceptance Rate (LAR) for quality and Percent On Time To Request (OTD-R) or Percent On Time To Promised (OTD-P) on a supplier level as well as on a part number level.

When a supplier does not meet these minimum performance levels, Smiths Interconnect reserves the right to require the supplier to engage in an aggressive improvement project – lead by the supplier's leadership as well as Smiths Interconnect Stakeholders. These projects will be focused on improving the supplier's Business Operating Systems that will result in the sustainable achievement of Smiths Interconnect's minimum performance expectation.

1.4 Audit Rights Reserved / Right of Entry

Smiths Interconnect, customers and regulatory authorities reserve the right to perform audits and/or inspections at the Supplier's and/or supplier's subcontractor's facility on the manufactured and/or repaired parts. Supplier material, records, process and routing sheets, manufacturing, and test and inspection facilities are subject to review by Smiths Interconnect and/or Smiths Interconnect's customers (Commercial, designated Government representatives, regulatory authorities). When on-site verification of Contract / Purchase order conformance is required, the supplier shall provide the equipment, facilities, and personnel necessary for the Smiths Interconnect representatives to verify compliance.

1.5 Changes in Process, Design, Quality System, Facilities, Management or Ownership

1.5.1 Generalities

Suppliers shall comply with all contractual requirements, (including but not necessarily limited to Long Term Contract and general purchase order provisions agreed between the parties), for notification and approval of changes in design, material, manufacturing location, manufacturing equipment, production processes, and any other process related to the Goods in place as of the purchase order issuance date.

1.5.2 Notification

In addition to the requirements imposed by previous paragraph, Suppliers shall immediately notify the Smiths Interconnect Buyer, the Smiths Interconnect Quality Manager from the procuring sites, and the relevant Supplier Quality Engineer, changes in quality leadership, scope, name, or address of Quality Management System registrations, or controlled processes certification status, including suspensions or disapprovals. Suppliers shall also notify the above parties in the event of complete company closure with no transition plan managed by its corporate office.

1.5.3 Records

Supplier notifications shall contain the following supplier information as a minimum:

- Supplier Name and ID
- Old data and new data (e.g. if address change, list the prior address and the new address)
- Name of supplier quality contact
- Phone number of supplier quality contact
- Email address of supplier quality contact.

1.6 Language Requirements

All quality records, data or correspondence to Smiths Interconnect are required to be in the language of the Smiths Interconnect facility placing the purchase order, or in the English language, as agreed on between the supplier and the Smiths Interconnect facility. Upon request, all supplier data related to finished product must be translated to English and made available. If the supplier does not perform this service, translation fees will be debited to the Supplier.

1.7 Configuration Management

The Supplier shall ensure that the current configuration of all drawings, specifications, and instructions required by the Contract / Purchase Order, as well as authorized changes, are used for manufacturing, inspecting, and testing. Contact the Smiths Interconnect buyer to obtain the latest revisions of Smiths Interconnect detail drawings and specifications.

1.8 Notification of Design and Manufacturing Changes

Suppliers with design authority are required to notify Smiths Interconnect promptly, in writing, of any changes of fit, form or function, or safety of product and obtain approval prior to manufacture and delivery. Supplier shall submit proposed changes to the Buyer including but not limited to: process – material – design – software.

Suppliers manufacturing to Smiths Interconnect drawing or specification invoked by purchase order must obtain written approval from Smiths Interconnect promptly, in writing, of any changes which affect form, fit, function, or safety of product being delivered to Smiths Interconnect.

Changes include but are not limited to:

- Material Change
- Sub-Tier Supplier Change
- Name Change
- Equipment Relocation
- New Equipment
- Process Change
- Plant Relocation
- Design Change

1.9 Source of Supply

When the source of supply is specified on a Smiths Interconnect drawing or specification invoked by purchase order in any manner (approved, may, suggested, recommended, trademarked, etc.), only those sources of supply shall be used. The use of any alternate sources not specifically listed on the drawing, or its associated specs/databases is prohibited unless otherwise specified by site-specific requirements flowed on the Purchase Order.

1.10 Quality Records

1.10.1 Access to Records

Smiths Interconnect reserves the right to access records at the PO holder, or its sub-tiers involved in the manufacture of Smiths Interconnect product. The Supplier shall make the records available within 48 hours, or 2 business days, of the request for access.

1.10.2 Records Storage

Records must be stored in an area which meets all local Fire and Life Safety Codes that prevents loss, damage, or deterioration. All data stored by electronic means shall be secure with back-up procedures and audited to verify the integrity of the data.

1.10.3 Disposition of Records

The supplier shall contact the Smiths Interconnect Buyer for disposition of records upon termination of business activity.

1.10.4 Corrections

Changes or corrections to records, regardless of the media, shall be made as follows: draw a single line through the old data, enter the correct data, date, and apply stamp or initials or signature of individual making the correction. No erasures, covering, or "white-out" allowed.

1.10.5 Record Retention

Records of product/material manufacture, test, inspection (including radiographic film), calibration and acceptance/certification, are considered quality records and shall be retained as follows:

Records in Support of	Minimum Retention Period ¹
Radiographic Film, Digitized Film or Digital Radiographs	11 years
Non-traceable, non-serialized parts	11 years
Traceable parts as identified on the Smiths Interconnect drawing or purchase order	Indefinitely ²
Serialized parts as identified on the Smiths Interconnect drawing or purchase order	Indefinitely ²
Critical parts as identified on the Smiths Interconnect drawing	Indefinitely ²
Distributor standard off the shelf product	7 years

1. *MINIMUM retention periods, beginning with the date the order was completed. In the case where a specification, contract or purchase order requires a greater retention period, the more stringent requirement will apply.*
2. *A lengthy period of time specified in the law that cannot be determined in advance. Indefinitely does not mean that the records must be retained permanently. Records having a retention period of "Indefinitely" should be reviewed periodically to determine if they have surpassed their useful legal and business life. Destruction of records with indefinite retention period must be authorized by Smiths Interconnect.*
3. *Quality records shall be all documented information as defined within the applicable AS9100 standard.*

1.11 Prohibited Practices

The following acts or practices are prohibited:

1. **Unauthorized Repair** - Repairs (by welding, brazing, soldering, or the use of adhesives) of parts damaged or found faulty in the fabrication process, repairing holes in castings, forgings or other materials by plugging or bushing without authorization from Buyer.
2. **Unauthorized Processing** - Addition, revision, or deletion of thermal, chemical, or electrochemical processes in manufacturing when processes are subject to specification control by Buyer.
3. **Improper Material Submittal** - Submission of material having known defects/problems to Buyer without notification.
4. **Improper Material Re-submittal** - Resubmission of material to Buyer without material being clearly identified as resubmitted material.
5. **Unauthorized Material and Information Transfer** – No supplier shall buy, sell, trade, or transfer Smiths Interconnect owned/supplied drawings, data, material, parts, devices, assemblies or end equipment for purposes other than the performance of Smiths Interconnect business, without prior written approval.
6. **Reclaimed Material** – No supplier shall use reclaimed material without prior written approval from the Buyer.

1.12 General Quality System Requirements

Suppliers and supplier sub-tiers providing product, are responsible for maintaining Quality Systems that are compliant to applicable Smiths Interconnect Quality System Requirements. Suppliers shall be third-party registered and receive periodic system audits or be subject to periodic compliance audits by Smiths Interconnect. Suppliers that fail to meet the minimal requirements may still be approved if they fall within the scope of the 'Grandfather Clause' per GW04-001. Suppliers assume the cost of systems audits. Smiths Interconnect's preferred Quality Systems levels are as follows:

- Manufacturing with Design Authority: ISO9001 is required, AS/EN/JISQ 9100 or ISO/TS 22163 is preferred; design must be included in scope of registration, and suppliers may not exclude design portions of the Standard.
- Manufacturing without Design Authority / Special Processes: ISO 9001 is required, AS/EN/JISQ 9100 or ISO/TS 22163 is preferred
- Repair and Overhaul: National Aviation Authority (NAA) Certification (local and/or international regulatory agency) ISO9001 Required and/or AS9100 or AS9110 Preferred
- Special Processors (non-manufacturing): ISO 9001 is required or satisfactory audit to NADCAP (AC7004) is preferred.
- Materials Laboratories and NDT Laboratories: ISO 9001 is required, ISO 17025, or AS9003, or

- satisfactory audit to NADCAP (AC7004) are preferred.
- Distribution and Brokers: AS/EN/JISQ 9120
- Calibration Laboratories: ISO 17025
- Software Suppliers: AS/EN/JISQ 9100 and AS9115
- ISO/TS 22163

Alternate Quality System standards which do not meet the above requirements must be approved by Global Quality or the Quality Manager (or designee) of the Smiths Interconnect site issuing the PO.

The supplier shall provide evidence of a certificate of registration from an organization accredited by a member of international accreditation forum (IAF) to the industry standard listed above, or successfully pass a compliance audit conducted by Smiths Interconnect or Smiths Interconnect's approved designee.

1.12.1 Evaluation

Smiths Interconnect Supplier Quality organization, and/or the Smiths Interconnect purchasing sites, shall perform periodic evaluations on external suppliers. Failure to provide proof of compliance may result in a Quality System compliance audit being launched at the Supplier's expense.

1.13 Obsolescence

For component parts (COTS) or Smiths Interconnect designed parts or assemblies, the Supplier shall notify the Smiths Interconnect Buyer regarding part or material obsolescence as soon as the information becomes available, with an expectation to provide notification at least six months prior to the last date an order will be accepted. Smiths Interconnect requires sub-tier/subcontract suppliers to manage obsolescence on the assemblies where they own the design.

For products where the Supplier has design responsibility, the Supplier shall develop and implement a Part Obsolescence Management Process. This Process shall include the following elements at a minimum:

- Annual assessment of Product Bill of Material(s) (BOMs) to identify any obsolescence that will potentially impact delivery of product to Smiths Interconnect.
- Proactive identification and detection of part, material or manufacturing/test equipment obsolescence issues
- Action Plan to resolve each obsolescence issue, including forecast analysis and product support decision(s) (i.e. Life Time Buy, redesign or product end of life.)
- Life Time Buy inventory management plan to ensure long term ability to produce product
- Advanced notification to the Smiths Interconnect buyer of any potential interruption in the ability to meet Smiths Interconnect forecasted demand due to an obsolescence issue.

1.14 Smiths Interconnect Consigned Material

The Supplier shall not return unused consigned material without written authorization from the Smiths Interconnect Buyer.

1.14.1 Nonconforming Consigned Material

If authorized for return, the material shall be labeled “Return of Consigned Materials, Do Not Route to Stores” on the outside of the shipping container (BARCODE LABELS ARE NOT TO BE USED). The Supplier shall identify part number and revision level, and the reason for return on the packing slip.

1.15 Business Continuity Management

The Supplier shall ensure their Company has robust Business Continuity Management (BCM) processes in place that include disaster recovery and preparedness.

1.15.1 Business Continuity Plan (BCP)

The Supplier shall document a Business Continuity Plan which details what the Company would do in the event that key People, Processes or Technology was to become unavailable. This Business Continuity Plan shall be applicable, including but not limited to, natural disasters, labor disputes, lockouts, evictions, power or systems failures, hazardous spills, fire, floods, explosions, sabotage, riots, war, or other civil disturbances, and voluntary or involuntary compliance with any laws, regulations, or requirements of any government authorities.

General information regarding how to develop a Business Continuity Plan can be found on the internet. Some helpful website links are listed below:

- <http://www.disaster-recovery-guide.com/>
- http://www.disasterrecovery.org/disaster_recovery.html
- ISO 22301 BCP Management

1.15.1.1 Sub-Tiers

The Supplier’s BCP should also include planned actions to mitigate any disruptions in supply from critical sub-tiers.

1.15.2 Audit Rights

Smiths Interconnect reserves the right to review the Supplier’s BCP at any time to assess their maturity and continued development.

1.16 Crisis Management

1.16.1 Notification

The Supplier must use best efforts to notify Smiths Interconnect Commodity Manager or Buyer within 24hrs if they experience an incident, including but not limited to those listed in 1.16.1 above that may impact their ability to make their scheduled shipments to Smiths Interconnect.

1.16.2 Sub-Tiers

Supplier must notify Smiths Interconnect Commodity Manager or Buyer within 24hrs of receiving notification that any of their critical sub-tiers have experienced an incident, including but not limited to those listed in 1.16.1 above, that may impact their ability to provide materials or components to the Supplier that are required in the manufacture or assembly of Smiths Interconnect product.

1.16.3 Disaster Recovery

In the event of a supply interruption, Smiths Interconnect may engage the Supplier to collaborate on recovery. Supplier is expected to fully support any such engagement until the delivery schedule to Smiths Interconnect is recovered.

1.17 Resource Awareness

The supplier shall ensure that persons doing work under its control are aware of:

- Their contribution to product or service conformity.
- Their contribution to product safety.
- The importance of ethical behavior.

Section 2 Specifications and General Information

2.1 General Requirements- Specifications

Suppliers are required to identify and work to Government, Industry, and Smiths Interconnect specification revisions as follows.

When a specification revision is listed on an engineering drawing, only that specification and revision shall be used.

- When no specification revision is listed on an engineering drawing, suppliers are required to identify the current specification and revision and to work to that specification and revision.
- The applicable revision shall be the revision in effect on the date of the Purchase Order except that new specification changes shall be implemented within 60 days of specification revision date.
- Parts on existing contracts that are processed before the specification change are acceptable unless otherwise specified in the revised document.

2.2 General Requirements- Alternate Materials

Material substitutions are NOT allowed without written Engineering approval.

2.3 Conflict Minerals

In an effort to comply multinational requirements related to manufacture products containing tin, tantalum, tungsten, or gold (termed "conflict minerals"), Smiths Interconnect is requiring all suppliers who supply product that may contain materials defined "conflict minerals" to conduct a reasonable "country of origin" determination (due diligence) for any conflict minerals that may be contained in using the current revision of the Conflict Minerals Reporting Template (CMRT). A downloadable version is available [here](#).

Section 3 SQAR Matrix – Details

3.1 Group Requirements*

In all cases, contents of SQAR Manual Sections 1.0–General Requirements, and Section 2.0–Specifications and General Information, shall be reviewed and complied with in conjunction with the purchase order flow down of specific Group SQARs, or individual SQARs.

Individual SQAR’s may have multiple sections, the supplier is responsible to understand applicability or request clarification.

The following SQAR’s are required for all Direct Purchase Orders											
100	Notification, Containment, and Corrective Action of NC Material to PO										
110	Certificate of Conformance / Shipping Declaration / Packaging Slip Requirements.										
200	Key Characteristics (KC) Management										
210	Component Traceability										
220	Foreign Object Damage (FOD) Control										
300	Packaging and Package Identification										
419	Supplier Counterfeit Parts Prevention Requirements										
410	Outsourcing Approval Required										
420	Provisions for Export-Control Regulation										
430	REACH & RoHS Requirements										
601	U.S. Government FAR DFAR Flow Down										
The following SQAR’s are required by Commodity Type for Direct Purchase Orders											
SQAR	Title	Limited Life Items: Chemicals, Adhesives, O-Rings	Manufactured Raw Materials - Machining, Stamping, Molding	Connectors and Cable Assemblies	Diodes and PCB's	Standard Hardware / COTS	Outside Processing (Special Processes)	Raw Materials	Ceramic Capacitors	Ceramic - Alumina/BEO/Aluminum-Nitride/Beryllia/CVD Diamond	Ceramic OSP - Machine/Scribe/Trim/Marking
205	Characteristic Accountability		X	X			X				
535	Material Test Reports		X							X	X
230	First Article Inspection Requirements		X	X			X		X		
240	Acceptance Data Package (Type A or B)		B	A	A		B		A		
440	Process Control Plan		X								
310	Control of Items with Limited Shelf-Life	X	X								
235	Drop Shipment of Smiths Interconnect Purchase Order		X								
165	Approved Sources for Special Processes			X			X	X			

SQAR Agreement

This Agreement together with Smiths Interconnect and Purchase Order agreement constitutes the entire agreement between the Supplier and Smiths Interconnect with respect to the subject matter hereof. No amendment to or modification of this Agreement shall be binding unless in writing and signed by a duly authorized representative of both parties.

Each party has caused this Agreement to be executed by its duly authorized representative as of the Effective Date.

Supplier Company Name:

Name (Printed):

Signature:

Title:

Date:

Smiths Interconnect

Name (Printed):

Signature:

Title:

Date:

Section 4 Mandatory SQARs for all Direct Purchase Orders

SQAR 100 – Notification, Containment, and Corrective Action of Material Found Nonconforming to Smiths Interconnect Purchase Order Requirements

100.1 Scope

Material that departs from drawing, specification or maintenance requirements shall be identified and controlled to prevent unauthorized use or delivery to Smiths Interconnect or other designated destinations. The Supplier shall provide prompt, (within 24 hours), written notification on supplier letterhead to the Smiths Interconnect Buyer of nonconforming product or process escapes are identified after shipment to Smiths Interconnect has taken place.

100.2 Material Review Authority

The Supplier shall not exercise Material Review authority without written approval by Smiths Interconnect's Quality Organization. This applies to material that is Smiths Interconnect designed and/or designs controlled to Smiths Interconnect specifications or other OEM designed hardware.

Action shall not be taken on any nonconformance which could affect safety of personnel; adversely affect performance, durability, interchangeability or reliability; affect weight; or otherwise result in failure of the end article to perform its intended function. All doubtful cases shall be submitted to Smiths Interconnect Material Review Engineering on the appropriate form.

Important: Smiths Interconnect reserves the right to reject the decision of the Supplier Material Review Board (MRB).

100.3 Request for Deviation

The Supplier may request consideration for nonconforming material that cannot be reworked to fully conform to drawing specifications, aftermarket maintenance technical data, or purchase order requirements. Requests for deviation shall be submitted to the Buyer using form F678, with copy to the Supplier Quality Engineer and site Quality Manager. The forms and instructions can be communicated by contacting the Smiths Interconnect buyer.

Nonconforming articles shall be retained by the Supplier until disposition of ACCEPT by Smiths Interconnect site MRB.

Note: Smiths Interconnect reserves the right to subtract monies from the purchase order or debit the supplier, for Smiths Interconnect incurred costs related to supplier responsible deviation requests.

100.4 Material Discovered Nonconforming after Shipment

The Supplier shall promptly notify Smiths Interconnect when nonconforming product has been shipped. The notification shall include part numbers, design activity, CAGE code or Current Design Activity (CDA) code, traceability (lot, serial, and manufacturer numbers), ship dates, quantities, and a description of the nonconformance. This applies to any nonconformance that departs from drawing, specifications, aftermarket maintenance technical data or purchase order requirements.

The Supplier shall send written notification, referencing the site-assigned supplier code, to the attention of

- the Smiths Interconnect Buyer, and
- Site Quality Manager at the issuing PO Smiths Interconnect site

The supplier shall promptly perform internal Root Cause Corrective Action (RCCA) to assure full containment is in effect and document all nonconformance causes and actions to prevent recurrence. Records of these actions shall be retained in accordance with Section 1.11 in this Manual and be available to Smiths Interconnect on demand.

For confirmed supplier disclosure escapes, a formal corrective action request will be made to the supplier.

100.5 Containment of Nonconforming Material

When a nonconformance is discovered, or the Supplier is notified of a discrepancy, the Supplier must take immediate action to determine if the condition exists on any other work-in-process, in all inventory locations at the Supplier's facility, or in prior shipments. Containment action must be taken and documented prior to the next shipment of the part number involved.

Containment activities taken and/or planned shall be communicated to the Smiths Interconnect site within 48 hours when formally requested through or other documented notification/discovery of nonconforming shipment. The supplier shall perform internal RCCA when any nonconformance has been positively identified as a result of one or more of these actions. Records of these actions shall be retained in accordance with Section 1.11 in this Manual and be available to Smiths Interconnect on demand. Smiths Interconnect may not decide to issue a corrective action request through our system, this does not preclude the supplier from documenting their corrective actions. The Supplier shall not wait for the discrepant hardware to be returned to begin an investigation.

100.6 Corrective Action

The supplier shall respond to all requests for corrective action on or before the requested response due

date.

Supplier shall initiate containment actions immediately to ensure no escapes of repeat issues occur during the investigation stages. These containment steps shall be noted in the CAPA response.

Supplier shall maintain a documented system for determining root causes of documented defects and obtaining corrective action both internally and from its suppliers.

Requests for corrective and preventive action will be issued to the supplier's representative in the form of an electronic (i.e. emailed) CAPA report. The supplier may use their own form, but the form must be equivalent to the Smiths Interconnect 8D form (GF07-012).

Smiths Interconnect 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 (original) due date. Requests must be in writing with adequate justification.

See procedure GP07-006 for SCAR requirements.

100.7 Request for Reversals

Rejects identified as supplier's responsibility are documented on the supplier scorecard. If the supplier's investigation of the reject concludes that the nonconformance should not be charged to the supplier's responsibility, then a request to reverse the responsibility must be submitted by the supplier.

Reversal requests should be submitted within 30 days of notification of nonconformance. Any reject listing on a supplier's scorecard constitutes notification whether or not the part is returned. All reversal requests submitted shall provide detailed justification information.

Requests for reversal submitted later than 90 days after nonconformance notification may not receive consideration from the Smiths Interconnect site.

100.8 Return Purchase Orders for Replacement, Reworked or Repaired Parts

Any part being supplied to Smiths Interconnect on a return purchase order must conform to drawing, specifications, aftermarket maintenance technical data or purchase order or have Smiths Interconnect MRB disposition for any repairs. Under no circumstances are parts known to be used or overhauled to be sent as a replacement for an OEM part.

For parts that cannot be reworked to full drawing compliance economically or where repair authorization will not be granted, parts are to be scrapped at the suppliers' facility. Supplier shall contact the Smiths Interconnect Buyer prior to scrapping these parts, and Smiths Interconnect reserved the right to witness the scrapping activity.

100.9 Failure Reporting

Smiths Interconnect reserves the right to request failure analysis on nonconforming hardware submitted from the Supplier. Failure analysis reports may contain:

- A process map identifying key inputs and outputs of each affected manufacturing step.
- A product/process Failure Mode Effects Analysis (FMEA) tied to the process map identifying the failures or risks associated to the known nonconformance.
- A control plan developed from process map and FMEA identifying how the Supplier shall monitor those known nonconforming characteristics on future lots to prevent re-submittal of nonconforming product.

100.9.1 Failure Reporting Applicability

Upon request, the Supplier shall submit failure analysis, a short-term customer escape prevention plan, and a permanent corrective action plan, focusing on the root cause of the discrepancy. Reports shall be submitted within 30 calendar days of request unless otherwise specified.

Smiths Interconnect reserves the right to issue a Supplier Corrective Action Request (SCAR) requiring completion of a part number of specific Smiths Interconnect project with the on-site assistance of Supplier Development Engineering.

SQAR 110 – Certification of Conformance / Shipping Declaration Document / Packing Slip Requirements

110.1 Scope

The Supplier is responsible for maintaining and supplying accurate and legible certification documentation as objective evidence of meeting drawing, specification, technical data, or purchase order requirements.

110.2 Certification of Conformance / Shipping Declaration Document / Packing Slip Requirements

The exact format of the Certificate of Conformance may vary by supplier. Requirements can be identified within the Certificate of Conformance, Packing Slip, and/or material packing but shall contain the following minimum information:

- Supplier's Name
- Manufacturer's name (when different from the supplier)
- Smiths Interconnect part number as specified on the purchase order
- Smiths Interconnect purchase order number
- When a Smiths Interconnect part number is not specified on the purchase order the supplier's part number shall be used
- When a supplier's part number is not specified on the purchase order the material's descriptor shall be used
- Smiths Interconnect's drawing revision as specified on the purchase order
- Change notices shall be included if they are not part of the revision level
- When a Smiths Interconnect drawing revision is not specified on the purchase order no drawing revision is required
- Serial Number (as applicable)
- Date code (as applicable)
- Lot/batch/heat number (as applicable)

110.3 Bulk Raw Materials

Unless otherwise specified, purchased bulk raw material (sheet, strip, plate, wire, rod, bar, tubing, solder, powder, paint, oil, fluids, etc.) shall be supplied to the latest procurement specification issue. Material certified to a previous specification issue and of the proper type, grade, or class called for by the engineering drawing or technical data, may be used until depleted, unless restricted by the superseding specification revision. Certifications for material shall include specification number and revision letter

applicable to each lot of material.

110.4 Evidence of Source Approval

A Source Acceptance Stamp (or facsimile) shall be placed on the shipping documentation (packing slip and/or C of C) for Purchase orders requiring SQAR 149. A Source Acceptance stamp is independent of the Certificate of Conformance signature requirements. C of C required signature and date should not be placed in the Source Acceptance Stamp area.

The individual performing the Source Inspection is responsible for providing the Stamp Impression and Date. This may be a Smiths Interconnect approved Source Inspector or it may be a Self-Release Approved Supplier representative, whichever is appropriate.

A signature is acceptable in lieu of a stamp impression for an Approved Self Release Supplier representative in organizations that do not issue internal employee acceptance stamps and control electronic approval within their Quality Management System.

110.5 Certificates of Conformance for Kits

For materials supplied as a kit, a top-level certification of conformance, subject to the documentation requirements above, will be accepted for the entire lot or receipt of kit(s) as long as:

- Manufacturing and procurement traceability and configuration management for every component part in the kit is maintained
- Associated data such as procurement certificates of conformance, test data, first article inspection reports, etc. are maintained and available upon request.

110.6 FAA / EASA Tags

Suppliers holding an FAA production approval shall ship parts with 8130-3 tags reflecting newly manufactured certification and not returned to service or repaired status to all Smiths Interconnect OEM sites. This requirement applies to both new shipments and parts that may have been rejected or returned by Smiths Interconnect or from a Smiths Interconnect customer location. Suppliers shall contact buyers if there are any questions in issuing new 8130-3 tags as Smiths Interconnect OEM sites can only return parts to suppliers requiring Part 21 type rework and have not been used in revenue flights.

SQAR 200 – Key Characteristics (KC) Management

The Smiths Interconnect Purchase Order holder is responsible for review of, and compliance to, all Special Characteristic management requirements on all drawing levels of items sold to Smiths Interconnect including those generated by sub -tier suppliers.

200.1 Applicability

Key Characteristic Management requirements apply to any Smiths Interconnect part number being made for the first time by a supplier. The requirement shall continue to apply during ongoing production. Where a purchase order holder subcontracts some/all of the manufacture of an item, the PO holder shall be responsible for the compliance of their sub tier(s) to the requirements of this SQAR.

200.2 Identification of Special Characteristics

Key characteristics (KCs) shall be those characteristics identified as such by symbol or note on Smiths Interconnect engineering drawings and specifications. Alternatively, KC's may be identified as Critical Characteristics, Major Characteristics, or Critical to Quality, on the Smiths Interconnect engineering document. The above mentioned termed shall be used interchangeably.

200.3 Requirements for Control of KCs

~~Where required by specification, p~~Producer is required to develop, adhere to, and retain an inspection plan to assure each feature designated KC conforms to specified requirements. ~~The process control plan shall be submitted to the owning Smiths Interconnect procuring agent and will be approved by site Quality. Review and approval shall be obtained prior to any shipment of parts.~~

200.4 Supplier Exception and Requirements

Suppliers taking exception to this SQAR in its entirety shall ensure that a drawing change removing the requirement is received before accepting orders. Removal of this SQAR from a PO does not alleviate the supplier from meeting all product requirements.

200.5 Disposition of Material

Process capability levels not meeting the requirements of the process control requirements specified on the drawing/spec shall not be cause for product rejection provided that each piece is inspected, found acceptable to tolerance, and records of inspection results are maintained.

200.6 Process Control Documentation

Where KC's are identified on the Smiths Interconnect engineering specification, process planning and control documents such as MSAs, PFMEAs, Control plans, etc. shall be generated under the supplier's document control system and maintained as quality records. These records are subject to audit and shall be made available for review. Process control documentation is a quality record and shall be retained by the supplier per PO requirements for quality records.

200.7 Establishment and Reporting of Process Capability

200.7.1 Capability Studies

Where KC's are identified on the Smiths Interconnect engineering specification, the seller shall perform process capability studies to demonstrate the ability of the process to produce results within specification limits.

In the event of short run or low volume production in which capability studies are not logical, 100% inspection will be required.

200.6.2 Capability Calculations

Capability calculations shall be made as defined below:

- 1) Supplier measures each KC on each piece and records the actual value.
- 2) Up to the first 30 measurements, supplier reviews the data, assures compliance to the tolerance limits, and looks for variation from run to run.
- 3) After 30 measurements supplier reviews Cpk and Ppk to determine if they meet the capability requirement defined in the applicable process control specification.
 - Short-term study must be ≥ 1.66 Ppk
 - Long-term study must be ≥ 1.33 Cpk
- 4) Suppliers not meeting the required capability performance level for Ppk after the first 30 pieces shall implement a documented process capability improvement milestone plan when required by controlling specification. Improvement plans shall be maintained by the supplier and are subject to audit.
- 5) Further capability study data and improvement plan changes/updates as required by controlling specifications shall be communicated to Smiths Interconnect until specification-defined process capability requirements are achieved.

200.8 Process Monitoring

200.8.1 Control Plan

Once process capability requirements have been met, the supplier shall operate to a control plan meeting the requirements of the applicable process control spec and SQAR 440. Supplier shall maintain records of compliance to the control plan.

200.8.2 Escapes of Key Characteristic

Escapes of a Key Characteristic shall be caused to revise any required control plans and PFMEAs. In the absence of an assignable cause and corresponding error-proofing for the escape, process capability shall be re-established.

200.8.3 Changes to Manufacturing or Inspection Processes

Changes to the manufacturing or inspection processes shall be caused to review any associated control plans and PFMEAs. Where such changes may affect process capability or where required by specification, a new process capability study shall be conducted to ensure capability requirements remain met.

SQAR 210 – Component Traceability

The Supplier of any component assembly shall be able to, upon request, provide a list of all material utilized in the creation of said assembly. Material requiring this work order to lot/date code level traceability includes electrical components, the active and passive parts and items in the schematic.

The list shall contain as applicable:

- Work order number
- Serial number range in the work order (as applicable)
- For each electrical component used in the work order:
 - The component names
 - Smiths Interconnect part number
 - Reference designators where this Smiths Interconnect part number is used
 - Quantity used per assembly
 - Component OEM manufacturers used in the work order
 - Manufacturer part numbers used in the work order
 - Lot numbers and / or manufacturing dates used in the work order
- Also required to be provided upon request, is the component distributor and procurement date of each component listed

The system must account for any/all components that require replacement past initial installation. The traceability must be maintained throughout the manufacturing process from work order launch to shipping to Smiths Interconnect.

In addition to the component traceability, the supplier shall, upon request, provide all necessary processing history for the assembly in question. This shall include process name, date and time, location, and operator ID of the personnel performing the function.

If more than one lot is included in this shipment, each lot must be individually identified and packaged separately.

SQAR 220 – Foreign Object Damage (FOD) Control

The supplier shall ensure that risk of Foreign Objects and subsequent Foreign Object Damage (FOD) is minimized from all parts prior to shipment. In addition to maintaining compliance with Smiths Interconnect site's cleanliness specifications, all suppliers must strive towards a FOD free environment during machining, manufacturing, assembly, maintenance, inspection, storage, packaging, and shipping.

Specific attention should be given, where applicable, to items such as:

- Housekeeping and cleanliness
- Food and beverage control
- Tool and small part accountability
- Loose objects
- Material handling and parts protection
- External cleaning following evidence of external contamination

Supplier shall ensure that the responsibility for the FOD prevention program is clearly defined, and appropriate personnel have received FOD awareness training.

Suppliers are responsible for flow down of these requirements to their sub-tier suppliers to ensure FOD free products.

Suppliers FOD prevention program and controls are subject to periodic audits by Smiths Interconnect as deemed necessary to ensure program effectiveness and compliance.

For additional information regarding FOD prevention, refer to National Aerospace Standard NAS 412, "Foreign Object Damage / Foreign Object Debris (FOD) Prevention".

SQAR 300 – Packaging and Package Identification

300.1 GENERAL REQUIREMENTS

300.1.1 Product Delivery

The Supplier must ensure that all items are packaged and preserved adequately to guarantee that the hardware is delivered to Smiths Interconnect undamaged and free of corrosion. Unless otherwise specified, all hardware shall be packaged and preserved in accordance with the drawing, applicable specifications, or purchase order requirements. If there is no drawing or specification requirement, hardware shall be packaged and identified in accordance with Aerospace Industry Standards (ATA Spec 300, ASTM-D-3951-98 and MIL-STD-2073).

300.1.2 Weight Limitations

Hand-handled containers, including bundles are not to exceed 25 pounds (11.3 KG) gross weight. Containers in excess of 25 pounds shall be put on skids or pallets to permit mechanical handling. Hand-handled containers may be skidded or palletized to consolidate a shipment, but containers must be properly identified, stacked, and secured to the pallet. Shipping skids/pallets or boxes shall not exceed 2,500 pounds (1,136 KG) gross weight and have appropriately placed pallet jack compatible fork truck slots or openings to allow mechanical handling.

300.1.3 Inappropriate Closures

Staples are prohibited as a means of closure for exterior shipping containers. Staples are permitted in non-closure portions of box type containers, such as bottom closure, side stitching, etc. The portion of the container meant to be opened must remain staple-free. Staples and other penetrating forms of unit package closure also are prohibited for use on bags (polyethylene or paper), bubble wrap, sheet foam, Kraft paper or other intermediate or interior containers. These types of unit packages must be heat sealed (if applicable) or sealed by folding, taping, Zip-Lock, or zipper sealing, etc.

300.1.4 Exterior Shipping Container

The exterior shipping container shall be sufficiently strong and functional to ensure product delivery, packaging identification and subsequent distribution and must withstand superimposed stacking loads, both as presented to the carrier and as may be expected during shipment.

300.2 PACKAGE IDENTIFICATION REQUIREMENTS*

300.2.1 Application

Bar code identification (labeling) is required on all exterior containers. Labels must be located to allow the markings to be easily read when stored on shelves or stacked, and to ensure marking will not be destroyed when the container is opened for inspection. When stencils are used, ink must be black waterproof.

Instead of using labels, it is permissible to print identification information directly on the container or packing slip as long as all other requirements are met.

300.2.2 Intermediate Package Marking

Intermediate packages, when used, shall be marked with the Part number, as specified on the PO, PO Number, Quantity and Unit of Measure (each, feet, etc.) and Supplier's Name (bar coding is optional). If product is shelf life sensitive, packaging is to be marked by the supplier with the expiration date.

300.2.3 Hand Tags

When the packaging material prohibits the use of containers that allow the application of self-adhesive labels, a tag shall be securely fastened to the material. The Supplier shall ensure that the location and attachment of the tag, under normal conditions, will not cause damage or premature removal of the tag prior to reaching Smiths Interconnect.

300.2.4 Shipping Documents / Packing Slip

Shipping documents: including the C of C, and/or the packing list required by SQAR 140, shall be attached to the exterior of container #1 in a weather-proof envelope marked "Packing List Enclosed. Specific additive customer requirements will be specified via PO and linked to receiving inspection line items. The envelope may be placed in a Tyvek envelope and securely attached to the exterior of the #1 container to prevent damage.

Identification and traceability (I&T) sheets, if provided, shall be placed inside the container or inside Box 1 of a multiple container shipment, at the top of the container (on top of the item shipped). ATP sheets shall be attached to each item or to the first wrap or bag of each item if direct item attachment is not practical.

300.2.5 Airworthiness Certification, Labeling and Consolidation Box Marking

When the PO requires a FAA 8130-3 airworthiness certification or equivalent form (Form 1), the certification form(s) and container identification shall have a bright yellow airworthiness label with bold black printing, similar to that shown in Figure 1, permanently attached to the shipping container.



Figure 1 Airworthiness Label for Exterior Container

300.2.6 Country of Origin and Marking (includes U.S.A.)

Country of origin marking is mandatory to comply with Customs Regulations or Smiths Interconnect requirements

Packaging of articles must be legibly, conspicuously, and permanently marked with the parts' country of origin. For a product to be called Made in USA, or claimed to be of US origin without qualifications or limits on the claim, the product must be "all or virtually all" made in the U.S. The term "United States," as referred to in the Enforcement Policy Statement includes the 50 states, the District of Columbia, the U.S. territories, and possessions. "All or virtually all" means that all significant parts and processing that go into the product must be of U.S. origin. That is, the product should contain no - or negligible – foreign content.

U.S. suppliers should contact the Federal Trade Commission, Division of enforcement since the phrase "made in U.S.A." is under their jurisdiction. Guidance can be found at the following link, <http://www.business.ftc.gov/documents/bus03-complying-made-usa-standard>. For the purpose of this SQAR, the designation "U.S.A." is not adequate country of origin marking.*

It is the supplier's responsibility to ensure that marking on the product reflects the true country of origin of the product and that no illegal transshipment through a third country has occurred. The supplier must also ascertain that foreign suppliers are familiar with the country-of-origin rules.

*300.3 Electro-Static Discharge (ESD) Labeling and Packaging**

Packaging and labeling shall comply with one of the following unless specified in Smiths Interconnect approved design document: (reference SQAR 354):

- 1) ANSI/ESD S20.20 and ANSI/ESD S541 or equivalent. Or
- 2) MIL-STD-1686 and MIL-STD-2073-1. Or
- 3) JESD625 and ANSI/ESD S541

300.4 Refrigerated, Frozen or Cryogenically Stored Items

For refrigerated, frozen or cryogenically stored product, the supplier shall display the type of storage necessary on the outside of the package. Packages must be adequately thermally insulated to ensure

temperature requirements are maintained through reasonably anticipated transportation, in-transit delays, transfers and destination.

The supplier's container shall be marked with:

- Net contents
- Manufacturer's production lot number
- Date of manufacture and expiration date
- Date and time shipped
- Warning notes and safety precautions in accordance with federal and state safety and health regulations.

300.4.1 Specific Frozen Packaging Requirements

Supplier shall package material in dry ice to maintain -40 degrees Fahrenheit during shipment, and must use a 24 hour delivery service for this shipment.

*300.4.2 Handling, Packaging, and Shipping of Moisture/Reflow Sensitive Surface Mount Devices (Electrical/Electronic Parts)**

For protection of moisture sensitive parts, handle, process, and package per the requirements of IPC/JEDEC J - STD-033 unless specified in design document.

SQAR 410 – Outsourcing Approval Required

The Supplier shall notify Smiths Interconnect, and request written approval prior to outsourcing a process, part, assembly, or end item.

SQAR 419 – Supplier Counterfeit Parts Prevention Requirements

419.1 Purpose

This SQAR 419 is intended to prevent suspect and confirmed counterfeit Electrical, Electronic and Electromechanical (EEE) and Materiel commodities from entering Smiths Interconnect's supply chain and to standardize practices to:

- a) Specify the flow down of these requirements to applicable suppliers/contractors and their sub-tier suppliers/contractors who are performing work on behalf of Smiths Interconnect;
- b) Maximize availability of authenticated EEE and Materiel;
- c) Procure EEE and Materiel from authorized sources where available;
- d) Clear risks with Smiths Interconnect when EEE and Materiel are not available from authorized sources;
- e) Assure authenticity and conformance of procured EEE and Materiel;
- f) Control EEE and Materiel identified as suspect or confirmed counterfeit within the Smiths Interconnect supply chain and in the Supplier/Contract Manufacturers' supply chain;
- g) Report suspected counterfeit and confirmed counterfeit EEE and Materiel, to other potential users and to Government investigative authorities as required by contract or by law;
- h) This SQAR is specific to counterfeit prevention and detection, and not fraudulence beyond counterfeiting.

The provisions of this SQAR 419 are in addition to Supplier's responsibility to meet all contractual / purchase order requirements. The requirements of this SQAR 419 supplement the requirements of a higher-level quality standard (e.g. AS9100), the Smiths Interconnect Counterfeit Parts Prevention control plan and other quality management system requirements. The requirements of SQAR 419 support both counterfeit prevention SAE Aerospace Standards: AS5553A and AS6174. SQAR 419 is not intended to stand alone or to supersede or cancel requirements found in other quality management system documents, requirements imposed by contract, or applicable laws and regulations unless an exemption and variance has been granted in writing by the Smiths Interconnect Director of Supplier Quality.

419.2 Applicability

- a) The requirements defined in SQAR 419 apply to all commodity and assembly (EEE and Materiel purchase orders issued to Smiths Interconnect suppliers as defined in the applicability tables.
 - 1. Smiths Interconnect suppliers shall flow these requirements down to their lowest level sub-tier suppliers on behalf of Smiths Interconnect no later than the effective date of this SQAR Manual.
 - 2. Periodic audits

- i. May be performed to assess compliance to SQAR419 requirements.
 - ii. Will be determined by Smiths Interconnect and Smiths Interconnect sites.
 - iii. Will assess SQAR419 flow down requirements for compliance.
 - iv. Will be conducted by Smiths Interconnect and Smiths Interconnect sites as applicable.
- b) EEE and Materiel delivered by a supplier after the effective date of this SQAR Manual shall comply with the requirements set forth in the current SQAR 419 revision.
- c) The Counterfeit Avoidance (EEE or Materiel) Inspection and Testing Statement of Work (SOW) are applicable for commodity and assembly risk mitigation for Smiths Interconnect Design Authority
- d) Smiths Interconnect EEE and Materiel commodity Furnished Material will have Authorizing Documentation providing traceability to the authorized source, or material verification testing and inspection, or inventory (receipt history) documentation. The supplier may use Smiths Interconnect EEE and Materiel commodity Furnished Material with Authorizing Documentation (Smiths Interconnect CofC) without needing to comply with further requirements of SQAR 419.
- e) EEE and Materiel inventory is applicable to SQAR419. However Non-Pedigree inventory is applicable per Para's 419.3.5.1 and 3.5.2.
- f) Supplier will indemnify, defend, and hold Smiths Interconnect harmless from and against any and all loss or expense incurred by Smiths Interconnect as a result of the delivery by Supplier to or on behalf of Smiths Interconnect of suspect, fraudulent, or counterfeit EEE and Materiel Parts or Assemblies, with the exception of parts included in assemblies acquired in accordance with paragraph (d) above.
- g) This SQAR419 supports SAE Aerospace Standard AS5553A, "Fraudulent/Counterfeit EEE Parts; Avoidance, Detection, Mitigation, and Disposition", and SAE Aerospace Standard AS6174 "Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel", with exceptions noted below.*
- h) All goods to be delivered will consist of new and unused materials (i.e. No used, refurbished, reclaimed) unless otherwise specified as "used" and no returned parts unless specified on the Smiths Interconnect purchase order or contract.**
- i) Suppliers Providing Product under Design Authority of Smiths Interconnect.

Companies that supply product for which Smiths Interconnect is the design authority (build to print) shall certify in accordance with SQAR 140 that all sources of part supply have been verified as Authorized, utilizing the guidance provided in SQAR 419 Table 1. In the event that a source cannot be verified as Authorized, a Counterfeit Avoidance Workflow System (CAWS) request shall be initiated to clear the risk of counterfeiting. CAWS is accessible to suppliers through the following link: <https://cpp.Smiths Interconnect.com/CounterfeitPartsPrevention/>. Training for CAWS is available through the "Help" tab on the CAWS portal. Suppliers shall maintain objective evidence that sources of supply for material being incorporated into assemblies is from Authorized Sources and shall make that objective evidence available upon Smiths Interconnect and U.S. DoD Contracting Officer (when applicable) request for review and audit.

When a First Article Inspection Report (FAIR) is initiated, Suppliers shall have a FAIR in Net-Inspect for EEE or Materiel commodities incorporated into sub-assemblies for which Smiths Interconnect has design authority that certifies:

- Compliance to SQAR 419 Supplier Counterfeit Parts Prevention Requirements and the drawing requirements.
- That all sources have been verified as authorized in accordance with SQAR 419 Table 1 or a Counterfeit Avoidance Workflow System (CAWS) request has been initiated to clear the risk of counterfeiting.

j) Suppliers Providing Product under the Supplier's Design Control.

For companies that supply product to Smiths Interconnect under their own design authority, SQAR 419 requirements to obtain parts from Authorized Sources still apply. However, Suppliers should utilize their own counterfeit parts control plan in accordance with applicable regulations to verify parts acquisition from Authorized Sources and to mitigate any related risk of counterfeiting instead of using the aforementioned CAWS request. Industry specifications such as SAE AS5553 – “Counterfeit Electrical, Electronic, and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition” and AS6174 – “Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel” provide the framework to create a counterfeit parts control plan. Additional information and industry specifications on counterfeit avoidance and detection are available through the SAE Website: <https://www.sae.org/news/3558/>. Suppliers shall maintain objective evidence that sources of supply for material being incorporated into assemblies is from Authorized Sources and shall make that objective evidence available upon Smiths Interconnect and U.S. DoD Contracting Officer (when applicable) request for review and audit.

The SQAR 419 takes exception to the following elements from both SAE Aerospace Standards:

- AS5553 - 4.1.4.c Purchasing Information, and consistent with the standard, Smiths Interconnect considers the appendices as guidance.
- AS6174 - 3.1.6 Materiel Control, and consistent with the standard, Smiths Interconnect considers the appendices as guidance.

419.3 Reference Documents

The following documents are directly associated with the application of SQAR 419.

- For dated references, only the edition cited applies.
- For updated references, the latest edition of the document, including all amendments, applies unless otherwise specified by contract.

In the event of conflict between the provisions of this SQAR 419 and references cited herein, the provisions of SQAR 419 take precedence.

419.4 SAE Publications

- SAE Aerospace Standard AS5553 (current release) - Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
- SAE Aerospace Standard AS6174 (current release) - Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel
- SAE Aerospace AS9100 (current release) - Quality Management Systems - Requirements for Aviation, Space and Defense Organizations

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

419.5 Commercial Publications

- DEA-STD-1010 Acceptability of Electronic Components Distributed in the Open Market

Available from Independent Distributors of Electronics Association (IDEA), 6312 Darlington Avenue, Buena Park, CA 90621, Tel: 714-670-0200, www.idofea.org.

SQAR 420 – Provisions for Export-Control Regulation

When Smiths Interconnect drawings and/or specifications are identified as “Export Controlled” (which may include but not limited to: ITAR, EAR), the supplier shall not divulge information and material to a foreign person (including organizations), unless written authorization from the Department of State is received or a special exception is used.

SQAR 430 – Provisions for ReaCH and RoHS Requirements

Product should meet ReaCH / RoHS regulations based on the dash number of the SQAR, as shown in the chart below:

SQAR dash	Description	Details
430-1	Fully RoHS Compliant 2002	Items, materials, or processes shall be fully RoHS compliant per European Parliament Directive 2002/95/EC. The supplier shall provide a signed Certificate of Conformance (CoC) stating compliance to RoHS 2002; the CoC shall reference the packing slip or order number. Supplier shall provide Smiths Interconnect with a description of any materials or processes used that are not RoHS compliant as related to the product or process being supplied.
430-2	RoHS Compliant, Except Lead In Solders	Items, materials, or processes shall be RoHS compliant per European Parliament Directive, with the exception of lead (Pb) in solders. The supplier shall provide a signed Certificate of Conformance (CoC) stating compliance to RoHS with the exception of Lead (Pb) in solders, the CoC shall reference the packing slip or order number. Supplier shall provide Smiths Interconnect with a description of any other materials or processes used that are not RoHS compliant as related to the product or process being supplied.
430-3	RoHS Compliant, Contains Lead >85% Weight in High Temp Solder	Items, materials, or processes shall be fully RoHS compliant per European Parliament Directive and contains lead (Pb) > 85% by weight in high melting temperature solders. The supplier shall provide a signed Certificate of Conformance (CoC) stating compliance to RoHS allowing Lead (Pb) > 85% by weight in high melting temperature solders, the CoC shall reference the packing slip or order number. Supplier shall provide Smiths Interconnect with a description of any other materials or processes used that are not RoHS compliant as related to the product or process being supplied.
430-4	Fully RoHS Compliant 2011	Items, materials, or processes shall be fully RoHS compliant per European Parliament Directive 2011/65/EU. The supplier shall provide a signed Certificate of Conformance (CoC) stating compliance to RoHS 2011; the CoC shall reference the packing slip or order number.
430-5	RoHS /ReaCH	The supplier shall certify that materials / chemicals supplier to Smiths Interconnect are RoHS/ReaCH compliant. In case of NOT compliance, this status shall be declared in the CoC as NOT RoHS/ReaCH compliant.

NOTE: Certifications provided should be in addition to any other documentation required per SQAR 140.

SQAR 601 – Compliance with DFAR regulations

601.1 Scope

The supplier shall ensure that all specialty metals procured/provided in support of the contract meet the requirements as set forth in the Federal Acquisition Regulations System section 252.225.7009 Preference for Domestic Specialty Metals (as applicable).

When specialty metals indicated, items on this order shall comply with DFAR 252.225.7008 for specialty metals listed and shall be made in the US or qualifying countries listed in DFAR 252.225.872.1.

601.2 Specialty Metals Definition

Steels with a maximum alloy content exceeding one or more of the following limits:

1) Magnesium 1.65%, Silicon 0.60%, or Copper 0.60% or containing more than 0.25% of any of the following elements -- Aluminum, Chromium, Cobalt, Columbium, Molybdenum, Nickel,

Titanium, Tungsten or Vanadium.

2) Metal alloys consisting of Nickel, Iron-Nickel, and Cobalt base alloys containing a total of other alloying metals (except Iron) in excess of 10%

3) Titanium and Titanium alloys, and Zirconium and Zirconium alloys.

601.3 Verification

When specialty metals (per 601.2) are applicable to the purchase order, the supplier shall include the following wording (or equivalent) on the CoC accompanying the material: *“This material is compliant with specialty metals regulation, as defined in DFARS 252.225.7008”*

When no specialty metals (per 601.2) are applicable to the purchase order, the supplier shall include the following wording (or equivalent) on the CoC accompanying the material: *“This material does NOT contain specialty metals, as defined in DFARS 252.225.7008”*.

Section 5 Applicable SQAR by Commodity Type

SQAR 165 – Approved Sources for Special Processes

165.1 Scope

Special process specifications are listed on the Smiths Interconnect engineering drawing or within ISO 9001 requirements. Suppliers shall use only Smiths Interconnect approved sources except for suppliers with design responsibility for hardware supplied to Smiths Interconnect may use their own approved process suppliers provided the Smiths Interconnect supplier complies with the following:

- Design and Development must be an element in their Quality Management System (Ref AS9100)
- Supplier Control must be an element in their Quality Management System (Ref AS9100 7.4)

This SQAR does not apply to:

- Industry standard parts such as AN, NAS, MS etc.

165.2 Change in Location of Facilities

The Approval of Sources to Controlled Specifications is location specific. In the event of change in location, notification shall be made prior to the relocation and with substantial time (180 days) for hardware, system, and process re-qualification. Also, satellite sites shall be approved independently of a Source's primary location and must have a separate Smiths Interconnect Supplier ID.

Parts processed at the location that is not yet approved in the APSL are considered non-compliant hardware. Notify by e-mail to the buyer. Suppliers' notifications shall contain the following supplier information as a minimum:

- supplier ID/DUNS number
- old data and new data (i.e. if address change, list the prior address and the new address)
- name of supplier quality contact
- phone number of supplier quality contact
- e-mail address of supplier quality contact

165.3 Approved Vendor List (AVL)

The AVL is the list of Approved Vendors. Sourcing shall periodically review the AVL to ensure sources are not expired.

165.4 Approved Special Source List (ASSL)

The ASSL is the list of Special Process Specifications and Approved Sources to perform those processes. Sources performing Special Processes shall be approved by Smiths Interconnect or must possess the applicable NADCAP accreditation, including the appropriate audit scope/checklist, are accurate and up to date. Sources not approved per the ASSL or NADCAP must be approved by Smiths Interconnect Quality Department for the applicable special process to be performed.

The Supplier is responsible for the cost of NADCAP accreditation.

Category	NADCAP Commodity/Code
Chemical Processing	Chemical Processing/CP
Composites	Composites/COMP
	Conventional Machining as a Special
Elastomers	Elastomer Seals/SEAL
Electrical & Wiring, includes C&H, PB & PBA	Electronics/ETG
Heat Treat, includes Brazing	Heat Treating/HT
Material Testing	Materials Testing/MTL
Nonconventional Machining	Nonconventional Machining/NM
Nondestructive Testing	Nondestructive Testing/NDT
Surface Enhancement	Surface Enhancement/SE
Thermal Coatings	Coatings/CT
Welding, Includes Torch & Induction Brazing	Welding/WLD

SQAR 205 – Characteristic Accountability

205.1 Scope

Suppliers shall have a verifiable methodology for controlling and recording inspection of all design characteristics, as well as a method of validating received components from sub-tiers.

205.2 Detailed Inspection Plans (DIPs)

A Detail Inspection Plan (DIP) documents the inspection plan for a part to ensure that all engineering drawing characteristics and notes are inspected and/or controlled by appropriate methods. DIPs shall be documented in a manner that meets the intent of the FAIR form.

A DIP may be used as a record, or may reference supporting records such as routings, receiving or in-process inspection sheets, final test/inspection reports, or statistical data as long as the DIP and/or supporting records is complete, accurate and reproducible. The DIP shall define the manufacturing operation at which the characteristic is inspected, and the inspection method used, including the type of tooling/gauging instrumentation used. Characteristics that are subject to change after in-process acceptance (e.g., growth, shrinkage, and/or distortion) must be re-inspected prior to final acceptance.

DIPs which contain characteristics which are “tool controlled” (castings, molded parts, etc) may contain less than 100% of the Smiths Interconnect drawing characteristics provided the following conditions are met:

A number of characteristics shall be selected as “control” dimensions. Control dimensions shall be of quantity and type such that inspection of these characteristics will give the supplier enough information (based on tool construction, assembly, process variation, and drawing tolerance) to assure that all other drawing characteristics are in conformance.

The supplier shall maintain a plan which clearly documents the control dimensions for all design characteristics. DIPs are not applicable to Standard and/or Catalog Hardware that if procured directly would be classified as SQAR 002.

SQAR 230 – First Article Inspection (FAI) Requirements

230.1 Scope

The Supplier holding the Smiths Interconnect Purchase Order is responsible for assuring completion of the First Article Inspection Report (FAIR) per AS9102 (Current Revision) and this SQAR for all Smiths Interconnect design characteristics generated by the supplier or their sub-tiers. In the event of any conflict between this SQAR and AS9102, the order of precedence shall be 1) the text of this SQAR, 2) AS9102.

The FAI requirement applies to each bill of material or parts list item with a Smiths Interconnect part number that is invoked in the product design, including lower-level Smiths Interconnect detailed drawings identified on top level assembly drawing(s), ~~and~~, and each cavity or tool serial number for products whose dimensions are controlled by the tool.

FAIRs may be required on Customer or Supplier Drawings that are non-Smiths Interconnect designs or CAGE codes if specified on the Purchase Order. Suppliers may offer an alternate FAI plan to meet the requirements of this SQAR. Approval to operate under this alternate FAIR plan shall only be authorized in writing by Smiths Interconnect Site Quality management.

Smiths Interconnect or Customer FAIR approval does not relieve the supplier of the responsibility and/or liability for full compliance with all contract requirements.

The following items are exempt from the requirements of this SQAR or Identify Smiths Interconnect Site Specific Requirements:

- Raw materials.
- Unaltered material consigned by or purchased from Smiths Interconnect
- Smiths Interconnect vendor item drawings including, specification controlled. While these drawings do not require a detailed FAIR, they shall be documented on form 1 of AS9102 for all assemblies and/or lower-level FAIRs where they form part of the top level assembly part number.
- Nonfunctional hardware (protective covers, shipping hardware, etc.), unless otherwise specified.
- Off the shelf sheet stock, unless post-milled processed.

230.2 Penalties / Fees

Failure to comply with Product Release requirements may result in a receiving inspection fee per shipment received (based on Smiths Interconnect incurred costs – minimum \$500 U.S.), and may incur additional product rejection charges. Smiths Interconnect will not accept responsibility for material delivered prior to first article approval when First Article Acceptance is required under this Purchase Order.

SQAR 235 – Drop Shipment of a Smiths Interconnect Purchase Order

235.1 Scope

The following requirements apply to Smiths Interconnect suppliers when they are instructed to ship material to another Smiths Interconnect supplier, site or customer.

235.2 Prior to the Drop Shipment

The Supplier shall ensure that the product:

- Meets all Purchase Order requirements (e.g., SQAR, engineering drawing, Manufacturing Operations & Tooling [MOT] or maintenance technical data)
- Is released in accordance with SQAR 149 (Required only for drop shipments to Smiths Interconnect customers).

The Supplier cannot drop ship if the product:

- Is a sample
- Is a research part
- Requires a Chemical and Metallurgical Report (CMR)
- Is a Special Federal Aviation Regulation (SFAR) 36 repair
- Product has not been released in accordance with SQAR 149
- First Article Inspection Report (FAIR) has not been completed (SQAR 124)

235.3 Immediately upon Shipment of Hardware

The Supplier shall forward the following to the Smiths Interconnect Buyer:

- A shipping receipt with reference to the Smiths Interconnect-applicable site-assigned supplier code
- Copy of packing slip, including Smiths Interconnect Purchase Order number, release, and part number
- All required identifications for traceability (i.e., inspection certificates, physical/chemical test reports)
- A copy of the common carrier prepaid (third-party billing to Smiths Interconnect) freight bill
- Bill of lading

SQAR 240 – Acceptance Test Plan Procedure (ATP) Approval Requirements

240.1 Scope

Where required by Smiths Interconnect, the Supplier shall submit for approval the test Procedure, test characteristics and test set-up to comply with the test requirements.

Smiths Interconnect Engineering may, at their discretion, approve test documents and plans containing less information than required by this SQAR. In such cases, those documents shall take precedence over the requirements of this SQAR.

240.2 Test Procedure

The Supplier provided Test Procedure shall cover:

- Supplier Acceptance Test Procedures (SATP)
- Qualification Test Procedures (QTP)
- Lot Acceptance Test Procedures (LATP)
- Functional Test Procedures (FTP) The minimum information required includes:
- Nomenclature
- Smiths Interconnect and Supplier part number, and the Supplier code assigned by
- Procurement Specification Control (PSC) number, if any, including revision letter.

Note: An Engineering Statement of Work may be referenced for research and development articles

- Supplier Test Number, revision letter, and date.
- Equipment type, range, accuracy level, and frequency of calibration.
 - Special test equipment must reference the drawing number and revision letter.
 - If software is used to control an automated test stand, the software number and revision designator must be referenced.
 - One copy of the special test equipment drawing, and software must be provided.
 - Commercial executive software for control of a computer need not be referenced or provided.
- Complete description of test performed (inclusive of all parameters and schematic of test set-up) in sufficient detail to permit a duplication of the test.

- Out-of-tolerance is cause for rejection.
 - If the Test Procedure does not test the article while it is exposed to the full ambient temperature range of the PSC, the tolerance of each tested parameter must be reduced, at ambient, to help ensure the PSC requirements are met over the full temperature range (this normalized tolerance range does not substitute for any requirement to environmentally qualify or substantiate the specified part).
 - The Supplier shall determine the tolerance, which is subject to approval by Smiths Interconnect.
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- Sampling Plan (if used) must include specific item or portion of test parameter sampled.
 - Supplier Acceptance stamp, if any, to accept test results.
 - When a Supplier receives a new or repeat Purchase Order for a product that does not have an approved Test Procedure, the Supplier must submit a copy for approval.

240.3 Data Submittal

The Supplier shall submit a copy of the proposed test procedure to the Smiths Interconnect Buyer, who will forward to the appropriate Engineering or Quality group for review and approval. Test plans, data sheet format and contents are subject to Smiths Interconnect approval prior to manufacture and shipment of production parts. The document must be submitted 60 days prior to scheduled delivery of production or development articles. Shipments shall not be made until this approval has been obtained. Objective evidence of Smiths Interconnect approval shall be maintained by the Supplier.

240.4 Change Control

Changes to a Smiths Interconnect approved Test Procedure require re-approval prior to implementation, and the changes may not be incorporated until receipt of written approval from Smiths Interconnect. Test procedures that have been approved with comments may be corrected at the next required revision.

Note: Smiths Interconnect approval of the Supplier Test Procedures does not relieve the Supplier of the responsibility for determining that the product complies with the requirements of the Purchase Order, engineering drawings, and applicable specifications.

240.5 Test Data Sheet Requirements

When required, Test Data Sheets shall be enclosed in a data sheet envelope and attached to each individual unit. Each ATP data sheet shall include the following:

- Supplier name
- Date of testing
- Signature or stamp of individual performing the test
- Smiths Interconnect assigned supplier code
- Test procedure document number and revision letter
- Smiths Interconnect part number, including the dash number
- Minimum and maximum test limits
- The actual numerical test results
- Any serial number of the unit tested, such that the result for each serial number is known.
The Supplier shall maintain documentation that demonstrates the adequacy of the testing procedure. The documents shall be stored at the Supplier facility.

SQAR 310 – Control of Items with Limited Shelf-Life

310.1 Scope

This SQAR defines remaining life requirements and the communication of date control information on items that require shelf-life control per their product specification. Typical commodities that require shelf-life controls are:

- Uncured compounds (for example: paint, adhesives, curing agents, primers, film adhesive, varnishes, elastomeric molding compounds, pressure sensitive adhesives, Prepregs, sealants, inks etc.)
- NOTE: Items such as tapes and labels which have pressure sensitive adhesive (PSA) back are categorized under uncured compounds. This includes metal nameplates with PSA backing applied
- Cured Elastomers (for example: O-rings, gaskets, plate seals, molded shapes etc.)
- Electronic Components**
- Applied Bearing Lubricants, Grease**
- Applied Bearing Preservatives**

310.2 System for Shelf Life and Storage Life Control

The supplier shall maintain a documented system for using, storing and controlling items with limited shelf or storage life. The system shall include a method of identifying and controlling such items to ensure expired items were not used in products shipped to Smiths Interconnect and that items shipped met remaining life requirements.* Shelf life shall apply per manufacturer expiry date or “use-by” date but not supersede applicable specs.

310.3 Certification Requirements

When shipping shelf-life controlled compounds and storage-life controlled elastomers, the supplier shall include the following additional information on the Certification of Conformance:

- Date of manufacture for shelf-life controlled compounds
- Cure date (QQ/YY) for storage-life controlled elastomers
- Shelf-life expiration date (MMYY) for shelf-life controlled compounds
- Storage life expiration date (QQ/YY) for storage-life controlled elastomers
- Batch and or lot number as applicable

- Date of shipment
- Manufacturer's name

310.4 Shelf Life of Limited-Life Items Shipped to Smiths Interconnect

Items that have exceeded their expiration date shall be removed from the supplier's inventory and conspicuously identified as scrap to preclude inadvertent use. All lots must be segregated and identified to maintain batch and/or lot number and cure date.

Shelf life of any uncured material as certified to by the material manufacturer will not be extended unless authorized either by the material manufacturer, or by Smiths Interconnect.

In any case of conflict between documented expiration dates, the Smiths Interconnect receiving site reserves the right to return the material to the supplier or resolve the conflict internally.

On the shipment date, uncured items/compounds must have 75% or greater shelf life remaining, but not less than 6 months unless otherwise approved by the procuring site. Exceptions are noted below.

310.5 Shelf Life of Compounds Applied to Products

The supplier shall maintain a documented system for identification and control of limited shelf-life compounds so that compounds that had expired shelf life were not used on product shipped to Smiths Interconnect. (Examples of limited shelf-life compounds are adhesives and paints).

SQAR 440 – Process Control Plan

440.1 Requirement

The supplier shall maintain a Process Control Plan (PCP) detailing how Key Characteristics and processes will be controlled. The PCP must be maintained by the supplier and on file for review upon request.

SQAR 535 – Material Test Report

The supplier shall provide legible test reports identifiable with purchase order number/material heat or lot number and the applicable specification and revision with each shipment. The report must contain chemical/physical analysis (as applicable).