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QSP 7.4.2 Supplier Quality Requirements

Quality System Procedure

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Approvals

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Revision History

Date	Revision	Description
5/2/2016	A	New procedure to establish better flow down controls to all suppliers.
3/22/2018	B	Revised WR-7 and added WR-7.1
5/11/18	C	Added awareness of product or service conformity, product safety & Ethical Behavior,
10/24/18	D	Added non-conforming & flow down requirements in section 1.1
4/28/20	E	Added changes to process, facility, products or services & Preservation of Product (FOD) to section 1.1. Revised SQR-3 (c Standards Accuracy. Removed WR-4
4/06/23	F	Removed note from section 1.5 Inspection & Surveillance to eliminate confusion on AS9102 FAI requirements.
4/06/23	G	Revised Para 1.0, Added Scope Para 2.0, Removed Para 1.1 "Purchase Order, Point of Contact, Supplier Rating System" paragraphs. Reassigned Nonconforming Material (SQR-4), Right of Entry (SQR-6), Contribution to Product Conformity and Ethical Behavior (SQR-8) under SUPPLIER QUALITY REQUIREMENTS (SQR) section. Added SQR-5, SQR-7 & SQR-9. Re-formatted entire document. Added "(s) and/or Date Code, as applicable to C-7e & removed C-7f.
07/01/24	H	Change of address, removed "Fax Number", Added 3.1.1 paragraph about SQR Clauses, Added SQR-10 End of Life (EOL)/Obsolescence, Removed the following clauses; WR-11, WR-12, WR-13, WR-14, WR-16, WR-17 and replaced them with WR-18 and WR-19

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1.0 PURPOSE

1.1 Supplier Quality Flow Down Requirements to Sub tier Sources.

2.0 SCOPE

2.1 This document applies to all purchasing personnel responsible for the flow down of Quality Requirements for IEE procured product.

3.0 PROCEDURE

3.1 Supplier Quality Flow Down requirements are defined by the various numbered “SQR, WR, C, I, N & PH” clauses. These apply only when the specific clause number is called out on the Purchase order.

3.1.1 All SQR clauses are general requirements and apply to all suppliers. Any questions please contact your IEE Buyer representative.

3.2 Flow Down Requirements – To assure conformance to all Purchase Order requirements, seller shall adhere to requirements and flow down to seller’s sub tier sources, when such sources are used by seller for procurement of products for IEE.

SUPPLIER QUALITY REQUIREMENTS (SQR)

SQR-1 Quality Management System:

The supplier's inspection system shall be certified to the requirements of ISO9001 "Quality Management System Requirements", AS9100 Quality Management Systems - Requirements for Aviation, Space and Defense Organizations or AS9120 Quality Management Systems — Aerospace Requirements for Stockiest Distributors ".

SQR-2 Counterfeit Parts Prevention:

For the purposes of this clause, Work consists of those parts delivered that are the lowest level of separately identifiable items (e.g., components, goods, assemblies). "Counterfeit Work" means Work that is or contains items misrepresented as having been designed and/or produced under an approved system.

- a. SELLER agrees and shall ensure that Counterfeit Work is not delivered to IEE by providing manufacturer certifications or SELLER's completed verification checklist with each shipment.
- b. SELLER shall only purchase products to be delivered or incorporated as Work to IEE directly from the Original Component Manufacturer (OCM) / Original Equipment Manufacturer (OEM), or through an OCM/OEM authorized distributor chain. Work shall not be acquired from independent distributors or brokers unless approved in advance in writing by IEE.
- c. SELLER shall notify IEE with the pertinent facts of SELLER becomes aware or suspects that it has furnished Counterfeit Work.
- d. In the event that Work delivered under this contract constitutes or includes Counterfeit Work, SELLER shall, at its expense, promptly replace such Counterfeit Work with genuine Work conforming to the requirements of this contract.
- e. SELLER shall be liable for all costs relating to the removal and replacement of Counterfeit Work.

SQR-3 Calibration Service Requirements:

- a. Out of Tolerance Conditions

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- I. Upon receipt for calibration, Measurement Test Equipment (MTE) is tested to determine if it is within specification limits before any adjustment, repair, or cleaning which would affect calibration results is performed. If not within specification limits, out of tolerance data is recorded and all work is halted.
- b. The IEE Metrology Department is contacted with the out of tolerance conditions of the MTE. An Out of Tolerance Notice (OTN) is then forward to Quality by IEE Metrology Dept. for an impact report.
- c. Standards Accuracy

A 4: 1 ratio is required whenever possible, although a 10:1 ratio is preferred. The accuracy of the standards must be no less than equal to the tolerance required (i.e., 1 : 1) but in most cases must be greater.

Note: A comparison is permitted only when state of the art limitations preclude a higher accuracy ratio.
- d. Traceability

All calibration services performed by Subcontractor calibration labs must have calibration systems that meets the requirements of ISO 17025, AS9100, ISO 9001, or ANSI -Z-540-1 and is traceable to National Institute of Standards and Technology (NIST).
- e. Certificate of Calibration / Traceability
 - I. A Certificate of Calibration / Traceability shall accompany each item calibrated by the subcontractor, indicating that all measurements are traceable to the National Institute of Standards and Technology. The Purchasing Department is responsible for coordinating with Metrology in the evaluation and selection of subcontractors.
 2. MTE calibrated by a Subcontractor which is not accompanied by a Certificate of Calibration/Traceability or inadequate data, will not be accepted and unit will be returned for recalibration.

SQR-4 Non-Conforming Material

No known nonconforming material shall be shipped to IEE without written authorization from IEE Quality. The product shall be held at the supplier pending instruction from IEE. If the supplier finds nonconforming product after shipment to IEE the supplier shall notify IEE within 48 hours of the discovery. Unless specifically authorized, in writing by an IEE Buyer and/or Quality Manager, you are not authorized to make use-as-is and repair dispositions of non-conforming material. Contact the IEE Buyer should you discover non-conforming material that you feel would be in IEE interest to accept.

SQR-5 Preservation of Product

Supplier shall establish, document and maintain a process to control and eliminate Foreign Object Debris (damage) (FOD) and/or contamination during supplier's (or suppliers' subtier sources) manufacturing, assembly, test and inspection operations.

SQR-6 Right of Entry

IEE, IEE customers, government representative or applicable regulatory agencies shall have the right to survey seller's facilities, with suitable notification to review all processes, subcontractors, contracted parts, procedures and records at any level of the supply chain that are applicable to IEE.

SQR-7 Notification of Changes

Supplier shall notify IEE when changes occur that will affect the Quality System, such as changes of address/location, ownership, company name, Quality Manager, Quality Management System (QMS), or QMS approvals and changes to

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processes, products, or services, including changes of their external providers or location of manufacture, and obtain the IEE approval prior to execution of purchase order.

SQR-8 Contribution to Product Conformity and Ethical Behavior

All employees are to be made aware of their contribution to product or service conformity, product safety and the importance of ethical behavior.

SQR-9 Traceability

Certifications provided shall be in English. Seller must ensure that all certifications (Manufacturers Certificate of Conformance, Test Reports, Process Certs, Raw Material etc.) for a part is traceable to one another by either a lot number, date code, heat number, job or work order number or material P.O. number. Where applicable, applicable specification and part revision level must be present on certifications and test reports. All certifications must be legible. Changes or amendments to any certification paperwork must identify the authorizing party via signature, initial, stamp, or any other similar method, along with amendment date.

SQR-10 End of Life (EOL)/Obsolescence

At the event of a manufactured part becoming obsolete, the supplier shall give a 6 month notice, (or in extreme cases, best allotted time) prior to EOL of manufactured part to IEE. After the production phase has been completed, the suppliers shall continue to submit EOL prediction/notifications on a semi-annual basis for 4 years.

WORKMANSHIP REQUIREMENTS

WR-1 Printed-Wiring Boards supplied on this purchase order shall comply with the requirements of Military Standard MIL-PRF-31032 entitled "Printed Circuit Board/Printed Wiring Boards, General Specification For".

WR-2 Circuitry testing for shorts and continuity shall be performed 100% for items supplied on this purchase order.

WR-3 Printed-wiring boards supplied on this order shall comply with the requirements of Military Specification MIL P 50884 entitled "Printed-Wiring, Flexible, and Rigid-Flex".

WR-4 REMOVED

WR-5 For parts procured to IEE drawings, the purchase order identifies the appropriate revision letter for each part number. The identification method of marking a part shall be as described on the drawing along with the part number including applicable dash number & Part Revision letter.

WR-6 Workmanship for items supplied on this purchase order shall comply with the requirements of Military Standard MIL HDBK 454 Guideline 9 entitled "Standard General Requirements for Electronic Assemblies, Workmanship".

WR-7 Performance Specification for Rigid Printed Boards). PWB's with more than two layers shall be Net List tested and documentation of net list shall accompany the PWB's upon delivery.

Coupons and/or Cross-sections coupons shall be delivered with each new manufactured lot.

a.) In-Process and Final Cross Sections

b.) Final Cross Section only

WR-7.1 IST (Interconnect Stress Test) coupons shall be designed and incorporated into the panels. Coupons shall be tested in accordance with IPC-TM-650 2.626 Method A.

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WR-8 Printed-wiring boards supplied on this purchase order shall comply with the requirements of Institute for Interconnecting and Packaging Electronic Circuits (IPC) IPC A-600 Class 3 entitled "Acceptability of Printed Boards".

WR-9 Items supplied on this order shall comply with the solder ability requirements of Military Standard MIL STD 202F Method 208G entitled "Test Methods for Electronic and Electrical Component Parts, Solder ability". A certification/re-certification shall accompany each lot of devices in which the date code of the device exceeds 18 months.

WR-10 Items supplied on this order shall comply with the solder ability requirements of the Institute for Interconnecting and Packaging Electronic Circuits (IPC) ANSI J STD 002 entitled "Solder ability Tests for Component Leads, Terminations, Lugs, Terminals, And Wires".

WR-11 REMOVED

WR-12 REMOVED

WR-13 REMOVED

WR-14 REMOVED

WR-15 Workmanship for modified, reworked or repaired items supplied on this purchase order shall comply with the requirements of Institute for Interconnecting and Packaging Electronic Circuits (IPC) IPC-7711/7721 "Suggested Guidelines for Modification, Rework, and Repair of Printed Boards and Assemblies".

WR-16 REMOVED

WR-17 REMOVED

WR-18 Workmanship for manufactured items supplied on this purchase order shall comply with the requirements of the Institute for Interconnecting and Packaging Electronic Circuits (IPC); IPC/WHMA-A-620, IPC-A-610, ANSI/J-STD-001, and/or equivalent standard may be used with IEE acknowledgement and approval, and shall meet **Class 2** requirements unless otherwise specified on the assembly drawing.

WR-19 Workmanship for manufactured items supplied on this purchase order shall comply with the requirements of the Institute for Interconnecting and Packaging Electronic Circuits (IPC); IPC/WHMA-A-620, IPC-A-610, ANSI/J-STD-001, and/or equivalent standard may be used with IEE acknowledgement and approval, and shall meet **Class 3** requirements unless otherwise specified on the assembly drawing.

CERTIFICATIONS AND TEST REPORTS

C-1 The supplier shall retain all test reports and/or Certificate of Conformance on file for a minimum of seven (7) years from payment of this order. Records shall remain legible, readily identifiable and retrievable. Record identification, storage, protection, retrieval, retention time (if greater than four years), and disposition of records shall be in accordance with the supplier's company policy.

C-2 Reports of electrical, functional, mechanical, environmental, or other tests are required with each shipment via any media type (e.g. hardcopy, electronic, share point). These reports shall include as applicable:

- a. IEE's Purchase Order Number or Blanker Purchase Order Number with released number.
- b. Item Description.
- c. Drawing/Specification and Revision Used.
- d. IEE Part Number and applicable Revision.
- e. Acceptance limits of test parameters/
- f. Number of units tested.

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- g. Serial Number of units tested, as applicable.
 - h. Lot/Date Code, as applicable
 - i. Recorded Test Data/Test Results.
- C-3** Chemical and Physical Test Reports are required with each shipment for each lot or batch shipped. The reports shall include the material manufacturer's lot/heat/melt number and actual inspection/test values as required by the material specification, typical values are acceptable when allowed by material inspection.
- C-4** **Use and Control of Special Process Sub-Tier Suppliers**
Industrial Electronic Engineers (IEE, Inc.) requires any special process required by the purchase order to be performed by an IEE approved special processor, Supplier's sub-tier special processor with NADCAP Accreditation or Customer Approved Source(s) for each specific process. The use of a Customer Approved Source will be specified on the IEE purchase order. The NADCAP Accredited supplier must provide their certification with the NADCAP Accredited Emblem on their certificate or provide a legible copy of the special processor's NADCAP Certificate & Scope with each shipment included in Supplier's certification package. Special processes included under this requirement are heat-treating, metal joining (welding and brazing), plating, chem film, anodizing, and NDT/NDE.
- C-5** Shelf life shall have a minimum of 90% shelf life remaining or 12 months upon receipt and expiration date clearly identified.
- C-6** Components with a date code older than seven (7) years will not be accepted.
- C-7** A Certificate of Conformance is required with each shipment. The certificate shall be signed by an authorized representative and include the following information as a minimum:
- a. IEE purchase order and line item number(s).
 - b. Part Number(s) and Revision.
 - c. Serial Number(s), as applicable.
 - d. Specifications(s), as applicable.
 - e. Lot Number(s) and/or Date Code, as applicable.

INSPECTION & SURVEILLANCE

- I-1A** IEE shall conduct a First Article Inspection on the product prior to fabrication of additional deliverable items. The supplier shall notify the appropriate IEE Purchasing personnel five (5) business days prior to the date of the inspection to ascertain location (supplier or IEE) of this inspection.
- I-1B** The supplier shall conduct and submit a First Article Inspection and Report that shall include all dimensional, functional and nondestructive test results required by applicable specifications.
- I-1C** IEE shall witness First Article Inspection on the product prior to fabrication of additional deliverable items. The supplier shall notify the appropriate IEE Purchasing personnel five (5) business days in advance of the First Article Inspection.
- I-1D** IEE shall witness the supplier's First Article Inspection. The supplier shall notify the appropriate IEE Purchasing personnel five (5) business days in advance of the First Article Inspection.
- I-1E** First Article Inspection (FAI) shall be performed per the requirements of AS9102, "Aerospace First Article Inspection Requirement," latest revision, and prior to product acceptance and shipment to IEE. The following optional fields in the AS9102 FAI Report Form 1 are considered mandatory by IEE: 11, 12, 21, 22, 23 and 24.

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- I-2** An IEE representative is to witness post burn in electrical testing per applicable specification. Five (5) days advance notification is required.
- I-3** Pre Closure (PRE CAP) Inspection by an IEE representative is required at the supplier's facility. Five (5) days advance notification is required.
- I-4** Final Acceptance Inspection and/or Mechanical and Functional Test Verification by an IEE representative/or designated representative, is required at the supplier's facility prior to shipment. Five (5) days advance notification is required. If certified part, Final Source not required.
- I-5** In process inspection by an IEE representative is required at the supplier's facility to verify material and/or processes (e.g., soldering, welding, machining) prior to encapsulation, plating, and/or painting. Five (5) days advance notification is required. If certified part, In-Process not required.
- I-6** The following shall not be performed or implemented without written approval from IEE, Inc.:
- The supplier and its sub-tier suppliers shall not repair any item found to be faulty or damaged during the manufacturing process by using adhesive, welding, brazing, plating, splicing, or soldering.
 - Defects in castings or forging shall not be repaired by any method.
 - The supplier shall not change any drawing, process, material, or procedure previously approved by IEE, Inc. /Prime Contractor including those used to qualify items or which were used by the supplier to become a qualified source.
- I-7** IEE shall approve special processes performed by the supplier or any of its sub-tier suppliers, including the system/procedures used to control its sub-tier special processes (e.g., soldering, plating, welding, heat treating, magnetic particle, X-Ray, cleaning and penetrate inspection). Approval of special processes does not relieve the supplier of responsibility for exercising the control measures necessary to ensure that the work performed by its sub-tier is in accordance with all specification requirements. The supplier shall have a record of his sub-tier approval on file and available for review by an IEE Representative. The supplier shall identify the sub-tier supplier that performed special processes, by process specification, and supply this information to IEE with each shipment.
- I-8** Government Source Inspection is required prior to shipment of the product from your facility. Upon receipt of this order, promptly notify the Government Representative who normally services your facility so appropriate planning for Government Source Inspection (GSI) can be accomplished. Unless otherwise authorized, IEE Quality Assurance approval is required prior to submittal for GSI. Evidence of government source inspection must be included with each shipment.
- I-9** IEE, the Government, and/or the Customer representatives reserve the right to conduct surveys and inspections at the Supplier's facility and Supplier chain, to evaluate compliance with this Purchase Order and all applicable requirements, including the right to perform Source Inspection on deliverable products. This includes the auditing of records created by and/or retained by the supplier for IEE deliverable product. When required, Buyer will provide prior written notification to arrange audits or inspections.
- I-10** Upon receipt of this order, promptly furnish a copy of the order to the Government Representative who normally services your facility or, if none, to the nearest Army, Navy, Air Force or Defense Supply Agency Inspection Office. In the event the representative or office cannot be located, notify the IEE Buyer immediately.
- I-11** Products and/or services provided under this Purchase Order are subject to final acceptance at destination. Inspection, test, and acceptance will be performed by an authorized IEE Representative.

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- I-12** IEE approval of acceptance test procedures (ATP) is required prior to the testing of units to be delivered on this Purchase Order. Any changes to acceptance test procedures (ATP) require concurrence from IEE Defense Systems.
- I-13** Non-Destructive Testing (NDT) shall be performed in accordance with the Purchase Order requirements.
- I-14** The supplier shall monitor and record all key characteristics. Key characteristics are designated on the drawing. The following items shall be recorded for each key characteristic: supplier, part number, revision level, serial number (if applicable), required dimension, required tolerance, measured dimension and pass/fail result for each and every item. Alternately, the supplier may provide the above information for a representative statistical sample of not less than 25, and the associated Cpk value. Shipments evaluated using Cpk shall have a Cpk value of at least 1.33. A copy of the key characteristic analysis shall be provided with each shipment. Questions regarding key characteristics shall be directed to the appropriate IEE Quality Engineer.

NON-CONFORMANCE REWORK & REPAIR

- N-1** Rework to a like new functional condition is required. Rework is defined as an action on a nonconforming product to make it conform to the requirements. A like-new functional and cosmetic condition is required. All rework specified shall be in accordance with the original equipment manufacturing specifications (including drawings), except that when such specifications are inappropriate, the manufacturer/rework agency will submit alternative recommendations to IEE. The supplier shall not commence work until a change is made to the purchase order authorizing alternative recommendations.
- N-2** Rework to a serviceable condition is required. A serviceable condition is defined as being capable of functioning and performing in the same manner as identical new articles, although they need not have the physical appearance of newness. All rework specified shall be in accordance with original equipment manufacturing specifications (including drawings), except that when such specifications are inappropriate, the manufacturer /rework agency will submit alternative recommendations to IEE. The supplier shall not commence work until a change is made to the purchase order authorizing alternative recommendations.
- N-3** The supplier is not authorized to conduct independent MRB activity. Discrepant conditions requiring MRB disposition for repair and use as is shall be documented on a Supplier Request for Deviation /Waiver form (QF 8.5.2B) and submitted to IEE(IEE) Supplier Quality through the applicable IEE buyer for IEE's disposition and approval. The supplier shall place non-conforming material in bond, pending disposition and notification by the IEE buyer of the MRB action to be taken.
To obtain a copy of QF 8.5.2B, Supplier Deviation /Waiver Request, the supplier may: Contact your IEE Buyer.

PACKAGING AND HANDLING REQUIREMENTS

- PH-1** Identification and packaging of electrostatic sensitive parts and/or assemblies shall be in accordance with the electrostatic protection requirements of Electronic Industries Association EIA-625 or In Accordance with an ESD-Protective Program approved by IEE.
- PH-2** Identification and packaging of electrostatic sensitive film resistors, resistor chips, and/or resistor networks shall be in accordance with Mil-R-39032.

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- PH-3** The supplier shall identify and package magnetic devices to ensure one that a (1) inch minimum clearance is maintained from all articles during transit/handling. The following caution note, or equivalent, shall be applied to each unit container.
- PH-4** The Supplier must adequately plan for packaging designed to prevent product contamination, deterioration or loss and to eliminate shipping damage. Suppliers should provide expendable packaging or returnable containers, where appropriate, that provide for sufficient density and protection from any likely damage that may occur. Expendable materials and packaging must meet local and national standards for safe disposal and/or recycling.

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