ABACO-EQP-001

Supplier Requirements Manual

Primary Change Summary

Approved By	Department	Revision	Date	Signatory
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Peter Rhodes	Purchasing	A	13TH Sep 2017	Peter Rhodes
Kelvin Greaves	SQE	A	13TH Sep 2017	Kelvin Greaves
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The latest issue of this document may be confirmed by viewing the web site at https://www.abaco.com/sourcing

Contents

1 Overview 4
1.1 Definitions 4
1.2 Order of Precedence 4
2 General and Program Specific Requirements 6
2.1 Supplier's Responsibility for Conformance 6
2.2 Language 6
2.3 Quality System Requirements 6
2.4 Documented Information 6
2.4.1 Control 6
2.4.2 Record Retention 6
2.5 Resource Management 7
2.5.1 Product Safety Awareness 7
2.5.2 Human Factors 7
2.5.3 Competency, Training, and Awareness 7
2.6 Right of Access 7
2.7 Environment, Health and Safety 8
2.7.1 Material Suitability 8
2.7.2 REACH 8
2.7.3 Take-back of Electrical and Electronic Components, Including Batteries or Accumulators. 8
2.7.4 CE Directives 9
2.7.5 Nanoscale Material 9
2.7.6 Labeling/Shipping Information 9
2.7.7 EU New and Global Approach Directives and Harmonized Standards 9
3 Specific Commodity Requirements 11
3.1 Software Control (SW Providers Only) 11
3.2 Counterfeit Prevention 11
3.2.1 Abaco Contract Manufacturers shall also comply with the following: 11
3.3 Foreign Object Debris/ Damage (FOD) 12
3.4 Configuration Management 12

3.5 Notification of Change 12
3.6 Tooling Requirements 13
3.7 ESD Plan 13
3.8 Moisture/Humidity Management 13
3.9 IPC and J-STD Certification 13
3.10 Supplier Sub-Tier Control 13
3.11 Special Process Requirements 13
3.12 Conformal Coating and Underfill 14
3.12.1 Manufacturer with Design Authority/OEM (Not COTS) 14
3.12.2 CCA's (EMS) and Services (product related) 14
3.13 Research and Development/Advanced Programs Requirements 14
3.14 Measurement and Traceability 14
3.15 Supplier First Article Inspection (FAI) 15
3.16 Sampling 15
3.17 Inspection Types 15
3.17.1 Abaco Receiving Inspection 15
3.17.2 Source Surveillance or Inspection at Supplier's site 16
3.18 Nonconforming Material Control 16
3.18.1 NOTICE OF NONCONFORMING MATERIAL 16
3.19 Product Recall 17
3.20 Corrective Action 17
3.20.1 Corrective Action Response Extensions 17
3.20.2 Verification of Corrective Action (VCA) 17
3.21 Part Marking Requirements 17
3.22 Packaging 17
4 Related Documents 19
5 Table of Quality System Levels 20

1 OVERVIEW

The purpose of this document is to provide our suppliers with pertinent, detailed requirements for doing business with Abaco Systems and its customers.

The details specified below are the minimum requirements and expectations that apply to all suppliers of Abaco Systems. Due to the variety of products and service supplied to Abaco, additional product specific requirements may be included on Abaco drawings or Purchase Order (PO).

Abaco Systems expects its suppliers (whether product or service based) to conduct business with the highest ethical behavior and standards. How a supplier conducts business can directly impact Abaco in a way that could damage our reputation or cause Abaco to be in violation of a law or regulation.

Abaco requires its suppliers to safeguard all sensitive information including proprietary information and personal data disclosed to the supplier for the use of building Abaco products.

1.1 DEFINITIONS

- Abaco Systems – The organization buying material or services from a supplier and the owner of this document.
- Seller - A person employed by a Supplier that accepts purchase orders for product or service from Abaco Systems.
- Buyer - A person employed by Abaco that initiates a purchase order to purchase materials or services for use by Abaco Systems.
- Supplier - An organization that provides a product or service to Abaco Systems.
- MRB – Material Review Board (used for non-conforming material management)
- SRM – Supplier Requirements Manual
- SQE – Abaco Supplier Quality Engineer

1.2 ORDER OF PRECEDENCE

If there is a conflict between any of the documents, the supplier should contact the Buyer immediately by email for resolution. By default, the order of precedence shall be:

I. The Purchase Order
II. The Detail Drawing(s)
III. The Model (3D)
IV. This Specification
V. Any other specifications detailed herein

This document is applicable to all Abaco purchase orders for the production and modification of contract deliverables excluding Maintenance, Repair, Operations (MRO) Items.

- Table 1 contains matrices that are the key to determining the applicability of Abaco Systems requirements and should be used by the supplier as part of their planning function to ensure compliance with the Abaco Systems requirements.
- The requirements in Section 2 apply to procurements regardless of commodity except for MRO Items.
- The requirements in Section 3 apply as applicable to the service provided

- Exemption from applicable sections of this document may be granted to the vendor on a case by case basis, only with written consent from the Abaco Quality department.

2 General and Program Specific Requirements

The requirements in this section apply to all procurements.

2.1 Supplier's Responsibility for Conformance

Abaco Systems expects our supplier base to deliver material that is 100% compliant with all PO requirements. Suppliers will ensure that these requirements, or applicable portions thereof, are invoked on lower-tier suppliers of parts, materials, or services. It is the responsibility of the Supplier to ensure ALL the requirements defined in the PO and this document are flowed down to any sub-tier suppliers.

2.2 Language

All supplier provided records, reports, specifications, drawings, inspection and test reports, certificates of conformance and other documentation are required to be in English.

2.3 Quality System Requirements

Supplier shall implement and maintain a Quality Management system that complies with the applicable Quality System standard or specification listed in Table 1 Quality System Requirements. The supplier's approval level must be appropriate for the type of product/service being delivered to Abaco.

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

Abaco Systems requires our Level 1, 2, and 3 suppliers identified in Table 1 to be certified to ISO9001 as a minimum unless otherwise stated on the Purchase Order and will only supply product or services in line with their scope of approval. Any change in approval status must be immediately communicated to Abaco Quality. AS9100 certification is the preferred certification for Level 1, 2, and 3 suppliers.

2.4 Documented Information

2.4.1 Control

The Supplier shall to the extent necessary:

- Maintain documented information to the operation of its processes.
- Retain documented information to have confidence that the processes are being carried out as planned.

The procedure for record creation, change, completion, and control of documented information will be in accordance with the applicable Quality System standard (i.e. – ISO 9001, AS9100).

2.4.2 Record Retention

The supplier shall maintain documented information (records) in accordance Sellers Quality System and with the contract. The supplier must notify Abaco before the destruction of any quality records associated with work performed towards Abaco orders. If the contract does not specify, then documented information (records) will be retained for 14 years. The supplier must impose this requirement on their sub tiers. Supplier records, associated with

Abaco orders, are to be maintained utilizing the supplier's documented procedure and provided without cost to Abaco, upon request given reasonable notice.

Records shall include, but not be limited to:

- Evidence of inspection to assure adherence to applicable drawings or specifications and revisions
- First Article Inspection
- Test Reports
- Periodic inspection and control of inspection media
- Records to indicate control of Special Tooling and Special Test Equipment
- Test data records of all qualification and acceptance tests performed
- Certification of personnel as required by specification and/or contract
- Raw Material and Process certifications
- Material Review Reports
- Any other record in the realization, verification, or validation processes

2.5 Resource Management

2.5.1 Product Safety Awareness

All Suppliers will have training to highlight the importance of product safety, as defined by ISO9001 or AS9100. This training should include:

- Design
- Development & Testing
- Manufacturing
- Assembly
- Inspection and measurement
- Shipping, storage, and preservation
- Transportation, docking, undocking
- Installation into next higher assembly
- End-use

2.5.2 Human Factors

Supplier Management will consider Human Factors through the realization of the product life cycle. This will include taking proper account of the interaction between employees and the processes required through the realization of the product.

2.5.3 Competency, Training, and Awareness

All suppliers' employees will be trained on execution of their activities and how they contribute to the achievement of the quality objectives. Operators carrying out processes will have the appropriate training and certifications to perform their job function. Records of education, training skills and experience will be maintained at the supplier's facility and available for review at any time.

2.6 Right of Access

Abaco Systems and their customers shall have the right of access to send representatives to the supplier's or supplier's sub-tier facilities with reasonable notice to perform verification activities according to the risk identified

by the organization and review relevant records or request copies at any time before or after manufacturing the product.

2.7 Environment, Health and Safety

Suppliers shall maintain an Environmental Health and Safety Management System that meets all legal requirements and reasonably provides for the safety of its employees and visitors and conducts its operations in an environmentally responsible manner.

2.7.1 Material Suitability

Seller covenants that each chemical substance constituting or contained in goods sold or otherwise transferred to the Buyer is suitable for use and/or transport in any jurisdiction to or through where the goods will likely be shipped, or to or through which Seller has knowledge that shipment will likely occur.

Examples, of such lists include, but is not limited to are:

(i) The U.S. Toxic Substances Control Act ("TSCA") Inventory,
(ii) The Federal Hazardous Substances Act (P.L. 92-516) as amended;
(iii) The European Inventory of Existing Commercial Chemical Substances ("EINECS") as amended;
(iv) The European List of Notified Chemical Substances ("ELINCS")
(v) The European Chemicals Agency (ECHA)

2.7.2 REACH

Supplier shall comply with any and all European Union (EU) Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) regulation obligations with respect to any of the Products delivered by Supplier to Buyer under the terms of this Purchase Order. Supplier must provide Buyer with a list of Substances contained in any of the Products that were included on the Candidate List published by ECHA. Thereafter, if a Substance is added to the Candidate List by ECHA, and that Substance is also contained in any Products, Seller must notify Buyer within fifteen (15) days following publication of the list.

By accepting this Purchase Order, Seller recognizes and agrees that Buyer will thereafter act in reliance on Seller's acceptance of this Purchase Order as a contractual commitment that it is in compliance with EU REACH regulations, subject to the further provisions below. Should any Products contain Substances listed on the Candidate List that are above 0.1% on a weight by weight basis within that Product, Seller shall provide Buyer with so-called Safe-Use information, pursuant to the provisions of REACH Article 33 and shall maintain the REACH database for the life of this Purchase Order. As indicated, Buyer will act in reliance on the statements and commitments Seller makes regarding the Candidate List status of each of the Substances contained in any of the Products. If Seller fails to comply with the provisions of this clause, Buyer may consider whether such failure constitutes a breach of this Purchase Order sufficient to warrant Termination for Default in accordance with the terms of this Purchase Order. Moreover, in the event failure to timely comply with these provisions results in a business interruption of Buyer's operations, Buyer will seek to recover the damages, including financial losses, it suffers as a consequence of such failure.

Seller is responsible for ensuring that the Products conform to and are compliant with the restrictions included in Annex XVII of the REACH Regulation and/or are otherwise authorized for use in accordance with Annex XIV of the REACH Regulation (in each case where relevant). For purposes of this clause, the terms "Substance" and "Candidate List" shall have the same meaning as are given those terms in REACH and the list of substances currently on the candidate list can be found at http://echa.europa.eu/web/guest/candidate-list-table.

2.7.3 Take-back of Electrical and Electronic Components, Including Batteries or Accumulators.

Seller covenants that, except as specifically listed on the face of this Purchase Order or in an applicable addendum, none of the goods supplied under this Purchase Order are electrical or electronic equipment or batteries or accumulators as defined by laws, codes or regulations of a jurisdiction to or through which Buyer informs Seller the goods are likely to be shipped or to or through which Seller otherwise has knowledge that shipment will likely

occur, including but not limited to EU Directive 2002/96/EC (27 January 2003) (the "WEEE Directive"), as amended and EU Directive 2006/66/EC (26 September 2006) (the "Batteries Directive") and/or any other legislation providing for the taking back of such electrical or electronic equipment or batteries or accumulators (collectively, "Take-Back Legislation"). For any goods specifically listed on the face of this Purchase Order or in such addendum as electrical or electronic equipment or batteries or accumulators that are covered by any Take-Back Legislation and purchased by Buyer hereunder, Seller agrees to:

(i) Assume responsibility for taking back such goods in the future upon the request of Buyer and treating or otherwise managing them in accordance with the requirements of the applicable Take-Back Legislation;
(ii) Take back as of the date of this Purchase Order any used goods currently owned by Buyer of the same class of such goods purchased by Buyer hereunder up to the number of new units being purchased by Buyer or to arrange with a third party to do so in accordance with all applicable requirements; and
(iii) Appropriately mark and/or label the goods as required by any applicable Take-Back Legislation. Seller will not charge Buyer any additional amounts, and no additional payments will be due from Buyer for Seller's agreement to undertake these responsibilities.

2.7.4 CE Directives

Seller covenants that all goods conform with applicable Conformité Européenne ("CE") directives for goods intended for use in the EU, including those regarding electrical/electronic devices, machinery and pressure vessels/equipment. Seller will affix the CE mark on goods as required. Seller will provide all documentation required by the applicable CE directives, including but not limited to Declarations of Conformity, Declarations of Incorporation, technical files and any documentation regarding interpretations of limitations or exclusions.

2.7.5 Nanoscale Material

With respect to any goods sold or otherwise transferred to Buyer hereunder, Seller shall notify Buyer in writing of the presence of any engineered nanoscale material (defined for these purposes as any substance with at least one dimension of such substance known to be less than one hundred (100) nanometers in length). With respect to all such nanoscale material(s), Seller shall provide a description of its regulatory status and any safety data or other notifications that are appropriate in the EU, U.S.

2.7.6 Labeling/Shipping Information

With respect to any goods or other materials sold or otherwise transferred to Buyer hereunder, Seller shall provide all relevant information, including without limitation, safety data sheets in the language and the legally required format of the location to which the goods will be shipped and mandated labeling information, required pursuant to applicable requirements such as, but not limited to:

(i) The Occupational Safety and Health Act ("OSHA") regulations codified at 29 CFR 1910.1200;
(ii) EU REACH Regulation (EC) No. 1907/2006, EU Regulation (EC) No. 1272/2008 classification, labeling and packaging of substances and mixtures ("CLP"), EU Directives 67/548/EEC and 1999/45/EC, as amended, if applicable, the U.S. Department of Transportation regulations 49 CFR, the International Maritime Organization ("IMO") and the International Air Transport Association ("IATA").

2.7.7 EU New and Global Approach Directives and Harmonized Standards

Seller covenants that the goods comply with EU New and Global Approach Directives and Harmonized Standards, including any transposed provisions into EU Member States' national legislation, and Seller shall submit associated documentation to Buyer and to the surveillance authorities. Seller assumes all liabilities applicable to, or deriving from, such directives and standards.

2.8 WARRANTIES

Seller warrants that all goods and services provided pursuant to this Order, whether provided by Seller or a direct or indirect supplier of Seller, will be:

a) free of any claims of any nature, including without limitation title claims, and Seller will cause any lien or encumbrance asserted to be discharged, at its sole cost and expense, within thirty (30) days of its assertion (provided such liens do not arise out of Buyer's failure to pay amounts not in dispute under this Order or an act or omission of Buyer);
b) new and of merchantable quality, not used, rebuilt or made of refurbished material unless approved in writing by Buyer;
c) free from all defects in design, workmanship, and material;
d) fit for the particular purpose for which they are intended; and
e) provided in strict accordance with all specifications, samples, drawings, designs, descriptions, or other requirements approved or adopted by Buyer.

Seller further warrants that all services will be performed in a competent and professional manner in accordance with the highest standards and best practices of Supplier's industry. Any attempt by Seller to limit, disclaim or restrict any such warranties or remedies by acknowledgment or otherwise shall be null, void, and ineffective.

The foregoing warranties shall, apply for twenty-four (24) months from delivery of the goods or performance of the services, or such longer period of time as customarily provided by Seller, plus delays such as those due to non-conforming goods and services. The warranties shall apply to Buyer, its successors, assigns and the users of goods and services covered by this Order.

If any of the goods and/or services are found to be defective or otherwise not in conformity with the warranties in this Section during the warranty period, then, Buyer, in addition to any other rights, remedies and choices it may have by law, contract or at equity, and in addition to seeking recovery of any and all damages and costs emanating therefrom, at its option and sole discretion and at Seller's expense may:

a) require Seller to inspect, remove, reinstall, ship and repair or replace/re-perform nonconforming goods and/or services with goods and/or services that conform to all requirements of this Order;
b) take such actions as may be required to cure all defects and/or bring the goods and/or services into conformity with all requirements of this Order, in which event all related costs and expenses (including, but not limited to, material, labor and handling costs and any required re-performance of value added machining or other service) and other reasonable charges shall be for Seller's account; and/or
c) reject and return all or any portion of such goods and/or services. Any repaired or replaced good, or part thereof, or reperformed services shall carry warranties on the same terms as set forth above, with the warranty period being the greater of the original unexpired warranty or twenty-four (24) months after repair or replacement.

3 SPECIFIC COMMODITY REQUIREMENTS

See table in Section 5, "Table of Quality System Levels", regarding the applicability of the following sections to specific Supplier types.

3.1 SOFTWARE CONTROL (SW PROVIDERS ONLY)

Supplier shall establish and maintain a Software Quality Assurance (SQA) program in accordance with the applicable purchase order or contractual requirements.

3.2 COUNTERFEIT PREVENTION

The supplier shall maintain a documented Counterfeit Avoidance program in accordance with the latest revision of AS5553 / AS6081, that has as its goal the avoidance, detection, mitigation, and disposition of counterfeit parts. The supplier shall also comply:

- Unless approved in writing by Abaco, supplier shall use only original equipment manufacturers or original component manufacturers (OEM/OCM) sourced from an OEM/OCM Authorized/Franchised dealer or distributor.
- The Supplier shall not misrepresent used or reclaimed parts as new
- Supplier shall comply with original manufacturer's handling, storage, and shipping procedures
- Supplier shall provide to the buyer all necessary certificates of conformance and acquisition traceability Certificate of Conformance or Certificate of Test to the OEM/OCM
- The Supplier shall be subject to liabilities and penalties associated with providing fraudulent/counterfeit product, Supplier shall maintain a documented system to ensure no delivered parts are counterfeit
- If applicable, the supplier shall be a member of the Government/Industry Data Exchange program (GIDEP) to be used for monitoring potential Counterfeit parts and reporting suspect counterfeit parts
- Supplier shall notify Buyer as soon as the Supplier becomes aware of any suspected or confirmed counterfeit/fraudulent parts supplied or furnished to the Buyer under the Purchase Order agreement
- Supplier shall disclose the source of parts if the parts should become the subject of a legal or counterfeit issue
- If suspect or confirmed counterfeit/fraudulent parts are supplied or furnished under the Purchase Order agreement, such items shall be impounded. Supplier shall promptly replace such items with items acceptable to the Buyer and the Seller shall be liable for all costs relating to impoundment, removal, and replacement. Buyer may turn such items over to the local or international authorities for investigation. Buyer reserves the right to withhold payments for such items pending the results of the investigation

3.2.1 Abaco Contract Manufacturers shall also comply with the following:

- ABACO-GQP-001 Global Counterfeit Electronic Parts Avoidance Policy
- ABACO-GQP-002 Counterfeit Electronic Parts Avoidance Requirements for Independent Distributor Approval
- ABACO-GQP-003 Counterfeit Electronic Parts Avoidance Requirements for Independent Distributors
- ABACO-GQP-004 Counterfeit Electronic Parts Avoidance Requirements for Contract Equipment Manufacturers
- ABACO-GQP-005 Counterfeit Electronic Parts Avoidance Approved Independent Distributors List
- ABACO-GQP-007 Global Counterfeit Material Avoidance Policy

3.3 Foreign Object Debris/ Damage (FOD)

The supplier shall develop, implement and maintain a documented Foreign Object Debris/ Damage (FOD) Process. Suppliers should use AS9146, Foreign Object Damage (FOD) Prevention Program - Requirements for Aviation, Space, and Defense Organizations as a guideline for their FOD process.

This FOD program shall be implemented through all phases of the manufacturing processes. This shall include periodic self-assessments to measure compliance to requirements and show continuous improvement.

Key FOD practices should include:

- Prevention
- Cleaning
- Detection, Reassessment
- Maintain cycles of continuous improvement

3.4 Configuration Management

Supplier shall maintain a Configuration Management system that effectively controls the product and/or process baselines. Abaco may elect to review the effectiveness of the suppliers Configuration Management system.

3.5 Notification of Change

The supplier shall notify in writing to Abaco Systems Procurement Contact of changes to process, products, or services, including changes of their external providers or location of manufacture, and obtain the organization's approval.

Any change in approval status to the business, or senior management must be immediately communicated to Abaco Systems Procurement Contact.

Buyer may at any time make changes within the general scope of this Order in any one or more of the following:

a) drawings, designs or specifications where the goods to be furnished are to be specially manufactured for Buyer;
b) method of shipment or packaging;
c) place and time of delivery;
d) amount of Buyer's furnished property;
e) quality;
f) quantity; or
g) scope or schedule of goods and/or services.

Buyer shall document such change request in writing, and Seller shall not proceed to implement any change unless and until such change is provided in writing by Buyer.

Seller shall notify Buyer in writing in advance of all:

a) changes to the goods and/or services, their specifications and/or composition;
b) process changes;
c) plant and/or equipment/tooling changes or moves;
d) transfer of any work hereunder to another site; and/or
e) sub-supplier changes.

No such change shall occur until Buyer has had the opportunity to conduct such audits, surveys and/or testing necessary to determine the impact of such change on the goods and/or services and has approved such change in

writing. Seller shall be responsible for obtaining, completing, and submitting proper documentation regarding any and all changes, including complying with any written change procedures issued by Buyer.

3.6 Tooling Requirements

At a minimum, Special Tooling (supplier manufactured, or Abaco furnished) used as a media of inspection must be defined in the supplier's manufacturing plan at the applicable operation/sequence where the inspection occurs. Inspection media tooling must be controlled as part of the supplier's Calibration system prior to use in production.

3.7 ESD Plan

The supplier shall have procedures for protection of ESD sensitive devices during all phases of handling, packaging, storage and testing. The supplier's ESD program shall be in accordance with ANSI/ESD S.20.20. The supplier's ESD program shall be applicable to the material and services being performed.

3.8 Moisture/Humidity Management

The supplier shall have procedures for protection of moisture sensitive devices (MSD) during all phases of handling, packaging, storage and testing. The supplier's MSD program shall be applicable to the material and services being performed.

3.9 IPC and J-STD Certification

All soldering will be accomplished and inspected by operators certified to J-STD-001 and IPC-A-610 or other standards required by the drawing or Purchase Order. Evidence of training shall be provided to Abaco, upon request. Supplier must have the appropriate IPC and J-STD certifications based on the work they are performing.

3.10 Supplier Sub-Tier Control

The supplier shall determine and apply criteria for the evaluation, selection, monitoring of performance and reevaluation of external providers, based on their ability to provide processes or products and services in accordance with requirements.

The requirements in this manual shall be flow down to sub-tier suppliers as necessary for the supplier to meet requirements flowed down by Abaco. The supplier will have a list of approved sub-tier suppliers. Including providers of special processes used in the manufacturing of Abaco products. Abaco has the right to request a copy of approved suppliers at any time.

3.11 Special Process Requirements

A special process is defined as a process that cannot be completely verified through inspection or non-destructive testing; therefore, the process itself must be verified/validated prior to performance. Training is also an important consideration related to verifying special processes.

The vendor shall provide process control and validation information related to any special processes used, when requested. Validation includes, but is not limited to, defined process criteria, approved and trained personnel, approved equipment, specific methods or procedures specified by the design authority, retention of records, test reports, and re-validation plans.

Special Processes can include:

- Chemical treatment of metals
- Painting

- Plating
- Welding
- Soldering (Managed by section “IPC and J-STD Certification)

3.12 Conformal Coating and Underfill

All suppliers that are conformal coating boards must follow Abaco drawings and purchase order requirements.

3.12.1 Manufacturer with Design Authority/OEM (Not COTS)

- Conformal coating thickness will be measured and managed in accordance with conformal coating thickness requirements. If not otherwise stated, IPC-A-610 conformal coating thickness is the agreed requirement.
- All boards must be cleaned prior to conformal coating

3.12.2 CCA's (EMS) and Services (product related)

All suppliers that are conformal coating must follow Abaco drawings and purchase order requirements.

- Conformal coating thickness will be in accordance with IPC-A-610 conformal coating thickness requirements
- All boards must be cleaned prior to conformal coating
- Suppliers will perform cleanliness testing on board prior to coating
- Suppliers will note conformal coating thickness requirements, measure, and document the conformal coating thickness after coating has cured. If measurement is taken before coating has cured evidence must be provided demonstrating final cured thickness meets coating thickness requirements.
- Copy of cleanliness and conformal coating thickness verification will be included with the shipment of finished boards

3.13 Research and Development/Advanced Programs Requirements

Manufacturing Plan Submittals for Critical and Designated Parts

When manufacturing plans are imposed by engineering or the purchase order, they require submittal to Abaco at least thirty (30) days prior to start of production. The manufacturing plan shall contain sequential fabrication, processing, processor name and inspection steps in the order required by the applicable process specification(s) and/or engineering drawings / 3D CAD Models.

Upon approval of supplier’s manufacturing plan, the supplier shall control all manufacturing, processing, testing and inspections as stated in the approved plan. No deviations, including the selection of supplier’s sub-tier suppliers/processors, is permitted without Abaco prior knowledge and written authorization.

3.14 Measurement and Traceability

The supplier will establish, implement and maintain a process for the calibration or verification of measuring equipment used to validate product / process through the realization process.

Calibration systems shall meet the applicable requirements of:

- ISO-IEC-17025 - General requirements for testing and calibration laboratories
- UKAS Lab24ed1-1- Measurement & Calibration

Measuring equipment shall be:

- Calibrated or verified or both at specified intervals, or prior to use, against measurement standards traceable intonation or national standards. The basis used for calibration shall be retained as documented information

- Verification intervals shall be established based on manufacturers guidelines, usage, and previous recorded data
- Identified to establish their status and establish and maintain a process for the recall of measuring, monitoring equipment requiring calibration or verification
- Safeguarded from adjustment, damage, or deterioration that may invalidate the measurement results
- On-site calibration shall be carried out within suitable environmental conditions at ambient temperature (20 degrees C)
- All equipment used to verify product to customer design requirements must be calibrated. This includes gauges and tooling manufactured or procured by the supplier to verify final requirements

If the validity of previous measurement results have been adversely affected when measuring equipment is found to be unfit for its intended purpose, then the supplier shall notify Abaco Systems of product at risk and the potential impact to product conformity previously verified.

3.15 Supplier First Article Inspection (FAI)

The 1st delivery of any item, including its' subsequent redesigns, must be shipped with a copy of the FAI in accordance with AS9102. The supplier will maintain records of all FAI reports.

The supplier will establish a plan to ensure that subsequent production, inspection, and operations requiring verification have been completed as planned to achieve Drawing and 3D design characteristics. This shall include:

- Critical to Quality (CTQ) dimensions stated on the drawing
- The retention and evidence of conformity with acceptance criteria will be retained and shall be available on request

3.16 Sampling

Supplier may use sampling plans, provided the sampling plans are in accordance with military or government standards such as ANSI Z1.4, ANSI Z1.9, BS6001, Mil-Std-1916 or ARP9013.

3.17 Inspection Types

3.17.1 Abaco Inspection and Testing

Deliverable product(s) may be subject to Abaco Systems inspection upon receipt at Abaco's facility. Suppliers of non-Abaco designed material shall forward a detailed/outline drawing with each item shipped if required per the purchase order.

In order to assess Seller's work quality, conformance with Buyer's specifications and compliance with this Order, upon reasonable notice by Buyer, all:

a) goods, materials and services related in any way to the goods and services purchased (including without limitation raw materials, components, intermediate assemblies, work in process, tools and end products) shall be subject to inspection and test by Buyer and its customer or representative at all times and places, including sites where the goods and services are created or performed, whether they are at premises of Seller, Seller's suppliers or elsewhere; and
b) of Seller's books and records relating to this Order shall be subject to inspection by Buyer.

3.17.2 Source Surveillance or Inspection at Supplier's site

Deliverable product(s) may be subject to Abaco Source Surveillance or Inspection as identified on the PO. Supplier shall notify their assigned buyer or SQE, at least 48 hours in advance of need, to schedule "in process" or "final" source surveillance.

All shipping documentation and documentation provided to show evidence of conformity to Purchase Order and SRM requirements shall be made available at the time of source surveillance. The goods shall not be shipped without an Abaco inspector's release or a written waiver with respect to required inspection point(s).

3.18 NONCONFORMING MATERIAL CONTROL

Nonconforming material must be identified, documented and segregated pending disposition to prevent its unintended release or use. The organization's nonconformity control process shall be maintained as documented information including the provisions for:

- Defining the responsibility and authority for the review and disposition of nonconforming outputs and the process for approving persons making these decisions
- Taking actions necessary to contain the effect of the nonconformity on other processes, products, or services
- Timely reporting of nonconformities affecting delivered products and services to the customer and to relevant interested parties
- Defining corrective actions for nonconforming products and services detected after delivery, as appropriate to their impacts

The supplier's MRB shall not perform any disposition to Abaco or customer requirements that affect form, fit, function, weight, interchangeability, maintainability, reliability, unique key characteristics or safety.

The supplier's disposition authority of a nonconformance is limited to rework to specification, return to supplier or scrap. These terms are defined as follows:

- **Rework** - Restore material to specification compliance in accordance with required processes and addressed by process specifications.
- **Return to Supplier** - Return of subcontractor product found to be discrepant for subsequent rework or replacement.
- **Scrap** - Product dispositioned for scrap shall be conspicuously and permanently marked, or positively controlled, until physically rendered unusable.
- **Repair – Repair dispositions must be approved by Abaco.**
- **Use-As-Is – Use-As-Is dispositions must be approved by Abaco.**

If the supplier is returning material that had initially been rejected at Abaco, then the supplier's shipping document shall clearly identify that material has been reworked. Final acceptance and formal disposition of all materials will be determined upon receipt at Abaco.

3.18.1 NOTICE OF NONCONFORMING MATERIAL

The supplier must promptly notify an Abaco Systems buyer when a nonconformity or reliability issue is discovered in the supplier's processes, components, or assemblies for any product already delivered.

The communication shall contain the following information:

- Lot/ batch information/ date of manufacture, as applicable
- Part numbers impacted including vendor part number(s) and Collins part number(s)
- Recovery plan
- Containment plan including non-conforming quantity

- Purchase order number(s) impacted 6. Non-Conformance description/problem summary and requirement violated

3.19 Product Recall

If a recall is required under the law or Buyer determines that it is advisable, Seller shall promptly develop a corrective action plan(s) (collectively, the "Corrective Action Plan"), which shall include all actions required by any applicable consumer protection or similar law and any applicable regulations and provide Buyer with an opportunity to review and approve such plan. Seller and Buyer agree to cooperate and work together to ensure that such plan is acceptable to both parties prior to its implementation. In addition, Buyer shall cooperate with and assist Seller in any corrective actions and/or filings; provided, however, that nothing contained in this section shall preclude Buyer from taking any action or making any filings.

3.20 Corrective Action

The supplier shall respond to all requests for corrective action on or before the requested response due date. After receiving the SCAR, the supplier will immediately perform containment activities within 24 hours. In addition, complete and submit any forms or worksheets when directed. Supplier shall maintain a documented system for determining root causes of documented defects and obtaining corrective action and preventive action both internally and from its suppliers. The supplier is accountable for effectiveness of corrective and preventive actions taken.

Abaco requests for corrective actions will be issued to the supplier's quality representative in the form of, but not limited to:

- Supplier Corrective Action Request (SCAR)
- Failure analysis reporting when required by engineering specification or contract data item requirements

3.20.1 Corrective Action Response Extensions

Abaco may grant the supplier an extension for their corrective action response on a case-by-case basis. Suppliers should formally request a time extension at least forty-eight (48) hours prior to the assigned corrective action response due date. Request should contain justification for extension and current update on Corrective Action progress.

3.20.2 Verification of Corrective Action (VCA)

Abaco retains the right to conduct corrective action verification at the supplier and/suppliers sub-tier supplier's facility to assess effectiveness of implemented corrective action.

3.21 Part Marking Requirements

Supplier shall mark all deliverable products as required by the engineering drawing. If the part marking requirements are not clear on the drawing, then the supplier shall contact the buyer for clarification. Where no method is defined Part Marking shall be I.A.W. MIL-STD-130 or AS9132

- All serial numbers delivered to Abaco must be unique, no duplication is allowed

3.22 Packaging

When no specific method of packaging is defined on the P.O. then it is the supplier's responsibility to determine a method of packaging that ensures the preservation of the product throughout the manufacturing process, and delivery onsite to Abaco Systems. Best commercial practices should be used.

DO NOT USE LOOSE FILL MATERIALS IN ANY FORM. Loose fill material is any small piece of packaging material that can be poured into a container to fill void container space. Examples of loose fill are packing peanuts, shredded paper or plastic, folded paperboard pieces and broken expanded polystyrene (Styrofoam) pieces.

There shall be no evidence of FOD in any received containers.

- Staples are not to be used for the closure of packs.
- Packing materials must be inert and shall in no way be deleterious to the part.
- Packaging must take into consideration any health and safety / environmental implications to the customer.

Product, as delivered by the supplier, must be accompanied by a Signed Certificate of Conformance, which details:

- Manufacturer's name and telephone number
- Abaco Systems part number and issue
- The quantity of parts supplied against each part number
- The supplier's works order number
- The Abaco Systems purchase order number
- The Delivery/Dispatch note number
- A statement to say whether the product is RoHS compliant

Below section is only applicable to contract manufactures and turnkey providers.

- Packaging used shall be ESD bags that are sealed with ESD sensitive label/sticker
- Each part will be individually packaged into a single shipping box
- Each single box will be identified with a label including:
    - Part number
    - Serial Number
    - Purchase Order Number
    - Quantity in box
    - Each single box will be sealed with a tamper label
    - All individual boxes will then be placed into an outer pack for shipment to Abaco or dropship as requested

4 RELATED DOCUMENTS

All related documents are to be taken at current industry revision

- SP00017-0VG-001 PROCUREMENT SPECIFICATION METALWORK PRODUCTS
- ANSI Z1.4, ANSI Z1.9, BS6001, Mil-Std-1916, ARP9013. Sampling plans
- ISO 9001:2015, AS9100 Quality Management System requirements
- First Article Inspection AS9102
- ANSI/ESD S.20.20. ESD Control
- J-STD-001 Requirements for Soldered Electrical and Electronic Assemblies
- IPC-A-610 Acceptably of Electronic Assemblies
- ISO 14001, OSHAS 18001
- Abaco Systems INC integrity Guide for Suppliers https://www.abaco.com/sourcing
- Abaco Terms and conditions of Purchase https://www.abaco.com/sourcing
- Counterfeit Parts Avoidance AS5553
- Fraudulent/Counterfeit Electronic Parts Avoidance: Distributors AS6081
- Government/Industry Data Exchange program (GIDEP)
- AS9146, Foreign Object Damage (FOD) Prevention Program
- MIL-STD-130, AS9132 Part Marking
- Human Factors http://www.hf.faa.gov/webtraining/index.htm.
- ISO-IEC-17025 - General requirements for the competence of testing and calibration laboratories
- UKAS Lab24ed1-1- Measurement & Calibration.

5 TABLE OF QUALITY SYSTEM LEVELS

Supplier Product / Service	Acceptable Systems	3.01	3.02	3.03	3.04	3.05	3.06	3.07	3.08	3.09	3.10	3.11	3.12	3.13	3.14	3.15	3.16	3.17	3.18	3.19	3.20	3.21	3.22
Manufacturer with Design Authority/OEM (Not COTS)	ISO9001 or AS9100 or Nadcap AC7004 (AS9100 Preferred)		**x**	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Manufacturer (Build-to-Print Metal/PCB fabrication)	ISO9001 or AS9100 or Nadcap AC7004 (AS9100 Preferred)		**x**	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
CCA's (EMS)	ISO9001 or AS9100 or Nadcap AC7004 AS9100 Preferred		**x**	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Franchised Distributor or COTS Manufacturer	ISO9001 or AS9100 or AS9120 (AS9120 Preferred)		**x**	x	x	x		x	x	x	x			x	x		x	x	x	x	x		x
Independent Distributor	ISO9001 or AS9100 or AS9120 Compliant to AS5553 and AS6081 IDEA-STD-1010 (Bonus)		**x**	x	x	x		x	x		x			x	x		x	x	x	x	x		x
Services (product related)	ISO 9001 or AS9100 or AS9003				x	x					x		x	x							x		
Services (non-product related)	Licensed & Insured																						
Tooling/Test Equipment	ISO9001 or AS9100 or Nadcap AC7004				x										x					x			x
Software Programs (Embedded Software)	Supplier's Software Quality Assurance Program shall be compliant to AS9006 or IEEE/EIA 12207	**x**			x	x					x			x						x	x		
Software Programs (Not Embedded Software)	Supplier's Software Quality Assurance Program shall be compliant to AS9006 or IEEE/EIA 12207	**x**			x	x					x			x						x	x		
Calibration Services	ISO 17025 or ANSI-Z540-1														x								