

## SUPPLIER QUALITY REQUIREMENTS MANUAL

### Revision History

Revision	Description	Date
Base -	Original Release – Precision Test Solutions	11/18/13
A	Review of procedure. Grammatical corrections. Replaced the word products with material in para 1 and 2 of section 5 Quality System Requirements. Better clarified section 6.3.a Special Processes to align with Section 5 para. 5. Removed examples listed in section 9.2 para 2. Changed section 11.2 from Labeling to Packaging and Labeling. Added 'per contract' to section 11.3.1	05/19/14
B	Revised section 6.2.2 to better define flow down of other suppliers – added “which could include customer designated sources”. Revised section 10.0 to include notification from the supplier to PTS of non-conformances and need for disposition from PTS. Added “For product quality problems/ nonconforming product discovered by the supplier, notification shall be made to PTS immediately for appropriate disposition.”	05/31/14
C	Revised section 8.3 to remove PTS from “PTS drawing”. Also added 'or packaging' to same sentence.	06/16/14
D	Added definition for special Processes to section 4.0. Added language around documents change control for suppliers to section 9.0. Added 30-day response time to section 13.0 for Scars. Updated language throughout for clarity.	03/28/2016
E	Updated to align with AS9100 and ISO requirements. Change to QSM-002 Document – Added 4. Acronym HSD, Updated paging number.	05/16/2018
F	Changed para. 6.2.4 Product Safety to better defines what product safety is to PTS for compliance to AS9100. Modified para 13.3 for timeline on SCARs. Added ITAR requirements, 6.2.5. Paragraph 10.2 added that any nonconformance must be approved by PTS. Modified 11.3.2 for C of C trackability. Modified 13.3 Supplier corrective action process. Corrected titles, grammar, spelling and format throughout.	12/12/2019

G	Update to clarify that a Quality System is required: Change “should” to “Shall” in 5.1 and clarified this para 5.1 and requirements of types of suppliers. (ref. AS9100 clause 8.4.2.a)  Add information to para. 12.3 for defining when a SCAR will be issued and the process for nonconformance review. (AS9100 8.4.1.1 d) Add C of C to be signed or authenticated.	05/08/2023
H	Add language pertaining to the destruction of documentation to para 11.4	05/10/2023

## 1. QUALITY OBJECTIVE

1.1. This Supplier Quality Requirements Manual sets forth and documents policy, requirements, responsibilities and authorities that are required to develop and improve the Precision Test Solutions (PTS) Supply Base. These policies and requirements reflect values the Precision Test Solutions President and the PTS employees hold for customer satisfaction and operational excellence. The objective of this manual is to communicate to Suppliers all of the Quality Requirements in support of PTS Purchase Orders not otherwise indicated on the face of the PO or attachments referenced therein.

## 2. SCOPE

- 2.1. The policy and requirements set forth in this Supplier Quality Requirements Manual apply to all PTS suppliers that provide materials or services. The requirements are complementary and mandatory (not alternative) to contractual and applicable law and regulatory requirements.
- 2.2. Allowance to depart from the PTS requirements within this document is at the sole discretion of PTS. Authorized departures will be managed under the waiver process and noted in the supplier's file.

## 3. Responsibilities

3.1. The PTS Quality Manager is responsible for the issue, content and revision of this manual.

## 4. DEFINITIONS

4.1. Terms and definitions contained in this manual are unique to our organization or business, and are listed below; when there is a difference, the definitions given in AS 9100 and ISO 9001 apply.

**Risk** – An undesirable situation or circumstance that has both a likelihood of occurring and potentially negative consequence.

**Special Requirements** – Those requirements identified by the customer, or determined by the organization, which have high risk to being achieved, thus requiring their inclusion in the risk management process.

**Critical Items** – Those items (e.g. functions, parts, software, characteristics, processes) having significant effect on the product realization and use of the product; including safety, performance, form, fit, function, producibility, service, life, etc; that require specific actions to ensure they are adequately managed.

**Key Characteristics** – An attribute or feature whose variation has a significant effect on product fit, form, function, performance, service life, or producibility, that requires specific actions for the purpose of controlling variation.

**Foreign Object Damage (FOD)** - Any damage or incident attributed to a foreign object which may degrade the product's safety and/or performance characteristics.

**Special Processes** – special processes are defined as Outside Supplier Process (OSP) activities of a processing nature, such as lead tinning, Hot Solder Dip (HSD) component tape & reel final packaging, water vapor testing, component decapsulation services, CSAM testing, circuit assembly, fixturing, machining, plating, and similar services.

## 5. QUALITY SYSTEM REQUIREMENTS

5.1. Suppliers shall maintain a Quality Management System (QMS) suitable to the material and services provided to PTS. It is preferred that your system is certified by an accredited third-party certification body. PTS suppliers that provide materials or services that affect fit, form, function or quality shall comply with the following requirements:

**Distributors** - establish and maintain a QMS that is in compliance with AS9120 or ISO 9001 (or equivalent)  
**Calibration Suppliers** - establish and maintain a measurement management system in accordance with ISO 17025 (latest revision) or ANSI/NCSL Z540.1-1994 as defined on PTS P.O. .

**Special Process Suppliers** – (Services such as solder dipping (tinning) or Tape & Reel) The supplier shall establish and maintain a QMS that is in compliance with AS9100, AS9003, AS9120, PRI/Nadcap AC7004, ISO 9001, or equivalent QMS. Exceptions must be evaluated and approved by PTS.

**Commercial-Off-The-Shelf Suppliers (COTS)** - Suppliers that provide commercial products shall establish a QMS in compliance with ISO 9001 or the equivalent.

In the absence of third-party certification, depending on the product, its application, value, and criticality, the PTS Quality Manager may authorize the acceptance of other documented evidence of compliance.

## 6. GENERAL REQUIREMENTS

6.1. The following set of general quality requirements applies to all Suppliers:

6.2. Compliance to Contractual Requirements

The Supplier is responsible for compliance to all contract (e.g., engineering drawing, specification, purchase order) requirements. All documents, drawings and specifications, regardless of origin, are applicable to the Supplier when specified in the contract or documents referenced in the contract, and are required to be used at all levels of the supply chain. Neither audit, surveillance, inspection or tests made by PTS, representatives of PTS or its customer(s), at Supplier's facilities, at any sub-tier facilities, or upon receipt at PTS, relieves the Supplier of the responsibility to furnish acceptable products or services that conform to all contract requirements; nor does it preclude subsequent rejection by PTS or its customers.

#### 6.2.1 Customer Access Rights

Precision Test Solutions aviation, space, defense customers and regulatory agencies reserve the right to have unlimited access to the Supplier's and relevant sub-tier supplier's facility and records as necessary.

#### 6.2.2 Precision Test Solutions Designated Sources

Where specified by contract, the Supplier shall purchase products, materials or services from PTS designated sources, which could include customer designated sources.

#### 6.2.3 Ethical Behavior

Supplier ethical behavior is a requirement for PTS suppliers. Suppliers should have a documented ethical behavior process and an associated training program for employees on business ethics.

#### 6.2.4 Product Safety

PTS services are performed on customer products that are used in High Reliability, Military, Commercial and Military Flight systems, and Manned Flight Vehicles for Space applications. It is very important that PTS, and PTS suppliers, are aware of the critical nature of the parts in that they do impact the life of a Human. Product Safety is the state in which a product is able to perform to its designed or intended purpose without causing unacceptable risk of harm to persons or property. AS9100 clause 8.1.3, Product Safety, states "The organization shall plan, implement, and control the processes needed to assure product safety during the entire life cycle."

Suppliers shall implement a Product Safety process to ensure that personnel are aware of the critical nature of their parts to PTS and to provide all necessary processes to submit only completely compliant material to fulfil PTS Purchase Orders.

#### 6.2.5 ITAR, Export Control

Supplier must operate under the Arms Export Control Act or the Export Administration Action when working with documentation and product procured or marked with identification that it is Export Controlled/ITAR. Export Controlled documentation must be sent and received through a secure method (encryption, password protection, secure FTP site)

#### 6.2.6 Certificate of Conformance –

All supplier product must have a CofC signed by an authorized person in Quality (or designee).

### 6.3. Control of Sub-Tier Supplier

The Supplier is responsible for meeting all requirements, including work performed by the Supplier's sub-tier Suppliers (also known as Sub-Suppliers or subcontract Suppliers). The Supplier shall include (flow-down) on contracts, to its sub-tier sources, all of the applicable technical and quality requirements contained in the Precision Test Solutions contract and this manual, including customer requirements, regulatory requirements, and "key characteristics".

6.3.1 Special Processes-Supplier and sub-tier suppliers shall establish and maintain a QMS that is in compliance with AS9100, AS9003, PRI/NADCAP AC7004 or ISO9001.

6.3.2 Risk Management-The Supplier shall establish a risk management program to effectively assess those elements from all aspects of the business that could affect the quality of the products and/or services scheduled for delivery to PTS. *Suppliers that provide MRO products, products that don't affect fit, form or function of shippable product, or do not affect product quality, do not have to comply with the risk management section of this manual.*

#### 6.4. Control and Release of Precision Test Solutions Furnished Documents

Documents furnished by PTS to the Supplier are furnished solely for the purpose of doing business with PTS. Proprietary documents may be furnished to the Supplier in hard copy, electronic or other media. The Supplier is responsible for controlling and protecting such documents from, loss, damage, alteration, deterioration and maintaining them in accordance with executed NDA or PIA agreements to preclude improper use.

## 7. PRODUCT QUALIFICATION

This section defines the generic requirements for production part qualification and approval.

### 7.1. First Article Inspection

The First Article Inspection (FAI) process is used to demonstrate the adequacy of supplier gauging, manufacturing and inspection processes and to ensure that all design and specification requirements have been understood, accounted for, verified and documented. This requirement applies when required by the PTS contract.

Suppliers may offer an alternate FAI plan to meet the requirements for production process verification when AS9102 is not called out specifically on the PTS contract. Approval to operate under this alternate plan shall only be authorized in writing by the Precision Test Solutions Quality Manager or delegate.

First articles shall be performed and documented as required by SAE AS9102 when required by PTS contract.

In cases where a PTS drawing directs the supplier to modify or perform testing a standard, off the shelf part, only the changed or added parameters need to be verified and documented (e.g., an altered item drawing).

## 8. PROCESS CONTROL

This section defines the basic necessities for Suppliers to control their processes.

### 8.1. Foreign Object Debris/Damage (FOD)

The supplier shall maintain a FOD prevention program. The prevention program shall include the review of design and manufacturing processes to identify and eliminate foreign object entrapment areas, paths through which foreign objects can migrate and potential causes of physical damage to parts. The supplier shall ensure that work is accomplished in a manner that prevents foreign object damage or material in deliverable items.

### 8.2. Key Characteristics

The Supplier shall demonstrate conformity to those key characteristics designated by PTS through means of documentation and appropriate control methods.

### 8.3. Electro-Static Discharge Sensitive (ESDS) Materials

The following requirements apply to materials, devices, or assemblies identified by the drawing, Purchase Order or packaging as ESDS and capable of being degraded, damaged, or destroyed by electrostatic charges or discharges.

#### Manufacturers:

All items shall be preserved, packaged, and packed in such a manner as to prevent exposure to the generation or discharge of electrostatic voltages. ESD processes must comply with JESD 625, S20.20, or similar type of ESD Handling Systems.

#### Distributors:

Packaging shall be compliant to either JEDEC 108 (Distributor Requirements for Handling Electrostatic-Discharge Sensitive Devices) or ANSI ESD 20.20 (Requirements for Handling Electrostatic-Discharge-Sensitive (ESDS) Devices) requirements. Parts shall be clearly marked or labeled to indicate that the contents are sensitive to damage or degradation by electrostatic discharge.

#### Suppliers

Supplier shall maintain a documented system for the control and handling of ESDS materials.

#### Counterfeit Part Avoidance Program

Suppliers are required to have a documented process for inspecting for and avoiding counterfeit components or parts they purchase for resale to PTS.

## 9. CHANGE CONTROL

The Supplier is responsible for controlling changes and notifying the PTS Buyer of all changes to the approved part design, manufacturing process, or site

### 9.1. Change Control Process

The Supplier shall have a process to ensure that the contract requirements and relevant versions of applicable documents furnished by PTS (as well as those specified of external

origin) are implemented correctly. The supplier shall maintain a Document Change Control process and maintain records of changes in accordance with record retention policies herein.

#### **9.2. Supplier Change Requests**

Suppliers shall not make changes to their processes, location, facilities, equipment, material, product design (or any change which may affect product or function of a PTS supplied drawing) without written approval from PTS Procurement.

Before submitting a request to PTS for a permanent change to a Supplier-controlled design, the Supplier shall review and document the Process Documentation and Risk Management impact, as applicable, to ensure that all process-related issues have been addressed and resolved.

### **10. CONTROL OF NONCONFORMING MATERIAL**

This section covers the requirements for handling nonconforming products supplied to PTS, including those that reach a PTS customer.

#### **10.1. Supplier Containment**

For product quality problems reported by Precision Test Solutions to the Supplier, until formal corrective action has been taken and approved, the Supplier shall provide documented evidence with subsequent shipments that such product has been inspected for the identified non-conformances and meets all applicable requirements.

For product quality problems/ nonconforming product discovered by the supplier, notification shall be made to PTS immediately for appropriate disposition.

#### **10.2. Material Review Board (MRB) Authority**

At no time shall the Supplier assume MRB authority without the expressed written authorization from PTS. Dispositions not authorized include Repair to Variation and Accept for Use. Supplier must contact PTS for approval for any nonconformance prior to shipment to PTS.

#### **10.3. Notice of Escape**

In the event that a non-conformance is discovered at any time following shipment of the product, the applicable PTS Buyer shall be notified immediately.

### **11. PRESERVATION, PACKAGING, LABELING, DELIVERY & RECORD RETENTION**

Preservation, packaging, labeling, and delivery methods must comply with common industry practices and PTS requirements specified on the contract.

#### **11.1. Preservation**

In order to detect deterioration, the condition of product in stock should be assessed by supplier at appropriate planned intervals. A system of preservation is required, including for Moisture Sensitive parts, when needed.

#### **11.2. Packaging and Labeling**

The PTS Buyer will provide the Supplier with the necessary specifications, when required. Supplier shall use industry-accepted packaging methods to contain product for shipment.



### 11.3.Delivery

The Supplier shall systematically inform PTS of any delay in delivering product and provide a new dispatch date. The Supplier is responsible for additional transport costs due to delays.

When a Certificate of Conformance is required, it shall contain as a minimum, Part number, revision letter, PO number, quantity, lot number or date code and serial numbers (where applicable) and signature of Quality (or designee). A C of C shall be required for all date codes for electronic components.

For Special Services and Screening Facilities:

A Certificate of Conformance shall be submitted with each order that specifically reference all part, test and process specifications on the Purchase Order, and/or include certifications from any sub-tier suppliers for the processes they have performed.

#### Certificate of Conformance Traceability Program

The Supplier may provide a traceability number on the supplier's general Certificate of Conformance. The supplier *shall* be required to provide material and sub-tier or process certifications for product traceability (active and passive components, unique electronic components, or through the PO or contract).

### 11.4.Record retention

The Supplier shall retain quality records for a time period specified by the PTS contract or related reference documents, such as this procedure.

The Supplier shall maintain all records that provide objective evidence of compliance to PTS contract requirements for a minimum of ten (10) years, or as specified on contract.

After the minimum 10 year retention period, the documents shall be destroyed in a manner that will render them unrecognizable.

## 12. CONTINUAL IMPROVEMENT, PROBLEM SOLVING & CORRECTIVE ACTION

### 12.1.Continual Improvement

Suppliers should define a process for continual improvement modeled after the AS9100 standard (or equivalent)

### 12.2.Problem Solving Processes

Suppliers shall use a closed-loop corrective action process whenever a problem is encountered internally or upon notification from PTS. SCARS issued must have a Root Cause assigned with an Immediate and a Long-Term Corrective Action to mitigate Risk of this nonconformance from returning.

### 12.3.Supplier Corrective Action

Nonconformances (such as incorrect count or paperwork errors, etc.) shall be identified to the supplier by email or telecon from PTS Purchasing or Quality. Nonconformances not

responded back to PTS in a timely fashion will be issued a Supplier Corrective Action Request (SCAR) by PTS Quality. Nonconformances that can affect form, fit , function, or reliability (such as damaged parts or suspect counterfeit parts) will be issued a SCAR by PTS Quality. SCARS must be completed and sent to PTS Quality by the assigned due date (usually 20 business days).