

TITLE: TEKTRONIX COMPONENT SOLUTIONS SUPPLIER QUALITY MANUAL

Change History:

REV	ECO	ECO COMPLETION/ FINISHED DATE	SUMMARY OF CHANGE
A01	S6-10550	07/29/15	Initial Document
A02	S6-10555	09/28/15	Change in Foreign Object Damage (FOD) Control
B01	S6-10622	02/13/17	Updated record retention (para 8), added definition to Counterfeit (para 14), added ESD shipping requirement and Toxics in Packaging (para 15), added customer furnished material/equipment (para 21), added ESD control (para 22), added calibration (para 23), added Organization Changes (para 24), added FAR/DFAR (para 25), added supplier information (para 26), added conflicting requirements (para 27)
B02	S6-10645	06/02/17	Added reference and instructions to ISO14001 (para 28)
B03	S6-10802	03/22/19	Removed part of para 5 as duplicate to para 24 (organization changes) Added to para 8 about protecting electronic records Updated link in para 25, FAR and DFAR supplement Added DMS to para 26 Updated reference to para 28, ISO14001
B04	S6-10841	09/12/19	Revised Paragraph 21. Customer Furnished Material/Equipment
B05	S6-10947	11/20/20	Added requirement 29 to reference the Supplier Code of Conduct, specifically to address ethics and product safety as required in AS9100.
B06	S6-10990	06/01/21	Reset para 25 to applicable regulatory requirements. Expanded FAR/DFAR to include RoHS, REACH, TSCA. Moved Toxics in Packaging from para 15 to 25 Added Key Contacts to para 26 and clarified when ITAR compliance statement needed Added sub-tier supplier flow down in para 5

Table of Contents

Introduction	3
Requirements.....	3
1. MONITORING OF SUPPLIERS' PERFORMANCE	3
2. QUALITY MANAGEMENT SYSTEM.....	3
3. RIGHT OF ACCESS.....	3
4. SUPPLIER'S SOURCE INSPECTIONS AND PROCESS VERIFICATIONS	3
5. CHANGES IN PRODUCT, FACILITIES, OR QUALITY MANAGEMENT SYSTEM	4
6. NOTICE OF DISCREPANT MATERIAL OR REQUEST FOR CORRECTIVE ACTION	4
7. UNIQUE TRACEABILITY	4
8. DOCUMENTATION AND RECORDS.....	4
9. WORKMANSHIP.....	5
10. SHIPMENT CONFORMANCE	5
11. FOREIGN OBJECT DAMAGE (FOD) CONTROL	5
12. MEASURING AND INSPECTION, EQUIPMENT CALIBRATION	5
13. SHELF LIFE, MATERIAL CHANGE AND OBSOLESCENCE.....	5
14. COUNTERFEIT ELECTRONIC PARTS AVOIDANCE, DETECTION, MITIGATION, AND DISPOSITION	6
15. STORAGE, MATERIAL HANDLING, AND PACKAGING	6
16. SKILLS AND COMPETENCY	7
17. FIRST ARTICLE INSPECTION (FAI)	7
18. MATERIAL REVIEW AUTHORITY	7
19. SUPPLIED MATERIAL, EQUIPMENT, AND TOOLING.....	8
20. SPECIAL PROCESSES.....	8
21. CUSTOMER FURNISHED MATERIAL / EQUIPMENT.....	8
22. ELECTROSTATIC DISCHARGE CONTROL	8
23. CALIBRATION	8
24. ORGANIZATIONAL CHANGES	9
25. REGULATORY FLOW DOWN REQUIREMENTS	9
26. SUPPLIER PROVIDED BUSINESS INFORMATION	10
27. CONFLICTING REQUIREMENTS	10
28. ISO 140001	10
29. SUPPLIER CODE OF CONDUCT.....	10

Introduction

This document defines quality requirements from Tektronix Component Solutions to suppliers (hereby known as "Supplier) of parts and services. The intent is to ensure that Supplier meets Tektronix Component Solutions specifications and requirements, which are based on the AS9100 Quality Management Systems and, in certain cases, mandated by Tektronix Component Solutions customers.

The requirements of this document shall apply in addition to the Supplier's Quality Management Systems requirements.

Requirements

1. Monitoring of Suppliers' Performance

Tektronix Component Solutions will continually monitor Supplier's performance including quality, delivery, or any other appropriate/relevant metric.

Where appropriate, Tektronix Component Solutions may be required to audit the Supplier's quality management system, processes and products to ensure adequate controls exist to meet Tektronix Component Solutions requirements. Tektronix Component Solutions will, as appropriate, feed back to the Supplier any performance measurement that may be relevant to the Supplier.

When defects or non-conformities are found in the manufacturing processes at the Supplier's site, Tektronix Component Solutions may request a formal correction action and/or assist the Supplier in order to resolve the defects or the non-conformities.

2. Quality Management System

The Supplier shall establish and maintain a Quality Management System that complies with, or is equivalent to, latest revision of International Organization for Standardization, such as AS9100 or ISO9001. Supplier's Quality Management System is subject to audit, verification and approval by Tektronix Component Solutions' designated representatives.

3. Right of Access

Tektronix Component Solutions, its customers, or any associated government agency shall have access to all applicable areas and records of Supplier's facilities at any level of the supply chain involved in the order. The right of access may include assessments, quality audits, source inspections, etc. This right shall also extend to the Supplier's subcontractors. In such instances, Supplier shall be notified within a reasonable amount of time by Tektronix Component Solutions to host such events.

4. Supplier's Source Inspections and Process Verifications

Tektronix Component Solutions source inspection or process verification shall not absolve the Supplier of their responsibility to provide acceptable product nor shall it preclude subsequent rejections. Use of a Tektronix Component Solutions subcontractor shall not be considered by the Supplier as evidence of effective control of quality by the subcontractor.

5. Changes in Product, Facilities, or Quality Management System

The Supplier shall maintain a configuration management system, to ensure:

- a) Changes are properly evaluated, classified, and documented
- b) Traceability of all changes made after the initial baseline is maintained
- c) Baselines are clearly defined and are re-creatable from configuration management records
- d) Manage and flow down applicable requirements to sub-tier suppliers

The Supplier shall notify Tektronix Component Solutions, and obtain written approval, 90 days prior to shipping products with Major Changes ¹ in product, process, components, sub-suppliers, sub-contractors, manufacturing facility location, packaging, shipping method, or outside processors.

If Tektronix Component Solutions deems any of the above changes significant, a full or partial product re-qualification may be necessary to validate the change.

6. Notice of Discrepant Material or Request for Corrective Action

For non-conforming products already delivered to Tektronix Component Solutions by the Supplier, the Supplier shall promptly notify Tektronix Component Solutions in writing of the non-conformity. The notification shall include at a minimum:

- a) A clear description of the non-conformity
- b) Affected programs, part numbers, serial numbers, date codes, etc.
- c) Quantity delivered, reference PO, ship date
- d) Containment plan, including replacement availability and recovery plan – to be provided within 48 hours
- e) Root cause statement and longer term corrective actions taken – to be provided within 30 working days. Systemic correction action must be implemented within 60 days.

Any item found to be non-conforming must be identified and segregated from conforming parts.

7. Unique Traceability

The Supplier shall maintain a system which provides guidelines on unique traceability for records and part numbers. All materials and components used by the Supplier shall be traceable back to their sources, i.e. where they were purchased from, batch numbers or lot traceability.

8. Documentation and Records

Records shall provide evidence of conformity to requirements and to the effective operation of the quality management system. Records shall be available for review by Tektronix Component Solutions, its customers, or regulatory authorities. It is the Supplier's responsibility to store all product documentation in such a way that they are protected and easily retrievable.

Unless otherwise indicated, the Supplier shall retain records for a minimum of 10 years or 15 years minimum for medical related parts or services after order completion.

Electronic records shall be protected from unauthorized access, virus, malicious code, and other malware.

¹ Definition of Major Change according to EIA649 - Configuration Management Standard: A change with significant impact, such as impact to functional and physical interchangeability and supportability of the product.

9. Workmanship

The Supplier shall establish workmanship plans and acceptable standards in accordance with the performance and reliability requirements of Tektronix Component Solutions in accordance with relevant drawings, specifications, and the Supplier's quality management system. Workmanship requirements specified on the component specification and/or drawing, or elsewhere, take precedence.

For electrical parts, the plans and acceptance standards shall be modeled after J-STD-001 – "Requirements for Soldered Electrical and Electronic Assemblies" and ANSI/IPC-A-610 – "Acceptability of Printed Board Assemblies".

10. Shipment Conformance

When Tektronix Component Solutions Purchase Order requires a Certificate of Conformance, supplier's shipment of products shall be accompanied by a Certificate of Conformance (C of C) attesting that the products are manufactured, processed and inspected to the requirements of Tektronix Component Solutions' purchase order.

At the minimum, the C of C must contain the following:

- a) The purchase order number
- b) Part number and revision level
- c) Quantity shipped
- d) Approval by the Supplier's authorized representative
- e) The manufacturer's lot batch, serial number (if applicable) and the date of manufacturer (date code) for each unique item that the C of C pertains to

A separate C of C is required for each unit of packaging as grouped by purchase order line item or manufacturer's lot.

11. Foreign Object Damage (FOD) Control

Where applicable, the Supplier shall establish and maintain a program to control and eliminate FOD and/or contamination during the Supplier's manufacturing, assembly, test and inspection operations. The Supplier's FOD control program shall include controls to preclude FOD or contamination at the Supplier's sub-tier sources. The program is subject to on-site review by Tektronix Component Solutions.

Reference document to be used as guideline is NAS 412, Foreign Object Damage/Foreign Object Debris (FOD) Prevention

12. Measuring and Inspection, Equipment Calibration

The Supplier's calibration system shall comply with the latest revision of ISO10012 or ANSI Z540, or equivalent recognized standard. Inspection, measuring, and test equipment shall be controlled, calibrated, maintained, and traceable to national or international standards.

13. Shelf Life, Material Change and Obsolescence

Supplier shall ensure that if any shelf life applies to materials, then that material shall be controlled and used in accordance with the relevant specification.

There shall be no change in materials, or subcomponents, without prior approval from Tektronix Component Solutions.

If the Supplier has prior knowledge of any part that has or may become obsolete, they shall inform Tektronix Component Solutions of all relevant data 12 months in advance. Supplier shall make discontinued items and spare parts available for sixty (60) months after the manufacture of items or spare parts is discontinued. Acceptable alternatives to assure supply of Items include:

- (i) Identifying an alternate source, acceptable to Buyer, for the discontinued Items or spare parts, or
- (ii) Identifying substitute Items, acceptable to Buyer, for the discontinued Items or spare parts, or
- (iii) Supplier will carry an inventory of the Items or spare parts as required to support Buyer, or
- (iv) After exhausting the above alternatives, providing Buyer with the opportunity to make a last-time buy of the Items or spare parts.

14. Counterfeit Electronic Parts Avoidance, Detection, Mitigation, and Disposition

The Supplier shall implement and maintain counterfeit electronic parts management process to comply with "Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition" in accordance with industry standards, such as AS5553 or equivalent.

Supplier shall maintain a system that provides for prior notification and approval to Tektronix Component Solutions before parts or components are procured from sources other than Original Component Manufacturer (OCM) or the Original Equipment Manufacturer (OEM) (collectively, the Original Manufacturer (OM)) or an authorized OM reseller or distributor (collectively, an Authorized Distributor).

Only franchised distribution Original Component Manufacturer (OCM) or the Original Equipment Manufacturer (OEM) (collectively, the Original Manufacturer (OM)) or an authorized OM reseller or distributor (collectively, an Authorized Distributor) is allowed unless otherwise authorized by Tektronix Component Solutions and/or its customers in advance.

Supplier shall flow this requirement to its subcontractors and suppliers at any tier for the performance of this PO or contract.

15. Storage, Material Handling, and Packaging

All parts shall be stored in such a way that prevents damage and contamination (FOD) and is ESD compliant, where required.

All packaging, unless otherwise stated, shall be adequate to prevent damage, contamination (FOD) and be ESD safe during storage and transit processes. Devices identified as electrostatic discharge sensitive shall be handled, stored, packaged and shipped in such a manner as to preclude damage from electrostatic discharge.

The Supplier shall have a MIL-STD-1686 or ANSI/ESD S20.20 complaint electro-static discharge control program in effect to protect electronic devices and assemblies during manufacture, test, inspection, packaging, transportation, shipping, rework, repair, and failure analysis.

All packaging shall be clearly marked with part number, batch or lot number, quantity and other relevant information as specified by Tektronix Component Solutions' drawings and specifications.

Package in a manner to avoid damage in shipping.

Parts to be contained in ESD-safe bags and packaging material. The Tektronix Component Solutions part number shall be clearly indicated on the packaging. Alternate non-ESD packaging material may be used if preapproval from the Tektronix Component Solutions Buyer.

Shipping documentation shall contain manufacturer name, manufacturer part number and the part number indicated at the header of this specification

16. Skills and Competency

The Supplier shall ensure adequate skills and competencies are available in order to meet Tektronix Component Solutions' purchase order requirements. The Supplier shall document training skills and competencies.

17. First Article Inspection (FAI)

When required on the Tektronix Component Solutions Purchase Order, the Supplier shall perform a Full FAI or Partial FAI (re-accomplishment or Delta FAI), when any of the following occurs:

Full FAI:

- a) First production run of new product
- b) Lapse in production for two years or as required on the Tektronix Component Solutions Purchase Order
- c) A major change² in manufacturing source(s), key process(s), location of manufacture, tooling, or materials that can potentially affect fit, form, or function

Partial FAIR:

- d) A change in the design affecting form, fit, or function of the part
- e) A minor change³ in manufacturing sources, processes, inspection methods, location of manufacture, tooling, and materials that potentially affect form, fit, or function
- f) A change in the numerical control program or translation to another media that can potentially affect form, fit, or function.
- g) A natural, or man-made, event which may adversely affect the manufacturing process
- h) A change in inspection method(s) that can potentially affect fit, form, and function

Where specified on the purchase order, the FAI report shall follow the requirements within AS9102.

First Article material shall be produced using production tooling, processing methods, and must include all design data specified by the purchase order, detail drawing, or any other applicable design.

The FAI requires that all features and key characteristics on the design specification and control plan be inspected and verified prior to production. Actual measured values shall be recorded as opposed to general statements of conformance or other notations simply indicating acceptance. Objective evidence of a FAI report or validation shall be provided with the shipment. Where applicable, this evidence shall include CMM measurements of CTQ (Critical to Quality) parameters or Key Characteristics as identified by Tektronix Component Solutions' drawings.

All CTQ or Key Characteristics must be compliant with the design data, unless previous approval has been given by Tektronix Component Solutions.

18. Material Review Authority

Material review authority shall not extend to "Repair"⁴ or "Use-As-Is"⁵ for Supplier-specified, or customer-specified, requirements without prior documented approval from Tektronix Component Solutions.

² Definition of Major Change according to EIA649 - Configuration Management Standard: A change with significant impact, such as impact to functional and physical interchangeability and supportability of the product.

³ Definition for Minor Change according to EIA649 - A change that has little or no significant impact.

Supplier shall submit to Tektronix Component Solutions all requests for variance from contract, purchase order, specification, or drawing requirements.

19. Supplied Material, Equipment, and Tooling

In some cases, Tektronix Component Solutions may supply materials, dedicated tooling or equipment, either owned by Tektronix Component Solutions or its customers. The Supplier is required to maintain a system for positive identification, segregation, and control of Customer Furnished Material (CFM). This system shall provide to the notification of Tektronix Component Solutions of any deficiency or failure noted upon receipt.

The Supplier shall protect materials and maintain the tools and equipment in an environment that prevents damage, contamination and degradation. The Supplier shall be responsible for reporting immediately, any such degradation to Tektronix Component Solutions.

Tektronix Component Solutions reserves the right to audit this process at any time.

20. Special Processes

As applicable, the Supplier shall ensure that Tektronix Component Solutions approves sources of Special Processes.⁶

21. Customer Furnished Material / Equipment

The supplier is required to maintain a system for positive identification, segregation, and control of Customer Furnished Material or Equipment. This system shall provide notification to Tektronix Component Solutions of any deficiency or failure noted upon receipt and shall provide reports of discrepancies (loss or excess) or damages, loss of property, physical inventory results, audits and self assessments, corrective actions as applicable. The supplier shall utilize, consume, move, and store Tektronix/Government Property only as authorized under the agreed contract with Tektronix.

In case of property disposal, submission of inventory disposal schedules to Tektronix and approval is required before execution of disposal.

In case of Government Property, FAR clause 52.245-1 shall be implemented.

22. Electrostatic Discharge Control

The supplier shall have a MIL-STD-1686 or ANSI/ESD S20.20 and JEDEC Standard No. 625 compliant Electrostatic Discharge control program to protect electronic devices and assemblies during manufacture.

23. Calibration

⁴ Definition for Repair: The subjection of non-conforming material to an approved process designed to reduce but not completely eliminate the non-conformance.

⁵ Definition of Use-As-Is: Material with minor non-conformances dispositioned by formal MRB process when the material is determined to be satisfactory for its intended use.

⁶ Definition for Special Process: Any process for production and service provision where the resulting output cannot be verified by subsequent monitoring or measurement and, as a consequence, deficiencies become apparent only after the product is in use or the service has been delivered.

The Supplier Calibration system shall comply with the latest Revision of ANSI Z540-1 or equivalent. Calibration shall be traceable to National or International Standards.

24. Organizational Changes

Seller shall promptly notify Tektronix Component Solutions in writing of major organizational changes including name or ownership changes, mergers, or acquisitions.

25. Regulatory Flow Down Requirements

The Purchase Order, Technical Drawing, Terms and Conditions, or standard government requirements may apply. The following, if specifically called out, could require documentation or audit evidence.

A. Federal Acquisition Regulations (FARs) and Defense Federal Acquisition Regulations (DFARs)

FAR and DFAR flowdown requirements will be referenced on the Purchase Order. The applicable list is located at the link below. Since the government updates these requirements regularly, please check the revision at each new Purchase Order.

https://www.tek.com/far_and_agency_far_supplements

B. Restriction of Hazardous Substances (RoHS)

If required, RoHS requirements will be called out on the drawing. A one-time declaration is required with appropriate change controls to ensure continued compliance.

C. Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

If required, REACH requirements will be called out on the drawing. A one-time declaration is required with appropriate change controls to ensure continued compliance.

D. Toxic Substances Control Act (TSCA)

As applicable to US businesses, TSCA compliance is managed completely by the business.

E. Toxic in Packaging

1. Toxics in Packaging legislation prohibits the sale or distribution of any package, packaging component, or packaged retail-ready product to which any mercury, cadmium, lead, or hexavalent chromium has been intentionally introduced. (Packaging component includes coatings, inks, glues, labels, etc.)
2. The law further requires that the sum of the total of the incidental presence of mercury, cadmium, lead, or hexavalent chromium be under 100 parts per million for any package, packaging component, or packaged retail-ready product offered for distribution or sale. Incidental presence is defined as the presence of one or more of these regulated metals as an unintended or undesired component of a package or packaging component. A limited number of specific exemptions are available related to the use of recycled materials, federal health and safety requirements, glass packaging, and other very limited situations. For details, visit <http://www.toxicsinpackaging.org/exemptions.html>

26. Supplier Provided Business Information

At initial supplier set up and/or periodically as needed, Tektronix Component Solutions may ask for the following information:

1. Conflict Minerals Statement
2. ITAR/EAR600 Compliance Statement if working with ITAR or EAR600 items
3. Business Classification (Large, Small, Minority, Woman, Veteran, Disabled)
4. Diminishing Manufacturing Sources (DMS) issues
5. Key Contacts

27. Conflicting Requirements

In case of conflicts, the requirement on the face of Purchase Order shall take precedence.

28. ISO 140001

If the Supplier's product, service and/or personnel have the potential to cause environmental impacts on or at Tektronix' Beaverton, Oregon facility, the Supplier must be aware of Tektronix' Environmental Management System (EMS) training requirements available on the Tektronix.com web page.

(<http://www.tek.com/> – click on About Us – Environmental Health and Safety – **ISO-14001 EMS Overview for Suppliers Training**– download the PowerPoint file and follow the directions.)

29. Supplier Code of Conduct

Tektronix Component Solutions parent company, Fortive, provides a "Supplier Code of Conduct" with expectations around ethics, product safety, and other key attributes important to our shared purpose. Please see this link for more information, and the Supplier may be asked to acknowledge the Supplier Code of Conduct through annual surveys. <https://www.fortive.com/suppliers>