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Supplier Quality Manual

SM002

1. QUALITY MANUAL

In today's manufacturing environment, the discovery of non-conforming products, whether during receiving or production, can cause significant disruptions to production and shipping schedules. These disruptions often lead to increased production costs. Even the most rigorous receiving inspection programs cannot identify all defective materials. Therefore, to minimize disruptions to production capabilities and control production costs, Juniper Systems' suppliers are expected to maintain and ensure a specified level of quality when manufacturing goods for sale to Juniper Systems.

This manual guides suppliers in developing adequate quality control procedures to ensure that the product specifications provided by Juniper Systems can be consistently met. The intention is that implementing such quality control measures will enable Juniper Systems to build trust and confidence in the supplier's quality control capabilities, potentially reducing the need for extensive sample-based incoming inspections of delivered products.

This manual applies to all suppliers interested in doing business with Juniper Systems who do not currently have their own certified quality management system, such as ISO 9001 or an equivalent

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2. JUNIPER SYSTEMS QUALITY POLICY

We Make Good Stuff

We continuously drive for perfection as we strive to meet customer expectations by delivering robust field data collection solutions.

3. QUALITY MANAGEMENT SYSTEM REQUIREMENTS

Juniper Systems requires suppliers to uphold an effective quality management system, preferably one that aligns with ISO 9001 Quality Management System – Requirements or an equivalent standard

4. RESPONSIBILITIES OF A QUALIFIED VENDOR

Juniper Systems requires its suppliers to establish and effectively implement a quality management system, typically documented in the form of a quality manual, and possibly supported by operating procedures and work instructions.

If a supplier already has an existing quality manual, Juniper Systems may request a copy of the manual along with any relevant supporting procedures. Additionally, detailed documents such as work instructions, quality control plans, inspection plans, etc., specific to the production of materials for Juniper Systems should be provided.

Suppliers without an existing quality manual or supporting procedures are expected to develop such documentation to align with the expectations outlined in this manual

The supplier may be required to submit a First Production Run deliverable as specified in Juniper Systems Purchase Order Requirements. If the Supplier First Production Run Inspection is conducted by the supplier, both Juniper Systems and the supplier will agree on the number of samples to be measured/inspected each time such an inspection is needed. First production run inspections are to occur upon request from product development and/or engineering. Any documents related to the First Production Run requested are to be submitted to the assigned Juniper Systems contact.

If stipulated in the purchasing agreement, shipment is not permitted until Juniper Systems reviews and accepts the results of the First Production Run inspection report. Juniper Systems personnel may request to be present during the initial production run to validate and verify the process before any product is shipped. Any supplier source inspection requirements should be outlined in the purchasing agreement.

Alternatively, First Production Run inspections may also be conducted at Quality Control (Incoming Inspection) at Juniper Systems to validate the inspections made at the vendor.

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ENSURING MANUFACTURING CONTROL

GENERAL REQUIREMENTS

Juniper Systems suppliers are obligated to control all manufacturing processes in alignment with the agreed-upon quality standards, as approved during part qualification.

MANUFACTURING PROCESS CONTROL

Statistical Process Control - Process Performance Requirements

Upon request from Juniper Systems, the supplier is required to implement effective statistical process controls. An agreed-upon statistical analysis should be used to assess the degree to which manufacturing processes are controlled. If any critical characteristic fails to meet the minimum requirement, a containment plan and an improvement plan are necessary.

PROCESS & YIELD IMPROVEMENTS

Identify and correct out-of-control or unstable processes (with assignable causes) and processes that do not meet the minimum requirements. The supplier must also enhance processes with low yield rates (< 90%). When specified by Juniper Systems, part and/or contractual characteristics failing to meet the minimum requirements will require a containment plan and a quality improvement plan.

MANUFACTURED LOT CONTROL AND TRACEABILITY

A lot comprises products of one part number and revision manufactured simultaneously, under the same processing conditions, and from the same lot of raw materials. The primary purpose of identifying lots is to determine the scope of actions needed when problems arise during further manufacturing or with customers. Each container of material shipped to Juniper Systems must bear the Supplier's lot number, and inspection records must be traceable to lot numbers.

Typical conditions that could result in a change of lot numbers include:

- Change of part number or revision
- Change of part number or revision of components
- Interruption of continuous production (typically for more than a few hours)
- Repairs or modification to the tooling or equipment
- Tooling changes (other than minor adjustments or replacement of consumable tooling)
- Change to a different lot of raw materials.
- Process changes

Traceability is the linkage of the finished product to the components used in its production. When traceability is specified, the marking system should effectively trace back to the

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individual component level, meaning lot codes, batches, or serial numbers should be identifiable throughout Juniper Systems' processes.

WORKMANSHIP

In the absence of workmanship standards referenced in Juniper Systems' drawings or specifications, the supplier is expected to adhere to industry-accepted standards (e.g., ANSI, IPC, ASTM, ISO, etc.). When in doubt, consult with Juniper Systems for clarification.

SAFETY

No customer or individual at a Juniper Systems facility should be exposed to hazardous materials or situations not inherent in a component's structure. Residues, films, out-gassing products, and packaging materials must comply with current OSHA (Occupational Safety & Health Administration) standards. For items with inherent hazards, safety notices must be clearly observable. As applicable, MSDS sheets must be provided during the First Article process.

MAINTENANCE

The supplier must maintain all facilities, manufacturing machines, tools, measuring devices, and other equipment in a manner that supports Juniper Systems' production requirements, ensuring the quality of parts manufactured for Juniper Systems is not degraded. Juniper Systems may, at any time, request to review equipment/tool maintenance records.

ELECTROSTATIC DISCHARGE (ESD)

If the supplier furnishes ESD-sensitive materials, an effective ESD program must be maintained, meeting all requirements for the materials produced.

CHANGE CONTROL REQUIREMENTS

The supplier must have a documented system to ensure the latest Juniper Systems' drawings are in effect at their facility. The supplier's quality management system must include a documented procedure outlining the receipt, review, distribution, and implementation of all changes to drawings and specifications. This procedure should also address the control of obsolete drawings and specifications. A documented process should detail how to contain new or modified parts until approved by the customer.

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Suppliers must have a documented system to control changes to manufacturing, packaging, shipping, etc., processes. This system should handle changes requested by the customer and those initiated by the supplier.

NOTE: First Article Approval is directed at a given part number for a specified revision level produced in a specific manner at the manufacturer's facility. Suppliers may not make any changes in their process, location, material, or to the part without written approval from Juniper Systems. The supplier must formally request a process change on all Juniper Systems components.

SUPPLIER CHANGE REQUEST (SCR)

A Supplier Change Request (SCR), which the supplier may use their own document for, is employed to propose changes to a released part, process, drawing, or specification. Juniper Systems encourages SCRs for process improvement, with the condition that before submitting an SCR, the supplier thoroughly reviews their PFMEAs and control plans to ensure that all process-related issues have been addressed and resolved.

Upon Juniper Systems' completion of the review and concurrence with the supplier, Juniper Systems will notify the supplier of the final disposition of the SCR, along with part submittal requirements and dates. If monitoring is required, appropriate markings must be identified on the lots, etc., for a specified time frame agreed upon jointly by Juniper Systems and the supplier.

SUPPLIER DEVIATION AUTHORIZATION (SDA)

A supplier is strictly prohibited from knowingly shipping products that fail to meet specifications provided by the engineering drawing or design intent without written authorization from Juniper Systems. In such cases, the supplier may request Juniper Systems to allow shipment by initiating a Deviation Authorization (SM0013).

If directed by Juniper Systems, the supplier must send samples of non-conforming items for evaluation. Any testing costs required to determine product acceptability will be charged to the supplier. Juniper Systems will assess the item's acceptability and prescribe any corrective actions beyond the deviation. If approved, Juniper Systems will send a written deviation approval to the supplier.

The deviation is an interim action and should not be construed as an engineering change. The supplier must promptly rectify the identified condition within the timeframe specified in the deviation. Failure to comply with the mutually agreed-upon closure date may impact the supplier's rating.

In all cases, the supplier must fully contain and separate from production parts all products suspected of being non-conforming at their facility. Additionally, the supplier

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may be required to sort any suspect product at Juniper Systems. Parts approved on a Deviation sent to Juniper Systems must be clearly identified on the packaging with appropriate markings decided jointly by Juniper Systems and the supplier.

OUTGOING INSPECTION REQUIREMENTS

Inspection for Attribute Characteristics

Product must undergo inspection for conformance to specifications for attributed characteristics in accordance with the guidance provided in ANSI/ASQ Z1.4-2008 (or the latest revision of this standard). Inspection should follow Single Sampling - Normal Inspection Procedures, adhering to the requirements for General Inspection Level II. The product must meet an AQL of 1.0 to be eligible for shipment to Juniper Systems. Knowingly shipping non-conforming products to Juniper Systems is strictly prohibited.

Inspection for Dimensional Characteristics

Product is to be inspected for conformance to specifications for dimensional characteristics following the guidance outlined in ANSI/ASQ Z1.9-2008 (or the latest revision of this standard). Inspection should be carried out using Single Sampling - Normal Inspection Procedures, with adherence to the requirements for General Inspection Level II. To qualify for shipment to Juniper Systems, the product must meet an AQL of 1.0. Knowingly shipping non-conforming products to Juniper Systems is strictly prohibited.

PACKAGING & LABELING

PACKAGING

1. Supplier Planning:
 - Each supplier is required to thoroughly plan for packaging.
 - Juniper Systems strongly encourages suppliers to initiate improvements in packaging.
2. Damage Prevention:
 - Suppliers are obligated to provide packaging that ensures protection against any potential damage.
3. Compliance with Common Carriers:
 - Packaging, labeling, and shipping materials must align with the specified requirements of common carriers.
 - This alignment should be structured to secure the lowest possible transportation costs.

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4. ESD-sensitive Items:
 - Packaging for items sensitive to Electrostatic Discharge (ESD) must adhere to appropriate ESD packaging requirements.
5. Contamination Prevention:
 - Recognizing contamination as a critical concern, packaging must shield components from contaminants, including fibers originating from the packaging materials.
6. Legal and Safe Disposal:
 - Expendable materials and packaging must be both legal and safe for standard disposal within the framework of "light industry."
7. Weight Guidelines:
 - The preferred maximum weight for manually handled packs is 40 lbs.
 - The maximum acceptable weight is 45 pounds unless explicit written approval is obtained from Juniper Systems.
8. Single Part Number and Supplier Lot:
 - Whenever feasible, each shipping container should include only one part number and one supplier lot.
9. Multiple Part Numbers or Lot Numbers:
 - If multiple part numbers or lot numbers are packaged in a single container, each must be individually packaged (e.g., in bags or boxes) within the container.
 - Each individual package should be clearly labeled to specify its contents.

LABELING

Each shipping container or inside package must contain the following information:

- Juniper Systems Part Number
- Quantity
- Supplier's Name
- Purchase Order Number
- Lot Identification (if required)
- Required ESD Susceptibility Label on packaging for ESD sensitive items, using the Electronic Industries Association Standard EIA-471 symbol or equivalent.

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CORRECTIVE ACTION SYSTEM

Juniper Systems mandates that suppliers employ a closed-loop corrective action system in instances where issues arise within their manufacturing facility or after the shipment of nonconforming products to Juniper Systems

The corrective action system employed should mirror the following outlined process, with a primary emphasis on identifying the root cause(s) of the problem and implementing measures to prevent its recurrence:

- Team Approach:
 - Utilize a collaborative team approach.
- Problem Description:
 - Clearly describe the problem.
- Problem Containment:
 - Contain the problem to prevent further escalation.
- Root Cause Identification and Verification:
 - Identify and verify the root cause(s) of the issue.
- Permanent Corrective Actions:
 - Implement permanent corrective actions to address the root cause(s).
- Effectiveness Verification:
 - Verify the effectiveness of the corrective actions.
- Closure of Corrective Action:
 - Close the corrective action once its effectiveness is confirmed.

Juniper Systems initiates a Supplier Corrective Action Request when non-conforming parts are identified during incoming inspection, in production, during testing, or by a Juniper Systems customer. Additionally, these requests may be issued following a supplier audit. The supplier is obligated to respond promptly by returning the SCAR to Juniper Systems, ensuring that the 'Team Response' fields are adequately completed

1. Immediate Containment Action:

- Upon notification of a non-conformance, Juniper Systems mandates that the supplier takes immediate containment action. The supplier is required to submit a written response to Juniper Systems within 48 hours, detailing the Supplier's Initial Observation and outlining the interim containment plan. The Supplier's Initial Observation serves as an acknowledgment that the supplier has been informed of the issue and has initiated the information-gathering process.

2. Containment Plan Definition:

- The containment plan must precisely articulate the containment actions at the supplier's facility to ensure that no nonconforming product is shipped to Juniper Systems. In cases where suspect products have already been dispatched, the supplier must address all suspect stock in transit and any stock at Juniper Systems. Additionally, the supplier is obligated to assist Juniper Systems in assessing customer risk by identifying all suspect lot numbers and associated quantities involved.

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3. Investigation Results Report:

- Within two weeks from the original notification, the supplier is required to provide a report on the results of the investigation into the cause of the problem.

4. Corrective Action Submission:

- Within three weeks from the initial notification date, the supplier must submit the corrective action plan to prevent the recurrence of the problem, specifying the effectivity date (the date the corrective action will be implemented). It's emphasized that actions such as "train the operator," "discipline the operator," or "increase inspection" are generally considered unacceptable as corrective actions.

5. Progress Updates and Verification:

- The supplier must maintain communication with Juniper Systems, keeping them informed of progress towards implementing the corrective action. Once corrective action implementation is complete, both the supplier and Juniper Systems verify the effectiveness of the corrective action in preventing the problem's recurrence.

SUPPLIER MONITORING

Juniper Systems maintains continuous vigilance over its suppliers to ensure ongoing adherence to Juniper Systems' requirements and the consistent delivery of acceptable parts. This monitoring includes:

- **Quality Management System Surveillance Audit:** Conducted at the supplier's facility.
- **On-Site Audit of the Supplier's Control Plan:** Ensuring the effectiveness of the implemented control plan.
- **Random Incoming Inspection Audit:** Verifying the quality of a batch of products through random inspection.
- **Source Inspection:** Conducted at the supplier's facility to ensure compliance.
- **Nth Article Inspection:** An inspection to validate the continuing conformance of critical parts, required annually or in the event of engineering changes affecting form, fit, or function.
- **Review of Supplier-Furnished Data Packages:** Periodic assessments of data packages to evaluate compliance and performance.
- **Supplier Progress Review Meeting:** Conducted periodically at the supplier's site or Juniper Systems to assess supplier performance and progress.

SUPPLIER AUDITS

Periodically, Juniper Systems may audit the supplier's quality management system for process verification. The supplier must make its facility available for on-site audits, which may be full or abbreviated, with reasonable notice. These audits aim to evaluate changes in the quality management system and assess the supplier's commitment to quality improvement. Periodic audits may also focus on the supplier's continuing conformance to the approved control plan from the First Article process.

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INSPECTION AUDITS

Juniper Systems expects suppliers to deliver materials meeting all requirements. Material not achieving Ship-to-Use (STU) status or on STU suspension is subject to sample-based inspection plans. Juniper Systems may perform 100% sorting, if necessary, at the supplier's expense. Inspection may occur at the supplier's facility to detect potential problems before shipment, and Juniper Systems may also inspect product at sub-tier suppliers.

NTH ARTICLE INSPECTION

Suppliers are required to perform annual Nth Article inspections for each critical part to verify ongoing conformance to specifications, particularly after engineering changes. This requirement does not apply to non-critical parts. The discretion to postpone or require Nth Article beyond the annual expiration is based on factors such as component volume, program life cycle, and supplier/part performance.

SUPPLIER-FURNISHED LOT DOCUMENTATION

Juniper Systems may request suppliers to furnish inspection, test, process performance, or other quality data with each shipment. Documentation must accompany each shipment, clearly identifying Juniper Systems' part number and the supplier's lot number. Monthly data packages, including control charts and process capability calculations, may be required. After two consecutive quarters of satisfactory data submissions, suppliers may request discontinuation, subject to Juniper Systems' approval.

CONTROL OF SUB-TIER SUPPLIERS

Suppliers bear the responsibility for the quality of materials and components sourced from their sub-tier suppliers and subcontractors. Juniper Systems mandates that its suppliers enforce controls on their sub-tier suppliers, ensuring that the quality outcomes and documentation align with the controls applied by Juniper Systems on its own suppliers. The extent of these controls may vary based on the product and process complexity, encompassing, but not limited to, the following measures:

- Control measures to guarantee that raw materials meet the stringent requirements set by Juniper Systems.
- Controls to ensure that the sub-tier suppliers providing components are those approved by Juniper Systems, where applicable.
- Verification that sub-tier suppliers have an Electrostatic Discharge (ESD) control program meeting or surpassing Juniper Systems' needs, especially for ESD-sensitive parts or materials.

In cases deemed appropriate, Juniper Systems may specify acceptable sub-tier suppliers, evaluate, and qualify their facilities, and collaborate with the supplier in managing these sub-tier suppliers. This involvement is particularly relevant when the sub-tier supplier plays a pivotal role in the supply chain.

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Juniper Systems retains the right to assess the quality system and records of such sub-tier suppliers as deemed necessary. However, the active participation of Juniper Systems in this process does not absolve the suppliers from their ultimate responsibility for ensuring the quality performance of their sub-tier suppliers.

5. DOCUMENT HISTORY

Revisions	Brief Change History	Approved By	Effective Date
00	Original Release	Bryan Howard	24SEP2014
01	First Production Run Updated	Wayne Godfrey	27AUG2015
02	Corrected Spelling Errors	Wayne Godfrey	09May2017
03	Updated to better align with current process and SOP01, now a Tier 2 document that requires ECO in place of single approver	13727	16MAR2023
04	Reformatted	Brian Cantwell	02JAN24