COHERENT

Supplier Quality Requirements Document (SQRD)

D127135 Rev. AF

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Revision History

Revision	Date	Description of Changes
AA	12/18/06	Initial Release
AB	07/22/10	Incorporated recommended changes from all sites
AC	08/28/14	Changed the scope and rewrote the Supplier Requirements Document to cover only quality requirements.
AD	03/20/15	Added packaging requirement for International Safe Transportation to section 10.0.
AE	05/09/18	Coherent website document version update
AF	06/05/20	Modify and/or added Introduction, Purpose, Scope, General Requirements, Process Controls, Product non-conformances, Performance measures

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1.0 INTRODUCTION

Coherent Inc, recognizes the very important role our Suppliers have in the value we offer our customers. As an extension of our own operations, we rely on our Suppliers to provide material, products and services which meet all the requirements and applicable specifications outlined herein.

2.0 PURPOSE

The purpose of this procedure is to inform Coherent Suppliers of the core expectations we have regarding the Suppliers' quality management systems, design requirements, and manufacturing process controls required to do business with Coherent. This manual describes what Coherent expects its Suppliers to do to ensure that all Coherent requirements and expectations are met.

3.0 SCOPE

This document applies to all worldwide production suppliers of Coherent, Inc. and Coherent's subsidiaries, Coherent's contract manufactures. The term "Supplier", widely used herein, includes contract manufacturers unless otherwise differentiated. Due to the variety of products and suppliers to Coherent, additional product-specific requirements may be included on the Coherent drawing or Purchase Order (PO). Contract manufacturers (CM's) may also be required to enter into a supplemental contractual agreement. The contract, drawing or PO take precedence over this document. If a conflict is discovered between the contract, drawing or PO, the Supplier should contact the Coherent Buyer immediately to resolve the conflict. Facility Maintenance, Repair and Operations (MRO) items and general services are excluded from this process, except for the purchase order terms and conditions.

4.0 REFERENCES

D126566, Coherent Supplier Self-Assessment Survey (SSAS)
D134162, Approved Supplier Management for Contract Manufacturers
D138327, Component Buys, non-approved supply channels
D156669, Agreement governing Product Changes and Supply Reliability *(Coherent German sites only)*
Coherent "Supplier Portal" located at https://www.coherent.com/company/supplier-portal

5.0 SUPPLIER QUALITY SYSTEM REQUIREMENTS

5.1 System Requirements

As a minimum, all suppliers must maintain production and quality records of product from raw material through shipment and implement a basic quality system that follows the intent of ISO 9001or equivalent standard. Suppliers that expect to grow their position with Coherent should have a Quality Management System (QMS) that is registered to ISO 9001 or equivalent standard. Sub-tier suppliers are also expected to have a proper QMS, preferably ISO 9001 or equivalent.

5.2 System Surveys

All suppliers will be required to conduct a self-assessment survey of their quality system, which will be evaluated by Coherent for approval (Reference: D126566). Survey can be requested from the Coherent Buyer and once completed, returned in accordance with included instructions. Suppliers of more critical processes and components, and those suppliers with a poor-quality history or do not have a certified or accredited QMS may be subjected to an on-site audit of their quality system and/or processes by Coherent personnel.

5.3 On-Site Assessment Audit

Coherent may elect to conduct on-site assessments of a Supplier's product or process capabilities. As a result, findings may be issued. These assessments could include:

- **Quality Management System (QMS)** – Product and/or process capability assessments, to determine whether the Supplier's quality management system meets one or more of the applicable standards, and is functioning effectively.
- **Business and Manufacturing Operations** – to determine whether the Supplier has the financial resources, production capacity, and other business resources needed to fulfill Coherent's production needs and continuity of supply.
- **Continual Improvement Initiative** – to determine if the Supplier's culture, methods and skills are present to actively pursue continual improvement.
- **Technology Assessment** - to determine whether the Supplier has the needed technical resources, including production and inspection equipment, facilities, engineering resources, etc.
- **Sub-Tier Supplier Control** – to evaluate the effectiveness of the Suppliers sub-tier management processes and ensure that products or services procured from sub-tier sources and delivered to Coherent conform to all applicable Coherent requirements.

6.0 SUPPLIER CLASSIFICATION

6.1 Approved Suppliers

Any potential Supplier to Coherent must, as a minimum, have their quality system approved. (See section 5). Once the quality system is approved and the Supplier has submitted and received a First Article Report approval, the supplier will be added to the Approved Supplier List (ASL) for the given part. Only approved suppliers will receive production purchase orders from Coherent. When applicable, the requirements that govern the Coherent Approved Supplier List (ASL) and Approved Manufacturer List (AML) are specified below.

6.2 Disapproved Suppliers

Potential new suppliers that do not meet the minimum quality system requirements will not be approved. Existing suppliers that fail to meet the expected quality requirements will be notified and expected to improve their performance. Suppliers that fail to improve their performance to an acceptable

level within an agreed upon time may be disapproved and removed from the ASL/AML.

6.3 Distributors

A distributor is defined as a supplier that procures parts, materials, or assemblies and sells such products to a customer without affecting product characteristics or conformity. Distributors must ensure that only approved, conforming parts make their way into the supply chain. The constant concern of "black market" or "counterfeit" parts has reached heightened levels and this document includes requirements that when effectively implemented, shall assist Coherent to minimize the risk of such activity. Definitions of counterfeit parts may include; unauthorized copies or substitutes of an OEM parts that are not traceable to an OEM sufficient to ensure authenticity in OEM design and manufacture, parts that do not contain proper external or internal materials or components required by the OEM and are not constructed in accordance with OEM design, parts that have been re-worked, re-marked, re-labeled, repaired, refurbished but are represented as OEM authentic or as new or parts that have not successfully passed all OEM required testing, verification, screening, and quality control processes

7.0 GENERAL REQUIREMENTS

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

7.1 Coherent Designated Sources

Where specified on the drawing or reference documents, the Supplier shall purchase products, materials or services from Coherent designated sources. However, the Supplier is responsible to ensure that items procured from such sources meet all applicable technical and quality requirements.

7.2 Control of Sub-Tier Suppliers

The Supplier, as the recipient of the Purchase Order, is responsible for meeting all requirements, including work performed by the Supplier's sub-tier Suppliers (also known as Sub-Suppliers or subcontract Suppliers). When the Supplier uses sub-tier sources to perform work on products and/or services scheduled for delivery to Coherent, the Supplier shall include (flow-down) on contracts, to its sub-tier sources, all of the applicable technical and quality requirements contained in the Coherent drawings or reference documents and reproduce all Coherent Confidential or Proprietary Information markings. Upon request, Coherent may request Supplier to submit certifications and test reports from their sub-tier suppliers.

7.3 Control and Release of Coherent Furnished Documents

Documents furnished by Coherent to the Supplier are furnished solely for the purpose of doing business with Coherent. Proprietary Documents containing Proprietary or Confidential Information may be furnished to the Supplier in hard copy, electronic or other media. The Supplier is responsible for controlling and maintaining such documents to preclude improper use, loss, damage, alteration and/or deterioration according to the terms of the non-disclosure agreement.

Unless authorized by the Coherent Buyer or Engineer in writing, the Supplier may not transmit or furnish any Coherent furnished documents, or copies of such documents, to anyone outside the Supplier's business organization except to a sub-tier source used by the Supplier for performance of work on the Coherent product. The Supplier shall return to Coherent, or purge electronic copies of, all proprietary documents with the last delivery of products or services on the contract.

8.0. PRODUCT QUALIFICATION

This section defines the generic requirements for production part qualification and approval. The purpose is to determine if all Coherent design and specification requirements are properly understood by the Supplier and that the manufacturing processes have the capability to consistently meet these requirements.

8.1 First Article Inspection

Prior to authorization to ship production product to Coherent, supplier must have on file an approved First Article Inspection Report (FAIR) that reflects 100% verification of all requirements - by inspection and/or test (as applicable). The quantity of parts used for First Article Inspection shall be agreed between the Supplier and Coherent's Buyer. First Article Inspections must be repeated for any portion of the product that is impacted by a design, process, or tooling change. A process change is any activity that affects the form, fit, function, or safety of the product. Any deviation to Coherent requirements must be approved in writing by Coherent and included as part of the submittal of First Article Inspection Report (FAIR).
Furthermore, a new FAIR may be requested if there is an extended gap of time since last production.

At minimum, the Suppliers FAIR must include the following parameters:

- part number & revision level
- clear indication of each specific requirement inspected or tested with results and pass/fail status (detailed test report)
- reference to any deviations preapproved by Coherent (if applicable)
- overall indication of first article pass/fail status
- record of the date and responsible person performing task
- record of first article acceptance by supplier's Quality Manager or designee
- marked-up drawing indicating all inspection points

When applicable, FAIR must also include:

- test data sheet with all recorded values
- material test or certification reports and data from sub-tier suppliers

Copy of the FAIR must be sent to Coherent, along with the corresponding first article sample(s), with the original report retained by Supplier as a quality record. Coherent may sample or perform a duplicate 100% first article to verify the product, inspection and/or test methods.

If key characteristics are identified on either the drawing or by the Coherent Buyer, a process capability study may be required for each of the key characteristics.

9.0 PROCESS CONTROL

This section defines the necessities for Supplier to control their manufacturing processes.

9.1 Key Characteristics

The Supplier shall demonstrate conformity to those special characteristics designated by Coherent through means of documentation and appropriate control methods. In addition to any special characteristics identified by Coherent, the Supplier shall also review, identify, document, and control other product and process characteristics that are key to achieving quality.

9.2 Error Proofing

The Supplier should use error-proofing devices and techniques as a form of process control; especially for repetitive functions, difficult tasks prone to mistakes, or where the cost of error is high.

9.3 Work Instructions

The Supplier shall prepare documented work instructions for all processes that impact product quality. These instructions shall be maintained current and accessible for use at the work station.

9.4 Control of Monitoring and Measuring Devices

The Supplier shall determine the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product to determined requirements. As a minimum, where necessary to ensure valid results, measuring equipment shall be calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards.

9.5 Statistical Process Controls

Certain critical products or processes may benefit, or require the use of SPC for monitoring and measuring purposes. The supplier is expected to implement such controls when applicable or required.

9.6 Preventive Maintenance

The Supplier should identify key process equipment and provide resources for machine/equipment maintenance activities and develop an effective planned total preventive maintenance system.

9.7 Sampling Inspection

Supplier may use sampling plans when historical records indicate that a reduction in inspection can be achieved without jeopardizing the level of quality. Supplier may employ sampling inspection in accordance with nationally accepted or Coherent required standards. Sampling may not be used to justify the existence of known defectives or discrepancies in a lot. Supplier shall maintain quality records in sufficient detail to establish evidence that any

sampling was representative, the required tests and verifications were properly performed, and only material meeting specified requirements has been accepted for production and delivery to Coherent.

9.8 Material Identification and Lot Control

Supplier is required to establish a documented system for the control of all materials. The inspection and test status of all materials must be easily identifiable by the system, and documentation must include a description of any applicable containment areas and/or devices. Parts or products removed from the normal process flow must be segregated and clearly marked.

9.9 ESD Sensitive Devices and Assemblies

Any components, materials, or assemblies that are susceptible to Electrostatic Discharge (ESD) damage must be controlled and processed at the Supplier within an acceptable ESD program consistent with ANSI/ESD S20.20. Antistatic or static dissipative packaging material must be used for all ESD sensitive components and assemblies. The packaging must be clearly identified as containing ESD sensitive material.

9.10 Shelf Life

Components that will be subject to soldering must have been stored in a controlled environment for no more than two (2) years and be able to pass an accepted solderability test. Chemical compounds that may suffer degradation in their characteristics must have no less than 75% of their expected life upon receipt at Coherent.

9.11 Drawing and Change Control

Supplier's quality management system must ensure that the latest engineering drawings and specifications are available at the manufacturing, test, and/or inspection locations. Written procedures should indicate the method(s) utilized for receipt, review, or distribution of all changes and the method(s) of recalling and disposing of an obsolete item. A review process must be established in the system for confirming that specifications are at the latest revision level.

10.0 CHANGE CONTROL

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

10.1 Supplier Engineering Change Requests

Suppliers shall not make changes to their processes, location, facilities, equipment, material, product design (or any change which may affect product design, form, fit or function) without written approval from the Coherent Engineer and acknowledgment from the Coherent Buyer.

The following list of changes are subject to written approval include but not limited to;

- Changes to software in a delivered product or to software which plays a material role in testing the conformity of the product

- Changes to hardware in a delivered product, e.g., using different components, regardless of their compatibility; changes to the chemical or physical composition of the item; changes to the appearance of the item
- Change to an existing Coherent drawing/parts list
- Changes to the manufacturing process or its documentation, e.g., instructions relating to testing or work procedures
- Changes to the logistics process, e.g., Changes to the packaging materials
- Change of sub-supplier (resourcing) or sub-contractor

Suppliers may propose any mechanical, electrical, process or documentary design change to the product that potentially or actually affects form, fit, function, reliability, safety, cost or maintainability. This is accomplished by the Supplier submitting to Coherent, an Engineering Change Request (ECR) for formal evaluation and approval prior to implementation.

10.2 Change in Manufacturing Location

Prior to making any Changes in production, the Supplier shall notify Coherent in writing in due time of Changes whose potential impact on item/product characteristics and/or the agreed specifications cannot be completely ruled out. The notification shall include the planned change, the date and number of the first product lot/batch which it intends to produce under the new conditions. The Supplier shall also provide documentation proving that suitable steps for qualification have been successfully completed and that the item/product characteristics and/or the agreement specifications will also be met under the new process conditions. All changes are subject to approval by Coherent in writing prior to implementation. First Article Inspection Report (FAIR) is required to be submitted to Coherent when there is a change in manufacturing location.

Prior to a change in Manufacturing Location, the following should be provided by the supplier:

- Schedule for the transfer
- An outline to build a buffer stock as part of the transition to mitigate the risk of supply disruption in the event there are issues with the startup at the new facility. We should have the option to work with the supplier on the appropriate buffer stock amount for the transition.
- Plan of action for requalifying the manufacturing line pertinent to our product(s)

11.0 PRODUCT AND PROCESS VERIFICATION

11.1 Inspection & Test by the Supplier

Suppliers are expected to be self-sufficient in the control of their processes and must objectively verify the quality and conformance of deliverable product by means of inspection and/or test – as applicable. Suppliers should not rely upon Coherent to perform any inspections and/or tests to verify the quality and conformance of deliverable product. Quality records should be kept for a

minimum of 10 years that indicate the inspections and/or tests that were performed and the acceptance or rejection of the product. Any failed or rejected product and subsequent corrective action should also be documented and records maintained.

11.2 Independent Verification, Proprietary Process & Right of Entry
Coherent, and any of Coherent's customers, may require independent inspection and/or test of product or verification of processes at the Supplier. In this case, Coherent will normally provide minimum of 48 hours advanced notice and the Supplier should identify proprietary processes before entry. When applicable, an arrangement will be made to execute a mutual nondisclosure agreement to prevent from disclosure to unauthorized individuals.

11.3 Traceability
Coherent normally requires lot traceability for all products and a unique lot/control number assigned by the supplier that is traceable to all raw materials and manufacturing processes.

12.0 CERTIFICATES OF CONFORMANCE

When required, shipments to Coherent must be accompanied by a Certificate of Conformance (CoC) that contains the part number, date code and/or serialization, shipment quantity, shipment date, packing slip number, and a statement of conformance to the purchase order requirements. When required, raw material should be accompanied by a Certificate of Analysis (CoA). The supplier is fully responsible to flow down these requirements, as necessary, to sub-tier suppliers and to maintain records of such sub-tier supplier material certifications.

13.0 PRODUCT NONCONFORMANCES

For nonconforming products supplied to Coherent, including those that reach a Coherent customer, the Supplier must cover all costs to correct the nonconformance.

13.1 Nonconformance after Delivery
Any product nonconformance found at Coherent may be cause for rejection of the entire shipment and will count against the quality rating for the Supplier. The Supplier will be informed of the nonconformance to allow for future corrections.

13.2 Corrective Action Requests
Whenever the nonconformance is considered serious or repetitive, the Supplier will be issued a Supplier Corrective Action Request (SCAR). The Supplier is expected to take immediate action to contain the problem and then provide root cause analysis and corrective action within the specified time.
Suppliers should use a closed-loop corrective action process whenever a problem is encountered internally or upon notification from Coherent; for example; a useful tool is the Eight Disciplines of Problem Solving (8D).

When documenting the root cause, the Supplier shall include the underlying reasons:
a) why the specific nonconforming condition or incident occurred,
b) why it was not detected by the Suppliers quality controls, and
c) why the related process, from a systemic viewpoint, allowed the nonconformance (and potentially others like it) to occur. Statements from the Supplier indicating that the corrective action is to alert or retrain the operator, and/or increase inspection, alone, are NOT acceptable corrective actions. These kinds of actions would be considered insufficient and not address the real underlying root cause(s) of why the Supplier's policy, instructions, process, procedure, and/or system allowed the problem to develop and occur and not be detected by quality controls. Unless otherwise requested by Coherent when notified, the Supplier shall respond to a request for corrective action as follows:

Required Action	**Timeline**
The Supplier shall promptly acknowledge receipt of notification and communicate to Coherent the immediate containment actions to be taken.	Within 24 hours
The Supplier shall provide an update of the containment plan to protect Coherent during the interim period. This update must include: • Confirmation that the Supplier has identified all suspect product in process, in stock, in transit, and potentially at any Coherent site by lot number, Coherent Purchase Order number, and quantity. • Additional specific containment actions needed to be taken by the Supplier and/or Coherent.	Within 48 hours
The Supplier must submit their Corrective Action Report in the format of 8D or equivalent indicating the permanent actions taken, or to be taken, to prevent recurrence of the same problem, to prevent the occurrence of similar problems, and the applicable effectivity dates	Within 14 days
The verification of effectiveness is due from the time of completion of the implemented corrective and/or preventative action	Within 60 days

13.3 Pre-Approval of Non-conformances

Suppliers are not authorized to accept product nonconformance to Coherent's requirements which includes sub-tier supplier material nonconformance. In the case of a known product nonconformance issue that cannot be reworked to specification, the Supplier should immediately request Coherent approval in

advance - by completing the form contained in Appendix A or similar form provided by a Coherent business unit. The completed form should be submitted to the Coherent Buyer or site Quality Representative for subsequent approval.

13.4 Control of Reworked Product

Rework is defined as additional operations that are not part of the basic production process flow, which will bring product into full compliance with applicable drawings and specifications. Instructions for rework, including re-inspection requirements, shall be accessible to and utilized by the Suppliers appropriate personnel. All rework shall be documented and accepted by Quality.

Repair is defined as using alternative manufacturing techniques, methods, materials, or processes which *may not* bring product into full compliance with applicable drawings and specifications. Repairs are not allowed without written approval from Coherent.

13.5 Supplier Containment

For product quality problems reported by Coherent 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 nonconformance and meets all applicable requirements.

13.6 Return Material Authorization (RMA)

Suppliers are expected to provide a Return Material Authorization (RMA), within a maximum of 3 working days after notification of rejected material at Coherent.

14.0 SUPPLIER PERFORMANCE MEASUREMENT

14.1 Performance Measurement, Tracking, and Reporting

All Suppliers are objectively monitored and evaluated for quality and on-time delivery (OTD) performance. Scorecards are generated that are used to work with selected Suppliers to improve their performance. In general, 3 consecutive months of negative performance constitutes a trend. Supplier may be requested to take formal corrective action at any time.

14.2 Quality

This metric defines the Defective Parts Per Million (DPPM) shipped using the following formula. The definition of “rejected parts” is the total number of parts returned to the Supplier for any valid quality reason.

$$\text{DPPM} = \frac{\text{Number of Parts Rejected}}{\text{Number of Parts Received}} \times 1{,}000{,}000$$

Suppliers with monthly Reject Rate above the set GOAL will be further analyzed. If the issues are validated and poor performance becomes a trend, an escalation process will ensue which could result in any, or all the following; Supplier development improvement plan, Audit, Upper Management attention/decision.

14.3 Delivery

This metric defines the delivery performance rating using the following formula:

$$\text{On Time Delivery} = \frac{\text{Quantity of Line Items Received within -3/+0 days}}{\text{Quantity of All Line Items Received}}$$

Coherent Need-by Date & Supplier Promise Dates are measured separately.

15.0 PACKAGING AND LABELING

When any special packaging and/or labeling requirements apply, they will be specified on the Coherent drawing or purchase order. Otherwise, product must be shipped to Coherent in a consistent manner that assures proper protection from damage during shipment and proper identification of each shipment container. All packaging should be capable of meeting the test requirements of ISTA 1A and 1B. International shipments may require meeting ISTA 2A or 2B packaging test requirements. Individual containers must be clearly marked/labeled with the appropriate purchase order, (Coherent) part number, serial number (if applicable) and any necessary lifting and/or handling instructions. If the product shipped is destined for any “special activity” (e.g. qualification, first article inspection, etc.) – the outside marking/label must also clearly reflect this designation.

16.0 COHERENT-OWNED TOOLING and MEASURING & TEST EQUIPMENT.

Coherent may provide specialized tooling and/or measuring & test equipment to the supplier. If so, such tooling and equipment can ONLY be used to manufacture product for Coherent and must be properly labeled, stored and controlled to prevent misuse, damage and deterioration. Except for normal wear, the Supplier is required to maintain Coherent-owned tooling in original condition and when applicable, perform preventative maintenance on a recurring basis. The Supplier is responsible for calibration of Coherent-owned equipment at pre-defined intervals – unless the equipment has been designated by Coherent as “No CAL Required”.

APPENDIX A
(Electronic version of form is available upon request)

SUPPLIER NOTIFICATION OF NONCONFORMANCE AND REQUEST FOR APPROVAL

Coherent Part No. _____ Request Date: _____
Coherent P.O. No. _____ Submitter's Name: _____
Supplier: _____ Submitter's Tel. No.: _____
Lot Size: _____ Submitter's Fax No.: _____
Submitter's E-Mail: _____

Description of Nonconformance (clearly include "specified" and "actual" conditions):

*** Send completed Form to the Coherent Buyer with copy to Site Quality Manager ***
(Information below this line to be completed by Coherent)

Coherent Disposition:

☐ Approved. Deviation # & Expiration Date _____
☐ Denied. Please correct.

Comments:

_____

_____

_____ Date: _____
Coherent Site Quality Representative

*** **A copy of this approved form must accompany the shipment to Coherent ***