

	Spare and accessory Manufacturing & Quality Requirement	
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Supplier (CM)	Teleplan
General Manager	
Manufacturing Manager	
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Overview

- A. Meet Overland approved manufacturing, test and quality requirement.
- B. Define data collection requirements for quality and production of Overland Storage products.
- C. Define ongoing quality and manufacturing improvement process
- D. Obtain Overland's pre-approval for any or all process / material / Supplier changes in the manufacturing of the Product.
- E. Define Overland's quality expectation from approved part supplier
- F. Close loop corrective action process

1.0 PURPOSE

To define quality requirements and expectation for Overland Storage Contract Manufacturer.

2.0 SCOPE

This requirement applies to any Contract Manufacturer that Overland awards manufacturing and service agreement.

3.0 REFERENCE DOCUMENT

Overland QMS400-02

4.0 DEFINITIONS

CM: Contract Manufacturer

ESD: Electro static Discharge

FAI: First Article Inspection

OBA: Out of Box Audit

FPY: First Pass Yield

MRR: Manufacturing Readiness Review

MVT: Manufacturing Verification Test

ECO: Engineering Change Order

TDA: Temporary Deviation Authorization

SCR: Supplier Change Request

BOM: Bill of Material

ORT: Ongoing Reliability Test

WIP: Work In Process

MSA: Manufacturing Service Agreement

SSD: Statistic Sensitive Device

FMA: Failure Mode Analysis

MANUFACTURING REQUIREMENTS

1. Contract Manufacturing ESD requirement:

ESD program requirements must be met for handling and storage of static sensitive devices (SSD's) (P640-01)

2. Products Identification and Traceability

2.1. The Contract Manufacturer will establish and maintain documented processes for identifying the product with respect to monitoring and measuring status during all stages of production and delivery with a unique and traceable product ID.

2.2. The unique identification of product will be established. The records of product traceability will be reported by CM to Overland Storage Operations preferably electronically transmitted daily.

2.3. Manufacturing assemblies will follow the Overland serial format specification.

3. Manufacturing Process

3.1. Product Cycle and Tact Time

CM will perform time study on product manufacturing build process. The product manufacturing Cycle and Tact Time will be documented. Overland and CM must come to an agreement on the Tact time.

3.2. Manufacturing, Test and Quality Plan

Overland will furnish a formal manufacturing, testing, and quality plan outlining its manufacturing, test and quality approach to the Product such as following:

- Manufacturing process CD to upload the GOS and perform component check
- Component test plan prior to integration
- Product burn-In process and duration
- Final detail and labeling
- ORT (Ongoing Reliability Test)

3.3. Manufacturing requirement

- Data collection and quality metrics
- Operator training and certification
- Value stream mapping and Process flowcharts
- Daily output reports

3.4. Work instruction: Method sheet/ SOP

CM must have a written manufacturing work instruction (Method Sheet/ SOP) available on the production line either in a booklet or on the monitor easily accessible for Operators.

- Mechanical assembly
- Manufacturing CD – Software installation

3.5. Operator Training Record

Each Operator must be trained and certified on each specific assembly station, using the manufacturing process instruction. A training record must be maintained.

3.6. Rework performed on product or parts

Rework performed on the Product must meet the overland specifications. Rework must be approved by Overland in advance.

3.7. Operator Retraining

In event of any changes in manufacturing process or procedures, operators must be re-trained on the process or method changes.

3.8. Control and calibration of Monitoring and Measuring Devices

CM will use calibrated tooling and will keep records of calibration.

Upon request by Overland CM must provide evidence of conformity of the tooling and equipment as specified by Overland through manufacturing and test document.

3.9. Measuring equipment and tools will:

- Be safeguarded from adjustments that would invalidate the measurement result
- Be protected from damage and deterioration during handling, maintenance, and storage

3.10. Manufacturing process or improvement

The CM will provide any proposed process change or improvement to Overland for approval.

3.11. WIP rejected parts

WIP rejected parts must be identified by color coded tag explaining reason for reject, identifying root cause of failure. Operator Name or Number, Date should be identified with supervisor initial on reject tag.

3.12. Production Line halt due to failure

In occurrence of following consecutive failures CM will ensure to put production line on halt until root cause of failure identified and proper corrective action taken:

3.12.1. Three consecutive failures caused by same parts or component.

3.12.2. Three consecutive manufacturing test failures due to an unknown cause.

Test and Inspection Requirement

The CM will perform following inspection and testing on all released systems, products, or materials, which are used in products that are intended for delivery to Overland Customers.

1. In process inspection

In-process inspection and testing is conducted through specific activities identified in the Method Sheets for each assembly, sub-assembly or component. Product is not permitted into Finished Goods until all required operations, inspections, and tests have been completed

2. Final Inspection and Testing

All products are subject to final inspection and testing in accordance with applicable Overland Storage requirements. Lot acceptance is acceptable for multiple Spare part orders.

3. Manufacturing Test Procedures

CM will perform the manufacturing test process according to defined procedures by Overland

4. Out Of Box Audits (Refer to W824-03)

4.1. CM will perform Out of Box Audit (OBA)

4.2. Overland's OBA expectation is as follow:

- Bill of Material (BOM)
- Cosmetics and workmanship
- Verification of configuration
- Package/shipping requirements

- 4.3. OBA must be performed in an ESD protected environment
- 4.4. OBA sample size
 - 4.4.1. CM will perform 100% OBA on first 100 units. Results will be providing to Overland for sample size reduction plan.
 - 4.4.2. OBA will be performed on 10% of daily output. (Any variances will require next 10% to be audited and so on)

The OBA Auditor will use the daily-expected build quantity to develop a sampling plan, in accordance with the Sample Plan specified in **Table 6-1**

Table 6-1 (Sample Plan)

Daily Build (items)	Sample Quantity (items)
1-10	1
11-20	2

5. Perform Failure Analysis on Nonconforming Product

- 5.1. Work in process units found to be discrepant at any of the workstations will be identified with WIP reject tag and routed to FMA for failure analysis, repair. Upon completion of repair the WIP unit will be re-injected into the line.
- 5.2. Nonconforming units that are repaired will have the fault data and repair data recorded in a FMA log file reported to Overland Quality department.
- 5.3. FMA should identify the root cause of failure (Workmanship, part, Process or design) and what action was done to fix the failure.
- 5.4. A work in process FMA report will be provided to Overland on weekly basis.

Quality Data collection and Reporting Requirement

1. Quality FPY and OBA Goal

Overland’s expectation of FPY is above 90%.
 The OBA yield goal is less than 1% failure.
 CM will issue an CAPA (Corrective and Preventive Action) for each FPY and OBA fall out.
 CM will provide Overland with a copy of ICAR

2. FPY (First Pass Yield) Data Collection

The Contract Manufacturer must establish a First Pass Yield (FPY) data collection process to collect the following process data:

- Hi-Pot
- First Power-up
- Function Test
- Final Acceptance

3. Quality Reporting :

3.1. Weekly Quality Report:

CM will provide Overland’s quality department with FPY, OBA and FMA (Failure analysis reports) on a weekly basis.

3.2. Monthly Quality Report:

CM will provide Overland with consolidated monthly report with collaborated metrics goals. This will result action items defined for improvement.

3.3. Quality Report Format

When requested by Overland, CM will provide in process fall-out data as in defects Pareto, yields, etc.

3.4. MRB (Material Review Board)

A list of all non-conforming material from MRB cage must be reported to Overland Quality on a weekly basis.

4. MRR (Manufacturing Readiness Review)

Overland will conduct a formal Manufacturing Readiness Review and at CM's location in order to Verify and validate the CM's process to ensure it meets Overland's specifications and fulfills its intended purpose.

5. MVT (Manufacturing Verification Test)

Overland will perform a formal Manufacturing Verification Test on final product prior to first shipment to ensure product or system meets specifications and that it fulfills its intended purpose.

6. Design and process review

A team of Overland and CM will perform design for manufacturability review.

7. FAI (First Article Inspection)

7.1. The CM must provide Overland Quality department with a FAI Report for approval prior to start the production of the product.

7.2. Overland Storage Quality department to review, approve or reject the FAI

7.3. First Article Inspection will consist of but not limited to verification that:

- The FAI unit was manufactured as defined in PRD.
- All required tests have been performed.
- The Method Sheet (SOP) has been created and conforms to the respective BOM.
- The unit is both functional and cosmetically acceptable.
- All accessory packages are included.
- All marking and labeling requirements have been met.
- The build documentation (i.e. traveler, BOM, and or other requirement documentation) for the FAI unit confirms manufacturing steps are completed and traceability label requirements are applied.

7.4. Accepted First Article

Upon FAI acceptance, Overland Quality will notify the CM with FAI approval.

7.5. Rejected First Article

If the FAI is rejected, Overland Quality will document all findings and route the FAI request back to CM for corrective action.

8. Control of Nonconforming Parts and components

8.1. The CM will ensure that parts that are not conform to requirements to be identified and controlled to prevent unintended use or installation.

8.2. MRB (Material Review Board)

The nonconforming materials must be documented and segregation into MRB cage (Material Review Board) for evaluation, disposition.

9. Corrective and Preventive Action

9.1. Corrective Action

Overland may initiate and submit a supplier corrective action to CM in order to eliminate the causes of nonconformities, in order to prevent their recurrence.

CM will perform the following upon receive of Corrective Action from Overland:

- Reviewing nonconformities, including customer complaints
- Corrective action investigation and determination of root cause
- Evaluating the need for action to ensure that nonconformities do not recur
- Determining and implementing action taken
- Reviewing corrective action taken to ensure that it is effective
- Establishing records of the results of corrective action taken

9.2. Preventive Action

Overland may initiate and submit a supplier preventive action to CM to eliminate the causes of potential nonconformities, in order to prevent their occurrence.

CM will perform the following upon receive of Corrective Action from Overland:

- Evaluating the need for action to prevent occurrence of nonconformities
- Determining potential nonconformities and their causes
- Determining and implementing action needed
- Reviewing preventive action taken to ensure that it is effective
- Establishing records of the results of preventive action taken
- Records of Corrective and preventative action will be maintained in a controlled database and monitored by Overland Quality.

10. Changes ECO , TDA (product , component , supplier or process

10.2. CM is not allowed to change material or process without going through formal change control review board at Overland.

10.3. The types of changes, as an example, requiring notification include, but are not limited to:

- Changes in Components
- Change of a supplier
- Changes in the inspection or testing process (e.g., reduced inspection and/or testing);
- Changes in the manufacturing site;
- Deviations from the MT&Q plan;
- Changes in packing, shipping and labeling of Product or containers.

10.3. CM will participate in Overland change review board and implementation to changes to the product that are built at their manufacturing sites.

10.4. Overland has the right to reject or modify any and all intended changes requested by CM.

- 10.5. CM will maintain internal documentation for all ECN's and ECO's for a period of no less than two (2) years.
- 10.6. Overland approved TDA is the only Overland authorized document that can be used until an ECO is written and approved.

11. Inventory of material with ESD sensitivity and limited shelf life

The CM will establish a process to maintain and control of materials with ESD sensitivity, limited shelf life and age controlled (Expiration date, temperature, humidity and special handling etc).

12. Part Supplier selection and qualification

12.1. Supplier Quality Evaluation

An Overland qualified supplier must obtain minimum 70% of total score from following supplier evaluation survey. However, the goal after corrective action must exceed 90% of total score.

- PCBA supplier survey (F741-05)
- Supplier Quality System (F741-03)

12.2. Supplier Credential

Candidate Supplier will provide following credential and supporting document upon Overland request as part of Overland supplier qualification process:

- Quality manual
- Quarterly customer reject rate
- Defect per million

12.3. First Article Inspection Measurement

Parts chosen for First Article measurement are to be randomly selected from a process identical to what is or will be used for normal production.

12.3.1. FAI report is required by Overland Storage in following event:

- Making a New Part by existing supplier
- Change of supplier for existing part
- Any change in process or revision

12.3.2. FAI report will be for 5 pieces of first production, consisting of following items:

i. At one piece out of 5 must be 100% all drawing dimensions and features as noted.

ii. Remaining pieces must be all critical dimension noted per drawing must be measured.

iii. An SPC chart with the Cpk value 1.33

iv. QA test and inspection report for PCBA, Motherboard, Fan and power supply

v. First Article submission must clearly identify on outside of shipping container.

vi. Material, RoHs certificate and Certificate of Compliance

vii. Plating/ Finish certificate

viii. Recorded measurement must consist of following information:

- Part number and serial number of part
- Characteristic being measured
- Tolerance range of characteristic
- Measurement Value
- Method of measurement
- Dated Approval by Supplier Quality Manager

12.3.3. Normal part deliveries

Moving forward for each delivery Supplier must provide the following:

- An outgoing final inspection sheet on 10% of lot size will be sufficient (Attached a sample for your reference)
- Certificate of Conformance

12.3.4. Supplier Part Change or Deviation

In no event Overland supplier or Overland appointed CM's supplier allowed to change or deviation from Overland approved part, component or process. A formal SCR (Supplier Change Request) in a great detail and reason for change must be submitted in advance. Please allow 12 to 16 weeks for review. Overland reserves the right to reject or accept the change for any reason.

13. IQC : Incoming Quality Control

13.1. Customer Off-the-Shelf Parts (COTS)

- Review purchase order requirements called out on GRN issued with the material. If revision on GRN does not match the packing slip notify the Receiving Inspection Supervisor for instructions.
- An FAI process will be completed as described above verifying part number and any special requirements that may be called out on the Overland drawing.
- A file folder as described below, including an RIR will be established. The Receiving Inspection Supervisor or SQE will determine further inspection requirements.

13.2. Documentation Parts

- Review purchase order requirements called out on GRN issued with the material. If revision on GRN does not match the packing slip notify a Receiving Inspection Supervisor for instructions.
- An FAI process will be completed as described above verifying part number and any special requirements (drawing and artwork). Once the documentation passes the FAI, the buyer will determine how many future's lots will come through receiving inspection.
- Any differences between the art work, including color and the document needs to be approved by the person or department that created the artwork file.

13.3. Normal Inspection Process

- Review purchase order requirements called out on GRN issued with the material. If revision on GRN does not match the packing slip notify the Receiving Inspection Supervisor for instructions.
- If drawing is not the latest revision, obtain a copy off the Agile system. If changes have been made the SQE will determine the attributes needed to be added or deleted.
- The inspector will establish the sample quantity per Sample Plan listed in F420-02 Overland Data C = 0 Acceptance Scheme. If part does not fit into any category covered on form the SQE will make the determination what classification/AQL is to be used.

- If the lot fails, generate a NCMR. Make the appropriate documentation and records then move the material to the MRB cage. If material quantity or size is too large and must remain on a pallet attach a Red Hold sheet with the NCMR number identified on it. All documentation will remain with the NCMR to ensure the material will not be moved to a stock location.
- For accepted lots the inspector will place an acceptance stamp or initials and date on the GRN form. Move all material to the stock room with a copy of the GRN. File the GRN and packing slip in the part history file folder.

14. GENERAL

- 14.1. CM must agree to improve and sustain quality levels of Overland product using improvement techniques consistent with the industry.
- 14.2. CM will meet the requirements of ISO 9001:2000 to ensure all quality requirements are being pursued and achieved.
- 14.3. Upon request, CM will provide to Overland evidence of ISO 9000 Certification and successful completion of surveillance audits.
- 14.4. Overland reserves the right to perform periodical CM Site Audit and Performance Reviews measuring and providing feedback to CM in all areas, including quality, performance, delivery, cost, responsiveness, and communication. These reviews will be performed as part of the continuous improvement strategies.