

RH Purchase Orders -Quality Requirements (PQR) – V17 – June 2017

1. Definitions:

a. **Component Identification:**

Every component and its packaging had to be identified with the original manufacturing label that includes manufacture lot number and date code.

- b. **C.O.C** – Certificate of Compliance/Conformance–original statement **signed by authorized quality personnel** to state that the goods sent to RH conform to RH order requirements and. Supplier conformance document (C.O.C etc') must include the original manufacturer information (labeling) as well as manufacturer name and manufacturer part number.
- c. **C.O.T** - Certificate of Testing – detailed tests or inspection statement **signed by authorized quality personnel** stating the actual measurement results of the manufactured part, product or assembly against the drawing or specification requirements.
- d. **C.O.A** - Certificate of Analysis –chemical analysis statement of material or chemical compound **signed by authorized quality personnel**
- e. **CS** - C means critical component. CS means that SPC results are required.
- f. **FAI** - First Article Inspection part and report for make parts sent for RH orders new parts. In case of military / aerospace parts FAI in accordance with RH / AS9102 process and records format **signed by authorized quality personnel** www.sae.org/iaqg/publications/as9102forms.doc
- g. **CE** – Copy Exact – Special requirements for purchasing order related to MKS and Applied Materials products to adhere specifications. See training site: http://sfc.amat.com/ce_training/CE_registration.nsf
- h. **BCP – DRP** – Business Continuity Plan – Disaster Recovery Plan. In case of Single Source Supplier a BCP plan or similar manufacturing continuity plan will be required
- i. **D/C – Date Code** – marking on the product packaging, used for traceability purpose to identify the date of production or a lot from a specific date. **Must be written on every COC statement document that is sent with the components**
- j. **UL** – Safety Mark that is provided by Underwriters Laboratories -a global independent safety science: www.ul.com
- k. **End Use** – Special Components that require customer notification and approval

2. General Requirements:

- a. Invoice / Shipping bill- all invoices and/or shipping bill's must include the following:
- RH PO number, RH PO Line number, RH Release number RH shipment number, RH Part number - Manufacturer/vendor P/N number, this details will be added to any and all necessary Information on the documents mentioned.
- b. This PQR supplement the requirements in the drawing specification supplied by RH as part of the purchase order. In case of contradiction, the drawing specification will prevail.
- c. When RH purchasing order indicates Aerospace and Defense Industry requirements, the supplier must verify compliance with all AS9100 requirements (as stated in the supplement drawings and specifications) prior to accepting the purchase order.
- d. Suppliers that require to perform design ,test ,inspection ,verification (including production process verification), will use statistical techniques for product acceptance, and related instructions for acceptance at RH ,and as applicable also for critical items and key characteristics
- e. Flow down applicable requirements. Supplier utilizing subcontractors must send relevant requirements (e.g. RH PQR and customer unique requirements) to his Sub-contractors, and verify compliance as well as records in due course.
- f. Supplier / Manufacturer are responsible for Notifying RH and get RH Approval for:
- Any nonconformance concerning product requirements / specifications (obtain RH approval for Nonconforming product disposition)
- Any nonconforming material, product and/or process definition, including notification for or to his subcontractor,
- Change of manufacturing facility location, and where applicable obtain RH approval.

- g. Supplier/ Manufacturer are responsible for notifying RH of flow down to the supply chain the applicable requirements (including subject d above), and including customer requirements.
- h. Supplier is required to retain records for 10 years or as dictated by RH for specific purchasing order
- i. Supplier / Manufacturer will allow access by RH, their customer, and regulatory authorities to all facilities including his subcontractor that involved in the execution of the purchase order and to all applicable records.
- j. Packaging: All electronic components / parts / assemblies will be packed in an antistatic ESD (Electro Static Discharge) shield
- k. Supplier/ Manufacturer must comply with Copy-Exact standards with regards to all RH purchase orders and letter of consent signed by the supplier.
- l. Customer Certified Supplier – Supplier that is certified by the Customer should mandatory committed to adhere to customer portal procedures.

3. Regulations Requirements:

- a. **RoHS2:** Manufacturer's products will conform to EU RoHS2 Directive, 2011/65/EU. <http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/>
When applicable, Manufacturer / Supplier will mark products as conformed to **China RoHS** Directive; GB-18455 Packaging recycling mark, and SJ/T 11364-2006 Marking for control of pollution caused by EIP's.
- b. **Conflict Minerals:** SEC Published rules associated with the disclosure of the source of Conflict Minerals by U.S. Publicly traded companies
See : <http://www.sec.gov/rules/final/2012/34-67716.pdf>
- c. **REACH:** Manufacturer's products will conform to REACH European Regulation on chemicals and their safe use (EC 1907/2006).
http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm
- d. **EICC:** Manufacturer / Supplier will adopt and implement the EICC Code of Conduct requirements see http://www.eicc.info/eicc_code.shtml
- e. **AS5553:** Counterfeit Electrical, Electronic, and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition

4. Passive / Active Components

- a. All components and their packaging has to be identified with the original manufacturing label that include manufacture's name/logo, part number, lot number and date code (D/C: 36 month for Passive components, 24 month for Active components)
- b. All components will be supplied only in Tape & Reel or Tray packaging. Supplier may send component in Stick packaging for Reel services on his account. Any deviation has to be approved by RH Quality prior to shipment.
- c. Supplier will provide original manufacturer's labeling and original C.O.C.
- d. In case of Manufacturer Authorized Dealer, the Supplier's - Authorized Dealer may provide C.O.C. Declaration on behalf of the original manufacturer.
- e. **Prototypes:** Requirements above apply and a FAI components that will be supplied to RH for approval
- f. **Packaging:**
 - i. All components will be packed in ESD (Electro Static Discharge) and Humidity related packaging in accordance with manufacturer original packaging's / instructions.
 - ii. All components that are sensitive to ESD (Electro Static Discharge) and Humidity will be sent in a vacuum packed with barrier bag and humidity indicator. Each barrier bag will contain Silica - gel (humidity absorbent), to prevent moisturizing of the components.

5. RF / UF/ DC Cables

- a. All material for cables (e.g. pins, wires, connectors etc) must be supplied with UL approved mark.

- b. Cable pins will be supplied only in tape or cut-tape reel. Supplier may send bulk pins for Reel services on his account.
- c. Cables will be marked according to Customer's drawings, including as a minimum: Manufacturer's name/logo, Rev., RH Part Number and Revision.
- d. Manufacturer will supply C.O.T. that refers to RF applicable tests included in RH / Customer specifications: Frequency range, insertion loss, impedance, return loss / VSWR shielding, DC resistance, Breakdown Voltage. In case of DC cables, C.O.T is for 100% electrical tests.
- e. **Prototypes:** Requirements above apply. In addition – manufacturer will supply mechanical reports: COT, COA for pull strength and bend Radius. For any cable from each lot.
- f. **Packaging:**
All cables will be packed carefully (RF/UF – individually), so that they will arrive undamaged to RH.

6. Mechanical Parts (including Plastic material)

- a. All Buy parts will have manufacturer's name/logo and identified by RH part number. All Custom made mechanical parts will be marked according to RH/Customer's drawings and identified by RH part number.
- b. Supplier / Manufacturer is responsible for notifying RH of any non conformance affecting quality.
- c. Manufacturer will supply the following reports:
 - i. For AS9100 orders – as detailed in drawing and specifications including as a minimum: validation test report of raw material (COT Shipper), FAI report and COT for finish parts.
 - ii. For buy parts: C.O.C that confirms that products fully comply with coating / color requirements and specifications. The C.O.C will be identified by RH Purchase Order number and Invoice number.
 - iii. For Custom made parts: C.O.T. (Certificate of Testing, stating actual results against requirement, confirmation that the mechanical parts have been dimensionally tested according to ISO 2859-1 or ANSI/ASQC Z1.4 Normal inspection AQL 1.5% level II.
 - iv. For painting/coating process finish - a coupon will be supplied by manufacturer with each lot.
- d. **Prototypes:** Requirements above apply and a FAI report will be supplied to RH for approval before production of the whole order.
- e. Any change in customer drawings or RH part number, the prototype to be approved by the customer, prior to approval of the whole production order.
- f. **Packaging:**
 - i. Mechanical parts will be packed individually so that they will arrive undamaged to RH.
 - ii. Each mechanical part will be packed with protecting material / bag.
 - iii. The outer cardboard of the whole shipment must be rigid according to the parts weight and size.

7. Packaging Material

- a. All Custom packing products will be marked according to drawing. Manufacturer's name/logo should be added inside the package so it will not be visible from the outside.
- b. All cardboard material will be marked by manufacturer's name/logo. Date Code is optional unless it is a specific demand from the customer.
- c. **Prototypes:** all above requirements apply for FAI package that will be supplied to RH for approval.
- d. All packaging material will be packed with humidity / environment protection so that they will arrive undamaged to RH.

8. Antenna

- a. All buy Antennas will be marked by manufacturer's name/logo and RH part number and Rev. All custom Antennas will be marked according to Customer's drawings.
- b. Manufacturer will supply C.O.T. for custom Antennas that refers to all tests included in Customer specifications on 100% basis. Supplier will supply original C.O.C. for buy Antennas.
- c. **Prototypes:** Requirements above apply and a FAI Antenna that will be supplied to RH for approval.
- d. **Packaging:**
 - i. Antennas will be packed carefully so that they will arrive undamaged to RH.
 - ii. Each Antenna will be packed with protecting or seal bag.
 - iii. Each Antenna's Cable will be packed in an antistatic ESD shield.

9. BA (Boards/ Assemblies)

- a. All Assembly products will be marked by the Contractor Manufacturer (CM) and S/N. This mark will follow the BOM / work instructions.
- b. CM is responsible for notifying RH for any non conformance with RH / Customer specifications or workmanship standards such as IPC 610 or IPC 620.
- c. All BA's will be supplied with COT stating 100% visual and electrical tested.
- d. CM will supply C.O.T. for custom BA's that refers to ISO 2859-1 or ANSI/ASQC Z1.4. Normal inspection AQL 1.5% level II and C.O.C. for other of the shelf (buy BA's items).
- e. **Prototypes:** all above requirements will apply to FAI item that will be supplied to RH for approval.
- f. **Packaging:**
 - i. All BA's will be packed carefully against shock so that they will arrive undamaged to RH.
 - ii. Each BA's will be packed in an antistatic ESD shield, according to Customer packaging specifications as appears in BOM / work instructions.

10. Printed Circuit Boards

- a. All PCB's will be produced with margins (edges) according to files attached to the purchasing order
- b. All PCB's will be marked by manufacturer's name/logo and RH part number, Revision, board serial number and **manufacturing date code** on the P.S. side of the board with silk-screen.
- c. Marking should resist normal hand-touch, including tin bath soldering, cleaning and regular clean agents and solvents of RoHS soldering process.
- d. Manufacturer is responsible for notifying RH for any non conformance with Customer specifications.
- e. Defective boards in a panel will be marked and segregated.
- f. Manufacturer will supply report such as:
 - i. C.O.T that refers to all tests (Mechanical and Electrical), including dedicated Customer specifications – performed on 100% basis.

- ii. Variable inspection report.
 - iii. Hole and dimension inspection report.
 - iv. Micro section coupon and test report.
 - v. Visual Inspection report.
 - vi. Control impedance test report.
 - vii. Coupon and Photograph of micro section after Thermal shock.
- g. Prototypes:** all above requirements will apply and a FAI that will be supplied to RH for approval
- h. Packaging:**
- i. PCB's (applicable also to PCB's plates) will be packed with ESD vacuum packed with barrier bag.
 - ii. Each barrier bag will contain Silica - gel (humidity absorbent), to prevent moisturizing of the board.
 - iii. Each package will contain up to 20 PCB's.
 - iv. Each barrier bag shall be labeled to show the following data: Manufacturers name, Manufacturer's Part Number and current Rev, Manufacturing Date Code, Total number of PCB's in a bag, Documents, Reports and Invoices shall be on marked box.
 - v. Silver finished PCB's will be separated with special paper and with special paper between each board.
 - vi. PCB's will be sent no later than 3 months from their original manufacturing Date Code.

11. Power supply

- a. All Power Supply (PS) will be marked according to Customer's drawings. For instance: manufacturer's name/logo , RH part number , Rev.
For custom Power Supplies manufacturer will add RH part number.
- b. Manufacturer will supply C.O.T. for custom Power supplies that refer to all tests (Mechanical and Electrical), included in RH specifications on 100% basis and original C.O.C. for buy Power supplies.
- c. **Prototypes:** all above requirements will apply and a Custom made PS FAI that will be supplied to RH for approval
- d. **Packaging:**
 - i. Power Supplies will be packed carefully so that they will arrive undamaged to RH.
 - ii. Each Power Supply will be packed with protecting ESD bag.

12. Auxiliary Materials – UT

- a. Each auxiliary Material will be supplied by Supplier / Manufacturer with MSDS (Material Safety Data Sheet).
- b. Each auxiliary Material will be supplied with Expired Date code report.
- c. Special storage requirements will be addressed by the Supplier / Manufacturer on the COC document
- d. Note: RH's reception will make sure that all the auxiliary materials will reach RH store with at least useful period of use that exceeding half life time of the material.