



QAP 1901

QUALITY ASSURANCE REQUIREMENTS FOR SUPPLIERS

Amended to Issue 11 by:

M. Whitfield

Principal Quality Engineer

Approved by:

P. James

Quality Manager

Date: NOVEMBER 2011

Distribution List:-

Local Intranet

UEE Webpage for Suppliers

Printing Note:

This document may contain Hyperlinks that are not printable.

ULTRA ELECTRONICS ELECTRICS

ISSUE	REVISION HISTORY	DATE
1	Replaces DEL	11/10/94
2	Amendment to ALL pages	01/03/00
3	Revise to QAP format	22/01/02
4	Modification to para 15.9 Raw Material Validation to meet the requirements of AS9100 and modification to para 7.5 NOTE added.	10/03/04
5	Rewritten in line with ISO9001:2000 Additional AS9100, AS9110 & UEE requirements highlighted in bold Updated to remove 'Division'.	7/12/07
6	Amended requirement for material approval to remove CAA approval. Added Nadcap requirement to special processes, including tin-lead solder requirement (7.5.2). Revised arrangements for FAIR submission (7.4.3.1). Revised arrangements for non-conforming product identified at UEE (8.6).	30/07/08
7	Reworded FAIR section for clarity (7.4.3.1). Added requirement for concessioned items to be individually bagged and labelled. (8.3) Changed inspection requirement when not 100% to AS9103 / ANIS (8.2.4 e)	02/07/09
8	Inclusion of AS 9100 clauses for non-aerospace suppliers. Updates to Key Characteristics section to include Process certification and provide clarification on data retention. Inclusion of basic FOD and handling requirements from customer.	02/03/10
9	Inclusion of 8D as default supplier response tool	03/08/10
10	Update to reflect Boeing NOE note re: on site inspection of FAIR Also additional wording for contract review and part contamination	15/07/2011
11	Two new sub-para ADDED:- Para 7.4.2.1. Source Change (Control of work transfer) Para 7.4.2.2. Source change requirements All references to "Production Permits" removed.	14/11/2011

TABLE OF CONTENTS

1.0 Scope.....4

2.0 Normative Reference.....4

3.0 Terms And Definitions.....4

4.0 Quality Management System.....5

4.1. General Requirements.....5

4.2. Documents & Records.....5

4.3. Configuration Management.....6

5.0 Management Responsibility.....6

6.0 Resource Management.....7

7.0 Product Realisation.....8

7.1. Planning of Product Realisation.....8

7.2. Customer Related Processes.....8

7.3. Design & Development.....8

7.4. Purchasing.....9

7.4.1.General Requirements.....9

7.4.2.Specific Requirements.....9

7.4.2.1. Source Change (control of work transfers).....10

7.5. Production & Service Provision.....14

7.5.1.General.....14

7.5.2.Special processes.....15

7.5.3.Preservation of product.....15

7.5.4.Foreign Object Damage (FOD) Prevention.....15

7.5.5.Material Handling.....16

7.5.6.Use of Wood.....16

7.5.7.Control of Monitoring & Measuring Devices.....16

8.0 Measurement, analysis & improvement.....17

8.1. General.....17

8.2. Monitoring & Measurement.....17

8.2.1.Customer Satisfaction.....17

8.2.2.Internal Audits.....17

8.2.3.Monitoring & Measuring of Processes.....17

8.2.4.Monitoring & Measuring of Product.....18

8.3. Process control plans.....19

8.4. The Process Control Plan certification.....19

8.5. Control of Non-Conforming Product.....20

8.6. Analysis of Data.....21

8.7. Improvement.....21

8.8. Non-conforming product identified at UEE.....22

FOREWORD

ULTRA ELECTRONICS ELECTRICS (UEE) is engaged in the design and manufacture of components both for the aircraft and military market sectors. To maintain our success in the highly competitive environment in which we operate it is essential that we continue to enhance our reputation for high standards by providing products and services which fully meet the requirements of our Customers and certifying authorities in every respect. Quality, Reliability, Cost Effectiveness, Efficiency and On Time Delivery to Order are crucial to the achievements of this aim.

To enable us to achieve our own ambitions, it is fundamental for UEE to develop a common set of values and objectives with our Suppliers.

This document, Quality Assurance Requirements for Suppliers, indicates the management systems and requirements, which need to be met for supplying goods and services to UEE.

1.0 Scope

This document contains the mandatory contractual requirements for the maintenance of a Quality Management System by the Suppliers of products or services to Ultra Electronics Electrics.

In the event of any conflict between the requirements of the Purchase Order, the Engineering Drawing and this document the precedence is as follows:

- 1) Purchase Order
- 2) Engineering Drawing
- 3) QAP1901 Quality Assurance Requirements for Suppliers

Objective evidence shall be available to demonstrate compliance with the requirements of this document and with any additional requirements which may be imposed on the Purchase Order.

2.0 Normative Reference

It is expected that as a minimum the Supplier's Quality Management System shall meet the requirements of BS EN ISO 9001. Additional requirements specific to UEE are detailed in this document and are highlighted in **bold** for clarity.

3.0 Terms And Definitions

ULTRA ELECTRONICS LIMITED whose registered office is situate Bridport Road, Greenford, Middlesex UB6 8UA, acting through its business division Electrics having a place of business at Kingsditch Lane, Cheltenham, Gloucestershire, GL51 9PG (hereinafter referred to as "UEE")

'Supplier' shall mean the person or organisation on which a contract or order is placed, and refers to the unit known as the 'organisation' in ISO 9001:2008

'Product' shall also equally mean service where applicable.

4.0 Quality Management System

4.1. General Requirements

To enable Suppliers to consistently conform to UEE Purchase Order requirements, the Supplier shall define a Quality System by the establishment and maintenance of procedures and instructions.

It is UEE's intent that as a minimum, all Suppliers' quality systems meet the requirements of ISO 9001:2008. Preference will be given to Suppliers who hold formal AS9100 certification from a recognised awarding body. Suppliers who do not hold ISO 9001:2008 will only be awarded approval for a limited scope of work. They will be audited by UEE before approval and at regular intervals thereafter.

Suppliers who do not hold AS9100 will not be eligible for UEE contracts mandating this requirement and thus the scope of work offered to the supplier may be severely limited in nature.

Where the scope of supply is limited to non-production items or services, UEE may, at its discretion, waive any requirement specified in this document on the written authority of the Quality Manager or his appointed delegate.

The Supplier shall maintain a Quality Manual that defines and documents the scope and exclusions of the Quality Management System.

4.2. Documents & Records

Documents required by the Quality Management System shall be controlled in a manner adequate for the size of the Supplier's organisation, the complexity of the processes and the competence of the personnel.

Documents shall be:

- a) Approved for adequacy prior to use
- b) Reviewed, updated and re-approved as necessary
- c) Identified with current status and revision level
- d) Available at the point of use
- e) Legible and readily identifiable
- f) Identified and controlled where they originate outside the Supplier's organisation
- g) Restricted from unintended use and identified as obsolete as required.

The Supplier's quality system shall be open to UEE for review upon request, including any documents forming part of the system.

Records shall be established and maintained to provide evidence of conformity to requirements and to demonstrate the effective operation of the Quality Management System. Records shall be legible readily available and retrievable.

The Supplier's records shall be retained for a minimum of 20 years, and shall be open to UEE for review upon request. The Supplier shall also define the flow down of these arrangements to sub-tier suppliers or make arrangements for the retention of records to satisfy UEE's requirement.

4.3. Configuration Management

The organisation shall establish, document and maintain a configuration management process appropriate to the product in line with the guidance given in ISO 10007.

5.0 Management Responsibility

Top management shall

- a) Communicate to the organisation the importance of meeting UEE requirements
- b) Establish the quality policy
- c) Ensure that quality objectives are established
- d) Review the effectiveness of the Quality Management System
- e) Ensure resources are available to meet both UEE requirements and the quality objectives of the organisation
- f) advise UEE of a nominated Management Representative for Quality.

The Supplier shall formally advise UEE Quality Manager of any change to their Organisation or Policy which directly or indirectly affect: -

- a) The Supplier's nominated management representative for quality
- b) The Conditions of Approval specified on the Purchase Order

The Supplier shall formally advise UEE of any changes associated with National, International or Official Approval Authorities.

The Supplier shall be able to demonstrate to the satisfaction of UEE that staff are sufficiently experienced, suitably trained and have the appropriate authority and attributes.

6.0 Resource Management

The Supplier shall determine and provide the resources required to meet UEE requirements.

Training reviews showing training needs and records showing training given shall be maintained and shall be available to the UEE Auditor.

The Supplier shall be able to demonstrate the competency of management, supervision and operators.

Records shall be available pertaining to operators performing special processes that are unable to be verified on completion of operations. UEE will give preference to Suppliers who show control via a Nadcap approved system.

Operators performing soldering shall be trained in accordance with IPC J-STD-001C - Requirements for Soldered Electrical and Electronic Assemblies.

Operators performing harness / cable wiring shall be trained in accordance with IPC/WHMA-620-A "Acceptability of Electronic Wire Harnesses and Cables".

The Supplier shall determine, provide, maintain and manage the infrastructure required to meet UEE requirements and to ensure conformity to product requirements (including humidity, temperature, lighting, cleanliness, protection from electrostatic discharge, etc)

7.0 Product Realisation

7.1. Planning of Product Realisation

The Supplier's quality system shall supply, upon request, a detail Product Quality Plan.

7.2. Customer Related Processes

The Supplier shall be able to demonstrate that UEE's Purchase Orders and Contracts are reviewed at appropriate intervals to ensure that: -

- a) All quality and delivery requirements as defined by the Purchase Order can be achieved.
- b) All information in the form of Drawings, Specifications and Procedures relevant to the Contract Purchase Order are available and clearly understood, including those differing from any Tender or development work before acceptance of any UEE Purchase Order.

The Supplier's incoming Certificate of Conformity shall quote the issue as stated on the relevant drawing.

Any problems relating to the Purchase Order requirements, including availability of approved components and materials shall properly resolved prior to acceptance of order. **Deviations from specified requirements will not be accepted without authority in writing from UEE in the form of a concession.**

Records of all reviews are maintained and traceable to Purchase Order. Evidence shall be available to show that the contract review has been completed and endorsed by relevant participants.

A purchase order review including QCD parameters does not constitute contract review. The supplier must generate a full compliance matrix against a specifications, documents, contracts including sub tier requirements to validate shipping, finishing, and in particular special processes.

7.3. Design & Development

Where UEE require, the Supplier shall establish and maintain written procedures to demonstrate the control and verification of products designed to specified requirements.

The documentation shall cover the following activities:

- a) Design and Development Planning
- b) Design Outputs to meet Design Inputs, including drawings, calculations and analyses.
- c) Verification that the Design Output meets the Design Input requirements by conducting Design Reviews.

- d) Review and Approval of all Design changes.

Key characteristics shall be defined within the product design information.

UEE may request that the Supplier supplies evidence of the organisation and resources necessary to meet all design requirements.

The Supplier shall plan, control, review and document Verification and Validation testing to ensure that the acceptance criteria are met.

7.4. Purchasing

7.4.1. General Requirements

The Supplier shall be able to demonstrate adequate procedures to ensure that: -

- a) The selection/reassessment of Suppliers is adequately defined and records maintained.
- b) All data contained within any Purchase Order placed on their Sub-contractors includes all information and specifications necessary to satisfy the relevant UEE Purchase Order.
- c) All purchased products in support of UEE Purchase Orders are accompanied by approved documentation detailing full traceability of all goods and processes used in the manufacture of materials and components.
- d) Suppliers not accredited to BS EN ISO 9001:2008 shall ensure that UEE are provided with written notification prior to any placements of lower tier orders unless authorised by the Purchase Orders.
- e) Raw material used in furtherance of UEE Purchase Orders shall be supported by documentation confirming the material specification and analysis of chemical and mechanical properties. The Supplier shall be able to produce evidence to show that the material chemical analysis certificates have been reconciled with the relevant material specification prior to release of material for manufacture.

7.4.2. Specific Requirements

No alternative materials/components to the specifications called up on UEE Drawings may be used without the WRITTEN permission of UEE by way of the Concession Form.

The Supplier shall assume total responsibility for all their sub-contractor activities including: -

- a) The provision of UEE to assess Sub-contractors where deemed necessary.
- b) UEE QAR/MOD QAR/CUSTOMER QAR, where appropriate having the right to inspect and test products ordered under any UEE Purchase Order at any reasonable time.

- c) The Supplier shall retain a copy of all documents in support of sub-tier activity, including Sub tier Certificate of Conformity / Material Release Documentation (MOD or CAA) / Material Certificate of Conformity / Material Analysis Certificate / Test results (where applicable). These documents must be referenced on the Supplier's release document.
- d) Electronic Components purchased from non-approved sources will not be acceptable unless otherwise stated on the purchase order.
- e) Components supplied in support of orders placed against specific participating organisations standards, i.e. PAN, JN, etc, shall be supplied where possible by Suppliers stated within the standard. Components supplied by organisations not stated within the participating standard shall attach a copy of the incoming Certificate of Conformity from the participating Supplier to the Suppliers Certificate of Conformity

Note: JN connectors must have the full JN alphanumeric identification marked upon the connector body. Connectors without the identification are not acceptable.

7.4.2.1. Source Change (control of work transfers)

Source change is applicable to suppliers planning the temporary or permanent transfer of work and is used to demonstrate control when changing a source of supply or manufacture of a product across the UEE supply chain to ensure that there is no loss of product integrity, quality or supply during and after the following transfers of product.

- a) from suppliers facility to another
- b) from the suppliers facility to a sub-contractor/sub-tier supplier
- c) From sub-contractor / sub-tier supplier to another sub-contractor / sub-tier supplier
- d) Any transfer of work within the suppliers facility that will have an effect upon the continuity of supply of the product

Source Change (control of work transfers) does not apply

- a) Purchased standard catalogue hardware or deliverable software
- b) A proposed source that holds a current FAIR for the product
- c) Raw material purchased from a stockist or distributor

7.4.2.2. Source Change Requirements

The Supplier shall:

- a) Establish and implement and maintain a source change process to plan, control and verify the conformity of the work to specific requirements during the temporary or permanent transfer of work.
- b) Ensure that source change documentation / information is communicated along the purchase order cascade.
- c) Proceed with the source change when a response has been received from UEE purchasing contact.
- d) Provide compliance documents such as a transfer plan, risk assessment, product verification/validation requirements.
- e) Ensure delivery performance is protected prior to any source change. Maintain records of source change in accordance with control of records requirements.

7.4.3. VALIDATION OF PRODUCT

7.4.3.1. First Article Inspection

UEE operates a system for verification of the first production run of a part that is intended to meet the international aerospace standard AS9102. All Suppliers are mandated to follow this system.

All UEE FAIR documents can be downloaded from the Suppliers page of www.ultra-electrics.com. AS9102 rev A may be obtained from www.sae.org.

The Supplier shall perform First Article Inspection (FAI) upon the first production run of a part, or when the part is subject to any of the following changes:

- A change in the design affecting form, fit or function of the part.
- A change in the manufacturing source, processes, inspection methods, location of manufacture, tooling or materials that may affect form, fit or function.
- A change in numerical program control or translation to another media that may affect form, fit or function.
- A natural or man-made event, which may affect form, fit or function.
- A lapse in supply of two years or as specified on the UEE Purchase Order.
- Change in section methodology
- Change in materials
- Change in model or CNC software.
- Change in tooling (jigs, assembly tools, validation tooling)

The UEE purchase order may indicate this requirement, but UEE may not be aware of changes to the supplier's processes, equipment or manufacturing site. It is the Supplier's responsibility to supply a First Article Inspection Report (FAIR) in any of the cases listed.

UEE reserve the right to conduct on site release activities for both FAIR and delta FAIR for changes that involve any of the above events.

The FAIR may be a single sample or accompany the complete batch of work. The item(s) used for the FAIR shall be segregated and identified.

The supplier shall produce and supply an annotated 'balloon' drawing. The balloon drawing shall identify each of the requirements on the drawing and assign them a unique number. Requirements include, but are not limited to, dimensions, material specifications, chemical / heat treatments, paint finishes, packaging requirements, references to a lower-level drawing, inspection operations, NDT, test requirements (including ATS and/or ATP) and items listed on the Parts List.

Where the item is an assembly (i.e. it is composed of a number of items, each with a UEE drawing), then the supplier shall list the component parts on UEE FAIR Form 1 (boxes 15 to 18), and supply copies supporting sub-tier FAIR reports for each against the relevant UEE sub-assembly drawing.

Raw materials and standard catalogue parts shall be reported on 'UEE FAIR Form 2' (boxes 5 to 10). Each item be supported by a copy of the Certificate of Conformance (CofC) referenced in box 10. The Supplier must ensure that the CofC references the exact specification called up on the UEE drawing and reported in Box 6.

Functional tests (including ATS/ATP) shall be reported on 'UEE FAIR Form 2' (boxes 11 to 12). All supplier ATPs must be verified by UEE engineering against the UEE ATS prior to FAIR.

All other drawing requirements shall be listed on 'UEE FAIR Form 3'. In Box 8, the Supplier shall list the drawing requirement including tolerances. The result of inspection shall be recorded in Box 9 and the equipment or gauge used shall be noted in Box 14. Where a non-standard gauge is used to determine conformance (e.g. a go/no-go gauge) the unique reference of the gauge used must be recorded in box 10.

For non-dimensional requirements (e.g. 'Package in accordance with') it is acceptable to report conformance in Box 9 as "Verified".

Where inspection detects non-conformance, then the Supplier MUST report this prior to submission of FAIR. It is the policy of UEE not to accept non-conforming products, and the Supplier should appreciate the fact that non-conformance reflects the inability of the supplier to meet UEE requirements.

If UEE agrees that it is not possible to proceed into production without non-conformance then the Supplier shall raise a request for concession and submit it to the relevant UEE Buyer. The supplier must not send parts to UEE without disposition of the concession. Once disposition has been accepted, the concession number shall be marked on box 11 and a copy of the concession shall be supplied as part of the FAIR.

If UEE agree that it is not possible to proceed into production without non-conformance then the FAIR submission shall not be considered closed.

FAIR shall be re-submitted once the agreed corrective & preventative actions have been implemented and verified to the satisfaction of UEE Quality.

The FAIR must be completed in ink or electronically. It must be submitted as a hard copy with the items to UEE Goods Inwards upon first delivery.

7.4.3.2. Inspection Documentation

Documentation for inspection shall define:

- a) The acceptance and rejection criteria
- b) Where in the sequence measurement and testing operations are performed
- c) The requirement to record & retain the measurement results
- d) The type of measurement instruments required and serial numbers.

Where Inspection Stamps are used to identify and individual Inspection Personnel, the supplier shall maintain a Register of all Stamp Holders. Stamps lost or withdrawn from use shall be quarantined for a period specified by the Supplier.

Where the Supplier uses signature endorsement of Inspection Stages, a list of specimen signatures is to be maintained.

The Supplier shall supply a Certificate of Conformity in accordance with their UEE approval status and the requirements of the UEE Purchase Order. This approval status shall in be accordance with ISO 9001:2008 unless otherwise stated on the Purchase Order.

The Certificate of Conformity shall bear the intent of the following endorsement: -

“This document certifies that the supplies listed have been manufactured, inspected and tested in accordance with the requirements of the Purchase Order and related documents.”

and shall contain the following information:

- e) Supplier's Name, Address and Approval Number
- f) UEE Purchase Order Number and Line Item Number
- g) Part Number and Issue
- h) Description of Part
- i) Quantity Supplied
- j) Material/Component Batch Number
- k) Release Note/Certificate of Conformity Number
- l) Approved Signature

The Certificate of Conformity shall accompany each delivery of product. A delivery of product without a complete Certificate of Conformity shall be deemed

to be incomplete and may be returned to the Supplier at UEE discretion for satisfactory fulfilment of the UEE order.

Delivery of product to may be subject to customer Supplier Quality Assurance (SQA). The Supplier may be notified of any SQA activities to be performed and access shall be provided to UEE, its Customers and any regulatory or Government body as required by Supplier Quality Assurance Representative (SQAR).

7.5. Production & Service Provision

7.5.1. General

The Supplier shall be able to demonstrate a suitably documented system of process control to ensure that: -

- a) Manufacturing Instructions are compiled which clearly, comprehensively and unambiguously define the Manufacture and Inspection of UEE Products. As a minimum, Instructions shall outline the sequence and description of operations, details of tools/equipment required and any sub-contract processes.
- b) Documented instructions are traceable to UEE Drawing, Part Numbers and Issue.
- c) Quality Records shall be maintained by the generation of Job/Route Cards or equivalent that follow the layout sequence of operations.

Where the Supplier is not the original manufacturer of product delivered to UEE, the Supplier must maintain a copy of the Manufacturers Certificate of Conformity, in addition to their own.

As a minimum the Job Route Card shall ensure: -

- a) Traceability to UEE Purchase Order
- b) Traceability to incoming supplied Release Documentation of all raw materials/components used in the manufacture.
- c) All operations are completed and endorsed.
- d) All inspection stages are completed and endorsed.
- e) All rejections, reworks or re-inspections are clearly identified, completed and endorsed.

7.5.2. Special processes

The Supplier shall be able to demonstrate adequate control of Special Processes, e.g. process, which may not be fully verified by subsequent inspection and test, through continuous monitoring in compliance with documented procedures.

Suppliers who operate a one of the following processes,

- Chemical Processing
- Coatings
- Composite manufacture
- Elastomer Seals
- Heat Treatment
- NDT
- Nonconventional Machining (ECM/ECG/EDM/LBM)
- Sealants
- Welding

shall submit a Manufacturing Process Control Procedure with the ability to demonstrate that changes to such processes and/or procedures are notified to UEE, by initiating the Concession process.

UEE will give preference to Suppliers who show control via a Nadcap accredited system. In the case of many aerospace and defence contracts, Nadcap accreditation is mandatory, and suppliers who are not accredited will not be eligible for selection. Where Nadcap is a stated requirement, this requirement shall also supply to any sub-tier operations.

Repairs of castings by any method other than welding shall be carried out with Authorised Concession approval. Repairs of castings by welding techniques shall be carried out in accordance with UEE Design Standard DS03.

Please note that UEE requires all soldering operations to use tin-lead solder. Lead-free solder shall not be used unless otherwise indicated on the Purchased Order or Drawing.

7.5.3. Preservation of product

The Supplier shall determine and provide adequate packaging and preservation of products is maintained throughout all manufacturing stages and including delivery. Electrostatic Sensitive Devices (ESSDs) shall meet the requirements of BS EN614340-5-1:2001

7.5.4. Foreign Object Damage (FOD) Prevention

- A Foreign Object Damage (FOD) preventative program must be documented and implemented to protect product at all times. Suppliers shall establish methods and facilities for identifying, handling, and storing articles to ensure

against contamination, corrosion, damage, deterioration and invasion of foreign objects or substances.

- Parts should not come into contact with lead, indium, cerium, tin, zinc, cadmium or antimony or alloys containing more than 10% by weight of any of these elements.
- An awareness program shall be in place to inform all employees of the impact of working conditions and product cleanliness practices and their consequences on performance of the final product.

7.5.5. Material Handling

- Parts / Materials shall be protected in all phases of processing to eliminate handling damage.
- Control uncoated parts where contact with other elements could be detrimental to the part (e.g. columbium, titanium, magnesium).
- Ensure accountability/control of tools including small parts and hardware.
- Provide care and use of protective devices.

7.5.6. Use of Wood

- The use of wood or any derivative of wood, as a packaging material for any component /assembly with cadmium plated surfaces is to be prohibited with immediate effect.
- It is recommended that plastic boxes, already used for some major assemblies, be utilised to eliminate any incidence of cadmium corrosion occurring during transport or storage.

7.5.7. Control of Monitoring & Measuring Devices

The Supplier shall establish and maintain procedures that ensure that all equipment used for measuring, inspection and testing is controlled and calibrated to known standards traceable to National Standards. These controls shall ensure that: -

- a) Each item of equipment is clearly and uniquely identified together with the current calibration status.
- b) Each item is capable of the accuracy and precision necessary.
- c) Calibration Records are maintained for each equipment listing type, unique number, location, frequency of checks, check method and acceptance criteria.
- d) Calibration Results are reviewed and frequency adjusted to reflect equipment condition.
- e) Handling, preservation and storage of equipment is such that accuracy and fitness for use is maintained.
- f) Items are recalled to a defined method when required for calibration.
- g) Equipment that can not be calibrated within the Suppliers calibration system is sent to an approved UKAS (or equivalent non-UK) test house. The calibration records and certificates shall be maintained within the Supplier's calibration system.

8.0 Measurement, analysis & improvement

8.1. General

The Supplier shall plan and implement the monitoring, measurement, analysis and improvement process to demonstrate:

- a) Conformity of the product
- b) Conformity of the quality management system
- c) Effective improvement of the quality management system

8.2. Monitoring & Measurement

8.2.1. Customer Satisfaction

The Supplier shall determine a method for obtaining and utilising data relating to customer perception as to whether the Supplier has met customer requirements.

8.2.2. Internal Audits

The Supplier shall establish and maintain procedures to ensure that: -

- a) A system of Internal Audits for reviewing the Quality System is maintained such that appropriate reviews are undertaken of the Quality System in a planned and timely manner.
- b) The Audit Report circulation level is such that sufficient attention is given to closed loop Corrective Action in a timely manner.
- c) Audit Deficiencies are corrected within 90 days.

The results of Audits shall be made available to UEE on request.

8.2.3. Monitoring & Measuring of Processes

The Supplier shall monitor and measure the effectiveness of the quality management system processes.

Where non-conformity is detected, the Supplier shall:

- a) Take appropriate action to correct the non-conformity.
- b) Evaluate whether the non-conformity has resulted in product non-conformity.
- c) Identify and control any resulting non-conforming product in accordance with paragraph 8.3 of this document

8.2.4. Monitoring & Measuring of Product

The Supplier shall monitor and measure the characteristics of the product to verify that the product requirements have been met, in accordance with appropriate UEE purchase order, design requirements and / or published product performance data.

The system shall ensure that: -

- a) Incoming products are not used or processed until they have been verified as conforming to specified requirements.
- b) Verification and Test are carried out in accordance with the relevant Drawings and Test Instructions.
- c) Where key characteristics are identified, they are monitored and controlled. The Supplier shall develop and maintain a process control plan. This control plan collects all relevant information used to control KPIs and KCs that are determined to be significant sources of variation to the KCs and processes being certified. The need for standardization, consistency, and simplicity should be considered
- d) Products are verified, tested and identified as such throughout all stages of manufacture.
- e) Measurement data (variables) must be recorded for all key characteristics, this data must be retained and remain traceable by part if serialised or batch if not. This data must be made available to UEE if requested.
- f) Suppliers not performing 100% Inspection shall operate a system to manage variation in accordance with AS9103. Under such systems, the process shall be deemed capable where Cpk is greater than or equal to 1.33, unless otherwise specified on the drawing or other related product definition data.

Where the supplier chooses to operate an inspection system that relies on sampling plans, then these plans shall be based on ANSI/ASQC Z1.4 or ANSI/ASQC Z1.9 as appropriate, or an alternative recognised standard, where agreed in advance by UEE. In all cases UEE reserve the right to review and approved the sampling plans and where appropriate, request 100% inspection be performed.

- g) Non-Conforming Products are identified as such and quarantined for disposition.
- h) Product conformance to the Purchase Order requirements is assured by a Pre-release/Final Inspection prior to despatch.
- i) Non-conforming products are not delivered to UEE unless written authority to do so has been received via the Concession process. A copy of the Concession shall be included with the products and shall be endorsed on the release note. Further endorsement may be required at UEE request.

8.3. Process control plans

The Process Control Plan shall contain as a minimum: UEE reserve the right to approve plans upon request.

- Processes to be monitored or generic process identification.
- KC description and requirement.
- KPIs settings and control method.
- Expected process capability of defined KCs.
- Process steps where measurements are taken.
- Type of control method used to monitor the process and KCs (e.g. control chart, etc.).
- Subgroup size used for process control / monitoring (if required).
- Frequency of measurements / monitoring.
- Method of measurement, or gauging, (gage capability requirement may be included).
- Actions required when capability levels are not maintained.
- Self Audit frequency based on process / KC capability performance cannot exceed a twelve month period.

8.4. The Process Control Plan certification

If the process does not utilise variable data, then certification shall be based upon:

Option 1: A minimum of (45) consecutive observations with no detected non-conformances or anything that impedes the flow of material or information along its intended path that would impact 100% compliance to customer / downstream process requirements.

AND / OR

Option 2:

Six (6) consecutive months of 100% compliance to customer and downstream process requirements that must be continually monitored.

If the process utilizes variable data (e.g., Cpk, etc.) to measure process capability, the following certification requirements must be met.

- A minimum of twenty-five (25) consecutive observations or thirty (30) days of output whichever is greater, capturing variability associated with step to step, piece to piece, set up to set up, time to time, and lot to lot variation, with no non-conformances detected.
- KCs are under statistical control and Cpk of 1.33 or better is demonstrated.

8.5. Control of Non-Conforming Product

It is the policy of UEE not to accept non-conforming products. Only in exceptional circumstances will a request for concession be approved. Non availability of Drawing Specified Materials (or alternatives as listed in UEE Design Standard DS01) shall be advised to UEE at tender stage. It is the responsibility of the Supplier to ensure that material is available at tender.

The Supplier shall ensure that product which does not conform to product requirements is controlled to prevent unintended use or delivery to UEE.

The controls shall ensure that: -

- a) Non-Conforming Products are identified, quarantined and records maintained.
- b) The method for review and authority for disposition are clearly defined.
- c) The process for approving the personnel making these decisions is defined.
- d) Corrective Actions are initiated to prevent recurrence.

The Supplier shall deal with non-conforming product in one of the following ways:

- a) By taking action to eliminate the non-conformity (Rework)
- b) By authorising use, release or acceptance of the product by a relevant authority (where the product is UEE design, the authority shall be UEE) (By use of concession form can be found on the suppliers page of the Ultra site)
- c) By taking action to preclude its use in the intended use or application (Scrap)

Where rework is performed, the Supplier shall ensure that the method of rework is authorised by the disposition authority, that the rework is clearly defined and recorded and that the rework is performed and checked in accordance with approved documented procedures.

Where non-conforming product is accepted by UEE, a copy of the relevant UEE Concession shall be included with the products and shall be endorsed on the release note. The parts shall be individually packaged in a clear polythene bag (or other appropriate individual packaging where dimensions restrict) and identified with the UEE part number and concession number clearly and indelibly marked on the packaging

Product dispositioned for scrap shall be permanently marked or positively controlled until physically rendered unusable.

The Supplier shall maintain a system that ensures the timely reporting of delivered non-conforming product that may affect reliability, safety or airworthiness of a product, including notification of the affected parts, quantity, dates delivered and a clear description of the non-conformity. The parties requiring notification of non-conformity may include UEE and other customers, internal organisations, suppliers, distributors and regulatory authorities. The Supplier shall ensure that all relevant parties are informed of the non-conformity.

8.6. Analysis of Data

The Supplier shall collect and analyse data to ensure the effectiveness of the Quality Management System and to drive a process of continual improvement of the System.

This data shall monitor:

- a) Customer satisfaction
- b) Conformity to product requirements
- c) Characteristics and trends in product and process performance including opportunity for preventative action
- d) Supplier performance

8.7. Improvement

8.7.1. Continual Improvement

The Supplier shall analyse data collected on the performance of the Quality Management System, and use it with data in corrective and preventative action, management review, audit results and performance against the quality objectives to improve effectiveness of the quality management system.

8.7.2. Corrective Action

The Supplier shall: -

- a) Establish, document and maintain methods of investigating and analysing the causes of non-conformance, initiate and control the resulting Corrective Actions needed to prevent recurrence and record changes in procedures resulting from Corrective Actions.
- b) Maintain a record of Customer Returns, Complaints and Corrective Actions.
- c) The use of 8D is mandatory for problem solving, customer complaints etc. – A template is available from the UEE web Pages

8.7.3. Preventative Action

The Supplier shall define a procedure to:

- a) Determine potential non-conformities and their causes
- b) Evaluate the need to action to prevent such non-conformities
- c) Determine and implement preventative action
- d) Record and review the effectiveness of such action.

8.8. Non-conforming product identified at UEE

When non-conforming product is identified at UEE, a Rejection/Inspection Note will be raised. This will identify the reason for non-conformance. In the case of rejected product, the Note will accompany the goods and rework purchase order. Where product is accepted as is but requires the supplier to prevent future deliveries with such non-conformities, the Note will be sent directly to your nominated representative.

The completed UEE Rejection/Inspection Note and returned via email to quality@ultra-electrics.com within 14 days of the rejection.

The supplier response shall address the following:

a) Root Cause

The root cause of the non-conformity shall be identified using a root cause technique such as Pareto, Five Whys, Fishbone Analysis, etc.

b) Correction

The supplier shall detail the proposed action to rectify the product such that it meets the requirements of the purchase order, drawing and relevant specification(s). The supplier should also detail and additional inspection or test required to verify the success of the rectification.

c) Corrective Action.

The supplier shall detail the actions proposed to prevent a re-occurrence of the same problem in the future. The supplier should also consider any similar non-conformance which is likely to occur on other related products / processes. The actions should be timely and robust. They should consider process and system failure and should use mistake proofing methodology wherever appropriate. Additional inspection stages should be used as a last resort, as they simply detect the failure downstream.

All actions shall be timely and effective. The implementation of such actions shall be monitored, and where actions are not achieved the Supplier shall agree with UEE defined specific actions, which may be monitored by UEE at the Supplier's site.

Failure to respond to UEE with adequate agreed corrective action will adversely affect Vendor Rating. This will in turn affect the decisions made by UEE to place further business with the Supplier.

Where the corrective action involves root cause at a sub-tier operation, the Supplier shall ensure that an equivalent corrective action process shall be implemented at the sub-tier supplier. This process shall be open to review by UEE.