Contract Electronics

Manufacturing Services

Microelectronics, Portchester

SUPPLIER QUALITY REQUIREMENT MANUAL

APPROVED BY ……

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QUALITY

Contents

1. Scope

The purpose of this document is to formally communicate Ultra Electronics CEMS Micrelectronics Portchester (UECEMSMP) quality requirements to the supply chain.

1.1 Definitions

In this Supplier Quality Requirement Manual (SQRM), the terms "***shall***" and "***must***" mean that the described action is mandatory; "***should***" means that the described action is necessary and expected with some flexibility allowed in the method of compliance; and "***may***" means that the described action is permissible or discretionary. The term "Supplier" means vendor, supplier of goods, provider of services, sub-contractor and distributor. Questions concerning this manual ***should*** be directed to your respective UECEMSMP Buyer or Supplier Quality Engineer.

2. Ultra Electronics CEMSMP

An operating business of Ultra Electronics, Ultra Electronics Contract Electronics Manufacturing Services Microelectronics Portchester is engaged in the design and manufacture of electronic products for industry sectors demanding high reliability product, including Aerospace, Defence, Military Defence Security, Oil & Gas exploration, Scientific Instrumentation, Medical, Nuclear power generation and other professional electronics industries.

3. Supply of Goods & Services

Goods and services provided by our Suppliers have a key impact on the quality of the products, solutions and services we offer our customers. To maintain a high level of quality, we are determined to establish and maintain close and long-lasting relationships with our Suppliers. UECEMSMP Terms and Conditions of trade shall apply to all contracts unless otherwise agreed.

4. Quality Management System Requirements

4.1 Minimum Quality Requirement

The minimum quality requirement for suppliers of goods and services to UECEMSMP ***shall*** be Quality Management System (QMS) certification to ISO9001 by a UKAS (or equivalent) accredited certification body that is a member or signatory of the IAF. Self-certification or non-accredited certification ***shall*** not qualify. This minimum requirement guarantees the Supplier has put in place a consistent QMS able to satisfy our basic needs. Suppliers that provide goods and services that are used in projects for Aerospace, Defence or Nuclear applications ***should*** be certified to AS9100 or equivalent and listed on the IAQG Online Aerospace Suppler Information System (OASIS).

4.2 Special Processes

A special process is a process that generates outputs that cannot be measured, monitored, or verified until it's too late. Deficiencies may not be detected until after products are in use. In order to prevent output deficiencies, special processes ***must*** be periodically validated in order to prove that they can generate planned results. Suppliers and supplier sub-contractors providing special processes ***should*** be Nadcap accredited for the special process commodity they provide.

4.3 Exceptions

Requirement exceptions for Suppliers that do not meet the minimum quality certification ***shall*** be authorised on the basis of:

- The Supplier is mandated by our Customer.
- The Supplier is the manufacturer of a single sourced product mandated by our Customer.
- The Supplier is the only distributor of a product mandated by our Customer.
- The Supplier provides goods or services that have no direct or indirect effect on the goods and services we provide our Customer.

Where the above criteria cannot be met, depending on the product, its application, value and criticality, special authorisation ***may*** be granted where evidence of compliance can be provided. This ***may*** include a UECEMSMP audit to a set of alternative basic quality requirements.

4.4 Specifications and Standards

It ***shall*** be the responsibility of suppliers to obtain, review, work to and maintain current issues of specifications and standards from appropriate sources.

4.5 Record Retention Requirement

Suppliers ***should*** retain records relating to processing, testing, calibration, manufacture, supply, traceability and certification for a minimum of **40 years.**

4.6 Delivery Quality Conditions

All quality requirements and conditions including flow-down requirements are stated on the purchase order.

Any specific requirements relating to design / development control, special requirements / critical items / key characteristics, test / inspection / verification activities, the use of statistical techniques for product acceptance or test specimens for design approval / inspection / verification / investigating / auditing will be stated on the purchase order and / or procurement documents referenced on the purchase order.

5. Additional Flow-Down Requirements

Additional requirements ***shall*** only apply when explicitly stated on the purchase order or other documentation associated with the contract.

5.1 Quality Plans

Where required suppliers ***shall*** submit a Quality Plan which describes the framework in which the contract will be accomplished and is subject to approval by UECEMSMP quality department. The Quality Plan is considered as the key document which ***shall*** define all relevant standards and procedures to ensure that work is completed successfully to the required level of quality. The supplier ***must*** ensure that their own personnel are aware of the existence, purpose and content of the Quality Plan.

6. Competence, Training and Awareness

The supplier ***shall*** ensure personnel processing orders or performing work affecting product / service conformity and product safety are trained and aware of the contribution, relevance and importance of their activities including the importance of ethical behaviour in relation to meeting the requirements of UECEMSMP purchase orders and associated documentation.

7. Control of Sub-Tier Suppliers

The Supplier, as the recipient of the contract, ***shall*** be responsible for meeting all requirements, including work performed by the Supplier's sub-tier Suppliers (also known as Sub-Suppliers or subcontract Suppliers).

7.1 Access Rights

With the suppliers' co-operation ULTRA representatives and ULTRA customers, regulatory authorities and other concerned authorities representatives shall be allowed access to applicable areas of the suppliers' facilities and to applicable documentation at any level of the supply chain.

7.2 Sub-Contracted Orders

Where the supplier intends to sub-contract work or service normally undertaken by the supplier, a written agreement ***shall*** be in place between UECEMSMP and the supplier indicating the reason for the sub-contract and the sub-tier sub-contractor to be used. Unless otherwise agreed, a quality plan ***shall*** be submitted to UECEMSMP in accordance with para 5.1.

7.3 Sub-Tier Flow Down

When the Supplier uses sub-tier sources to perform work on products and/or services scheduled for delivery to UECEMSMP, the Supplier ***shall*** include (flow-down) on contracts, to its sub-tier sources, all of the applicable technical and quality requirements contained in the Ultra CEMS contract, including quality system requirements, regulatory requirements, the use of UECEMSMP designated sources including those for special processes, and the requirement to document and control 'key characteristics' and/or 'key processes,' and to furnish certifications and test reports as required. UECEMSMP Representatives, Customers and/or End Users ***shall*** be allowed access to the Sub-Supplier's plant and facilities for the purpose of surveillance and inspection.

7.4 Notification of Change

All suppliers ***shall*** notify UECEMS of changes in product and/or process, changes of suppliers, changes of manufacturing facility location and where required obtain UECEMSMP approval, and flow down this requirement to their Supply Chain.

8. Supplier Approval

8.1 Accreditation, Certification and Approvals

Current and potential suppliers to UECEMSMP ***shall*** provide written confirmation and objective evidence of third party certification and approvals.

8.2 Scope of Approval

Suppliers ***shall*** inform UECEMSMP Quality Department if they are requested to work outside their scope of approval.

8.3 Site Visits and Supplier Audits

Where appropriate, suppliers ***may*** be subject to on-site audit and / or site visit by the UECEMSMP Supplier Quality Engineer and / or supply chain representative. In some instances UECEMSMP will be unable raise a purchase order until supplier approval has been granted. Scheduled verification audits, site visits and business to business (B2B) meetings ***shall*** be supported when required.

8.4 Risk Assessment

A risk assessment will be carried out that determines the Risk Rating to UECEMSMP. This will be based on criteria relating to the complexity of product, the manufacturing process and inspection criteria. The results of the questionnaire and Risk Assessment will determine the initial level of monitoring.

8.5 Supporting Documentation

Documents required to complete the supplier approval process are:

- Supplier Evaluation Questionnaire (This must be completed as part of the initial approval process and at subsequent supplier re-assessments)
- Accreditation certification
- Approval documentation
- Supplier audit report if required (UECEMSMP to complete)
- Confidentiality or non-disclosure agreement if applicable
- Inclusion on a Technical Assistance Agreement (TAA) if applicable

9. Supplier Performance

Supplier performance metrics are monitored monthly by UECEMSMP for on-time delivery (OTD) and quality of product / service.

Where suppliers are identified as consistently not meeting delivery and / or quality requirements UECEMSMP will contact the supplier to agree actions to correct the situation.

Supplier performance metrics are also reviewed on a yearly basis where supplier metrics are analysed and, when applicable, compared to other suppliers providing the same product / service.

If any deficiencies or opportunities for improvement are identified the supplier will be contacted to discuss and agree an improvement strategy.

10. Non-Conformances and Corrective Actions

From time to time non-conformities occur in many shapes and forms whether in product, process or documentation. The supplier ***must*** respond to all non-conformances raised by ULTRA in a timely manner. (48 hours containment and 14 days corrective action / preventive action (CAPA))

10.1 Root Cause Analysis (RCA) and Corrective Action / Preventive Action (CAPA)

When non-conformances occur the supplier ***must*** perform Root Cause Analysis (RCA) and corrective action / preventive action (CAPA) activities to prevent recurrence of the problem. The supplier ***may*** refer to AS13000 for 8D problem solving best practice and / or Nadcap RCCA for root cause corrective action best practice. The supplier ***may*** refer to AS9131 for non-conformance data definition. For non-conforming product, Suppliers ***shall***: -

- Carry out containment and evaluate product impact
- Inform UECEMSMP immediately when shipped non-conforming product is suspected
- Establish and form root cause analysis team from stakeholders, experts and others involved
- Identify & understand the problem
- Gather & analyse data
- Find direct cause(s), contributing causes and root cause(s)
- Determine corrective action and preventive action
- Implement corrective action and preventive action
- Review corrective action and preventive action
- Document and provide objective evidence for above actions

11. Identification and Traceability

Traceability is an important factor in high end and safety critical products and is a basic requirement unless agreed in writing. Suppliers ***shall*** provide documentation that includes batch numbers, lot codes and where relevant date codes and serial numbers of goods provided.

11.1 Date Codes

Where date codes are used, the date code format ***should*** match on all documentation. Semiconductor lot identification code ***shall*** conform to MIL-PRF-19500.

11.2 Traceability to Original Equipment Manufacturer (OEM)

Where the delivery quality condition requires certification traceable to the manufacturer's lot / date code the Supplier ***shall*** ensure this requirement is met prior to delivery of goods.

11.3 Manufacturers Certificate of Conformance (CofC)

Where required by the delivery quality conditions the Supplier ***shall*** provide an original manufacturer's Certificate of Conformity to accompany the goods provided.

12. Certification

Certification refers to any document that states the goods or services meet or conform to specification or purchase order requirements. These include, but are not limited to; Certificates of Conformance, Certificate of Analysis, Certificate of Attestation and Certificate of Calibration. The certifying document ***shall*** be deemed as an **authorised contractual guarantee** that the goods and services reference on the certificate meet drawing, specifications, technical data and purchase order requirements. Accreditation logos or marks ***should*** not appear on certification documents.

12.1 Minimum Information Requirement

The following data/information ***shall*** be included on each certification document.

- Certificate or delivery unique identifier
- Certification Date
- Purchase order number
- Drawing number and / or part number and revision
- Batch unique identifier (Batch number / Lot number / Date code)
- Quantity
- Supplier Name and Address
- Statement that goods and / or services conform to the specified requirements
- Original Manufacturer's name, part number and lot / date code (when the supplier is not the manufacturer of the supplied goods)
- Name of authorised certifying quality representative or company official

12.2 Calibration and Test Certification

In addition, calibration and test certification ***shall*** include:

- Calibration / test specification including tolerances and criteria
- Calibrated test apparatus / instrument / standard used traceable to NIST or equivalent.
- Test results
- Pass or fail or equivalent statement of conformance / non-conformance

13. First Article Inspection (FAI)

When indicated on the purchase order a FAI in accordance with AS9102 ***shall*** be conducted on the initial group of one or more parts that are the result of a planned process designed to be used for production of the same parts. A first article inspection report (FAIR) ***shall*** be submitted with the delivery of goods. In some cases a Last Article Inspection Report (LAIR) ***may*** be required.

14. Product Preservation

The supplier ***shall*** preserve the product during internal processing and delivery to the intended destination.

14.1 Workmanship Acceptance Criteria

Unless otherwise stated, the following workmanship acceptance criteria ***shall*** be used; Supplied product with surface finishes for functional or cosmetic applications ***shall*** be smooth, adherent, uniform in appearance, free from blisters, pits, nodules, scratches and other defects. This includes but is not limited to electroplated, conversion coated, anodised, painted, mechanically finished and passivated surfaces.

14.2 Foreign Object Debris (FOD)

The supplier ***shall*** establish a process to detect and prevent Foreign Object Debris. This ***should*** be in accordance with NAS412 and as a minimum include:

- FOD process review
- Training of FOD practices
- Material handling and product protection
- Tool / hardware accountability
- Lost items search and documentation process
- Physical entry control into FOD critical areas
- Inspection for foreign objects prior to closing apertures and compartments during assembly

14.3 Moisture Sensitive Level (MSL)

Moisture sensitive components ***shall*** be packaged in accordance with IPC/JEDEC J-STD 033. The Moisture Sensitivity Level (MSL) ***must*** be clearly identified on the outer packaging.

14.4 Electrostatic Discharge (ESD)

Where appropriate, suppliers ***shall*** provide adequate protection measures against ESD damage to goods and UECEMSMP property This ***should*** be in accordance with MIL-STD-1686 or ANSI/ESD S20.20. Electronic Components ***shall*** be handled, packaged and supplied in accordance with BS EN 61340-5-1

14.5 Shelf Life

Products with finite shelf life ***shall*** have the expiry date identified on the product and the delivery documentation. The remaining shelf life ***must*** be a minimum of 75% of the total shelf life for the material at time of delivery.

14.6 Packaging

The Supplier ***shall*** adequately plan for packaging designed to prevent product contamination, deterioration, damage or loss. Suppliers ***should*** provide expendable packaging or returnable containers, where appropriate, of sufficient density and protection from likely damage that may occur. Mechanical and electromechanical parts ***should*** be packaged with anti-static material where possible. The use of approved industry standard labelling and bar-coding ***shall*** be in accordance with any contractually agreed packaging specification.

15. Counterfeit Product Prevention

Where appropriate, the Supplier ***shall*** establish and maintain a counterfeit parts / material prevention and control plan using AS5553 and / or AS6174 to ensure that counterfeit parts / material is not delivered. The purpose of the Supplier's plan ***shall*** be to develop a robust process to prevent the delivery of counterfeit commodities and to control commodities identified as counterfeit. Where possible, distributors ***should*** be certified to AS5553 or AS6081.

16. Obsolescence Management

Obsolescence, as defined in the International Standard IEC 62402:2007, is the 'transition from availability from the original manufacturer to unavailability' and Obsolescence Management is 'the co-ordinated activities to direct and control an organisation with regard to obsolescence'. The suppliers ***shall*** notify UECEMSMP of any pending obsolescence, the relevant last time buy date and last time ship date at least 6 months prior to the last time buy date. Distributors ***may*** refer to BS EN 62402 for best practise.

17. International Traffic in Arms Regulations (ITAR)

ITAR technical data ***must*** only be shared with third-party suppliers who have: -

- Been approved by the owner of the ITAR technical data.
- Confirmed in writing (e.g., hardcopy letter, email with return address header) that they are authorized to receive such data and they understand the implications of and requirements for handling ITAR technical data.

Principally where data is identified as subject to ITAR restrictions apply to the control, handling and monitoring of such data. Only authorised personnel ***shall*** have access to restricted data. Restricted data ***shall*** be controlled in such a way as to prevent unauthorized transmission or access. Suppliers that require ITAR data ***shall*** have a procedure in place for the control, handling and monitoring of such data.

17.1 Non-Disclosure Agreement (NDA)

Where a supplier is identified on a Technical Assistance Agreement (TAA) or Manufacturing Licence Agreement (MLA), the organisation ***must*** complete a Non-Disclosure Agreement (NDA) when requested by UECEMSMP and ***shall*** continue to maintain access controls in accordance with the NDA and any Technology Control Plan (TCP) that UECEMSMP and the organisation enter into.

17.2 Sub-tier Suppliers

Sub-tier suppliers and sub-contractors used by the supplier that have access to any ITAR data ***must*** be authorized and identified on the TAA with an NDA in place.

17.3 Communication of ITAR Technical Data

- Voicemail ***shall*** not be used for ITAR technical data. Voicemail ***may*** be used for non-technical messages associated with ITAR projects (e.g., announcements of project meetings).
- Instant messaging ***shall*** not be used to transmit ITAR technical data.
- ITAR technical data ***may*** be transmitted by telephone or through conference calls if previously authorized by the owner.
- Email ***shall*** not be used for ITAR technical data unless a prior **written** agreement subject to security encryption measures is in place.

NOTE: The communication methods listed above ***may*** not always be authorized for every project.

17.4 Computer Equipment

The use of standalone secured computers is recommended for storing ITAR technical data. The use of networked computers for storing ITAR technical data ***may*** be permitted providing prior **written** agreement subject to security encryption measures is in place. Offsite storage of ITAR Technical Data for the purposes of storage or archival backup is not permitted unless specifically authorized by the owner of the data.

17.5 Deliveries

Delivery items ***shall*** not have any exterior labelling indicating that the contents of the package are subject to ITAR.

17.6 Disposal of ITAR Data and Products

Hard-copy ITAR documentation that is no longer needed ***must*** be disposed of in shredder bins or confidential material disposal bins. Scrap products and components ***shall*** be destroyed, rendered unusable and unrecoverable and specific disposal sanctioned by UECEMSMP.

17.7 Violations

Violations or suspected violations of the ITAR ***shall*** be reported to the UECEMSMP quality department immediately.

18. Distributors

Distributors ***shall*** be franchised unless otherwise agreed in writing. A franchised distributor ***shall*** have a contractual agreement with an Original Component Manufacturer (OCM) or Original Equipment Manufacturer (OEM) to buy, stock, re-package, sell and distribute its product lines. Where possible, distributors ***should*** be certified to AS6081.

19. Concessions

It is the policy of UECEMSMP not to accept a product that fails to meet the required specifications. All concessions ***shall*** be considered as non-conforming product.

19.1 Deviations

Deviations from the parts requested on the UECEMSMP Purchase Order ***must*** be supported by an approved Concession by UECEMSMP.

19.2 Approval

Approval must be obtained prior to delivery of parts to UECEMSMP. The issuing of a Concession on specific order(s) ***shall*** not give approval to supply the same part on any other orders. Parts purchased under concession ***shall*** not be linked to an UECEMSMP Stock number on the supplier's business system or by any other means within the supplier's organisation. Concessions ***shall*** be approved via UECEMSMP Quality and Purchasing.

20. Delivery on Time In Full (OTIF)

Suppliers ***shall*** supply conforming goods and services on time in full including all required correct documentation and certification where applicable.

20.1 Late Deliveries

If non-delivery or late deliveries are anticipated, suppliers ***shall*** immediately notify the buyer indicated on the purchase order. Delays can cause line or operation interruption.

20.2 Short Orders

If short orders are anticipated, suppliers ***shall*** immediately notify the buyer indicated on the purchase order. Short orders can cause line or operation interruption.