SUPPLIER QUALITY REQUIREMENTS

QA-401

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1.0 OVERVIEW

1.1 PURPOSE

This document defines the specific requirements for a system to control the quality level for purchased products supplied to Ultra Electronics, Ocean Systems located in Braintree, MA, subsequently referred to as the Company.

The quality of Company products and the success of our business depend in large measure upon the quality and the reliability of the parts, materials, and services furnished by our Suppliers. The quality requirements imposed on Suppliers and the records maintained by the Company showing the Supplier's performance to these requirements are essential elements to the Company's quality assurance program.

1.2 THE COMPANY QUALITY POLICY

The Company is dedicated to providing high value electronic products and services. We will ensure customer satisfaction by meeting all of our commitments. We aggressively pursue higher quality through employee involvement, teamwork, and metrics. Using a continuous process improvement program, we strive to increase the effectiveness of all business processes.

1.3 SCOPE

This document is applicable in its entirety to all procurements when specified in the contract. When the requirements of this document conflict with the requirements of other controlled documents referenced in the contract, the order of precedence will be as follows:

- a. Contracts (Purchase Orders)
- b. Detail specification, statement of work, or drawing
- c. Military or other agency quality specifications
- d. This document

Exceptions to the requirements as specified in this document must have written approval of the Company Procurement and Quality Assurance (QA) departments prior to the commencement of fabrication

The Supplier's acceptance of the Contract is considered acceptance of this document to the procurement activity.

1.4 DEFINITIONS

The following is a list of definitions and terms contained in this document.

Contract - The purchase order or contract document that specifies all conditions of purchase.

Firmware - The combination of a hardware device and computer instructions or computer data that reside as read-only software on the hardware device. The software cannot be readily modified under program control.

Government - Shall mean U.S. Government.

Product - All Company-purchased raw material, bulk material, parts, subassemblies, assemblies, units, software, firmware, and service.

Processes - Manufacturing and software development processes used in producing the material described by the contract, other than special and proprietary processes. The scope of software development processes evaluation will be specified in the contract.

Software Product - A complete set of computer programs, software media, procedures, and associated documentation and data designated for delivery to a user.

Software Service - Performance of activities, work, or duties connected with a software product, such as its development, maintenance, and operation.

Special Processes - The processes of a chemical plating, metallurgical, heat treatment, castings/forgings, bonding, printed circuit boards (PCB/PWB), organic coatings, biological, sonic, electronic, or radiographic nature that require, to an extent deemed significant, specialized equipment, procedures, personnel training, materials, and/or equipment and certification or calibration controls.

[Refer to "Special Process Supplier Quality Requirements" and their respective referenced documents when specified in the P.O. quality clause provisions in the contract.]

Supplier - Any source of product or service procured by the Company.

Deviation or Waiver requires authorization from the Company to ship noncompliant product to the Company when Company material review consideration is required. Written requests must be submitted prior to manufacturer.

2.0 SUPPLIER QUALITY REQUIREMENTS

2.1 QUALITY MANAGEMENT SYSTEM - MANUFACTURERS

The Supplier shall have in effect a quality management system that is documented in written procedures preferably certified to the ISO-9001 Standard. The Supplier shall submit to the Company upon request a quality manual or other appropriate documents that clearly outline the methods for satisfying the contract quality provisions. ISO 9001/ AS9100 or other quality system requirement may be imposed by specific contract.

2.2 DISTRIBUTORS

Materials shipped from distributors must be from the prescribed Company sources (as required on the drawing) or currently approved Government Qualified Suppliers (QPL sources) that are qualified and capable of performance in accordance with the applicable specifications.

The JAN or MIL preferred devices supplied on this contract shall have traceability documentation to the OEM accompanying the product with each order shipped.

In addition, the Distributor shall show the Company contract number, the part number, and date/lot code number of the material on the documentation provided.

The Distributor's quality program shall include:

- a. Records showing that applicable MIL or other specifications were imposed by the Distributor's purchase order to his source for materials and products being furnished to the Company.
- b. Provision for obtaining and retaining a statement of quality from his sources for materials and products being furnished to the Company.
- c. Control of products, materials, and documentation to ensure that the identity of materials and products being furnished to the Company can be demonstrated.
- d. Provision for obtaining from the Distributors' sources, upon request from the Company, objective quality evidence for the items being furnished and a corrective action response for deficient items.
- e. Provisions for demonstrating compliance with quality system requirements for valueadded work performed on the product supplied in accordance with the contract.
- f. Have a counterfeit parts control process in place that complies with the requirements of Industry Standard AS5553 and AS6174.

2.3 GENERAL REQUIREMENTS

The requirements set forth herein are minimum requirements and do not relieve Suppliers of their obligation to deliver products in accordance with contract requirements.

It is the Supplier's responsibility to obtain applicable Government/industry documents of the revision in effect on the date of contract, unless otherwise specified. Applicable Company documents will be issued to approved Suppliers upon request to Company Buyer.

It is the Supplier's responsibility to immediately notify the Buyer in writing of any change in the Supplier's name, part number, address, or point of manufacture. Failure by the Supplier to notify the Buyer will result in the Supplier being removed from the Approved Supplier Listing.

Workmanship must be of a consistently high level of quality commensurate with the existing state of the art and in conformance with applicable specifications referenced on the engineering drawings or specified in the contract. If workmanship standards are not specified, they shall be equivalent to the Company standards or better, which, as a minimum, meet the guidelines of MIL-HDBK-454 or other applicable industry standards. Software development processes must, as a minimum, meet the guidelines of ISO IEC 90003 2004.

During performance of a contract, the Supplier's quality control or inspection system and manufacturing processes are subject to audit, review, verification, and analysis by cognizant Government, Company, and/or third-party quality representatives under contract to the Company.

The Government has the right to inspect any or all of the work on any contract where a military contract number has been referred to at the Supplier's plant. The Supplier shall provide a copy of the contract to his Government representative upon request.

- 3.0 OCEAN SYSTEMS SUPPLIER QUALITY PROGRAM
- 3.1 SUPPLIER ASSESSMENT AND APPROVAL

Potential new Suppliers will be assessed for suitability prior to purchase based on an on-site survey or supplier quality survey.

Following a successful pre-assessment, the Company may elect to perform an on-site survey to evaluate the Supplier's existing quality or inspection system and processing controls and capabilities. The assessment shall include, but not be limited to:

- a. Organization structure b. Quality system
- c. Manufacturing capability d. Process controls
- e. Corrective and Preventive Actions

The Supplier will be informed of any deficiencies that will require corrective action. The Company reserves the right to resurvey Suppliers to verify adequacy and implementation of the corrective action. Suppliers will be formally advised of their approval/disapproval status following the survey.

Supplier may be approved by any one or combination of the following methods:

ISO9001/AS9100 certification		
On-Site UEOS Survey		
Supplier Self Survey		
Supplier History		
Customer Directed Source		
QPL Supplier		
Special Process Certification		
OTHER		

3.2 SOURCE INSPECTION

The Company, third-party source representatives, or customers (when authorized by the Company or the Government) reserve the right to inspect, reinspect, test or retest, or witness any inspection or test at the Supplier's facility on all items at any level of manufacture and software development, up to and including completed end items, using the Supplier's equipment. All such visits will be coordinated in advance. These visits will be with Supplier escort and with prior approval, which will not unreasonably be withheld.

When source inspection is contractually imposed, the Company must be advised a minimum of three (3) working days in advance of the requirement. The Supplier will perform such tests and inspections as deemed necessary to ensure conformance of the product to applicable requirements. All documented evidence or assurance must be made available for review to the Company Source Inspector. Source inspection in no way relieves the Supplier of the responsibility for supplying a product that fully complies with the contract.

The Company reserves the right to assign a Company Representative to the Supplier's facility. The Supplier will be required to support such Company-assigned personnel with adequate facilities and equipment and must designate one or more responsible individuals with whom the Company representative may discuss any questions concerning manufacture, software development, inspection, or test of the product on order.

When Government Source Inspection (GSI) is required, it will be specified on the contract, and a copy of the order must be promptly furnished to the local Government Defense Contract Management (GDCM) Agency and/or Contract Administration Office (CAD). In the event that the representative or office cannot be located, the Company Buyer must be notified immediately.



3.3 SUPPLIER QUALITY LISTING/RATING

A Supplier quality rating is maintained on a rolling year average and is related to Quality Performance, Delivery Performance and Overall Supplier Performance (on-time deliveries or rework costs but may be adjusted for reason of latent or other defects not detected at time of initial acceptance).

Consistent with our goals for continuous improvement, the Supplier performance goals are: quality, on time to promised date, and overall performance (cost, service, billing).

Consistently poor performance may be cause for removal from the Approved Supplier List. Suppliers which receive a rating less than <u>80</u>% will be issued a Supplier Corrective Action. For all others, "Supplier report cards" describing the Suppliers' overall performance are available upon request.

3.4 SUPPLIER CORRECTIVE ACTION REQUEST / Non-Conforming Report (NCR)

Defective material that requires corrective action will be reported to the Supplier by a Supplier Corrective Action Request (NCR Form QA-050), whether or not the Company elects to return the material to the Supplier. Each SCAR requires action and a reply within 14 days by the Supplier to ensure that subsequent shipments will be satisfactory. <u>Failure to respond</u> within the allowed time may result in the Supplier being placed on a "Procurement blocked" status listing on the Approved Supplier List, which may prevent Supplier from receiving future Purchase Orders.

3.5 METRICS - PROCESS CONTROL

Suppliers are encouraged to monitor and control processes by analyzing collected data to improve quality and processing efficiencies. When the PO or drawing specification calls out Key Characteristics or Key Quality Indicators (KQI) the supplier shall be able to provide objective evidence that they have a consistently controlled process. And that all items produced are compliant to the requirements.

The control Plan must include the controls used, the method of data collection and presentation and the implementation of corrective actions for conditions that affect form, fit or function of the parts.

4.0 QUALITY PROVISIONS - GENERAL REQUIREMENTS

4.1 RECORDS

The Supplier must maintain adequate reports and records of inspection, tests, and quality programs performed. The Company may elect to utilize such data as criteria for acceptance.

Records must be analyzed and corrective action must be taken and documented for any defect trends observed.

All records must be available for review by the Company, and copies of individual records must be furnished upon request or, when required by contract, supplied to the Company with the product.

The Supplier must keep on file records for all products that can be identified to an individual item or production lot for a period of three (3) years following completion of a contract or as specified by the contract.

4.2 SUPPLIER STAMPS, TAGS, TICKETS, AND FORMS

The Supplier must indicate the inspection status of parts, components, and assemblies purchased by the Company with the aid of stamps, tags, tickets, forms, or other control devices. Stamps, if used, must be clearly distinguished from the Company and Government stamps.

A certified welder's stamp must appear on all items welded in accordance with Military Specifications.

4.3 SPECIAL PROCESSES

Special processes" refer to processes that produce outputs whose output cannot be verified before being released to the customer. These products and services require special attention during production to ensure that they're free of defects.

These processes may require specialized testing/analysis, a demonstration of operator or equipment capability or proficiency, and may require special controls for monitoring of characteristics. These processes must be validated to the current industry (i.e. ASTM) standards for those processes prior to supplying a product.

For processing performed under NAPCAP certification, the NADCAP process statement, accreditation number and expiration date must be included in the certification provided to UEOS.

4.4 PROCESS AND/OR PRODUCT CHANGE

The Supplier must notify the Company of any significant changes that could affect product quality. These include, but are not limited to, changes to location, process, or design in qualified products; changes in quality system status; or changes to workmanship standards.

For nonstandard, specification-controlled, source-controlled, or altered items, the Supplier shall maintain an effective system for control of drawings, changes, and specifications.

The "suggested" or "recommended" Suppliers listed on the Company-supplied specifications/ drawings are the only approved sources of this material.

No changes shall be made to the product, part number, or critical processes without prior written approval of the Company.

Notification of these changes shall be coordinated through the Company Buyer.

The Company Quality Manager or Company Materials Manager shall be notified in writing of the intent to effect a change to proprietary process or construction that may affect item form, fit, or function since the time parts where Company approved. In no case will product incorporating such a change be submitted without prior written approval of the Company. Products that are changed may require re-qualification as determined by the Company.

4.5 CONTROL OF RAW MATERIAL

Raw materials must be identified and controlled by the Supplier's facility. Evidence of raw material conformance to applicable physical, chemical, and other technical requirements, including periodic verification of Supplier certificates, must be available for Company review. When required by contract, the Supplier's deliveries must include certificates of analysis for materials used.

4.6 PROCUREMENT QUALITY CONTROL

The Supplier must purchase items and services only from the Company-approved Supplier(s) or source(s) listed on the Company specification. If a source of supply is not specified, the Supplier will evaluate the quality capabilities of each prospective source. The Supplier must maintain an evaluation system for the purpose of selecting sources and obtaining corrective action.

The Supplier must perform adequate incoming inspection and tests to ensure that all purchased products conform fully to contractual requirements, including procedures and instructions for preventing the use of products that have not been processed through the required inspections and tests.

Applicable requirements of the contract and this document will also be imposed as a requirement on the Supplier's sources as part of the requirements flow down process.

4.7 STORAGE AND DISBURSEMENT

The Supplier's system must provide, by adequate procedures and facilities, for control of the storage and disbursement of products. This includes incoming product, product in-process, and completed product. The system will make provisions for the protection of supplies subject to deterioration and for the preservation, age identification, stock rotation, and reinspection of products, when required.



4.8 INSPECTION AND TEST INSTRUCTIONS

Instructions must be prepared by the Supplier to specify all physical, dimensional, and functional quality characteristics to be inspected and/or tested. Instructions will also specify the applicable sampling plan, accept/reject criteria, and methods of inspection and/or test. These instructions will be revised as required to conform to the latest engineering changes.

4.9 IN-PROCESS INSPECTION

The Supplier must perform adequate inspection and test on all products produced within the plant at points appropriately located in the manufacturing and software development process to ensure an acceptable end item and conformance to contractual requirements.

4.10 SAMPLING PLANS

Sampling plans per ANSI/ASQC Z1.4 may be used by the Supplier whenever inspections or tests of the product are destructive or when quality records indicate that reduction in inspection or testing will not affect product quality.

The Supplier's use of a statistical quality control program utilizing sampling procedures other than those based on ANSI/ASQC Z1.4 or other contractually valid plans requires Company approval based on submittal of the following information:

a. Acceptance sampling tables with quality risks and levels (operating characteristic curves) for such special plans.

b. Accept/reject criteria and procedures for classification of characteristics.

c. Data recording and control forms.

4.11 FINAL ACCEPTANCE INSPECTION AND TEST

Final inspection and test of the product, as well as preparation of required documents, must be performed by the Supplier prior to submission for acceptance by the Company. Inspection and tests that cannot be readily performed on the end product must be performed at appropriately located in-process stages of manufacturing and software development.

4.12 MATERIAL IDENTIFICATION AND PERMANENCY OF MARKING

Suppliers are expected to have a thorough lot control system that provides complete traceability of all production and material throughout manufacturing, including any special processes and sub-tier activity. The system is expected to provide traceability to the supplier's shipping label.

Material must be marked with the manufacturer's name/logo. The lot number or date code, where applicable, shall be included. When an item is too small to be physically marked, it will be bagged and tagged by some suitable means.

For military contracts, the manufacturer's CAGE code shall be marked in accordance with MIL-STD-130, except if specifically superseded by the drawing.

The Supplier shall ensure that material with date lot codes exceeding five (5) years will <u>not</u> be provided unless specifically approved by the Company's Quality Assurance department.

Regarding electronic assemblies, printed circuit boards, and electronic components, the part and its markings shall not be adversely affected during or as a result of a dip-soldering operation consisting of fluxing with an approved RMA flux and dip soldering for ten (10) seconds at 550°F, followed by complete immersion in the solvents listed below. This requirement is in addition to any solvent-resistant requirement of applicable specification(s).

a. 15-minute minimum immersion in isopropyl alcohol and/or Humiseal acrylic stripper #1080.

b. 3 cycles at 5-minute each cycle immersion at 160°F and 90 psi using Armakleen 2002E; Saponifier, and deionized water.

c. 8-minute immersion with Genesolv 2004.

4.13 ELECTRONIC PARTS/COMPONENTS SOLDERABILITY REQUIREMENTS

The electronic part(s)/component(s) supplied on the purchase order must be capable of meeting the applicable requirement of solderability.

Solderability specification ANSI/J-STD-002, "Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires", is applicable to those electronic part(s)/ component(s) that do not specifically identify a higher level solderability requirement in the procurement documentation (i.e., drawing, specification, or catalog).

4.14 SUPPLIER'S TOOLS, GAGES, AND TEST EQUIPMENT

The Supplier must provide and maintain adequate tools, gages, test equipment, test software, and other measuring and testing devices and must ensure that these devices are calibrated using documented procedures against certified measurement standards at established periods. In addition, the Supplier is required to maintain records of inspection, calibration, and certification of tools, gages, test equipment, and test software. Unless otherwise specified, the controls employed will meet the requirements ISO 10012:2003 or ANSI/NCSL-Z540.1. ISO IEC 90003 2004 for software.

4.15 COMPANY-FURNISHED EQUIPMENT

Suppliers must control, calibrate, and maintain Company-furnished inspection and test equipment in accordance with ISO 10012:2003 or ANSI/NCSL-Z540.1 unless otherwise indicated. Company personnel will be made available for the operation and verification of such devices. Modification or changes to Company-furnished equipment and software will not be made without prior written approval from the Company.

4.16 PACKAGING AND SHIPPING CONTROL

The Seller will package the product in a manner that will afford adequate protection against corrosion, deterioration, or physical damage during shipment from the supply source to the receiving activity. For products sensitive to temperature change, i.e., "frozen adhesive, B stage epoxy, etc," packaging must include warning labels and, where possible, a temperature indicator must be used to flag possible product damage due to unfavorable environmental exposure.

Flexible printed circuits must be packaged with desiccant in vapor barrier bags with not more than two (2) units per package and protected between sheets of expanded polystyrene (EPS) or equivalent. The vapor barrier bags must be sealed with allowance for a minimum of two additional seals.

Where the product ordered is considered sensitive to electrostatic charges, the Supplier is responsible for packaging the product in electrostatic protective containers in conformance with EIA/JESD 625. The Supplier must mark all packages and unit packaging with an appropriate caution/warning.

Moisture-sensitive plastic surface-mount components must be packed in desiccant packing. Units shall have been baked dry and enclosed in sealed moisture barrier bags with desiccant pouches. Packaging shall conform to ANSI/IPC-SM-786. The part number as called out on the purchase order must be marked on unit containers and packages.

4.17 NONCONFORMING PRODUCTS

The Supplier's system will, by adequate procedures and records, provide for the control of products that are not in conformance with engineering drawings, specifications, and contractual requirements. Procedures will ensure that a nonconforming product is properly dispositioned, positively identified, and segregated to prevent intermingling with normal production.

Any departures from drawings, specifications, or other purchase order requirements must be approved by Company Quality Assurance prior to shipment, with such approval accompanying that shipment.

All material rejected by the Company and subsequently resubmitted by the Supplier to the Company shall bear adequate identification of each resubmission, either with the material or on the Supplier's document (e.g., NCR No., P.O. number).

Reference shall be made to the Company's rejection document, and evidence shall be given that the causes for rejection have been corrected.

Government Source Inspection (GSI) material must have evidence that the resubmission has also received GSI approval.

The Seller agrees that the material/product supplied on this purchase order conforms in every respect to applicable specifications and/or drawings. Evidence of conformance with applicable specifications will be furnished on request. Under no circumstances shall the Supplier submit a product to the Company that has been previously rejected by another customer.

4.18 MATERIALS REVIEW AUTHORITY

When suppliers are not authorized by the Company to conduct MRB actions (i.e., any deviations or major non-conformances from the drawing or specification) on the Company products manufactured within their facilities and must conform to the Contract (PO) or Statement of Work.

Where the Supplier has been authorized in writing by the Company to conduct MRB actions on products manufactured for the Company within the plant, the Supplier's actions are subject to the following conditions:

- a. The Supplier's Material Review Board (MRB) will consist of:
 - (1) A qualified representative of the Supplier's Quality organization.
 - (2) A qualified representative of the Supplier's Engineering organization.
 - (3) In addition to the above personnel, members of the board and/or the Company may call upon Government, Company, or Supplier personnel to act in an advisory or consultant capacity.
- b. Supplier MRB action will be limited to the processing of minor nonconformances only. Minor nonconformances are departures from established standards or workmanship or other similar standards in a manner or to a degree that has no subsequent bearing on the use or operation of the item or related components and that does not involve any of the factors classified as major nonconformances, such as safety, weight, performance, reliability, life, and interchangeability.
- c. Supplier's MRB decisions are subject to review and approval by the Company.



d. The Company reserves the right to rescind approval of MRB not operating within established procedures.

e. The Supplier is required to maintain complete records of all material review action and must forward one copy of each Material Review Report to the Company resident representative within three (3) days of completion of the action. If no representative is assigned, the copy should be sent to Company's Quality Manager. In addition, one copy of the pertinent Material Review Report must accompany the product when shipped to the Company.

4.19 CERTIFICATION OF CONFORMANCE

Where specified, the shipment must be accompanied by a Certificate of Conformance (C of C) containing the following or equivalent statement: *"We hereby certify that the material supplied on this order complies in every respect to the specifications and/or drawings referenced on the order. Documented evidence is on file at our facility and is available for review upon request."* The certificate must contain the signature and title of an authorized officer of the Seller, along with the purchase order number, Company part number, and date/lot code of the material.

4.20 METAL PARTS

Suppliers of sheet metal parts shall take every reasonable precaution to protect the material supplied. Damage such as gouges, scratches, and burrs are not acceptable. Surface scratches that are within allowable acceptance criteria for the chemical conversion process per MIL-DTL-5541 shall have the coating reworked such that it is discernible for inspection.

4.21 IDENTIFICATION OF LIMITED CALENDAR LIFE MATERIAL

Suppliers of limited calendar life material are required to identify each item with limited calendar life with the date of manufacture, storage, temperature, and, when applicable, special handling conditions in addition to normal identification requirements of name, part and batch number, specification number, type, size, quantity, and manufacturer's recommended shelf life. Identification including "Special Handling Conditions", is to be marked on the shipping documents for the material and on the C of C.

Material deemed acceptable by the Seller's inspection department is to be marked with an expiration date label(s) affixed directly to the age-sensitive material. Expiration date used for age-sensitive material is to be based on manufacturer's recommended shelf life and date of manufacture. The Company reserves the right to return any material that 25% of its shelf life has expired at time of receipt.

5.0 QUALITY PROVISIONS - SPECIFIC/SUPPLEMENTAL REQUIREMENTS

Special quality provisions, when required, will be specifically identified to the part number by the individual requirements as one or more clauses on the contract. Some examples are Government Source Inspection, Company Source Inspection, X-Ray Reports Required, etc.