COVER SHEET AND REVISION STATUS

REV	ECN	DATE	DESCRIPTION OF CHANGE / INITIATOR
A	17866	4/9/99	Initial Release.
B	10432	11/20/02	Added Reference to TRB Para 4.1.3.3, Added Quality Program Plan Para 4.2.1.1 and Appendix E, Added Design Controls Section 4.4., Updated Section 4.7 Consigned Materials, Added Section 4.19 Servicing. Updated Appendix A, B & C, Updated Organization Chart Appendix D.
C	10484	05/07/03	Updated Reference Procedures, Organization Chart Appendix D. and QM Plan Appendix E.
D	10624	06/23/04	Added Section 10.0 Added Appendix F –Quality Management Systems – Aerospace Standard. (AS9100)
E	10838	12/20/07	Changed section 4.1.2.3 from QA Director to Quality Associate, changed Organization Chart. (RT)
F	10844	04/10/08	Up-dated Organization Chart (RT).
G	10883	07/20/09	Update to QP/e2v Logo, Org Chart, Mission Statement and add New Technology Insertion Requirement (ES)
G	10883	07/27/09	Current Approved Revision and Affectivity Date

APPROVED DOCUMENT RELEASE / ENGINEERING CHANGE NOTICE (ECN)
ON FILE IN DOCUMENT CONTROL

Specification type

QUALITY ASSURANCE MANUAL

Table of contents

1. PURPOSE:

1.1. Purpose:

1.1.1. This document establishes the requirements for the maintenance of a quality assurance system capable of assuring that Company products meet the quality standards required by Military, Customer, and QP Semi requirements.

1.1.2. This document specifies quality system requirements for use where a contract between two parties requires the demonstration of the capability to manufacture, test, and supply product.

1.1.3. The requirements specified in this document are aimed primarily at preventing nonconformity and providing continuous improvement.

1.2. Application:

1.2.1. The quality assurance system assures that an adequate control of quality shall be maintained throughout the manufacturing process from receiving to shipping for all devices that make up the high quality products manufactured and tested by QP Semi.

1.2.2. This document is applicable in contractual situations when:

1.2.2.1. The contract specifically requires design effort and the product requirements are stated principally in performance terms or they need to be established.

1.2.2.2. Confidence in product conformance can be attained by adequate demonstration of certain capabilities in design, development, production, installation, and servicing.

2. APPLICABLE DOCUMENTS:

2.1. Documents:

2.1.1. The following documents of the latest issue form a part of this Quality Assurance Manual to the general requirements of said documents and to the extent specified herein.

2.2. International Standards:

2.2.1.	ISO 8402	Quality - Vocabulary
2.2.2.	ISO 9000	Quality Management and Quality Assurance Standards – Guidelines for Selection and use.
2.2.3.	ISO 9002	Quality Systems: Model for Quality Assurance in Production and Installation.

2.3. Government Documents:

2.3.1.	MIL-PRF-38535	General Specification for Integrated Circuits (Microcircuits) Manufacturing

3. GENERAL REQUIREMENTS

3.1. Definitions:

3.1.1. For the purpose of this document, the definitions given in ISO 8402 apply.

3.1.1.1. This term “product” is also used to denote “service”, as appropriate.

3.1.2. e2v – Owner and Parent Company to QP Semiconductor. e2v is a publicly traded company, listed on the London stock exchange and based in Chelmsford, England. e2v purchased QP Semiconductor from the founders in October 2008.

3.2. Company Mission Statement:

3.2.1. QP Semiconductor Statement: To provide our customers with Mature, End-of-Life and Obsolete semiconductor products of premium quality to support existing high reliability systems.

3.2.2. e2v Mission Statement: Our mission is to place our customers at the heart of our business, providing enabling products of premium quality that extend technical performance and enhance the competitive position of our partners.

3.3. Employee Mission Statement:

3.3.1. “Together We Achieve the Extraordinary”.

3.4. QP Semi Values:

3.4.1. People: Our greatest asset is our people.

3.4.1.1. They can achieve full potential as individuals and as contributors to our success only if they are fulfilled in their work.

3.4.1.2. We provide a working environment in which integrity, ethical behavior, and respect for one another are paramount in all interactions.

3.4.2. Product: Our products give meaning to our life as a business.

3.4.2.1. They are the standard by which we are measured.

3.4.2.2. Our products are successful only if our customers view them as the best available.

3.4.3. Profits: We are in business to generate profits for the company so that we can prosper and grow.

3.5. Guiding Principles:

3.5.1. Quality Comes First: Our top priority is continuous improvement in the quality of all of our products. The meaning of quality is determined by the customer who uses the product.

4. QUALITY SYSTEM REQUIREMENTS

4.1. Management Responsibility:

4.1.1. Quality Policy: QP Semi shall provide products and services that conform to customer's contractual and regulatory requirements and strive to exceed customer expectations. QP Semi shall ensure that this policy is understood, implemented, and maintained at all levels in the organization.

4.1.2. Organization:

4.1.2.1. Responsibility and Authority: The responsibility, and interrelationship of all personnel who manage, perform, and verify work affecting quality shall be defined; particularly for personnel who need the organizational freedom and authority to:

4.1.2.1.1. Initiate action to prevent the occurrence of product nonconformity

4.1.2.1.2. Identify and acquire any controls, processes, inspection equipment,

fixtures, total production resources, and skills that may be needed to achieve the required quality.

4.1.2.1.3. Initiate, recommend or provide solutions through designated channels.

4.1.2.1.4. Verify the implementation of solutions.

4.1.2.1.5. Control further processing, delivery or installation of non-conforming product until the deficiency or unsatisfactory condition as been corrected.

4.1.2.2. Verification Resources and Personnel: QP Semi shall identify in-house verification requirements, provide adequate resources, and assign trained personnel for verification activities (see 4.18). Verification activities shall include the following:

4.1.2.2.1. Inspection, test, and monitoring of the design, production, installation, and servicing processes and/or product.

4.1.2.2.2. Design reviews and audits of the quality system, processes and/or product shall be carried out by personnel independent of those having direct responsibility for the work being performed.

4.1.2.3. Management Representative: A management representative, Quality Associate who, irrespective of other responsibilities, shall have the defined authority for ensuring that the requirements of this document are implemented and maintained.

4.1.3. Management Review: The quality system adopted to satisfy the requirements of this document shall be reviewed at appropriate intervals by the company management to ensure its continuing suitability and effectiveness. Records of such reviews shall be maintained.

4.1.3.1. Management reviews normally include assessment of the results of internal quality audits.

4.1.3.2. These reviews may be carried out by, or on behalf of, the management, via management personnel having direct responsibility for the system. (See 4.17)

4.1.3.3. In addition a quarterly status report will be sent to DSCC – Defense Supply Center Columbus per the requirements of QAP-9, Technology Review Board (TRB). This report summarizes the quality system activities for the past quarter and is reviewed and approved by the TRB.

4.2. Quality System:

4.2.1. A documented quality system is established and shall be maintained as a means of ensuring that product conforms to specified requirements. This shall include:

4.2.1.1. The preparation of documented quality system procedures and instructions in accordance with the requirements of this document.

4.2.1.2. The effective implementation of the documented quality system procedures and instructions.

4.2.2. In meeting specified requirements, timely consideration needs to be given to the following activities:

4.2.2.1. The preparation of quality plans and a quality manual in accordance with the specified requirements.

4.2.2.1.1. A Quality Assurance Program Plan per MIL-PRF-38535 is defined in Appendix E. Records of this plan will be maintained by Document Control.

4.2.2.2. The identification and acquisition of any controls, processes, inspection equipment, fixtures, total production resources, and skills that may be needed to achieve the required quality.

4.2.2.3. The updating, as necessary, of quality control, inspection, and testing techniques, including the development of new instrumentation.

4.2.2.4. The identification of any measurement requirement involving capability that exceeds the known state of the art in sufficient time for the needed capability to be developed.

4.2.2.5. The clarification of standards of acceptability for all features and requirements, including those, which contain a subjective element.

4.2.2.6. The compatibility of the design, production process, installation, inspection, test procedures, and the applicable documentation.

4.2.2.7. The identification and preparation of quality records. (see 4.16)

4.3. Contract Review:

4.3.1. The procedures for contract review and for the coordination of these activities shall be established and maintained. Each contract shall be reviewed by the supplier to ensure that:

4.3.1.1. The requirements are adequately defined and documented.
4.3.1.2. Any conflicting requirements are resolved.
4.3.1.3. The supplier has the capability to meet contractual requirements.
4.3.1.4. Records of such contract reviews shall be maintained (see 4.16).
4.3.1.5. The contract review activities, interfaces, and communication within the company's organization shall be coordinated with the purchaser's organization, as appropriate.

4.4. Design Control:

4.4.1. The general electrical performance requirements are defined in QP Semi document SCD-14, "Device Design Requirements".

4.4.1.1. All new and/or redesigned devices are required to "plug and play" in the existing application without any changes to the existing applications. (i.e. No change detectible by the end user.)

4.4.2. Operational and Storage Environmental Requirements:

4.4.2.1. Operating Temperature, -55 C to + 125 C.
4.4.2.2. Storage Temperature of –65 C to + 150C.
4.4.2.3. Maximum Tj of 200 C.
4.4.2.4. Human Body Model ESD protection circuitry capable of withstanding 2000V minimum.
4.4.2.5. Etc. (See SCD-14 for details)

4.4.3. Application:

4.4.3.1. QP Semi is responsible for performing 100% screening across all temperatures and parameters as detailed in the applicable drawing.
4.4.3.2. The Vendor/designer is responsible for providing material that is capable of meeting these

requirements to a reasonable yield as defined in SCD-14.

4.4.4. Current Density (as designed):

4.4.4.1. The current density shall not exceed 5.0 X 10^5 A/cm^2 for glassivated metallization or 2.0 X 10^5 A/cm^2 for unglassivated metallization without prior agreement by QP Semi. (See SCD-14 for details)

4.4.5. Other Requirements/Conflicts:

4.4.5.1. The Vice President of Engineering resolves conflicting, ambiguous, or incomplete requirements with those responsible for drawing up these requirements.

4.4.5.2. Statutory and regulatory requirements are identified and documented as part of product specifications.

4.4.6. Design Output/Deliverables:

4.4.6.1. A complete set of design files, including as a minimum:

4.4.6.1.1. Schematic

4.4.6.1.2. Physical Layout (normally GDSII)

4.4.6.1.3. Validation that the Design Rule Check was made and passed. This normally includes a printout showing no violations, or a list of violations that were approved by the QP Semi Technical Review Board.

4.4.6.1.4. Plot showing location of highest current density on design, along with calculated worse case design current density calculated in accordance with SCD-14. Design Requirements.

4.4.6.1.5. Simulation data showing that the design is capable of meeting significant specified parametric limits in the primary device specification.

4.4.6.1.6. Identification of the wafer foundry and process that the design is intended for.

4.4.6 Design Review / Approvals:

4.4.6.1 A Design Review Checklist will be maintained per SCD-14, Design Requirements and approved by the TRB.

4.5. Document Control:

4.5.1. Document Approval and Issue: Procedures to control all documents and data that relate to the requirements of this document shall be established and maintained. These documents shall be reviewed and approved for adequacy by authorized personnel prior to issue. This control shall ensure that:

4.5.1.1. The pertinent issues of appropriate documents are available at all locations where operations essential to the effective functioning of the quality system are performed.

4.5.1.2. Obsolete documents are promptly removed from all points of issue or use.

4.5.2. Document Changes/Modifications:

4.5.2.1. Changes to documents shall be reviewed and approved by the same functions/organizations that performed the original review unless specifically designated otherwise. The designated organizations shall have access to pertinent background information upon which to base their review and approval.

4.5.2.2. The nature of the change shall be identified in the document or the appropriate attachments.

4.5.2.3. A Document Control procedure shall be established to identify the current revision of documents in order to preclude the use of non-applicable documents.

4.5.2.4. Documents shall be re-printed and distributed after every change.

4.6. Purchasing:

4.6.1. General:

4.6.1.1. A system shall be established that will ensure that purchased products and/or services meet the specified requirements.

4.6.2. Assessment of Sub-Contractors: Sub-contractors shall be selected on the basis of their ability to meet sub-contract requirements, including quality requirements. Records shall be established and maintained of acceptable sub-contractors (see 4.16).

4.6.2.1. The selection of sub-contractors, and the type and extent of control exercised by the supplier, shall be dependent upon the type of product and, where appropriate, on records of sub-contractors' previously demonstrated capability and performance.

4.6.2.2. The effected quality system controls shall be ensured and maintained via a combination of incoming inspection, auditing and quality records.

4.6.3. Purchasing Data: Purchasing documents shall contain data clearly describing the product ordered, including, where applicable:

4.6.3.1. The type, class, style, grade or other precise identification.

4.6.3.2. The title or other positive identification, and applicable issue of specifications, drawings, process requirements, inspection instructions, and other relevant technical data, including requirements for approval or qualification of product, procedures, process equipment, and personnel.

4.6.3.3. The title, number, and issue of the quality system document to be applied to the product.

4.6.3.4. Purchasing documents shall be reviewed and approved for adequacy of requirements prior to release.

4.6.4. Verification of Purchased Product: Where specified in the contract, the purchaser or his/her representative shall be afforded the right to verify at source or upon receipt that purchased product conforms to specified requirements.

4.6.4.1. Verification by the purchaser shall not absolve the responsibility to provide acceptable product nor shall it preclude subsequent rejection.

4.6.4.2. When the purchaser or his/her representative elects to carry out verification at the sub-contractor's plant,

such verification shall not be used as evidence of effective control of quality by the sub-contractor.

4.7. Purchaser Supplied Product:

4.7.1. Consigned Materials will be identified and tracked in the same manner as standard products including appropriate inspections and inventory controls.

4.7.1.1. Any such product that is lost, damaged or is otherwise unsuitable for use shall be recorded and reported to the purchaser.

4.8. Product Identification and Traceability:

4.8.1. Where appropriate, the procedures for identifying the product from applicable drawings, specifications or other documents, during all stages of production, delivery and installation shall be established and maintained.

4.8.2. Where, and to the extent that, traceability is a specified requirement, individual product or batches shall be a unique identification.

4.8.3. This identification shall be recorded (see 4.16).

4.9. Process Control:

4.9.1. General: Production shall be identified, planned and carried out under controlled conditions. Controlled conditions shall include the following:

4.9.1.1. Documented work instructions defining the manner of production and installation, where the absence of such instructions would adversely affect quality.

4.9.1.2. Use of suitable production and installation equipment.

4.9.1.3. Establishment and maintenance of a suitable working environment.

4.9.1.4. Compliance with reference standards/codes and quality plans.

4.9.1.5. Monitoring and control of suitable process and product characteristics during production and installation.

4.9.1.6. The approval of processes and equipment, as appropriate.

4.9.1.7. Criteria for workmanship which, shall be stipulated, to the greatest practicable extent, in written standards or by means of representative samples.

4.9.2. Special Processes: These are processes, the results of which cannot be fully verified by subsequent inspection and testing of the product and where, for example, processing deficiencies may become apparent only after the product is in use.

4.9.2.1. Accordingly, continuous monitoring and/or compliance with documented procedures are required to ensure that the specified requirements are met. These processes shall be qualified and shall also comply with the requirements of 4.9.1.

4.9.2.2. Records shall be maintained (see 4.16) for qualified processes, equipment, and personnel, as appropriate.

4.10. Inspection and Testing:

4.10.1. Receiving Inspection and Testing:

4.10.1.1. Incoming Product: Incoming Product shall not be used or processed (except in the circumstances described in 4.10.1.2) until it has been inspected or otherwise verified as conforming to specified requirements.

4.10.1.1.1. Verification shall be in accordance with the quality plan or documented procedures.

4.10.1.2. Incoming Product Identification: Where incoming product is released for urgent production purposes, it shall be positively identified and recorded (see 4.16) in order to permit immediate recall and replacement in the event of nonconformance to specified requirements.

4.10.1.2.1. In determining the amount and nature of the receiving product, consideration shall be given to the control exercised at source and documented evidence of quality conformance provided.

4.10.2. In-process Inspection and Testing: The following shall be ensured:

4.10.2.1. Inspect, test, and identify product as required by the procedures.

4.10.2.2. Establish product conformance to specified requirements by use of process monitoring and control methods.

4.10.2.3. Hold product until the required inspection and tests have been completed or necessary reports have been received and verified except when product is released under positive recall procedures (see 4.10.1). Release under positive recall procedures shall not preclude the activities outlined in 4.10.2.1.

4.10.2.4. Identify and segregate non-conforming product.

4.10.3. Final Inspection and Testing: The quality plan or documented procedures for final inspection and testing shall require that all specified inspections and tests, including those specified either on receipt of product or in process, have been carried out and that the data meets specified requirements.

4.10.3.1. Final inspection and testing shall be carried out in accordance with the quality plan or documented procedures to complete the evidence of conformance of the finished product to the specified requirements.

4.10.3.2. No product shall be dispatched until all the activities specified in the quality plan or documented procedures have been satisfactorily completed and the associated data and documentation is available and authorized.

4.10.4. Inspection and Test Records:

4.10.4.1. Records which give evidence that the product has passed inspection and/or tests with defined acceptance criteria shall be established and maintained (see 4.16).

4.11. Control of Inspection, Measuring and Test Equipment:

4.11.1. General Information:

4.11.1.1. Calibration of measuring and test equipment, whether owned by the company, on loan, or provided by the purchaser, to demonstrate the

conformance of product to the specified requirements shall be controlled.

4.11.1.2. Test equipment shall be used in a manner which ensures that measurement uncertainty is known and is consistent with the required measurement capability.

4.11.1.3. Test equipment shall be selected based upon the measurements to be made and the accuracy required.

4.11.1.4. Where test hardware (e.g., jigs, fixtures, templates, patterns) or test software is used as suitable forms of inspection, they shall be checked to prove that they are capable of verifying the acceptability of product prior to release for use during production and installation and shall be rechecked at prescribed intervals. The extent and frequency of such checks shall be established and shall maintain records as evidence of control (see 4.15). Measurement design data shall be made available, when required by the purchaser or his/her representative, for verification that is functionally adequate.

4.11.1.5. Where test hardware (e.g., jigs, fixtures, templates, patterns) or test software is used as suitable forms of inspection, they shall be checked to prove that they are capable of verifying the acceptability of product prior to release for use during production and installation and shall be rechecked at prescribed intervals. The extent and frequency of such checks shall be established and shall maintain records as evidence of control (See 4.15). Measurement design data shall be made available, when required by the purchaser or his/her representative, for verification that is functionally adequate.

4.11.2. Calibration System Requirements:

4.11.2.1. Shall identify, calibrate, and adjust all inspection, measuring, and test equipment and devices that can affect product quality at prescribed intervals, or prior to use, against certified equipment having a known valid relationship to nationally recognized standards.

Where no such standards exist, the basis used for calibration shall be documented.

4.11.2.2. Establish, document, and maintain calibration procedures, including details of equipment type, identification number, location, frequency of checks, check method, acceptance criteria, and the action to be taken when results are unsatisfactory.

4.11.2.3. Ensure that the inspection, measuring, and test equipment is capable of the accuracy and precision necessary.

4.11.2.4. Identify inspection, measuring, and test equipment with a suitable indicator or approved identification record to show the calibration status.

4.11.2.5. Maintain calibration records for inspection, measuring, and test equipment (see 4.15).

4.11.2.6. Assess and document the validity of previous inspection and test results when inspection, measuring, and test equipment is found to be out of calibration.

4.11.2.6.1. This assessment shall include all test results since the last successful calibration.

4.11.2.7. Ensure that the environmental conditions are suitable for the calibrations, inspections, measurements, and tests being carried out.

4.11.2.8. Ensure that the handling, preservation, and storage of inspection, measuring, and test equipment is such that the accuracy and fitness for use is maintained.

4.11.2.9. Safeguard inspection, measuring, and test facilities, including both test hardware and test software, from adjustments which would invalidate the calibration setting.

4.12. Inspection and Test Status:

4.12.1. The inspection and test status of product shall be identified by using markings, authorized stamps, tags, labels, routing cards, inspection records, test software, physical location or other suitable means, which indicate the conformance or non-conformance of product with regards to inspection and tests performed.

4.12.2. The identification of inspection and test status shall be maintained, as necessary, throughout production and

inventory of the product to ensure that only product that has passed the required inspections and tests is dispatched, used or inventoried as acceptable product.

4.13. Control of Non-Conforming Product:

4.13.1. Procedures shall be established and maintained to ensure the product that does not conform to specified requirements is prevented from inadvertent use or installation. Control shall be provided for identification, documentation, evaluation, segregation (when practical), disposition of non-conforming product, and for notification to the functions concerned.

4.13.2. Nonconformity Review and Disposition: The responsibility for review and authority for disposition of non-conforming product shall be defined. Non-conforming product shall be reviewed in accordance with documented procedures. It may be:

4.13.2.1. Reworked to meet the specified requirements.
4.13.2.2. Accepted with or without repair by concession.

4.13.2.2.1. Where required by the contract, the proposed use of repair of product which does not conform to specified requirements shall be reported for concession to the purchaser or his/her representative.

4.13.2.2.2. The description of non-conformity that has been accepted, and of repairs, shall be recorded to denote the actual condition (see 4.16).

4.13.2.2.3. Repaired and reworked product shall be reinspected in accordance with documented procedures.

4.13.2.3. Re-graded for alternative applications.
4.13.2.4. Rejected or scrapped.

4.14. Corrective and Preventative Action:

4.14.1. Documented and maintained procedures shall be established for:

4.14.1.1. Investigating the cause of non-conforming product and the corrective action needed to prevent recurrence.

4.14.1.2. Analyzing all processes, work operations, concessions, quality records, service reports, and customer complaints to detect and eliminate potential causes of non-conforming product.

4.14.1.3. Initiating preventative actions to deal with problems to a level corresponding to the risks encountered.

4.14.1.4. Applying controls to ensure that corrective actions are taken and that they are effective.

4.14.1.5. Implementing and recording changes in procedures resulting from corrective action.

4.15. Handling, Storage, Packaging and Delivery:

4.15.1. General: Procedures shall be established, maintained, and documented (see 4.16) for handling, storage, packaging, and delivery of product.

4.15.2. Handling: Methods and means shall be provided for product handling that prevents damage or deterioration.

4.15.3. Storage: Secured Storage areas or stock rooms shall be proved to prevent damage or deterioration of product, pending use or delivery. Appropriate methods for authorizing receipt and the dispatch to and from such areas shall be stipulated. In order to detect deterioration, the condition of product in stock shall be assessed at appropriate intervals.

4.15.4. Packaging: Packing, preservation and marking processes (including materials used) shall be controlled to the extent necessary to ensure conformance to specified requirements and shall identify, preserve, and segregate all product from the time of receipt until the company's responsibility ceases.

4.15.5. Delivery: Protection of the quality of product after final inspection and test shall be arranged. Where contractually specified, this protection shall be extended to include delivery to destination.

4.16. Quality Records:

4.16.1. Procedures for identification, collection, indexing, filing, storage, maintenance, and disposition of quality records shall be established and maintained.

4.16.1.1. Quality records shall be maintained to demonstrate achievement of the required quality and the effective operation of the quality system.

4.16.1.2. Pertinent sub-contractor quality records shall be an element of these data.

4.16.2. All quality records shall be legible and identifiable to the product involved.

4.16.3. Quality records shall be stored and maintained in such a way that they are readily retrievable in facilities that provide a suitable environment to minimize deterioration or damage and to prevent loss.

4.16.3.1. Retention times of quality records shall be established and recorded.

4.16.3.2. Where agreed contractually, quality records shall be made available for evaluation by the purchaser or his/her representative for an agreed period.

4.16.4. Records shall include:

4.16.4.1. Management Responsibilities (see 4.1)
4.16.4.2. Quality System (see 4.2)
4.16.4.3. Contract Review (see 4.3)
4.16.4.4. Design Control (see 4.4)
4.16.4.5. Document Control (see 4.5)
4.16.4.6. Purchasing (see 4.6)
4.16.4.7. Purchaser Supplied Product (see 4.7)
4.16.4.8. Product Identification and Traceability (see 4.8)
4.16.4.9. Process Control (see 4.9)
4.16.4.10. Inspection and Testing (see 4.10)
4.16.4.11. Inspection, Measuring and Test Equipment (see 4.11)
4.16.4.12. Inspection and Test Status (see 4.12)
4.16.4.13. Control of Nonconforming Product (see 4.13)
4.16.4.14. Corrective Action (see 4.14)
4.16.4.15. Handling, Storage Packaging and Delivery (see 4.15)
4.16.4.16. Quality Records (see 4.16)
4.16.4.17. Internal Audits (see 4.17)
4.16.4.18. Training (see 4.18)
4.16.4.19. Servicing (see 4.19)
4.16.4.20. Statistical Techniques (see 4.20)

4.17. Internal Quality Audits:

4.17.1. A comprehensive system of planned and documented internal quality audits to verify whether quality activities comply with

planned arrangements and to determine the effectiveness of the quality system shall be carried out.

4.17.2. Audits shall be scheduled on the basis of the status and importance of the activity.

4.17.3. The audits and follow-up actions shall be carried out in accordance with documented procedures.

4.17.4. The results of the audits shall be documented (see 4.16) and brought to the attention of the personnel having responsibility in the area audited.

4.17.5. The management personnel responsible for the area shall take timely corrective action on the deficiencies found by the audit.

4.18. Training:

4.18.1. Procedures shall be established and maintained for identifying the training needs and provide for the training of all personnel performing activities affecting quality.

4.18.2. Personnel performing specific assigned tasks shall be certified on the basis of appropriate education, training, and/or experience, as required.

4.18.3. Appropriate records of training shall be maintained (see 4.16).

4.18.4. Executive and Management Personnel:

4.18.4.1. Training shall provide executive management with an understanding of the quality system together with the tools and techniques needed for full executive management participation in the operation of the system.

4.18.4.2. Executive management should also understand the criteria available to evaluate the effectiveness of the system.

4.18.5. Technical Personnel:

4.18.5.1. Training shall be given to the technical personnel to enhance their contribution to the success of the quality system.

4.18.5.2. Training shall not be restricted to personnel with primary quality assignments, but should include assignments such as marketing, procurement, and process and product engineering.

4.18.5.3. Particular attention shall be given to training in statistical techniques, such as process capability studies, statistical sampling, data collection and analysis, problem identification, problem analysis, and corrective action.

4.18.6. Production Supervisors and Workers:

4.18.6.1. All production supervisors and workers shall be thoroughly trained in the methods and skills required to perform their tasks, i.e., the proper operation of instruments, tools and machinery they have to use, reading and understanding the documentation provided, the relationship of their duties to quality, and safety in the workplace.

4.18.6.2. As appropriate, operators shall be certified in their skills, such as visual inspection. Training in basic techniques is also to be provided.

4.18.7. Certification:

4.18.7.1. The need to require formal qualification of personnel performing certain specialized operation, processes, tests or inspections shall be evaluated and implemented where necessary.

4.18.7.2. Consideration is given to both experience and demonstrated skills.

4.18.8. Motivation:

4.18.8.1. General: Motivation of personnel begins with their understanding of the tasks they are expected to perform and how those tasks support the overall activities. Employees shall be made aware of the advantages of proper job performance at all levels, and of the effects of poor job performance on other employees, customer satisfaction, operating costs, and the economic well-being of the company.

4.18.8.2. Application: Efforts to motivate employees toward quality of performance shall not be directed only at production workers, but also at personnel in marketing, design, documentation, purchasing, inspection, test, packaging, shipping, and after sale services. Management, professional, and staff employees shall be included.

4.18.8.3. Quality Awareness: The need for quality shall be emphasized through an awareness program which may include introduction and elementary programs for new employees, periodic refresher programs for long-standing employees, provision for employees to initiate corrective actions, and other methods.

4.18.8.4. Measuring Quality: Accurate, definitive measures of quality achievement attributable to individuals or groups shall be publicized to let employees and production line supervisors see for themselves what they, as a group or as individuals, are achieving and to encourage them to produce satisfactory quality. Management shall provide recognition of performance when satisfactory quality levels are attained.

4.19. Servicing:

4.19.1. Servicing is not applicable to Semiconductor Products.

4.20. Statistical Techniques:

4.20.1. Procedures shall be established, maintained and documented (see 4.16), where appropriate, for identifying adequate statistical techniques required for verifying the acceptability of process capability and product characteristics.

4.20.1.1. Applications: Correct application of modern statistical methods is an important element at all stages in the quality loop and is not limited to the post-production (or inspection) stages. Applications shall be for purposes such as:

4.20.1.1.1. Market analysis.

4.20.1.1.2. Product design.

4.20.1.1.3. Reliability specification, longevity/durability prediction.

4.20.1.1.4. Process control/process capability studies

4.20.1.1.5. Determination of quality levels/inspection plans.

4.20.1.1.6. Data analysis/performance assessment/defect analysis.

4.20.1.2. Statistical Techniques: Specific statistical methods and applications available include, but are not limited to, the following:

4.20.1.2.1. Design of experiments/factorial analysis.

4.20.1.2.2. Analysis of variance/regression analysis.

4.20.1.2.3. Safety evaluations/risk analysis.

4.20.1.2.4. Tests of significance.

4.20.1.2.5. Quality control charts/custom techniques.

4.20.1.2.6. Statistical sampling inspection

4.20.1.3. Process Capability: Production processes shall be verified as capable of producing in accordance with product specifications. Operations associated with product or process characteristics that can have a significant effect on product quality shall be identified. Appropriate control shall be established to ensure that these characteristics remain within specification or that appropriate modifications or changes are made.

5. Appendix A - QUALITY SYSTEM DOCUMENT IDENTIFICATION

DOCUMENT	TITLE
PS-303	Preparing and Inspection
QAP-9	Technology Review Board
QAP-20	Clean Room Control
QAP-21	Qualification and QCI Testing
QAP-22	Set up and Continuous Process Monitoring
QAP-27	QML Die Evaluation Requirements
QAP-29	Receiving Inspection
QAP-34	Final Inspection
QAP-48	Security Program Operating Manual
QAP-50	Packaging for Shipment of Product
QAP-51	Paperwork Requirements and Out of Control Actions
SCD-14	Device Design Requirements
SCD-15	Die/Wafer Requirements-Foundry
SOP-01-0001	Specification System
SOP-01-0002	Customer Order and Drawing Review
SOP-01-0003	Traveler Generation
SOP-01-0004	Burn-In and Test Program Development (DRO/BRO)
SOP-01-0005	Maintenance and Control of Records
SOP-01-0006	Purchasing Procedure
SOP-01-0007	Order Entry Process Flow
SOP-06-0001	ESD Control Program
SOP-06-0015	Temperature and Humidity Control
SOP-09-0002	Calibration Control System
SOP-09-0005	Non-Conforming Material Handling Procedure
SOP-09-0007	Return Material Authorization (RMA) Procedure
SOP-09-0010	Solder Analysis
SOP-09-0011	Wrist Strap Tester Calibration Procedure
SOP-09-0013	Statistical Process Control
SOP-09-0015	Corrective Action Request (CAR) Procedure
SOP-09-0016	Self Audit Program
SOP-09-0020	Source Inspection Request
SOP-09-0022	Rework
SOP-09-0023	Changes to Product Design and Quality Assurance Program
SOP-09-0025	Failure Analysis
SOP-10-0004	Second Optical (Die) Visual Inspection
SOP-10-0005	Third Optical Visual Inspection (Pre-Cap)

6. Appendix B - CONFORMANCE MATRIX FOR ISO 9001 REQUIREMENTS

ISO PARA. REFERENCE	REQUIREMENTS TITLE	DOCUMENT NUMBER
3.	DEFINITIONS	QAM-1
4.1	MANAGEMENT RESPONSIBLIIES	QAM-1 QAP-9
4.2	QUALITY SYSTEM	APPENDIX A
4.3	CONTRACT REVIEW	SOP-01-0002 SOP-01-0007
4.4	DESIGN CONTROL	QAP-21 QAP-27 SCD-14 SCD-15
4.5	DOCUMENT CONTROL	SOP-01-0001
4.6	PURCHASING	SOP-01-0006 QAP-8
4.7	PURCHASER SUPPLIED PRODUCT	NOT RELEASED
4.8	PRODUCT IDENTIFICATION AND TRACEABLITLY	SOP-01-0003 SOP-01-0004
4.9	PROCESS CONTROL	QAP-22
4.10	INSPECTION AND TESTING	QAP-29 QAP-33 QAP-52 SOP-10-0004 SOP-10-0005 QAP-34

4.11	INSPECTION, MEASURING EQUIPMENT	SOP-09-0002
4.12	INSPECTION AND TEST STATUS	QAP-51 QAP-6
4.13	CONTROL OF NON-CONFORMING MATERIAL	SOP-09-0005 QAP-51
4.14	CORRECTIVE ACTION	SOP-09-0015 QAP-51
4.15	HANDLING STORAGE PACKAGING DELIVERY	PS-303 QAP-35 QAP-50 SOP-06-0001 SOP-09-0009
4.16	QUALITY RECORDS	SOP-01-0001 SOP-01-0005
4.17	INTERNAL QUALITY AUDITS	SOP-09-0016
4.18	TRAINING	QAP-58
4.19	SERVICING	N/A
4.20	STATISTICAL TECHNIQUES	SOP-09-0013

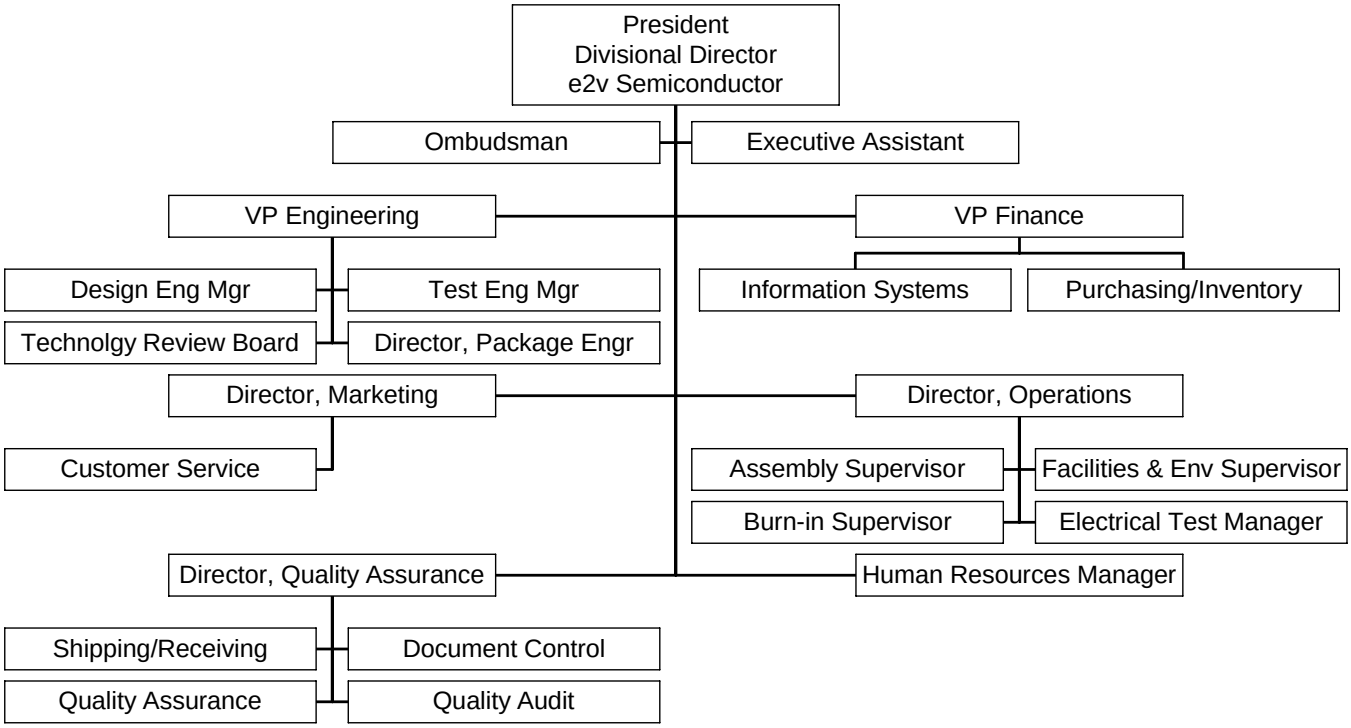
7. Appendix C – Compliance Matrix for MIL-PRF-38535

MIL-PRF 38535 PARA.	REQUIREMENT	DOCUMENT NUMBER
3.2.1 & G.3.2	Manufacturer's Review System	QAP-9
3.4.1.1.1	New Technology Insertion	QAP-9
A.4.8.1.1.1	CONVERSION OF CUSTOMER'S REQUIREMENTS INTO INTERNAL INSTRUCTIONS	SOP-01-0001 SOP-01-0003
A.4.8.1.1.2	PERSONAL TRAINING AND TESTING	QAP-58
A.4.8.1.1.3	INSPECTION OF INCOMING MATERIALS UTILITIES AND OF WORK PROCESS	QAP-29 SOP-09-0009 QAP-33 SOP-10-0004 SOP-10-0005 QAP-34
A.4.8.1.1.4	QUALITY CONTROL OPERATIONS	APPENDIX A
A.4.8.1.1.5	QUALITY ASSURANCE OPERATIONS	QAM-1
A.4.8.1.1.6	DESIGN PROCESSING	QAP-21 QAP-27 SCD-14 SCD-15
A.4.8.1.1.7	CLEANLINESS AND ATMOSPHERE CONTROL	QAP-20 SOP-06-0015
A.4.8.1.1.8	DESIGN, MATERIAL, AND PROCESS CHANGE CONTROL	SOP-09-0023
A.4.8.1.1.9	TOOL, GAUGE, AND TEST EQUIPMENT MAINTENANCE, AND CALIBRATION	SOP-09-0002

A.4.8.1.1.10	FAILURE AND DEFECT ANALYSIS	SOP-09-0025
A.4.8.1.1.11	CORRECTIVE ACTION	SOP-09-0015
A.4.8.1.1.12	INCOMING INPROCESS, AND OUTGOING INVENTORY CONTROL	QAP-29 QAP-52 QAP-54 SOP-09-0005 SOP-09-0009
A.4.8.1.1.13	SCHEMATICS	SOP-01-0004
A.4.8.1.1.14	ESD HANDLING CONTROL PROGRAM	SOP-06-0001
A.4.8.1.2	RECORDS TO BE MAINTAINED	SOP-01-0005
A.4.8.1.2.1	PERSONNEL TRAINING AND TESTING	QAP-58
A.4.8.1.2.2	INSPECTION OERATIONS	SOP-01-0003
A.4.8.1.2.3	FAILURE AND DEFECT REPORTS	SOP-09-0025
A.4.8.1.2.4	CHANGES IN DESIGN	SOP-09-0023
A.4.8.1.2.5	EQUIPMENT CALIBRATION	SOP-09-0002
A.4.8.1.2.6	PROCESS, UTILITY, AND MATERIAL CONTROLS	QAP-22 QAP-51
A.4.8.1.2.7	PRODUCT LOT INDENTIFICATION	SOP-01-0003 SOP-01-0004
A.4.8.1.2.8	PRODUCT LOT TRACEABLILITY	SOP-01-0003 QAP-6 QAP-51
A.4.8.1.3	QUALITY ASSURANCE PROGRAM PLAN	QAM-1 APPENDIX E.
A.4.9.3.1 – A.4.9.3.8.	SELF AUDIT PROGRAM	SOP-09-0016

8. Appendix D - QP Semi ORGANIZATION CHART

QP Semiconductor Organizational Chart June 2009



9. Appendix E – QUALITY ASSURANCE PROGRAM PLAN (MIL-PRF-38535 Appendix G Paragraph G3.3.1)

Paragraph	Description	Reference Documents
A.	Index of Certified Baseline Documents	Included Below:
B.	Conversion of Customer Requirements	SOP-01-0002 SOP-01-0007 SOP-01-0003 SOP-01-0004
B1.	Device specification requirements (Standard Microcircuit Drawing – SMD's)	Same as above in b.
B2.	Controlled Design procedures and tools.	SCD-14
B3.	Mask Generation Procedure.	Covered in above.
B4	Wafer Fabrication and Assembly Capabilities Baselined	Fab – SOP-09-XXXX Assy – QPL-AH-001 SCD-12 SCD-15
B5.	Design, mask fabrication, assembly and test flows:	Design, Mask & Fab – Subcontracted. Assy MMT Per QPL-AH-001 Assy & Test at QP Semi per SOP-01-0003
B6.	QML Listing Coverage	See QPSemi Website: at www.qpsemi.com
B7.	SEC, TCV or alternate assessment procedure.	QAP-27 & QAP-21
B8.	Incoming Inspection and vendor procurement documents.	QAP-52 SOP-01-0006 SOP-01-0009 SOP-01-0010
B9.	Screening and Traveler.	SOP-01-0003
B10.	Technology Conformance Inspection (TCI) Procedures.	QAP-21
B11.	Marking.	SOP-09-0032 PS-108
B12.	Rework.	SOP-09-0022
C.	Functional Organizational Chart.	QAM-1.

D.	Change Control Program.	SOP-09-0023 QAP-9
E.	Failure Analysis	SOP-09-0025
F.	Self Audit Program and Audit Results	SOP-09-0016 SOP-09-0015
G.	TRB Reporting to DSCC	QAP-9
H.	Yield Improvement Programs.	SOP-09-0005
I.	SPC Program.	SOP-09-0013
J.	List of test Methods for laboratory suitability including any outside labs.	Defined in DSCC Letter "DSCC-VQC-98-079"
K.	Major Test Methods for which data may be requested to be submitted	Defined by DSCC
L.	Calibration	SOP-09-0002
M.	Retention of Qualification Data	SOP-01-0005
N.	Training	QAP-58
O.	Cleanliness and Atmospheric Controls	SOP-06-0015 QAP-20
P.	Electrostatic Discharge Sensitivity (ESDS) Program	SOP-06-0001
Q.	Certification and Qualification Test Plan	QAP-9
R.	Process for Control of Third Party Activity	QAP-8

10. Appendix F – Quality Management Systems – Aerospace Standard. (AS9100)

AS9100 REFERENCE	REQUIREMENTS TITLE	DOCUMENT NUMBER
4.1	GENERAL REQUIREMENTS	QAM-1
4.2	DOCUMENTATION REQUIREMENTS	QAM-1, SOP-01-0001, SOP-01-0005
4.3	CONFIGURATION MANAGEMENT	SOP-01-0002, SOP-01-0003, SOP-01-0004
5.1	MANAGEMENT COMMITMENT	QAM-1, QAP-9
5.2	CUSTOMER FOCUS	SOP-01-0002, SOP-09-0007, SOP-09-0015
5.3	QUALITY POLICY	QAM-1 Section 4.1
5.4	PLANNING	QAM-1 Sections 4.2 & 4.3
5.5	RESPONSIBILITY AUTHORITY AND COMMUNICAION	QAM-1 Section 4.1
5.6	MANAGEMENT REVIEW	QAM-1 Section 4.1, QAP-9
6.1	PROVISION OF RESOURCES	QAM-1 Section 4.1
6.2	HUMAN RESOURCES	QAP-58
6.3	INFASTRUCTURE	QAM-1 Section 4.1
6.4	WORK ENVIRONMENT	SOP-06-0001, SOP-06-0015, QAP-20
7.1	PLANNING OF PRODUCT RELIAZATION	SOP-01-0002, SOP-01-0003
7.2	CUSTOMER-RELATED PROCESSES	SOP-01-0002, SOP-01-0003, SOP-01-0007
7.3	DESIGN AND DEVELOPMENT	SCD-12, SCD-14, SCD-15, QAP-9, QAP-21, QAP-27
7.4	PURCHASING	SOP-01-0006, QAP-8, QAP-29, QAP-52
7.5	PRODUCTION AND SERVICE PROVISION	SOP-01-0003, SOP-09-0005, SOP-09-0009, PS-303, QAP-50, QAP-51
7.6	CONTROL OF MONITORING AND MEASURING DEVICES	SOP-09-0002
8.1	GENERAL – MEASUREMENT, ANALYSIS AND IMPROVEMENT	SOP-01-0004, SOP-09-0013
8.2	MONITORING AND MEASUREMENT	SOP-01-0003, SOP-09-0016, QAP-21, QAP-34, QAP-37
8.3	CONTROL OF NONCONFORMING PRODUCT	SOP-09-0005, SOP-09-0033
8.4	ANALYSIS OF DATA	QAP-9
8.5	IMPROVEMENT	SOP-09-0005, SOP-09-0015, SOP-09-0016, QAP-9