QUALITY CONTROL MANUAL

SECTION - 50
REV - T
DATE - 10/20/15

REVISIONS

REV.	RCN NO.	DESCRIPTION OF UPDATE	APPROVED	DATE
C	5781	Per ECO	D. MILLER	01/08/97
D	8416	Per ECO	D. MILLER	08/28/00
E	8877	Per ECO	D. MILLER	02/28/01
F	9820	Per ECO	D. MILLER	02/19/02
G	11684	Per ECO	D. MILLER	03/29/04
H	11822	Per ECO	D. MILLER	06/08/04
I	12788	Per ECO	D. MILLER	06/24/05
J	13355	Per ECO	D. MILLER	01/26/06
K	14799	Update Para 2.0 background, Clarify Quality Objectives para. 5.4.1, update Organization Flow Para. 5.5.1, Insert Human Resources to Para. 5.5.1, update Internal Communication Part 5.5.3, update Human Resources para. 6.2.1, tie in new Preventive Action Request MS 54 procedure.	D. MILLER	09/07/07
L	15315	3.0 Clarify the Quality Policy, Add Paragraph 3.1 Manual Purpose, General additions to match MS 4.	D. MILLER	04/29/08
M	16741	Add MIL-PRF-38535	D. MILLER	12/16/09
N	18132	Change MS 41 Vendor Survey to Form 8535	D. MILLER	04/16/11
O	18512	Update entire document to meet AS9100 Rev C	D. MILLER	09/23/11
P	18605	Paragraph 4.2.2 add MSK Scope and Objective Outline ref.	D. MILLER	10/21/11
Q	18697	Add Class Q, remove QCI for Class V, add Class Q generic flow chart	D. MILLER	11/08/11
R	176664	Update background, move AS9100 scope under policy, add counterfeit controls, general classifications	D. MILLER	03/18/15
T	181168	Clarification of exclusion (3.2) and Post Delivery Support (7.5.1.4), remove ISP and SQC 003.	D. Miller	10/21/15

APPROVED BY: Daniel Miller

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Quality Control Manager

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2.0 MSK BACKGROUND:

Since 1971, MSK has been a leader in the development, design and manufacture of high performance microelectronic circuits. High speed operational amplifiers were the beginning of MSK and has expanded into a wide range of amplifiers, video amplifiers, linear voltage regulators, switching voltage regulators, motor controllers, DC to DC converters, microcircuit devices, RF type devices, RAD Hard devices and hundreds of custom hybrid applications. The custom applications range from MSK standard product spin offs to customer build to print applications that include AD/DA converters, missile electronics, aviation, actuator controls, space satellite components, radar components, targeting electronics, shuttle and space station electronics.

MSK has grown over the years and since January 2015, have relocated into its forth facility and employ over 160 personnel. The facility is over 31,000 square feet with a Class 100,000/10,000 cleanroom covering 18,000 square feet. The production floor contains automatic assembly equipment that includes two Palomar Model 3500 and one MRSI pick and place machines, two Asymtek epoxy dispense systems, one GPD epoxy dispense system, one Palomar CBT 6000 automatic wirebonders, one Palomar CBT 8000, two Palomar 2460 automatic wirebonders, two Delvotec automatic wirebonder, one Orthodyne Model 360 automatic aluminum wirebonder, eight HP automatic test stations, two Video Jet marking system, three seam welders, twenty burn -in ovens and all screening equipment to meet the requirements of MIL-PRF-38534 for Class H or K devices and MIL-PRF-38535 for Class Q or V devices. In addition, equipment that is used to validate MSK's process controls include a Sonoscan Ultrasonic inspection station, Viscom X-Ray system, three Dage Model 4000 bond pull/die shear/ball shear stations, PIND test station two fine leak stations, gross leak, optical leak test station, centrifuge test system and three temperature cycle chambers.

In 1988, MSK was the smallest hybrid company to become certified to MIL-STD-1772 and have maintained the certification to the present MIL-PRF-38534 performance specification by DLA Land and Maritime. Over sixty qualifications to QML-38534 have also been performed with numerous periodic inspections each year to validate MSK's commitment to quality. The initial ISO 9001 audit was performed by DLA in July 1994 and in February 2006, MSK became certified to AS9100 by Eagle Registrations with reassessments planned every nine to twelve months. In 2012, MSK became certified to MIL-PRF-38535 for Class Q and V microcircuits.

MSK MISSION

We will continuously innovate and bring to market products that will improve the performance of our customers' products.

We will lead our industry in performance, quality, service and value.

Our success will be measured by the success of our customers.

Total Customer Satisfaction is the only acceptable outcome.

3.0 QUALITY POLICY:

MSK is devoted exclusively to the design, development and manufacture of state of the art microelectronic circuits. The degree of precision and quality required in all phases is such that strict adherence to established control and specifications is mandatory to meet customer, government, statutory and regulatory product requirements. The management of MSK is charged with the responsibility of maintaining an effective system which will support this policy, thus insuring customer satisfaction.

The Quality Policy of MSK is to meet customer, government, statutory and regulatory needs and expectations, total commitment to overall quality, communicate with customers and MSK personnel, continue to develop MSK personnel, continue improvement in customer satisfaction and expectations, perform functions in accordance with internal procedures, prevent potential non-conformities and strive to meet and exceed MSK's Quality Policy objectives.

3.1 AS9100 Scope of Registration:

The design, development, manufacture and test of Hybrid Microcircuits, motor control modules, voltage regulators, amplifiers, RF modules, RAD Hard products and power multichip modules.

3.2 Manual Purpose:

The purpose of this manual is to describe the policies and procedures which assure that adequate inspection and control is maintained throughout the system. All MSK operating departments are oriented to quality and become active participants in the Quality Program.

The provisions of this manual

- Exceed the requirements of MIL-I-45208
- Developed to meet the requirements of MIL-PRF-38534 and MIL-PRF-38535
- Baselined to meet American National Standard, ANSI/ISO/ASQ Q9001-2008, Quality Management Systems.
- Baselined to meet Aerospace Standard, AS9100, Quality Systems - Aerospace Model for Quality Assurance in Design, Development, Production, Installation and Servicing.

Exclusions from this manual

Some portions of the service provision of this manual does not apply to MSK (Ref. 7.5.1.4) as servicing to the hybrid/microcircuit/element level is not applicable during normal system operation (eg. in an aircraft or in space). Post Delivery Support does apply to any problems detected after delivery.

4.0 QUALITY MANAGEMENT SYSTEM:

4.1 General Requirements for the Quality System:

In order to meet the requirements of ISO 9001 and to ensure quality, MSK has established, implemented and documented a comprehensive quality management system that addresses customer and applicable statutory and regulatory system requirements. MSK is committed to improving our quality performance continually using the quality system.

MSK manages the quality processes in accordance with MIL-PRF-38534, MIL-PRF-38535, ISO 9001 and AS9100. If a process is outsourced, MSK will control the outsource similar to a vendor.

MSK Referenced Documents:

Quality Policy - Manual Section 2
Organization - Manual Section 4
Product Design - Manual Section 14
Procurement Document Quality Req. Review - Manual Section 26
Quality Management Program (QMP) - Manual Section 43, 58
Quality Control Manual - Manual Section 50
Generic Assy Flow Charts - 2422-2739 (Class K), 2422-1518 (Class H), 2422-1976 (Class D), 2422-9936 (Class E), 2422-1563 (Sub Fab), 2422-14417 (Class V), 2422-16054 (Class Q)
Flow Chart - 2422-1632 (New Procurement Quotation Flow)

4.2 Documentation Requirements:

4.2.1 General:

The quality management program (QMP) includes the following documentation:

- applications for the different devices provided
- general documentation format (Policy, Manual, Work Instructions)
- statements of a quality policy and quality objectives
- the quality manual
- procedures required by ISO 9001, AS9100, MIL-PRF-38534 and MIL-PRF-38535
- any documents necessary to plan, operate and control the processes
- records required by the quality system, ISO 9001, AS9100, MIL-PRF-38534 or MIL-PRF-38535

MSK Referenced Documents:

Quality Policy - Manual Section 2
Organization - Manual Section 4
Procurement Document Quality Req. Review - Manual Section 26
Quality Management Program (QMP) - Manual Section 43, 58
Quality Control Manual - Manual Section 50

4.2.2 Quality Manual:

This quality manual includes the scope of the quality system, any exclusions (see para 3.0) and their justification, a reference to lower-level procedures and a description of the interaction between key processes.

MSK Referenced Documents:

Quality Control Manual - Manual Section 50
MSK's Quality Objectives Outline - Form 8471

4.2.3 Control of Documents:

MSK created a written procedure governing document control. The procedure ensures that all documents, including external documents required by the quality management system are controlled.

The Records Procedure and Other Related Procedures shall provide the minimum maintenance requirements for all records or data essential to and resultant from, the manufacture and inspection of MSK products. These records shall provide objective evidence of quality assurance and control, as well as conformance to applicable standards and requirements.

This section shall apply to all records generated in connection with MSK products (including those described in this section, as well as those described elsewhere in this manual), and all MSK personnel involved with record generation, processing and storage.

Adequate records shall be used and maintained for all work accomplished, conformance, or non-conformance with work instructions, and actions taken to remedy non-conformance.

At a minimum the records must indicate the nature and number of observations made, the number of conforming items, the number of nonconforming items, the type of deficiency found, and any action taken concerning deficiencies. In addition, records must contain applicable traceability information.

These records shall be made readily available to regulatory or customer representatives, and copies of individual records may be furnished when requested. In addition, records shall be maintained so as to be available to management for analysis of the overall quality program and as an aid to decision making.

MSK Referenced Documents:

Engineering Drawing Approved and Release - Manual Section 18
Document Distribution and Control - Manual Section 19
Engineering Dwg Change Control - Manual Section 23
Engineering Change Order - Manual Section 25

4.2.4 Control of Records:

MSK records information throughout the company to provide evidence of conformity to the quality system, ISO 9001, AS9100, MIL-PRF-38534 and to MIL-PRF-38535. Our records are legible, identifiable, retrievable and protected. We have documented the identification, storage, protection, retrieval, retention time and disposition of records in the Manual Section Procedures.

MSK Reference Document:

Records - Manual Section 11

5.0 MANAGEMENT RESPONSIBILITY:

5.1 Management Commitment:

MSK is committed to developing and implementing the quality system and to improving its effectiveness continually.

MSK Referenced Documents:

Quality Policy - Manual Section 2
Organization - Manual Section 4
Quality Control Manual - Manual Section 50

5.2 Customer Focus:

Our top management identifies customer requirements and ensures we meet them so that we enhance customer satisfaction. Key customer requirements include Quality (product conformance) and on-time delivery.

MSK Referenced Documents:

Organization - Manual Section 4
Quality Control Manual - Manual Section 50

5.3 Quality Policy:

The management team defines a quality policy that:

- is appropriate to the purpose of the organization,
- commits to complying with customer and regulatory requirements,
- commits to improving the effectiveness of the quality management system continually,
- provides a framework for establishing and reviewing quality objectives,
- is communicated and understood within the organization and is reviewed periodically for continuing suitability.

MSK Referenced Documents:

Quality Policy - Manual Section 2
Organization - Manual Section 4
Quality Control Manual - Manual Section 50

5.4 Planning:

5.4.1 Quality Objectives:

Our top management defines quality objectives that are measurable and consistent with the "Quality Policy" of MS 2. This includes objectives relating to customer, government, statutory and regulatory requirements, commitment to quality, communication with customers and employees, continue improving customer satisfaction and meet or exceed customer expectations. Our top management has established these objectives at relevant functions and levels within the company.

The top objectives meeting our "Quality Policy" are management, sales, design, purchasing, production and quality. The procedures that tie in MSK's objectives for each category are outlined in MSK's Quality Objectives Outline (Form 8471) which ties into the detailed flow in Manual Section 4, Organization.

MSK Referenced Documents:

Quality Policy - Manual Section 2
Organization - Manual Section 4
Final QA Inspection - Manual Section 9
Product Design - Manual Section 14
MSK's Quality Objectives Outline - Form 8471

5.4.2 Quality Management System Planning:

Our top management plans the nature and structure of our quality system so that it meets the requirements of this manual, of ISO 9001/AS9100 and our quality objectives. We also plan changes to the quality system in such a way that its integrity and effective functioning is preserved.

MSK Referenced Documents:

Organization - Manual Section 4

5.5 Responsibility, Authority and Communication:

5.5.1 Responsibility and Authority:

Responsibilities and authorities of all personnel involved in quality related activities are defined in the following sections and in specific documented procedures. All responsibilities and authorities are placed with the department manager or supervisor but may be delegated to individual members of personnel within their department. All personnel has the responsibility to support their management in the accomplishment of tasks described in the Quality System documentation and as directed.

All employees have ultimate responsibility to the company and to the principles of quality laid down in the quality policy statement authorized by the management team.

In support of this, all employees have the responsibility to comply with documented procedures and the direction of management and to complete tasks carefully in a responsible manner. All employees are also responsible for identifying nonconforming material at any time and reporting it to the appropriate person responsible for the area.

MSK Referenced Documents:

Organization - Manual Section 4
MSK Organization Chart - Form 8269

MSK Management Team

The management of the MSK Quality Program shall be shared by all departments at all levels. The basic premise is that every employee contributes to quality and hence, his or her attitude and performance provides the base for effective control.

Management responsibility shall enforce the MSK statement of policy and mission which includes commitment to quality/preventative action, the ISO 9000 summary (Form 8286) and the Quality Management Program (QMP, MS43, MS58). Each manager has the freedom of resolving issues related to the business (sales, operations, engineering, quality).

5.5.2 Management Representative:

Top management has given the responsibility and authority of Management Representative to the Quality Manager.

The Management Representative establishes, implements and maintains the processes needed for the quality management system. The Management Representative also reports to the management team on the performance of the quality management system and any need for improvement. The Management Representative promotes the awareness of customer requirements throughout the company.

MSK Referenced Documents:

Organization - Manual Section 4
Quality Management Program - Manual Section 43, 58
ISO Summary - Form 8286

5.5.3 Internal Communication:

Top management establishes processes so that communication takes place regarding the effectiveness of the quality management system. The communication can be a result of MRP reports, work in progress reports, pareto analysis, sales bookings/ shipments reports and general information received from customers or other agencies.

MSK Referenced Documents:

Organization - Manual Section 4

5.6 Management Review:

5.6.1 General:

The management team periodically reviews MSK's quality system to ensure it is suitable, adequate and effective. The review assesses opportunities for improvement and the need for changes to the quality system, quality policy or quality objectives. Records of management reviews are maintained.

MSK Referenced Documents:

Organization - Manual Section 4

5.6.2 Review Input:

Our management reviews include review of internal audits, customer feedback, pareto analysis, preventive actions, corrective actions, manager meeting follow up, major system changes and areas for improvement:

MSK Referenced Documents:

Quality Policy - Manual Section 2
Organization - Manual Section 4

5.6.3 Review Output:

The management team reviews output and includes any decisions and actions related to the management system, processes, product improvement and resources (capital and personal).

MSK Referenced Documents:

Quality Policy - Manual Section 2
Organization - Manual Section 4

6.0 RESOURCE MANAGEMENT:

6.1 Provision of Resources:

MSK determines and provides the resources necessary to implement and maintain the quality system and to improve continually its effectiveness. We also provide the resources needed to enhance customer satisfaction by meeting customer requirements. This applies to human resources, infrastructure and work environment.

MSK Referenced Documents:

Organization - Manual Section 4

6.2 Human Resources:

6.2.1 General:

MSK will ensure that any employee who performs work affecting product quality is competent on the basis of education, training, skills and experience. MSK shall introduce new employees to MSK's policy and general requirements particular to manufacturing of devices and clean room. Employee relations, hiring, exit interviews and job descriptions are function of human resources.

6.2.2 Competence, Awareness and Training:

MSK will ensure that the workforce is well-trained and competent. We determine the necessary competence and provide training or take other actions to achieve competence. We evaluate the effectiveness of our training or other actions. We maintain records of education, training, experience and skills in order to demonstrate competence.

MSK trains the employees so they are aware of the relevance and importance of their job functions and how they contribute to the achievement of the quality objectives.

The training procedure shall set forth minimum requirements for indoctrinating new employees in basic Device Assembly Instruction and Quality Control Policies and Procedures.

The Quality Management and Human Resources Department shall be responsible for creating, maintaining and presenting a Quality Control indoctrination suitable for familiarizing new employees with Quality Control policies and training them in methods of operation.

A refresher program shall be given to all personnel at a minimum on an annual basis, as called out in the training procedure, to reinforce their knowledge of Quality Control policies and procedures.

All inspectors shall receive suitable update lectures when major changes are made in procedures or forms which affect their duties.

MSK Referenced Documents:

Non-Conforming Material (C.A. System) - Manual Section 34
Training - Manual Section 36

6.3 Infrastructure:

MSK determines, provides and maintains the infrastructure necessary to achieve quality requirements. This includes buildings, workspace, cleanroom, maintenance, process equipment, equipment preventative maintenance (PM) and software. It also includes such supporting services as transport, communication or information systems.

The cleanliness and atmospheric control procedure defines the purpose and furnishes a set of operational guidelines for MSK Clean Room Areas and acquaints personnel with aspects and basic requirements for monitoring and the maintenance of cleanliness and atmospheric environments.

The electrostatic discharge procedure establishes the program requirements to protect devices manufactured at MSK against damage or degradation due to electrostatic discharge.

This procedure applies to all MSK employees who handle or come within close proximity to electrostatic sensitive components, assemblies or devices.

MSK Referenced Documents:

Organization - Manual Section 4
Product Design - Manual Section 14
Procurement Document QA Review - Manual Section 26
Electrostatic Discharge - Manual Section 38
Cleanliness and Atmospheric Control - Manual Section 39

6.4 Work Environment:

The work environment for manufacturing devices is performed in a clean room environment where temperature, humidity, particle count and ESD is controlled for the manufacturing application.

Appropriate protection is worn by all employees in the cleanroom (ESD lab coats, face mask, hair bonnet) to prevent foreign material from entering the product.

MSK Referenced Documents:

Cleanliness and Atmospheric Control - Manual Section 39

7.0 PRODUCT REALIZATION:

7.1 Planning of Product Realization:

MSK plans and develops the processes needed to provide products and services successfully. The planning is consistent with our quality system and procedures. MSK documents the plan(s) for product realization in a form that is appropriate for our needs. MSK planning includes consideration of the following:

- product and personal safety
- reliability, availability and maintainability
- producibility and inspectability
- suitability of parts and materials used in the product
- selection and development of embedded software and
- recycling or final disposal of the product at the end of its life

MSK Referenced Documents:

Organization - Manual Section 4
Product Design - Manual Section 14
Prototype Development - Manual Section 15
Engineering Drawing System - Manual Section 16
Documentation Distribution and Control - Manual Section 19
Engineering Change Order - Manual Section 25
Procurement Document Quality Review - Manual Section 26
Packaging and Shipping - Manual Section 29
Quality Management Plan - Manual Section 43, 58
MSK Documentation Database - Manual Section 45
Quality Conformance Inspection - MPI 5008
Kitting - MPI 7009
Device Regrading - MPI 7064
Qualification - QML 38534
38535 QCI - MPI 38535V

7.1.1 Project Management:

An appropriate project management schedule is developed for new products by engineering. The method may include a detailed milestone or a simple spreadsheet.

MSK Referenced Documents:

Product Design - Manual Section 14

7.1.2 Risk Management:

Risk management is considered in all planning phases from start to finish. The systems include reviewing request for quote requirements, design, processes, capabilities and are identified and resolved. Actions to resolve risk may include design of experiments, adding capability, hiring personnel.

MSK Referenced Documents:

Organization - Manual Section 4
Product Design - Manual Section 14
Engineering Drawing Approval and Release - Manual Section 18
Engineering Change Order - Manual Section 25
Procurement Document Quality Review - Manual Section 26
Quality Control Audits - Manual Section 28
Design Guidelines - Manual Section 42
Quality Management Plan - Manual Section 43, 58

7.1.3 Configuration Management:

Configuration Management of all documentation is controlled by MSK's document control department. All documents and drawings associated with the product configuration are under revision control and changes are incorporated through the engineering change control system.

The product configuration; bill of materials and QA review checklist, is the management system. When all drawings are released to a product, the Technical Data Package (TDP)/Configuration Baseline is then released. Any changes to the product configuration thereafter will result in an update of the TDP/Configuration Baseline thereby maintaining up to date configuration management of each product.

The configuration is also maintained from PO conversion, kit ticket generation, kitting of materials, manufacturing, regrading, final QA inspection to shipping.

MSK Referenced Documents:

Engineering Drawing System - Manual Section 16
Documentation Distribution and Control - Manual Section 19
Engineering Change Order - Manual Section 25
MSK Documentation Database - Manual Section 45
Procurement Document Quality Review - Manual Section 26
Kitting - MPI 7009
Device Regrading - MPI 7064
Packaging and Shipping - Manual Section 29

7.1.4 Control of Work Transfers:

All production processes are performed internally at MSK with the exception of functions that MSK does not have capability. These functions are typically tests that are performed by labs certified by a regulatory agency (ie. Internal Water Vapor, Salt Testing, Vibration Testing, DPA, etc.) but are sometimes supported by MSK due to the technical nature of the work (ie. radiation testing can be performed using MSK technicians and test equipment, lead form, laser trim, solder dip).

If work is transferred on a temporary basis, the MSK PO and applicable documentation or procedures would be referenced on the PO.

MSK Referenced Documents:

Certified Labs - TIP 1000
Quality Conformance Inspection - MPI 5008
Product Design - Manual Section 14
Qualification – QCP - 38534
PO Control and Surveillance - Manual Section 30
38535 QCI - MPI 38535V
Procurement Documents

7.2 Customer Related Processes:

7.2.1 Determination of Requirements Related to the Product:

When considering providing a product, we determine customer requirements. This includes requirements specified by the customer, including any relating to delivery or post delivery. We consider implied requirements where they are known. We also consider any requirements imposed on us by regulation or that we impose on ourselves.

7.2.2 Review of Requirements Related to the Product:

Prior to taking an order or providing a quote, we review the requirements relating to the product or service in question. Results of the review and any associated actions are recorded.

In cases where orders change after they are accepted, we update our order documentation/information and communicate the change to relevant personnel within the company.

7.2.3 Customer Communication:

MSK determines the necessary customer communication arrangements and ensure that they are implemented. This includes information relating to product information, inquiries, contracts, orders, order changes, feedback and customer complaints.

MSK Referenced Documents:

Product Design - Manual Section 14
Prototype Development - Manual Section 15
Procurement Document Quality Requirement Review - Manual Section 26
Design Guidelines - Manual Section 42
Quality Conformance Inspection - MPI 5008
Qualification - QML 38534
38535 QCI - MPI 38535V

7.3 Design and Development:

7.3.1 Design and Development Planning:

MSK plans and controls the design process at MSK. We determine the design and development stages and any review, verification or validation that is necessary during the design process. We also define responsibilities, authorities and interfaces within the design group so that responsibility is clear and communication is effective. The groups within engineering are broken down into separate functions (design, drafting, specification review, process engineering, research/development, test development, etc.) to provide a complete and re-producible final design. Each group is headed by an individual and reports to the engineering manager with specific information/data to ensure compliance with the customer and/or regulatory requirements. We update the design status weekly during the development process as needed.

The Product Design Procedure shall establish Engineering guidelines for new device design and development, to assure that MSK designs conform to required Quality Standards as well as customer and/or regulatory performance, reliability and safety specifications.

The Prototype Development Procedure establishes guidelines for the evaluation of a functional prototype device into an approved final product design.

These guidelines shall apply to all MSK Prototype to Production Development projects performed by Engineering, and shall also be applicable to Manufacturing to the extent that its assistance is required (eg. building of prototype or pre-production devices).

MSK Referenced Documents:

Organization - Manual Section 4
Product Design - Manual Section 14
Prototype Development - Manual Section 15

7.3.2 **Design and Development Inputs:**

MSK defines and documents inputs (requirements) relating to the product. These include functional and performance requirements, statutory and regulatory requirements and other requirements essential for design and development. Where applicable, the input includes information derived from previous similar designs. We review these inputs for adequacy and to ensure that they are complete, unambiguous and without conflict.

MSK Referenced Documents:

Product Design - Manual Section 14
Prototype Development - Manual Section 15
Design Guidelines - Manual Section 42

7.3.3 **Design and Development Outputs:**

The design process delivers outputs that enable us to provide the product successfully. The design outputs shall:

- meet the design requirements
- provide bill of materials and support drawings
- meet product acceptance criteria
- specify special requirements, critical items or key characteristics as required to meet the design requirements.

We review and approve design outputs prior to release.

MSK Referenced Documents:

Product Design - Manual Section 14
Prototype Development - Manual Section 15
Design Guidelines - Manual Section 42
Engineering Drawing Approval and Release - Manual Section 18

7.3.4 **Design and Development Review:**

MSK performs systematic design reviews at appropriate stages of the design process. The reviews may be conducted in accordance with design stages, or supplemental reviews may be conducted beyond those that have been planned.

Design reviews determine whether design results meet design input requirements, identify any problems and propose necessary actions prior to progression to the next stage. Representatives of all functions concerned with the subject matter of the review will attend. We keep records of the reviews and any necessary actions.

MSK Referenced Documents:

Records - Manual Section 11
Product Design - Manual Section 14
Prototype Development - Manual Section 15
Engineering Drawing Approval and Release - Manual Section 18
Engineering Change Order - Manual Section 25
Design Guidelines - Manual Section 42

7.3.5 Design and Development Verification:

MSK verifies design outputs in accordance with the design plan to ensure they meet the input requirements. We record the verification results and any necessary actions.

MSK Referenced Documents:

Product Design - Manual Section 14
Prototype Development - Manual Section 15

7.3.6 Design and Development Validation:

MSK works with the customer to validate the completed product in accordance with the design plan to ensure it is capable of meeting the requirements for the specified application or intended use. Wherever practical, this validation occurs prior to product implementation. We record the validation results and any necessary actions.

MSK Referenced Documents:

Product Design - Manual Section 14
Prototype Development - Manual Section 15
Quality Conformance Inspection - MPI 5008
Qualification - QML 38534
38535 QCI - MPI 38535V

7.3.6.1 Design and development verification and validation testing:

Concurrently during design development, the test engineering area designs a manual and/or an auto test plan that will verify the operation of the product. The test documentation (manual test schematic, auto test schematic, test fixture fabrication, test procedure development) will result in a test verification method that will validate the initial prototype build. During this phase; the test objectives, test conditions, test results, temperature conditions, test limits are finalized and the prototype test results are recorded.

After completion of the prototype testing, all applicable test documentation is released for testing the final product configuration. The initial build of the product is manufactured to the current configuration and is tested/accepted to the released test documentation.

MSK Referenced Documents:

Product Design - Manual Section 14
Prototype Development - Manual Section 15
Electrical Test Procedure - Manual Section 22

7.3.6.2 Design and development verification and validation documentation:

During the design and/or development of a product, each phase of the process is verified and validated by the project engineer, quality and engineering. The inputs from the customer and/or regulatory agency is determined and the output result is verified. Upon completion of all design documentation, a final design/production readiness review is performed to verify and validate that all design documentation is complete.

MSK Referenced Documents:

Product Design - Manual Section 14
Prototype Development - Manual Section 15
Engineering Drawing Approval and Release - Manual Section 18
Design Guidelines - Manual Section 42

7.3.7 Control of Design and Development Changes:

MSK identifies and records design and development changes. They are reviewed, verified, validated and approved internally by MSK's configuration management process and when applicable, by customer and/or regulatory agency as appropriate prior to implementation. We consider the effects of changes on constituent parts and previously delivered product. We record the results of the review of changes and any necessary actions.

MSK Referenced Documents:

Product Design - Manual Section 14
Engineering Drawing Approval and Release - Manual Section 18
Documentation Distribution and Control - Manual Section 19
Engineering Change Request - Manual Section 24
Engineering Change Order - Manual Section 25

7.4 Purchasing:

7.4.1 Purchasing Process:

MSK controls suppliers/vendors/outsource vendors/special processes/key characteristics of the purchased product or service so that it conforms to specified requirements. Controls are in place to prevent counterfeit materials from being purchased by purchasing from OEM and authorized distributors. Checks are in place when purchasing from a non-authorized vendor/distributor. The amount and nature of the control we exercise depends on the product and its effect on final product quality.

We continuously evaluate and select suppliers based on their ability to meet our product requirements. We establish criteria for selecting, evaluating and re-evaluating suppliers via vendor ratings. We record the evaluation results and any necessary actions.

The Purchase Order Control and Surveillance Procedure details the procedures and requirements that will be followed in the execution of specified purchase orders to assure contractual and internal quality.

Prior to the purchase of piece parts, elements, raw materials and all other direct support goods and services, confirmation of the vendor status shall be made by reference to the Approved Vendor List in MRP.

Whenever applicable, parts will be ordered to MSK's Procurement Document and print with drawing number and latest revision code, of which the vendor is to have a copy. Any exceptions to MSK's print must be noted on the purchase order with approval of Quality Control.

MSK is ultimately responsible for the purchased products and continuously monitors accept/reject history at incoming inspection. Poor product history may affect MSK's ability to manage risk in continuing purchase of product and may result in vendor disapproval.

MSK Referenced Documents:

Receiving Inspection - Manual Section 5
Purchase Order Control and Surveillance - Manual Section 30
Vendor Survey - See Manual Section 30
Training - Manual Section 46
Element Evaluation Incoming Test Procedure - RIP 005
Approved Vendor List - Supplier List in MRP
Source Control Drawing - SCD
Procurement Documents:

Adhesives 1021-1629
Microcircuits/Semiconductor 1021-1618
Passives 1021-1628
Packages 1014-0981
Thickfilm Substrates 1026-8309
Crystals 1032-11833

7.4.2 Purchasing Information:

MSK purchasing information adequately describes the product to be purchased. We send controlled drawings that describe the element, specify the requirements (eg. testing, processing, lot control, traceability, storage, packaging, documentation, record retention, access rights, calibration requirements, inspection system requirements, special requirements, inspection, physical dimensions, change control, disposition, etc.). We review and approve specific purchase requirements prior to communicating them to the supplier.

MSK Referenced Documents:

Receiving Inspection - Manual Section 5
Purchase Order Control and Surveillance - Manual Section 30
Vendor Survey - See Manual Section 30
Training - Manual Section 46
Element Evaluation Incoming Test Procedure - RIP 005
Approved Vendor List - Supplier List in MRP
Source Control Drawing - SCD
Procurement Documents:

Adhesives 1021-1629
Microcircuits/Semiconductor 1021-1618
Passives 1021-1628
Packages 1014-0981
Thickfilm Substrates 1026-8309
Crystal 1032-11833

7.4.3 Verification of Purchased Product:

Upon receipt of purchased product, MSK will verify the material at receiving and incoming inspection. The verification will include a C of C as a minimum but may also include other supporting data (e.g. test, Cert of Analysis, OEM C of C, Authorized Distributor C of C, etc.)

If purchased product does not meet any of the verifications, the product may be held in a bonded area until proper verifications are obtained.

If purchased product does not meet MSK requirements, a discrepancy report will be documented and product may be returned to vendor based on the discrepancy. Product and report will be forwarded to QA for disposition and will not be stocked as acceptable product.

If purchased product is element evaluated in the end item, traceability records shall exist to recall the purchased product in case of failure.

Vendor is responsible for purchased product even if all verifications and validation are performed on the purchased product. If MSK's end item is shipped with defective purchased product, MSK will show that purchased product is non-conforming and may submit for return and/or replacement.

If material is supplied to MSK from Government or Customer, the material shall be handled in accordance with normal incoming procedures, unless otherwise specified.

MSK Referenced Documents:

Receiving Inspection - Manual Section 5
Purchase Order Control and Surveillance - Manual Section 30
Vendor Survey - See Manual Section 30
Training - Manual Section 46
Element Evaluation Incoming Test Procedure - RIP 005
Government/Customer Furnished Material - Manual Section 33
Approved Vendor List - Supplier List in MRP
Source Control Drawing - SCD
Procurement Documents:

Adhesives 1021-1629
Microcircuits/Semiconductor 1021-1618
Passives 1021-1628
Packages 1014-0981
Thickfilm Substrates 1026-8309
Crystals 1032-11833

7.5 Production and Service Provision:

7.5.1 Control of Production and Service Provision:

Note: MSK is excluded from the service provision (Ref. 7.5.1.4 and 3.1).

MSK controls production of product in accordance with a customized product travel card/router/shop packet.

MSK manufacturers products and serve our customers under controlled conditions. As part of our operations control, we make the following available, as applicable:

- data sheets are available on MSK's web site describing the product and applications.
- all procedures, inspection points and equipment applicable to manufacturing the product is specified on the product travel card/router/shop packet or via subtier documents. This includes the monitoring and measurement of process parameters, workmanship criteria, tooling prevention/detection or removal of foreign material. The travel card/router/shop packet also accounts for all traceability of the product from start to shipment which includes piece parts and product accountability.
- final review of the travel card/router/shop packet determines accountability and conformance for release of the product for shipment. All manufacturing, inspection and screening shall be in accordance with the travel card/router/shop packet unless otherwise documented and authorized.
- MSK maintenance is responsible for maintaining building environment conditions such that manufacturing equipment is not affected. The environments include proper ventilation within the clean room, clean compressed air, clean vacuum lines, stable electrical lines for sensitive equipment, battery backup of system controllers and properly maintained chemicals including the DI water system.

MSK Referenced Documents:

Kitting - MPI 7009
In Process Inspection - Manual Section 7
Manufacturing Process Inst. - Manual Section 8
Final QA Inspection - Manual Section 9
Calibration - Manual Section 10
Records - Manual Section 11
Control of Age/Environment Sensitive Items - Manual Section 13
Documentation Distribution & Control - Manual Section 19
Assembly Drawing - Manual Section 20
Electrical Test Procedure - Manual Section 22
Engineering Change Request - Manual Section 24
MSK Web Site - MSK Data Sheets

7.5.1.1 Production Process Verification:

All production operations are performed in accordance with the product travel card/router/shop packet with documentation specified on the travel card/router/shop packet (ie. assembly drawing, bill of materials, test procedure, BI procedure, active trim, MPI, TIP, etc.) All operators can provide process input on the first production build by means of a review form or engineering change request. Engineering validates electrical test. Change of product is verified in accordance with the type of change and is documented.

MSK Referenced Documents:

Records - Manual Section 11
Engineering Change Request - Manual Section 24
Engineering Change Order - Manual Section 25

Generic Device Assy flow Charts:

Class K Flow Chart - 2422-2739
Class H Flow Chart - 2422-1518
Class D Flow Chart - 2422-1976
Class E Flow Chart - 2422-9936
Class V Flow Chart - 2422-14417
Class Q Flow Chart - 2422-16054
Industrial Flow Chart - 2422-9937

All TIP Procedures
All MPI Procedures
Prototype Production Review - Form 8270

7.5.1.2 **Control of Production Process Changes:**

MSK controls all changes to documentation through the Engineering Change Order System. This procedure identifies personnel that are allowed to approve the change and each change is classified (major, minor, editorial) with tie into customer and/or regulatory agency approval process. If a major change applies, a requalification system is in place that identifies the required testing based on the change and also controls the implementation of the change.

MSK Referenced Documents:

Engineering Change Order - Manual Section 25
Engineering Change Request - Manual Section 24

7.5.1.3 **Control of Production Equipment, tools and software programs:**

All production equipment is under calibration control and where necessary, set up devices are used to verify equipment prior to performing production testing (eg. Test Correlation, Ultrasonic Inspection, BI Board Verification, PIND test set up check, etc.) Set ups are verified as applicable to the test requirement and are stored to maintain reliability for future use. Validation of production may also be accomplished by performing non-destruct testing (eg. Non-Destruct Bond Pull, X-Ray, Screening, etc.) or first piece visual
inspection of the first assembled device in the process. Electrical test software is verified for repeatability and accuracy prior to release.

MSK Referenced Documents:

Calibration - Manual Section 10
Auto Test Development Guideline - Manual Section 52
Inspection Procedures - TIP 2017 Series

Applicable TIP and MPI procedures

7.5.1.4 Post-Delivery Support:

Post delivery monitoring and update can occur any time during the process from customer requirement review to shipment. The actions can result from customer requirement review, internal auditing, end item data review, pareto analysis, internal or external corrective actions, failure analysis, MRB (customer approval required) internal material review (IMR) or issues detected after delivery.

MSK Referenced Documents:

Non-Conforming Material Control - Manual Section 34
Procurement Quality Requirement Review - Manual Section 26

Note: ***MSK is excluded from some portions of the service provision (Ref 3.2). MSK is a manufacture of Hybrid and Microcircuits which is typically a small portion of an entire system. Servicing to the component level is not required during normal system operation but may apply during the engineering design phase with the customer. MSK is responsible for problems that are detected after delivery and is responsible for control of non-conforming product returned post delivery.***

7.5.2 Validation of Processes for Production and Service Provision:

MSK validates processes from the design concept (similarity), design of experiments, in-process validations, in-line testing, end-of-line testing and qualification of processes.

MSK Referenced Documents:

Records - Manual Section 11
Product Design - Manual Section 14
Prototype Development - Manual Section 15

Generic Assy Flow Charts:

2422-2739 (Class K)
2422-1518 (Class H)
2422-1976 (Class D)
2422-9936 (Class E)
2422-1563 (Sub Fab)
2422-14417 (Class V)
2422-16054 (Class Q)

All TIP Procedures
All MPI Procedures
All RIP Procedures
All SQC Procedures

Quality Conformance Inspection - MPI 5008, MPI 5008.XX
Qualification - QML 38534
38535 QCI - MPI 38535V

7.5.3 Identification and Traceability:

MSK tracks raw materials and elements via a unique control number (assigned at receiving) used throughout the production process and is traceable to the piece part (individual device) via a serial number and product travel card/router/shop packet. The travel card/router/shop packet will also control the device configuration (assembly level revision) and will show the production status of the device while in the manufacturing process.

When travel cards/routers/shop packets are signed off by operators, the initials of the operator are documented and are traceable to the operator. These records (initials) are maintained even as the work force changes over time.

MSK Referenced Documents:

Receiving Inspection - Manual Section 5
Records - Manual Section 11
Documentation Distribution & Control - Manual Section 19
Engineering Change Order - Manual Section 25
Packaging and Shipping - Manual Section 29
Header Prep (Control Number Identification) - MPI 7001B
Kitting - MPI 7009
Marking - MPI 7063
Element Evaluation - RIP 005
Quality Inspection and Identification - Manual Section 31

7.5.4 Customer Property:

MSK controls, maintains and protects all personal data, government (regulatory agency) or customer property including furnished elements, assemblies, jigs, test fixtures, burn-in boards, test equipment, test data, design data, customer processes or intellectual property. The material is identified, verified and protected as if the material were owned by MSK. If the material becomes lost, damaged or non-functional, MSK will determine and report the probable cause.

MSK Referenced Documents:

Government/Customer Furnished Material - Manual Section 33

7.5.5 Preservation of Product:

MSK provides guidelines, equipment, resources and appropriate training to ensure that product is handled under safe and controlled conditions to reduce the likelihood of damage, deterioration and foreign material. Employee safety is considered of paramount importance.

We provide secure, safe and appropriate storage facilities for all products in a suitable environment to reduce the likelihood of damage, deterioration, or foreign material.

We define authorities responsible for and define procedures for the issue and receipt of goods from bonded stock and associated areas.

We undertake periodic stock checking activities to ensure the accuracy of stock records (inventory), shelf life control of age sensitive materials, stock area control and monitor for damage, deterioration and foreign material of product while in storage.

We provide appropriate packaging materials (including marking and labeling) suitable for the protection of the product while in storage and during delivery to the customer.

We provide guidelines and materials to assist with the marking and labeling of product to ensure it can be identified once packed.

We extend all of the above activities until the contractual obligation with the customer has ceased, including, where specified, during the delivery of goods.

Safe handling is performed on all hazardous materials (ie. BeO safeguards are specified on Assembly Dwg) and on all sensitive devices (ESD, fragile packages/devices) to prevent damage, deterioration or foreign material. Safe handling of chemicals (hazardous materials) is also performed to prevent exposure or operator harm.

MSK Referenced Documents:

Calibration - Manual Section 10
Packaging and Shipping - Manual Section 29
ESD - Manual Section 38
Wrist Strap Testing - MPI 7170
Health and Safety - Manual Section 37
Cleanliness and Atmospheric Control - Manual Section 39
Kitting - MPI 7009
Handling of Chemicals - MPI 7100

All TIP Procedures
All MPI Procedures

7.6 Control of Monitoring and Measuring Devices:

MSK identifies the inspections and measurements required and determines the monitoring/ measuring devices needed to conduct those inspections and monitoring. We establish processes to ensure inspection and monitoring are carried out in a way that is accurate and capable in the applicable environment.

We calibrate or verify our measurement equipment at regular intervals (recall intervals), prior to use or against nationally traceable standards in accordance with internally controlled calibration procedures. In cases where no such calibration standard exists, the basis used for calibration is recorded. We record the results of calibration and verification.

If inspection or monitoring equipment is determined to be nonconforming, we assess and record the validity of measurements taken using that equipment. We ensure the equipment is removed from use until it is repaired. Any adversely affected product is subject to nonconforming product procedures.

If software is used in the monitoring and measurement of products and processes, its ability to satisfy the intended application is confirmed unless it is validated by the equipment supplier. This is done prior to initial use and re-confirmed as necessary.

The Calibration Procedure and related procedures shall establish requirements for the use and maintenance of the MSK Calibration System and Test Inspection Procedure.

The requirements for the procuring, identifying, labeling, calibrating, verifying, storing, destroying, listing of standards and measuring of equipment shall be delineated, including requirements for associated documentation.

All testing and measuring equipment shall be calibrated on a regular schedule by the Engineering Department under controlled conditions (temperature, humidity). These calibrations must be traceable to NIST and are in conformance with MIL-STD 45662, Z540-X or equivalent.

MSK Referenced Documents:

Calibration - Manual Section 10
Cleanliness and Atmospheric Control - Manual Section 39
Auto test Development Guide Line - Manual Section 52
Test Inspection Procedure - TIP 2017D

All TIP's and MPI's

8.0 MEASUREMENT, ANALYSIS AND IMPROVEMENT:

8.1 General:

MSK plans and implements the monitoring, measurement, analysis and improvement processes that are necessary to operate the business. These include processes necessary to demonstrate conformity of the product. It also includes processes necessary to ensure conformity of the quality management system and to improve its effectiveness continually. We determine appropriate methods, process verification, process control, special requirements, pareto analysis, design of experiment, inspection results, qualification results, destructive physical analysis results, FAI results and the extent of their use.

MSK Referenced Documents:

Final QA Inspection - Manual Section 9
Records - Manual Section 11
Customer Satisfaction – Manual Section 51
First Article Inspection – MPI 7197
QCI - MPI 5008
38535 QCI - MPI 38535V
Test Inspection Procedures:
External Visual - TIP 2009
Substrate Inspect - TIP 2017A
Die Inspect - TIP 2017B
Wire Inspect - TIP 2017C
PreCap Inspect - TIP 2017
Test Inspect - TIP 2017D
Product Design - Manual Section 14
Engineering Change Request - Manual Section 24
Engineering Change Order - Manual Section 25
Quality Control Audits - Manual Section 28
Non-Conforming Material Control - Manual Section 34
Preventive Action Request - Manual Section 54

8.2 Monitoring and Measurement:

8.2.1 Customer Satisfaction:

As one of the measurements of the effectiveness of the quality management system, MSK monitors customer satisfaction. We monitor our customer's perception as to whether we have met their requirements and our performance as a supplier via customers' feedback (quality and delivery reports, business analysis, feedback from field sales, compliments, lost opportunities/jobs).

MSK Referenced Documents:

Organization - Manual Section 4
Procurement Document Quality Requirement Review - Manual Section 26
Non-conforming Material - Manual Section 35
Customer Satisfaction - Manual Section 51

8.2.2 Internal Audit:

MSK performs internal audits at planned intervals to ensure that the quality system is effectively implemented and operating in accordance with AS9100, MIL-PRF-38534, MIL-PRF-38535, MIL-STD-883, our own procedures, our quality management plan (QMP) and other regulatory agency requirements.

The Quality Audit Procedure details the system for in-plant audits using pre-audits, previous audits, check sheets and regulatory specifications to assure compliance with MSK specifications, policies, contract requirements, regulatory requirements, organization, effectiveness and in particular, to the requirements of this manual.

The scope of the audits shall include all operations that can affect the quality of the finished product.

This section shall apply to MSK Quality Department personnel to the extent that they are involved with the audit system.

The Quality Assurance Department shall be responsible for the performance of all audits. The auditor(s) shall be independent from the area being audited. If for some reason, it's not practical to use an independent auditor, then at a minimum, a Quality Representative shall be assigned to participate in the audit and review the results.

If the auditor is other than the Quality Control Manager or Quality Assurance Personal, the auditor shall be formally trained in the area audited and provided with a more extensive checklist or highlighted procedures denoting specific characteristics to look for.

MSK Referenced Documents:

QA Audits - Manual Section 28
Quality Management Program (QMP) - Manual Section 43
Quality Management Program (QMP) for 38535 - Manual Section 58

8.2.3 Monitoring and Measurement of Processes:

MSK monitors and measures the various processes used within the quality system using suitable methods. These performance measurements ensure our processes are sufficient to meet quality requirements. If a process is not working properly, we will take action (correction, corrective action, preventative action, rework) as appropriate in order to ensure product quality and will evaluate, identify and correct the non-conforming process/product.

MSK Referenced Documents:

Organization - Manual Section 4
Non Conforming Material Control - Manual Section 34
QCI - MPI 5008, MPI 5008.XX
Test Inspection Procedures - TIP 2017 Series
Engineering Change Order - Manual Section 25
Rework - MPI 7050
Preventive Action Request - Manual Section 54

8.2.4 Monitoring and Measurement of Product:

MSK inspects and tests products to ensure all requirements are in accordance with the applicable specifications at various points in the process. When key characteristics or special requirements are called out for the product (via SCD, assembly dwg, travel card/router/shop packet, test procedure), the item is inspected and/or tested and is documented.

MSK performs sampling and 100% inspection based on the critical nature of the test in accordance with regulatory specifications. If sampling inspections or tests exhibit non-conformance, then sampling is increased and/or 100% inspection/test will be performed. When a required 100% inspection or test is reduced to a sample plan, the plan shall be submitted to customer or regulatory agency for approval (eg. alternate method).

All product are inspected and tested to meet all requirements prior to ship. If product requires additional testing upon completion of the production process (ie. qualification testing, first article inspection, source inspection, radiation testing, etc.), then the product may be held or released with customer approval under positive recall.

We record the results of the inspection and the identity of the person authorizing release of product. We do not release product until it has passed all required inspections, screening and qualification unless allowed by MSK procedures with positive recall traceability (ie. MSK may ship product prior to completion of Life Test or Qualification with customer approval).

MSK Referenced Documents:

Final QA Inspection - Manual Section 9
Records - Manual Section 11
Sampling - Manual Section 32
Packaging and Shipping - Manual Section 29
Kitting - MPI 7009
Test Inspection Procedures - TIP 2017 Series

All TIP's and MPI's

8.3 Control of Nonconforming Product:

MSK identifies and controls nonconforming product in accordance with the nonconforming material control and rework procedure so that we do not accidentally use or deliver. Authorized personnel determine disposition of nonconforming product.

We record the nature of the nonconformity, any subsequent actions and any concessions. If nonconforming product is reworked, it is subject to re-inspection so that it meets all requirements. If nonconforming product is detected after delivery or use, we take action appropriate to the severity of the situation and address other processes or products.

The Non-Conforming Control Procedure establishes a system for informing departments or personnel of a quality problem (which has occurred or is occurring on parts resulting in considerable delay, rework, scrap, etc) and to initiate failure analysis, corrective action or preventive action.

This system shall apply to all product lines and encompasses the activities of all departments in the company.

MSK controls disposition of non-conforming product (does not meet design or contract requirements) that requires customer approval prior to ship. The control dispositions may include waivers for repair, excess rework, test limits, visual defects. The waivers are only requested if the product will meet the form, fit and function requirements of the end item application and will be reliable.

If product is deemed unusable for an application, the product will be destroyed and scrapped into the precious metals recycling container. The non-conforming data base shall also reflect the disposition of the product.

If non-conforming or suspect product is shipped to the customer, MSK will notify customer of non-conformance after all applicable background information, including preliminary cause and corrective action has been obtained. The notification will include the affected part numbers, date code, serial number (as applicable), quantity, delivery date and PO reference. The notification will be sent to the customer buyer as soon as possible to prevent use of the suspect product.

MSK Referenced Documents:

Nonconforming Material Control - Manual Section 34
Rework - MPI 7050
Preventive Action Request - Manual Section 54

8.4 Analysis of Data:

MSK determines, collects and analyzes appropriate data about the company's performance. We do so to measure the suitability and effectiveness of the quality system and to evaluate opportunities for improving its effectiveness. Our sources of information may include monitoring, measurement or any other relevant sources.

The data includes information relating to customer satisfaction, product conformity, process conformity and suppliers. Other information may also be analyzed. We will consider trends in the data and opportunities for preventive action.

MSK Referenced Documents:

Organization - Manual Section 4
Final QA Inspection - Manual Section 9
Engineering Change Order - Manual Section 25
Nonconforming Material Control - Manual Section 34
Element Evaluation Incoming Test Procedure - RIP 005
Quality Control Audits - Manual Section 28
Non-Conforming Material Control - Manual Section 34
Preventive Action Request - Manual Section 54
Customer Satisfaction - Manual Section 51

8.5 Improvement:

8.5.1 Continual Improvement:

MSK continually improves the quality system's effectiveness using the quality policy, quality objectives, audit results, analysis of data, test results, inspection results, qualification results, failure analysis, customer return analysis, pareto analysis, corrective action, preventive action and management review.

MSK Referenced Documents:

Organization - Manual Section 4
Engineering Change Request - Manual Section 24
Engineering Change Order - Manual Section 25
Quality Control Audits - Manual Section 28
Nonconforming Material Control - Manual Section 34
Element Evaluation Incoming Test Procedure - RIP 005
Preventive Action Request - Manual Section 54

8.5.2 Corrective Action:

MSK acts to eliminate the cause of any quality problems that occur as a result of internal non-conformance, customer returns and/or MSK vendor returns in accordance with the documented nonconforming material control procedure. When determining actions, we consider the severity of the nonconformance's and their effects. MSK monitors corrective action responses and determines action if responses are not received in a timely manner.

MSK Reference Documents:

Nonconforming Material Control - Manual Section 34

8.5.3 Preventive Action:

We handle preventive actions in accordance within the Preventive Action Request Procedure. We determine potential nonconformities and actions necessary to prevent their occurrence. When determining actions, we consider the effects of the potential problem. The Preventive Action System is tied into the Engineering Change Order Procedure.

MSK Reference Documents:

Engineering Change Request - Manual Section 24
Engineering Change Order - Manual Section 25
Nonconforming Material Control - Manual Section 34
Preventive Action Request - Manual Section 54