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Sign/Date: <i>5/9/02</i>	Sign/Date:

This document is the  
ISO 9001 Quality Manual  
Of

## **The AMI Group**

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**0.2 Cross References to ISO 9001:20000**

The numbering of this manual directly reflects that used by ISO 9001 -2000, except for section 0, which is for information purposes only.

Where applicable, any relevant procedures are referenced within each section of this Quality Manual.

1 **Scope**  
1.1 **General**

The Quality Management System described in this manual and the related procedures aims to enhance customer satisfaction by consistently providing electronic manufacturing services that meet customer and applicable regulatory requirements,

1.2 **Exclusions**

- Clause 7.3 is not applicable, as we do not design or develop products, we manufacture to our customers requirements.

2 **Normative Reference**

The normative references described in ISO9001:2000 are accepted.

3 **Terms & Definitions**

As described in ISO 9001:2000, the following terms are used within this manual:

**Supplier** = the organisations which supply products and/or services which we use in order to produce our Electronic Manufacturing services

**The Company** = the aspects of our activities which are covered by this Quality Management System (shown in section 1.1, above)

**Customer** = The persons or organisations to whom we supply our Electronic Manufacturing Services.

In addition, the following terms are used within this Quality System:

**EMS** = Electronic Manufacturing Services

**GP** = General Operating Procedure

**SOP** = Standard Operating Procedure

## 4 Quality Management System

### 4.1 General

Within this Quality Manual and the procedures to which it refers, we identify the methods by which we control the types of activity described in sections (a) through (f) of this Clause.

- a. We have identified the processes required for this Quality Management System (see the **flowchart on the next page**)
- b. We have determined the sequence of these interactions shown in the overview flowchart (see flowchart on the next page). The procedures link to each other in sequence.
- c. We have determined the ways in which we ensure the effective operation of our processes, and their control, through the use of Standard Operating Procedures. General Procedures and individual project plans (Routers).
- d. We ensure the availability of resources and information required for each operation. Resources are described in [section 6.1](#). Information includes our procedures and work instructions, as well as details of Customer requirements & descriptions of processes to follow. These are described in the various procedures.
- e. We measure, monitor and analyse our processes, in order to ensure that we meet our objectives and to improve the processes wherever possible. This is conducted by internal quality audits ([Sop-17.0](#))
- f. We implement actions necessary to achieve the required results and to ensure continual improvement of the system. These actions include the provision of procedures which define the actions to be conducted during the product realisation process (see **flowchart on the next page**, which links to the relevant procedures).

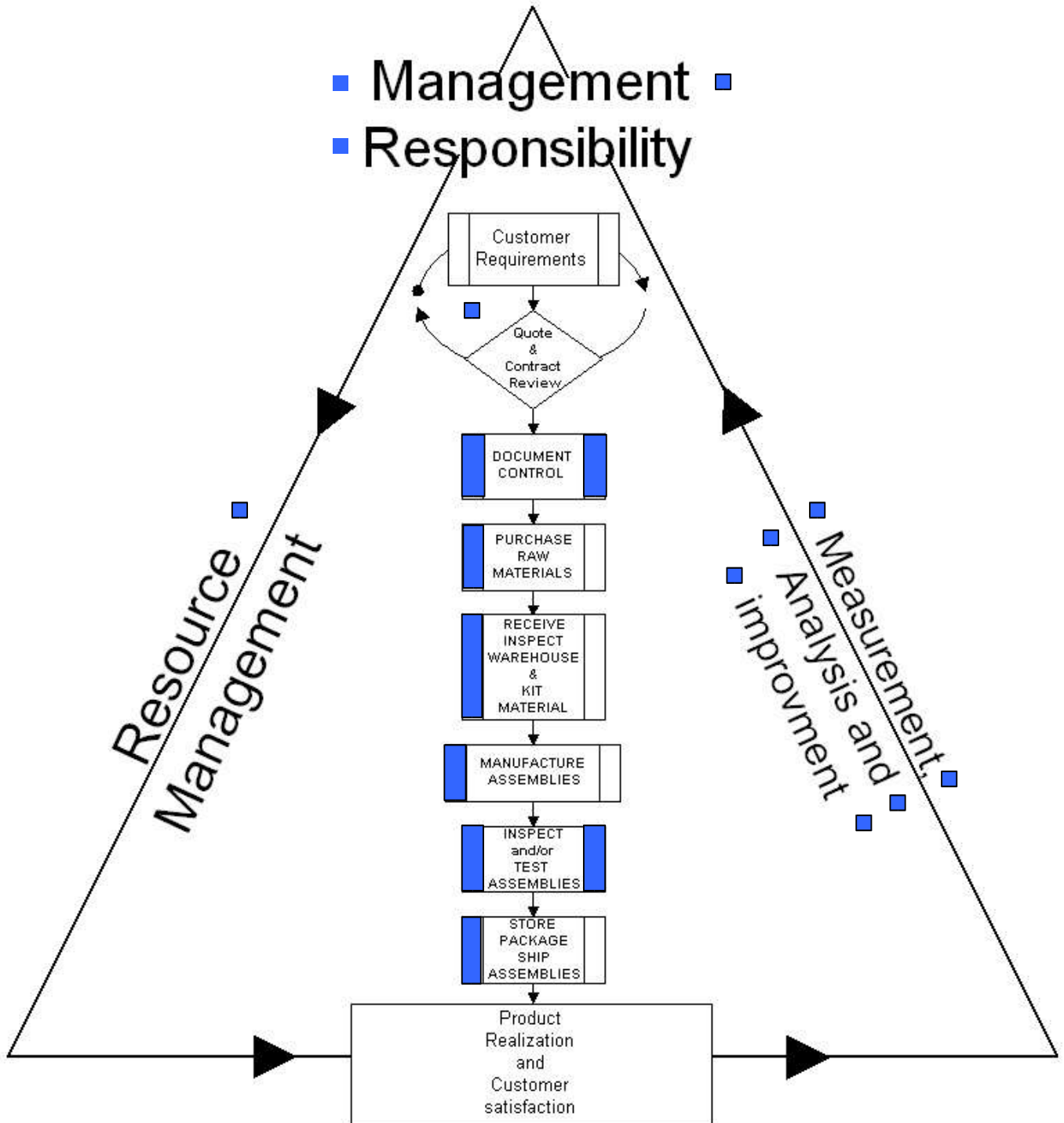
[We ensure that any outsourced process that affects product conformity is controlled.](#)

[Outsourced Process List:](#)

- [Calibration of Test & Inspection equipment](#)

Sequence of operations and their interactions:

Click  areas for related procedures.



## 4.2 Documentation Requirements

### 4.2.1 General

This system includes this Quality Manual, our Quality Policy and objectives, all procedures, instructions, forms and other documents, in printed and electronic format, required to ensure the effective operation and control of our processes.

Where highly trained staff are utilised within our system, the level of documented procedures has been reduced.

This system also includes all of the records that we produce in order to demonstrate compliance with ISO 9001:2000 and to demonstrate that our products and services meet the performance criteria specified in our literature and/or our Customer's requirements.

### 4.2.2 Quality Manual

A Quality Manual (this document) has been established, which includes:

- the scope of the Quality Management System (see [section 1.1](#))
- justification for any exclusions within Clause 7 (see [section 1.2](#))
- references to all relevant documented procedures (see [section 0.2](#))
- a description of the interaction and sequence of processes within the Quality Management system ([see Flow Chart](#))

### 4.2.3 Control of Documents

Procedures exist which ensure that only the appropriate issue of quality documentation is available at the point of use. Documents exist in printed and computerised format. We ensure that all documents and any subsequent changes are reviewed and approved prior to use.

We ensure that all documents are updated whenever necessary, by:

- being reviewed whenever there is an initial assembly release.
- being reviewed whenever a new assembly revision is released.
- being reviewed due to customer feedback.
- being reviewed due to staff feedback

We ensure that only appropriate versions are available for use.

- [Electronic Document statement](#)
  - [Our Controlled Quality Manual, Standard Operating Procedures, General Procedures, Forms and Database data are in Electronic document form located on the AMI\\_FILE\\_SERVER computer in Broken Arrow, Oklahoma. All employees have READ access to these documents via the Corporate Intranet. Only the Director of Quality Assurance can change these documents. Printed copies of these documents are considered REFERENCE ONLY.](#)

We ensure that all documents remain legible, and that each document is clearly identified.

We review the suitability of documents, so as to ensure that they are kept up to date or else withdrawn if they are irrelevant or obsolete.

Where documents are received from external sources (such as Customer data), which is used within the Quality Management System, they are controlled in the same way as in-house documents.

We ensure that obsolete documents are removed from use, held in the archives and stamped obsolete. [See Sop-5.0 Document and Data Control](#)

### 4.2.4 Control of Records

We have established and maintain records, in order to provide evidence of conformity to requirements, and as required for the effective operation of our quality management system. We ensure that records remain legible, readily identifiable and retrievable.

Where production records are requested by Customers, the Director of Q.A. is responsible for reviewing the request and if appropriate arranging for the release of the relevant documents.

The Document & Record Control procedure gives more details of the control of records ([see Sop-5.0 Document and Data Control](#)).

## **5 Management Responsibility**

### **5.1 Management Commitment**

The Senior Management of the Company has defined quality objectives, which are stated within section 5.4.1 of this manual.

The Senior Management conducts regular reviews of the effectiveness of the quality management system, and ensures that there are adequate resources in order to ensure that the quality objectives are achieved.

### **5.2 Customer Focus**

This system has the full backing and support of the Senior Management of the Company, in order to ensure that the Customers needs and expectations are determined. In particular the Sales Director has the primary responsibility for liaising with Customers and determining their needs and expectations, and for relaying them to other Senior Management.

### 5.3 Quality Policy

**The principal factor in our successful performance is the incorporation of Quality into all of the Electronic Manufacturing Services that we provide. Our objective is to always attain, and whenever possible, exceed the standards expected by our customers. This will be achieved by developing, establishing and maintaining a Quality Management System that complies with the requirements of ISO 9001:2000 and EN 13980:2002. All employees are given the responsibility and authority to identify problems, initiate solutions to those problems, and to control further processing of affected product. This includes preventing shipment of Nonconforming materials or product, until satisfactory Corrective Action has been taken. Our Quality Management System will be periodically reviewed, consistently applied, continuously measured and rigorously enforced.**

The ongoing suitability of this Quality policy is reviewed during the Quality Management Review Meetings.

We utilise a process of continual improvement.

- Our staff is encouraged to review their working practices and suggest methods for improvement, where appropriate. In addition, all relevant processes are reviewed and improvements determined where practical.
- Our EMS performance is reviewed via data collected from Customer returns, Customer surveys and in-house inspection and testing. Wherever practical we will make improvements, so that our services cost less and meet or exceed our customer's expectations.

Every member of our staff must be familiar with, and carry out, the procedures that are applicable to their area of work within the company.

This Quality Policy is issued and explained to all employees upon commencement of work with the company, and a copy is prominently displayed in the reception area and made available for viewing on the computer network. All staff are trained in the meaning and implications of this Quality Policy.

5.4 **Planning**

5.4.1 **Quality Objectives**

It is the policy of The AMI Group

- **To always attain, and wherever possible, exceed the standards expected by our customers.**

In order to meet these objectives, measurable quality objectives have been established for relevant functions within the organisation:

- Production
  - See Production Department Objectives Declaration Form.
- Purchasing
  - See Purchasing Department Objectives Declaration Form.
- Quality Control
  - See Quality Control Department Objectives Declaration Form.
- Receiving
  - See Receiving Department Objectives Declaration Form.
- Sales
  - See Sales Department Objectives Declaration Form.
- Shipping
  - See Shipping Department Objectives Declaration Form.
- Stockroom
  - See Stockroom Objectives Declaration Form.
- Test Engineering
  - See Test Engineering Department Objectives Declaration Form.

The above objectives are reviewed and revised as necessary at each of the Quality Management Review Meetings ([see section 5.6](#)).

**5.4.2 Quality Management System Planning**

The resources required to achieve the quality objectives have been identified and incorporated into the relevant procedures.

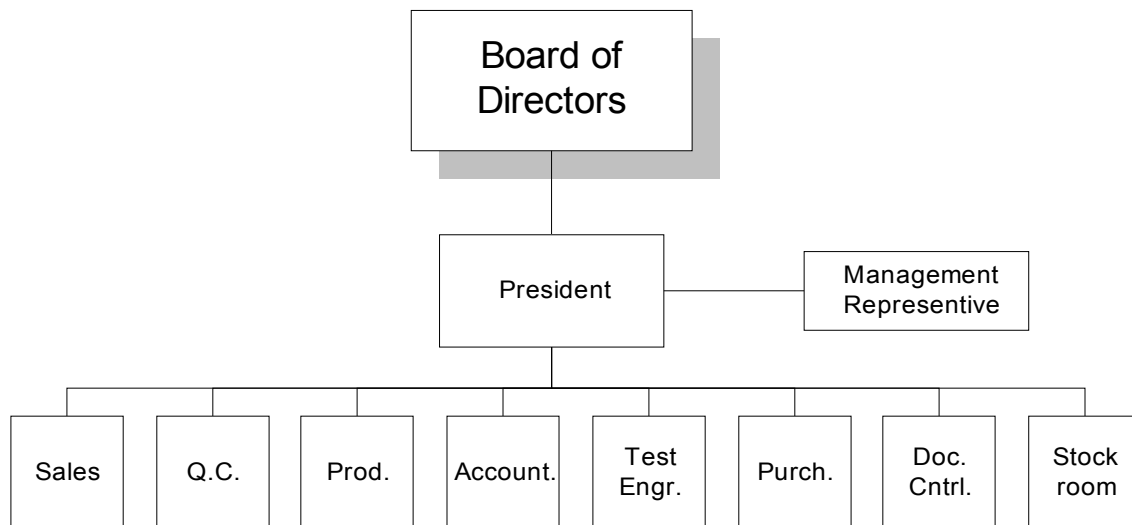
Where system changes are planned which may affect the operation of the system, the changes are reviewed during the Quality management Review Meetings, so as to ensure that the integrity of the system is not compromised.

**5.5 Responsibility, Authority and Communication**

**5.5.1 Responsibility and Authority**

**Notes:**

- Only key positions and functions are indicated on this chart;
- Status is not indicated by relative positions within this chart.



5.5.1 **Responsibility and Authority** (continued)

The responsibilities and authorities defined below relate to the key quality responsibilities of personnel having particular functions. Each Procedure may specify additional task-related responsibilities.

- President
  - ◆ Responsible for operations of the company
- Director of Quality Assurance
  - ◆ Management Representative
  - ◆ Responsible for Quality Control
- ◆ Responsible for ensuring that the Quality system is adhered to in all areas.
- ◆ Control of Internal Quality Auditing
- ◆ Reviews and analyses all problem reports and audit reports
- ◆ Responsible for ensuring safe working practices within the company
- Director of Sales and Marketing
  - ◆ Responsible for all sales & marketing activities
  - ◆ Responsible for handling of Customer Complaints
- Controller
  - ◆ Responsible for all accounting functions
- Purchasing Manager
  - ◆ Responsible for all purchasing activities
- Production Manager
  - ◆ Responsible for printed circuit assembly operations
- Test Engineering Manager
  - ◆ Responsible for all PCA testing activities
  - ◆ Responsible for sub assembly production
- Quality Control Supervisor
  - ◆ Responsible for PCA and Final Inspection activity.
- Document Control Manager
  - ◆ Responsible for controlling all assembly documentation
- Stockroom Supervisor
  - ◆ Responsible for warehousing and stock control operations

### 5.5.2 Management Representative

The Director of Quality Assurance is the Management Representative and has been appointed by the President [to](#) ensure the operation of the system, irrespective of any other duties.

The Management representative is responsible for reporting on the performance of the quality system and of any required improvements during the Quality Management Review Meetings.

The Management Representative will arrange for various methods of promoting awareness of Customer requirements throughout the organisation. These are discussed and agreed during the Quality Management Review Meetings. The Director of Sales and Marketing will also be involved in such promotions.

### 5.5.3 Internal Communication

Internal communication via a company wide “open door” policy where all employees may discuss concerns with any manager, supervisor or the president.

## 5.6 Management Review

### 5.6.1 General

The department managers and the Management Representative undertake the Management Quality Review.

The Management Review Meetings will be held at least once per annum, in March (plus or minus four weeks). The Management Representative may call additional meetings at his discretion.

The meetings will be formally conducted using the form # [Q.M.-Sec. 5.6 Management Review](#) Form, and conducted with actions and completion dates set. Completed actions will be recorded at the following meeting. The Management Representative is responsible for the monitoring of all outstanding actions.

5.6.2 **Review Inputs**

- Actions outstanding from previous meetings
- Analysis of non-conformances, including
  - ◆ Corrective Actions
  - ◆ Customer Complaints
  - ◆ Internal problems (reject rates, scrap rates, process problems, etc)
- Internal Quality Audits Results (see [SOP-17.0 Quality Audits](#))
  - ◆ Analysis of audits conducted since previous meeting
  - ◆ Recommendations for improvements
  - ◆ Next year's Audits Schedule
- Suitability of the Quality System
  - ◆ Suitability of existing documentation
  - ◆ Relevance of Quality Policy
  - ◆ Achievement of objectives
    - Reports by all Managers, showing whether or not they have managed to meet the measurable objectives for their department. If not, what needs to be done in order to meet the objectives.
  - ◆ Areas for improvement Products
  - ◆ Production processes
  - ◆ Software development processes
  - ◆ Sales Department processes
  - ◆ Warehouse processes
  - ◆ Levels of Customer satisfaction/dissatisfaction
    - Complaints
    - Levels of repeat business
    - Lost business
    - Feedback from Sales Department
    - Market share, etc
    - Customer returns
    - Methods of promoting awareness of Customer requirements
- External Factors
  - ◆ New Technologies
  - ◆ New Legislation
  - ◆ New Standards
  - ◆ Changes in Market Requirements
- Review of training needs
- Relevance of statistical methods
- Any other business
- Date of next meeting

### 5.6.3 **Review Outputs**

The Quality Management Review Meeting outputs include actions to ensure that there are improvements to the Quality management System and all processes involved in the supply EMS to the Customer.

Where applicable, additional resources (personnel and equipment, etc) may also be specified during the meeting, in order to ensure correct realisation of quality objectives.

## 6 **Resource Management**

### 6.1 **Provision of Resources**

We ensure that adequate resources are provided, in order to ensure that we meet and continue to meet and where possible exceed Customer requirements and expectations. We ensure that we implement the processes described within this Quality management system and continue to improve the system.

### 6.2 **Human Resources**

#### 6.2.1 **General**

Staff is only assigned tasks for which they are adequately experienced, qualified and/or trained.

#### 6.2.2 **Competence, Awareness & Training**

The Company ensures that all employees are adequately trained and/or educated and/or experienced to enable them to proficiently perform their duties, and that their training needs are considered. All job functions directly affecting quality of goods and/or services supplied to the customer are identified within the relevant procedures and their training needs defined as appropriate.

Records are maintained of previous relevant qualifications & experience, and of all training provided to staff whilst in the employ of our organisation.

The Departmental Heads review the training records of all members of staff and consider the effectiveness of training provided, and determine future training needs as appropriate. Records of the review and of the training supplied are maintained.

(see [SOP-18.0 Training](#))

### 6.3 **Infrastructure**

We provide adequate facilities to enable product conformity to be achieved. The following aspects are considered:

- workspace (including the provision of suitable buildings and related utility services, etc)
- tools, equipment (including manufacturing and testing hardware/software)
- supporting services, which include:
  - maintenance of processing equipment
  - calibration of measuring equipment
  - use of externally-supplied temporary staff when workloads require

### 6.4 **Work Environment**

Within the applicable procedures, the company has identified and manages the human and physical factors within the work environment, which are needed to achieve product conformity. ([see GP-004 Building and Environmental Controls](#))

## 7 Product Realization

### 7.1 Planning of Product Realization

#### Overview of Process :

The quality objectives for all assemblies are defined in the procedures, related instructions and Routers . These include: [Sop-9.0 Process Control](#) and [Sop-10.1 In process inspection and Test](#)

- Method of agreement of delivery date and price
- Manufacturing Methods
- Inspection points, inspection methods, required equipment and records required

### 7.2 Customer-related Processes

#### 7.2.1 Determination of Requirements Related to the Product

Procedures exist to ensure that the Customer's requirements are fully understood and that they are capable of being achieved by the Company. Consideration is also given, so as to ensure that the product is suitable for the intended use, where applicable. [See Sop-3.0 Contract Review](#)

#### 7.2.2 Review of Requirements Related to the Product

Upon receipt of a request for a quotation or upon receipt of an order, a review of the Customer's requirements is conducted so as to ensure that the order is reviewed as described in the procedures. The review is conducted prior to acceptance of the Customer Order. Where a quotation has previously been supplied to the Customer, the Customer's order is compared against the quotation and any differences resolved before the order is accepted.

The Company ensures that it has sufficient resources to meet the Customer's requirements before it accepts the order. Any aspects of the order, which are unclear, are discussed with the Customer and the clarification is recorded on the [Contract Review Form](#).

Any subsequent variations and specific instructions are reviewed, recorded, confirmed and notified to the relevant functions within the Company and also to any suppliers involved in the changes.

Where verbal orders are received, the order is confirmed by either a faxed confirmation or reading back the order entered onto the computer system and asking the Customer to verbally confirm the order.

The procedures ensure that records are maintained which record all correspondence relating to the order. See [Sop-5.1 Engineering Change Control](#)

**7.2.3 Customer Communication**

The Sales Department is responsible for liaising with the Customer for all queries relating to delivery times, prices, etc

The Quality and/or Sales Department is responsible for handling of Customer feedback, including Customer Complaints Etc. See [Sop-14.1 Customer Complaints and Reporting](#)

Document Control is responsible for liaising with the Customer for all queries relating to assembly changes.

**7.3 Design and Development**

This clause is not relevant, as we do not perform any design activities.

**7.4 Purchasing**

**7.4.1 Purchasing Process**

The Company controls purchasing activities in order to ensure that purchased product meets our customers requirements.

**7.4.2 Purchasing Information**

All purchase orders are entered into our Mapics system. These Purchase Orders reference part numbers that are in our Purchase Specification database. All material in the Purchase Specification database has approved manufactures and is approved for use.

### 7.4.3 **Verification of Purchased Product**

All received materials are inspected prior to acceptance. Any defective items are rejected to the Supplier for replacement/credit. These non-conformances are recorded. See [Sop-10.0 Receiving and Incoming Inspection](#)

## 7.5 **Production & Service Provision**

### 7.5.1 **Control of Production & Service Provision**

In order to ensure proper control of all operations involved in the supply and servicing of product, the following controls are utilised:

- supply of product-specific documentation (BOMs, assembly drawings, routers, etc ) which define the characteristics of the product and the
- supply of procedures, GPs, work instructions, SOPS, etc which describe in sufficient detail, the method of manufacture of the items and the
- supply of procedures, sufficient detail, the method for testing the items, together with details of allowable tolerances, etc. and the
- supply of suitable equipment and tools for the manufacture and test of the items and the
- control of product for shipping and delivery and
- process monitoring

### 7.5.2 **Validation of Processes for Production and Service Provision**

All assemblies are validated during the in-process and final inspection and/or testing.

- Expectation:
  - PWA Cleanliness

### 7.5.3 **Identification and Traceability**

Identification is maintained during the production process by means of:

- M.O./serial # labelling, which is affixed to each assembly
- Material stored in designated areas
- Inspection and Test stamps where appropriate
- WIP tracking using Mapics
- Where appropriate Serial Number labelling affixed to each Final assembly.

### 7.5.4 **Customer Property**

- All Customer supplied material will be visibly labelled as such (using the CUSTOMER SUPPLIED PRODUCT TAG). Staff will exercise control over their safekeeping, confidentiality and security. Any items which are lost or which are found to be defective or otherwise unsuitable are reported to the Customer and appropriate actions taken. Records are kept of such events (RTV LOG). The Company ensures that adequate care is taken to protect the integrity and security of Customer's property whilst under the Company's control.

#### 7.5.5 **Preservation of Product**

The AMI Group ensures the conformity of product by preventing damage whilst being manufactured, inspected, tested, stored and delivered.

These controls include all incoming raw materials and components, as well as work in progress and finished goods. See [SOP-15.0 Handling, Storage, Packaging and Delivery](#)

#### 7.6 **Control of Monitoring & Measuring Devices**

The procedures and where applicable, Customer Supplied documentation, specify the required test equipment to be used.

The Company controls, calibrates and maintains measuring equipment. Equipment is uniquely identified and records maintained of the results of each calibration. Calibration of all such equipment is carried out internally against master equipment or externally through approved sources traceable to ANSI Standards.

The procedures ensure that all measuring equipment and processes are capable of providing readings to the required level of accuracy as specified by the relevant contract or as otherwise defined by statutory requirements.

In the event of equipment found to be defective, all work involving the equipment since the previous calibration will be reviewed.

[See Sop-11.0 Control of Measuring and Test Equipment](#)

## 8 **Measurement, Analysis & Improvement**

### 8.1 **General**

- (a) In order to demonstrate conformity of product, we conduct various inspections and tests.

The measurement and monitoring techniques used are those generically specified within the applicable procedures and supplemented as necessary by the Customer's own requirements.

- (b) In order to ensure conformity of our quality Management System, we conduct audits as described in [section 8.2.2](#). We record, correct, analyse and prevent problems, as described in [SOP-14 Corrective and Preventive Action](#). We also review the effectiveness of our system in meeting Customer requirements ([see section 5.6](#))

- (c) In order to continually improve the effectiveness of our quality management system, we review audits as described in [section 8.2.2](#). We record, analyse and prevent problems using Statistical techniques (PWA Inspection database). We also review the effectiveness of our system in meeting Customer requirements ([see section 5.6](#)).

### 8.2 **Monitoring & Measurement**

#### 8.2.1 **Customer Satisfaction**

Levels of Customer satisfaction are determined during the Management Review Meetings by analysing the information obtained from analysis of Customer Surveys, analysis of levels of repeat business and from analysis of Customer Complaints. Appropriate action is decided, based upon the results of the analyses and reviews conducted, so as to ensure that levels of Customer Satisfaction are as high as reasonably possible.

### 8.2.2. **Internal Audit**

The Company ensures that the Quality Management System continues to meet the company quality objectives. Implementation, relevance and compliance of the documented Quality Management System is verified by regular and systematic independent internal audits conducted by independent, qualified auditors.

All processes will be audited at least once per annum. The intended plan of audits for each year is considered at the last Management Review Meeting of the previous year.

The summary of the results of the Quality Audits is reviewed as part of the Management Review of the Quality Management System. Following each audit, the results are recorded and brought to the attention of the personnel having responsibility for the activity under audit. Where corrective action is needed, it will be emphasised to the manager of the area and re-audited as appropriate. This re-audit will also be recorded.

[See Sop-17.0 Internal Audits](#)

### 8.2.3 **Monitoring & Measurement of Processes**

The effectiveness of processes involved in the production of product is monitored by means of reviewing inspection data and Customer returns on a regular basis.

Where failure rates or Customer returns increase or are becoming unacceptably high, the suitability of the manufacturing process is reviewed.

We record, correct, analyse and prevent problems, as described in [Sop-9.0 Process Control](#)

### 8.2.4 **Monitoring & Measurement of Product**

The relevant procedures ensure that all inspection and test operations are identified, conducted and recorded.

Authorised staff conducts inspection verification activities to ensure the items produced are in accordance with the customer's requirements. Specific inspection and other verification activities are identified on the Routers.

All inspection activities are recorded in Mapics, including the name of the inspector responsible for releasing the product. Routing milestones are considered Inspection steps. Material movement from one milestone to the next is considered a "PASS". [See Sop-10.1 In process Inspection and Test](#). Additionally assemblies are stamped with appropriate inspection and/or test stamps [See Sop-Sop12.1 Control of Stamps](#)

## 8.3 **Control of Nonconforming Product**

The relevant procedures ensure that instances of product non-conformance are identified and investigated and recorded. Non-conforming product is prevented from use. If necessary, action is taken to prevent a recurrence.

The procedures define the method and responsibilities for the disposition and/or reworking of product found to be nonconforming. All reworked items are re-inspected in accordance with the relevant procedures.

Where product is found to be nonconforming after delivery the items can be returned, after a Return Goods Authorization has been issued. Appropriate action will be agreed upon between the company and the customer. [See Sop-13.0 Non Conforming Material](#)

#### 8.4 **Analysis of Data**

Various data are analysed in order to determine the suitability and effectiveness of this Quality Management System. This includes:

- levels of Customer Satisfaction / dissatisfaction ([see 8.2.1](#))
- suppliers (reviewed during Quality Management Review Meetings, [see section 5.6](#))
- levels of conformance / non-conformance (see section 8.3)
- scrap rates & reject rates (see section 8.3)

## 8.5 Improvement

### 8.5.1 Continual Improvement

The Company has a system for ensuring improvement through

- the analysis of non-conformances, including audit reports (internal and external) and determination of consequential actions
- the identification of potential problems and determination of consequential actions
- use and review of quality objectives
- analysis and review of levels of Customer satisfaction
- Management Review of non-conformances, identification of external changes and planning of additional or alternative resources

### 8.5.2 Corrective Action

We ensure that appropriate, timely corrective action is taken whenever nonconformities are discovered.

The Company maintains a system of recording and analysing the causes of non-conformance and the necessary corrective actions. This information is compiled from inspection records, audit reports and customer complaints. In particular the trend or recurrent failure is investigated to identify the underlying cause.

Action is then agreed for the resolution of the cause, recorded, implemented and later reviewed to ensure its effectiveness.

Effective corrective action is taken to correct the non-conformance and the effectiveness of such actions is reviewed after an appropriate period of time. [See Sop-14.0 Corrective and Preventive Action](#)

### 8.5.3 Preventive Action

The Company maintains a system of determining potential causes of non-conformance and for implementing the necessary actions.

Where appropriate, potential problems are considered and action taken to prevent them, subject to consideration of costs, likelihood and consequences of the potential problem.

This consideration includes information compiled from quality records, problem reports, audit reports and customer complaints, etc as well as suggestions for improvement made by members of our staff.

Effective preventive action is then taken to prevent the causes of non-conformance. The effectiveness of such changes is reviewed periodically at the Quality Management Review Meetings. [See Sop-14.0 Corrective and Preventive Action](#)