

# **axiom**

MANUFACTURING SERVICES

## **Quality Management System**

### **Supplier Quality Requirements Manual**

**QEG-M-001/9**

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Date	Details of Change	Issue	Approved by:
16/11/06	Initial Draft	1	Whitehead
27/11/06	Manual re-structured	2	Whitehead
06/02/07	Supplier Questionnaire added	3	Whitehead
22-4-08	<ol style="list-style-type: none"> <li>1. Additional product specific requirements added</li> <li>2. Updated Quality Policy added</li> <li>3. Updated Environmental policy added</li> <li>4. Added Acronyms</li> <li>5. Reference to record retention for aerospace customers</li> <li>6. Addition of BS EN9100 to QMS scoring</li> <li>7. Additional questions added to Supplier Questionnaire</li> </ol>	4	J. Williams
05-08-09	Removal of Supplier Questionnaire	5	J. Williams
07-06-10	Inclusion of supplier based verification process	6	J. Williams
14/06/17	Complete rewrite	7	J. Williams
27/11/18	Addition of notification of change to deviation section	8	J. Williams
01/11/21	Key supplier selection criteria added to section 3.2	9	T. Meredith

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## 1. Introduction

Suppliers must familiarise themselves with the contents of this manual and ensure that its contents are passed to all relevant parties in their organisation.

Suppliers must sign the designated sections and return to Axiom

### 1.1 Purpose

The intent of this document is to define the quality and logistics requirements necessary to ensure a successful partnership between AXIOM and our suppliers. The document outlines the process to become an approved supplier to Axiom, and the ongoing performance improvement requirements to be classified as a preferred supplier. It also identifies the minimum activities and quality performance required of the suppliers' quality management system and of delivered products.

### 1.2 Scope

This document is applicable to all existent suppliers, and potential new suppliers of purchased production material to Axiom.

### 1.3 Requirements

We are dedicated to work with suppliers who have demonstrated a commitment to continuous improvement in their product quality. It is our intent to develop mutually beneficial long-term relationships with these suppliers.

Suppliers must be capable of providing defect-free products that meet the design requirements, and on time delivery

All proposed material, manufacturing location and process changes must be communicated in writing to Axiom Quality Manager.

Deliveries will be accepted earlier than the delivery dates specified on our Purchase orders providing that they are in the same calendar month as requested. If the delivery dates requested on our Purchase Orders cannot be met in full this should be advised as soon as possible in writing. Under such circumstances partial shipments would normally be accepted.

Axiom will utilise a supplier performance monitoring system that enables Axiom to gauge supplier's performance using Quality and delivery performance along with QMS commitment as defined in clause 3.3

Preferred Suppliers will pro-actively advise of any potential cost reduction or quality or logistics improvement opportunities.

### 1.4 Acronyms

PCB	-	Printed Circuit Board
SCAR	-	Supplier Corrective Action Report
RMA	-	Return Material Authorisation
ISIR	-	Initial Sample Inspection Report
FAIR	-	First Article Inspection Report
QMS	-	Quality Management System
PPM	-	Parts Per Million
IPC	-	Association connecting electronics industries
RoHS	-	Restriction of Hazardous Substances

## 2. Axiom Policies

### 2.1 Quality Policy

In line with our Vision and Mission Axiom Manufacturing Services Ltd. employees are committed to Total Quality Excellence in Contract Electronic Manufacturing.

“Total Quality Excellence” means identifying and fully understanding the requirements of the customer and satisfying those requirements first time, every time, on time.

“Total Quality Excellence” is achieved by adopting a Quality Management System, working practices and a leadership culture which concentrates on; customer satisfaction, continuous improvement, emphasis on prevention of errors (in both product and working practices) and waste elimination, by utilising the power of a dedicated customer focused workforce.

Continuous Improvement culture based on “it can always be done better”.

### 2.2 Environmental Policy

Axiom Manufacturing Services is committed to continually improving its environmental performance; environmental management is an integral part of our business policy.

The responsibility for implementing the policy lies directly with management and employees at all levels and extends to those persons and companies with contractual relationships with Axiom Manufacturing Services Ltd. The policy is the framework for our objectives and targets.

Axiom Manufacturing Services Ltd. will take all appropriate steps to minimise the company’s impact on the environment and are committed to prevent pollution. We will:

- Comply fully with all relevant legislation and regulations.
- Reduce waste and recycle materials within the business wherever practicable.
- Reduce energy and utilities usage through company objectives, metering and monitoring.
- Operate and maintain the plant and vehicles in a responsible manner providing the maximum practicable environmental protection.
- Respect wildlife and maintenance of the surrounding grounds, whilst maintaining the appearance of the premises to the highest standards.
- Provide the information necessary to enable the company’s hazardous products to be properly used, stored and disposed of.
- Encourage the use of recyclable packaging at initial stages.

Axiom Manufacturing Services Ltd. will operate systems and procedures to ensure we adhere to our environmental strategy. We will:

- Periodically review and update this policy to ensure adherence to our strategy.
- Regularly monitor and review our environmental impacts.
- Implement an environmental improvement plan and update it annually.
- Implement an environmental incident and investigation reporting system.
- Select suppliers, contractors and sub-contractors with care.

Axiom Manufacturing Services Ltd. will:

- Make all employees aware of the Company environmental strategy; providing suitable training to improve awareness, encouraging active participation at all levels in the achievement of the responsibilities of the strategy.
- Where appropriate, take the interests of the local community into account.
- Make this policy available to all interested parties.

### 2.3 RoHS Compliance

Axiom Manufacturing Services are committed to meeting and exceeding defined targets with regards to the elimination or restriction of lead and other banned substances from the products we manufacture to ensure that our customers meet government directive requirements and limits.

Supplier must ensure that for all deliveries despatch notes include clear notification of the RoHS compliant status of the parts supplied. The despatch notes should show the purchase order number, part number, manufacturing batch or lot number, quantity and compliant status. All of this information should also be included on any labelling of products where possible.

The supplier may also issue a blanket statement of RoHS compliance which must reference Axiom part number(s).

All products that Axiom receives where this is not clear will be quarantined until status can be confirmed or returned to the supplier.

### 2.4 Anti-Slavery and Human Trafficking policy

Modern slavery is a crime and a violation of fundamental human rights. It takes various forms, such as slavery, servitude, forced and compulsory labour and human trafficking, all of which have in common the deprivation of a person's liberty by another in order to exploit them for personal or commercial gain.

Axiom has a zero tolerance approach to any form of modern slavery. We are committed to acting ethically and with integrity and transparency in all business dealings and to putting effective systems and controls in place to safeguard against any form of modern slavery taking place within the business or our supply chain.

To aid in this process the supplier needs to complete Table A on page 13

### 2.5 Counterfeit Parts Avoidance policy

Suppliers purchasing electronic components shall develop implement and maintain a counterfeit parts control plan that documents the processes used for risk mitigation, disposition and reporting of counterfeit parts. The plan should be compliant with industry standard AS-5553 latest issue.

Details to be entered into Table A on page 13

### 2.6 Conflict Material

Axiom Manufacturing Services shall commit and take necessary measures to comply with the conflict minerals provision (Section 1502) of the Dodd-Frank Wall Street Reform and Consumer Act. The supplier shall ensure that all applicable documentation shall be maintained to support compliance.

Details to be entered into Table A on page 13

### 2.7 REACH

The supplier shall ensure that their obligations under the EU REACH directive are fully met with respect to his products, facility and supply chain. Applicable documentation shall be maintained to support compliance

Details to be entered into Table A on page 13

### 3. Axiom Supplier Management

#### 3.1 Quality System Evaluation

AXIOM has specific requirements, based on ISO9001, ISO13485 and BSEN9100 principles, which all Suppliers must adhere to. From a Quality System perspective all manufacturing facilities that have UKAS accredited ISO 9001 certification will normally be approved, but further evaluation may take place as a function of the Parts Approval Process and/or periodic Supplier Assessment review depending upon the nature of the parts to be supplied.

Issued with this manual is a brief questionnaire which you are requested to complete and return to the address stated.

Upon receipt of this questionnaire Axiom may request to perform an On-site Audit, issue a report outlining status and any non-conformity found.

*Suppliers are requested to:*

1. Complete and return all Questionnaires within 1 week of receipt with accurate information.
2. Accommodate an on-site audit of the manufacturing facility, where deemed necessary by AXIOM.
3. Produce a clear, concise list of actions in a timely response to nonconformities identified during an on-site audit (where applicable), thereby developing their QMS in accordance with AXIOM requirements.

#### 3.2 Quality Performance Monitoring

AXIOM monitors ongoing quality performance of suppliers on a monthly basis. Based on performance one of three actions can be taken if required.

1. Supplier is moved to the preferred supplier's list.  
Suppliers that are on the preferred supplier's list will be considered for further business before any other supplier.
2. Supplier is developed to improve product quality etc.  
Supplier will be developed in line with Axioms requirements through supplier audit and mutually agreed action plans.
3. Supplier is dropped from the approved supplier's list and work is transferred to a new supplier.

Our Key Suppliers (usually 20 to 30 suppliers) will be monitored monthly following the below criteria. Monthly performance will be published and discussed with the relevant Suppliers with a view to conduct QBR meetings.

Key Suppliers are determined annually via a meeting in January to decide which suppliers will be monitored in full every month. The criteria to select key suppliers is based on expected spend for the year, importance to the business, criticality of supply and customer expectations. Quality Group will also be asked for an opinion and can add to the list if required.

KEY MEASURE	WEIGHTING	RATING	SCORE	
PPM	30%	Above 20001	0	
		5001-20000	10	
		601-5000	20	
		0 - 600	30	
		<b>Maximum Score = 30</b>		
CUSTOMER SERVICE	15%	<b>Maximum Score = 15</b>		
NCR	5%	Above 4	0	
		4	1	
		3	2	
		2	3	
		1	4	
<b>Maximum Score = 5</b>				
OPEN NCR's	10%	Above 4	0	
		4	2	
		3	4	
		2	6	
		1	8	
<b>Maximum Score = 10</b>				
OTDIF	40%	10%	4	
		20%	8	
		30%	12	
		40%	16	
		lines < 3 days late / total lines x100	50%	20
		60%	24	
		70%	28	
		80%	32	
		90%	36	
		100%	40	
<b>Maximum Score = 40</b>				
<b>Total Score</b>	<b>100%</b>	<b>Rating out of 100</b>		

**SUMMARY**

**SCORE = 75 or Less** Supplier has a poor rating which must be addressed and formal efforts made to improve. Supplier must respond to this rating and details documented.

**SCORE = 75 to 90** Supplier has an unsatisfactory rating and must make efforts to improve. Supplier must respond to this rating and details documented.

**SCORE = 91 or Greater** Supplier has a satisfactory score.

**4. Parts Quality Assurance**



#### 4.1 Standard New Part Approval Process

Axiom performs a part approval process for all mechanical, electromechanical and components that are manufactured to a customer supplied drawing this includes:

1. New part introduction
2. Parts affected by engineering change / up issue
3. Parts that have been subject to tooling transfer
4. Parts that have been subject to supplier transfer

##### *Axiom will:*

1. Approve samples in a timely manner and feedback to the supplier
2. When samples are rejected provide a full explanation for rejection

##### *Supplier will as a minimum:*

1. Supply a FAIR which meets the requirements of AS9102 if requested or an ISIR report that has all drawing dimensions and notes addressed and has all dimensions and tolerances recorded with a pass/fail indication
2. Supply a drawing with all dimensions numbered.
3. Supply five measured samples per cavity or impression
4. Supply a Control Plan / Quality plan
5. Supply Material certification including RoHS statement
6. In the case of gerber data, the supplier will confirm the panel gerber complies with the panel drawing by measuring each dimension or detail contained in the drawing. Any non-conformance discovered during the confirmation will be corrected before the gerber is supplied to Axiom for formal approval. The measurement results must accompany the gerber supplied.

#### 4.2 First Receipts

AXIOM performs incoming inspection on the first lot of newly introduced products to verify certain criteria specified by the Parts Approval Process in relation to the component drawing and does not perform an inspection service for ongoing quality assurance. *Ultimately it is the supplier's responsibility to guarantee their own quality.*

##### *AXIOM will:*

1. Perform initial inspection based on the Parts specification and the ISO2859-1 Inspection Sample size requirements (Where applicable). This may be conducted at the suppliers' premises with prior approval.

##### *Right of Access:*

Axiom, its customer or other regulatory agencies reserve the right of entry to survey the suppliers' quality management system, processes, products and sub-tiers and to review all applicable records including but not limited to:

Product conformity and production records

The supplier's contribution to product / service conformity

The supplier's contribution to product safety

The importance of ethical behaviour

2. Inspect the first manufactured batch for all PCB, mechanical, electromechanical and components that are manufactured to a customer supplied drawing. Inspect the first batch of electronic components and off the shelf parts e.g. nuts and bolts
3. Provided the first lot are defect free either during receiving inspection, or in manufacturing, future shipments to AXIOM will be deemed as 'Free to Line' and no further inspection will be conducted on receipt unless a quality issue has been highlighted.
4. Immediately inform the Supplier of any quality concerns discovered, as detailed under Problem SCAR. The product will continue to be inspected upon receipt until a satisfactory action is implemented to prevent recurrence. Associated inspection costs will be forwarded to the Seller as noted under SCAR.

Axiom Terms and Conditions are available upon request.

***Supplier will:***

1. Identify Axioms part number on all delivery documentation and packaging.
2. Any component that has been up issued must be identified as "New Revision" on packaging and delivery documentation.
3. Indicate RoHS compliance on all delivery documentation or issue a blanket statement of RoHS compliance that includes Axioms part numbers.
4. Provide a Certificate of conformity with each delivery

#### **4.3 Material Rejection**

Axiom Manufacturing Services operates a zero defect policy. The following processes apply to any delivered material that does not conform to specification.

***AXIOM will:***

1. Inform the Supplier of the non-conformance via an initial telephone call and/or email with and supply supporting data allowing the Supplier the opportunity to determine material disposition.
2. Issue a Supplier Corrective action Report (SCAR) if applicable depending on severity, cost and impact to Axiom

***Supplier will:***

Inform AXIOM of their disposition instructions for the non-conforming material within 24 hours from one of options listed below

1. Issue of a Returns note (RMA) for the Return and credit of parts. The Supplier will replace with confirmed stock in a time scale that does not affect AXIOM manufacturing process. The Supplier must arrange collection or pay for any freight charges incurred by Axiom.
2. 100% inspection/rework at AXIOM by Supplier-nominated source at Seller's cost.
3. 100% inspection/rework by AXIOM nominated source and forward associated costs to Supplier. Inspection costs are charged at £15.00 Sterling per hour for each person used on the activity.
4. Give Approval to scrap the Defective product at AXIOM and issue credit.

The failure to comply with the above will result in actions deemed appropriate by AXIOM in order to support production needs at suppliers cost.

#### 4.4 Supplier Corrective Action Reports (SCAR)

In the event of a potential or actual production line stop at AXIOM or a customer rejection due to non-conforming material, the following actions will apply:

***AXIOM will:***

1. Issue a SCAR and supply objective evidence in the form of photographic evidence, electrical test data or measurement data for evaluation.
2. If applicable request the supplier to visit Axiom for line support immediately in the case of a potential line stoppage, where technical assistance or inspection is required to resolve the problem.
3. Inform the Supplier of any production disruption costs associated with the issue.
4. May perform (based on the severity) an audit to verify that corrective and preventative actions are effective at the suppliers premises.
5. Perform a three manufacturing batch inspection of the material concerned.

***Supplier will:***

1. Respond within 24 hours with containment actions, documented on the SCAR.
2. Provide AXIOM with corrective and preventative actions documented on the SCAR within 14 days of receiving the SCAR, including responsibilities and due dates.
3. Provide regular updates to AXIOM on a basis that reflects the severity of the concern until concern is verified and closed.
4. Accept responsibility to visit and/or provide line support when requested.
5. Accept Axiom and/or a third party audit from Axiom's customer if required.
6. Accept to compensate AXIOM for any disruption costs associated.

#### 4.5 Record Retention Period

In the event that product is supplied for aerospace and Medical end use material certification and inspection records must be retained for a period of 25 years and / or a retention time agreed with the end user and Axiom.

#### 5. Deviation Request & Notification of change

If product deviates in any way from the specification on an Axiom Purchase Order (Other than part packaging format which can be verbally agreed), a deviation request must be formally raised with the Axiom Procurement Department who will obtain agreement or otherwise from the relevant departments within Axiom and as necessary from Axiom's Customer.

The deviation request from the Supplier must be signed by their Quality manager and must clearly identify how the parts differ from those specified. The request should include supporting data such as photographs, statistical samples results, or data sheets as appropriate.

Approval must be given in writing in advance prior to delivery.

The acceptance will stipulate a Deviation Number which must be identified on the packaging and delivery documentation.

Axiom are to be informed of any change to the product build process or change of premises prior to delivery of product. Axiom will then request additional information dependant on the risk of change. Authorisation (formal or email) must be received prior to dispatch of product

## **6. Additional Product Specific Requirements**

### **6.1 PCB Supply**

#### **Testing:**

- All PCB's must be 100% bare board tested.

#### **Packaging:**

- All PCB's must be packaged appropriately to protect the surface finish and to preserve shelf life.
- Note: Axiom Manufacturing Services will not accept scrap PCB's even for packaging protection
- PCB's that have uneven peel able mask must be stacked alternately to even out stress upon panel breakouts.

#### **Identification:**

- All PCB's are to be identified with the manufactured date code on each PCB, inner and outer packaging.
- All PCB's must be identified with an indication that they have passed bare board testing.
- IPC class that PCB's have been manufactured must be specified on the delivery documentation or the C of C.
- When a PCB is up issued the first delivery must be clearly identified as 'New Revision' on packaging and delivery paperwork

#### **Certificate of Conformity:**

- A certificate of conformity is to be supplied with each delivery stating conformance to:
- Material composition
- Bare board testing
- Solder ability
- IPC Class

#### **Problem investigation:**

- Any request for failure investigation of populated PCB's must be completed within 7 days of receipt and a report submitted to Axiom Purchasing department. If the investigation shows that the manufacturer is at fault a credit for the full populated cost must be received within 7 days of the report submission.

#### **Miscellaneous:**

- A copy of the manufacturers Gerber data is to be sent to Axiom's technical engineering group for reference. This must also be re-sent upon up-issue of a PCB.
- Supplier must request approval from Axiom Procurement person to deliver panels with cross out circuits. Axiom will only accept cross outs once a mutual consent has been agreed

### **6.2 Plastic moulded components**

#### **Identification:**

- All box labels must be identified with the manufactured batch number and are also to be sequentially numbered by box.
- When a moulding is up issued the first delivery must be clearly identified as 'New Revision' on packaging and delivery paperwork.
- Any request for failure investigation of defective parts must be completed within 28 days of receipt and a report submitted to Axiom Purchasing department.

### **6.3 Programmed IC's**

#### **Identification:**

- Programme number and issue (Where possible) must be displayed on the IC, packaging and delivery documentation.
- When a programme is up issued first receipts following the implementation date must be clearly identified as 'New Software Revision'

7. Acceptance Sheet

**Table A**

All sections below to be completed and returned to Axiom

<i>Policy</i>	<i>Existence Y / N</i>	<i>Document Number</i>	<i>Implementation Date</i>	<i>Revision</i>	<i>Issued to Axiom Y / N</i>
Anti-Slavery & Human Trafficking					
Recruitment Policy					
Whistleblowing policy					
Code of business conduct					
Counterfeit Parts Policy					
Conflict Material Policy					
REACH Statement					

[Insert Supplier Name] confirm that the Axiom Supplier Quality Manual has been received and hereby agree to the requirements contained within the document

Name (Print)

Position

Date

Signature

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