QUALITY MANUAL

QUALITY MISSION STATEMENT

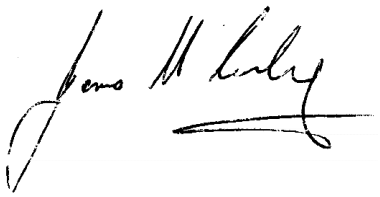
Within Arbarr Electronics Ltd we are totally committed to setting and achieving quality standards that are capable of meeting, in all respects, the requirements and reasonable expectations of our customers.

This company is committed to developing and maintaining a Quality Management System that meets the requirements of ISO 9001:2008 for Automated PCB & Equipment assembly.

The principles of ISO 9001:2008 shall be applied to every aspect of our activities. This is the key to reaching our strategic objectives.

To achieve this objective, everyone's involvement and commitment is vital in adhering to the system adopted.

We are committed to ensure that staff at all levels are properly trained and motivated to facilitate and achieve the above objective in keeping with our commitment to maintaining the Investors in People standard.

Signed: 

Managing Director

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INTRODUCTION

NOTE:
The scope of Arbarr's ISO 9001:2008 certification is for the Automated & Manual Assembly of PCB & Electronic Equiptment.
Arbarr assemble products to customer specification as supplied only and are not responsible for the actual design of product. Therefore Arbarr is excluded from ISO 9001:2008 clause 7.3

Purpose
The purpose of this Quality Manual document is to detail the Corporate and Operational Quality Policies of Arbarr Electronics Ltd. from which the Arbarr Control and Operating procedures and Derived Documents are developed.

Scope
This document applies to all automated PCB and equipment assembly operations performed within Arbarr Electronics Ltd.

Related Documents
The following documents form part of the Quality Manual, but are printed and updated separately from this document.

Procedures Manual	-Contains Control and Operating Procedures.
Quality Matrix	-Cross-reference matrix between the Quality Policies, the Procedures Manual and ISO 9001.
Organisational Chart	-Details departmental structure within the company.
Key Authority Manual	-Key personnel within the company, their departmental responsibilities, their signatures, their deputies, and to whom they are responsible.
Annual Quality Objectives	-Quality objectives for the current fiscal year.
Capability Manual	-Scope of the company's manufacturing and technical ability.

Abbreviations
A number of abbreviations are used throughout this document.

MRB	Material Review Board	-Body which determines the disposition of materials held in quarantine
MRS	Material Review Stores	-Quarantine area where materials are stored prior to disposition by the MRB
GRN	Goods Received Note	-Document which details purchase goods and customer supplied goods which have been received
PP	Production Permit/Concession	-Document which is raised to request a temporary relaxation from production methods and/or materials defined in specifications or procedures.
W.I.P.	Work-In-Progress	-Product or sub-assemblies currently under manufacture.

Definitions

Arbarr Drawings	-Each job manufactured by Arbarr will be manufactured to a set of documents issued by the Document Control Department. These drawings, numbered in the format MS XXXXX, will generally consist of the following: • MSxxxxx Main Schedule where xxxxx is the AR number which will contain links to the following: • BS xxxxxx Batch Sheet • BOM XXXXX BOM • PTI XXXXX Test Instructions • PAI XXXXX Assembly instructions • GERxxxxx Gerber files
Main Schedule	-Control Document controlling all the documentation of an AR XXXXX job number, including the Detail Specification, Arbarr Drawings and Customer Drawings (for subcontract). The Main Schedule also carries the full amendment record and details of the current issue of the job.
Batch Sheet	-Work Instruction document outlining the processes to be followed in manufacturing product or sub-assemblies.
Detail Specification	-Document outlining all electrical and mechanical performance and physical characteristics of the assembly.
Traveller (Travel Slip).	-Identifying document which accompanies Work-In-Progress which is separated from the main batch. It carries the number of the batch sheet and states the disposition of the assembly.

BUSINESS OVERVIEW

Formed in 1991 to offer a Design/Prototyping service for OEMs, Arbarr Electronics is looking to a new era of success, having recently relocated to new premises in Antrim where it now offers a complete Concept to Manufacture service.

Growing customer needs, in addition to in-house requirements to manufacture Arbarr Gas Detection and Aviation products, have necessitated the move, which forms part of the company strategy for further growth in the 21st century.

Circuit design, Layout design, Surface Mount, Through-Hole and Complete Systems are all encompassed within Arbarr's modern techniques. An in-house design team employ CAD and simulation software in each area of design, producing outputs suitable for manufacture by CAM equipment.

The primary objective at Arbarr is to offer a solution which is tailored to each customers needs. The company maintains a loyal customer base by endeavouring to fulfil expectations and provide a flexible and responsive ongoing service which ensures customers are kept aware of the latest state-of-the-art solutions.

Arbarr is certified to ISO9001:2008 for the automated and manual assembly of PCB and electronic equipment, and all production staff are trained to the IPC-A-610 rev E quality standard.

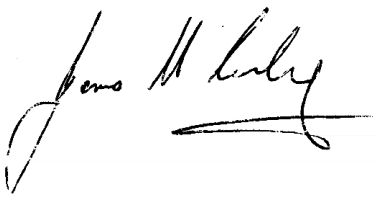
The new facility at Limavady houses state-of-the-art CAD/CAM facilities for Low and High Volume requirements, supplying the Medical, Industrial and Aviation sectors to ISO 9001 standards. This, together with the company's strategy to build key alliances with a select number of progressive indigenous companies in the technology sector has had a significant effect on company growth, which is forecast to grow at 50% per annum over the next five years.

QUALITY STATEMENT

Arbarr Electronics shall produce sub assemblies, assembled PCB's and Complete Products to high standards by providing a total quality service from customer quotation through to delivery of finished product.

The manufacturing facility in Limavady, established by experienced professionals, operates a TQM management philosophy based upon a set of principles and supported by a set of proven methodologies and tools. These include:

- Focusing the organisation on satisfying customers needs
- Developing and tapping the full human potential of all employees
- Involving everyone in efforts to “find better ways”
- Managing business processes, not just functions or departments
- Managing by fact, using reliable data and information
- Adding value to society, as well as achieving financial goals

Signed, 

James McCorley
Managing Director.

APPROVALS & MEMBERSHIPS

Approved to ISO 9001:2008

Approved supplier to BAA

Approved supplier to FDA registered customers

Approved supplier to Governmental Departments

Supplier to the Water Industry & Fire Authority

CAA recommendation on aviation lighting products

Member of Confederation of Small Businesses

Member of SMART (Surface Mount and Related Technologies) Organisation

Investor In People Award

Overview of QMS system

Meeting the Customer's requirement for quality

ARBARR's Quality Management System

Within Arbarr's QMS there are 4 Primary levels of documentation structured as shown in Fig1

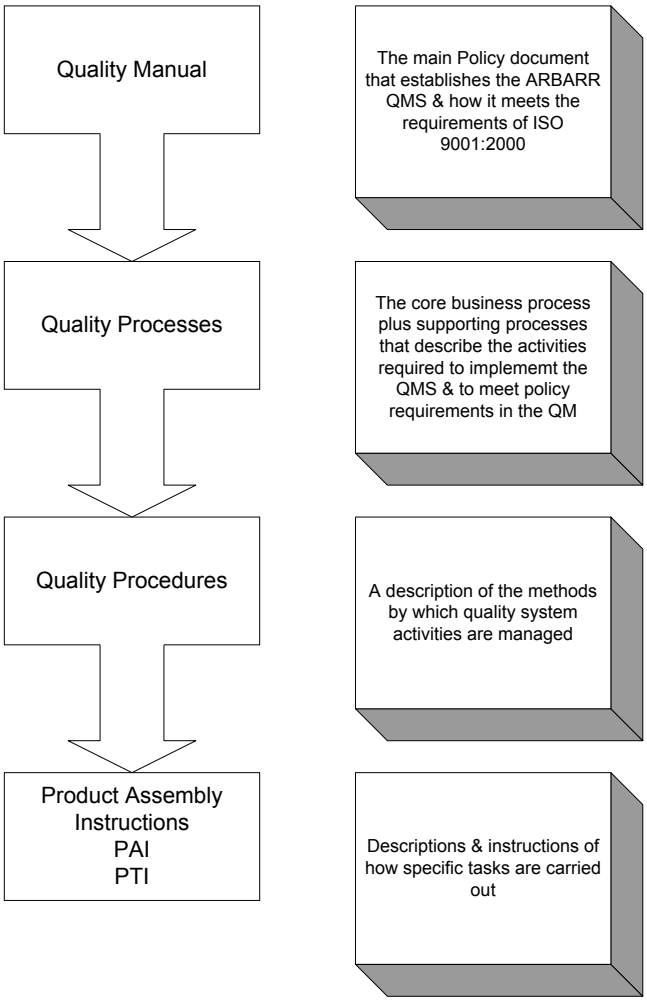
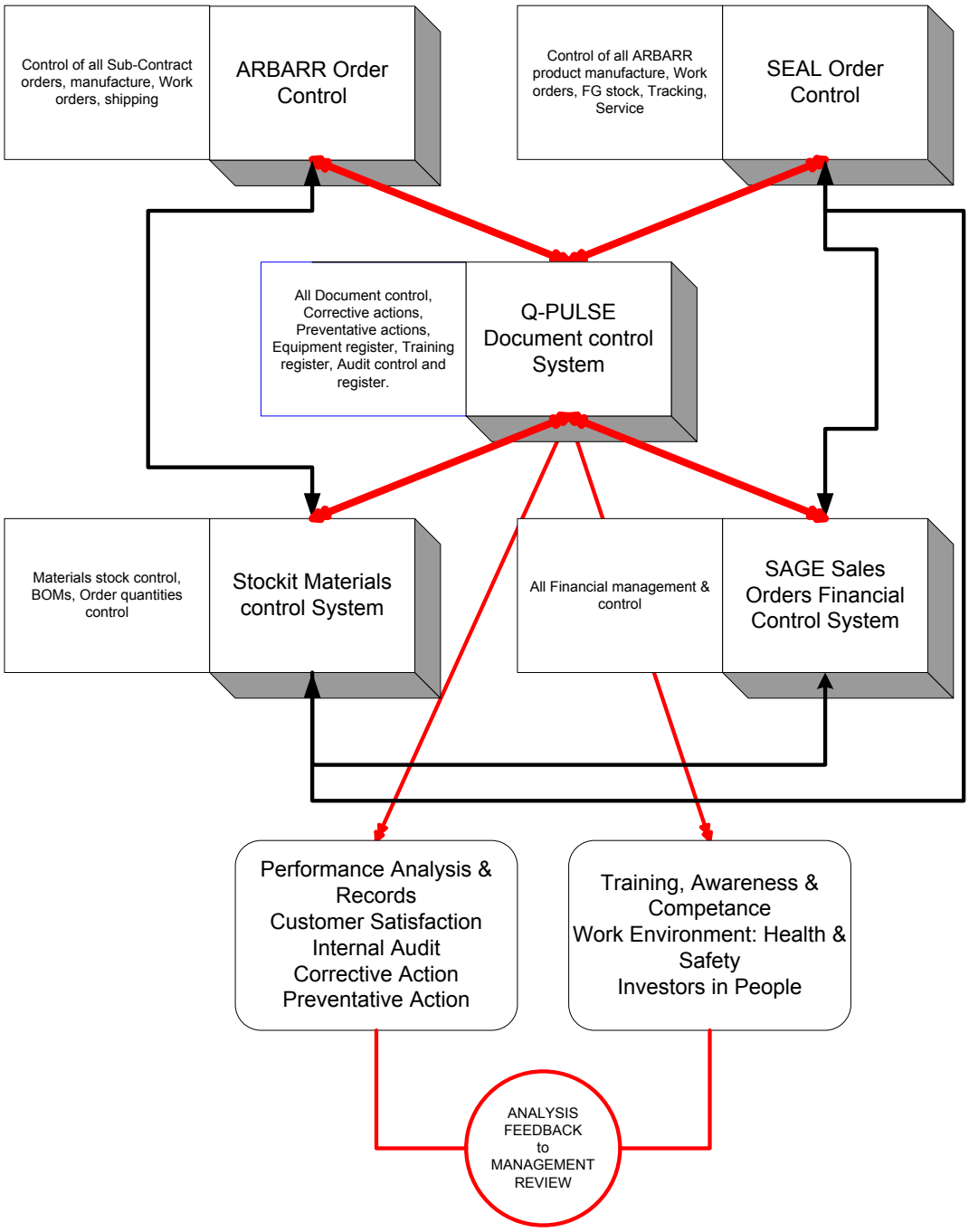


Fig1

The System components of ARBARR QMS



Data from all support processes used to direct continuous improvement initiatives

Fig2

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1. ORGANISATION

1.1 Arbarr Organisation Chart

The Arbarr Organisation Chart, while part of the Quality Manual, is a separately printed and separately updated document with its own revision number. The organisation chart outlines the reporting structure within Arbarr.

1.2 Responsibilities

A separate document “Key Authority Manual”, which forms part of the Quality Manual, lists the names of Employees responsible for each activity throughout the organisation and their deputy. Below is a summary of the main roles/authorities within Arbarr and the responsibilities attached to that role. Regardless of the role being performed by the various Authorities, all Authorities are responsible to the Quality Manager for the provision of a quality service within their area of responsibility.

MANAGING DIRECTOR AUTHORITY
The Managing Director is responsible for ensuring that the operation of Arbarr Electronics Limited is carried out in a diligent and professional manner in each department, and that the heads of each department are given the opportunity and support necessary to carry out their respective role in this fashion. The Managing Director will also ensure liaison between the Quality Authority and other Managers on matters affecting the initial specification of aspects pertaining to quality in any contract.

COMPANY SECRETARY AUTHORITY
The Company Secretary Authority is responsible for statutory communications to and from the company.

COMPANY ACCOUNTANT AUTHORITY
The Company Accountant Authority will ensure that management accounts are produced monthly, that interim reviews and audits are sufficient to ensure adequate financial resources and that costing structures and accounting practices are in place to ensure efficient and profitable running of the operation.

MANUFACTURING AUTHORITY
The Manufacturing Authority is responsible for all manufacturing activity, for achieving quality end product and ensuring that manufacturing schedules are met.

PRODUCTION ENGINEERING AUTHORITY
The Production Engineering Authority is responsible for the equipment, processes and manufacturing methods including ensuring that the optimum equipment and methods are utilised for each job in progress.

CUSTOMER LIAISON AUTHORITY
The Customer Liaison Authority is responsible for ensuring that all communications from and to the customer are in compliance with the company standards and in keeping with the requirements of ISO9001:2008.
This role will ensure that the transfer if information regarding all issues pertaining to customer business is to the customer requirements where they are within reason.

DESIGN AUTHORITY *
The Design Authority is responsible for the operation of the Research and Development and Design Departments, including ensuring the achievement of a quality service being offered from this department

DOCUMENT CONTROL AUTHORITY
The Document Control Authority maintains all controlled documents with Arbarr and ensures the efficient operation of the documentation and change control features.

QUALITY AUTHORITY
The Quality Authority is responsible for product quality and confidence throughout the Company. The Quality Authority's responsibilities for quality confidence are implemented through the Quality Assurance Department. The Quality Authority's responsibilities for product quality are delegated to the Manufacturing Authority in so far as manufacturing is concerned, to the Design Authority in so far as design is concerned and to the Materials Authority in so far as material procurement, planning and control are concerned (The Quality Authority is the person designated "CHIEF INSPECTOR").

ADMINISTRTION AND CLERICAL AUTHORITY
The Administration and Clerical Authority will control the day to day clerical duties within the company.

HUMAN RESOURCES AUTHORITY
The Human Resources Authority is responsible to the various department heads for fulfilling the staffing requirements of their departments. Part of this role will include training needs analysis, and the implementation and review of training requirements. It will also involve ensuring that staff are furnished with adequate terms and conditions of employment and job specifications and ensuring that disciplinary procedures are enforced.

CONTROL ACCOUNTS AUTHORITY
The Control Accounts Authority is responsible to and liases with the Company Accountant Vis a Vis the day to day control of operational accounts.

MATERIALS AUTHORITY
The Materials Authority is responsible for the procurement, planning and control of raw materials, manufactured components and finished goods.

SALES AND MARKETING AUTHORITY
The Sales and Marketing Authority is responsible for implementation of the companies policies in the following sectors:

- Sales (Subcontract Manufacture)
  The company will sell through selected distribution outlets throughout Europe. It is the policy to target the existing representatives market place offering lower tooling costs, lower unit prices and quicker delivery, with a high standard of quality. This policy should allow equipment manufacturers access to technology not previously available to them. Representatives in each country will act basically as “door openers”, after which communication with the engineering group will be established. Accounts will be serviced from Antrim.

- Sales (Design Services) Clause 7.3 Excluded from ISO9001:2008
  Arbarr will offer a contract design service. The policy will be to offer entry and exit points at any stage from concept to product manufacturing, offering lower cost design solutions where manufacturing rights are attained.

- Product Marketing
  Arbarr products will be sold through distribution outlets - already servicing users of associated product.

2. MATERIALS CONTROL

2.1 Material Identification and Handling

The proper identification and handling of all material is the responsibility of the managers within whose departments the material may from time to time be located as it moves throughout the process. The processed level, test, rework and inspection status of all items of material must be readily identifiable throughout the manufacturing process. This status information is shown on Batch Sheets. Customer kitted material should be identifiable by a circuit reference while all other items in trays, bins etc., must be identifiable back to an Arbarr Part Number. Identification is implemented by a control slip which travels with the material.

Work In Progress is identified by batch number, status and description. Housekeeping procedures must ensure that all material is handled, packed and stored such as to prevent damage. Where Anti-static precautions are required, appropriate warning labels must accompany all components and units, and procedures must ensure that the appropriate precautions are taken by all personnel handling static-sensitive devices including the use of anti-static warnings where appropriate.

2.2 Receiving Inspection

Receiving Inspection is operated by the Quality Authority in conjunction with the Goods Inwards section of the Materials Authority.
The Store-person, on delegation from the Materials Authority, is responsible for directing all incoming Material to the Goods Received Area for inspection. A record of the material order so directed is entered in a Goods Received Book.

Receiving Inspection is the responsibility of the Receiving Inspector on delegation from the Quality Authority. All incoming material is inspected by the receiving Inspector for conformance to an approved purchase order and Approved Vendor List., ensuring that the packaging is in good condition and the quantity is correct. A Certificate of Conformance will be requested from non-approved sources of critical production supplies and equipment and a sample inspection, of critical parameters, will be performed on these goods when received. The inspection is indicated by the inspector on the Goods Received Note with applicable comments.

After Receiving Inspection, material will be routed as follows:

Production Materials
Conforming Items - to Direct Material Store.
Non-conforming Items – purchasing notified and held in quarantine area (Material Review Store) until their disposition is clarified.

Non-Production Items

Conforming Items -	Consumable Items – to Direct Material Store.
	Other items - To Originator.
Non-conforming Items –	Purchasing Authority notified and held in quarantine area (Material Review Store) until their disposition is clarified.

Inspection records are embodied in a Receiving Inspection Record Form which references the Goods Received Note (GRN) and the relevant specification together with the extent and results of inspections performed.
Sampling plans are in accordance with BS6001.

2.3 Material Storage and Stockroom Control

The Store-person is responsible to the Materials Authority for the correct operation of the Material Stores and. Finished Goods Stores, as detailed in Material Stores Procedures

Material Stores and Finished Goods Stores are operated on a First-In, First-Out basis. Materials requiring special storage e.g. Shelf Life, Electrostatic or Temperature Sensitive will be suitably labelled or handled as detailed in the stores procedure. Material Stock Levels are maintained as appropriate for the material concerned. .
Stocks held for more than a period of 12 months will be re-viewed by the Material Review Board (MRB) and their quality reassured for a further 12 months.

Work In Progress (WIP) is identified by batch number, status and description. Where Work-In-Progress is suspended, its disposition will be reviewed by the Material Review Board (MRB).

Quarantined Goods will be reviewed at frequent intervals as defined by the MRB.

2.4 Material Review Board

Non-conforming materials or items originating at Receiving Inspection or at any other point in the manufacturing process are identified with a reject label and quarantined in the Material Review Store (MRS) pending disposition by the Material Review Board.
The operation and security of the MRS is the responsibility of the Quality Authority.

Material exhibiting minor non-compliance may be accepted for manufacturing use or further processing under a Production Permit/Concession which requires the unanimous approval of the Quality, Manufacturing and Materials Authorities. Details of all items submitted to MRB are recorded on the Material Review Form, as is the decision of the Board concerning the disposition of the material.

2.5 Purchasing

The operation of the Purchasing Function is the responsibility of the Materials Authority. The responsibilities of the Purchasing Function include:

- The Procurement of all materials as specified, and in accordance with the company's policy, material specification, drawings, and procedures, in a timely and cost effective manner.
- Investigation of potential suppliers of material with respect to quality, delivery, and price.
- The scheduling or re-scheduling of Purchase Orders as required by the Manufacturing Authority and/or other Purchase Order Originators.
- The assessment and appraisal of potential vendors (including Courier & Freight contractors) in association with the Quality Authority and the maintenance of an approved vendor list.
- The return for rectification, replacement or credit of non-conforming items.
- Ensuring the implementation of corrective action where a supplier is in default.

The methods by which these responsibilities are executed are detailed in the purchasing procedures, which are raised and issued on the authority of the Materials Authority and approved by the Quality Authority.
The procedure for raising a Purchase Order requires the provision of a copy to Receiving Inspection.

2.6 Goods Despatch

Goods will only be despatched or released to the customer after despatch clearance has been signed on the batch sheet. This will normally be done on completion of the batch, unless;
The customer has specified that the goods must be held
The goods are part of a larger shipment with a common delivery date
The customer is on credit hold.

3. MANUFACTURING CONTROL

3.1 Control of Manufacturing Operation

The Manufacturing Operation is controlled by the Drawings and Process Specification maintained by the Document Control Authority.
The manufacturing process is illustrated in the Process Flow Chart in the Manufacturing Procedures. The Flow Chart also references the detailed process specifications relating to each stage of manufacturing.

3.2 Responsibilities

The responsibility from order receipt through to delivery lies with the Managing Director and is delegated by him to six main departments vis. Materials, Manufacturing, Production Engineering, Quality, Design and Document Control Authorities.

The Production control function of the Materials Department under the control of the Materials Authority, is responsible for the following:

- Order receipt and acknowledgement.
- Planning of all purchasing operations.
- Progress of all orders through the factory and corrective action in the event of slippage or amendments.
- Liaison with the supplier and feedback to the supplier of information in all matters concerning delivery and performance of the contract.
- Liaison with the purchase order originators and/or manufacturing and feedback to the originator and/or manufacturing of information in all matters concerning delivery and performance of the contract
- Storage, Packing, despatch and invoicing of all goods released for shipment.

The Manufacturing Department, under the control of the Manufacturing Authority, includes amongst its responsibilities the following:

- Correct and timely performance of all manufacturing and test operations as defined on the batch control sheet and according to the requirements of the drawing, manufacturing and process specifications relating to the job type.
- Achievement of product quality.
- Organisation, disposition and discipline of the workforce to ensure that all orders are executed in a timely and cost-effective manner.
- Ensuring that statutory and company requirements in relation to safety in the workplace are met.
- Ensuring that all personnel are suitably trained for the jobs they are called upon to perform.

The Production Engineering Department, under the control of the Production Engineering Authority, includes amongst its responsibilities the following:
Raising and maintaining of process and/or manufacturing specifications required to supplement the production drawings.

- Control and monitoring of all production processes.
- Design and provision of jigs, fixtures and assembly aids.
- Design and improvement of production processes.
- Specification and commissioning of the new equipment.
- Maintenance of all production and test equipment
- Generation of batch control forms for each product or product group.

The Quality Department, under the control of the Quality Authority, is responsible for

- Maintenance of Quality Standards throughout the manufacturing process
- Production, Review and Storage of Quality Records
- Performance of Quality Control (QC) checks at appropriate stages within the manufacturing process.
- Calibration of all production and test equipment

The Design Department, (Clause 7.3 Excluded from ISO9001:2008) under the control of the Design Authority, is responsible for Production of accurate drawings for the production process

- Ensuring that drawings are updated as required
- Advising on all matters relating to design

The Document Control Department, under the control of the Document Control Authority, includes amongst its responsibilities the following

- Control and maintenance of all internal and external standards and specifications maintained within Arbarr and their availability when required for production processes.

- Maintenance of the Document Control Process for all critical work related documentation within Arbarr, including maintenance of all records produced during the production process.

3.3 Non-conforming items

Non-conforming items discovered as a result of an in process or final inspection operation are removed from the main batch, identified with a reject label and held in the MRS for consideration by the Materials Review Board. Subject to unanimous board approval, minor non-compliance may be allowed to proceed for onward processing under the production permit (See section 2.4). Items not allowed forward in this way are rendered useless for production purposes and are disposed of to scrap.

3.4 In-Process Quality Control

In addition to the production testing requirements of the Drawings or Process Specification, in-process Quality Control inspection is performed on a routine basis on all products both as a "patrol" activity and on a batch-by-batch basis. Such inspection is carried out by an inspector in the Quality Department on delegation from the Quality Authority and is totally independent of the production Department.

The requirements for batch-by-batch inspection are detailed on the batch sheet which accompanies goods at all times. Any additional patrol inspection activities are detailed by Quality Assurance Procedures raised by the Quality Authority. Inspection status is indicated by date and inspector's signature or stamp on the batch control form.

3.5 Inspection Records

Details of the quantity inspected, quantity accepted, and quantity rejected are entered by the Inspector on the batch control form for each in-process inspection operation and for final inspection operation. These are analysed by the Quality Department at weekly intervals, or as determined by the Quality Authority and form the basis of the quality report.

3.6 Inspection Stamp Control

An inspection stamp of an approved pattern is held by each inspector. The issue of inspection stamps is controlled by the Quality Authority, who maintains a register of all issued stamps and to whom, and who ensures that in the event of personnel changes the relevant stamps are not re-issued for a period of at least six months.

3.7 Training

While provision of training resources is the responsibility of the Human Resources Department in conjunction with department heads, overall responsibility is vested in the Quality Authority to ensure that this function is being performed in an satisfactory manner and that personnel at all levels in the Organisation are adequately trained for the jobs they are called upon to perform.

All Supervisory and management personnel are required to undergo training in their appropriate discipline and such training must be carried out by a person or body approved to do so by the Quality Authority. This will be recorded on Personnel and Training Record files. A list of qualified training instructors will be held by the Quality Department.

Training is carried out on initial recruitment and following periodic requirements. Each member of staff will be provided with an induction manual which will define the standards and key requirements of their job. Training records forms in the induction manual will be completed by the HR department in agreement with the trainee's department head. Full records containing the skill level and cross-training status of each operator and inspector are maintained by the HR Authority with a copy to the Quality Authority. Training requirements throughout the organisation are reviewed annually by the Quality Authority.

4. DOCUMENT CONTROL SYSTEM

4.1 Introduction

The Document Control System will control the implementation and/or revision of the following:

Company policies and practices, control and operating procedures, guides and internal standards.

Documents derived from the policies and practices such as company drawings, specifications, plans, work instructions, technical procedures, costings and reports.

External documents such as trade, national or international standards, and customer standards, specifications and drawings.

4.2 Responsibility for the System

The operation of the Document Control System is the responsibility of the Document Control Authority.

4.3 General Aspects of Control

The System is a Positive Recall, Maintained Copy System.
Controlled documents such as standards, specifications and manuals which cannot easily or legally be entered into a computer system, are maintained as hard copies in the (Document Control Centre) and are loaned out using a manual logging/recall system.

All other controlled documents are maintained by a computerized ISO9001 record management system "QPulse". with the original held in the Document Control Office. Officially, no other copies exist. The original of any document may be examined in the Library, but may not be removed. Documents will also be available for viewing on PC terminals at various locations. Printing of Controlled Documents will only be performed by document control.

Where possible a "one time use" system is use whereby PAIs, PTIs are printed out each time a job is run, on completion of the job documents returned with batchsheet for archiving . the same product on a new order has new instructions issued with the batchsheet. For Orders where this is not possible a positive recall system operates when a document is changed, this is under the control of the Document Control Authority, who is responsible for the removal of superseded documents from its maintained set, it's replacement with the new issue and the updating of amendments and issuing of corresponding change note to authorised holder of maintained copy. On some exceptional occasions old issue documents may be allowed to remain in a maintained set of documents but in this case they must be printed obsolete. Work Instructions (Batch Sheets) and all controlled documents issued with a job will be returned to the Document Control Centre on completion of the work, along with test results and other documents derived during the course of the work.

4.4 Manufacturing Drawings and Detail Specifications

The Manufacturing Drawings describe the manufacturing of the assembly, stage by stage. Each manufacturing drawing defines the result of a manufacturing operation and thus can be used to inspect work for conformity. The manufacturing drawing does not in itself tell manufacturing how to do the job. The manufacturing stages involved, and the order in which these are performed, are specified by the Batch Sheet & Work Instructions. How to do the job is specified by the procedures referenced in the Batch Sheet, which provide the Process Specifications for each stage of manufacture.

The Detail Specification provides a complete description of the finished module in the same way as the manufacturing drawings provide the description of the part-finished assembly at various intermediate stages. The Detail Specification lists all of the attributes (physical, dimensional, electrical, etc.) of the assembly which we guarantee to supply and which the customer is entitled to inspect. Processes and components and the degree of quality assurance to be applied by the company is also listed in this specification. This degree of assessment is given by the group A, B, C, D inspection schedules. For sub-contract the onus will be on the customer to provide the detail specification if he/she wishes to do so. It follows that the Detail Specification is an essential and integral part of the Manufacturing Drawings. It requires prior approval as meeting customer requirements and being within the approved capability (Ref: Capability Manual).

4.5 Identity and Issue versus Drawing Issue

Both Final Assemblies and the Main Schedule of the drawings bear identities and Issue Letters. Thus Final Assemblies have an “AR “ Number and an Issue number. Drawings have a Drawing Number and an Issue number. Any modules with the same Identity and Issue are for all practical purposes interchangeable.

Whenever the information on a drawing changes so must it's Issue. This applies however trivial the change may appear to be. Equally when any change occurs to a module which affects its' performance, attributes or method of use, it's issue letter must change also. The Module Identity and Issue is marked on the module, and is indicated on the Main Schedule of the Drawings. It is not necessarily the same as the Issue of the Main Schedule itself. This is because the Main Schedule Issue must change every time any one of the manufacturing drawings is changed, or if the Customer Detail Specification changes.

4.6 Drawing Authorisation and Approval

Arbarr product drawings, including Detail Specifications, are first raised at Issue A. They require approval by signature and date of the following:

Design Authority
Quality Authority
Production Engineering Authority

On approval, drawings are maintained and controlled by the Q-Pulse IS 9000 Record Management Software. Authorised drawings bear Issue letters 1, 2, 3, etc. In exceptional circumstances Provisional Drawings bearing Issue A to Z may be issued without approval signatures providing they are overprinted "Provisional".

4.7 Control of Drawing Changes

Change requests will be initiated internally or from the customer when changes are required due to finding defects or for other reasons. This will cause Document Control to raise a Change Request (C.R.) Form to allow review and investigation. Previously authorised drawings may only be changed when a "Change Request" is implemented.

A Change Request may be raised by any employee. The originator must complete the sections on the form relating to work in progress and finished goods, consulting as necessary with relative departments, e.g. Production Control and Purchasing, as to what actions are to be taken. The action to be taken for each and every batch must be stated on the Change Request.

On receipt of an approved and correctly completed Change Request, Document Control will accept the "Change Request", allocate a serial number and enter the Change Request log. Where a change is not accepted then the reason is recorded and signed off by the Quality Authority.
The Change Request is then distributed immediately to all holders of the drawing affected.
The Change Request is copied to Production Control and the number entered in the appropriate section of the issue log. Where a change has a commercial significance, a copy of the Change Request should be issued to the Sales Department.

Document Control is then responsible for seeing that the change is implemented. When the change is complete, the Change Note part of the Change Request Form is completed and the new drawings issued to all the appropriate maintained files. A copy of the change note is issued to the file holders to let them know the change is complete.
Document Control must also ensure that a revision of costing is undertaken by the sales department for change requests which are accepted.

4.8 Production Permit (P.P.) and Concession Procedure

A Concession and a Production Permit are essentially two different things although the same form is used for both. A Concession may be used to allow temporary deviation from the manufacturing drawings for a module. A Production Permit may be used to allow temporary deviation from manufacturing methods specified. Since they call up a temporary change, these deviations are different from a Change Request and must stipulate the time, quantity and shop order numbers affected.

Any employee can raise a Production Permit or Concession. Before accepting, the P.P. or Concession must be approved by the Design, Quality and Production Engineering Authorities before implementation by the Document Control Department. The originator must complete where applicable all the sections of the form; this will help ascertain the effect of the Concession/P.P. on all W.I.P. and Finished Goods.

Document Control, on the receipt of a correctly completed and approved concession will allocate a serial number to the form which will be maintained on Q-Pulse.

Copies of the Concession are then immediately attached to the Batchsheet/traveller for the batch(es) affected. Copies are also distributed to the Quality, Manufacturing, Production Control and also Purchasing Authorities if the concession applies to a material change.

Should a Concession/P.P. be unacceptable it is rejected giving reasons and distributed as above but without a copy attached to the traveller.

4.9 Control of Customer Drawings and Specifications

Once a quote has been accepted, the originals of customer specifications are kept on file in the Document Control Centre.
Document Control is responsible for the maintenance of the original, keeping cross-references and Indexes up to date.

Specifications will be checked for conformance to design rules and limits defined in the Capability Manual. Confirmation of order will require customer acceptance of the Detail Specification.
On receipt of an updated customer specification, Document Control is responsible for entering the date of receipt and updating relevant indexes. The specification must be stamped by Document Control to indicate that it has been approved

4.10 Control of Process Specifications and Quality Manual

Any document and data for which its development, approval, issue, revision, distribution, maintenance, use, storage, obsolescence or disposal needs to be controlled, shall be defined in company procedures and the appropriate control measures specified. All company documents shall be assigned an Owner who will normally be the Authoring or Sponsoring Authority. The Owner will be responsible for controlling such documents.

4.11 Retention of Records

All job related records (sales, manufacturing, purchasing, etc.) will be maintained for a minimum period of two years after completion of the job in question. Accounting records will be maintained for a minimum period of seven years following the year for which the accounts are current.

5. PRODUCT ASSURANCE

5.1 Final Q.C. Inspection and Lot Acceptance

Having completed manufacture and all production-testing operations, goods are submitted to the Quality Department for quality conformance inspection.
Quality Conformance inspection is carried out on a batch-by-batch basis, to the requirements of the customer, the Arbarr Drawings or Detail Specification, and the current Workmanship Standards Manual, having regard also to any generic specification appropriate to the order.

The Quality Department is also responsible for ensuring that all shipping documentation (Delivery Note, Address Labels etc) is present and correct, that quantities are correct, that packing is adequate and that the Batch Sheet is properly completed at all relevant stages.

The inspected status is indicated on the Batch Sheet by the Quality Control Inspector (Q.C.), by means of an appropriate stamp.

5.2 Q.C. Department

For the purposes of the Company's Quality Assessment requirements, samples lots from production batches will be inspected by the Quality Department to a predetermined AQL as defined by either the customer or the Quality Authority.

The results of all periodic testing performed by the Quality Department are maintained in that Department, and summary sheets giving details of quantities tested, accepted and rejected are collected by the Quality Authority to form part of the Quality Report. Results of tests carried out by outside houses are also maintained in this Department.

The Quality Department is supervised by the Quality Authority.

5.3 Equipment Calibration

The Quality Authority is responsible for ensuring that all equipment used for the measurement of quantities which form an attribute of the product required by the specification is calibrated at regular intervals in a way traceable to National Standards.
Calibration of such equipment is supervised by the Quality Authority who is responsible for maintaining records of all calibrations performed, for collecting items for calibration and for performing it at the intervals called for on the calibration record.
The calibration status of equipment requiring calibration is indicted by a label affixed to the equipment bearing the date of the last calibration, the signature of the operator performing it and the due date for the next calibration.
Un-calibrated equipment may not be used for the final testing or inspection of any quantity which forms part of a contract and will be labelled to indicate it is not in the calibration system.
Local standards for calibration (traceable to National Standards) are maintained by the Quality Authority and are checked by an approved Test House as appropriate.
Equipment which cannot be calibrated locally in a cost-effective manner is sent by the Quality Authority to an approved Test House capable of calibrating with traceability to National Standards.

The calibration interval is reviewed by the Quality Authority from time to time in the light of the calibration results obtained.
Extensions to the calibration interval may be granted for up to one month on the authority of the Quality Authority provided that at the time of the previous calibration, the equipment was found to be within calibration. If necessary this extension may be limited to a particular range of measurements for a particular urgent purpose.

The Quality Authority has the responsibility of generating calibrating procedures for each relevant test equipment and these form part of the Quality Department procedures.
Calibration is conducted in the Quality Department except where equipment is not easily transportable. In the latter case calibration may take place where it is situated.
Details of Major Electrical, Mechanical and Optical Test Equipment are maintained in the Quality Department.
Details of calibration shall be recorded, by the Quality Authority within Q-Pulse.

The calibration procedure carried out shall be as defined in the instruction manual for the equipment. Equipment manuals shall be kept on file in the Document Control Department.
A record of adjustment shall be maintained and an Adjustment Record Sheet completed for each instrument on calibration and kept on file in the Quality Department.
Where large errors are noted on equipment during calibration, the Quality Authority will assess the effect of such errors on the quality of product delivered or in course of manufacture for possible recall action.
The Quality Department will maintain a list of approved Calibration Houses.

5.4 Qualification of New Product (outside existing capability)

All existing product is manufactured within the limits of the current Capability Manual.
From time to time, Arbarr may wish to manufacture product which is outside the limits of existing capability. It is the responsibility of the Chief Inspector to decide whether or not a change to the Capability Manual is necessary.

5.5 Maintenance of Capability Manual

The Capability Manual will be reviewed in line with New Product Introduction, as well as routinely on an annual basis.

5.6 Investigation of Significant Defects and Corrective Action

In the event of a significant failure in periodic tests on a product, the Quality Authority will investigate the reason for failure and where necessary apply a new sampling rate and tighten the AQL

5.7 Certified Test Records

Records of lot-by-lot and periodic tests will be maintained by the Quality Department.

6. EVALUATION AND REVIEW - QUALITY AUDITS

6.1 Introduction

The Quality Authority has responsibility to ensure that all aspects of company operations covered in this manual comply with its provisions.

6.2 Frequency of Audit

The maximum period of internal audits of each department in the company will be performed on a minimum of once per annum or more frequently if required by the Quality Authority.

6.3 Auditor or Audit Team

The audit is carried out by a person or persons, nominated by the Quality Authority, who will be from outside the department being audited.

6.4 Scope of Audit

The Audit shall encompass all aspects of the operation of the department concerned as covered by this manual and the relevant procedures it invokes.

6.5 Completion of Audit Report Forms

The audit report forms should be completed by the auditor. Each section of this form, should be completed giving details of non-conformances, agreed corrective action, interim action, agreed date of re-audit which should be as early as possible, and finally details of re-audit completed where applicable. The Audit Report Form should be held in the open section of the audit report file during the interim period. Closed or completed Audit Report Forms will then be filed in the "Closed Audits" file.

6.6 Audit Procedures

The Audit Procedures, which are held and maintained by the Quality Authority, will ensure that effective audits of each department are carried out.

Open Audit Report forms will be held on file and reviewed weekly at an Audit Review Meeting by the Quality Authority,. If the non-conformity has not been corrected by the review date, it will be reviewed on a daily basis until the report form is closed. Closed Audit Forms will be retained on File for a minimum period of one year.

The status and periodicity of Audits will be maintained in Q-Pulse. The Audit Report Form, the Closed Audit Index and the Open Audit Index are maintained in the Quality Department.

7. TENDERS AND CONTRACTS

7.1 Procedures and Approval

The Sales and Marketing Authority shall establish and maintain documented procedures for handling customer enquiries and for contract review and shall establish and maintain procedures for the coordination of contract review activities. Unless delegated in particular instances by the Sales and Marketing Authority, the Sales and Marketing Authority only has the authority to approve tenders, contracts and/or contract amendments.

7.2 Tender Review

The Sales and Marketing Authority shall establish that tenders are reviewed before submission to ensure:

- that the company has the current capability to perform the contract
- that the Arbarr Conditions of Sale have been referred to within the tender, with the revision or revision date quoted.
- that the Arbarr Conditions of Sale have been supplied with the tender, if the customer's first tender request, and are otherwise made available should a customer ask for a copy.
- that where the tender differs from the customer's requirements, the advantages are made obvious to the customer.
- that the pricing schedules utilised for preparing the tender are sufficiently current.
- That the tender includes a statement indicating that contracts and contract amendments are not accepted until order acceptance has been provided by Arbarr in writing.

7.3 Contract Review

The Sales and Marketing Authority shall, unless directed by the Managing Director, establish that contracts are reviewed before acceptance to ensure:

- that they are commercially acceptable and that they are within the company's projected capabilities
- that the requirements, including standards, specifications, testing, customer visits, delivery time and costs, dates of payment, when the order will be deemed to be complete, etc. are adequately defined in writing to or from the customer before acceptance
- that there is full agreement on all aspects of the contract before acceptance
- that Customer Conditions of Purchase, if applicable, have been read and that those conditions which are unacceptable have been stated to be unacceptable in writing.
- That the customer representative is the authorized person for agreeing contracts of the nature being negotiated.

7.4 Contract Amendments

The Sales and Marketing Authority shall establish that contract amendments are reviewed before acceptance to ensure:

- that manufacturing, design, purchasing and any other parties affected by the change are asked for their input regarding the amendments
- the amendments are commercially acceptable and that they are within the company's projected capabilities
- that the customer contact is permitted to authorise amendments and has signed the Change Request or other document authorising the amendments.

7.5 Verbal Contracts and Verbal Amendments

Unless otherwise directed by the Managing Director, the Sales and Marketing Authority shall ensure that verbal contracts and/or contract amendments are not accepted.

7.6 Processing of Contract Amendments

The Sales and Marketing Authority shall ensure that a Change Request is raised to initiate the actions required due to an acceptable contract amendment, and that the amendment documentation joins the original contract documentation in the Document Control Department. Documentation concerning amendments not agreed should also be forwarded to the Document Control Department.

7.7 Maintenance of Contract Records

The Sales and Marketing Authority shall ensure that all records associated with the contract, including contract and/or amendment review are filed in the Document Control Department. Contract and/or amendment review records should state which parties participated in the review and what were the decisions and concerns, if any, and/or under what conditions was the order accepted. The contract review records should define the requirements which were agreed, who was involved in the review process, the conclusion that Arbarr has the capability to meet the customer requirements, any special constraints, who accepted the tender for submission and who accepted the contract. The reference

numbers of any relevant customer or Arbarr quotation, tender request or contract documentation should be included.

COMPANY RECORD

Arbarr Electronics; Established: - 1989

Arbarr Electronics Ltd.; Registration: - 1991
Company Registration Number – NI 25384

Head Office: - Unit 3, Aghanloo Industrial Estate, Limavady
Derry, BT49 0HE

AMENDMENT RECORD

Quality Manual Amendments are recorded in Q-Pulse as per the amendments of all other controlled documents.