



# SUPPLIER QUALITY ASSURANCE REQUIREMENTS 'SQAR'









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Issue	3	4	5	6	7	8
Date	3-Mar-15	30-Nov-15	1-Sep-16	14-Nov-16	09-Jan-17	25-Sep-17
Change No.	10721	11306	11670	11808	11890	12305
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## 0.1 SQAR AMENDMENT RECORD

Iss	Date	Change Note No	Description of change	Author	Approved By
1	28-Oct-13	9765	New Supplier QA Requirements document to address AS9100 requirements.	Louise Ellison	 C.P.Evans
2	17-Mar-14	9972	Para 4. Order of precedence added (subsequent paras incremented by 1) Para 8 clarified to detail major changes to QMS system Para 10 Record retention updated to state those required by ISO9001 or AS9100 Para 19 CofC content updated to show difference between drawn and catalogue items. Para 24 updated to facilitate sellers confirmation of non-conformity before conducting RCCA. Para 27 : Workmanship requirements added Para 28 : Calibration services added	Martin Davis	 C.P.Evans
3	3-Mar-15	10721	Para 24 updated to include DDC's Supplier Corrective Action Request Form	Martin Davis	 C.P.Evans
4	30-Nov-15	11306	Para 3 references updated Para 5.1 new seller categories added Para 21 AS5553 added	Martin Davis	 C.P.Evans
5	1-Sep-16	11670	Para 12 : NADCAP flow down added Para 26 : Modern Slavery Act added	David Drudge	 C.P.Evans
6	14-Nov-16	11808	All Pascall references changed to DDC Electronics Ltd Para 26.6 : added	Martin Davis	 C.P.Evans
7	09-Jan-17	11890	Para 12.3 : NADCAP requirement changed to state when specified by PO or piece part drawing	Martin Davis	 C.P.Evans
8	25-Sep-17	12305	Para 22 updated to state 12mths	Martin Davis	 C.P.Evans

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## 1.0 PURPOSE

- 1.1 This document establishes “Quality Assurance” requirements for Purchase Orders issued by DDC Electronics Ltd (DDC) also referred to as Buyer, to all suppliers, also referred to as Seller.
- 1.2 Sellers & their Sub-Tier Suppliers shall comply with all Purchase Order requirements & its referenced documents.
- 1.3 Seller shall flow down the requirements of this document to their sub-tier suppliers.

## 2.0 SCOPE

- 2.1 All documents including drawings and specifications, whether issued by DDC, Industry, Government or DDC’s Customers, are considered part of the Purchase Order requirements, when specified or referenced.
- 2.2 The revisions of documents are effective as of Purchase Orders issue dates.
- 2.3 Seller is responsible for Certification of all Off-The-Shelf & Catalogue items, including testing equipment, to meet Quality & Safety requirements.

## 3.0 REFERENCES

- 3.1 Seller is responsible to obtain all Non-DDC documents at own cost, as required to their applicable “Products/Services/Processes”.
- 3.2 **Associated Documents:**

Document ID#	Document Name
ISO 9000	Quality Management Systems – Fundamentals and Vocabulary
ISO 9001	Quality Management Systems- Requirements
ISO 14001	Environmental Management Systems- Requirements
AS9100	Quality Management Systems- Aerospace – Requirements
AS9102	Aerospace First Article Inspection Requirement
AS5553	Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
IDEA-STD-1010	Acceptability of Electronic Components Distributed in the Open Market
J-STD-001	Requirements for Soldered Electrical and Electronic Assemblies
IPC-A-610	Acceptability of Electronic Assemblies

- 3.3 Seller shall have a Quality Management System registered to the ISO 9001 or AS9100 standards or meet the intent & be compliant to the requirements of ISO 9001 or AS9100 standards.

## 4.0 ORDER OF PRECEDENCE

- 4.1 In the event of conflicting quality requirements being requested on DDC documentation the order of precedence is as follows:
  - Purchase Order
  - Drawings/Specifications (applicable to DDC drawn items only)
  - SQAR
  - Purchase T&Cs

## 5.0 SELLER CATEGORISATION

5.1 Sellers are categorized by DDC into the following groups

Code	Category	Description
PRI	Primary Supplier	Supplier of goods manufactured to DDC drawings (eg PCBs, Metalwork, Windings)
SUB	Sub-Contractor	Services provided in the completion of a Works Order (eg test activities on a part manufactured by DDC)
FRANC	Franchised	Component Original Equipment Manufacturer (OEM) or Franchised Distributor
INDEP	Independent	Can only supply parts if : - traceable back to source and CofCs supplied Or - DDC management sign-off
SOURCE	Sourcing Company	Non-Franchised distributor
CON	Consumables	Consumables used in the manufacture of DDC products (eg glues, tapes, etc)
CUST	Customer	Customer supplied items for integration into DDC delivered products
CAL	Calibration	Calibration services performed on equipment used during the manufacture and verification of deliverable product
PRV	Provisional	Provisional approval pending DDC Quality review
TOOLS	Tools & Equipment	Supplier code used to supply production tools that have been assigned a DDC stock number.
NAS	Non-Approved Supplier	Limited to supply of non-stock items (SQAR not applicable)

## 6.0 SQAR COMPLIANCE MATRIX

**6.1** Based on the seller category above, quality conditions apply to all orders as indicated below.

ISO9001 Para		PRI	SUB	FRANC	INDEP	SOURCE	CON	CAL
4.1	General Requirements	X	X	X	X	X	X	X
4.2	Documentation Requirements	X	X	X	X	X	X	X
5.1	Management Commitment	X	X					
5.2	Customer Focus	X	X	X	X	X	X	X
5.3	Quality Policy	X	X					
5.4	Planning	X	X	X	X	X	X	X
5.5	Responsibility, Authority & Comms	X	X					
5.6	Management Review	X	X					
6.1	Provision of Resources	X	X					
6.2	Human Resources	X	X	X	X	X	X	X
6.3	Infrastructure	X	X					
6.4	Work Environment	X	X					X
7.1	Planning of product Realization	X	X					
7.2	Customer-Related Processes	X	X	X	X	X	X	X
7.3	Design and Development	X	X					
7.4	Purchasing	X	X	X	X	X	X	
7.5	Production and Service Provision	X	X	X	X	X	X	X
7.6	Control of Monitoring and Measuring Devices	X	X					X
8.1	General	X	X					
8.2	Monitoring and Measurement	X	X	X	X	X	X	X
8.3	Control of Non-conforming Products	X	X	X	X	X	X	X
8.4	Analysis of Data	X	X					
8.5	Improvement	X	X	X	X	X		
SQAR Requirements		PRI	SUB	FRANC	INDEP	SOURCE	CON	CAL
7.0	Communication	X	X	X	X	X	X	X
8.0	Prohibited Practices	X	X	X	X	X	X	X
9.0	Change Control	X	X					
10.0	Record Retention	X	X	X	X	X	X	X
11.0	Responsibility for Product Conformance	X	X	X	X	X	X	X
12.0	Procurement Specifications	X	X	X	X	X	X	
13.0	Right Of Entry	X	X					
14.0	Source Inspection	X	X					
15.0	Age and Environmentally Sensitive Matls	X	X				X	
16.0	DDC Furnished Items	X	X					X
17.0	First Article Inspection	X	X					
18.0	Product Inspection & Test Reports	X	X					X
19.0	Certificate of Conformance	X	X	X	X	X	X	
20.0	Material Traceability	X	X	X	X	X	X	
21.0	Counterfeit Mitigation Controls	X	X		X	X		
22.0	Obsolescence Mitigation	X	X	X	X	X	X	
23.0	Packaging and Labelling	X	X	X	X	X	X	X
24.0	Corrective and Preventive Action	X	X	X	X	X	X	
25.0	Environmental Requirements	X	X	X	X	X	X	
26.0	Human Rights	X	X	X	X	X	X	X
27.0	Workmanship	X	X					
28.0	Calibration Services							X

## **7.0 COMMUNICATION**

- 7.1 All communications related to the fulfillment of Purchase Order(s) shall be carried out through the DDC Procurement office which places the Purchase Order(s).
- 7.2 DDC's Quality representative reserves the right to contact Sellers and Sellers' sub-tier Suppliers, per agreement of the Seller, for all quality related questions, issues, request for failure analysis, corrective/preventive actions or any other quality related concerns.

## **8.0 PROHIBITED PRACTICES**

- 8.1 Seller shall not delivery non-conforming product to DDC without prior written permission as indicated by an approved Deviation Request (DR) (*QF-Q126*) and update to the Purchase Order to include the unique DR reference number.
- 8.2 Seller shall not implement any major changes to their Quality Management System, including changes to the Quality Control System that may affect the conformity or airworthiness of the product. Loss of certification (eg ISO9001) should be notified to DDC immediately.
- 8.3 Seller shall not sell or transfer any excess inventory of DDC to a third party without prior written permission of the Buyer. Seller is held responsible for strict control of Buyer's inventory.
- 8.4 Seller shall not procure products & services from unapproved sources.
- 8.5 Seller will not sub-contract the Order or any part of it other than for materials, minor details or for any part of the Goods of which the makers are named in the order or specification without written approval by DDC.
- 8.6 Inspections & Audits shall not relieve Sellers & their Sub-Tiers of any non-conformance to requirements associated with their products/services

## **9.0 CHANGE CONTROL**

- 9.1 Seller shall not make design & product changes, substitutions or repairs, on items where the design is controlled by DDC, unless otherwise approved by Buyer in writing.
- 9.2 Seller shall not make any changes in facility(s) location(s), size & manufacturing processes unless the Buyer has been informed in writing prior to changes. This does not apply to clerical changes such as correcting typographical errors on documents

## **10.0 RECORD RETENTION**

- 10.1 Unless otherwise approved by Buyer in writing, Seller shall retain all required records for a minimum of Ten (10) years after order completion
- 10.2 These records shall include those items defined in ISO9001 or AS9100 as Quality Records.
- 10.3 Seller's record retention system shall include appropriate controls at Seller's sub-tier sources. Such records shall be available to the Buyer for review upon request.
- 10.4 Based on written mutual agreement, Buyer can maintain the records for Seller, if Seller is unable. The seller will provide the buyer with the option of continued record retention at the time of archive record disposal.



**11.0 RESPONSIBILITY FOR PRODUCT CONFORMANCE**

- 11.1** Sellers & their sub-tier supplier(s) shall be responsible for Quality, Reliability & Safety of their products/services to meet all Form, Fit, Function, Industry and Regulatory requirements for DDC’s parts/products.
- 11.2** Use of DDC specified sub-tier sources does not relieve the Seller of compliance to all applicable technical and quality requirements for products/services provided to DDC.
- 11.3** Seller shall provide materials, parts, and products free of any contamination, damage or objects not listed on the drawings &/or specifications.
- 11.4** Unless otherwise approved by Buyer in writing, Seller shall furnish only items specified on the Purchase Order issued by Buyer.

**12.0 PROCUREMENT SPECIFICATIONS**

- 12.1** Seller shall ensure that they are compliant with any procurement specifications and referenced documents (eg MIL-STD, BS EN, etc) detailed on the Purchase Orders and/or drawings/specifications referenced thereon.
- 12.2** Seller shall ensure that any sub-contract processes are compliant with the requirements detailed on the Purchase Orders and/or drawings/specifications referenced thereon.
- 12.3** Seller shall ensure that all controlled processes detailed below are performed by NADCAP approved sources when required by Purchase Orders and/or drawings/specifications referenced thereon.

Category	Nadcap Commodity/Code
Chemical Processing	Chemical Processing/CP
Composites	Composites/COMP
Controlled Machining	Conventional Machining as a Special Process/CMSP
Elastomers	Elastomer Seals/SEAL
Electrical & Wiring	Electronics/ETG
Heat Treat	Heat Treating/HT
Material Testing	Materials Testing/MTL
Nonconventional Machining	Nonconventional Machining/NM
NonDestructive Testing	NonDestructive Testing/NDT
Surface Enhancement	Surface Enhancement/SE
Thermal Coatings	Coatings/CT
Welding	Welding/WLD

It is the sellers responsibility to review the requirements above and determine applicability to their process.

It is the sellers responsibility to ensure all sub-contract activities comply with this requirement as applicable.



### **13.0 RIGHT OF ENTRY**

- 13.1** The Seller & its sub-tier suppliers shall allow representatives of DDC, the Federal Aviation Administration (FAA), European Aviation Safety Agency (EASA), National Aviation Authority (NAA), other regulatory agencies approved by DDC and DDC's customers to conduct Audits and also verify the quality of work, records and materials at the Seller & its sub-tier suppliers' location(s)

### **14.0 SOURCE INSPECTION**

- 14.1** If applicable to product(s) & agreed by Buyer & Seller in advance, Seller shall notify Buyer of the time the product will be ready for in-process &/or final source inspection at Seller's facility.
- 14.2** Seller's measuring, testing or any other required equipment(s)/tool(s), facilities, and personnel shall be made available for use by Buyer's representative when requested during source inspection.

### **15.0 AGE, ENVIRONMENTALLY SENSITIVE & HAZARDOUS MATERIALS**

- 15.1** As applicable to Seller's products, Seller shall systematically control time, temperature, humidity, environmentally sensitive & hazardous materials within a defined acceptable range that will include any "special" storage or handling conditions, when required.
- 15.2** For materials with limited shelf-life, Seller shall show on each container and also on the certificate, the cure or manufacturing date, expiration date or shelf life & lot's batch number.
- 15.3** It is Seller's responsibility to assure that upon delivery age sensitive materials to DDC, the materials will have 90% of their remaining shelf life as a minimum.

### **16.0 DDC FURNISHED ITEMS**

- 16.1** Seller shall be responsible for ascertaining the accuracy and stability of DDC furnished equipment used for product acceptance.
- 16.2** DDC furnished equipment for product acceptance shall be periodically re-inspected and calibrated to assure continued accuracy, at Seller's cost & according to Seller's Quality system.
- 16.3** Seller shall document, identify & protect DDC's property. Seller shall be responsible for loss or damage.
- 16.4** DDC's property also includes, but not limited to, intellectual property, furnished information & data for design, production, testing & inspection.

## **17.0 FIRST ARTICLE INSPECTION**

- 17.1** Concurrent with delivery of first production product(s) and First Article sample(s), seller shall provide a First Article Inspection Report (FAIR) documenting the results of Seller's First Article Inspection &/or Test of the product and each sub-tier component *in* accordance with AS9102, including First Article Inspection results of all sub-tier builds and components.
- 17.2** First Article Inspection Report shall include the following (as applicable):
- AS9102 Forms 1, 2, and 3
  - Copy of Buyers drawing with bubbled identifiers for all design characteristics
  - Test Data when applicable
  - Special processes Certificate of Conformance when applicable
  - Sub-Tier suppliers' Certificates of Conformance when applicable
  - Seller's Certificate of Conformance
- 17.3** First Article Buyer reserves the right to accept or reject the First Article Inspection report.
- 17.4** Each First Article product shall be completely processed per Purchase Order and clearly identified as a First Article sample.
- 17.5** The seller shall perform a full FAI or partial FAI for affected characteristics, when any of the following events occur:
- A change in the design affecting fit, form, or function of the part.
  - A change in manufacturing source(s), process(es), inspection method(s), location of manufacture, tooling or materials, that can potentially affect fit, form or function.
  - A change in numerical control program or translation to another media that can potentially affect fit, form, or function.
  - A natural or man-made event, which may adversely affect the manufacturing process.
  - A lapse in production for two years or as specified by DDC.
- 17.6** Example copies of AS9102 Forms 1, 2 and 3 are available for review via the 'Supplier' section on DDC's website : [www.pascall.co.uk](http://www.pascall.co.uk)

## **18.0 PRODUCT, INSPECTION, TESTING AND REPORTS**

- 18.1** With each delivery of product(s), Seller shall maintain a copy of Seller's final inspection report(s) and/or records showing the actual results (dimensions, values, etc.) obtained by seller during final inspection of the delivered product(s).
- 18.2** Unless prior sampling & inspection plans have been approved by Buyer, Seller shall perform 100% inspection of all characteristics on all products covered by the Purchase Order.
- 18.3** With each delivery of product(s), Seller shall maintain a copy of Seller's test report(s) and/or records showing the actual results (plots, values, etc.) obtained by seller during tests of the delivered product(s).
- 18.4** Seller shall furnish all inspection and test reports if required by Purchase Order, or will make them available upon request to DDC.

## 19.0 CERTIFICATE OF CONFORMANCE

- 19.1** Seller shall provide a written statement, Certificate of Conformance (C of C) that all supplied products and/or services comply with all requirements of the purchase order.
- 19.2** All Certificate(s) of Conformance shall contain the following information:
- Unique CofC Reference
  - Part number
  - Part revision (if DDC drawn part)
  - Change Notices/Deviations approved by DDC (if applicable)
  - DDC Purchase Order Number.
  - Identification of Special process(s), including type of process(s) and process specification as noted on the drawing (if DDC drawn part)
- 19.3** Seller shall maintain all certifications of their products/materials for Traceability Audits.

## 20.0 MATERIAL TRACEABILITY

- 20.1** Seller shall ensure that all materials used in the manufacture of products supplied to DDC are traceable back to their source.
- 20.2** Seller shall ensure that this requirement is flowed down to their supplier chain such that traceability is maintained back to raw materials.
- 20.3** Traceability records shall be made available upon request.

## 21.0 COUNTERFEIT MITIGATION CONTROLS

- 21.1** Sellers of Electronic components/part shall have an effective process for mitigating risks of supplying counterfeit electronic components.
- 21.2** This process should be compliant with AS5553, or as a minimum shall include verification activities in accordance with the latest revision of IDEA-STD-1010.
- 21.3** Sellers must be able to provide material traceability back to OEM.

## 22.0 OBSOLESCENCE MITIGATION

- 22.1** The Supplier should notify DDC as soon as it becomes aware of an obsolescence issue for any parts meeting any of the following:
- Subject to open order
  - Subject to request for quote
  - Has been supplied in last 5 years
- 22.2** The supplier will work with DDC to ensure there is sufficient material coverage to allow for up to 12 months supply such that any alternatives can be approved"

## 23.0 PACKAGING AND LABELLING

- 23.1** Seller shall ship according to best commercial packaging practices or as specified on purchase order.
- 23.2** Electrostatic Discharge (ESD) sensitive materials, assemblies, parts, components, etc, shall have a sealed primary container that is ESD compliant. ESD warning labels shall be visible at the point of access. Dust caps used in conjunction with ESD material shall be ESD compliant.
- 23.3** The use of pink poly ESD bags is prohibited for the primary ESD container.
- 23.4** Seller & Seller's Sub-Tiers are responsible for all packaging related damages & failures.
- 23.5** Use of newspapers or other similar materials for packaging products is prohibited.
- 23.6** Hazardous materials shall be clearly identified, labeled and packaged in accordance with legislative requirements to ensure the health & safety of DDC personnel in the receipt and handling of those materials.

## 24.0 CORRECTIVE AND PREVENTIVE ACTIONS

- 24.1** In case of Buyer receiving non-conforming materials from the Seller, or Buyer's discovery of product field failures, malfunctioning products, or request from Buyer's customer(s), Buyer may request from the Seller to conduct a formal investigation and provide failure analysis reports with objective evidence to identify the root cause(s) of the non-conformities within a time frame approved by Buyer.
- 24.2** Per request of Buyer, and upon confirmation by Seller of Non-conformity, the Seller shall take immediate action to implement & document below requirements on CAPA report *Q212 Supplier Corrective Action Request*:
- Containment to prevent existing nonconforming product being supplied
  - Root Cause Analysis of Non-Conformities
  - Root Cause Corrective Action Measures
  - Preventive Action Plans
  - Verification Method(s)/Technique(s) to Confirm Effectiveness of Corrective & Preventive Action(s).

DDC will accept the Suppliers own CAPA form submission on the proviso it addresses all of the above points

- 24.3** Product(s) rejected by Buyer and resubmitted by Seller shall be clearly identified as re-submitted product(s) and must also be documented on Seller's shipping documents that product(s) delivered are either "replacement" or "reworked" product(s).
- 24.4** Seller's documents shall include reference to Buyer's rejection document number and Seller's copy of corrective & preventive action report.

## 25.0 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

- 25.1** Seller shall ensure that they are compliant with all Environmental legislative requirements and shall provide evidence to buyer of that compliance upon request.
- 25.2** Seller should have an Environmental Management System(EMS) in compliance with ISO 14001 requirements, or as a minimum have the following controls:
- Environmental Policy/Statement
  - Legislation monitoring and control

- Records demonstrating legislative compliance

## 26.0 HUMAN RIGHTS

- 26.1** Human rights violations related to the trade in minerals from the conflict zones in the Democratic Republic of Congo (DRC) are a focus of DDC's supply chain and environmental responsibilities. DDC Electronics requires its manufacturers/suppliers not to source gold, tin, tantalum and tungsten metals from the conflict zones in the Democratic Republic of Congo (DRC) and surrounding countries.
- 26.2** We expect manufacturers/suppliers to conduct their worldwide operations in a manner that does not result in labour or human rights violations, including operations that contribute to the direct financing of armed conflict.
- 26.3** If requested by DDC the supplier will provide information in support of DDC's obligations to demonstrate compliance with any legislative or customer requirements.
- 26.4** DDC requires all its suppliers to comply with the Modern Slavery Act 2015 and requests that they take all steps to prevent slavery and human trafficking in their respective business and supply chains.
- 26.5** DDC will not support or engage suppliers where it is aware of slavery or human trafficking in such suppliers' business or supply chains or where a supplier has failed to give DDC the requisite assurances if requested.
- 26.6** Any breaches of these requirements will result in the immediate cancellation of orders with no right to claim or compensation of behalf of the supplier.#

## 27.0 WORKMANSHIP REQUIREMENTS

- 27.1** All electronic assemblies must be manufactured in accordance with J-STD-001 Class 3
- 27.2** All electronic assemblies must meet IPC-A-610 Class 3 requirements.
- 27.3** All wiring assemblies must meet IPC/WHMA-A-620 Class 3 requirements.
- 27.4** Electronic assemblies include parts manufactured to DDC drawings that have a soldering operation performed during that manufacturing process.

## 28.0 CALIBRATION SERVICES

- 28.1** All Calibration Suppliers (CAL) will ensure that all calibration is traceable back to national standards and provide calibration certificates to that effect.
- 28.2** No further sub-contracting of calibration/repair services is permitted without prior written approval of DDC, which dependent on the accreditation status of sub-supplier, could necessitate an audit.