QUALITY ASSURANCE PROVISIONS

General Quality Requirements

The scope of the supplier's efforts includes the following as defined in the purchase order:

- Provide service (or as necessary) manufacture and deliver the quantities called for in the purchase order, in accordance with the specifications, drawings, process requirements, and work instructions listed.
- Articles defined in the purchase order are subject to the applicable supplier quality assurance provisions contained herein.
- SPARC Research will list top level drawings and specifications (which may include special requirements, critical items, or key characteristics), process requirements, and work instructions, as well as control and monitoring requirements for performance in the applicable purchase order. SPARC will provide the unique specifications, drawings, process requirements, and work instructions. It is the responsibility of the supplier to obtain all industry common drawings and specifications as well as secondary and general support specifications. Should you be unable to obtain these documents contact the SPARC buyer.
- The supplier is required to comply with the most current revision date of the supplier quality assurance provisions in effect at the time the purchase order is placed, for the life of the purchase order, unless otherwise notified by the buyer.
- The signed purchase order is the approval of products and services, as well as methods, processes and equipment. (separate approval required for special processes or special test equipment)
- Any changes or direction must be in writing from the buyer. The buyer is the only point of contact for the work described in the purchase order that can authorize changes.
- Release of products and services provided with acceptable FAI and/or CofC

STANDARD QUALITY SYSTEM REQUIREMENTS

The requirements in this section apply to all subcontracts unless otherwise noted in the purchase order.

A) Quality Management System

The external provider shall implement and maintain a Quality Management System that complies with the applicable system standard or specification listed in Table 1 – Standard System Requirements below.

Table 1 - Standard System Requirements

External provider Product/Service	Acceptable Systems
Manufacturer with Design Authority	AS9100 Certified
Manufacturer (Build-to-Print)	AS9100 Certified
Distributor	AS9120 or ISO 9001 Certified
Services	AS9100 or ISO 9001 Certified
Commercial items (COTS)	None imposed by SPARC
Tooling	AS9100 or ISO 9001 Certified
Calibration Services	ISO 17025 Certified

B) Design Data, Configuration Control

The supplier will not implement any changes to process, SPARC Research, drawings and/or specifications and/or materials without written approval from SPARC Research.

C) Design and Development

SPARC Research does not currently use external suppliers for design and development. For any product or service that is an input to SPARC Research design and development under AS9100D, the Supplier shall provide all information required by SPARC Research to meet the requirements of AS9100D section 8.3.4.

D) Manufacturing Data

The supplier will maintain a batch or lot identification system that distinguishes one lot from another by use of (as applicable); shop travelers, routers, etc.

E) Test, Inspection and Verification

The supplier shall maintain a quality/inspection system that will ensure all goods and services conform to contract requirements whether manufactured or processed by Supplier or procured from Sub-Tier Suppliers.

The use of statistical techniques for product acceptance and related instructions for acceptance must have prior approval from the buyer.

F) First Article Inspection (FAI)

This requirement does not apply to COTS items or Tooling.

Production Process Verification (First Article Inspection) per AS9100D is required.

External providers shall perform a FAI to verify that the part conforms to the approved data and any additional purchase order requirements, including, if necessary, destructive testing. A FAI should be conducted for any new production line or when the following occurs IAW AS9102.

- A change in the design characteristics affecting fit, form, or function of the part. A change in manufacturing sources, processes, inspection methods, 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. An implementation of corrective action required to complete a previous FAI.
- A lapse in production for two years shall require an update for any characteristics that may be impacted by the inactivity. This lapse is from the completion of last production operation to the actual restart of production.

A partial FAI is acceptable when changes as described above occur and when a previous full FAI has been approved by SPARC.

The contractor format is acceptable with approval by SPARC Research.

External providers shall notify SPARC's Program Manager/Director of Engineering and Buyer in writing 10 working days prior to the FAI. Unless otherwise specified, FAI acceptance will occur at the external provider's facility.

G) Test Specimens

The supplier will provide test specimens for design approval, inspection/verification, investigation, or auditing as required.

H) Identification and Traceability

If the items of an order are packaged in individual or multi-unit containers, the outside of the containers must be identified with the part number and lot number or serial number if applicable.

Material and processes used must be identified including any outside processing and be traceable by record to the purchase order-imposed drawings and specifications. Records will be maintained.

I) Competence and Training

The supplier will maintain a system where personnel performing work affecting conformity to product requirements will be competent on the basis of appropriate education, training, skills and experience. Appropriate records will be maintained.

J) Calibration, traceable to a national standard

The supplier will maintain a calibration system in compliance to either ANSI/NCSL Z540, ISO 10012, ISO/IEC17025. Obsolete specifications such as MIL-STD-45662A will be considered acceptable.

K) Handling, Storage (Segregation), and Packing including shelf-life and scrap items

The supplier will use good commercial practices for preservation and packaging of items supplied to SPARC Research. Limited-life materials will be identified by either 1) the date at which the useful life has begun [DOM]; or, 2) the date the useful life will be expended

[expiration date], and, have at least 75% of their shelf life remaining at time of SPARC Research, receipt.

L) Record Completion and Retention

Completed, legible documentation supporting the requirements of the purchase order will be maintained on file for a minimum of seven (7) years unless otherwise stated in the purchase order

This documentation will include, but not limited to, material certifications, manufacturing and inspection reports, and test reports.

Documents that meet or exceed the retention period shall be dispositioned with SPARC research prior to destruction.

M) Nonconforming Material Control and Material Review Board

External providers shall not ship nonconforming material to SPARC without written authorization from the Buyer. This includes the prohibition of integration of nonconforming components into products without SPARC's approval.

External providers have authority to rework product to order requirements, return it to their sub-tier external providers, or scrap any material that is not SPARC furnished.

External providers shall notify the Buyer of all nonconformities to purchase order requirements that require a repair or Use-As-Is deviation/waiver acceptance prior to delivery. Formal notification of nonconformance shall be in writing and in external provider's format and must include:

- Description of nonconformance, with requirement and actual condition
- Recommended disposition including justification.

Nonconformities detected by the supplier prior to delivery and requiring SPARC disposition require documenting the supplier's nonconformance in accordance with SPARC's Nonconformity and Corrective Action Procedure. All documentation provided by the supplier will be included.

In the event a nonconformance is discovered that affects previously delivered product, the external provider shall notify the Buyer in writing of the condition within 24 hours of discovery. Notification must include defect description and identification traceability of the affected material by lot, serial, delivery, or date code numbers.

Government-Industry Data Exchange Program (GIDEP) Alerts: The external provider must be a member of GIDEP, if eligible, and take appropriate corrective and preventive actions on all suspect or defective material or suspect counterfeit or counterfeit parts reported by GIDEP alerts. Access to GIDEPs can be viewed at www.gidep.org/gidep.htm.

External providers shall utilize and provide feedback on any GIDEP data provided by SPARC that may be pertinent to items of its manufacture.

N) Supplier Corrective Action

Supplier shall, on request, provide statements of corrective action on nonconformities or failures of Supplier's goods or services.

O) Certificate of Conformance (C of C)

External providers shall provide a Certificate of Conformance for each separate shipment with the following minimum requirements:

- External provider's identification or logo and address
- Date
- SPARC purchase order number
- Line item (preferred)
- Quantities
- Product traceability must include a unique identifier such as serial number, manufacturing lot number, job number, heat lot number or date code that is traceable to the manufacturer's production, testing, and inspection records as applicable.
- Shelf life material date of expiration
- Part number
- Part revision *(Not applicable to COTS items)*
- Part description *(Not applicable to COTS items)*
- Reference number for any SPARC authorized deviations
- A statement attesting to the conformance of the product to the contract/PO requirements
    - Example: "The items provided on this order are in conformance with the customer's purchase order defined above."
    - (COTS items: The statement of conformance to the manufacture's product/material specification is acceptable.)
- Name/Title and Signature (electronic acceptable) of an appropriate authorizing representative.
- The C of C may be incorporated into the packing slip.
- SPARC nonconformance (NC) number when applicable.

SPARC Final Source Inspection Report

Upon receipt, the material is compared to the packing documentation and to the PO to ensure the correct product and quantity are delivered. Packages are inspected for visible damage. There is also a check for any required documentation that should accompany the product or material (e.g., Certificates of Conformance or Authenticity, Test Results, etc.).

Product requiring additional verification is inspected by an Engineering representative according to an inspection plan and applicable verification method. Should product or materials be found

nonconforming, they are handled in accordance with the Control of Nonconformances Procedure. Should it be determined that the parts are either counterfeit or suspect counterfeit, they are handled in accordance with the Counterfeit Parts Procedure.

If we need to release a product or materials to production before all verification tasks are completed, the parts are identified, and records maintained for traceability in case they are later found to be nonconforming. A Director of Engineering approves such situations and maintains records.

SPARC reserves the right to delegate incoming receiving activities to suppliers.

We keep a list of any instances where we have delegated verification activities to a supplier. The list contains the supplier's name and the scope and requirements of the delegation. A Director of Engineering periodically reviews the list and monitors the delegated verification activities.

P) Raw Materials Certifications

External providers shall retain raw material certifications and make them available to SPARC upon request. If we have identified a raw material we purchase as a critical item for our product and require our supplier to provide us with test reports for that material, we also verify the validity of the test report data. Raw Material certifications shall be a certified Mill Test Report (MTR) with the following requirements:

- Be legible and legibly reproducible.
- List the country of melt (for specialty metals per DFARS, 252.225-7014)
- Make record of results to show conformance to applicable material specification requirements.
- Include traceability, such as heat lot, mill lot, and/or batch number.
- Include a Statement of Conformance attesting the material conformance to the specification requirements.
- Comply with DFARs Buy American Act

Q) Obsolescence

On a best effort basis, the external provider agrees to perform an obsolescence analysis or end of life (EOL) notification when the component or material is no longer in production by the manufacturer. The purpose is to keep SPARC informed of any potential component or material that may become obsolete.

External providers will provide a list describing the obsolescence/EOL issues to the SPARC Buyer. Additionally, external providers will provide options and recommendations of obsolescence/EOL issues to the SPARC buyer. This can include a onetime purchase of all EOL type material, the qualification of an alternate external provider/item, or a re-design of the affected assembly.

R) Foreign Object Damage / Debris (FOD)

The external provider shall maintain a Foreign Object Damage (FOD) prevention plan/program to prevent unintended material from being closed within a product or product packaging.

External providers have sole responsibility to inspect for FOD and ensure that prior to closing inaccessible, and obscured areas and compartments during assembly, all debris is removed. External provider shall inspect for foreign objects, such as materials, personal items, contaminants, or anything not part of the assembly, and ensure area is free of FOD barriers which may remain embedded. External providers shall ensure that tooling, fixtures, and test handling equipment are maintained in a state of cleanliness.

By delivering items to SPARC, external providers shall be deemed to have certified to buyer that such items are free from any foreign materials that could result in FOD.

S) Age Sensitive Shelf-Life Material

If a deliverable product/material is age-sensitive (material having definite characteristics of quality degradation or drift with age and/or environment), the external provider shall mark the product with the expiration date and storage environmental requirements in accordance with MIL-STD-129 and, have at least 75% of their shelf life remaining at time of SPARC Research receipt.

T) ESD Control and Packaging

If Electrostatic Sensitive Devices (ESD) are included in this order, the external provider shall maintain a program for ESD control for hardware items to be furnished in accordance with one/or more of the following standards:

- MIL-STD-1686 ESD control program for protection of electrical and electronic parts, assemblies and equipment (excluding electrically initiated explosive devices)
- ANSI-S20.20 parts, electrical and electronic, assemblies and equipment, protection of (excluding electrically initiated explosive devices), for the development of an electrostatic discharge control program
- JESD625, requirements for handling electrostatic discharge sensitive devices

U) Safety Data Sheets

If the purchase order includes the purchase of chemicals, safety data sheet(s) shall be provided by the external provider. All materials that are volatile, toxic or emit fumes, which may be harmful to human health, shall be properly contained in accordance with applicable Code of Federal Regulations. The containers will be plainly marked as to contents with appropriate warnings, precautions, instructions and storage conditions.

V) Quality Assurance Monitoring

SPARC may perform periodic on-site surveillance to review quality system elements as well as operation and control of processes to meet the requirements for the provision of products and

services, therefore SPARC Research, its customers, and regulatory authorities shall be granted the right of access to all Supplier and sub-tier Supplier facilities and records involved in fulfilling the Purchase Order requirements to ensure conformance with the requirements.

W) Special Processes

Process certifications

External providers shall provide a process certification representing each applicable deliverable item. Process certifications are required for any process defined on SPARC's drawing. These processes may include but not be limited to the following: chemical-processing, chemical-etching, nondestructive testing, brazing, welding, plating, painting, coating, heat-treatment, and laboratory testing.

- Process certifications shall include the following information:
- Company name and/or logo, address location.
- A statement certifying to all the details of the process requirement required on the SPARC drawing.
- The specification as listed on the SPARC drawing (if superseded, state: "superseded by … ")
- Revision of the specification used.
- Include a Statement of Conformance attesting the process conformance to the specification requirements.
- Make record of any modifiers listed on the drawing (Class, Type, Code, Grade, etc.)
- Signed by a representative of the process inspection acceptance authority.

X) Sub-tier Suppliers

The supplier will flow down all applicable Quality clause/provision requirements to their sub-tiers from SPARC research, as specified in the SPARC Research, purchase order including any identified key characteristics, customer requirements, and Approved Supplier List use. SPARC Research must be notified of significant sub-tier supplier manufacturing problems.

The supplier and any sub-tier supplier will use SPARC, or its customer-approved special processors, manufacturers and their authorized distributors, and SPARC or its customer-approved sources of nondomestic raw materials, as required.

Y) Significant Change to the Quality/Inspection System

The supplier will notify SPARC Research, in writing of any adverse change in the status of their quality control system, including any location or transfer of supplier manufacturing operations, which may affect the quality of supply.

Z) Failures, Malfunctions, and Defects

The supplier must provide a disclosure notification letter to SPARC Research, in the event of any failure, malfunction or defect, which would affect previously delivered products.