



GENERAL MICRO SYSTEMS, INC.
TRUSTED AND DEPLOYED SINCE 1979

Supplier Quality Requirement Standards and Clauses

The following Quality Clauses are applicable to all PO. Customer Specific Quality requirements are flowed down via PO by the Buyer.

Q-1 CERTIFICATE OF CONFORMANCE

The supplier shall include a Certificate of Conformance with each shipment against this Purchase Order. The supplier shall ensure the person issuing the Certificate of Conformance has been authorized by the supplier to do so. The exact format of the Certificate of Conformance may vary from Seller to Seller. Requirements can be identified within the Certificate of Conformance, Packing Slip, and/or material packing but shall contain the following minimum information: A statement affirming that the delivered item meets all requirements identified on the General Micro Systems Purchase Order and all associated Reference documents.

Reference documents include:

- A. Supplier's name
- B. Manufacturer's name (when different from the supplier)
- C. General Micro Systems part number as specified on the Purchase Order
 - When a General Micro Systems part number is not specified on the Purchase Order, the supplier's part number shall be used.
 - When a supplier's part number is not specified on the Purchase Order, the material's descriptor shall be used.
- D. General Micro Systems drawing revision as specified on the Purchase Order
- E. Change notices shall be included if they are not part of the Revision Level
- F. When a General Micro Systems drawing revision is not specified on the Purchase Order, no drawing revision is required.
- G. Serial Number (as applicable)
- H. Date code (as applicable)
- I. Lot/batch/heat number (as applicable)

A Certificate of Conformance certifies that the manufacturer and supplier have performed all required inspections and tests, and that the delivered item meets all requirements identified on the General Micro Systems Purchase Order and all associated reference documents.

Q-2 FIRST ARTICLE INSPECTION (FAI)

The supplier shall perform a First Article Inspection (FAI) that conforms to the requirements of AS9102, the Aerospace First Article Inspection Requirement. The revision of AS9102 in effect is the latest released revision at the time the Purchase Order was placed. The supplier shall ensure the AS9102 requirements for First Article Inspection are flowed to their sub-tier suppliers and processors. The supplier shall ensure that their sub-tier supplier's first article documentation packages (for subassemblies or detail parts) are in compliance with AS9102 requirements.

The supplier shall provide justification if a full or partial FAI is not performed due to any lapse in production of two years or more and any non-administrative drawing revision changes. This justification must be approved by General Micro Systems.

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Production to non-General Micro Systems purchase orders shall not constitute continuous production. This justification and General Micro Systems approval shall be included with the shipment, if applicable. This justification shall be available for review during General Micro Systems Source Inspection, if applicable. If General Micro Systems Source Inspection/Surveillance is required, the supplier shall have the FAI documentation approved by General Micro Systems during the General Micro Systems Source Inspection. Evidence of FAI approval shall be provided with first shipment.

If General Micro Systems Source Inspection/Surveillance is not required, the supplier shall include a complete copy of the full FAI or partial FAI package with the initial shipment. The seller shall include in the FAI package all supporting data referenced in the FAI package. The supplier shall not commence production of units beyond the first production lot until the successful completion of the FAI, unless authorized by the General Micro Systems Buyer. Any parts produced beyond the first production lot without General Micro System's approval shall be at the sole risk of the supplier.

A supplier that is unable to comply with the FAI requirements identified herein shall submit an alternate FAI plan to the General Micro Systems Buyer and obtain approval prior to the commencement of manufacturing. If the AS9102 forms cannot be used, the fields of information from the AS9102 forms must be in alignment (numbering/mapping) with the alternate form utilized.

Q-3 ELECTROSTATIC CONTROL PLAN

Vendors providing static sensitive items or repair services to static sensitive items must take necessary precautions to ensure these items are protected from electrostatic discharges. Additionally, suppliers are required to have an ESD Control Program Plan available for review. It is recommended the ESD Control Program Plan follow the guidelines of MIL-HDBK-263, titled "ESD Control Handbook for Protection of Parts, Assemblies and Equipment."

Q-4 FOREIGN OBJECT DEBRIS/ DAMAGE (FOD) PREVENTION

The supplier shall implement controls to preclude foreign object debris/Damage (FOD) or contamination of product during the supplier's processing, manufacturing, assembly (if applicable), test and inspection, and packaging/shipping operations. The supplier shall flow down this requirement to their sub-tier suppliers. All materials, components, or assemblies produced to General Micro Systems design shall be free of FOD, or within allowable product specification ranges. Delivery of product to General Micro Systems shall be deemed as delivered FOD free.

Q-5 TRACEABILITY

Outside Processing Suppliers performing processing of raw materials are required to maintain traceability of materials supplied by General Micro Systems/GMS subcontractors to the processed product. Batch and/or lot numbers of materials provided shall be referenced on the processed product certifications provided with each shipment. Product shall be identified properly.

Q-6 QUALITY MANAGEMENT SYSTEM SUPPLIERS

Sellers shall have a quality management system in compliance with the current revision of AS9100 or ISO 9001, or have a General Micro Systems approved quality management system. Sellers certified to AS9100 or ISO 9001 shall provide evidence of a third party certification upon request by General Micro Systems. The Sellers' AS9100 or ISO 9001 certification shall be from an accreditation body that is a member of the International Aerospace Quality Group (IAQG) or International Accreditation Forum (IAF), respectively. Sellers not certified to AS9100 or ISO 9001 shall pass a General Micro Systems Quality Management System audit. Sellers shall provide evidence of

compliance to AS9100 or ISO 9001 by a third party auditor, or be re-audited by General Micro Systems within two (2) years to remain an approved Seller.

Distributors shall have a quality management system in compliance with the current revision of AS9120, AS9100 or ISO 9001, or have a General Micro Systems-approved quality management system. Distributors certified to AS9120, AS9100 or ISO 9001 shall provide evidence of a third party certification upon request by General Micro Systems.

Q-7 SUPPLIER CONTROL

The supplier shall procure all part numbers from supplier(s) that have been qualified by General Micro Systems. General Micro Systems will provide the list of parts within the Bill of Material that have been qualified by General Micro Systems and the associated list of qualified suppliers for these parts. The supplier shall contact the General Micro Systems Procurement Agent to obtain the applicable Qualified Parts and associated Qualified Supplier(s).

Q-8 SELLER'S SUPPLIER CONTROL

Seller's supplier procured supplies/services, which become a part of the item(s) delivered in accordance with this Purchase Order, shall conform to drawing(s) and specification(s) requirements. Seller's systems shall ensure purchase order flow-down to Seller's supplier of applicable quality and technical requirements, Seller's supplier's capability to produce items and adequate methods of assuring compliance, and Seller's supplier shall be required to flow-down and verify requirements of supplies/services they subcontract.

The Seller shall be responsible for conformance of all supplies or services procured from every tier of their sub-suppliers and shall assure that the requirements of this document, Purchase Order, and applicable drawings and specifications are incumbent upon his procurement sources. Seller must use GMS-approved sources for all required special processes. For a list of approved sources, please contact your GMS Purchasing agent.

Seller must use GMS customer-approved sources for all required special processes and Non-destructive/Environmental Testing. For a list of customer approved sources, please contact your GMS Purchasing agent.

Q-9 NO CHANGES WITHOUT APPROVAL

All communication, technical guidance and instructions having contractual impact shall be accomplished directly between the buyer and the supplier's authorized representative. No contract or specification deviations shall be made without the written authorization of the General Micro Systems Buyer.

No changes in materials, processes, procedures, design interfaces or software which affects the form, fit, function, safety, weight, maintainability, service life, reliability, replaceability or interchangeability of the items to be delivered to General Micro Systems shall be made without prior written approval from the General Micro Systems Buyer. Prior to implementing such a change, the supplier shall submit Section 1 of the Supplier Change Request (SCR) form notifying General Micro Systems of the impending change. Form completion instructions are included to provide direction. Section 2, completed by General Micro Systems, dispositions the change and identifies resulting actions which will be communicated back to the supplier by the buyer.

Listed below are examples (not all-inclusive) of events which the supplier shall evaluate for product impacts as defined above.

- Plant Relocation
- New Equipment
- Material Change

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- Name/Cage Code Change
- Equipment Relocation
- Process Change
- Design Change
- Drawing conflict
- Sub-Tier Supplier Change

It is the supplier's responsibility to fully comply with all the instructions listed on the General Micro Systems Purchase Order. Lack of written approval shall not relieve the supplier of the responsibility to fully comply with all of the requirements of the purchase order. The supplier shall not receive compensation in any form from General Micro Systems for unauthorized activity.

Q-10 RECORD RETENTION FOR SEVEN YEARS

The word "shall" invokes a binding requirement for the supplier to meet.

GENERAL REQUIREMENTS

The supplier shall retain all records needed to show conformance to Purchase Order requirements for each shipment. Records shall remain legible, readily identifiable and retrievable for a period of seven (7) years after the date of the completion of this Purchase Order.

Q-11 ELECTRONIC PART COUNTERFEIT RISK MITIGATION

The word "shall" invokes a binding requirement for the supplier to meet.

GENERAL REQUIREMENTS

- A. The supplier shall ensure the material supplied on this order is the Original Component/Equipment Manufacturer (OCM/OEM) referenced on the Purchase Order, General Micro Systems Drawing, or as indicated by the Manufacturer's unique part number. The supplier shall mark the material in accordance with the applicable procurement document, whether it is a Military Specification Standard Microcircuit Drawing (SMD), General Micro Systems control drawing or Manufacturer's Data Sheet. Any unauthorized marking or remarking of components is prohibited.
- B. The Seller shall use the inspections and tests contained in Table 1 to verify that the material conforms to this Quality Note, unless otherwise specified in this Purchase Order.
- C. The Seller shall utilize a test and inspection laboratory capable of performing the required inspections and tests, and have General Micro System's concurrence in writing. The Seller shall contact the General Micro Systems Procurement Agent to confirm the General Micro Systems preferred method of laboratory testing (Internal or External).
- D. The Seller shall ensure that the inspections and tests meet the requirements listed in this document.
- E. The Seller shall provide separate inspection data reports for each component date code/lot code. The Seller's inspection data reports shall include:
 - Original manufacturer's name
 - General Micro Systems purchase order number
 - General Micro Systems part number as specified on the purchase order
 - a. If no General Micro Systems part number is specified on the purchase order, the Seller's part number shall be used.
 - b. If no Seller's part number is specified on the purchase order, the material descriptor shall be used.
 - General Micro Systems drawing revision (including change notices, if not part of revision level) when specified on the purchase order

- c. If no General Micro Systems drawing revision is specified on the purchase order, then no drawing revision is required.
- Component date code and lot code
 - Test/Inspection results, conditions, and parameters
 - Quantity of parts tested
 - Serial numbers (where applicable)
 - Date of Test/Inspection
 - Inspector identification
 - Seller's authorized agent's name, position, and date.
- d. Note: Electronic signature is acceptable.
- F. The Seller shall report any evidence of counterfeit parts encountered during Inspection or Test to General Micro Systems, ERAI, and the Government Industry Data Exchange Program (GIDEP).
- If multiple date codes/lot codes are shipped in the same container, the Seller shall place each date code/lot code in separate packages marked with the date code/lot code.
- G. The Seller shall retain test samples as part of the quality record associated with this purchase order. The Seller shall have destruct test samples made available to the General Micro Systems Procurement Agent upon request.
- H. The Seller shall provide the name and location of the 1st tier supplier providing the material to the Seller.
- I. The Seller shall address all correspondence to the General Micro Systems Procurement Agent.
- J. The Seller shall retain the test data for a minimum of 5 years from the completion of this Purchase Order unless otherwise specified.

TABLE 1

Inspection/Test	Requirement	Sample Size
Packaging Inspection and OEM/OCM history investigation	Verification that package marking is consistent with the OEM marking and that the date/lot code is not later than the last production date. For Qualified Parts List (QPL) parts, verify that the manufacturer identified on the package was a QPL source for the time period represented by the part date/lot code.	3 parts from each date code 1/
External Visual Inspection (N/A for bare die)	IDEA-STD-1010, 20 X magnification minimum, 50 X or greater may be used to detect counterfeiting	100% up to 122 pieces and minimum 122 piece sample for lots greater than 122 pieces
Mechanical Inspection (N/A for bare die)	IDEA-STD-1010 paragraph 10.3.3	20 parts from each date code
Marking Permanency (N/A for bare die) 2/	Using the following in the order specified: 1) 3 parts Mineral Spirits, 1 part Isopropyl Alcohol mixture, 2) Acetone	3 parts from each date code 1/
Blacktop Testing (N/A for bare die) 2/	1) 1-Methyl 2- Pyrrolidone (AS6081), 2) Dynasolve 750 solution (AS6081), 3) Scrape Test (IDEA 1010.3.2.3)	3 parts from each date code 1/

Inspection/Test	Requirement	Sample Size
Delid/Decapsulation (for bare die see 3/)	Component Decap (cavity devices only) and die photograph to compare die marking to external part marking, OEM/OCM die maps or datasheet or known good die, if available.	3 parts from each date code 1/
Lead Cross-Section	For metal can, through hole packages such as TO-99, TO-100, TO-8, etc. All device leads must be cross-sectioned in order to determine if leads have been extended by welding.	3 parts from each date code, all leads (may be performed on the Delid/Decapsulation sample) 1/
Solderability (N/A for bare die)	per IPC/EIA-J-STD-002	3 parts from each date code 1/
X-Ray Fluorescence (N/A for bare die)	Termination finish composition	3 parts from each date code 1/
Electrical (for bare die see 4/)	Test in accordance with commodity matrix in Appendix A herein.	100%
Radiographic Inspection (N/A for bare die)	Radiographic Inspection of the die and internal construction of the product	100%
Test Inspection Data	The Seller shall submit a test and inspection data report to General Micro Systems for review, approval and disposition prior to shipping the part. The electrical test data requirements are contained in the checklist attached to this Quality Note. The Seller or the Seller's test laboratory shall complete the checklist attached to this Quality Note, which will serve as a summary cover sheet that is supported by all additional detailed test data, results, images and photographs. No shipments of material can be made without report review and written confirmation of approval by General Micro System's Buyer via a COTC.	N/A
Certificate of Test completion (COTC)	The Seller shall submit an approved COTC with each shipment of material to General Micro Systems.	N/A

1. Performance of multiple tests on the same samples is allowed to maximize yield
2. As applicable for device package materials and marking

3. For bare die, perform die inspection to compare die marking to OEM/OCM die maps, datasheet, or known good die, if available. After the die inspections have been completed, select three samples and perform cross section analysis. Compare the various die layer characteristics against the known die information (i.e. die thickness, backside plating layer material and thickness, passivation characteristics and material type, number of metal layers, etc.), and verify uniformity between the samples (and compare to cross sections of known good die, if available).
4. For bare die, a 10 piece sample shall be assembled for electrical testing and tested to the corresponding commodity type per Appendix A. One hundred percent (100%) electrical probe testing may be performed in lieu of assembly.

Q-12 NONCONFORMING MATERIAL CONTROL

The seller shall have a documented internal system or process that includes provisions to identify, segregate, and control nonconforming material to ensure the seller does not ship nonconforming material to General Micro Systems.

The seller is authorized to make the following dispositions:

- Rework to product requirements
- Scrap
- Return to vendor

The seller is not authorized to make the following dispositions:

- Use as is (UAI)
- Repair

If the seller determines that a UAI or Repair disposition is needed, the seller shall contact the General Micro Systems Buyer for an Authorization to Ship or a General Micro Systems Material Review Board disposition.

Q-13 CERTIFICATE OF ANALYSIS (C of A)

Seller shall provide a Certificate of Analysis (C of A) test report with each shipment that complies with the requirements of the material specification. Seller's Subcontractor raw material test report(s) may be supplied in lieu of repeating tests, provided lot traceability can be demonstrated.

The Certificate of Analysis shall include the following information:

- Original manufacturer's name,
- Purchase order number,
- Part number,
- Drawing(s) and/or specification number(s) and revision,
- Traceability of material to the C of A, including serial numbers, date code, lot number or batch code,
- A signature, company name, and title of a person in the Seller's organization who has been authorized by the seller to sign the C of A, and
- Test data required per sections 3-6, as stated below.

Seller shall provide a C of A that includes actual discrete test data (e.g. physical properties, chemical analysis, and other test results) which validate conformance for the lot or batch of material supplied. In the absence of lot or batch conformance testing, the Seller shall have every requirement in the specification(s) tested and reported. Commercial-Off-The-Shelf (COTS) items will be accepted with a standard C of A.

Seller shall report the actual measured value of each required test along with the acceptance range for each lot or batch requirement. Conformance is demonstrated when all test values fall within the acceptable range. Seller shall report the test methods and conditions for each measured value. In the absence of lot or batch conformance testing, Seller shall match the test methods and conditions designated in the specification(s). COTS items will be accepted with a standard C of A.

Seller shall report cure parameters used for a test sample when a test is performed on a cured, non-elastomeric material (such as adhesives, coatings, resins, etc.).

Q-14 COMMERCIAL MANUFACTURER'S OR DISTRIBUTOR'S QUALITY SYSTEM

Material supplied under the terms of this Purchase Order shall conform to either the Commercial Manufacturer or Commercial Distributor requirements, as appropriate. A commercial quality rating is assigned to the Seller upon General Micro System's review and acceptance of the applicable survey questionnaire.

COMMERCIAL MANUFACTURER'S QUALITY SYSTEM

I. Seller's Responsibility:

- Seller shall maintain and, on request, make available to Buyer, adequate records of calibrations, measurements, tests, and other objective evidence necessary to assure that the raw materials and/or electronic components used in the manufacture of items and other supplies/services supplied meet all applicable specifications and quality requirements of this Purchase Order.
- Seller certifies that all materials and/or parts furnished to satisfy the requirements of this Purchase Order are from original equipment manufacturers, authorized franchised distributors for the items, or subcontractors to whom the requirements of this attachment are made applicable.
- Reports shall be made available to the General Micro Systems Field Engineer (FE) or designate, and copies supplied to the Buyer upon request.
- Tools, gauges and test equipment utilized to meet the requirements of this Purchase Order shall be calibrated at established intervals against standards traceable to the National Institute of Standards & Technology (NIST).

II. Inspection/Surveillance:

Buyer and authorized government representatives (if a government contract is involved) reserve the right to, at reasonable times: enter Seller's plant(s) or those of Seller's suppliers at every tier that may be engaged in work relating to this Purchase Order. Entrance will be for the purpose of surveillance/inspection of the Seller's (and Seller's suppliers) processes, controls, quality records, and systems, as well as supplies/services procured under this Purchase Order. Surveillance/inspection of Seller's processes and controls will not constitute acceptance of the supplies/services being procured.

III. Discrepant Material:

When Seller's quality personnel determine that the supplies/services to be submitted for Buyer's acceptance depart from the specified requirements of this order and that rework to specifications is not practical, the items in question shall be identified as discrepant and withheld pending Buyer's disposition. Seller is required to submit detailed descriptions of discrepancies to the Buyer for formal disposition instructions.

COMMERCIAL DISTRIBUTOR'S QUALITY SYSTEM

The Seller shall comply with the following quality system requirements:

I. Procurement System Controls must require Seller to:

- Develop/maintain an approved and/or qualified Manufacturers list.

- Define and stipulate in Seller's Purchase Order to the Manufacturer applicable Buyer and/or Military specifications and related requirements.
- Certify that all materials and/or parts furnished to Buyer are from a Manufacturer for whom Seller is an authorized and/or franchised Distributor.

II. Manufacturing Controls must require Seller to:

- Require the Manufacturer to submit inspection/test data of material purchased when required by this Purchase Order.
- Require material certification(s) to be maintained on file and furnished to the Buyer on request.
- Determine the adequacy and qualifications of the Manufacturer.
- Have an effective corrective action system.
- Assure corrective action on Buyer reported deficiencies whether at the Seller or at the Manufacturer.

III. Receiving controls must require Seller to:

- Identify received material and maintain traceability to Manufacturer's part number, lot number and date code of all electronic and electrical parts, raw material and mechanical machined parts, semiconductor devices, integrated circuits and passive electrical components.
- Identify and segregate accepted material when received.
- Identify and segregate defective material when received.
- Maintain on file or certify as on file with the Seller and available to the Seller's Manufacturer, physical and electrical test reports that verify conformance with applicable specification or drawing requirements. All such data shall be maintained for a period of five (5) years after the completion of all deliveries and made available for inspection by, or copies supplied to, the Buyer upon request.

IV. Stock room controls must require Seller to:

- Practice the "first in, first out" principle of stock control.
- Identify the quality status of material.
- Provide for and maintain adequate control of all material in its stock room.
- Identify and segregate material.
- Have a method of removing obsolete and unacceptable supplies.
- Maintain shelf-life controls over all material where applicable.

V. Shipment Controls must require Seller to:

- Provide the proper handling, identification, and packaging of material shipped to Buyer

Q-15 OBSOLESCENCE/END OF LIFE (EOL) CLAUSE

Subcontractor shall perform an obsolescence/EOL analysis of the product Bill of Material (BOM). The purpose of the analysis is to categorize every item in the product BOM as follows:

- Known obsolescence/EOL: component(s) no longer in production by the manufacturer.
- Potential obsolescence/EOL concern: component(s) nearing the end of their life cycle. The manufacturer has plans to discontinue component(s) within the next 12 months as a minimum, and/or up to as much as four years.
- Small or no obsolescence/EOL concern: verified by the components' manufacturer(s) that component(s) will be available for the next 12 months as a minimum.

The analysis shall be performed once in the first two months of the execution of this purchase order or no more often than 12 months from the previous analysis. Analysis shall be done on any items added to the BOM. Data is to be submitted to the General Micro Systems buyer upon completion of analysis. The expected output of the analysis would be a report or matrix that describes the obsolescence/EOL detail of each item in the BOM

categorized as described above. Additionally, the subcontractor shall provide options and recommendations to obsolescence/EOL issues to General Micro Systems Supply Chain Management (SCM). Resolution of obsolescence/EOL issues may include the one time purchase of all EOL type material, the qualification of an alternate supplier/item, or a re-design of effected circuit/subassembly.

The data is not required to be shipped with this order, but shall be available for review as specified by the contract.

Q-16 MRB AUTHORITY WITHHELD

REQUIREMENTS

MRB authority is not in effect unless specifically granted in writing by General Micro Systems. Nonconforming material shall not be shipped unless approved by General Micro Systems in writing.

Q-17 (A) ELECTRONIC COMPONENT TRACEABILITY

Electronic components purchased through authorized distributors must be traceable to the original component manufacturer (OCM), and must include a statement on the Certificate of Compliance that they are an authorized distributor.

Q-17(B) OEM COMPONENT TRACEABILITY

MS/NAS/AN hardware purchased through authorized distributors must be traceable to the original component manufacturer (OEM) and must include a statement on the Certificate of Compliance that they are an authorized distributor.

Q-18 CERTIFICATE OF COMPLIANCE FOR RAW MATERIALS/DOMESTIC SOURCES

The supplier will include with each shipment the raw material manufacturer's test report (e.g., mill test report) that states the lot of material has been tested, inspected and found to be in compliance with the applicable material specifications. The test report will list the specifications, including revision numbers or letters, to which the material has been tested and/or inspected, and the identification of the material lot to which it applies.

When the material specifications requires quantitative limits for chemical, mechanical, or physical properties, the test report will contain actual test and/or inspection values obtained. For aluminum mill products (except castings), certifications may indicate compliance within the allowed range. Certifications for physical properties will show actual values.

ALL RAW MATERIAL TEST REPORTS MUST BE TRACEABLE TO MANUFACTURERS WHO HAVE METLED THE MATERIAL/ALLOYS IN THE UNITED STATES OR QUALIFYING COUNTRY LISTED IN SUBSECTION 225.872-1.

Q-20 SUPPLIER CALIBRATION REQUIREMENTS

- A. b. The Seller shall provide and maintain a calibration system that complies with ISO-10012, "Calibration System Requirements."
- B. The seller shall provide and maintain a calibration system that complies with ANSI/NCSL Z540.1, "Calibration System Requirements."