

# MICROSEMBLY

## QUALITY CODES

### PROCUREMENT

#### QUALITY REQUIREMENTS

##### 1.0 PURPOSE

This document establishes the Quality Assurance requirements (Q Clauses) which are applicable as specified on the Procurement Document.

##### 2.0 DEFINITIONS

2.1 Buyer: Microsembly, LLC

2.2 Seller: The Legal entity which is the contracting party with Buyer with respect to the Procurement Document

2.3 Procurement Document: The Purchase Order or Subcontract

2.4 Item: Products or services contracted for by the Procurement Document.

##### 3.0 QUALITY ASSURANCE REQUIREMENTS

The following Clauses are a requirement of the procurement when specified by number and letter designation paragraph, as applicable on the Procurement Document.

The general Quality Assurance requirements, Q-1, apply to all procurements.

##### ADDITIONAL PURCHASE DOCUMENT CLAUSES/NOTES

Additional Program or Specification clauses or notes form a part of an order as defined in the Purchase Document.

##### 4.0 Quality Requirements

###### Q-1 GENERAL QUALITY ASSURANCE REQUIREMENTS

*(Includes paragraphs A through N below)*

**A. PROHIBITED PRACTICES Unauthorized Repairs/Rework:** No rework shall be allowed outside of the specific specification limits, (i.e., welding, reheat-treat, insert removal, re-installation, etc.) unless prior approval is obtained by the Seller from the Buyer in writing. A deviation in no way affects any contractual requirements until a signed disposition is issued by the Buyer.

**Change in Approved Drawings, Processes, Materials or Procedures:** (Not applicable to distributors), Seller shall not change any drawing, process, material, or procedure without prior Buyer written approval if such drawing, process, material, or procedure was originally approved by Buyer

Seller shall not change any process, material, or procedure from that used to qualify items or which was used by Seller to become a qualified source without written approval by Buyer.

**Re-Submittal of Rejected Items:** Items rejected by Buyer, and subsequently resubmitted to Buyer, shall be clearly identified on Seller's shipping document as resubmitted items. New lot control identification numbers are to be provided, if required.

**Unauthorized Submittal of Production:** When the Procurement Document requires Buyer acceptance of a "first article," Seller shall not submit items from a production run for Buyer inspection prior to Buyer's acceptance of such "first article." (Not applicable to distributors)

**Notification of Facility Change:** (Not applicable to distributors) - Seller shall not use or relocate any production, manufacturing, and/or processing facilities during performance of the work specified on the Procurement Document from those production, manufacturing, or process facilities approved by Buyer without promptly notifying Buyer and affording Buyer an opportunity to examine such facilities for compliance with Quality Assurance requirements.

**B. RESPONSIBILITY FOR CONFORMANCE** Neither surveillance, inspection, and/or tests made by Buyer, or his representatives, or representatives of the Government at either Seller's or Buyer's facility, nor Seller's compliance with all applicable Quality Assurance requirements, shall relieve Seller of the responsibility to furnish items which conform to the requirements of the Procurement Document.

Seller shall control sub-tier procurements to the extent required to assure quality requirements specified in Buyer Procurement Documents are satisfied.

**C. BUYER SURVEYS, SURVEILLANCE, AUDITS, AND INSPECTION** Buyer and/or end customer has the right to conduct surveys, audits, and surveillance of Seller's facilities, or those of Seller's subcontractors, or suppliers with prior coordination with Seller to determine the capability to comply and to verify continuing compliance with the requirements of the Procurement Document.

Buyer and/or end customer has the right to perform inspection at Seller's facilities, or those of Seller's subcontractors, or suppliers with prior coordination with Seller during the period of manufacture and inspection prior to shipment. Final inspection and acceptance shall be performed at the Buyer's facility, unless otherwise specified on the Procurement Document.

**D. CORRECTIVE ACTION REQUESTS** When a quality problem exists with Seller's items, Buyer may forward a Corrective Action Request to Seller. Corrective Action Requests require a response within 15 business days and must include the following information: analysis of the cause of the problem, statement of the action taken to prevent recurrence, and the affectivity of the action. When corrective action is required for Government Source Inspected items, Seller shall coordinate such action with the Government Quality Assurance Representative assigned to Seller's facility.

**E. MEASURING AND TEST EQUIPMENT** Seller shall be responsible for validating the accuracy and stability of tools, gages, and test equipment used to demonstrate that items conform to the Procurement Document. Traceability of calibration equipment and gages shall be to the National Institute of Standards and Technology (NIST) or qualified acceptable certified standard.

Documented schedules shall be maintained to provide for periodic calibration to adequate standards. Objective evidence of calibrations shall be recorded and made available for Buyer review.

**F. NONCONFORMING MATERIAL** Decisions to accept nonconformances (variances from Buyer drawings and specifications) detected at Seller's facilities must be made by Buyer, unless otherwise specified by the Procurement Document. Shipment of nonconforming items must be accompanied by a non-conforming material report.

Seller shall provide for control, segregation, and identification of non-conforming material detected at Seller's facilities.

Seller does not have MRB authority without express written authorization of the Buyer.

Any test samples and/or reject parts to be shipped to Microsembly, LLC. shall be packaged in appropriate packaging medium to protect parts from damage. These items shall be packaged separately from compliant product and shall be labeled with part number, date/lot code, and identified as test samples/reject parts.

**G. INSPECTION \ MANUFACTURING\TEST RECORDS** Seller shall maintain manufacturing records, all inspections and tests performed on items delivered to Buyer. These records shall identify nonconformances and shall be made available for Buyer, Buyer's customer and regulatory review. Period of retention is 10 years from close of order, unless otherwise specified on the Procurement Document. When record retention has expired electronic files are to be deleted and physical documents/samples are to be destroyed through a source that certifies the destruction of material.

**H. SAMPLE INSPECTION** Sample Inspection plans may be used by the Seller when tests are destructive. Sample inspection may replace 100 percent inspection only when approved by the Buyer and when the records or inherent characteristics of the product indicate that a reduction in inspection/testing can be achieved without jeopardizing product quality. Sample inspection must be in accordance with the applicable Buyer specification. When not specified by Buyer specification, military standard sampling plans (e.g., from ANSI Z 1.4) may be used with Buyer approval of acceptable quality levels and accept/reject criteria. Other sample inspection plans must be approved by the Buyer prior to their implementation. All sample inspection plans shall provide valid confidence in specified quality levels.

**I. PACKAGING** Boxes or containers, as applicable, should be selected to the extent necessary to provide protection from physical and environmental damage during shipping and handling. Cushioning materials shall be applied, as required, to protect and to restrict movement of the item(s). The use of packaging "Peanuts" is not authorized unless specifically approved by the Buyer.

**J. BRIGHT TIN FINISH PROHIBITION** Bright tin finishes are prohibited on ANY product delivered to Microsembly LLC unless approved by the buyer.

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**K. COUNTERFEIT PARTS PREVENTION** The Seller shall ensure that only new materials are used in products required to be delivered to the Buyer. To further mitigate the possibility of the inadvertent use of counterfeit parts, the Seller may only purchase components and parts procured directly from the Original Equipment Manufacturers (OEMs), through the OEM's authorized distribution chain, or if through an Independent Distributor per AS5553 and DFARS, Seller must make available to Buyer (if Microsembly, LLC so requests) OEM documentation that authenticates traceability of the components to that applicable OEM. If the required items cannot be procured from these sources, use of product without appropriate traceability documentation from independent distributors (brokers) or other sources is not authorized unless first approved in writing by Microsembly LLC. The Seller must present complete and compelling support for its request and include in its request all actions to ensure the parts thus procured are legitimate parts

**L. QUALITY PROGRAM REQUIREMENTS (ISO9001 & AS 9100)** Seller shall maintain, at a minimum, a Quality System which meets the requirements of ISO 9001 and when required AS9100.

**M. Supplier On-Time Delivery** The seller shall ensure material is delivered upon the agreed date with the Microsembly, LLC Buyer. Unless otherwise indicated by Microsembly, LLC Buyer, on-time deliveries are +3/-5 days from agreed delivery date. Any change in delivery status shall be communicated to Microsembly, LLC Buyer. Suppliers shall maintain an on-time delivery rating of 90% and a quality rating of 95%. Failure to maintain this rating will result in corrective action.

**N. Seller Shall Ensure Persons Are Aware of The Seller** shall ensure that persons are aware of their contribution to product or service conformity, their contribution to product safety and the importance of ethical behavior.

**Q-2 Deleted**

**Q-3 CALIBRATION SYSTEMS REQUIREMENTS (ANSI/NCSL-Z540-1, ISO 10012-1, & 17025)** Seller shall provide and maintain a calibration program, which is in conformance with ANSI/NCSL-Z540-1, ISO 10012-1, and 17025.

**Q-4 SOLDERABILITY** Unless governed by a procuring document (JANTX part, DESC, etc.), Solderability of leads and terminations, for parts manufactured 0 to 3 years, shall comply with requirements of J-STD-002, Category 3, Typical Coating Durability for Tin and Tin-Lead Finish Electronic Component Leads, Terminations, Solid Wire, Lugs, and Tabs. Steam aging for wire and cable shall be limited to 1 hour (J-STD-002, Category 2) with insulation removed. (If the parts are within 3 years, then the solderability requirements can be waived).

Any parts delivered that are over 3 years old from date of manufacture must be accompanied by a C of C that documents that parts have been re-certified to meet above requirements. If testing is not possible at the seller's facility, the buyer can perform the test with acceptance contingent upon positive test results.

**Q-5 SOFTWARE DELIVERY DOCUMENTATION** Seller shall deliver documentation of software as specified in the Procurement Documents. Software documentation shall be sufficient to establish that:

All requirements are achieved, or waivers submitted and approved.

Configuration is correct and deliverables are properly identified and marked.

Planned level of acceptance is achieved and/or deviations/waivers are made part of the deliverable documentation package.

Operating instructions accompanying the developed software are sufficient to enable loading, initialization, and operation by Buyer's personnel.

**Q-6 CONTROL OF PROGRAM PARTS** Seller shall provide and maintain a system for the control of software used in the qualification/acceptance testing of deliverable hardware, software, and firmware to be furnished on this procurement. Seller shall maintain procedures and test records on items delivered to Buyer including test software, and these records shall be available for Buyer review.

**Q-7 ELECTROSTATIC DISCHARGE CONTROL (ANSI/EIA 20.20)** Seller shall provide and maintain a program for electrostatic discharge control for hardware items to be furnished on this procurement. Buyer requirements are as specified in the procurement documents. The Seller's electrostatic discharge control program is subject to review and approval by the Buyer. As a minimum ANSI/EIA 20.20 shall be complied with.

Packaging techniques using MIL-B-81705 Type I, or Type II barrier material or equivalent shall be used in device shipment. A label identifying that the parts are static sensitive shall be attached to the package. (Static sensitive product shall be packaged in ESD-safe packaging).

**Q-8 SOURCE INSPECTION** Inspection by Buyer must be performed at Seller's facility prior to shipment. (Not applicable to Distributors). Seller shall provide reasonable inspection facilities for Buyer to verify conformance to requirements. Buyer Source Inspection may include validation of Seller's automatic test programs, procedures to Buyer specification requirements, witnessing Seller's performance of acceptance testing, and review of acceptance test data to Buyer's specification/drawing.

Seller shall notify the Buyer not less than 3 working days prior to the time items are ready for Buyer Source Inspection. Buyer Source Inspection points may include, but are not limited to:

- First Article
- In-process (i.e., Pre-Cap, Pre-Pot, Inner-Layer)
- Major/Critical Tests
- Final Acceptance

After Buyer Source Inspection, any rework or test of the item, including any nonscheduled entry, such as removal of a panel, cover, or enclosure will void the source inspection, unless otherwise specified on the Source Inspection Report. In case of any nonscheduled entry, rework, or test, Seller shall request Buyer to repeat source inspection.

**Q-9 GOVERNMENT SOURCE INSPECTION** Government inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government Representative who normally services your plant so that appropriate planning for Government inspection can be accomplished.

On receipt of this order, promptly furnish a copy to the Government Representative who normally services your plant, or, if none, to the Army, Navy, Air Force or Defense Supply Agency inspection office. In the event the representative or office cannot be located, our purchasing agent should be notified immediately.

During performance on this order, your quality control or inspection system and manufacturing processes are subject to review, verification and analysis by authorized Government representatives. Government inspection or release of product prior to shipment is not required unless you are otherwise notified.

All work on this procurement is subject to inspection and test by the Government at any time and place. The Government representative who has been delegated Quality Assurance functions on this procurement shall be notified immediately upon receipt of this Procurement Document. If the Government representative is in residence, he shall be notified 2 working days in advance of the time the items are ready for inspection or test; 7 working days otherwise. In the event that the Government representative cannot be contacted, Buyer shall be notified immediately. The Seller, without additional charge, shall provide all reasonable facilities and assistance for the safety and convenience of the Government Representatives in the performance of their duties.

**Q-10 MATERIAL AND PROCESS CONFORMANCE—C OF C Certification of Compliance and/or Certificate of Conformance (C of C)** defined by Military Specifications (Military Standards, Federal Specifications, AN, NAS Documents, etc.), or Standard Military Drawings (SMD's) may be kept on file by the supplier in lieu of being supplied with each shipment. The C of C shall be traceable to the Buyer part number and Purchase Document number and shall identify the date of shipment. The file copy held by the Seller shall be subject to audit by Buyer personnel and discrepancies found will be an input to the Supplier Rating System.

A statement of compliance to the specification is to be included on the Seller's shipping document.

This is to certify that items processed on this order meet all the requirements imposed.

**Q-11 CERTIFICATION OF ANALYSIS—C OF A** A certificate of analysis must accompany material. The C of A shall include: 1) Manufacturer's name; 2) Spec number; 3) Material grade; 4) Material condition; 5) Size; 6) Heat lot; 7) Date code; 8) Chemical analysis, and 9) Physical properties as applicable to material procured.

**Q-12 CERTIFICATION OF COMPLIANCE—C OF C** A certificate of compliance shall be supplied with each shipment of material supplied against this Procurement Document. The certificate shall contain the signer's printed name, be signed and dated by the responsible Seller personnel and shall certify that the material meets all applicable Buyer specification requirements or military/industrial specification requirements. The C of C shall contain the signer's job title. The C of C is to reference the Purchase Document number, lot/date code number, and serial number as applicable.

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### Q-13 RAW MATERIAL DOCUMENTATION REQUIREMENTS

Shipment of metallic raw material must be accompanied by:

A. Manufacturer or mill inspection/test report for the raw material containing:

- Name and location of the raw material manufacturer or mill.
- Material identification by specification number and material condition.
- Manufacturer or mill lot identification number of the raw material.
- Actual chemical and physical test results as specified in the applicable specification.

Certification from Seller containing:

- Name and location of the raw material manufacturer or mill.
- Material identification by specification number and material condition.
- A statement that the raw material meets applicable specification requirements.

B. Shipment of finished or semi-finished items manufactured from raw materials must be accompanied by a certification from Seller containing:

- Name and location of the manufacturer(s) of the raw material(s) and the lot number(s) of the raw material(s) used in the manufacture of the finished, or semi-finished, item(s).
- A statement, that the raw material(s) used in the manufacture of the finished or semi-finished item(s) meet applicable specification requirements.

C. Shipment of nonmetallic raw material must be accompanied by:

Chemical inspection/test report for the raw material containing:

- Name and location of the raw material manufacturer.
- Material identification by specification number.
- Manufacturer lot or batch number of the raw material.
- Actual chemical test results as specified in the application specification.

Certification from Seller containing:

- Name and location of the raw material manufacturer.
- Material identification by specification manufacturer.
- A statement that the raw material meets applicable specification requirements.
- Certification of shelf life.

### Q-14 PRINTED WIRING BOARDS (PWB Designs and designed prior to 1998)

A. Drawing Requirements

Printed Wiring Boards shall be manufactured in accordance with the master drawing.

B. Qualifications and Certifications

The seller shall be certified by DESC to MIL-P-55110, or other certifying activity, to provide product meeting the procurement documentation specified on the master drawing. If during the life of this purchase order certification is revoked, or the certification expires, all efforts against this purchase order will be stopped and the buyer shall be notified in writing within 24 hours. Certification by DESC to appropriate military specifications will be considered acceptable qualification to furnish products to IPC specifications.

C. Buyer Furnished Tooling

It is the responsibility of the Seller to assure that the master pattern, drill tapes, magnetic tapes, and any other software media or hard tooling is acceptable to produce a product that is compliant to this purchase order and the master drawing. It is also the responsibility of the Seller to identify to the Buyer any unacceptable tooling or requirements on the master drawing for direction as to corrective action and schedule impact.

D. Buyer Source Inspection (when required)

Buyer Source Inspection is required at the following:

First Article inspection of each inner layer on each board type. Not required on board type if this inspection has been previously performed on this or any earlier contract.

Final inspection and acceptance of deliverable materials prior to packaging. The buyer reserves the right to witness solderability testing and continuity and circuit short testing.

This clause can only be waived by written authorization of the procurement administrator and quality engineer.

*NOTE: Buyers acceptance of in-process materials does not relieve the Seller of full compliance of the deliverable end item.*

E. Solderability

Solderability shall be performed and evaluated to the requirements of J-STD-003, Solderability Tests for Printed Boards. The shelf life of products meeting the requirements of J-STD-003 will be 1 year from date of manufacture for tin/lead fused finished and 6 months for hot air leveled products. Material delivered will have a minimum of 80 percent of the shelf life remaining. Residual materials with less than 80 percent of the designated shelf life remaining will not be acceptable for delivery.

F. Group A Testing

Unless otherwise specified, all Group A-testing, or quality conformance testing, shall be performed in accordance with the procurement document specified on the master drawing. Sampling is permitted only for dimensions, and plating and solder mask adhesion testing. All other inspections and tests will be performed 100 percent. Any failure within a panel shall be clearly marked on BOTH sides of the printed wiring board. There shall be no co-mingling of discrepant material.

G. Deliverable Data Items

The supplier shall deliver the following along with the final material:

One as received unmounted coupon from each panel so identified to the parent panel. The coupon configuration must support solderability testing to be performed at the Buyer's facility. Coupons shall be individually packaged as specified for the final boards in paragraph H.

- Any Buyer approved Change Requests
- Copy of applicable Source Inspection Reports.
- Copy of applicable Source Inspection Waiver Authorizations.
- Certification of Conformance.
- H. Preparation for Delivery

Boards shall be in packaging that protects against damage and moisture. When feasible a slip sheet between each board shall be added. Boards shall be vacuum packed with a desiccant package and humidity indicator card.

**Q-15 CONTROL OF PROCESSES** The Seller engaged in special processes (example: soldering, brazing, welding, magnetic particle inspection, etching, dye penetrant inspection, plating, casting, heat treating, radiographic inspection) shall have special process approval by the Buyer or NADCAP approved for each process. Personnel shall be military standard or industry standard certified, as required. Unless otherwise specified by the Procurement Document, test results and test coupons required by the process specification, will be retained on file by the process supplier for a minimum period of 10 years. A certification of compliance to the specification requirements is to be prepared by the process supplier and is to accompany each shipment.

The Seller shall maintain a supplier control system for all special process sub-tier suppliers ensuring all processes are documented and controlled. Unless otherwise specified by the Procurement Document, test results and test coupons required by the process specification, will be retained on file by the process supplier for a minimum period of 10 years.

Approval of any process supplier does not in any way relieve Seller of their responsibility to deliver items conforming to the requirements of the Procurement Document.

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**Q-16 CONTROL OF SUB-TIER SUPPLIERS** The Seller engaged in special processes (example: soldering, brazing, welding, magnetic particle inspection, etching, dye penetrant inspection, plating, casting, heat treating, radiographic inspection) shall have special process approval by the Buyer or be NADCAP approved for each process. Personnel shall be military standard or industry standard certified, as required. Unless otherwise specified by the Procurement Document, test results and test coupons required by the process specification, will be retained on file by the process supplier for a minimum period of 10 years. A certification of compliance to the specification requirements is to be prepared by the process supplier and is to accompany each shipment.

The Seller shall maintain a supplier control system ensuring all special process sub-tier suppliers are NADCAP certified for each process performed on deliverable hardware. Unless otherwise specified by the Procurement Document, test results and test coupons required by the process specification, will be retained on file by the process supplier for a minimum period of 10 years.

Approval of any process supplier does not in any way relieve Seller of his responsibility to deliver items conforming to the requirements of the Procurement Document.

**Q-17 TEST DATA** When Buyer specifications require test data to be reported during the performance of acceptance testing, a copy of the recorded data showing evidence of Seller's inspection and verification of conformance shall accompany shipment of items to Buyer.

### Record Retention

After approval by the Buyer's representative, the test report shall be maintained on file by the Seller and shall be available for review for a minimum period of 10 years from date of final payment, unless otherwise specified by the Purchase Document.

**Q-18 Deleted**

**Q-19 CONTAINER MARKING** Each individual container containing the articles to be delivered hereunder must be clearly and permanently marked with:

- Quantity
- Batch or Lot Number
- Date of Manufacture or Shipping Date, whichever controls shelf life limitation
- Hazardous Material Marking, (if applicable)
- Specifications or Material Control Information Number
- Buyer's Part Number
- Manufacturer's Part Number
- Purchase Document Number
- Special Handling Requirements (Refrigeration, Orientation Markers, Magnetized devices, etc...)

Product (chemicals and/or hazardous materials) that has a shelf-life requirement shall be marked with this information and shall have remaining 80 percent of the time from the initial date of certification. (If the product does not meet 80% then Microsembly shall be notified in writing of how much shelf life is remaining. Microsembly will determine whether product will be accepted).

**Q-20 REQUIREMENTS FOR DISTRIBUTORS** Inspection System Requirements (ISO 9001 or AS 9100) Shall Be in accordance with Q-1 stated herein.

Certificate of Compliance Shall Be in accordance with Q-12 stated herein.

Shelf Life (if required)

The mixing of date codes within any single order shall be minimized. Shelf life requirement shall be marked with this information, and shall have remaining 80 percent of the time from the initial date of certification. (If the product does not meet 80% then Microsembly shall be notified in writing of how much shelf life is remaining. Microsembly will determine whether product will be accepted). Chemical materials shall be accompanied by a current revision Material Safety Data Sheet (MSDS)/ Safety Data Sheet (SDS).

Solderability Shall Be in accordance with Q-4 stated herein. (If the parts are within 3 years, then the solderability requirements can be waived).

Electrostatic Discharge Control Shall Be in accordance with Q -7 stated herein.

Approved Suppliers

All parts purchased to a Military Specification shall come from a currently approved QPL manufacturer and be traceable to the manufacturing source.

Part Substitution

Part substitution shall not be allowed. The exact part number as identified on the Purchase Order (MIL-Spec or Supplier Part Number), or the exact part number identified in the purchase item drawing shall be provided. Distributor evaluated parts which meet the purchase drawing shall be communicated with the Buyer prior to delivery for technical evaluation and proper documentation

DPAS (Defense Priorities and Allocations Systems) Orders

The seller shall give priority treatment to rated orders. Rated orders are identified by a priority rating consisting of the rating-either DX or DO and a program identification symbol. Rated orders take preference over all unrated orders as necessary to meet required delivery dates. Among rated orders, DX rated orders take preference over DO rated orders.

The seller shall include the priority rating on each successive order placed to obtain items needed to fill the buyer's rated order. This continues from contractor to subcontractor to supplier throughout the entire procurement chain.

**Q-21 CHEMICAL MATERIAL(S)** Each shipment of perishable material shall have the date of manufacturer imprinted on each container or shall be accompanied by documentation indicating the date of manufacture. Material will not be accepted without this evidence. The shelf life time is measured from the date of manufacture and a minimum of 80 percent of the total available shelf life must be remaining when received. . (If the product does not meet 80% then Microsembly shall be notified in writing of how much shelf life is remaining. Microsembly will determine whether product will be accepted).

Chemical materials shall be accompanied by a current revision Material Safety Data Sheet (MSDS)/ Safety Data Sheet (SDS)

**Q-22 PRINTED WIRING BOARDS** (To be used for PWB Designs, designed, and procured after 1998)

A. Compliance Requirements

Printed Wiring Boards shall comply with supplied documentation. It is the responsibility of the Seller to assure that the design data and documentation is acceptable to produce a product that is compliant to this purchase order and the master drawing. Identification of non-compliant design data or documentation shall be transmitted via Microsembly,LLC. Deviation/Change request form. Any failure within a panel shall be clearly marked on BOTH sides of the printed wiring board. There shall be no co-mingling of discrepant product.

B. Date of Manufacture

All materials delivered shall have a manufacturer date code no older than 3 months prior to date of shipment.

C. Deliverables

The supplier shall deliver the following along with the final material:

- One as received unmounted coupon from each panel so identified to the parent panel. The coupon configuration must support solderability testing to be performed at the Buyer's facility. Coupons shall be individually packaged as specified for the final boards. (These coupons are not required for IPC Class 1 procurements).
- Any Buyer approved Supplier Information Requests.
- Any Buyer approved deviation/change request (ADMF021).
- Copy of applicable Source Inspection Reports (When applicable).
- Certification of Conformance
- Preparation for Delivery

Boards shall be in packaging that protects against damage and moisture. When feasible a slip sheet between each board shall be added. Boards shall be vacuum packed with a desiccant package and humidity indicator card.

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### Q-23 COMPONENT PACKAGING

#### PACKAGING

The seller shall handle and package material in a manner that will assure protection against corrosion, oxidation, deterioration, Electrostatic Discharge (ESD) damage, Foreign Object Debris (FOD), and physical damage during shipment. Bulk packaging may only be used when the component lead integrity is maintained, and material is protected against damage. ESD protective packaging shall be used for all electronic components.

Packaging shall be in accordance with acceptable commercial practices and as indicated i.e., tubes, tape and reel, JEDEC matrix trays, etc. Parts will be packaged in such a manner as to prevent damage to components.

All SMT Quadpacks provided in JEDEC matrix trays shall have pin 1 oriented and loaded into the tray in the same direction.

All packages shall be marked with part number, lot/date code, and suppliers CAGE.

Moisture sensitive product shall be packaged in Moisture Sensitive packaging.

#### TAPE AND REEL COMPONENTS

Axial leaded components shall be provided on Tape and Reel IAW EIA-296, inside tape spacing of Class 1 (2.062 inches). In addition, all reels shall have a minimum of 6 inch leader at the beginning and a minimum of 6 feet leader (tape free of components) at the end of the reel.

If reeling is not possible due to a short length of tape, a six inch leader (free of components) must still be attached to one end of the tape.

#### SURFACE MOUNT PACKAGING

Surface Mount Technology (SMT) components shall be provided on Tape and Reel IAW EIA-481. In addition to this EIA standard, the following items apply. Reel material must be made of plastic. All reels shall have a minimum of 2 inches of carrier and cover tape at the end.

#### TUBE COMPONENTS

Dual Inline Packages (DIP's) and SMT Flatpack may be provided in anti-static tubes. Pin 1 must be loaded consistently for all parts in the tubes. SMT Flatpacks may also be provided on Tape and Reel IAW EIA-481 and the SMT note above. Parts must be secured from movement. Tubes must be greater than 7 inches in length.

#### PEM PACKAGING REQUIREMENTS (Moisture Sensitive Parts)

Suppliers shall "dry" pack all moisture sensitive devices in a moisture barrier bag (MBB) with desiccant and humidity indicator card (HIC), I.A.W. the industry standards EIA-583 and IPC-SM-786.

Supplier shall label all moisture sensitive devices with level, seal date, shelf life and baking instructions I.A.W. JEP-113, and J-STD-020.

#### WAFFLE OR GEL PACKED COMPONENTS

All bare die components shall be packaged in 2"x2" ESD protective waffle or Gel pack tray with a minimum of 2 sheet of sulfur free tissue paper between base and cover. Each single stack waffle tray shall be secured using clip and labeled with part number, quantity, and applicable details of specification. Tape or adhesive label shall not overlap cover to waffle tray.

Waffle or Gel Packed components shall be placed into a nitrogen backfilled ESD protective bag and sealed. Product marking shall be placed on the exterior of ESD bag or be visible through ESD bag on waffle tray.

Components shall be oriented the same direction within waffle or Gel pack.

**Q-24 PROHIBITED MATERIALS** The following materials shall not be contained in any deliverable product except where specified on drawing by note or material specification:

- Cadmium greater than 1% (weight/weight)
- Zinc greater than 1% (weight/weight) unless dry film lubricant or a specific zinc alloy is present and expected.
- Magnesium or Selenium except internal to hermetically sealed devices.
- Unalloyed tin with less than 3 percent (by weight) alloy material.

- Corrosive solder fluxes (Type RA, etc.) unless detailed cleaning procedures are specified, along with appropriate verification methods to ensure removal of residue contaminants.
- Mercury or compounds of mercury.
- All radioactive materials including uranium, potassium, radium, thorium, and/or any alloy thereof.
- Incompatible dissimilar metals shall not be used in conjunction with each other unless specified in drawings or specifications.
- Hexavalent Chromium.
- Polybrominated diphenyl ethers.

**Q-25 PURE TIN PROHIBITED MATERIAL** All Products Supplied on this Purchase Order shall be free of solder, platings, coatings, and claddings that exhibit either of the following:

A. Material composition greater than 97% tin by weight.

B. Tin alloy with composition of less than 3% lead by weight.

This requirement is applicable to the internal and external configuration of the products. If the product is RoHS, then the manufacturer's specification that states RoHS compliance indicates compliance. This requirement is not applicable if the product is tin lead.

The Seller shall notify the Microsembly Buyer prior to any solder, plating, coating and cladding change by the Seller or its Sub-Tier Supplier (s) that would result in said products becoming noncompliant with this Q Clause.

Compliance with this restriction is subject to review by Microsembly, LLC. at any time during the performance of this order.

Noncompliance to this requirement must be approved in writing prior to acceptance of this Purchase Order. The Seller shall notify the Microsembly, LLC. Buyer and submit the noncompliance to the Microsembly, LLC. Buyer for approval.

Required Documentation: A Certificate of Compliance (C of C) shall be supplied with each shipment of material supplied against this Procurement Document. The certificate shall contain the signer's printed name. The C of C shall be signed and dated by the responsible Seller personnel and shall certify that the material meets all requirements specified above, all applicable Buyer specification requirements, and all requirements in the Procurement Document. The C of C shall contain the signer's job title. The C of C shall reference the Procurement Document Number, Part Number, Lot/Date Code and Serial Number as applicable.

**Q-26 CERTIFICATION OF COMPLIANCE**—C of C from Manufacturer A certificate of compliance from the manufacturer shall be supplied with each shipment of material supplied against this Procurement Document. The certificate shall contain the signer's printed name, be signed and dated by the responsible manufacturer representative and shall certify that the material meets all applicable Buyer specification requirements or military/industrial specification requirements. The C of C shall contain the signer's job title. The C of C is to reference the Purchase Document number, lot/date code number, and serial number as applicable.

**Q-27 ELECTRONIC DATA** Electronic files shall be sent as follows:

a. specific assembly shall be in either .pdf or .doc file format

b. each file shall be named in the following format:

- Assembly #, Revision #, purchase order #, & ship date

c. If files are combined into a .zip file format, the file name shall reference each of the enclosed purchase order numbers and ship date. (IE: N12345 mm-dd-yy, N6789 mm-dd-yy, etc.)

d. Any data that is considered Controlled Unclassified Information (CUI) must be encrypted.

e. Files are to be sent either by email to Microsembly buyer, the Microsembly secure/encrypted electronic method, or submitted on a cd-rom/DVD medium and formatted to be compatible with Microsoft Office products.

**Q-28 Domestic Material Requirement** All material used for fulfilling this purchase order must be from domestic stock and wholly manufactured and processed within the borders of the UNITED STATES OF AMERICA. The BUY AMERICAN ACT, FAR 52.225-3, dated January 1989 (In accordance with FAR 25.109[d]), applies.

# MICROSEMBLY

## QUALITY CODES

**Q-29** ITAR Compliance/Restricted Use The supplier shall adhere to the ITAR compliance requirements for performing work or service involving ITAR compliance. In accordance with ITAR 22 C.F.R. 120-130 International Traffic in Arms Regulation, all documents identified as ITAR controlled shall be identified and maintained in Document Control. Documents identified as ITAR controlled shall be viewed only by a U.S. PERSON. A U.S. PERSON means an entity that is: a U.S. Citizen or a Legal Resident, or U.S. organization incorporated to do business in the United States. Seller shall utilize an approved secure method of when transferring ITAR documents to the buyer. (Encrypted email, SFTP, or other approved method). Seller is required to produce a copy of the ITAR registration letter issued by the State Dept. This requirement must be completed prior to commencement of any quoting or buying activity. Failure to provide such documentation within the requested timeframe will result in non- acceptance as a Microsembly supplier.

**Q-30** Private Label (Brand Name) Components The use of private label components are prohibited, only new and authentic electronic components are to be delivered to the Buyer. Microsembly refers to components as surface mount, through hole, or any other components used in the assembly of printed circuit board assemblies. Parts shall be purchased directly from the original equipment manufacturer (OEM) and not through the distributor's private label. If the component requested is a private label device the Microsembly buyer is to be notified and can only be approved by Microsembly Quality Assurance prior to order fulfillment.

**Q-31** Workmanship Supplier shall document and implement workmanship standards with acceptance criteria following the guidance of the workmanship standard defined in the drawings or other documentation. Unless otherwise noted in the PO, Supplier shall utilize latest revisions of IPC-A-610 Class 3, IPC J-STD-001 Class 3, IPC-7711/21, IPC CM-770, MILHDBK-454 and/or MIL-STD-883 as guidelines. For microelectronic packages and covers, JESD9 criteria (part of JEDEC standard) shall be adhered to. It is meant to be used in conjunction with, and to not contradict MIL-STD-883. Supplier shall ensure employees are certified to the appropriate standards and shall make certification records available upon request.