

SYMETRICS INDUSTRIES, LLC.
QUALITY ASSURANCE NOTES
PURCHASE ORDER ATTACHMENT

CERTIFICATION REQUIREMENTS

- Q1.** A Certificate of Conformance is required with each shipment. It will certify that the specified quantity of parts or materials, shipped on the date indicated, are in full conformance with all referenced specifications, drawings and purchase order requirements. This certificate must be signed by a responsible company representative.
- Q2.** A Certificate of Traceability is required with each shipment. This certificate must include a statement as to the quantity of parts or materials shipped, the date of shipment, and must reference the purchase order, drawings and specifications to which the material conforms. In addition, it must show traceability to a specific manufacturing control identifier by means of a lot, batch or date code reference. If the material was not manufactured by the supplier, the actual producer must be identified. This certificate must be signed by a responsible company representative.
- Q3.** All certificates supplied must be verified by the signature and/or stamp of the cognizant Government representative.
- Q4.** A Certificate of Composition showing the results of physical or chemical tests will be furnished to Symetrics, but may be for a generic or typical batch or lot.

SYSTEM OR SPECIFICATION REQUIREMENTS

- Q5.** A Certificate of Acceptability is required. This certificate will show either actual test data for the items supplied or proof that the original design met the Specification or Industry Standard. For actual data, this certificate will show the results of physical, electrical or chemical tests, traceable to the material actually shipped, and must be furnished with each shipment.
- Q6.** The supplier shall maintain a quality system, which fully complies with the requirements of MIL-Q-9858A. or equivalent This system is subject to review and approval by Symetrics at all times. Maintenance of the system does not relieve the supplier of the responsibility for meeting all other requirements of the Purchase Order and the obligation to deliver an acceptable product.
- Q7.** The supplier shall maintain an inspection system which fully complies with the requirements of MIL-I-45208A and traceable to N.I.S.T. This system is subject for review and approval by Symetrics at all times.
- Q8.** Suppliers shall maintain inspection and test records in accordance with best commercial practices. This data will be available for review by Symetrics as required.
- Q9.** All equipment delivered against this Purchase Order will be fully and traceably calibrated by a system with the requirements of MIL-STD-45662. (ISO-10012, ANSI-Z540)
- Q10.** Parts or materials will be processed in accordance with the Military or Federal specification referenced on the purchase order, drawings or specifications, and the material will be certified to be in full conformance with these Government documents. The actual manufacturer of the material must be qualified to the specification and listed on the appropriate qualification list.

DATA REQUIREMENTS

- Q11.** The material supplied against this order requires a “critical process” in its fabrication. Evidence of objective certification of the process and/or operators must be provided to Symetrics for inspection as requested.
- Q12.** Special testing must have been performed to the appropriate subgroup(s) in accordance with the requirements of the referenced specification, and objective evidence of results will be provided.
- Q13.** Generated test data will be on file at the manufacturer’s facility, and will be available for review by Symetrics as required.

Q14. Requested test data must be furnished with the material shipped against this order.

ACCEPTANCE REQUIREMENTS

Q15. Objective evidence of inspection and/or test data must be retained for three (3) years at supplier's facility for review by Symetrics and/or Government Representative.

Q16. Materials on this order will be inspected/tested upon receipt at Symetrics to verify full conformance to all specified requirements. Failure to meet any specifications may result in immediate rejection and return of the material at the supplier's expense.

Q17. The material will be inspected/tested by a representative of Symetrics at the supplier's facility prior to shipment. Evidence of inspection must be shown by inspector's signature or stamp on shipping documents. Final acceptance is at destination. A minimum of three (3) days notice is required prior to shipment. Adequate facilities and personnel will be made available by the supplier to support this activity.

Q18. This material is subject to evaluation by a Government representative prior to shipment. 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. If the supplier has a difficulty in locating a Government representative, Symetrics' Purchasing Department will provide assistance. Shipping papers for each lot shipped must bear evidence of Government surveillance in the form of authorized Government Quality Assurance Representative signature and/or stamp.

Q19. The supplier shall not make any design, material, or workmanship changes from the initially supplied product to the product supplied against this Purchase Order, without specific written approval from Symetrics.

Q20. The material on this order is considered to have a limited shelf-life, and must be so identified. Each container must bear a mix, batch, cure, date, and a "not to be used after" date. All storage condition limitations must be clearly detailed on each label. At the date of receipt by Symetrics, at least two-thirds of such designated use life must still be remaining, or the material may be returned for replacement.

Q21. Test specimens or coupons, as required by controlling specification, drawing, or Purchase Order notes, must be included in each shipment against this order.

Q22. Special quality provisions, as listed on the face of this Purchase Order, apply to this order.

Q23. A "First Article" Inspection for all requirements shown on the control drawing and/or specification will be performed in the presence of a Symetrics Representative at the supplier's facility.

Q23A "First Article" Inspection for all requirements shown on the control drawing and/or specification will be performed without the presence of a Symetrics Representative at the supplier's facility. First Article inspection data for all drawing and/or specification requirements shall be supplied with first shipment of each part.

For PCB's COMPLY TO SIF-QA-104C.

For MACHINED PARTS COMPLY TO SIF-QA-104C

Q23B "First Piece Inspection". The first time that a supplier produces an item for Symetrics. (or if it has been greater than twelve months since the last production of that item), that item shall be accompanied by a copy of the supplier's normal test and/or inspection data. The supplier's format is acceptable. **For PCB's COMPLY TO SIF-QA-104C**

For MACHINED PARTS COMPLY TO SIF-QA-104C

Q23C "Supplier Inspection Data". Each time that a supplier produces an item for Symetrics., that item shall be accompanied by a copy of the supplier's normal test and/or inspection data. The supplier's format is acceptable. In the event that the supplier's data is, electronic only in nature, a hard copy listing of the sampling levels and inspection criteria initiated by the inspector may be substituted. **For PCB's COMPLY TO SIF-QA-104C**

For MACHINED PARTS COMPLY TO SIF-QA-104C

Q23D "Quality Assurance Conditions – Brokered Stock" – Reference **SIF-QA-104C Rev A – pages 6 and 7.**

Q24. The product must be packaged in the best commercial fashion for Electrostatic Discharge (ESD) protection. Acceptable packages include static dissipation bags, conductive foam, foil impregnated bags, static dissipation tubes, etc. No clear or untreated plastic or white foam packaging will be allowed.

Q25. The materials will be packaged, handled and stored in conditions compliant to MIL-STD-1686, EIA-625 and DOD-STD-HDBK-263. The classification of material for susceptibility to electrostatic discharge will be by the aforementioned specifications.

Q26. Supplier & Sub-tier Audits

Symetrics and Symetrics' customer Quality Assurance representative may elect to verify the quality of work and materials at the supplier's facility, or at the supplier's sub-tiers for material intended for incorporation into Symetrics products at any production state. Such sub-tier verification will be requested through Symetrics' Quality Assurance function and will be performed jointly with Symetrics supplier.

PURCHASE CLASSIFICATIONS

Q27. Not Used.

Q28. Not Used.

Q29. Not Used.

Q30. Safety documents are required to be submitted to Symetrics, such as Material Safety Data Sheets (MSDS).

Q31. Item must meet solderability requirements of MIL-STD-202F, Method 208E or J-STD-002 (parts) or J-STD-003 (boards)

Q32. Manufacturer must be certified to MIL-P-55110. Note: If manufacturer is not certified to MIL-P-55110 but manufactures in compliance to that specification, they must receive prior approval from Symetrics to build product.

Q33. This item must meet the requirements of and MIL-P-50884

Q34. Polytetrafluoroethylene tubing shall conform to ASTM-D-3295.

Q35. Heat shrinkable tubing shall conform to MIL-I-23053, except that the use of polyvinylchloride tubing is prohibited.

Q36. Extruded vinyl plastic tubing shall conform to MIL-I-7444, Type 1 or MIL-I-22076.

Q37. Supplier shall notify Symetrics of any special handling required for material being supplied to Symetrics. This notification may be shipped with the material or noted on the packing slip.

QI xxxxx This is an Internal Symetrics Quality note ONLY and does not affect Suppliers. All these notes will begin with "QI".

Quality Requirements for Suppliers of Printed Circuit Boards (Double Sided and Multi Layer)

First Article Build

- A) Table 1-0 and referenced sampling plans are to be used for all Group A Inspection, Acceptance Testing and Electrical Test of First Article Builds.

Table 1-0

	<u>Electrical Test</u>	<u>Visual Inspection</u>	<u>Dimensional</u>	<u>Microsection</u>
MIL-PRF-55110	100%	100%	MIL-PRF-55110F Table A-III & Table C-I	MIL-PRF-55110F Group A Inspection Table A-III
IPC-6012A				
Class 1	100%	100%	Table 4-2, Index Value 4.0	Table 4-2, Index Value 1.0
Class 2	100%	100%	Table 4-2, Index Value 2.5	Table 4-2, Index Value 0.10
Class 3	100%	100%	Table 4-2, Index Value 2.5	Table 4-2, Index Value 0.10

Production Build

- A) Table 2-0 and referenced sampling plans are to be used for all Group A Inspection, Acceptance Testing and Electrical Test of Production lots.

Table 2-0

	<u>Electrical Test</u>	<u>Visual Inspection</u>	<u>Dimensional</u>	<u>Microsection</u>
MIL-PRF-55110	100%	100%	MIL-PRF- 55110F Table A-III & Table C-I	MIL-PRF-55110F Group A Inspection Table A-III
IPC-6012A				
Class 1	100%	100%	Table 4-2, Index Value 6.5	As specified per Table 4-2 & 4-3
Class 2	100%	100%	Table 4-2, Index Value 4.0	As specified per Table 4-2 & 4-3
Class 3	100%	100%	Table 4-2, Index Value 4.0	As specified per Table 4-2 & 4-3

Panelization

- A) Follow guidelines provided in Array Panel Drawing 5100-0-001.

Documentation (to be supplied with each shipment)

- A) Samples taken for board dimensions are to be from different panels and locations in a production lot. Serial numbers and actual readings are to be recorded for each sample taken.
 B) Evidence of 100% Electrical test must be recorded on a C of C and the number passed/ failed must be identified.
 C) A micro section report must include inspection criteria, actual measurements and serial numbers.

- D) A general C of C insuring all boards meet or exceed all requirements as called out on the drawing; specification built to and or purchase order.

Solder Sample (to be supplied for each manufacturing lot)

- A) A portion of one PCB from each manufacturing lot must be tested and inspected in accordance with J-STD-003.
- B) The remaining untested portion of the PCB used for the solder sample must be supplied as well.
- C) Samples supplied must be clearly marked as Solder Sample Test Specimens.

Quality Requirements for Suppliers of Machined Parts

First Article Requirements (Items listed shall be delivered with Machined parts.)

- A) All drawing dimensions shall be measured and recorded on each F/A unit produced.
- B) Material Certifications
- C) Special Process Certifications (Paint, conversion coat, etc.)
- D) List of equipment used for hardware acceptance and calibration dates.

Production Build

- A) All dimensions shall be measured and recorded on a sample basis.
- B) Symetrics Quality Assurance Manager or designee shall approve supplier sampling plan prior to start of production.
- C) Sampled units shall be identified and recorded data delivered with shipment.

Purchase Order Attachment

Quality Assurance Conditions – Brokered Stock

REQUIREMENTS

- Broker must meet the same Certificate of Conformance requirements as those required from an OEM or Franchised Distributor. If the certificate requirement cannot be met, the inspection and test requirements defined below must be met.
- Broker must also provide their own certification that warrants parts to be “original” (that is not refurbished or reworked). If Broker cannot provide this certification, the parts may not be procured.
- Broker is responsible to validate any Mil-Spec Electronic Component delivered against a Symetrics Industries purchase order to have a date code that falls within the time frame listed in the QPL/ QML and the Manufacturers Designating Symbol. The broker shall assure the date code and the manufacturers location are within all time constraints of the QPL/QML, *See Note Pg. 7

INSPECTION AND TEST REQUIREMENTS

In the event that any source of supply cannot provide a Certificate of Conformance certifying the component provide is the part number being procured on the Symetrics Purchase Order AND establishing traceability to the Original Equipment Manufacturer, the component may only be procured if the following inspection and test requirements are met. All inspection and testing performed to satisfy the conditions of this QAC shall be performed by a 3rd party test laboratory. The test laboratory must be capable of complying with Symetrics’ test requirements as defined below. The Broker or Independent Distributor is responsible for ensuring the required testing is performed and that test results for the product supplied to Symetrics Industries, LLC are compliant.

The term “Lot Acceptance Testing”, as used herein, shall be defined as: Lot testing at specified temperature range, as defined in the OEM device data sheet. The data sheet may identify these requirements as Group A testing, critical parameters, or key performance parameters.

Integrated Circuits (IC):

- The component supplier must verify that the physical attributes of the package meet the data sheet specifications and that the case/package marking is consistent with the marking requirements given in the OEM device data sheet and, if applicable, the Symetrics drawing.
- The component supplier must de-lid a minimum of one (1) sample IC from each data or lot code.
- Confirm and document that the device die is a product of the OEM indicated on the case/packaging marking.
- Contact the OEM to obtain verification that the die and case/package markings, as well as date/lot codes are valid. If the verification is provided, the lot is acceptable with little or no further testing.
- If OEM date and lot codes are NOT valid or OEM verifies they DID NOT manufacture the part, the lot must be rejected.
- If OEM verification cannot be obtained, Lot Acceptance Testing, as defined below, must be performed.

Perform Lot Acceptance Testing, if required:

- If OEM verification cannot be obtained, perform Lot Acceptance Testing, as specified on the device data sheet and, if applicable, the Symetrics drawing.
- Sample size: As specified on the OEM’s data sheet. If no sample size is specified, it shall be 116/0. That is, a sample size of 116 randomly selected from each lot/date code and submitted to the specified testing.
- If the lot size is less than the required sample size (116), each and every device in the lot must be tested and all failed devices removed from the lot.

- If any device in the sample fails any parameter in the lot acceptance testing, each and every additional device in the lot shall be tested on the same test set-up for all parameters in the test, and all failed devices shall be removed from the lot. If this testing results in a percent defective greater than 5 percent, the results shall be submitted to Symetrics for lot disposition prior to use of any device in the lot.

Components that are not Integrated Circuits

- The Component Supplier must verify that the physical attributes of the package meet the data sheet specifications and that the case/package marking is consistent with the marking requirements given in the OEM device data sheet and, if applicable, the Symetrics drawing.
- Contact OEM to obtain verification that case/package markings and date/lot codes are valid. If the verification is provided, the lot is acceptable with no further testing.
- If OEM date and lot codes are NOT valid or OEM verified they DID NOT manufacture the part, the lot must be rejected.
- If OEM verification cannot be obtained, perform Lot Acceptance Testing, as specified on the device data sheet and, if applicable, the Symetrics drawing.
- Sample size: As specified on the OEM's device data sheet. If no sample size is specified on the OEM data sheet, sample size shall be 116/0. That is, a sample size of 116 shall be randomly selected from each lot/date code and submitted to the specified testing.
- If the lot size is less than the required sample size (116), each and every device in the lot shall be tested and all failed devices removed from the lot.
- If any device in the sample fails any parameter in the lot acceptance testing, each and every device in the lot shall be tested on the same test set-up for all parameters in the test, and all failed devices shall be removed from the lot. If this testing results in a percent defective greater than 5 percent, the results shall be submitted to the Symetrics buyer for lot disposition prior to the use of any devices in the lot.

DOCUMENTATION REQUIREMENTS

Documentation requirements shall be in accordance with this QAC and/or as directed by Symetrics purchase order.

***Note: QML-QPL**

Qualified Manufacturers List (QML). A list of manufacturers' qualified processes and materials at each facility that have been successfully subjected to a defined set of qualification and periodic tests using processes, worst case designs or materials, to verify the end product's design, performance, quality, and reliability meet all the applicable specification requirements.

Qualified Products List (QPL). A list of products or families of products that have successfully completed the formal qualification process (including all specified periodic tests) that examines, tests, and verifies that a specific product design meets all the applicable specification requirements.