



Solutions for Next Gen EW / Radar Test & Deployment

## Complete Listing of Giga-tronics/Microsource PO QA Clauses

**Quality Requirements:** Seller shall meet the requirements of the clauses specified on the purchase order and as defined in detail within this document and all applicable requirements therein in effect as of the date of this PO. Seller shall maintain Internet access for obtaining requirements of this PO. Acceptance of a Purchase Order where these clauses are called out is considered evidence of acceptance of all clauses.

Seller must comply with all applicable statutory and regulatory requirements.

### P1 Certificate of Compliance

- Seller shall:
  - prepare a certificate of conformance (“CoC”) to assert the Items contained with the shipment are in compliance with all applicable requirements of this PO; and
  - annotate in the delivery package any exceptions, e.g. variances, Supplier Quality Assurance Report (“SQAR”), Advanced Engineering Authorization (“AEA”), etc;
  - ensure the CoC is signed by a Seller’s quality representative, and
  - include a copy of the CoC inside the shipping container and with shipping documents.
  - Provide a copy of CoC from any external sources used including plating sources and heat-treating sources.
- The certification shall as a minimum contain the following:
  - Seller’s name and address
  - Date certification issued
  - Buyers purchase order number and line item
  - Governing specification, when applicable
  - Part number (Sellers and/or Buyers)
  - Lot/serial number/ or model number (Sellers), when applicable
  - Signature of an authorized QA Representative
  - MIL specification, when applicable

### P2 Domestic Specialty Metals

- Metal fabrication must comply with DFARS clause 252.225.7014 for Domestic Specialty Metals. DoD’s interpretation of this specialty metals clause (DFARS 252.225-7014) is that it prohibits the contractor (including its suppliers at every tier) from incorporating into military parts, components, and/ or end item deliverables “specialty metals” (identified in the clause, including titanium and stainless steel) which have been melted outside the United States, its possessions, or Puerto Rico, unless certain limited exceptions set forth in the clause or DFARS Subpart 225.7002-2 apply. One such exception is for specialty metals melted in a qualifying country or incorporated into an article manufactured in a qualifying country. Those countries are listed at DFARS 225.872-1(a) or (b). Since the United States is not listed as a qualifying country, DoD does not consider it to be a qualifying country. Even if a qualifying country exception applies, the source for specialty metals melted outside the United States may also have to be listed in an applicable Qualified Products List (QPL), such as set forth in Douglas Material Specification (DMS) 2201, “Procurement From Foreign Sources – Metallic Raw Material”. Please check your purchase order carefully for any such requirement. If your purchase order contains this requirement, you must comply with its provision. If your organization is issued a purchase order with specialty metals clause, compliance to this requirement is required and this includes your sub-tier suppliers to ensure that no foreign



## *Solutions for Next Gen EW / Radar Test & Deployment*

melted specialty metals are utilized to fabricate any sold product to Giga-tronics from a non-qualifying country. If your organization needs further information and/or assistance on this matter, then please contact Giga-tronics Purchasing Department.

### P3 SCD Revision Controlled Documentation

- Giga-tronics/Microsource supplied SCD (Specification Control Document) shall be used by the supplier and no product changes are to be made to this SCD without an approved Giga-tronics deviation. Product is to be built to the current supplied revision noted on the SCD. All SCD built product shipped shall be properly identified with the SCD part number and the current revision number.

### P4 Deviations and Repair

- No material Deviations to the specified ordering product requirements
- No Repair to the specified ordering product requirements
- No nonconforming USE AS IS material to the specified product ordering requirements, Seller to notify Buyer on any nonconforming material to the Buyers ordering requirements
- No manufacturing facility location changes without prior notice to Buyer
- As set forth on the body of the PO, as stated - any exceptions “to the above” must be noted on the Buyers PO authorizing the Seller to proceed with product order completion.

### P5 Part Number or Revision Referenced on Product Ordered

- Seller to reference part number or revision on all products ordered.

### P6 Seller to Maintain an Effective Quality System

- Seller shall fully incorporate all necessary measures and controls to assure a consistent quality-controlled product.

### P7 Source Inspection

- Giga-tronics/Microsource reserves the rights for Source inspection with confirmation between Buyer and Seller When this is a requirement, it will be noted on the purchase order.

### P8 On-Site Audits, Surveys & Right of Access

- Supplier shall grant Giga-tronics/Microsource, their customers and/or regulatory agencies the right to perform periodic on-site supplier audits and surveys, the right to all quality management system documentation and applicable records, & the right of access to supplier’s, and their sub-tier supplier’s facilities, that are involved with this purchase order.

### P9 Supplier Flow Down to Sub-tier Suppliers

- Supplier flow down to sub-tier suppliers is required for all Giga-tronics purchasing requirements, including key characteristics and customer-specific requirements.



## Solutions for Next Gen EW / Radar Test & Deployment

### P10 Supplier Record Retention

- Seller shall:
  - maintain complete records of the following:
    - all manufacturing, inspection, test, CoC, and shipping; and
    - all nonconforming material, dispositions, assignable causes, corrective and preventive actions, and effectiveness of corrective actions; and
  - make records available for at least 7 (seven) years or for longer periods if specified elsewhere in this PO; and
  - upon Buyer's request, forward records to Buyer at no additional cost, price, or fee to Buyer.

### P11 Special Testing Requirements

- Special testing requirements to be supplied when specified on the body of the PO such as test samples required, 1<sup>st</sup> articles, etc.

### P12 Control of Nonconforming Product / Material Review Process

- Buyer and Buyer's customers have the right to refuse to accept any and all Seller nonconformances.
- Seller shall ensure Seller's quality system has capability to report nonconformance(s) on CSI in full compliance with Defense Federal Acquisition Regulation Supplement ("DFARS") 252.246-7003.
- \*When Buyer's customer has delegated oversight/surveillance of Buyer's work to a cognizant Government representative at Seller's facility, Seller shall submit all material review dispositions for Buyer-related work to the cognizant Government representative, regardless of ownership of design and regardless of tier level for concurrence.
- Buyer has the right to limit or eliminate Material Review processing on work defined by this PO.
- MR for Seller designed, or Buyer-designed Items is not applicable to Buyer-Furnished Equipment (BFE).
  - BFE is equipment or Items provided to Seller from Buyer; therefore, not procured or built by Seller. Seller's continued processing, prior to obtaining Buyer's MR disposition, of any nonconforming BFE shall be at Seller's risk.
  - Seller shall request Buyer MR Disposition.
- For Seller-designed Items, Material review dispositions are limited to non-conformances that do not affect a parameter controlled by Buyer drawing or specification, where form, fit or function, interchangeability, Critical Safety Characteristic (CSC) related to Critical Safety Item (CSI) service life or reliability is affected. Seller shall submit requests for recommended disposition of non-conformances, if any, affecting any such parameter(s) to Buyer for Major Variance approval as defined in this PO.
- For Buyer-designed Items, Seller Material review process is limited to scrapping of Items, eliminating the nonconformance by rework to engineering, or returning to vendor. Seller shall request repair or Use-as-Is disposition from Buyer's MRB. Seller's continued processing shall be limited to subsequent operations that do not hide, alter or limit the ability to inspect, disposition or repair Item unless Seller has received written approval from Buyer. When Buyer has delegated MR to Seller for Buyer-designed Items, Seller's process shall be limited to the scope provided in the MR delegation.

Seller's request for Buyer MR Disposition of Seller or Buyer-designed Items shall be submitted in writing via email to the buyer.



## *Solutions for Next Gen EW / Radar Test & Deployment*

- When requested by Buyer, Seller shall provide Buyer's Supplier Quality Engineer with Seller's MRB disposition information related to Buyer's Item(s).

### P13 Acceptance Test Procedure

- Acceptance test procedure to be submitted for approval when specified on the body of the PO. Acceptance testing shall be performed prior to shipment. Acceptance testing shall be performed to the seller's prepared Acceptance Test Procedure approved by Giga-tronics/Microsource. Seller shall show evidence of formal Giga-tronics/Microsource approval of the test procedures, when requested.

### P14 Test Data

- Test data in accordance with specification requirements shall be available for product shipments. Data shall include, as a minimum, results of the specific testing and objective evidence that the test data required is valid.

### P15 Transportation Packaging

- Proper transportation packaging shall be accomplished for maximum protection against physical damage and shipment damage.

### P16 Quality/Delivery/Service

- Giga-tronics/Microsource monitor's supplier's "Quality/Delivery/Service" and expects the same from all of our suppliers. Suppliers are expected to maintain good quality standards, on-time delivery and maintain good service with competitive cost for product ordered.

### P17 No unauthorized deviations to PO's

- No deviations to the Giga-tronics/Microsource PO are allowed without a written purchase order amended notice.

### P18 QUF03019 "Statement of Work"

- The seller shall comply with the Giga-tronics/Microsource QUF03019 "Statement of Work". This QUF03019 "Statement of Work" is utilized by Giga-tronics/Microsource contract manufacturers (CM) and Giga-tronics Turnkey suppliers. This file is available for download at: <https://gigatronics.com/quality/>

### P19 Optical Inspection

- Automatic Optical Inspection System (AOI) as per TR7100EP optical diagnostic system or the equivalent shall be used for all printed circuit assemblies.

### P20 (ICT) Performed In-Circuit Test

- (ICT) Performed In-Circuit Test, using Giga-tronics/Microsource Test Fixtures/Programming for Giga-tronics/Microsource Printed Circuit Assemblies and ICT test data shall be supplied with product shipments when required by the purchase order.

### P21 Soldering Workmanship Standards

- Soldering Workmanship standards shall comply to the latest revision of ANSI/IPC-A-610, Class II for Giga-tronics SCD specifications and Class III for Microsource SCD specifications.

# Giga-tronics

## Solutions for Next Gen EW / Radar Test & Deployment

### P22 Rework, Modifications and Repair of Electronic Assemblies

- Rework, Modification and Repair of electronic assemblies shall to the latest revision of ANSI/IPC-7711/-7721 and to Giga-tronics/Microsource SCD specifications.

### P23 Hybrid Workmanship Standards

- Hybrid Workmanship assembly standards shall comply to the latest revision of MIL-STD-883, Method 2032, 2017 & 1017 and to Giga-tronics/Microsource SCD specifications.

### P24 Static Sensitive Product

- Static Sensitive Products shall be in compliance to the latest revision of ESD MIL standard MIL-STD-1686.

### P25 Special Packaging

- Special packaging shall be supplied when specified on the body of the PO such as requested Waffle packaging, Gel packaging, etc.

### P26 Compliance to the Approved Manufacturers Part Number

- Seller must comply to the Approved Mfg. part number when specified on the body of the PO.

### P27 Shelf Life Product

- Shelf Life products ordered shall have at least two-thirds of un-expired life remaining when received at Gigatronics/Microsource.

### P28 Counterfeit Parts / Material Prevention:

- Seller shall establish and maintain a Counterfeit Parts / Material Prevention and Control Plan using SAE AS-5553 (Ref. elements of Section 4) and/or AS6174 (Ref. elements of Section 3) to ensure that Counterfeit Work is not delivered to Buyer. The purpose of Seller's Plan shall be to develop a robust process to prevent the delivery of counterfeit commodities and control commodities identified as counterfeit.
  - For purposes of this clause, Work consists of those commodities delivered under this Contract that are the lowest level of separately identifiable items (e.g., articles, components, standard hardware, goods, raw materials and assemblies). "Counterfeit Work" means Work that is, or contains, items misrepresented as having been designed and/or produced under an approved system or other acceptable method. The term also includes approved Work that has reached a design life limit or has been damaged beyond possible repair but is altered and misrepresented as acceptable.
  - Seller shall only purchase products to be delivered or incorporated as Work to Buyer directly from the Original Component Manufacturer (OCM)/Original Equipment Manufacturer (OEM), OCM/OEM authorized distributor chain, Aftermarket Manufacturer, or Authorized Reseller. These products shall have verification that Work is traceable to OCM/OEM; OCM/OEM authorized distributor chain, Aftermarket Manufacturer, or Authorized Reseller that identifies the name and location of all the supply chain intermediaries from the part manufacturer to the direct source of the product for the Seller. Work can only be acquired from independent distributors or brokers in cases of diminishing material supply (DMS) or obsolescence and shall be subjected to a



## Solutions for Next Gen EW / Radar Test & Deployment

screening process appropriate to the commodity in accordance with the Counterfeit Parts / Material Prevention and Control Plan.

If traceability is not obtainable, written notice shall be provided to the Supplier Quality Engineer and Buyer prior to delivery with records of evidentiary tests and inspections performed and conformance of the product to specified acceptance criteria that ensures verification activities taken to assure authenticity. Written notice is not required for raw material and standard hardware purchased from independent distributors or brokers, but products must be able to provide commodity level traceability to the Original Manufacturer.

- Seller shall notify Supplier Quality Engineer and Buyer in accordance with 2.2 with the pertinent facts if Seller becomes aware or suspects that it has furnished Counterfeit Work. Seller shall provide to Supplier Quality Engineer and Buyer, upon request, the supply chain traceability to an Original Manufacturer or authorized distributor chain that identifies the name and location of all the supply chain intermediaries from the part manufacturer to the direct source of the product for the Seller.
- Seller shall include this clause or equivalent provisions in lower tier subcontracts for the delivery of items that will be included in or furnished as Work to Buyer. Sellers eligible for utilization of the Government-Industry Data Exchange Program (“GIDEP”) shall utilize the GIDEP process to alert the industry of encountered counterfeit parts.
- Also see Gigatronic’s “Policy on Avoidance, Detection, Mitigation, And Disposition of Counterfeit Electronic Parts” MKF01025 by visiting our website: <https://gigatronics.com/quality/> and opening the Conflict Mineral Policy Statement document.

### P29 Independent and Authorized Distributors

- Preferred suppliers are to have IDEA (*Independent Distributor Electronic Association*) certification & ISO certification. It is a requirement and expected that unless otherwise stated on the PO, all orders are being placed with authorized distributors for the part(s) ordered. If Seller is not an authorized distributor, Seller must notify Buyer in writing prior to confirming order that they are not currently an authorized distributor for the materials being ordered. Seller is to warrant against any counterfeit shipments and no pulls/no used parts shall be provided by Seller. Giga-tronics may request the following Vendor criteria conditions when stipulated in the PO line Item covering: component x-ray required, de-lidded/de-capped, submit photographs on parts being supplied, and submit part samples for Giga-tronics/Microsource electrical testing & component date code restrictions.

### P30 QUF17026 “Statement of Work (AS9100 Programs)”

- This Statement of Work takes precedence over QUF03019 when noted in the body of the PO. This QUF17026 “Statement of Work” is utilized by Giga-tronics/Microsource contract manufacturers (CM) and Electronic Turnkey suppliers. This file is available for download at: <https://gigatronics.com/quality/>



# Giga-tronics

Solutions for Next Gen EW / Radar Test & Deployment

## P31 Purchase Order Exclusivity

- Giga-tronics/Microsource Purchase Orders will take precedence over all other requirements. Unless noted on the PO then the Purchase Order controls all procured product requirements.

## P32 CAM File Precedence

- CAM file(s) supplied with PO take precedence over the drawing. In the event of a conflict between the CAM file(s) and the drawing, the supplier shall notify Giga-tronics/Microsource Purchasing.

## P33 Raw Material Certifications and Validation

- Supplier shall maintain a copy of all procured raw material and plating/finishing certifications from sub-tier suppliers. Such certifications shall be available for review upon request by Giga-tronics/Microsource OR shall be furnished to Giga-tronics/Microsource if the PO includes a First Article requirement. Certifications shall include material description and specification. This requirement does not apply if Giga-tronics/Microsource has supplied consigned material for use by the supplier. Validation test requirement: Seller shall periodically validate test reports for raw material accepted on the basis of test reports and c of c's. That validation shall be accomplished by Seller or other independent party through periodic, scheduled tests of raw material samples. Schedules for frequency of tests will be established by Seller based on historical performance of the raw material supplier.

## P34 Serial Number Labeling on Printed Circuit Board Assemblies

- Supplier shall supply serial number labeling on production printed circuit board assembly units and utilize the 1<sup>st</sup> alpha sequence as the suffix to the name of the supplier & then use the next two numerical digits as the year & then the next two numerical digits as the week, followed by four sequential numerical numbers. The serial number labeling shall be located next to the assembly part number labeling on the board unless otherwise specified on the supplied drawing.

## P35 Machined and Sheet Metal Parts that are plated or have Chromate Conversion

- Sheet Metal and Machining Drawings that specify Chromate Conversion coating:  
Mil-C-5541 Will contain Hexavalent Chrome (Early Version Spec)  
Mil-DTL-5541F Specific to Type I Gold in Color (Hexavalent Chrome) (Up to date version Spec)  
Mil-DTL-5541F Specific to Type II Clear in Color (non-Hexavalent Chrome) (Vendor Using Tri Chrome Product.

For All parts with Hexavalent Chrome, the plating must be performed by a Boeing Approved NADCAP certified source. Please see:

<http://active.boeing.com/doingbiz/d14426/GetAllProcessors.cfm> for updated approved NADCAP sources.

C of Cs from external plating sources must be provided.

## P36 Cancellation

- Buyer may at its option cancel the Purchase Order without liability due to pro-long delivery delays exceeding a one-week period with no advance notice received from Seller or un-resolved quality issues with no corrective action response received from the Seller exceeding 30 days.

## P37 Confidentiality

- Any information regarding our intellectual property is to remain confidential. Buyers supplied documentation shall be treated as confidential. There shall be no disclosure to a third party of our

# Giga-tronics

## Solutions for Next Gen EW / Radar Test & Deployment

confidential information for any purpose other than your performance under this order without prior written consent from buyer.

### P38 Quality System Changes & Relocation

- Seller shall notify Buyer's Supplier Quality Engineer, in writing, within 10 days of any of the following:
  - change in its quality system status; or
  - loss of third party registrar's certification status; or
  - change in Seller's quality organization, process or procedures that affects conformity of any Item; or
  - adverse action taken by Seller's customer, the Government, the Federal Aviation Agency ("FAA"), or the Civil Aviation Agency ("CAA") to include any of the following:
    - Issuance of a Level II Corrective Action Request ("CAR") associated with Buyer Items
    - Issuance of any Level III CAR
    - Suspension of Government Source Inspection ("GSI")
- Seller shall notify Supplier Quality Engineer and Buyer, in writing, at least 90 days in advance of any sale, relocation, or transfer of Seller's manufacturing operations. Seller shall include the following, as a minimum, in the written notification:
  - purpose of the relocation,
  - address of the new location(s),
  - assessment of actual or potential impact to current POs,
  - risk mitigation plan to ensure compliance to existing requirements,
  - plan defining the identification, storage, protection, retrieval and retention of records,
  - master schedule and timeline of relocation activities, and relocation Coordinator/Point of Contact

### P39 Language

- Upon request by Buyer, Seller shall provide all Seller records, reports, specifications, drawings, inspection and test results and other documentation in English.

### P40 Government/Industry Data Exchange Program ("GIDEP") Membership

- If Seller is eligible for GIDEP membership, Seller is required to be a member of GIDEP.

### P41 Buyer-Certified Materials:

- Seller shall establish and maintain controls to prevent the use of non-certified materials when Buyer-certified materials (e.g. Engineering Materials and Approved Products [EMAPs]) are required.

### P42 Calibration

- Seller shall maintain a documented calibration system for the calibration and maintenance of tools, jigs, inspection and test equipment. Seller shall have and maintain a calibration system compliant to ISO 17025, ISO10012-1, or ANSI Z540.



# Giga-tronics

## Solutions for Next Gen EW / Radar Test & Deployment

### P43 Buyer-Furnished, Seller-Manufactured or Seller-Owned Tooling:

- Seller shall include in its documented quality system written procedures for the control, maintenance, and calibration of buyer supplied special tooling, jigs, inspection and test equipment, and other devices used in manufacturing, test or inspection processes.

### P44 Corrective Action, Preventive Action, Request and Reporting

- Seller shall:
  - ensure effective corrective and preventive action is taken (including repetitive non-conformances dispositioned “Use-As-Is” or “Repair” by Buyer’s or Seller’s Material Review Board [“MRB”] actions) to prevent, minimize, or eliminate non-conformances; and
  - evaluate each nonconformance for its potential to exist in previously produced Items and notify Buyer, in writing, within 24 hours of potential or verified non-conformances impacting quality or performance of Items in transit or delivered to Buyer; and
  - notify Buyer in writing within 5 working days of all other potential or verified non-conformances by email and;
  - provide effective corrective and preventive action upon request by Buyer and, when requested by Buyer, provide trend data; and
  - Assess all Buyer-identified non-conformances, whether or not Item(s) was/were returned to Seller, and take appropriate actions ensure causes of non-conformance are corrected.

### P45 Facility Access

- Regardless of Buyer’s or Buyer's Customer Point of Acceptance on this PO or whether Buyer's Customer has issued a delegation for this PO, Seller shall provide or obtain for Buyer, Buyer’s customers and regulatory agency personnel, access to any and all facilities where work is being performed or is scheduled to be performed, including those facilities of Seller’s subcontractors, in order to perform Item inspections, surveys or system/process surveillance as part of verification of conformance to the requirements of this PO. Seller’s denial of any such access may result in inactivation of Seller’s approval. Seller shall include the provisions of this facility access requirement in its POs with its subcontractors, for this PO. And
- Seller shall provide the following, at no increase in price, cost or fee to Buyer, Buyer’s customers or regulatory agencies:
  - suitable facilities at Seller and Seller’s subcontractors’ manufacturing locations for Buyer, Buyer’s Supplier Quality Engineer, Buyer’s customer and regulatory agency representatives to perform Item inspections, surveys or system/process surveillance, and
  - Buyer’s Supplier Quality Engineer with high speed internet access (DSL or wireless).



## Solutions for Next Gen EW / Radar Test & Deployment

### P46 FOD Foreign Object Debris/Damage (FOD) Prevention

- Seller shall maintain a FOD prevention program in accordance with Aerospace Standard AS9146, Foreign Object Damage (FOD) Prevention Program - Requirements for Aviation, Space, and Defense Organizations.
- Whenever and/or wherever FOD entrapment or foreign objects can migrate, Seller shall ensure that applicable Quality Clause requirements are flowed down to Seller's subcontractors at every tier.
- Prior to closing inaccessible or obscured areas and compartments during assembly, Seller shall inspect for foreign objects/materials and ensure no FOD barriers remain embedded, e.g. embedded protective plugs. Seller shall ensure tooling, jigs, fixtures, and test or handling equipment are maintained in a state of cleanliness and repair sufficient to prevent FOD. By delivering Items to Buyer, Seller shall be deemed to have certified to Buyer that such Items are free from any foreign materials that could result in FOD.

### P47 FAI First Article Inspection

This provision is required when specified on the purchase order.

PURPOSE: The purpose of First Article Inspection (FAI) is to validate:

- (1) Seller's product realization processes are capable of producing parts and assemblies that meet all engineering and design requirements, and
- (2) Those processes are stable and repeatable.

A well planned and well executed FAI will provide objective evidence that Seller's processes can produce compliant product and Seller understands and has incorporated all product requirements.

SCOPE: The requirements of this Quality Clause and AS9102 are applicable in full to the PO. The requirements of this Quality Clause and AS9102 are also applicable to all lower-level detail parts which comprise the part on the PO. This includes parts manufactured, processed, assembled, tested or inspected at sub-tier suppliers.

Copies of AS9102 may be obtained from the Society of Automotive Engineers at [www.sae.org](http://www.sae.org). FAI forms can be found at [www.sae.org/aaqg/publications/AS91020faq.htm](http://www.sae.org/aaqg/publications/AS91020faq.htm). C. References to AS9102 in this document refer to the revision in effect at the time of the PO. Seller may work to the latest version of AS9102, if desired, at no additional cost, price or fee to the PO. D. In the case of a conflict between AS9102 and this Quality Clause, this Quality Clause takes precedence.

DEFINITIONS: Digital Production Definition (DPD) – Requirements in any digital data files that disclose, directly or indirectly, the physical or functional product requirements. This includes both the design and acceptance criteria (e.g., 3D solid models, CATIA, etc.).

FAI Planning – Those activities that are performed prior to the first production run of parts. First Production Run Parts – The first group of one or more parts that are the result of a planned process designed to be used for future production of these same parts. Sub-Tier Supplier – For the purposes of this Quality Clause, sub-tier supplier shall include all entities that perform manufacturing, assembly, testing and inspection work for Seller, including, but not limited to, sub-tier suppliers at all levels, subcontractors, special processors, feeder plants, other Seller manufacturing sites, partners, etc.

For the purposes of this Quality Clause, Critical Items shall mean parts identified on the drawing or specification as Critical Safety Items (CSI), Fatigue Fracture Critical (FFC), Fracture Critical (FC), Durability Critical (DC) or Maintenance Critical (MC).



## Solutions for Next Gen EW / Radar Test & Deployment

### GENERAL REQUIREMENTS:

- A. Seller shall create a documented procedure or plan that covers all the elements of this Quality Clause and AS9102. This procedure or plan will detail how Seller will validate FAIs completed by sub-tier suppliers.
- B. Seller shall document completion of Seller's FAI in the English language. Seller shall record the requirements and results in the units specified on the drawing, DPD or specification.
- C. Seller shall complete the FAI on the first production part. Exceptions or deferrals beyond the first production part will only be allowed with written authorization from Buyer's assigned Supplier Quality Engineer (SQE). Seller's failure to complete the FAI on the first production part may result in actions by Buyer, up to termination of the contract, for failure to perform.
- D. Seller shall flow down the requirements of this Quality clause to all sub-tier suppliers. All elements of this Quality Clause shall be applicable to all sub-tier supplier locations where the product on the PO is manufactured, processed, tested, inspected, accepted and shipped. All sub-tier supplier FAI reports shall become an integral part of Seller's FAI documentation and shall be provided to Buyer's assigned SQE at the time of FAI submittal by Seller.
- E. Seller is required to perform a partial or full FAI, as required by AS9102, when Seller or Seller's sub-tier supplier makes any change that affects the form, fit, function, safety or reliability of the part. These changes include, but are not limited to, those listed in AS9102, and any changes to programming that is used in numerical controlled machines, test stations, coordinated measuring equipment, etc. Seller shall complete a full FAI when a lapse in production for over two (2) years has occurred, regardless of the impact of the inactivity. Seller shall perform a partial or full FAI when the causes of nonconformances discovered after completion of an FAI are other than special cause variation (e.g., computer crash, power outage or surge, tool breakage, etc.). Partial FAIs will only require one (1) part to demonstrate the change had no impact, unless the change was a Class I engineering change, and then three (3) parts are required.
- F. Seller shall notify Buyer's assigned SQE, in writing, a minimum of five (5) business days prior to Seller procuring items or beginning any FAI Planning activity for the PO. Buyer's assigned SQE may elect to review or participate in Seller's FAI process at any time throughout the FAI process. Seller shall also notify Buyer's assigned SQE, in writing, a minimum of five (5) business days prior to creating or starting any changes identified in paragraph E above that affect items delivered under the PO.
- G. The following items do not require FAI, unless otherwise directed by Buyer:
  1. Standard hardware and electronic piece parts (e.g., AN, MS & NAS standards; C, M & P standards; 2GNA00001 standard parts; etc.)
  2. Commercial off-the-shelf (COTS) items
  3. Metallic raw material (e.g., plate, bar, rod, etc.) and non-metallic raw material (e.g., paints, sealants, adhesives, etc.)
  4. Engineering models, design/concept prototypes, etc.
  5. Items that have been manufactured and delivered to the U.S. Government where Seller has objective evidence of an FAI performed in accordance with AS9102, unless otherwise approved in writing by Buyer, within the last two (2) years from the date of the PO to the same configuration as required by the PO. If Seller or the U.S. Government are experiencing nonconformances, Seller shall complete a partial or full FAI in accordance with this Quality Clause.
  6. Items being repaired
  7. Items procured to Buyer's part number where Buyer has not developed drawings or specifications controlling the item's physical and functional requirements
  8. Special Tooling and Perishable Tooling
- H. An FAI by similarity requires a previously completed FAI on parts with identical characteristics of similar parts produced by identical means with no history of nonconformances. Parts may be grouped into families that utilize common manufacturing processes. A limited number of each family will undergo an FAI to validate the common processes, procedures and work instructions. This grouping shall be approved in advance in writing by Buyer's assigned SQE. The remaining parts shall require a partial



## Solutions for Next Gen EW / Radar Test & Deployment

FAI focused on part specific attributes and dimensional features. Complex or Critical Items shall not be grouped into families but shall be managed uniquely.

- I. Any discrepancies or nonconformances to Buyer's requirements discovered during the FAI shall result in the failure of the FAI. Seller shall then take corrective action. A partial FAI for all characteristics affected by the nonconformance shall be performed on the first production run, after implementation of the corrective actions. If the partial FAI does not clear all identified nonconformances, the FAI shall be considered incomplete and the requirements to complete the FAI shall remain in effect. Seller shall notify Buyer's assigned SQE in writing of any nonconformance discovered during the FAI.
- J. Seller shall comply with the forms usage and completion requirements of AS9102. Seller shall complete all fields, but may mark a field as not applicable by indicating "N/A" as appropriate. \
- K. Seller shall maintain documentation of FAI results on each deliverable end item for the period specified by the PO. Seller shall provide a complete copy of FAI reports to Buyer within 48 hours of receiving Buyer's written request. The FAI reports shall be provided at no increase in cost, price or fee to the PO.
- L. Once AS9102 forms have been completed for one (1) part, Seller shall use internal processes / procedures, as defined in Seller's Quality Management System, to verify product conformance to the FAI Exit Criteria requirements of Q2A.
- M. Buyer reserves the right to require Seller to perform a partial or full FAI at no additional cost, price or fee to the PO.

DETAILED REQUIREMENTS OF SELLER: A. FAI Planning: Seller shall take the following actions prior to the start of manufacturing or subcontracting of the item on Buyer's PO:

1. All characteristics from the engineering (e.g., drawings, specifications, DPD, Production Outsource Instruction Sheet (POIS), Procurement Data Sheets (PDS), etc.) and PO shall be accounted for during the FAI planning. The method of documentation for this reconciliation shall follow the best practice of "ballooning" the drawings, specifications and other requirements and providing traceability of each characteristic to the FAI report. The "ballooned" documents shall become part of the FAI documentation package.
2. All specifications, including referenced specifications within parent specifications, shall be reviewed, mapped and reconciled to each applicable work instruction / operation planning card to ensure no product requirements have been overlooked.
3. Reconcile the engineering bill of material against the released configuration effective at the time of PO acceptance.
4. Determine the method for validating all DPD requirements and objective evidence of that validation.
5. Review routing sheets, manufacturing / quality plans, manufacturing work instructions, engineering, etc., to ensure operations are planned with the appropriate level of detail and clarity. The review shall include production and inspection steps. Assure inspection steps have appropriate measurement or sampling plans.
6. Verify that employee certifications required to perform all tasks listed in operation cards / work instructions are identified and current.
7. Determine how subcontracted components, sub-assemblies and special processing will be validated as part of the FAI process. Assure only approved components, special processes and material sources have been or will be used (e.g., Engineering Material & Approved Products (EMAP), Qualified Material List (QML), Qualified Product List (QPL), QCS-001, 2GNA00001, etc.).
8. Identify Key Characteristics and Critical Item requirements and assure these requirements are validated during the FAI. This shall include planning for the completion of an Engineering First Article Evaluation (EFAE) when required per 2ZZP00006 for the F-35 program.
9. Assure all gages and tooling used for the manufacture, processing, testing and inspection of product, including airframe tooling controlled by TMS-MC-015 (Buyer-furnished and Seller owned) is qualified, calibrated and validated, as applicable. Tooling used as a media of acceptance shall be verified against the applicable

## Solutions for Next Gen EW / Radar Test & Deployment

requirements of engineering, master tooling, etc., in accordance with the plan defining periodic inspection requirements and methods.

10. For all major aircraft assemblies (wings, forward fuselage, center fuselage, tails, aft fuselage, mid-fuselage panels, forward/aft plug panels, center wing assemblies and empennage), or when otherwise required by Buyer, create planning for completing Fit check at the appropriate aircraft assembly level.
11. Create a process flow matrix for the part or part family and a plan for validating the capability and stability of each process step.
12. Document a process for packaging and shipping in accordance with PM-5010, "Supplier/Seller Shipping Instructions", and PM-801, "Seller Packaging, Handling, Storage and Transportability Instructions for Direct Shipment of Items to the U.S. Government via Wide Area Work Flow", as applicable.
  - A. FAI Entrance Criteria: FAI documentation requirements begin when FAI planning begins. Once the following are met, Seller shall begin the FAI:
    1. Engineering (e.g., drawing, specifications, DPD, etc.) is released by Buyer.
    2. Seller Acceptance Test Procedures (ATP) have been approved by Buyer, if required.
    3. Seller Manufacturing Plans for Critical Items have been approved by Buyer, if required.
    4. Seller's completion of Safety of Flight and Qualification, if required.
    5. Buyer's assigned SQE has been notified in writing of the beginning of the FAI process (reference Section IV General Requirements paragraph F).
  - B. FAI Process: 1. Complete FAIs for all detail parts, sub-assemblies and subcontracted components and special processes. Document these FAIs in accordance with AS9102 and this Quality Clause. 2. Complete the EFAE in accordance with 2ZZP00006, if applicable. Evidence of EFAE completion and acceptance by Buyer shall become part of the FAI report. 3. Complete the FAI for the item on Buyer's PO. Document the FAI in accordance with AS9102 and this Quality Clause.
  - C. FAI Exit Criteria: An FAI will be considered complete when the following are met:
    1. Completion of all the FAI requirements contained in this Quality Clause and AS9102, including the completion of the FAI documentation package with supporting objective evidence.
    2. Completion and validation of all sub-tier supplier FAIs on sub-components, sub-assemblies and processing, as applicable.
    3. Successful manufacture, process, test and inspection of the FAI item, with no defects or nonconformances to Buyer's requirements.
    4. Successful manufacture, test and inspection of three (3) consecutive parts from three (3) consecutive and different lots/batches after the FAI item (FAI item plus 3 subsequent items). Validation is accomplished by the test and inspection of 3 parts from 3 consecutive and different lots/batches with no defects to Buyer's requirements. A full FAI report is not required for these subsequent parts. However, objective evidence for the successful completion of these subsequent items is required. For the purposes of this Quality Clause, "different lots/batches" means that machines, tooling and fixture setups are torn down and re-setup, between production runs. Failure of any of the three (3) consecutive items will require root cause and corrective action (RCCA), and a successful full or partial FAI on the affected characteristics, followed by three (3) consecutive parts from three (3) consecutive and different lots/batches.
    5. Completed Fit check at the appropriate aircraft assembly level, when required.
  - D. Post FAI Sustainability:
    1. After FAI is complete, Buyer expects all subsequent production parts will be defect free. If nonconformances to Buyer's requirements are discovered after FAI, Seller shall conduct RCCA analysis to determine root causes for each nonconformance. RCCA shall be provided to Buyer's assigned SQE within 30 days of the discovery of the defect, or as otherwise agreed to by Buyer's assigned SQE. While performing RCCA, Seller shall consider the following elements for applicability as part of the RCCA: special causes; process changes that require a partial or full FAI; the need for variation reduction actions based on statistical analysis; the need to perform a Process Failure Mode and Effects Analysis (PFMEA); etc.





## *Solutions for Next Gen EW / Radar Test & Deployment*

2. Seller shall provide documented evidence for the RCCA analysis and the actions Seller is taking for any failure following FAI completion, upon written request by Buyer.
3. Seller shall accomplish a partial or full FAI for all characteristics affected by any defect. Buyer may require Seller to perform a partial or full FAI at no additional cost, price or fee to the PO if nonconformances to Buyer's requirements are discovered after the FAI.
4. Nonconformances discovered after the completion of the FAI are subject to the Performance Assurance Warranty clause in the PO.

### P48 Conformity, Product Safety and Ethical Behavior

Seller shall ensure that all persons involved in processing our order are aware of their contribution to product conformity, product safety, and the importance of ethical behavior.

### P49 Product Quality, Delivery and Corrective Action Response

All suppliers' quality and delivery performance is monitored on an ongoing basis. We use this data to determine supplier selection for each new purchase order. Quality performance is based on product quality issues and the supplier's responsiveness to addressing product quality issues. If a corrective action is issued to supplier, the expected closed with completed response shall be within 30 days. Every supplier has a quality rating that is adversely affected by corrective actions and even more so with corrective actions that are not closed within 30 days. Continuing poor quality performance may result in disqualification as a supplier.

### P50 Conflict Minerals

Supplier shall disclose any "Conflict Minerals" included in the products, components, or materials supplied, manufactured or contracted to be manufactured by Supplier for Giga-tronics Inc or Microsource Inc under this Agreement. The term "Conflict Minerals" shall have the meaning ascribed to it under Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, meaning wolframite, cassiterite, columbite-tantalite (coltan), gold and their derivative metals: tantalum, tin and tungsten. Such information will be disclosed to Giga-tronics Inc. or Microsource Inc. using the then-current version of the Conflict Minerals Reporting Template developed by the Electronic Industry Citizenship Coalition ("EICC"). The information will be submitted prior to the time of delivery of materials, components, or products to Giga-tronics Inc. or Microsource Inc. Supplier shall obtain Giga-tronics's prior written consent before providing any materials, components, or products to Giga-tronics Inc. or Microsource Inc. that include Conflict Minerals that originated from the Democratic Republic of Congo ("DRC") or the nine adjoining conflict countries; Angola, Burundi, Central African Republic, the Republic of the Congo, Rwanda, South Sudan, Tanzania, Uganda, and Zambia. Supplier shall maintain effective accounting procedures, internal controls and audit procedures necessary to verify that any Conflict Minerals included in materials, components, or products provided to Giga-tronics Inc. or Microsource Inc. did not originate from the DRC or the nine adjoining countries, and to verify compliance with this Section. Giga-tronics Inc. or Microsource Inc. shall be permitted to audit such records as reasonably necessary to confirm Supplier's compliance with this Section. Supplier shall indemnify and hold Giga-tronics Inc. and Microsource Inc. harmless for all fines, penalties, expenses or other losses sustained by Giga-tronics Inc. and Microsource Inc. as a result of Supplier's breach of this Section. Supplier must flow down the Conflict Minerals requirement to all applicable suppliers of materials that may be used in the production of material provided to Giga-tronics Inc. or Microsource Inc.





*Solutions for Next Gen EW / Radar Test & Deployment*

**P51 Printed Circuit Board Shipping**

All PCB shall be dry, cleaned and free of debris prior to packaging. The packaging shall be done in a way to prevent damage using industry acceptable methods (Reference IPC Spec 1601) and must include the following:

- Vacuum Sealed Moisture Barrier Packaging
- Humidity Indicator Card (HIC)
- Desiccant compatible with PCB and Surface Finish
- All Immersion Silver finish PCBs must be packed with Anti-Tarnishing paper (effective for protecting silver) in between each PCB
- Suitable bubble wrap

SELLER Surface Finish Shelf Life: Immersion Silver surface finish more than three (3) months old per date code shall be submitted to Gigatronics BUYER for approval prior to shipment.