Supplier Requirements for the Preparation of AS9102 First Article Inspection Reports TCX-9102

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REVISION HISTORY

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SECTION 1

1. SCOPE AND GENERAL REQUIREMENTS

This document outlines the completion of AS9102 Forms 1, 2 and 3 used for First Article Inspection Reports (FAIR) submitted to Telephonics and FAIR planning requirements. It provides consistency in approach resulting in compliant FAIR documentation.

- The Supplier shall have a process to plan for completion of FAI or shall plan FAI activities prior to the first production run, reference Section 1.1.
  - An FAI Plan is provided as guidance in Appendix A. FAI Plans may require review by Telephonics.
- A FAIR is required if the Telephonics Purchase Order has a Quality Clause of 6.9 or as specified in the Telephonics Purchase Order, Subcontract or Statement of Work. Supplier(s) shall flow down this requirement to all sub-tiers and those sub-tiers shall flow down applicable first article requirements to their contracts/purchase orders.
  - Initial FAIRs shall be completed on new product using a representative item from the first production run.
- This document applies to all purchased or manufactured assemblies, sub-assemblies, detail parts including castings, forgings, machined items, Telephonics designed tooling, and only the modifications (Altered Item Drawings) to Standard Catalogue Items (SCI) and Commercial-Off-the-Shelf (COTS) items.
  - Supplier shall submit a FAIR traceable back to the part number and revision levels listed in the Telephonics purchase order.
  - All Lower Level FAIRs shall be included with the upper level FAIR. Lower level items include but not limited to;
    - All levels of designed part(s) specifically manufactured to be used in the FAI Part
    - External and Internal manufactured part(s)
- Telephonics and Supplier Designed
  - Modified or altered SCI/COTS, modifications only (Refer to Section 1.3)
- This document does not apply to development, prototype parts and unique single run production orders not intended for ongoing production.
  - SCI/COTS items do not require a FAIR. Assemblies and sub-assembly FAIRs require a list of COTS parts used in the assembly. This shall be included with the FAIR, Form 1 or provided as an attachment.
  - SCI/COTS C of C's shall be included with the FAIR. C of C's will show traceability to Telephonics Parts List and to Original Component Manufacturer, as applicable per Purchase Order requirements.
- Raw Material and Special Process Certifications must match requirements on the Telephonics drawing, and be included in the FAIR package. Accredited processors shall be used for special processes (NADCAP or Telephonics approved) when Special Processes are identified on Telephonics drawing. See Appendix C.
- Visual and dimensional requirements shall be verified to meet those on the Telephonics drawing, including all Notes.
- A bubbled drawing shall be created and is required for every FAIR submission.

- The terms and definitions in this document are the same as those in AS9102 Aerospace First Article Inspection Requirement, current revision. Appendix D lists Terms and Definitions used in this document.
  - FAI Forms are available at https://www.telephonics.com/policies-and-training

1.1 EVALUATION ACTIVITIES

The supplier shall conduct the following activities to ensure part conformance for the FAIR.

1. Supplier ensures the current hardware part number revision and drawing revision levels on file matches the Telephonics Part revision level as identified on the Telephonics Purchase Order.
2. Review supporting documentation for completeness (e.g., inspection data, test data, acceptance test procedures, special process approvals and certifications).
3. Verify that the raw material, special process certifications, and material used in the FAI part such as solder, flux, Loctite, etc. call out the correct specification, material types, conditions, and approvals. Validation documentation shall be referenced on Form 2, and a copy is included as an attachment.
4. Verify part dimensions reported meet drawing requirements, including Notes Section. This includes any Telephonics drawing embedded in those notes.
5. If applicable, verify the Telephonics Parts List revision levels are included in the FAIR.
6. All lower level FAIRs shall be included.

1.2 PARTIAL OR RE-ACCOMPLISHMENT OF FAIR (INCLUDING BY SIMILARITY)

The FAIR requirement is in effect for the duration of the Telephonics Purchase Order. A Partial or Re- Accomplishment FAIR addresses changes from a baseline part, including changes to product and processes at the assembly and sub-assembly level. Refer to Form 1, Field 14 instructions. This is applicable to any change invalidating original results of an approved FAIR.

A Full FAIR or a partial FAIR is submitted for affected characteristics, when any of the following CHANGE(S) occurs:

1. Design characteristics affecting form, fit or function of the part (part revision level change).
2. Source(s) supply for product or service.
   a. Manufacturing source
   b. Special Process source
3. Inspection method(s): When the difference between the two methods reduces the accuracy of inspection results.

4. Location of manufacture, tooling, material or raw materials that can potentially affect fit, form, or function.
5. Numerical control program or translation to another media that can potentially affect form, fit or function. Including changes to ATP, ATE, and associated Software programs affecting product.
6. A natural or man-made event, which may adversely affect the manufacturing process.
7. A lapse in production for 2 years or as specified by Telephonics.

BY SIMILARITY FAIR - FORM 1 FIELD 14

FAIR requirements may be satisfied by a previously approved, full FAI performed on identical characteristics of similar parts produced by identical means. Identify the "Baseline Part Number" and Revision Level and associated FAIR number. Enter Reason "By Similarity". Record the differences on the FAIR Forms 1, 2 and 3, as appropriate.

Existing Supplier FAIRs: When the drawing is not under Telephonics control, then FAI may be performed to the contracted part drawing and Form 1 will reflect the part number on Telephonics P.O. providing traceability.

1.3 FAI FOR ALTERED/MODIFIED STANDARD CATALOG ITEM (SCI) AND COMMERCIAL-OFF-THE-SHELF (COTS) ITEMS

Any SCI or COTS item that is altered/modified require an FAI for only the modifications completed to the item. Form 1, 2 & 3 are completed per this document's instruction.

1. Record SCI/COTS part information and specification information, as procured, in Field 5, 6, 8, 9 & 10 of Form 2. This information is prior to its modification. Recorded information in these fields is considered the "material information" since the SCI/COTS item is incorporated into the FAI Part (Field 1 of Form 1). Refer to Form 2 instructions for additional information.
2. Any specification or drawing associated with the FAI Part, other than SCI/COTS industry standards, are applicable documents that shall be bubbled and assigned a unique identifier as per this document's requirements listed in Form 3.
3. FAIRs for Altered/Modified may be submitted for review when referencing other FAIRs of similar manufacturing and inspection methods. This is most often done through the dash conditions.
4. When a Telephonics drawing/specification is modified, adding a new part number to the list of cross references, a FAI is not required for all previous part numbers.

SECTION 2

2. DOCUMENTATION REQUIRED FOR A FAIR

Appendix B contains completed examples of AS9102 Forms 1, 2, and 3.

Each field in the forms is designated with a unique reference number and is identified as:

- **(R) – Required:** This is mandatory information.
- **(CR) – Conditionally Required**: This field is completed, when information is available, otherwise enter N/A.
- (O) – Optional: This field is provided for convenience; the field may be left blank.

Use of the AS9102 Forms 1, 2, and 3, latest revision is preferred. The forms shall be completed in accordance with this document's sections 3, 4, and 5 field identifiers **(R/CR/O)**. These designations are compliant to AS9102, but may differ from the standard.

Note: Non AS9102 forms may be used; however, they shall contain all **"Required"** and **"Conditionally Required"** information and have the same field reference numbers, per this document's instruction.

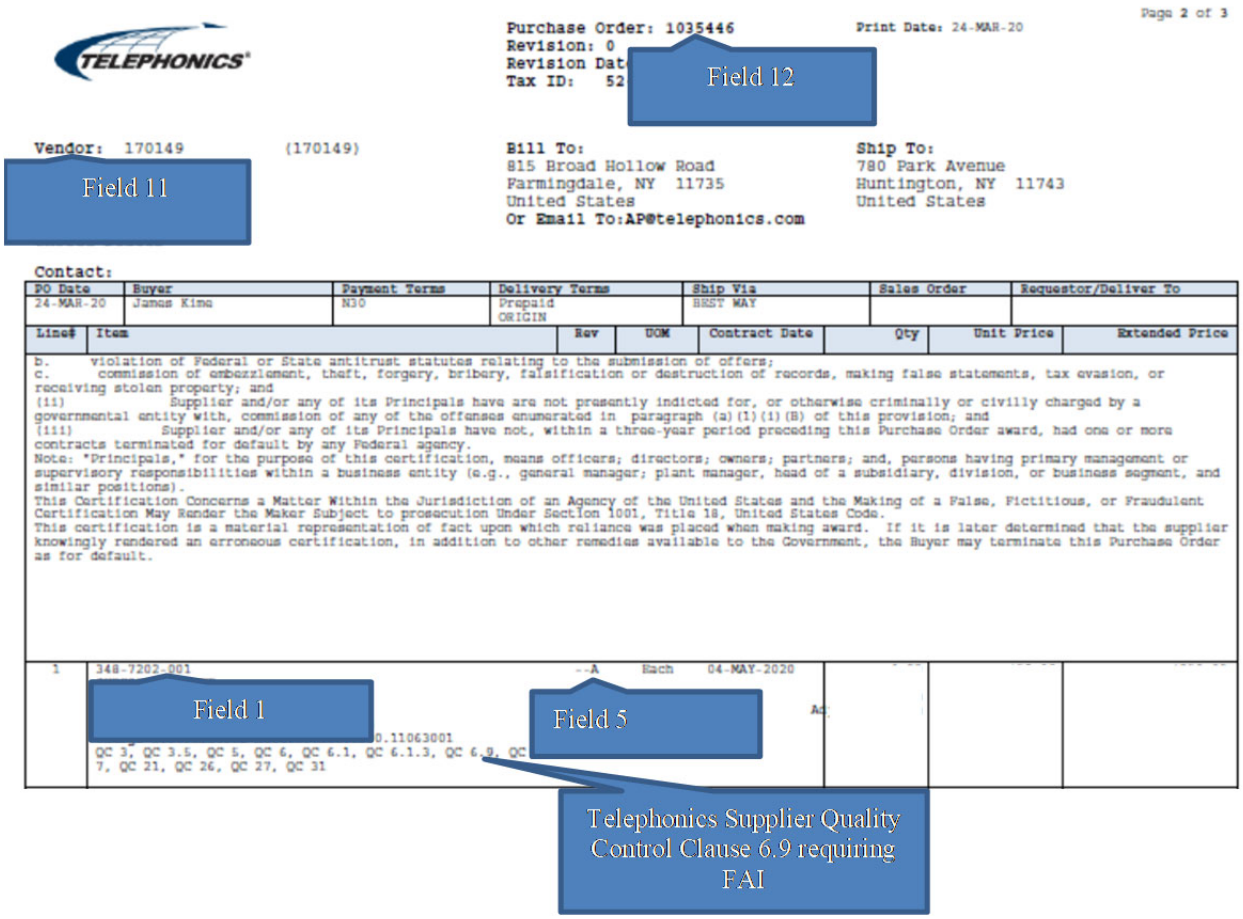
All forms shall be completed either electronically or permanent ink and in English. Continuation sheets, attachments and insertion of additional rows are acceptable.

SECTION 3

3. FORM 1 – PART NUMBER ACCOUNTABILITY

Field 1-15 Instructions. Note: See Appendix B for example

Telephonics Purchase Order Information is used for Field 1, 5, 11 and 12 of Form 1



Fields 1 thru 4 are repeated on all forms for convenience and traceability. Changes to 1 thru 4 fields shall be made on each Form 1, 2, and 3.

1. **(R) Part Number:** Record the part number from the Item Number Field of Telephonics purchase order. Note: Supplier's part number may be listed underneath the Telephonics part number.
2. **(R) Part Name:** Record the Part Name found in the Title Field of the Telephonics drawing.
3. **(CR) Serial Number:** When applicable, record the Serial number of the part measured for FAIR. Otherwise leave field blank or enter N/A.

4. **(R) FAIR Number:** Record Supplier's assigned unique FAIR identifier for traceability purposes.

5. **(R) Part Revision Level:** Record Telephonics part revision from the Telephonics purchase order. PO format is Part Revision level. **NOTE:** Supplier's part revision level may be listed underneath the Telephonics part revision level.

6. **(R) Drawing Number:** Record Number found in the Title Field of the Telephonics drawing. Typically, a part number without any suffix.

7. **(R) Drawing Revision Level:** Record the Telephonics drawing revision level.

   NOTE: Supplier's drawing print revision level may be listed underneath the Telephonics drawing print revision level.

8. **(CR) Additional Changes:** When applicable, record reference numbers of changes incorporated in the product, but not reflected in drawing/part revision level. (E.g. ECO # or accepted Supplier Variation Request # (SVR#)).

9. **(R) Manufacturing Process Reference:** Record the reference number of the manufacturing document providing traceability to the production lot of the part (e.g., router number, manufacturing plan number). Lot number, batch number, date code, may also be included.

10. **(R) Organization Name:** Record the name of the supplier or manufacturer who produced the FAI Part (Form 1, Field 1) and performed the FAI. Example: Name of supplier from the PO.

11. **(R) Supplier/Vendor Code:** Record Telephonics assigned supplier ID number or supplier CAGE code.

12. **(R) P.O. Number:** Record Telephonics Purchase Order number.

    - The Telephonics PO supplier and manufacturer(s) PO (if different) shall be listed in Field 12.

13. **(R) Detail Part/Assembly FAI:** Check, as appropriate as defined.

    Detail FAI: Does not contain a Parts List (i.e. a single item).

    Assembly FAI: Contains Parts Lists of manufactured or procured sub-assemblies, etc., or hardware as called out on the Telephonics drawing. (E.g. list of lower level parts present that are necessary to manufacture, assemble or maintain a product.)

14. **(R) Full FAI/Partial FAI:** Check the appropriate level of inspection, per this document.

    If a Partial FAIR is submitted, provide 1 – the previous baseline part number (including revision level), 2 – the previous FAIR number and 3 – the reason for the change, such as design changes, engineering change order, testing, process change, and/or modified COTS.

    - When accomplishing FAI requirements by Similarity, requirements may be satisfied by a previously approved, full FAI performed on identical characteristics of similar parts produced by identical means. Record the "Baseline Part Number", Revision Level and associated FAIR number. Enter Reason "By Similarity".
        - Differences in drawing features of identical characteristics, record any differences on FAI Forms 1, 2 and 3, as appropriate.

15. **(CR) Part Number:** Verify the use and record part numbers of components and/or sub-assemblies present in the FAI Part; this includes:

    1. All purchased and made part numbers from the associated Parts List. All items shall be traceable to the Telephonics Parts List, when applicable.
        - When the part listed is a buyer furnished/supplied part, complete entries for Fields 16-18. (e.g. Customer Supplied, Government Supplied etc.)
    2. Any lower level parts purchased or fabricated by the organization manufacturing the Upper Level part.

       When recording Standard Catalogue or COTS items that are "non-modified", each item shall be listed separately. Also see Form 1, Field 18 note.
        - Alternate method: Generate and attach a separate list that contains these items. State in Field 15, "See attached COTS list."
        - Include all lower level FAIRs within the Upper Level FAIR. See field 18.
        - For **"Modified"** Standard Catalogue or COTS items refer to Section 1.3.

16. **(CR) Part Name:** Record the name of the component and/or sub-assemblies associated with Field 15 (abbreviated names are permissible / acceptable).

17. **(CR) Part Serial Number:** Record if serial numbers are assigned to the part.

18. **(CR) FAIR Number (Cert No.):** When Field 15 contains a part number that is a lower level detail, sub-assembly, and "Modified" Standard or COTS item; the supplier shall verify the FAIR is valid and record that FAIR number.

    - Any lower level FAIR that is used in the Upper Level part; include that FAIR as an attachment.
    - For Standard Catalogue and COTS items record "COTS Item" within the field and include traceable documentation (e.g. packing slip or C of C).
    - When the part listed in field 15 is a buyer furnished/supplied part, record the document identifier that proves ownership of the part listed. (E.g. Customer Supplied, Government Supplied etc.)

Note: Form 2 may also be used to record Standard Catalogue and COTS items and their Cert No. Form 1 must still contain a record of Standard Catalogue and COTS items used in the FAI Part.

19. **(R) Signature:** Provide a legible printed name and signature or unique identification, such as a stamp, employee ID#, etc. Electronic signatures are acceptable. The person signing this field certifies the FAIR is compliant to this document.

    - Record "FAI Complete", if all design features, configured items, materials, processes and characteristics are conforming.
    - Record "FAI Not Complete", if any discrepancy is found and/or characteristics are nonconforming, notify Telephonics Buyer and submit a Telephonics Supplier Variation Request (SVR) form for approval. Once approved, record the SVR # in Form 1 Field 8 and as required Form 3 field 14. See Appendix E for Nonconformance Handling.

20. **(R) Date:** Date when field 19 was signed. Recommend Month/Day/Year (mm/dd/yyyy) format.

21. **(R) Reviewed By:** Provide a legible printed name and signature or unique identification, such as a stamp, employee ID#, etc. who approved the FAIR (recommend a different person from Field 19).

22. **(R) Date:** Date when field 21 was signed. Recommend Month/Day/Year (mm/dd/yyyy) format.

23. (O) Customer Approval: Leave Blank for Telephonics use.

24. (O) Date: Date when field 23 was signed. Leave Blank for Telephonics use.

SECTION 4

4. FORM 2 – MATERIALS, PROCESSES AND FUNCTIONAL TESTING

Field 1-15 Instruction

Note: See Appendix B for Example

Record Materials, Special Processes, or Functional Testing required by the Drawing or Specification.

Fields 1 thru 4 are repeated on all forms for convenience and traceability. Any changes to fields 1 thru 4 shall be made on each Form 1, 2 and 3.

5. **(CR) Material or Process Name:** Record the Name of applicable raw materials or special processes used to accomplish design characteristics for the FAI Part. The materials or special process shall comply with drawing requirements.

   - **Altered/Modified SCI/COTS:** Record the industry standard's description of the procured SCI/COTS item. This entry defines the SCI/COTS item as a material incorporated into the FAI Part (Field 1, Form 1). Form 2 instructs entries for materials during FAI.

Note: For **"non-modified"** Standard Catalogue or COTS items refer to Form 1, Field 15 and 18

Examples of **Raw materials** – aluminum, stainless steel, resin, glass, adhesive, solder, marking ink, chemicals.

Telephonics designated Special Processes Quality Clause 6.1.3: All Methods, Types, Grades and Classes of brazing, heat treating, painting/coatings, and plating (electro & electroless), non-destructive testing (NDT), welding, coatings on composites and various chemical processes. See Appendix C for Telephonics recognized Special and Chemical Process list.

Note: For all Special and Chemical special processes (i.e. gold, nickel, tin, copper, etc.) the supplier is responsible to certify to the specification such as MIL, J-STD, ASTM, AMS or IPC within the Telephonics TDP. The individual or constituent components of the bath/chemical process do not need to be provided as part of the FAIR (Form 2).

6. **(CR) Specification Number:** Record the specification validating Field 5 entry. This is the specification of the material and/or process incorporated into the FAI Part. All specifications must **exactly** match the Telephonics drawing/specification (reference Field 8 and 9, Form 3 instructions).

   - Record Material specifications (ASTM, MIL STD) and it's material form, such as sheet, bar, roll, rod

Note: When a material specification (ASTM, MIL STD) is unique to a material form, omitting an additional entry of form is permissible.

- Record Special process specifications as indicated on the drawing.
- For **"non-modified"** Standard Catalogue or COTS items refer to Form 1, Field 15 and 18.

Altered/Modified SCI/COTS: For an Altered/Modified SCI/COTS item, list the industry standard item/part number. This number shall be traceable to a purchase order and/or Certification of Conformance list in Field 10.

7. (O) Code: Not required by Telephonics.

8. **(CR) Supplier:** Record the name of supplier that performed special processes or supplied material.

9. **(CR) Customer Approval Verification:**

   - Enter **"NA"** if customer approval is not required

     For Quality Clause 6.1.3, Sub-Tier Special Processors are required to be NADCAP approved.

10. **(CR) Certificate of Conformance Number (C of C):** The (C of C) or Certificate of Analysis (C of A) shall match the Telephonics drawing requirement.

    Enter the applicable unique document identifier from the document (e.g. cert #, lot #, PO #). Include C of C or C of A in the FAIR.

    - For **raw materials** listed on the Telephonics and/or Suppliers' drawing, include the manufacturer's certification.
    - For any **special process** used on the FAI part to achieve a design feature and/or drawing characteristic include the NADCAP Certification
      - Parts requiring application of primer and/or paint requires certification up to 4 independent criteria:
      - Primer thickness as defined by specification
      - Paint thickness as defined by specification
      - Tape Test (pass)
      - Gloss Readings.

11. **(CR) Functional Test Procedure Number:** Record the Functional Test Procedure number and revision used to validate drawing/specification requirements. The results of the test procedure are recorded in a Telephonics Acceptance Test Report.

12. **(CR) Acceptance Report Number:** Required to be completed when functional testing is conducted. The report is traceable back to the required test results from the Telephonics drawing.

    - Record the report number.
    - Include the actual test report with the FAIR.

13. (O) Comments: As needed.

14. **(R) Signature:** Print name and signature of the person from the organization who completed and approves Form 2. Electronic identification or signature is acceptable.

    Signature indicates that all applicable materials, special processes, and functional testing are accounted for, meet requirement's, validation documents are present and are properly documented.

15. **(R) Date:** Date when field 14 was signed. Recommend Month/Day/Year (mm/dd/yyyy) format.

SECTION 5

5. FORM 3 – CHARACTERISTIC ACCOUNTABILITY, VERIFICATION AND EVALUATION.

This form is used to record inspection results for the design characteristics and document any applicable non-conformances (see Appendix B for example).

1. **Characteristic Accountability – Form 3**

   - For all hidden and/or un-measurable characteristics within the upper level assembly drawing, the inspection of these design features shall be completed and recorded during the manufacturing/assembly process. All lower level parts shall have individual FAIRs documenting the FAI process in accordance with this document.
   - Lower level detail or sub-assembly parts are inspected to verify these characteristics within the Upper Level FAI Part and it's FAIR.
   - Characteristics verified at a detail level (lower level) or sub-assembly level may be referenced in the upper level FAIR. This is accomplished by the instructions established in Form 1, field 15 &18 and Form 3, field 9.

2. **Record Results- Form 3**

   - When design requirements are in a Digital Product Definition (DPD) format and traditional 2D drawing information is not available for all applicable design requirements, DPD design characteristics shall be extracted and included in Form 3 as design characteristics.

Fields 1 thru 4 are repeated on all forms for convenience and traceability. Any changes to fields 1 thru 4 shall be made on each Form 1, 2 and 3.

5. **(R) Char. No.:** The drawing(s) and specifications shall contain unique assigned identifier for each design characteristic. The supplier shall include a Bubbled/Bubble product drawing(s) clearly traceable to the characteristic number listed in Field 5. Individually identify all dimensional characteristics, drawing notes, specification requirements and any requirements shown in title fields of a drawing.

   - The supplier shall verify every design characteristic and record the associated results in an FAIR. Every design characteristic shall have its own unique characteristic number.
   - Additional lines are permitted on Form 3 for drawing note(s) and/or design feature(s), as needed. Reference Appendix B.
   - Tables within a drawing may contain multiple features. Each feature within the table shall be accounted for in Field 8. Accomplishment may be completed individual characteristic or as one characteristic for the entire Table. Follow Field 8 and 9 instructions.
   - Multiple characteristics (e.g. 2X, 4X etc.) may be recorded in Field 9 as a Min/Max range of the actual measurements. (May also be listed separately by reference location on drawing)

- Automated inspection methods/tooling measurement report/results, shall all be clearly linked to the Char. No. in Form 3, Field 5, Bubbled drawing and measurement report/results.
- Basic and Reference dimensions on the drawing are optional and may be documented on Form 3, but are not required to be identified. If included these are subject for review and disposition.

6. **(CR) Reference Location:** When available, record the two dimensional designation of the general location of the characteristic. Older drawings may not contain border locations and this field is left blank.

   Note: Acceptable examples to identify a reference location may be similar but not limited to B5, B5-1, B5 S1 and B5 Sheet 1

7. (O) Characteristic Designator: When applicable, record information that adds clarity to the report. Otherwise leave blank or enter N/A.

   Note: Typically indicated through PO/Contract or drawing requirements

8. **(R) Requirement:** Record drawing features as shown within technical data packages. Record Dimensional Characteristics, Drawing Notes, Specification Requirements and Requirements shown in title fields of a Drawing, as listed.

- Requirements shall be recorded in the units specified on the drawing or specification.
- Drawing notes shall be recorded as the note number or the full text.
- Requirements within Tables shall be accounted for and recorded as identified, reference Field 5 for characteristic identification. Field 9 inspection results shall account for all features within a table.
- Record Nominal dimensions from drawings and/or specifications. Additional decimal places and range (min/max) are acceptable.

5. Char No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results
1	S1 H-8		**Acceptable examples are as follows:** **0.10” ±0.010”** **0.100" ±0.01"** **0.1000” ±0.010”** **0.0990” -0.1100”**	 **X.XXX”**

- Record tolerances of each feature when it’s stated in a design feature, such as a control frame feature.
- Record tolerances as stated within the design feature or use an alternate method to record upper and lower specification/tolerance limit, which is identical in comparison to design the feature/characteristic.
- True Position is recorded per drawing requirements.
- Basic and reference dimensions on the drawing do not require measurement results recorded in Form 3, Field 9.

- Record part marking per applicable specification(s); every design feature of the drawing note/specification for marking shall have inspection results. Some results may vary between attribute and variable data depending on each feature within the note.

9. **(R) Results:** As inspected, record measurement(s) using the units specified on the drawing or specification.

- For a single design callout that applies to multiple characteristics (e.g. 2X, 4X etc.), list each characteristic as individual values or list once with the minimum and maximum of measured values attained.
- Characteristics not measurable in the final product, also known as hidden characteristics, shall be recorded.
- Inspection shall be verified during the manufacturing process of the lower level part. Record the FAIR # and its characteristic number from the lower level FAIR.
- Inspection results for Tables shall be accounted for and recorded as identified, reference Field 5 for characteristic identification. Inspection results shall account for all features within a table. Inspection results given as an attachment shall be traceable to the all features of the table, within the table.
- When verification testing is required, record the actual results.
- Numerical dimensional results shall be recorded at a minimum to the number of decimal places as the drawing feature states. Additional decimal places are acceptable. See example below.

5. Char No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results
1	S1 H-8		**0.100" ±0.01"**	Acceptable examples are as follows: .09" 0.095" 0.0955" 0.0950" 0.09500"

- When verifying a Design Characteristic using Attribute data (e.g. pass/fail) in lieu of variable data, ensure the following:
  - Inspection technique resulting in variable data is not feasible,
  - Designed tooling or qualified tooling is consistently used as a check feature and a go/no-go feature and is established for the specific characteristic.
    - When Designed Tooling is used for inspection results, record as attribute data (e.g. pass/fail) and then refer to Form 3, Field 10 instructions for additional and required information to be recorded for this tooling.
    - When Qualified Tooling (e.g. radius gauges) is used as a go/no-go gauge, record the results as an attribute data (e.g. pass / fail) then refer to Form 3, Field 10 instructions for additional and required information to be recorded for this tooling.
- Attribute Data is permitted as an inspection result (Refer to Appendix D).

- Inspection results that are appraised/verified as to whether it does or does not achieve requirements recorded in Field 8, may be recorded in Field 9 using the following; Comply, Conform, Accept and Acknowledge. Supporting information may be recorded in Form 3, field 14. The following rules apply:
  - "Comply" or "Accept" is used when verifying processes or parts are compliant with specified regulatory requirements and standards, such as MIL, J-STD, ASTM, AMS, Environmental, IPC or ESD. In this field, record "Comply or Accept" along with document identification reference numbers to a Test Report, C of C and/or C of A containing objective evidence of compliance. If raw material (i.e. adhesives, solder, filler material……) are listed on Form 2 then requirement of C of C and/or C of A is not required on Form 3.
  - "Conform" or "Accept" is used as an attribute result when a design feature is or has been completed and verified. In this field, record "Conforms or Accept" and make reference to "What" in the process or product has shown evidence of compliance to the design, such as a reference to work order/manufacturing planning steps.
  - "Acknowledge" is used as an attribute inspection result when the FAI Part's drawing and/or specification is stating a "reference to" feature, such as a "drawing view", "See Note/Table…", and "Removed" statements. Record "Acknowledge" and when it is applicable make reference documentation, process or inspection steps to assure the feature is true.

  Note: When using inspection results such as Comply, Conform and Accept, include and record supporting information that answers the question; "Comply per what?" and/or "Conform per what?" This additional information shall be included in the FAIR.
- When automated inspection/tooling measurement is used to record pass/fail results, CMM or any automated inspection report shall be attached with the FAIR (refer to field 10).
  - All characteristic numbers shall be linked in the attached report.
  - The results in the attached reports shall be traceable to the characteristic numbers.
  - The results are directly equivalent to the design characteristic.

  NOTE: Coordinate Measurement Machine (CMM) data alone would not be acceptable for a positional tolerance; the results shall show the actual positional value.
- When characteristics listed in the drawing are validated using document listed in Form 2, such as Finish or Material; Record applicable unique identifier from the document (e.g. cert #, lot #, PO #).
- Characteristics and drawing notes that are a feature of a drawing, but not the manufacture; verify and record inspection results as accept, pass, complies or acknowledge. (E.g. DIMENSIONING AND TOLERANCING IAW ASME YXX.X or ALL DIMENSIONS SHOWN ARE CRITICAL AND SHALL BE INSPECTED.)
- Verify part marking is legible, correct in content, size, and properly located per applicable specification(s).
- Every design feature of the drawing note/specification for marking shall have inspection results. Some results may vary between attribute and variable data depending on each feature within the note.

- (CR) Designed / Qualified Tooling: This field is for Designed and Qualified Tooling information. Standard measurement equipment does not have to be recorded. See Appendix D for Terms & Definitions
- When a Designed and/or Qualified Tool is used to validate a design characteristic as attribute data (e.g. pass/fail), the tool identification number used measure and verify acceptance shall be recorded.
- When Qualified Tooling is used for attribute acceptance record the gauge value or range (e.g. minimum/maximum value), as applicable.
- When Automated Inspection Software is used as attribute acceptance record the SW program's name or identification number and revision status.
- Standard Measuring Equipment (SME) used for variable measurement results (i.e. Plug gages, Deltronics, Thread gages, Height gages, Bore Micrometers, Vernier Calipers, Micrometers, Super Micrometers) identification numbers are not required to be listed in Form 3, Field 10.

11. **(CR) Nonconformance Number**: If the characteristic is found to be nonconforming, record a nonconformance document reference number.

12. **(R) Signature:** Print name and signature of the person from the organization who completed and approves Form 3. Electronic identification or signature is both acceptable. Include a unique identifier, if applicable (e.g. Stamp number, Employee ID#, etc.).

    Signature indicates that all applicable design characteristics are accounted for and meet requirements.

13. **(R) Date:** Date when field 12 was signed. Recommend Month/Day/Year (mm/dd/yyyy) format.

14. (O) Additional Data/Comments: This area is reserved for optional fields; add additional columns, as required, by the organization or customer.

APPENDIX A – FAI PLANNING REQUIREMENTS

Purpose:

The purpose of a FAI plan is to document the activities to achieve the minimum requirements for the supplier to successfully complete the FAIR per AS9102.

Requirements:

- The supplier shall have a process to plan for completion of the required FAI or shall plan FAI activities prior to the first production run.
- FAI planning shall address the activities to be performed throughout the FAI/ manufacturing process and define the responsible groups of those activities.

General:

The supplier should consider the sum or all of the following activities during FAI planning and coordinate planning with the customer, if required:

- Review all documentation required to perform production of the product:
- Routing/Work Order documentation Process Sheets/Work Instructions for performance of work
- All required external Material and processing identifies the correct material specifications and specifications called out in the Technical Data Package (TDP).
- CMM manufacturing equipment programs are controlled and at the correct revision levels for the product being manufactured.
- Inspection points to be performed on product based on processing steps (e.g. machining, heat treating, plating, assembly, painting, marking, etc.) especially if all characteristics are not measurable on the final product.
  - Evaluate design characteristics within 2D drawings or within models or CAD files (e.g. digital product definition).
  - Verify all design characteristics are accounted for in the FAIR and determine whether Variable, Attribute, or Compliance data is required.
  - Assess what objective evidence will be provided with the FAIR for compliance of the features/characteristics, whether performed internally or outsourced to a sub tier supplier.
  - Some characteristics are measurable and others are performed by process steps requiring certifications or test. Process logs.
  - Determine whether by contract specific Special Process Suppliers are required to be used and that all TDP information is flowed to those sub tiers for compliance to drawing/specification requirements with required objective evidence.
  - Determine if drawings call out Key Characteristics (AS9103) and how they will be planned for.
  - Determine what tooling and gaging will be required to perform the FAI and product compliance inspections. Ensure all items used to verify compliance to TDP are identified, controlled and meet required calibration requirements.

- Determine whether a Full or Partial FAIR is required based on previous production activities of this part.
- Determine whether assembly items on any Supplier part list or Telephonics parts list are COTS, MOTS, MIL SPEC, or Build to Print items and if FAIR's are required to be provided with the part number being produced.

- When an FAIR is required on Items built/procured to a specification controlled document include all items in the build per the manufacturer's (supplier's) Parts List/Bill of Material.
  - When a FAIR is required on items built/procured to a Source Control Document all design characteristics must be bubbled on SOCD. Non-Design characteristics such as Scope, Applicable Documents, etc. need not be bubbled.
- First Article Inspection Reports shall be reviewed for completeness and approved (Field 21). Reports shall be organized in the following manner:
  - Form 1
    - Telephonics Purchase Order
    - Sub-Level FAI reports with certs complied in the order listed from fields 15 -18
    - Top level detail parts and certs complied in the order listed from fields 15 -18
    - SCI/COTS items and certs complied in the order listed from fields 15 -18
  - Form 2
    - Material and Special Process certifications complied in the order listed on Form 2
    - Modified COTS items and certs complied in the order listed on the Form
    - Test Data reports as applicable
  - Form 3
    - Telephonics ballooned Drawing and Parts List if applicable
    - Supporting dimensional reports referenced on Form 3
    - Supporting test reports referenced on Form 3

Reports submitted electronically shall follow the same organization as above. Files that need to be separated due to size limitations shall be done by each form. Reports returned for corrections shall be re-submitted as full reports. Missing pages, change pages or partial updates sent separately will not be accepted.

APPENDIX B – EXAMPLES – FORMS 1, 2, & 3

AS/EN/SJAC 9102 Rev B First Article Inspection
Form 1: Part Number Accountability

1. Part Number:	2. Part Name:	3. Serial Number:	4. FAI Report Number:
XXX-XXXX-XXX *(R) Telephonics PO Line Item Number*	PROCESSOR CABLE *(R) From Title Block of Telephonics Drawing*	N/A *(CR) When applicable, record S/N of the part*	0001 *(R) Suppliers unique assigned reference number that identifies the FAI.*
5. Part Revision Level: Rev C *(R) Telephonics Part Rev from Purchase Order*	**6. Drawing Number:** XXX-XXXX-XXX *(R) From Title Block of Telephonics Drawing*	**7. Drawing revision level:** Rev D *(R) From Revision block of Telephonics Drawing*	**8. Additional Changes:** *(CR) SVR/PCN# (if incorporated into FAI part and approved by Telephonics*
9. Manufacturing Process Reference: *(R) Unique ID # assigned by the Supplier*	**10. Organization Name:** *(R) Telephonics PO Supplier Name*	11. Supplier Code: *(R) Unique ID # located at the top left of the Telephonics PO sheet 1*	12. P.O. Number: XXXXXX or XXXXXXX *(R) Located at the top center of the Telephonics PO sheet 1*
13. Detail Part: ☐ *(Go to Field 19)* **Assembly FAI:** ☐ *(R) Check Detail FAI or Assembly FAI (Assembly FAI contain Parts List*	**14. Full FAI** ☐ **Partial FAI** ☐ *(R) Check as appropriate* **Reason for Partial FAI:** *(Change in Design, PCN# or Change in Sub-Tier FAIR# or Change in Final Test Procedure. List reason for Partial FAI)*	***Baseline Part Number (including revision level):***	

a) If above part number is a detail part only, go to Field 19.
b) If above part number is an assembly, go to the "INDEX" section below.

INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.

15. Part Number:	*16. Part Name:*	*17. Part Serial Number:*	18. *FAI Report Number:*
(CR) Verify the use and record the part numbers of components and/or sub-assemblies present in the FAI	*(CR) Record the name of the components and/or sub-assemblies Associated with field 15*	*(CR) Record is serial numbers are assigned to the part*	*(CR) Number of detail part*

List ALL Lower Level Parts (COTS/SCI, Sub-Assemblies and Detail Parts) used in FAI Assembly (Field 1) which is also referenced on the Telephonics PO. Ensure the Telephonics Parts List is accounted for in this section. For SOCD/SCD all requirements have to be accounted for on the form.

19. Signature ☐ **FAI Complete** ☐ **FAI not Complete** *(R) Suppliers Employee & Unique Employee Identifier* **Notify Telephonics Buyer if FAI is not complete**	**20. Date:** *(R) Month/Day/Year*
21. Reviewed By: *(R) Suppliers Employee & Unique Employee Identifier*	22. Date: *(R) Month/Day/Year*
23. Customer Approval: *(Leave Blank for Telephonics Approval)*	24. Date: *(Leave Blank)*

AS/EN/SJAC9102 Rev B First Article Inspection
Form 2: Product Accountability – Materials, Special Processes and Functional Testing

1. Part Number: XXX-XXXX-XXX *(R) Telephonics PO Line Item Number*	2. Part Name: PROCESSOR CABLE *(R) From Title Block of Telephonics Drawing*		3. Serial Number: *N/A* *(CR) When applicable, record S/N*		4. FAIR Number: 0001 *(R) Suppliers unique assigned reference number that identifies the FAI.*
5. Material or Process Name: *(CR) Name of the Process or Raw Material*	*6. Specification er:* *IL/ASTM STD from Drawing*	7. Code *(O) Not required by Telephonics*	*8. Supplier:* *(CR) Name of Sub-Tier Supplier of Raw Material or NADCAP Process*	*9. Customer Approval Verification:* *(CR) N/A when no approval is required*	*10. Certificate of Conformance number:* *(CR) Unique Identified traceable to the C of C provided in the FAIR*
11. Functional Test Procedure Number: *(CR) Traceable to Acceptance Report Results*	*12. Acceptance report number:* *(CR) Result of Functional Test recorded in Field 11. Indicate Pass/Fail Attach with FAIR*				
ATP XXX-XXX-XXX	Data Sheets P/N – XXX-XXXX-XXX See attached.				
13. Comments *(O) Use as needed to record any Supplier related Documentation used to verify the part for FAI*					

14. Signature: (R) Suppliers Employee & Unique Employee Identifier	15. Date: (R) Month/Day/Year

AS/EN/SJAC9102 Rev B First Article Inspection
Form 2: Product Accountability – Materials, Special Processes and Functional Testing

1. Part Number: XXX-XXXX-XXX (R) Telephonics PO Line Item Number	2. Part Name: PROCESSOR CABLE (R) From Title Block of Telephonics Drawing		3. Serial Number: N/A (CR) When applicable, record S/N		4. FAIR Number: 0001 (R) Suppliers unique assigned reference number that identifies the FAI.
5. Material or Process Name: (CR) Name of the Process or Raw Material	6. Specification er: (CR) MIL/ASTM STD from Drawing	7. Code (O) Not required by Telephonics	8. Supplier: (CR) Name of Sub-Tier Supplier of Raw Material or NADCAP Process	9. Customer Approval Verification: (CR) N/A when no approval is required	10. Certificate of Conformance number: (CR) Unique Identified traceable to the C of C provided in the FAIR

11. Functional Test Procedure Number: (CR) Traceable to Acceptance Report Results	12. Acceptance report number: (CR) Result of Functional Test recorded in Field 11. Indicate Pass/Fail Attach with FAIR
ATP XXX-XXX-XXX	Data Sheets P/N – XXX-XXXX-XXX See attached.

13. Comments *(O) Use as needed to record any Supplier related Documentation used to verify the part for FAI*

14. Signature: (R) Suppliers Employee & Unique Employee Identifier	15. Date: (R) Month/Day/Year

AS/EN/SJAC9102 Rev B First Article Inspection
Form 3: Characteristic Accountability, Verification and Compatibility Evaluation

1. Part Number XXX-XXXX-XXX *(R) Telephonics PO Line Item Number*				**2. Part Name** PROCESSOR CABLE *(R) From Title Block of Telephonics Drawing*			***3. Serial Number*** *N/A* *(CR) When applicable, record S/N*	4. **FAIR Number** 0001 *(R) Suppliers unique assigned reference number that identifies the FAI*
Characteristic Accountability				**Inspection / Test Results**				
5.Char	***6. Reference Location***	*7. Characteristic Designator*	**8. Requirement**	**9. Results**	***10. Designed/ Qualified Tooling***	***11. Non-Conformance Number***	14. *Additional Data/ Comments*	
(R) Unique assigned identifier for each design Char.	*(CR) Ref location*	*(O) Char Desig When applicable add information that adds clarity to the report*	*(R) Record dimensional Char, DWG notes, Specification Reqt's and Reqt's shown in the field of the Drawing.*	*(R) As inspected, record measurement(s) using the units specified on the Drawing or Specification*	*(CR) If specially designed tooling (including NC Programming) is used as a media of inspection record the tool identification number*	*(CR) If a characteristic is found to be nonconforming, record a document reference number*	*(O) This area is reserved for optional fields; add additional columns, as required, by the organization or customer*	
12. Prepared By *(R) Supplier Employee with Employee unique identifier*							**13. Date** *(R) Month/Day/Year*	

Bubbled Drawing: A Bubbled drawing is required for all FAIR packages to support Form 3, Field 5. The following shall be identified:

1. Identify 100% of characteristics
2. All notes and dimensions
3. All surface finish callouts
4. All material and hardness callouts
5. Requirements identified in Title Boxes at the bottom of Drawings.

APPENDIX C – SPECIAL AND CHEMICAL PROCESSING

Telephonics considers the following as “Special Processes”:

All Methods, Types, Grades and Classes of brazing, heat treating, plating (electro & electroless), non-destructive testing (NDT), welding, coatings on composites and various chemical processes.

Processing includes, but is not limited to, processes listed in the following table:

Electroplating	Electroless Plating	Chemical Milling	Chemical Etching	Alu chromic anodizing
Hard Sulfuric Anodizing	Alu Sulfuric Anodizing	Ti Sulfuric Anodizing	Mg Anodizing	Alu Conversion Coating
Mg Conversion Coating	Phosphate Conversion	Passivation	Electrolytic Polishing	Cadmium Brush Plating
Alu Brush Anodizing	Brush Plating	Brush Anodizing	Primer on Composite	Dry Film Coatings
Paint system on Composite				

APPENDIX D – TERMS AND DEFINITIONS

Assembly FAIR: A First Article Inspection Report generated from an assembly or sub-assembly. Assemblies contain a list of manufactured or procured parts, components or sub-assemblies used in the FAI part. When applicable, the list includes items called out in the Telephonics part drawing, Telephonics Parts List, BOM, etc.

Attribute Data: An inspection result from a characteristic that is appraised/verified as to whether it does or does not achieve requirements of the correlating characteristic. Attribute data is qualitative data that can be counted for recording and analysis. Attribute data is purely binary in nature (i.e. Yes or No).

Inspection results in attribute data form, by itself, is not enough to objectively support validate and/or verify the design requirement has been achieved. Additional information is required.

Bubbled Drawing: See Appendix B. While conducting the FAI a Bubbled drawing is used to identify each characteristic within the drawing. Every dimension and note, including surface finish, material, hardness, etc. callouts, are marked with a unique identifier such as a number that is circled. Each identifier corresponds to the FAI Form 3 Fields 5-11 and 14 as required.

The purpose of Bubbled a drawing is to ensure accuracy and completeness and to establish a standard and organized routine to collect drawing requirements and their inspection results; proving objectively each drawing requirement is met.

Bonus Tolerance: Bonus tolerance = true position tolerance (measured hole size – MMC hole size). The further you are from MMC when it is referenced in the feature control frame, the more bonus tolerance you are allowed. (E.g. for a hole, the larger the diameter, (closer to the LMC) the more bonus tolerance you have for your true position.)

Commercial-Off-The-Shelf (COTS): Commercially available items intended by design to be procured and utilized without modification.

Designed Tooling: Product specific tooling [i.e. check fixtures, Coordinate Measurement Machine (CMM) program] specifically made to validate the design characteristics of a product. Reference Form 3, Field 10 for designed tooling entry.

Detail Part: A part that does not require a list of parts necessary to manufacture, assemble or maintain a product.

Digital Product Definition: Requirements of any digital data files that disclose the physical or functional requirements, including design or acceptance criteria (i.e. 3D model solid, etc.).

First Article Inspection (FAI): also referred to as Production Process Verification (PPV). A planned, complete, independent, and documented inspection and verification process to ensure that prescribed production processes have produced an item conforming to engineering drawings, Digital Product Definition (DPD), planning, purchase order, engineering specifications, and/or other applicable design documents.

First Article Inspection Report (FAIR): The forms and package of documentation for a part number, sub-assembly, or assembly, including associated FAI results, as defined by this document.

Location of Manufacture Change: For purposes of this document and to re-accomplish an FAI; Location of Manufacture Change is a physical move of the collective manufacturing process that involves critical manufacturing elements of People, Machine, Method, and Material and/or Inspection methods. The continuation of the FAI process shall be repeated when Location of Manufacture changes occur. Reference Section 1.1 of this document.

Multiple Characteristics: Identical characteristics that occur at more than one location (e.g., “4 places”), but are established by a single set of drawing requirements (e.g., rivet hole size, dovetail slots, corner radii, chemical milling pocket thickness).

National Aerospace and Defense Contractors Accreditation Program (NADCAP): is a global cooperative accreditation program for aerospace engineering, defense and related industries.

Primary Reference Document: For the purposes of this document, the terms and definitions are the same as those in AS9102 Aerospace First Article Inspection Requirement, current revision.

Product: Wherever the term “product” occurs, it can also mean “service”.

Qualified Tooling: Universal (not part specific) calibrated measuring equipment (e.g., go/no go gauges, thread gauges, radius gauges) used to validate product design characteristics, that are uniquely identified and traceable to their calibration records. Reference Form 3, Field 10 for measurement equipment entry.

Standard Catalogue Item (SCI): parts for which the design, manufacturing, inspection data, and marking requirements of the part are in the public domain and published or established as part of officially recognized standards.

Supplier Variation Request: Non-conformances are submitted for approval to Telephonics using a Supplier Variation Request (SVR).

APPENDIX E – NONCONFORMANCE HANDLING

a) Any FAI with design characteristic nonconformance(s) is considered “Not Complete”. Form 1, field 19 shall be signed and be noted as “FAI NOT Complete”.

1. Non-conformances found against the Product affecting form, fit, function shall be recorded on Form 3, Field 11. Non-conformances shall be dispositioned, approved, closed prior to the product final acceptance.
2. Non-conformances found against the Product violating a design (drawing) characteristic and have been reviewed to have no potential to effect form, fit, and function and shall be recorded on Form 3, Field 11.

b) FAIRs marked “Not Complete”, as a result of product nonconformance affecting form, fit, and function or violating a design (drawing) characteristic are suitable for delivery only after the SVR is approved. Note the SVR # in Form 1 Field 8.

1. When processing a FAIR with documented non-conformances and/or open actions:

   a) Check the box “FAI Not Complete” on Form 1 (see field 19).

   NOTE: This document does not control disposition of SVRs or non-conformances.

   b) Sign Form 1 fields 19 and 21 per supporting form instructions.

   c) Record the nonconforming design characteristics on Form 3.

   - Include approved SVRs with a disposition of “Use As Is” or “Repair”, by Telephonics
   - Record the nonconformance document reference number on Form 3 (see field 11).
   - Enter the Supplier’s NC number and Telephonics SVR number.

c) The supplier shall implement corrective action(s) and perform a Partial FAI for all characteristics affected through the implementation of corrective actions associated with SVRs and open actions. The Partial FAI is accomplished as established by Telephonics. If the partial FAI does not clear all identified non-conformances, the FAI is still considered “Not Complete” and the requirement to complete the FAI still remains in effect.

- A full FAI may be done in lieu of a partial FAI.

NOTE: Telephonics approval of an incomplete FAI does not eliminate the requirement for Partial FAI.