TE Requirement – Frist Article Inspection

AS9102 Rev B – Aerospace First Article Inspection Requirement

Invoked by AS9100:

8.5.1.3 Production Process Verification

The organization shall use a representative item from the first production run of a new part or assembly to verify that the production processes, production documentation, and tooling are able to produce parts and assemblies that meet requirements. This activity shall be repeated when changes occur that invalidate the original results (e.g. engineering changes, production process changes, tooling changes).

NOTE: This activity can be referred to as First Article Inspection (FAI).

Definition

First Article Inspection (FAI):

[Also referred to as Production Process Verification] A planned, complete, independent, and documented inspection and verification process to ensure that prescribed production processes have produced an item conforming to engineering drawings, DPD, planning, purchase order, engineering specifications, and/or other applicable design documents.

NOTE: This activity can be referred to as First Article Inspection (FAI).

NOTE: See (AS) (EN) (SJAC) 9102 Rev B for guidance.

TE Requirement – Frist Article Inspection

TEC 1005 - REQIREMENTS FOR SUPPLIERS

6.11. Inspection

A. When indicated on the purchase order or other appropriate document when applicable, first article inspection data approval shall be obtained from the supplier and approved by TE prior to initiation of full production. The supplier is responsible for notifying Purchasing when first article samples and inspection data are available. Purchasing will make arrangements with the supplier to review the first article data and samples. TE first article approval does not relieve the supplier of the responsibility of assuring that subsequent production is in accordance with documented requirements.

For product manufactured to TE specifications a First Article Inspection Report (FAIR) may be required.

FAI approval must be granted by TE before shipment of product and in accordance with the latest revision level of AS9102 Aerospace First Article Inspection Requirement. When directed by TE, Supplier shall document FAIs within the licensed Net-Inspect software.

Partial or Re-accomplishment of a First Article Inspection shall also be done in accordance with the latest revision level of AS9102 Aerospace First Article Inspection Requirement, section 5.3.

First article data must include verification of materials and all specifications and tolerances on the prints, the actual reading of each dimension, a numbered print to correlate to the recorded data and

must include the print revision level. Where physical testing is required, test results must also be documented on the FAIR. If the FAI sample is accepted, the remainder of the lot will be inspected in accordance with the supplier's final inspection plan.

All out of tolerance conditions will be listed and corrected or reported to TE Quality Assurance prior to delivery of the supplies.

Suppliers shall conduct periodic First Article Inspection for Aerospace Products. Tooling shall be approved and periodically verified through FAI. Tools out of service shall be properly stored and periodically checked.

When specified on the purchase order all products shipped to TE Aerospace sites shall be accompanied by a certificate of compliance (C of C) stating that the materials provided conform to the order requirements. This C of C shall include the TE part number and revision level, purchase order number, quantity of parts in the shipment, date and the release authority's signature or stamp. Material analysis reports should accompany all raw material or contact material shipments. Supplier shall supply current Material Safety Data Sheets (MSDS) for raw materials and chemical compounds. Shipments not accompanied by the required documentation are subject to rejection.

102-32067 - Supplier First Article Inspection

102-32029 – ADM Quality Supplier

Purpose

FAIs provide objective evidence that:

All engineering design, specification requirements and manufacturing processes are:

- Understood
- Accounted for
- Verified
- Capable (SPC)
- Documented

What documents should be included in a First Article Inspection Report (FAIR)?

Requirements should be included in FAIR

- ✓ **AS 9102 forms 1/2/3**
- ✓ **Balloon Drawing**
- ✓ **Material (s) Certificate in accordance with TE technical specification /Test**
- ✓ **CoC's (Certificates of conformance)**
- ✓ **Deviation request if there is a Non conformance or a discrepancy**
  - **Deviation request should be approved by TE before to ship parts.**
- ✓ **Drawing requirements**
  - **including any notes , specifications, and lower-level drawings invoked.**
- ✓ **Control Plan /QIP**

When should FAIs be performed?

Full FAI

- Whenever there is a part or product that is being made for the first time
- Whenever there is a new supplier for a raw material in the final product
- When required by the customer
- When there is a change in the product design
- When there is a significant change in the method of manufacture (e.g. **Tooling**, Processes, **Machine**, **Location**, Numerical Control Program, Sequence of Manufacturing, etc.)
- When a product has not been manufactured in 2 years
    - Lapse is calculated from completion of last production operation to actual restart of production

Partial FAI

- Partial FAIs are generally not performed, as Full FAIs can be performed in lieu for circumstances calling for a partial FAI

AS9102(B) Forms and Supporting Information

The following three forms are templates used to meet the documentation requirements of AS9102(B). They report the key information needed to demonstrate that the production processes are compliant to the engineering design and specification requirements. These three forms are assembled with the other required documentation in a packet that will be presented to the customer for review and approval.

- The Total Number of Pages in the Report only counts Forms 1 – 3.
  - e.g. It can be a 30 page report, but Forms 1 – 3 may only be 5 pages.

Non conformances

When dealing with an FAI Sample with nonconforming design characteristics, the following options are available:

1. **Request Manufacturing to remake the FAI Sample**
   a) Re-examine all design characteristics to ensure conformance on all other characteristics
   b) Prepare a delta (partial) FAI report listing only the previously nonconforming characteristic
   c) Have your Quality Manager or a senior Quality Engineer review the report.
   d) Submit the delta FAI report along with the original full FAI report to the customer for review and approval – retain both samples for traceability
2. **Submit a sales call/Request customer deviation for the nonconformance**
   a) Paperwork documenting the customer approval must be included with the report
      a) No paperwork = no approval

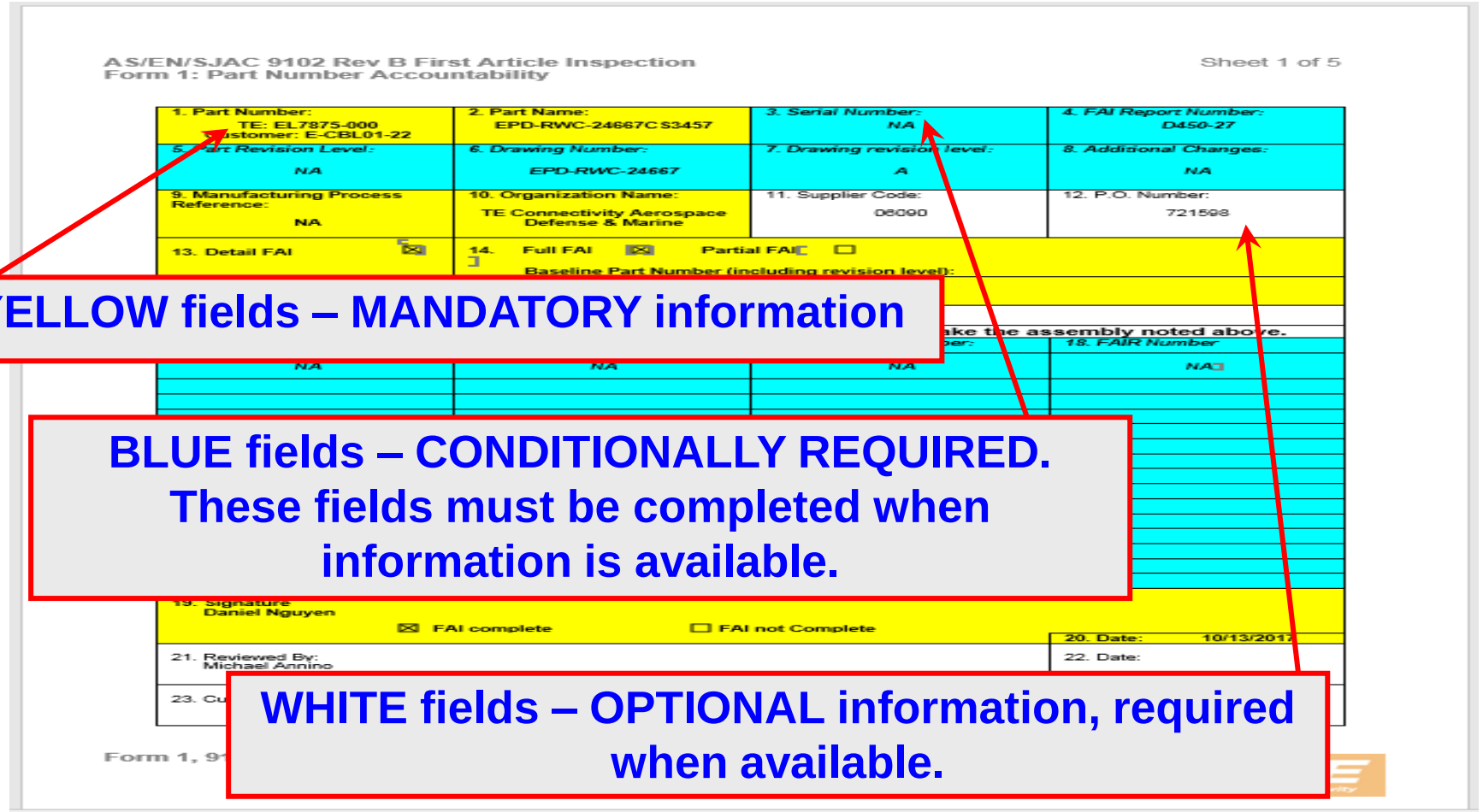
AS9102(B) Form 1: Part Number Accountability

AS9102(B) Form 1: Part Number Accountability

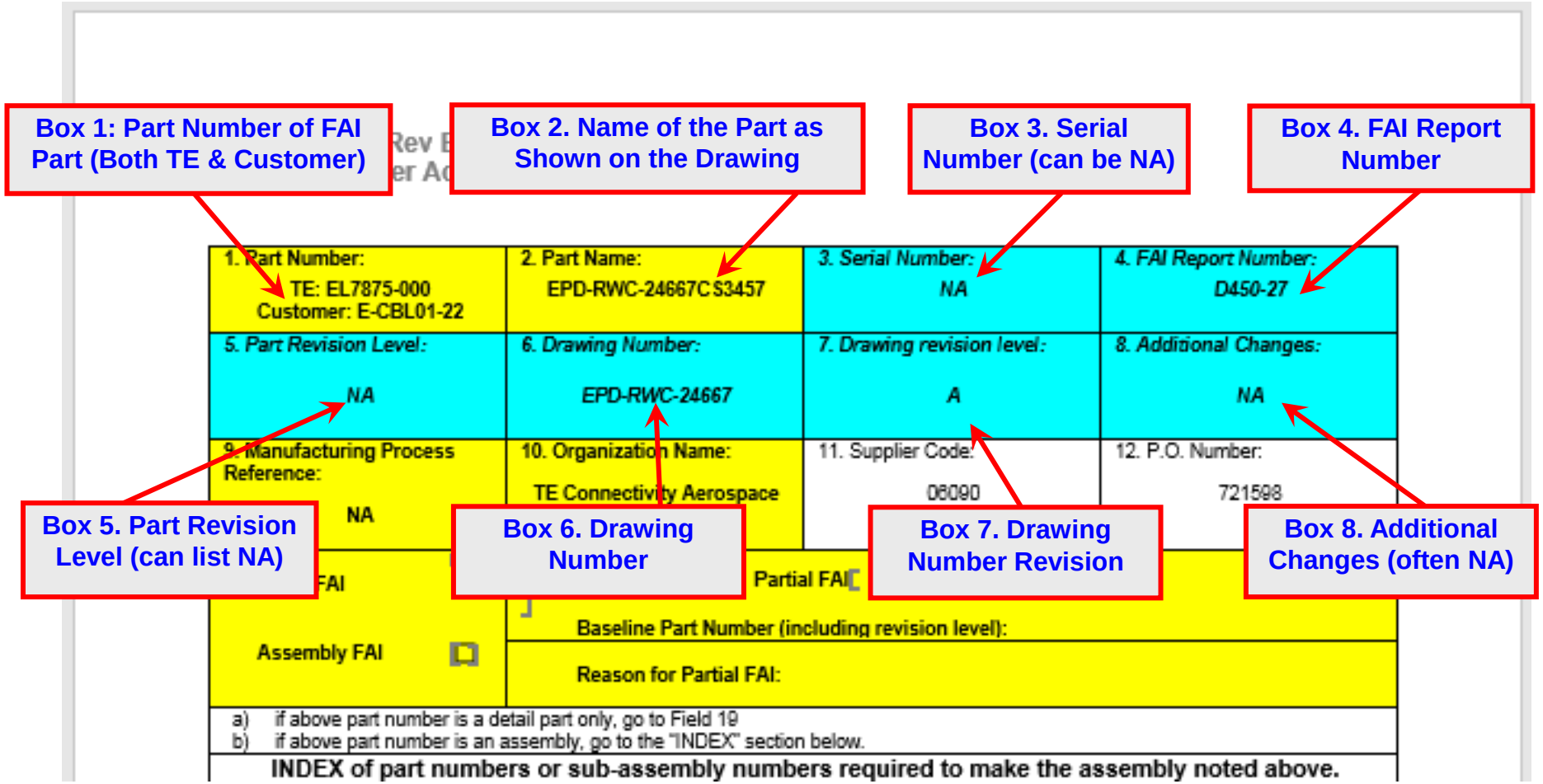
This form is used to identify the product that is having the First Article Inspection (FAI) conducted on

- Form 1 also includes all of the related data
  - Part number and revision level
  - Type of manufacturing process
  - Name of organization performing the FAI
  - Type of FAI
    - Detail Part / Assembly
    - Full / Partial

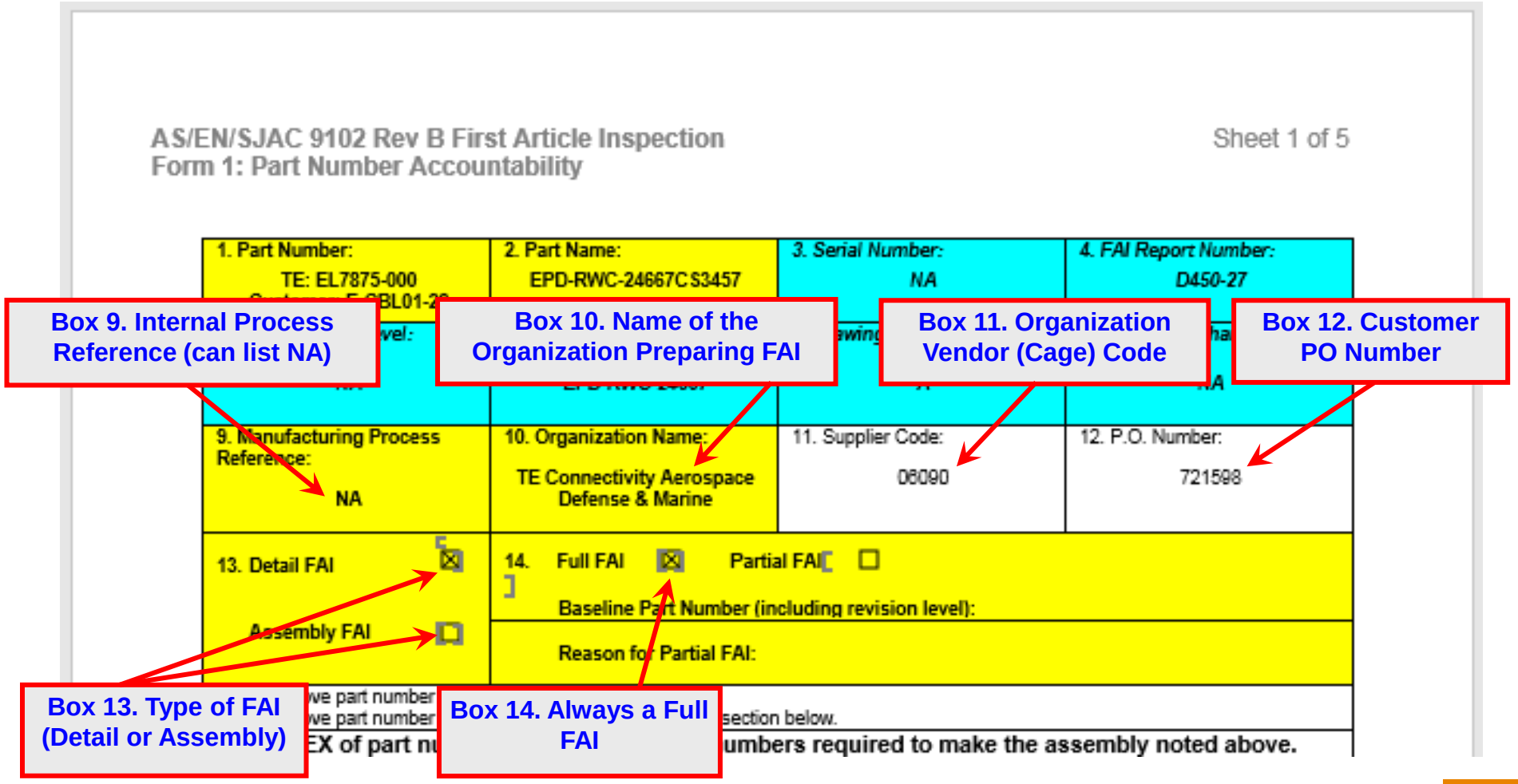
Filling in AS9102 Forms 1-3



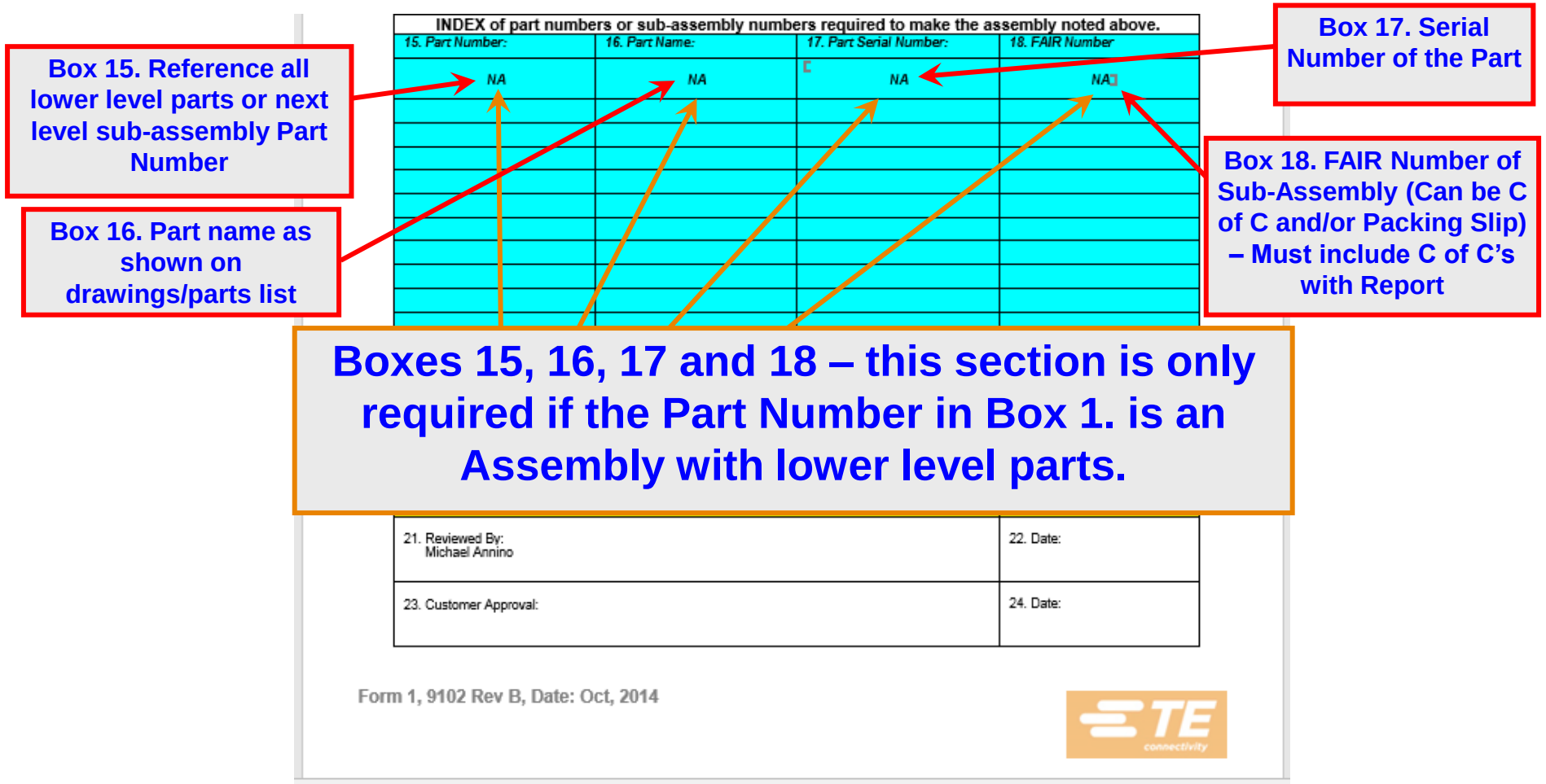
AS9102(B) Form 1: Part Number Accountability



AS9102(B) Form 1: Part Number Accountability

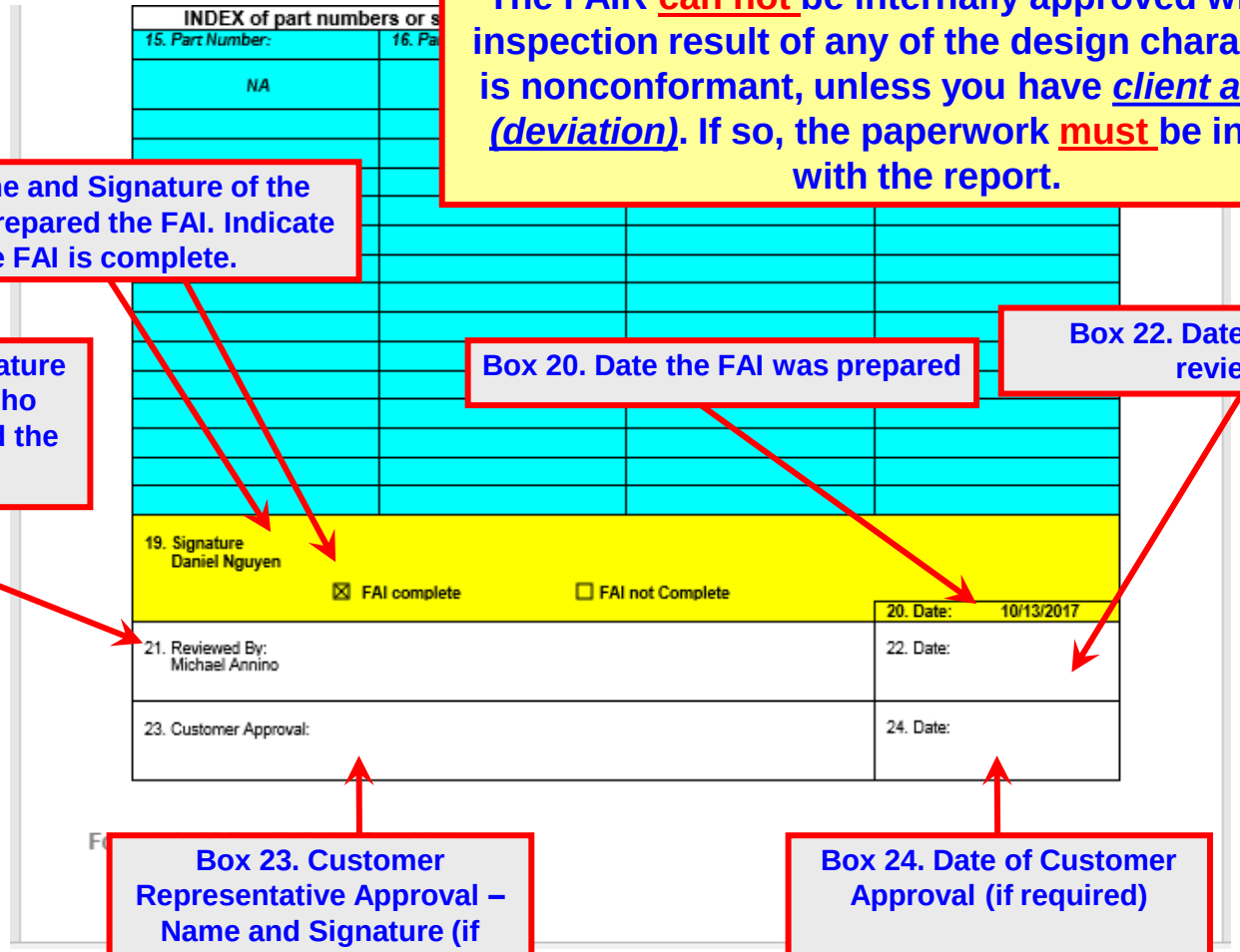


AS9102(B) Form 1: Part Number Accountability



AS9102(B) Form 1: Part Number Accountability

VERY IMPORTANT
The FAIR can not be internally approved when the inspection result of any of the design characteristic is nonconformant, unless you have *client approval (deviation)*. If so, the paperwork must be included with the report.



Box 19. Name and Signature of the person who prepared the FAI. Indicate that the FAI is complete.

Box 21. Name and signature of (internal) person who reviewed and approved the FAI Report.

Box 20. Date the FAI was prepared

Box 22. Date the FAI was reviewed.

Box 23. Customer Representative Approval – Name and Signature (if required)

Box 24. Date of Customer Approval (if required)

AS9102(B) Form 2: Product Accountability

AS9102(B) Form 2: Product Accountability – Raw Material, Special Processes, and Functional Testing

This form is used to document the raw materials, special processes and functional testing used in the manufacturing of the product. In addition, the below information is also listed:

- Material or Special Process Name (Typically the part number is used for raw material)
- Specification Number
- Supplier (Typically the Vendor 4-Digit/6-Digit SAP Code is used)
- Certificate of Conformance or Test Report Number

AS9102(B) Form 2: Product Accountability

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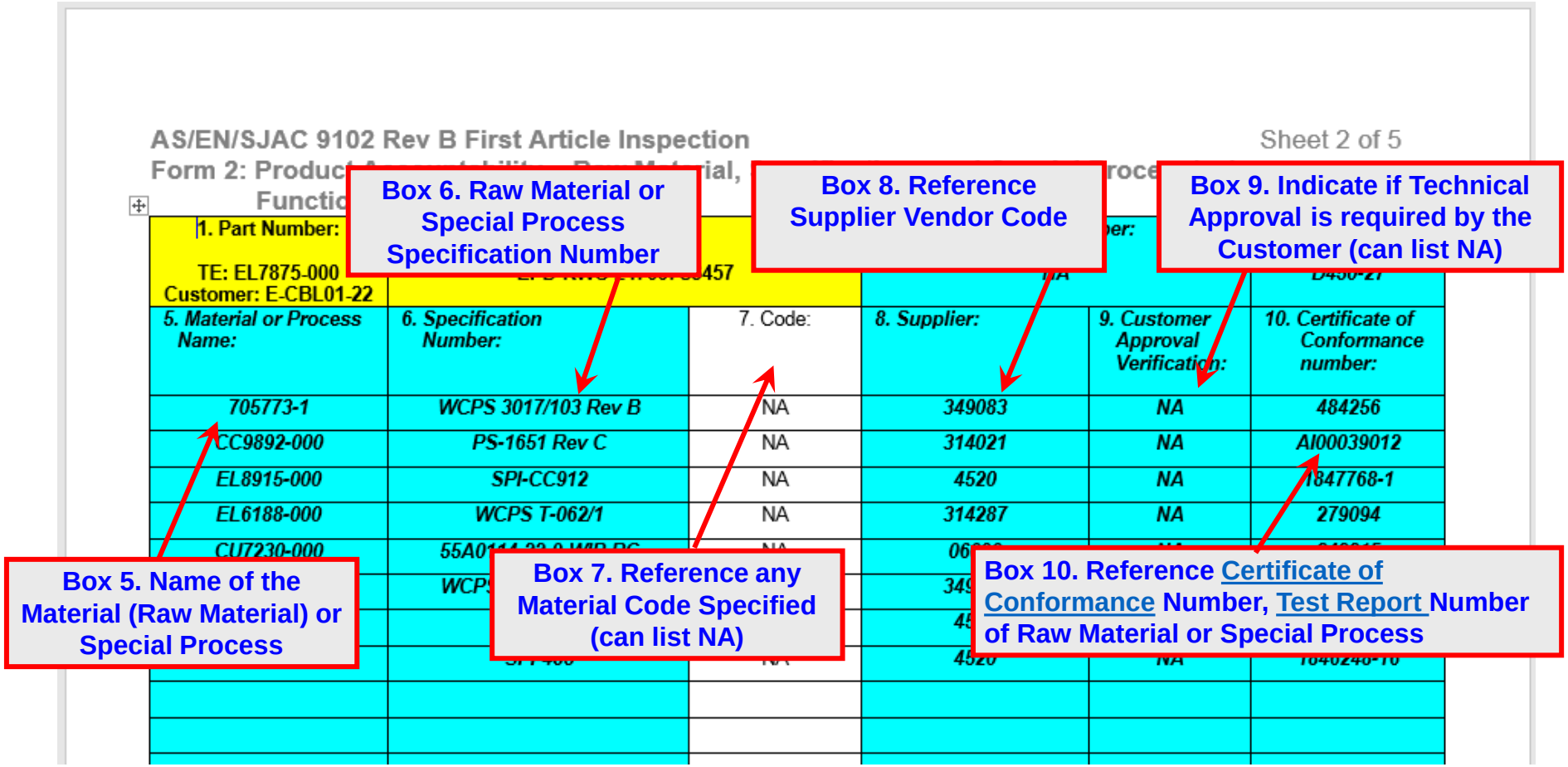
Form 2: Product Accountability – Raw Material, Specifications and Special Process(es), Functional Testing

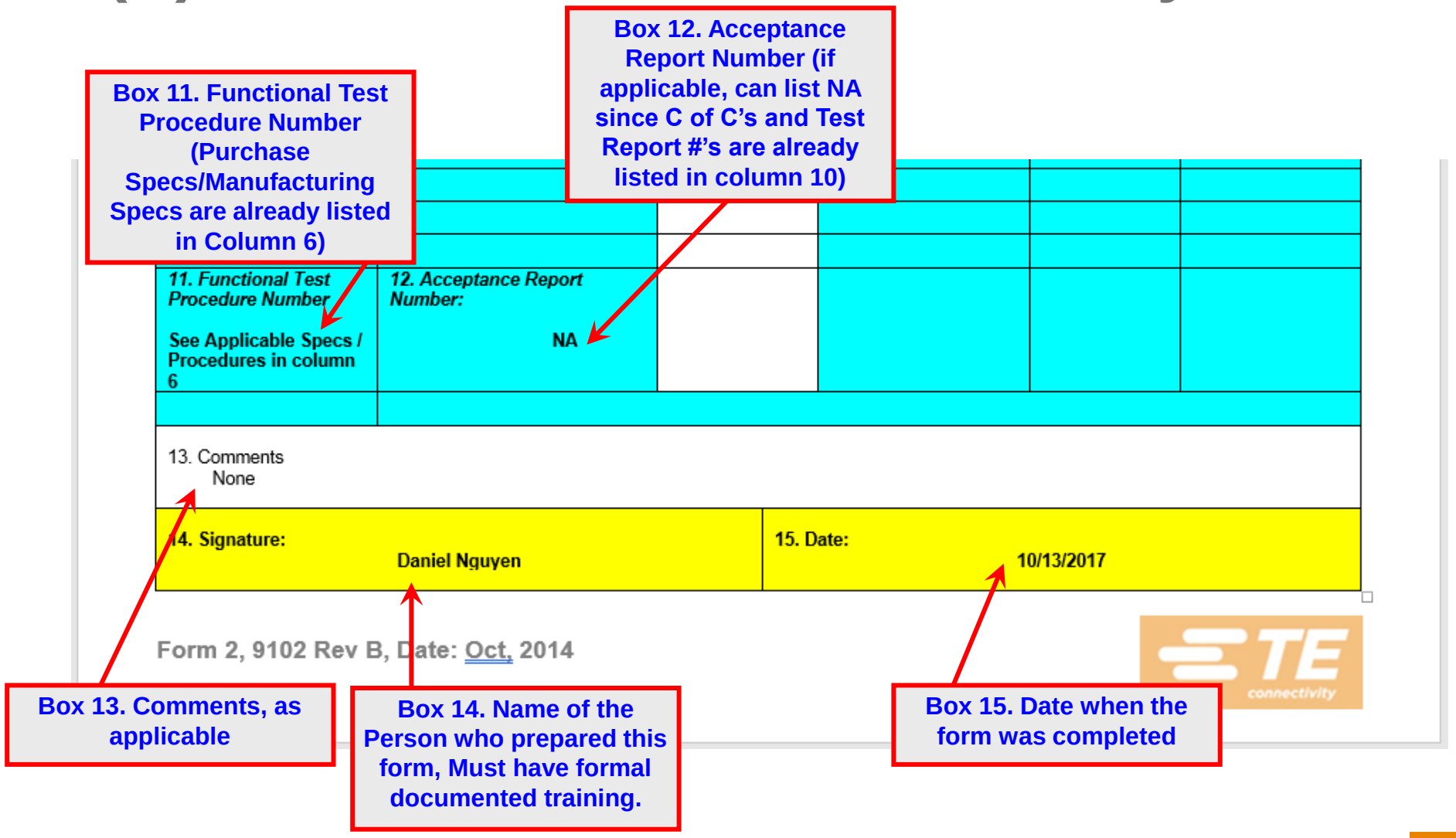
1. Part Number: TE: EL7875-000 Customer: E-CBL01-22	2. Part Name: EPD-RWC-247667S3457		3. Serial Number: NA		4. FAI Report Number: D450-27
5. Material or Process Name:	*6. Specification Number:*	7. Code:	*8. Supplier:*	*9. Customer Approval Verification:*	*10. Certificate of Conformance number:*
705773-1	*WCPS 3017/103 Rev B*	NA	*349083*	*NA*	*484256*
CC9892					*AI00039012*
EL8915-					*1847768-1*
EL6188-					*279094*
CU7230					*342815*
CA6170-000	*WCPS 3017/77 Rev. C*	NA	*349083*	*NA*	*485196*
CV0265-000	*SPI-485*	NA	*4520*	*NA*	*1846248-15*
CV0265-000	*SPI-485*	NA	*4520*	*NA*	*1846248-16*

Boxes 1 – 4 are repeated on all forms for convenience and traceability

AS9102(B) Form 2: Product Accountability



AS9102(B) Form 2: Product Accountability



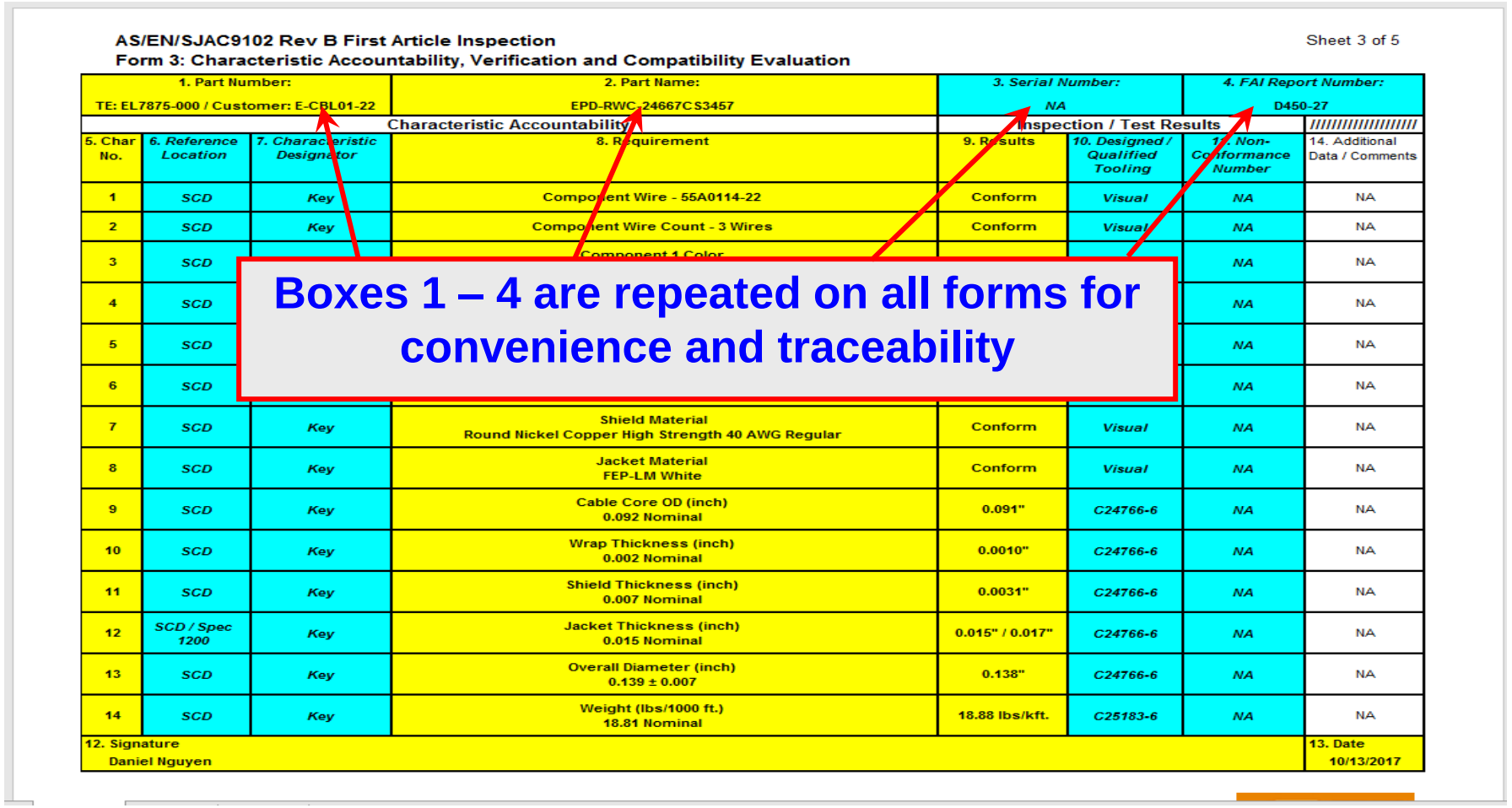
AS9102(B) Form 3: Characteristic Accountability

AS9102(B) Form 3: Characteristic Accountability, Verification, and Compatibility Evaluation

This form is used to record inspection results for the design characteristics and any functional tests that need to be performed per the Manufacturing Spec, SCD or CSR. In addition, the type of equipment or tool used in the validation of each characteristic is documented.

- The asset number used to validate the characteristic must be listed for traceability.
- Some large OEM customers require the calibration due date for the test equipment/tooling.
- This form may – and usually – contains more than 1 page.

AS9102(B) Form 3: Characteristic Accountability



AS/EN/SJAC9102 Rev B First Article Inspection

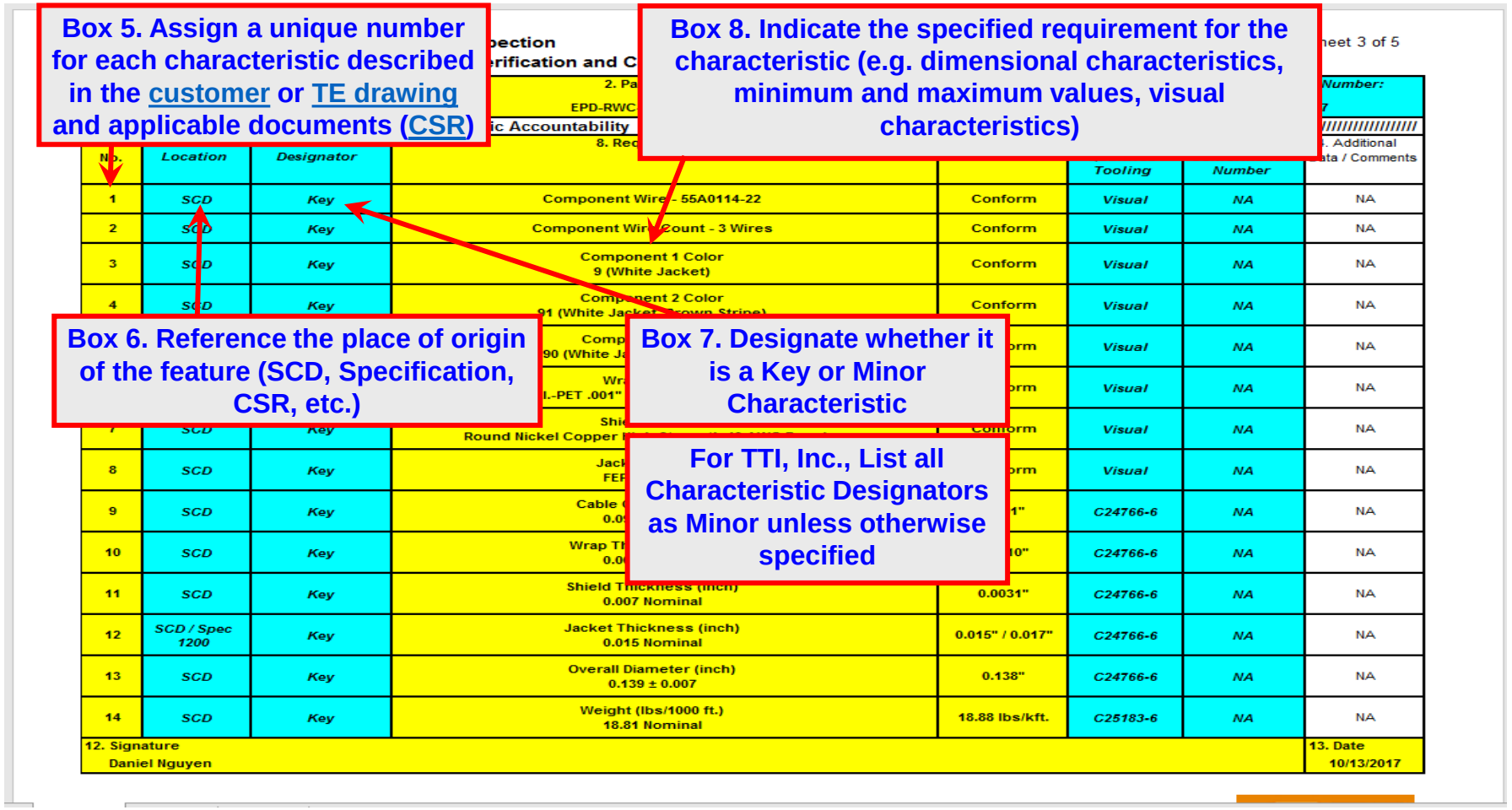
Sheet 3 of 5

Form 3: Characteristic Accountability, Verification and Compatibility Evaluation

1. Part Number: TE: EL7875-000 / Customer: E-CBL01-22			2. Part Name: EPD-RWC-24667CS3457	3. Serial Number: NA		4. FAI Report Number: D450-27	
Characteristic Accountability				Inspection / Test Results			
5. Char No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed / Qualified Tooling	11. Non-Conformance Number	14. Additional Data / Comments
1	SCD	Key	Component Wire - 55A0114-22	Conform	Visual	NA	NA
2	SCD	Key	Component Wire Count - 3 Wires	Conform	Visual	NA	NA
3	SCD		Component 1 Color			NA	NA
4	SCD					NA	NA
5	SCD					NA	NA
6	SCD					NA	NA
7	SCD	Key	Shield Material Round Nickel Copper High Strength 40 AWG Regular	Conform	Visual	NA	NA
8	SCD	Key	Jacket Material FEP-LM White	Conform	Visual	NA	NA
9	SCD	Key	Cable Core OD (inch) 0.092 Nominal	0.091"	C24766-6	NA	NA
10	SCD	Key	Wrap Thickness (inch) 0.002 Nominal	0.0010"	C24766-6	NA	NA
11	SCD	Key	Shield Thickness (inch) 0.007 Nominal	0.0031"	C24766-6	NA	NA
12	SCD / Spec 1200	Key	Jacket Thickness (inch) 0.015 Nominal	0.015" / 0.017"	C24766-6	NA	NA
13	SCD	Key	Overall Diameter (inch) 0.139 ± 0.007	0.138"	C24766-6	NA	NA
14	SCD	Key	Weight (lbs/1000 ft.) 18.81 Nominal	18.88 lbs/kft.	C25183-6	NA	NA
12. Signature Daniel Nguyen							13. Date 10/13/2017

Boxes 1 – 4 are repeated on all forms for convenience and traceability

AS9102(B) Form 3: Characteristic Accountability



Box 5. Assign a unique number for each characteristic described in the customer or TE drawing and applicable documents (CSR)

Box 8. Indicate the specified requirement for the characteristic (e.g. dimensional characteristics, minimum and maximum values, visual characteristics)

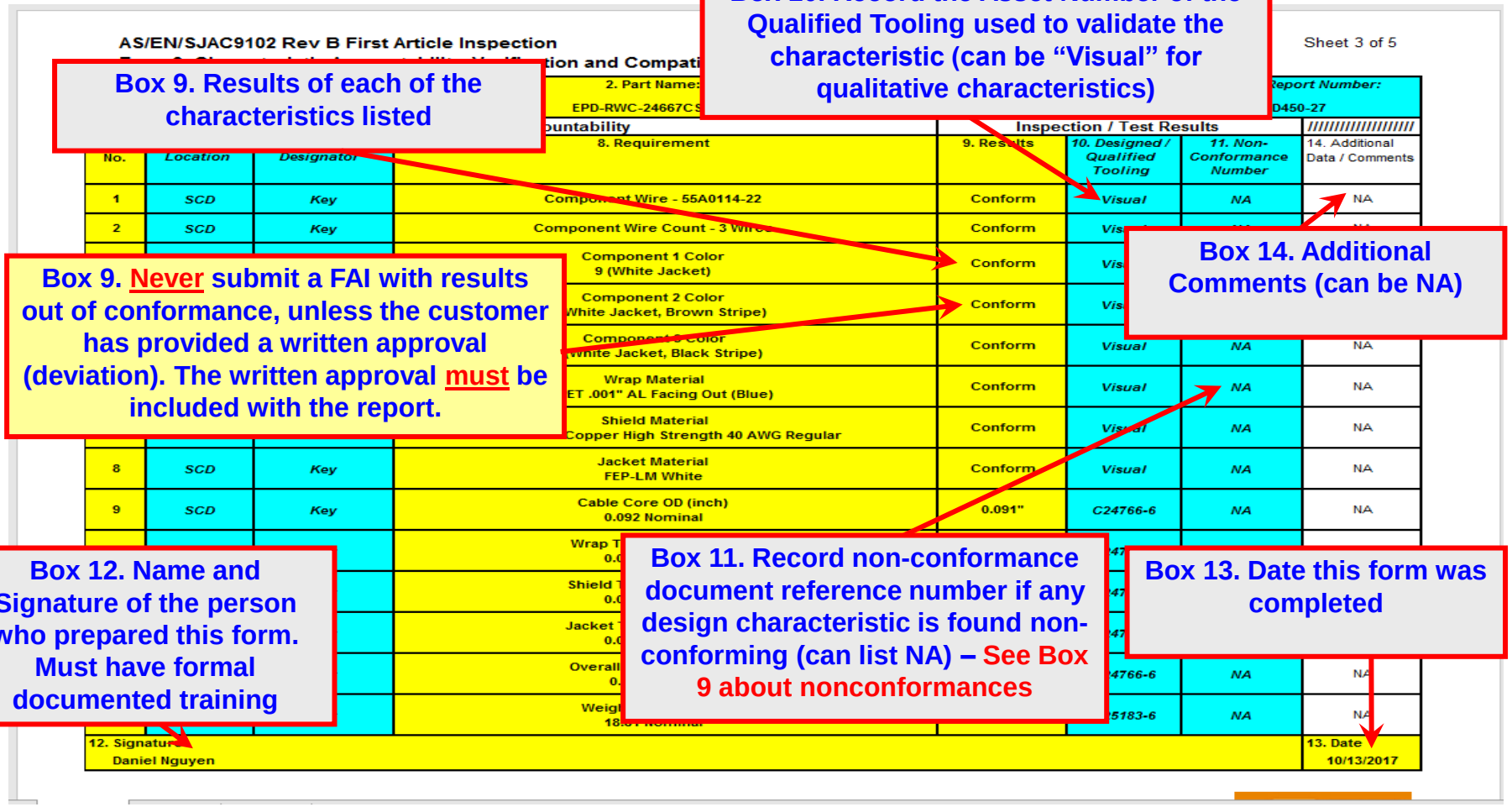
Box 6. Reference the place of origin of the feature (SCD, Specification, CSR, etc.)

Box 7. Designate whether it is a Key or Minor Characteristic

For TTI, Inc., List all Characteristic Designators as Minor unless otherwise specified

No.	Location	Designator			Tooling	Number	Additional Data / Comments
1	SCD	Key	Component Wire - 55A0114-22	Conform	Visual	NA	NA
2	SCD	Key	Component Wire Count - 3 Wires	Conform	Visual	NA	NA
3	SCD	Key	Component 1 Color 9 (White Jacket)	Conform	Visual	NA	NA
4	SCD	Key	Component 2 Color 91 (White Jacket - Brown Stripe)	Conform	Visual	NA	NA
			Comp 90 (White J	orm	Visual	NA	NA
			Wr I.-PET .001"	orm	Visual	NA	NA
			Shi Round Nickel Copper	Conform	Visual	NA	NA
8	SCD	Key	Jack FEP	orm	Visual	NA	NA
9	SCD	Key	Cable 0.0	1"	C24766-6	NA	NA
10	SCD	Key	Wrap Th 0.0	10"	C24766-6	NA	NA
11	SCD	Key	Shield Thickness (inch) 0.007 Nominal	0.0031"	C24766-6	NA	NA
12	SCD / Spec 1200	Key	Jacket Thickness (inch) 0.015 Nominal	0.015" / 0.017"	C24766-6	NA	NA
13	SCD	Key	Overall Diameter (inch) 0.139 ± 0.007	0.138"	C24766-6	NA	NA
14	SCD	Key	Weight (lbs/1000 ft.) 18.81 Nominal	18.88 lbs/kft.	C25183-6	NA	NA
12. Signature Daniel Nguyen							13. Date 10/13/2017

AS9102(B) Form 3: Characteristic Accountability



FAI Sampling, Completion & Submission

The FAIr including evidences & documents associated (see slide 5) should be submitted by email to

- Supplier Quality and paper version should be added with parts.

Upon submitting the FAIr to the customer:

- Request customer approval for the report and place a customer-signed Form 1 with the hard copy of the FAIR.

International Traffic in Arms Regulations

International Traffic in Arms Regulations (**ITAR**) is a United States regulatory regime to restrict and control the export of defense and military related technologies to safeguard U.S. national security and further U.S. foreign policy objectives.

ITAR Continued…

U.S. Persons, including companies that manufacture components for military applications, can be heavily fined if they do not take measures to safeguard the information related to the manufacture of such products (documentation, drawings, processes, specifications, etc.)

ITAR Continued…

The U.S. Department of State interprets and enforces ITAR. Its objective is to safeguard the national security of the United States and other U.S. foreign policy objectives.

In particular, the ITAR regulations dictate that information and material related to military defense and related technologies can only be shared with authorized persons from the United States, unless they receive authorization from the U.S. Department of State.