






QD0001 QUALITY ASSURANCE REQUIREMENTS FOR SUPPLIERS

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To Establish a dynamic, global, supply network that maximizes the combined strength of The TT Group companies, provides common processes and integrated systems, identifies aerospace suppliers and capitalizes on their skills with the objective of exceeding our customers' expectations for first time quality, on time delivery and long-term cost management.

TTEB is emerging as a leader in the production of aerospace components and product integration to the aerospace industry. As we continue to grow, TTEB is striving to become the supplier of choice for aerospace prime contractors. We also endeavor to be the supplier of choice for our aerospace customers. As TTEB is continually on the move to improve this position, our industry demands total commitment to continual quality improvement and process performance from both TTEB and our aerospace suppliers.

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Revision History

DATE	DCN	GENERATOR	NEW ISSUE	CHANGE DETAIL
16 July 2015	10929	J Robinson	06	<ul style="list-style-type: none"> Complete review
19 Dec 2018	11894	M Upfold	07	<ul style="list-style-type: none"> Up-date company name & staff names only.
24 th June 2019	11927	J Bowden	08	<ul style="list-style-type: none"> To add further requirements for deviation request and approval (See section 26). To add change requirements, as per below. Changes given in red.
21 st December 2020	N/A	M Osborne	09	<ul style="list-style-type: none"> Supplier Compliance Matrix requirement. OEM certification in support of Stockist / Distributor CofC, Inspection methodology. Zero Defects and capability of measurement equipment for Inspection and FAIR.
20 th January 2025	ECN-10072	M Osborne	10	<ul style="list-style-type: none"> Change to Quality Manager. Format change including information tables. Additional section on RMAs. Additional section on References. Addition of Appendix A and B.
5 th June 2025	ECN-10256	M Osborne	11	<ul style="list-style-type: none"> Appendix A removed. Section 13, 14, 15 removed, remaining sections adjusted and contents page adjusted. Section 10 incorporated into Section 6. Section 6.1 Reference added to new QD1004 document. Section 6.5 New information added regarding new investigation requirements and QD1005, QD1006 & QD1007 Section 7 amended to remove notes requiring FAIs to be shipped before parts, statement amended to allow parts to be shipped pending FAI approval. New section added – QD0001 Acceptance.

1. Section One - TTEB Quality Assurance Requirements Manual (QD0001)

1.1. Overview

1.2. It is the responsibility of the TTEB Supply Chain Management Team to establish and develop aerospace suppliers with demonstrated capabilities, to consistently evaluate the aerospace business climate and protect itself and its customers by securing reliable material sources. We are also required to ensure our suppliers consistently meet TTEB specified requirements for quality and delivery, maximize the supplier's total value while also aggressively minimizing all associated procurement costs.

TTEB is committed to eliminating occurrences of nonconforming products and processes as well as their related cost and schedule impact to our customers. TTEB recognizes that communication is vitally important to the support and success of our customers. To achieve these objectives, TTEB expects no less than this same level of commitment to product and service excellence and continual improvement from its aerospace suppliers.

As expected by our customers, TTEB requires its aerospace suppliers to recognize their responsibility for the quality of the products that they and their sub-tier suppliers provide. To meet this commitment, it is necessary that TTEB aerospace suppliers develop, execute, and sustain key business, operational and process management practices that demonstrate that they are capable of effectively meeting and exceeding the contractual obligations to the satisfaction of TTEB and our Customer's.

1.3. In addition to the requirements contained in this document, the supplier shall comply with the Quality Requirements noted in the Contract Terms & Conditions (T&C's) referenced in TTEB Purchase Orders (PO). Contact your TTEB Purchasing Representative if further clarification is required.

1.4. TTEB, its customers or Government Regulatory Agencies, have the right of entry into the supplier's facility. The supplier shall also include right of entry provisions in any subcontract. These provisions shall allow the supplier, TTEB Customers or Government Regulatory Agencies, to examine and verify the quality of work, records, processes, and material at any place, including the plant of the subcontractor.

1.5. Any correspondence or data submitted to the TTEB in support of the requirements contained herein are to be in English. Documented measurements will be derived using equipment that measures in the original native engineering unit of measure (i.e., engineering dimensions in English must be measured with equipment capable of measuring in inches. Mathematical conversions are not allowed). Requests for deviations to this requirement must be submitted to the TTEB Company Procurement Representative. Requests will contain a Measurement Plan detailing the documented process(es) that will identify the affected characteristics, ensure calculations are accurate, no rounding is utilized that could compromise engineering tolerances and individuals are adequately trained.

2. Section Two - Utilizing the TTEB Quality Assurance Requirements Manual

2.1. The TTEB Supplier Quality Assurance Manual (QD0001) contains prescribed methods for interaction between TTEB, TTEB and its aerospace suppliers. The contents of this manual are supplemented by TTEB specific requirements. TTEB specific requirements shall not supersede the requirements of this document.

2.2. With reference to this document, the term "TTEB" or "applicable TTEB" is defined as an TTEB Barnstaple (TTEB). TTEB (the corporation) is defined as the TTEB Enterprise.

2.3. This manual is applicable to TTEB as listed in Section One of this document unless otherwise agreed upon by the applicable TTEB and the supplier.

2.4. These methods shall be always adhered to ensure the conformance of products and services to specified requirements.

2.5. The manual will be maintained on the TT Barnstaple Supply Chain/ Supply Chain Quality. Printed documents are uncontrolled. Verify the current version of this document before use. This document is maintained by TTEB Supplier Quality Management.

2.6. Individual TTEB Company Quality Requirements

2.6.1. TTEB maintains Company specific Quality Requirements. Individual TTEB requirements shall meet or exceed the TTEB Quality Requirements detailed in this manual.

3. Section Three - Supplier System Requirements, Approvals and Evaluations

3.1. Overview

3.1.1. TTEB maintains an Approved Supplier Listing (ASL) as a basis for identifying direct part / material, processing and critical service suppliers who meet the standards necessary to fulfill its procurement needs.

3.1.2. Entry into the ASL is authorized by the Supply Chain Manager (SCM) and or the Supply Chain Lead (SCL) and maintained by the Supply Chain Quality Lead (SCQL), after completing the relevant approved documentation (QD0015 and QD0125).

3.2. Supplier Quality Management System Requirements

3.2.1. Aerospace suppliers shall implement and maintain a Quality Management System (QMS) in accordance with the respective Quality System standards listed in Table 1 (see para. 3.5) of this document, as appropriate for the type of product being delivered to TTEB. All costs associated with obtaining and maintaining appropriate Quality System approvals shall be borne by the supplier.

3.2.2. Supplier shall ensure that all personnel involved and perform work in support of a TTEB PO be made aware of:

- their contribution to product or service conformity.
- their contribution to product safety.
- the importance of ethical behavior.

Note: This requirement can be coordinated with transition to AS9100 certification.

3.3. The QMS identified in Table 1, shall be the Quality System standards used in determining eligibility for the TTEB Approved Suppliers Listing (ASL).

3.4. The TTEB will recognize AS/EN/SJAC9100, AS/EN/SJAC9110, AS/EN/SJAC9120/AS9003 (referred to generically as 9XXX) Quality System Certifications issued (less AS9003) only by an accredited Certification/Registration Body (CRB).

3.4.1. Suppliers that cannot or will not meet this requirement shall contact their TTEB Procurement Representative for further advice.

3.5. An initial and subsequent periodic review of a supplier's QMS may be performed at the option of TTEB. Objective evidence of supplier's compliance, either by submittal of requested evidence, or evidence of "Other Party" evaluation, may be acceptable for the purpose of re-survey to TTEB.

3.5.1. **NOTE:** "Other Party" - A registrar that has their accreditation body participates in the IAQG Quality System Certification oversight process. An "Other Party" Quality System Certification would be one issued by an accredited registrar that participates in the aerospace industry's IAQG oversight process. As requested, the supplier shall provide the TTEB with the right of access to perform appropriate assessments, surveys and reviews.

3.6. Suppliers shall provide TT Electronic access to their IAQG OASIS information upon request. IAQG OASIS information access may include but is not limited to the supplier's 9XXX audit record and/or copies of a supplier's past audit reports. Suppliers that do not provide this access or copies may be subject to additional TTEB approval audits or disqualification as a TTEB supplier. Access to the supplier's IAQG OASIS records or previous audit reports does not necessarily preclude the requirement for a TTEB approval audit.

3.7. Once added to the TTEB ASL, the supplier must continue to demonstrate an acceptable level of performance as noted in Section 9 to remain eligible for new business and to maintain their approved status.

3.8. Supplier name changes, changes in ownership, facility changes or changes in senior Quality management may subject the supplier's Quality System to reevaluation by TTEB Group. The supplier shall notify the TTEB within 48 business hours of the occurrence.

3.9. **New Suppliers**

3.9.1. An electronic supplier application is initiated by TTEB for all prospective suppliers. The application is forwarded to the prospective supplier by the TTEB Group. Unsolicited application requests from suppliers will not be reviewed.

3.9.2. After completion of the supplier application, the submittal is reviewed by TTEB Quality and Purchasing/Supply Chain Management to determine whether the prospective supplier is qualified to become a TTEB supplier.

3.10. **New Supplier Approval Appraisals**

3.10.1. Approval appraisals may be used to conduct a comprehensive risk assessment of the supplier's capabilities, capacities, compliance, strengths, and weaknesses and provide direction regarding developmental needs and opportunities.

3.10.2. The method of appraisal is based upon the scope and criticality of the work to be performed. For sustaining suppliers, past performance will also play a part in determining how frequent an appraisal may be employed.

3.11. Prior to any on-site activity, documentation and operational evidence to demonstrate performance should be organized to facilitate timely presentation and review by the appropriate TTEB personnel. TTEB personnel cannot conclude compliance unless they are presented with objective, verifiable evidence that the criteria have been met.

3.12. **Supplier Designations (See Table 1 for Minimum Quality System Requirements)**

3.12.1. Aerospace - This supplier is approved to provide materials/products for use in Aerospace (Commercial and DOD) applications.

3.12.2. Non-Aerospace - This supplier is approved to provide materials/products for use in other than Aerospace applications, e.g., Nuclear, Space, MRO, etc.

Table 1: Minimum Quality Systems Requirements:

Required Quality System Level	Applicable Minimum Quality System Document (7)	Supplier Description
Level 1 (3)	AS9100	Manufacturer with design authority (Major Assemblies, Source/Spec. Control Product); Engineering Services with design/release authority
Level 2 (3)	AS9100 (1) or AS9003A	Manufacturer (Build-to-Print) Value Added Distributor, JIT Suppliers, Inspection Services (e.g., CMM), Raw Material Suppliers
Level 3 (4)	AS9120 or, ASA100	Pass Through Distributor, Standard Hardware Suppliers
Level 4 (2)(4)	Nadcap AC7004, or AS9003A	Processor
Level 5	AS9100 (3), AS9003A, or ISO9001 (3)	Tooling with design authority
Level 6	AS9100 (3), AS9003A, or ISO9001 (3)	Tooling (Build-to-Print)
Level 7 (5)	NONE	Commercial, Off-The-Shelf (COTS), Technical Service Providers, Customer authorized, CFE/CFM/PMI (6)
Level 8 (3)	ISO 10012-1or, ISO 17025 or, ANSI Z540-1or, A2LA, or NVLAP or AC7006	Calibration/Laboratories
Level 9 (3)	FAA FAR Part 145/21 or AS9110	Repair Stations
Level 10 (3)	ISO9001	Manufacturer, Single source, Customer directed not able to meet AS QMS Requirements

- When AS9100 is referenced, EN9100 and SJAC9100 are also applicable.
- When AS9110 is referenced, EN9110 and SJAC9110 are also applicable
- When AS9120 is referenced, EN9120 and SJAC9120 are also applicable.

(1) Less the "Design" requirements of the standard

(2) Requirement is National Aerospace and Defense Contractors Accreditations Program (Nadcap) / Nucap Process A approval.

(3) "Other Party" certification required.

(4) "Other Party" certification required, Approval to AS9100 will also satisfy this requirement.

(5) Service Providers may require other audits if TTEB is to transmit Digital Data.

(6) CFE/CFM/PMI Customer Furnished Equipment/Material; Partner Managed Inventory. Customer authorized requires documented concurrence from the TGI customer.

(7) These requirements are for Aerospace supplier designation only. For Non-Aerospace, the TTEB Group Company will define the QMS requirements

3.13. Maintenance of Approved Supplier Status

3.13.1. TTEB monitors supplier performance monthly using Supplier Quality Performance Ratings. Suppliers who continue to demonstrate unsatisfactory performance may lose their approval status and become suspended or terminated. To regain satisfactory approval status, the supplier may be subject to formal supplier corrective action per Section 10, more extensive performance improvement actions as detailed in Section 11 or a supplier appraisal per Section 3.

3.13.2. Suppliers shall notify TTEB when an update to held quality approval certification(s) has been made regarding audits, ISO / AS certification etc. Copies of new certification to be emailed to your procurement representative.

3.13.3. Suppliers shall notify TTEB of the loss (probation / suspension / termination) of Quality System registration, FAA or National Aerospace and Defense Contractors Accreditations Program (NADCAP) NADCAP User Compliance and Audit program (Nucap) approvals, or any "major" nonconformance that has been designated as having "product impact" or "potential product impact" or that may affect any TTEB product. The supplier shall notify the TTEB within Forty-Eight (48) business hours of the occurrence. Submission shall be accomplished by sending an email to Barnstable.Purchasing@TTElectronics.com and providing the required details for action.

3.13.4. Suppliers may also lose their TTEB approved supplier status for failing to maintain their appropriate Quality System, FAA or NADCAP/NUCAP registrations or for any other significant quality related issues. The supplier shall notify the TTEB within Forty-Eight (48) business hours of the occurrence. Submission shall be accomplished by sending an email to Barnstable.Purchasing@TTElectronics.com and providing the required details for action.

3.13.5. The inactivation of a supplier based on Quality System failures shall ultimately be the decision of TTEB Supplier Quality Management in coordination with the affected TTEB.

3.14. Current Supplier Evaluations

3.14.1. For existing suppliers, the TTEB utilizes Quality System assessments, capacity analysis, and product conformity assessments to authorize supplier scope additions, maintain supplier approvals, and improve supplier performance. An approved supplier database is maintained with our agreed key suppliers being monitored monthly through Vendigital.

3.15. Capacity Risk Assessment / Conformity Assessments / First Part Qualification

3.15.1. The TTEB reserves the right to perform a review of the TTEB Purchase Order (PO) and deliverable product(s) key/critical elements with the supplier. Assessments shall include but are not limited to specific areas of the suppliers:

- Quality System
- Build package
- Contract and purchase order flow downs
- Control of tooling
- Digital data handling
- Supplier sub-tier management

3.15.2. Supplier Capability Risk Assessments are conducted to ensure the suppliers equipment, resources, technical and process capabilities are adequate to support the TTEB purchase order/contract requirements.

3.15.3. Supplier Product Conformity Assessments are a process-based review of a supplier's practiced business and manufacturing process controls against their internal procedures as well as PO and contractual requirements. Supplier Product Conformity Assessments may also be initiated when significant changes in a supplier's facility occur, major management changes, facility upgrades, equipment movement, major capacity changes, etc.

3.15.4. Examples of pre-production qualifications include, but are not limited to:

- First Part Qualifications,
- Thermal Profile Plans/Reports,
- Preproduction Verification Plans.

3.15.5. Subject review will be performed to the extent necessary to verify mutual understanding of PO requirements and ensure that supplier's production planning activities address all applicable key/critical elements.

3.15.6. Where specifications associated with the product being procured by the TTEB require qualification or other types of approvals prior to production, the supplier shall submit all required materials and/or documentation to the appropriate TTEB Business Unit Procurement Representative. **Regardless of the customer specification verbiage, the supplier shall NOT contact TTEB Group's customer regarding specification requirements associated with qualification data without prior written approval from TTEB.**

3.15.7. Nonconformances identified during any type of assessment or review may require initiation of formal corrective action requests to document the resolution. The TTEB and / or the appropriate TTEB will utilize assessment and review results as a basis for determining the amount and nature of additional supplier oversight required.

3.15.8. The appropriate TTEB may follow-up with suppliers to review the implementation of development strategies. This follow-up may occur through subsequent on-site assessments and/or a specific request to the supplier to provide evidence to substantiate the successful implementation of targeted improvements.

4. **Section Four - Supplier Responsibilities**

4.1. **Quality Assurance Requirements**

4.1.1. TTEB POs for direct parts / materials, outside processing and services may include several additional clause(s) relating to specific quality assurance requirements. Applicable Quality Assurance Requirements or Quality Clauses may be assigned on a part-number or contract number basis and are identified on the TTEB POs.

4.2. **Identifying Applicable TTEB Quality Assurance Requirements**

4.2.1. TTEB Quality Assurance Requirements are TTEB specific and apply only to the TTEB Business Unit issuing the specific Purchase Order.

4.2.2. Suppliers are expected to review all applicable Quality Assurance Requirements and clauses as a part of their contract review and quality planning processes. Requirements imposed by Quality Assurance Requirements are contractual and shall be integrated into the supplier's Quality Systems and / or product-specific planning and related controls to ensure consistent compliance for all parts / materials supplied.

4.3. The use of verbal communication is not accepted as an approved method of communicating PO and/or contract amendments, any required changes shall be followed up with an email clearly stating the updates as discussed.

4.4. The appropriate TTEB Procurement Representatives will assist suppliers in gaining the necessary access for the purposes of reviewing:

- Quality Assurance Requirements,
- Technical engineering requirements as defined on blueprints,

4.4.1. Specifications, etc., as well as:

- Requirements for Certificates of Conformance
- Quantified test results
- Use of appropriately qualified sources
- Special part / material identification requirements
- Any other requirement imposed by TTEB Quality Assurance Requirements applied to the subject PO

4.4.2. TTEB Quality Assurance Requirements encompass a broad range of additionally imposed contractual requirements, including but not limited to:

- Critical Part/Material Traceability and / or Serialization Requirements
- TTEB or TTEB Business Unit and its Customer's or regulatory bodies Right of Entry for review of equipment, facilities, products, processes and systems
- First Article Requirements
- Record Retention Requirements
- Special Restrictions on the Use of Qualified Sources
- Special Control and Disposition of Nonconforming Materials
- Program, Customer-Specific or DFAR Quality Requirements

4.4.3. Acceptance of the TTEB PO constitutes acceptance and accountability for the achievement of all requirements listed on the PO and the requirements contained herein. Lack of diligence on the supplier's behalf is not justification for not complying with the applied requirements.

4.4.4. It is the supplier's responsibility to perform an in-depth review of the purchasing documentation to ensure that the supplier can and will comply with the requirements therein. It is also the supplier's responsibility to request or otherwise obtain subordinate documents, specifications and data referenced within the Purchasing Documentation. It is advised that suppliers keep a record of all specifications they use for the parts manufactured, including the revision level and issue this list to their TTEB buyer contact at least once a month. TTEB can they carry out at check to ensure the supplier holds all current, up to date revision. **Failures resulting from a lack of review and / or compliance with subordinate requirements documents will be considered the responsibility of the supplier.**

4.4.5. The supplier must obtain any agreements deviating from the issued purchase order in writing. No verbal agreements or e-mails will be recognized under any circumstances and all liability because of the supplier accepting verbal changes to the purchase order shall be the responsibility of the supplier. Any requests or deviations shall be forwarded to the issuing TTEB Purchasing Representative in writing for agreement or re-assignment of the purchase order.

4.4.6. Changes, supplements or amendments to TTEB Quality Requirements must be agreed to in writing by the respective TTEB Supplier Quality Representative. TTEB Procurement Representatives do not maintain the authority to modify, rescind or otherwise alter TTEB Quality Requirements.

4.5. Contract Configuration

4.5.1. Unless otherwise specified in the PO / Long Term Agreement (LTA), manufacturing and inspection shall be performed to the latest TTEB released planning/engineering. The supplier is authorized to work to the drawing revision level noted on TTEB supplied planning (where applicable) or to a more current revision of released engineering supplied by TTEB. **If a drawing change notice or drawing revision changes the configuration of the part and is not called out on the PO, the appropriate TTEB Company Procurement Representative should be notified immediately for written authorization either by email or telephone call (and then backed up with an email).**

4.5.2. If the PO does not indicate the revision of the drawing or specification, the drawing and / or specification revision in effect on the issue date of the PO shall be utilized. Requests to utilize a later revision of a process specification may be submitted to the TTEB Procurement Representative.

4.5.3. Requests to utilize a later revision of a process specification must meet the following requirements:

- There is no TTEB initiated Engineering Orders associated with the process specification that the author of the specification has not incorporated in the later revision.
- There is no cost or schedule impact to deliverable hardware under contract.
- If an impact does exist as a result of using a later process specification revision than that is shown on purchase order, the supplier shall contact the applicable TTEB Procurement Representative for disposition instructions.

NOTE: Suppliers with design authority may approve their own sub tier process source(s). However, if any special processes are used, their suppliers must have NADCAP accreditation and be approved for the processes being applied.

4.6. Government Quality Assurance Requirements

4.6.1. When required, TTEB source inspection shall precede **ALL** government source inspection.

4.6.2. Unclassified Programs

4.6.2.1. The supplier shall determine applicability of this requirement via the "Government Source" requirement shown on the PO, at the PO line-item level, or within the PO "notes" section.

4.6.2.2. If applicable, the supplier shall promptly notify the government representative normally servicing supplier's facility. The supplier shall furnish a copy of the purchase order to the respective government office. If the government representative/agency cannot be identified, notify the TTEB Procurement Representative immediately.

4.6.3. Classified Programs

4.6.3.1. The supplier shall determine applicability of this requirement via the "Government Source" requirement shown on the PO, at the PO line-item level, or within the PO "notes" section.

4.6.3.2. When applicable, the supplier is specifically instructed **NOT** to contact the Government Representative normally servicing the supplier's plant. The supplier shall contact the TTEB Procurement Representative that will advise through TTEB security channels of the Government Representative accessed and designated for this contract.

4.7. Special Process Requirements

4.7.1. Special processes shall only be carried out by those companies holding Nadcap accreditation for those processes. (Where it is a customer \ end user requirement) These processes include:

- NDT
- Heat Treatment.
- Chemical Processing.
- Welding.
- Non-conventional machining.
- Thread rolling.
- Coatings.
- Surface Enhancement
- Materials Testing Laboratories
- Electronics assembly suppliers (PCB's, Circuit Card Assemblers, cables and harness manufacturer

TTEB is committed to the use of NADCAP for the accreditation of special processors. In the absence of NADCAP approval special dispensation shall be required from TTEB prior to use.

In addition, TTEB is committed to the use of NADCAP for the accreditation for other technologies as industry expectations are defined. These include fluid distribution systems, elastomer seals and electronics assembly suppliers. TTEB shall approach the relevant companies through the Supplier Management process to coordinate the transition.

4.7.2. TTEB reserves the right to validate NADCAP compliance to any processes that are unique to the TTEB or outside the scope of normal industry practice and/or NADCAP general audit practice. This requirement also applies to the first-tier suppliers with internal process capabilities. In addition, if the supplier utilizes any special external process sources, this requirement must be flowed down to the processing sources.

4.7.3. All costs associated with NADCAP/NUCAP accreditation shall be borne by the processor. Performance Review Institute (PRI), a nonprofit affiliate of the Society of Automotive Engineers (SAE), must perform all NADCAP/NUCAP accreditation audits. Detailed information regarding the NADCAP/NUCAP accreditation process, including the audit schedule can be obtained from PRI at: <https://WWW.P-r-i.org/nadcap>

4.7.3.1. Subcontracted processes of components of supplier design must be performed by supplier-approved facilities whose capabilities and performance are supported by objective evidence of control such as surveys and/or test results. **In the event that the subcontracted supplier is customer approved, it remains the responsibility of the supplier to verify all processes are performed in accordance with the specification requirements.**

4.7.4. A listing of all the facilities being used by the supplier must be available for review by the TTEB which reserves the right of disapproval of those facilities not considered satisfactory. **Suppliers shall not substitute their own or other party process specifications for TTEB or customer process specifications without prior written approval from the applicable TTEB Purchasing Representative.**

4.8. Raw Material Type and Temper

4.8.1. All metallic details, prior to the first fabrication operation, the supplier is required to verify the correct material type and temper to engineering. Verification shall be accomplished by verifying the Material Certificate of Conformance test results during receiving inspection of the raw material. (Evidence of the review shall be indicated by an inspection stamp).

4.8.2. The work order should have the information for traceability during the manufacturing process and must be stamped by the inspector on the assigned operation.

4.8.3. Evidence of verification shall be on the supplier's shop traveler, work order, planning paper or other inspection status documentation.

4.8.4. No material substitutions are authorized unless approved by the appropriate TTEB. Contact the appropriate TTEB Procurement Representative for approval.

4.8.5. Market changes are likely to happen in regard to material costs availability etc suppliers are to ensure they keep TTEB up to date on any changes that may affect the part they supply. It's encouraged that suppliers do a quarterly review of all materials used as a form of future proofing to ensure there are no delays or sudden changes and inform TTEB if there is likely to be any changes due to material market changes.

4.9. Counterfeit Parts Avoidance, Detection, Mitigation, and Disposition

4.9.1. TTEB suppliers shall put into place a documented program to avoid, detect, mitigate, and disposition counterfeit parts and materials. Electronics suppliers should utilize and reference AS5553 for guidance. All other suppliers should utilize AS6174 for guidance. Suppliers will be audited to identify if they have any company documentation to comply with.

4.9.2. Suppliers shall also flow down counterfeit parts program requirements to their sub-tiers, especially but not limited to:

- Electronic parts suppliers
- Raw material suppliers
- Distributors

Note: This requirement can be coordinated with transition to AS9100 certification.

4.10. Nonconforming Material Control

4.10.1. Supplier-responsible nonconformances are defined as any violation of a specified contractual requirement imposed by a TTEB PO. Nonconformance's are to be processed in accordance with the specific TTEB contractual requirements as defined in the respective appendices of this manual.

4.11. TTEB Supplied Material

4.11.1. If the TTEB supplied parts or material is found to be nonconforming upon receipt, the supplier is to immediately notify the appropriate TTEB Procurement Representative listed on the PO. The continued use of this material without the permission of the appropriate TTEB constitutes the supplier's acceptance of part or material quality and any costs related to repair or replacement. If the supplier does not receive a Certificate of Conformance (CoC) with the products supplied by TTEB, then they must inform the Point of Contact (POC) at TTEB and stop any further work until this has been reviewed and completed.

4.12. Supplier Disposition Authority

4.12.1. Unless identified specifically by a TTEB PO or Quality Requirement, a supplier's disposition authority of nonconformances is limited to Rework, return to supplier and Scrap, unless the supplier has been granted Material Review Board (MRB) authority, as issued by TTEB.

4.12.2. All material returned to a Supplier will be accompanied by a Supplier Nonconforming Product Notification Form and DMR Report stipulating the reason for return.

4.12.3. It is up to the supplier to validate TTEB Disposition Authority via the TTEB Quality Assurance Requirements. Disposition Authority terms are defined as follows:

Rework

- A process applied to nonconformance, entirely within the confines of the drawing specifications that will eliminate it and result in a characteristic that conforms completely to the drawings, specifications, and contract requirements.
- Under the provisions of this definition, rework is authorized only when approved in writing by the appropriate TTEB and the governing specification is within the bounds of the associated specification that provides the necessary rework instructions. When authorized in writing by the TTEB Group, suppliers must document the nonconformance(s) and provide detailed rework instructions as part of their manufacturing planning process. This is considered a part of the supplier's approved Quality System relative to the control, documentation, and disposition of nonconforming material. Any rework that will alter the chemical or mechanical properties of the affected part final engineering configuration must be submitted to the TTEB MRB for disposition.

Repair

- Under no circumstances shall a supplier or a supplier's sub-tier supplier perform any repair procedures / operations without specific written authorization from the appropriate TTEB. To accelerate the repair process, it is recommended that the suppliers submit their repair plan upon nonconformance notification to the appropriate TTEB Procurement Representative.

Reworked/Replaced Material

- When returning previously rejected material to a TTEB Group Company, the supplier shall reference the nonconformance document number on the shipping documents (including the Certificate of Conformance) and shall state if the items have been replaced or reworked. Under no circumstances should reworked or replaced material be combined with any other material.

Return to Supplier

- Return of subcontractor product found to be discrepant for subsequent rework or replacement.

Scrap

- Permanent removal from production and timely destruction of product found to be unfit for use. Scrapped products shall be conspicuously and permanently marked and or segregated until destroyed. All other dispositions of nonconforming material shall be submitted to the appropriate TTEB MRB.
- Scrapping of parts or materials that are provided by a TTEB customer or Company is prohibited without prior written authorization.

4.13. Maintenance Rejection Board (MRB) Dispositions for Supplier Designed Hardware

4.13.1. Suppliers of products that retain design authority to a Source / Specification Control Drawing (SCD) may use dispositions of use-as-is or repair as long as the nonconformity does not result in a departure from the requirements of the SCD / Customer Specification. This includes suppliers that produce products of proprietary design, and products to military and industry standards.

4.13.2. The supplier's MRB shall not perform any disposition on any nonconformance to customer requirements that affect form, fit, function, weight, interchangeability, reliability or safety. These nonconformances shall be submitted to the appropriate TTEB Procurement Representative in accordance with paragraphs 4.10 and 4.14.

4.14. Recording & Reporting of Supplier-Responsible Nonconformance's

4.14.1. Nonconforming parts / materials or processing shall be coordinated through the applicable TTEB Buyer. Such documents will be developed as a result of supplier-responsible nonconformances encountered at any point in the value chain established between the TTEB Buyer and its suppliers.

4.14.2. Nonconformance documents are to be submitted to the appropriate TTEB Procurement Representative.

4.15. Supplier Responsibilities upon Notification of Nonconformance's

4.15.1. Suppliers are expected to immediately route nonconformance information to their appropriate Operations and Quality personnel. Once notified, suppliers are required to undertake immediate containment action to minimize or eliminate any further impact to the TTEB and/or its customers as a result of similar nonconformance's, which may be in-process, in the supplier's inventory, or in the process of delivery. Containment shall include parts nonconformance that may be in the process of shipping, at a customer or in the field.

4.15.2. Suppliers will also be expected to participate in discussions with their TTEB Procurement Representative regarding appropriate disposition options for nonconformances encountered as well as the future availability of known acceptable replacement stock as required.

4.15.3. When schedule permits, suppliers may request return of nonconforming parts / materials, at their expense, when such parts/materials are not otherwise suitable for immediate use or rework by the appropriate TTEB. Alternately, when schedule permits, suppliers are encouraged to examine nonconformance's at the appropriate TTEB prior to final disposition to aid the development of timely and appropriate corrective / preventive actions.

4.16. **Supplier-Responsible Nonconformance Cost Recovery**

4.16.1. At the discretion of the TTEB, suppliers may be subject to charges for recovery of costs associated with any / all supplier-responsible nonconforming parts/materials. Such charges will include:

- An administrative charge for each nonconformance document generated by a TTEB supplier as determined by the contracting TTEB,
- An administrative charge for each request for error corrections required to a material certificate or Certificate of Conformance generated by a TTEB supplier as determined by the contracting TTEB,
- A "to be determined" rework charge (GBP) for each part requiring rework by the TTEB or TTEB Customer personnel, (amount as determined by actual rework cost),
- Part and / or material charges (GBP) per purchase order or contract pricing for each part and / or material scrapped at TTEB or its customer (amount as determined by scrap cost).
- Additional charges may also apply where parts or materials, as supplied by the TTEB and/or its customer, require scrapping at the supplier as a result of the supplier's actions (amount as determined by scrap cost).
- Additional charges may also apply where supplied parts / materials require extraordinary rework at the TTEB or its Customer, e.g., an assembly needing to be disassembled, part removed and replaced due to bad part / material, etc. (amount as determined by actual rework cost).

4.17. **Notification of Quality Escape**

4.17.1. When the supplier identifies or becomes aware of a suspect product / service that has escaped from the supplier's facility to the TTEB Group, the supplier shall notify the appropriate TTEB Procurement Representative within 48 hours or email Barnstaple.Purchasing@TTElectronics.com, the following clearly highlighting the full details (Manufacturers Part Number, Description, Quantity, Lot or Batch Number, Date of Delivery, Delivery Shipment Number). Note: For escapes that affect "Safety of Flight" (i.e. controls) the suppliers shall submit all available information IMMEDIATELY UPON DISCOVERY to the Buyer and the email Barnstaple.Purchasing@TTElectronics.com, clearly stating "Safety of Flight" as the Header.

4.17.2. A product or service escape is defined as a product or service that has been delivered / provided to TTEB by a supplier that does not meet the TTEB purchase order requirements.

4.17.3. The supplier notification shall consist of two (2) methods of communication:

- By telephone to the appropriate TTEB Procurement Representative and then a second notification in email in writing utilizing the email Barnstaple.Purchasing@TTElectronics.com,
- The supplier shall provide all the information detailed above. Notifications that do not contain all requested information will be returned for additional supplier information.
- Suppliers are required to attach the last FAI performed for the affected part (s). It is acceptable to list the FAIR No.

4.17.3.1. If it is immediately known, it is expected that supplier root cause and long-term corrective action will also be submitted with the notification. If the root cause and long-term corrective action is not immediately known, it shall be provided within fourteen (14) days or sooner if identified.

4.17.3.2. The TTEB may require additional detailed information to support internal investigations and/or customer requests. Any similar goods held by the supplier shall be inspected and when found nonconforming, contained to prevent shipment.

4.18. **Non-recurring** instances of escapes reported by the supplier are recorded within the supplier's Quality Performance Rating.

4.18.1. It is the TTEB Group's option to report Supplier Notifications of Escape incidents to the suppliers Quality System certification body via the OASIS feedback process.

NOTE: Suppliers may lose their approved supplier status and be removed from TTEB ASL for failing to report a known product quality escape, and any further orders will be immediately cancelled at no cost to TTEB.

4.19. **Inspection Sampling**

4.19.1. In some cases, inspection sampling methods are specifically prescribed or even prohibited, by TTEB Customers. Prior to implementation of any sampling, sampling plans and procedures must be submitted to and approved by TTEB Quality Assurance.

4.20. **Non-Destructive Test (NDT) Submittal Requirements**

4.20.1. When required by TT TTEB purchase order or Quality Requirement, submittal of NDT general procedures and part-specific techniques to the TTEB is required prior to production testing. Note that TTEB approval may also include the need for the TTEB customer approval.

4.20.2. Suppliers shall review the purchase order and associated drawings/drawing notes and related documents to determine if / when NDT is required.

4.20.3. NDT procedures and/or techniques shall be submitted to the TTEB Procurement Representative.

4.20.4. Guidelines for the minimum content of general procedures / techniques are provided in the respective NDT process specifications. After initial approval, any changes to subject documents shall be resubmitted to TTEB for approval.

4.20.5. Unless detailed on the TTEB purchase order, NDT technique submittal is required for the following items only:

- Critical Parts
- Class 1 and 2 castings (in accordance with SAE-AMS-STD-2175)
- Pyrotechnics
- Compo Companies
- Adhesive Bonded Assemblies
- When specifically designated in the TTEB Group's purchase order, drawing, etc

5.6.6 Suppliers Using Outside (sub-tier) NDT Sources.

5.6.7 Suppliers employing outside sources for NDT shall ensure that the selected NDT sub-tier has TTEB approval as applicable for the NDT procedure / technique used.

5.6.8 Suppliers Utilizing In-House or Outside (Sub-Tier) Sources for Radiographic Inspection.

- 5.6.9 When required by TTEB PO's or Quality Requirement, radiographic techniques shall be established to assure that castings and/or finished part are free from detrimental defects. Noted techniques shall be approved by a TTEB designated Level 3 prior to delivering the hardware. Note that TTEB approval may also include the need for the TTEB customer approval.

4.21. Manufacturing Plan Submittals for Critical Parts

When required by TTEB PO's or Quality Requirement manufacturing plans for Critical, or in some cases, Non-Critical Parts may be required for approval.

NOTE: "Critical Parts" are parts identified on the Engineering drawing as:

- Fracture
- Durability
- Fatigue
- Maintenance, as well as designated parts
- Flight Safety Critical, and identifiable parts

Manufacturing plans requiring TTEB and / or TTEB Group's Customer approval per specification / purchase order requirements shall be submitted to the appropriate TTEB at least 30 days prior to start of production, or as required by applicable specification.

Manufacturing plans shall be submitted to the appropriate TTEB Procurement Representative. The manufacturing plan shall contain fabrication, processing, processor name, and inspection steps in the sequential order required by the applicable process specification(s) and/or engineering drawing(s). This shall also include all sub-tier associated manufacturing and/or process plans.

Upon approval of supplier's manufacturing plan, the plan will be considered "frozen", and the supplier shall control all manufacturing, processing, testing and inspections as stated in the approved plan. No deviations, including supplier's sub-tier suppliers / processors, are permitted without TTEB Group's written authorization. Delivery of product is not permitted until the supplier has received appropriate TTEB approvals.

4.22. TTEB Furnished Tools

4.22.1. When the tooling is furnished by TTEB or TTEB Group's customers, this does not relieve the supplier of the responsibility of proving the adequacy of all tooling. Any anomalies found in such tooling must be immediately reported to the appropriate TTEB Procurement Representative. All TTEB furnished tools must be maintained, inventoried and readily recallable.

4.22.2. If TTEB furnishes tooling to supplier requiring a tool prove-out, TTEB Group's acceptance will be based on verification of supplier's first article part and/or assembly documentation.

4.22.3. The supplier shall induct all TTEB furnished Precision Measuring Equipment (PME) into their calibration system and control it in accordance with their written calibration procedures.

4.22.4. PME is defined as any device used to measure, gage, and test, inspect or otherwise determine compliance with prescribed technical/engineering requirements. PME includes, but is not limited to, calipers, micrometers, linear scales, pin gages, thread gages, spline gages, custom gages, and optical comparators; coordinate measuring machines, hardness & conductivity testing equipment, optical flats, roughness testers, torque wrenches, tensiometers, protractors, sine bars and angle blocks.

4.22.5. The supplier is responsible for maintenance periodic calibration of all TTEB furnished PME unless otherwise negotiated with the responsible TTEB Procurement Representative.

4.23. Key Characteristics

4.23.1. When the Engineering drawing, specification, and / or TT TTEB PO or Quality Requirement, includes "key characteristic" requirements, the supplier shall employ Variability Reduction / Statistical Process Control (VR/SPC) methods as defined in SAE AS9103 to ensure "Key Characteristic" integrity.

4.23.2. VR / SPC related records shall be retained at the supplier's facility and provided to the TTEB Group's representative, upon request, for compliance review. The definition of "Key Characteristic" shall be those Key Characteristics specifically called out on Engineering drawings and/or purchase order/manufacturing notes.

4.23.3. The supplier shall establish control plans for applicable Key Characteristics and strive to achieve Cpk of 1.33 or better. If not achievable, contact the appropriate TT TTEB Procurement Representative for directions.

4.23.4. When a TTEB key characteristic or key characteristics are identified and contractually flowed to the supplier, TTEB reserves the right to perform Advanced Quality System (AQS) Assessments as necessary at the supplier facility(s) to ensure compliance to TTEB PO /Long Term Agreement (LTA) requirements.

4.24. Software Control (End-Item Deliverable)

4.24.1. If the supplier provides software supporting procurement, the supplier shall establish and maintain a Software Quality Assurance (SQA) program in accordance with ISO 9001, utilizing ISO 9000-3 as a guideline for the development, supply and maintenance of software and any associated Data Item Description (DID) for writing an SQA plan.

5. Section Five - Shipping & Deliverable Documentation Requirements

5.1. Suppliers shall not return TTEB furnished material without written directions from the applicable TTEB Purchasing Representative. Material returned to the TTEB must include copies of TTEB shipping documents. The supplier shall provide a packing sheet for each separate shipment. At a minimum, packing sheets or attachments shall include the following information:

5.1.1. Supplier's company name and address,

5.1.2. The appropriate **TTEB PO** number, change order number and applicable PO line item(s) and Part numbers,

5.1.3. Record of applicable design drawing revision and applicable engineering changes (DCN, EO, etc.), as stated in the appropriate TTEB PO, or later revision,

5.1.4. The Suppliers Invoices must always reference the PO to correctly allow cross reference of the PO against the Invoice number. Invoices will be returned to the Supplier and at the Suppliers Cost be requested to Update the Invoice with the correct PO number.

5.2. **Certification of Conformance (C of C)**

5.2.1. Form and Content:

- A Certificate of Conformance (C of C) document provides written assurance that all work performed in connection with the appropriate TTEB PO conforms to purchase order requirements.
- This can be a separate document from the packing sheet, or included on the packing sheet,
- **NOTE:** The original signature and / or stamp of supplier's authorized Quality Representative are required and must be dated. Secured, computer-generated signatures are acceptable. Additionally, the certification statement must state the suppliers Quality Assurance department has inspected the parts and they adhere to all contract requirements, applicable drawings and / or specifications.
- All supplied C of C's and delivery notes must be clear and legible.

5.2.2. All C of C shall be traceable to the material submitted and at a minimum shall contain:

- Suppliers name
- Suppliers address
- PO number
- PO item number
- Drawing number and revision
- Quantity delivered
- Serial number(s) (as required)
- When applicable, nonconformance reference number

5.2.2.1. Product deliveries that have been subjected to Aerospace Industry designated "Special Processes" shall at a minimum be accompanied by the Processor's Certification for the Special Process or all the following:

- Name of special process facility
- Address of special process facility
- Special process designation, nomenclature and revision
- Date that special process was performed

5.2.3. Machined Part Suppliers, Sheet Metal Part Suppliers, Composite/Nonmetallic Part Suppliers, Casting & Forging Suppliers, and Raw Material Manufacturers:

5.2.3.1. The supplier shall provide the raw material certifications which were provided by the original mill. Mill certifications shall include conformance with the applicable material specification as noted on the applicable TTEB PO, material description, alloy and condition, physical properties, chemical analysis, and heat lot number.

5.2.3.2. All Stockist & Distribution suppliers shall supply the Certificates of Conformity from the OEM (Original Equipment Manufacturer) of a product alongside their Certificate of Conformity. This includes a distributor who procures from a Franchised stockist, they must have the CofC from the OEM.

Note: Unless specifically required by the purchase order, suppliers that have been granted delegation from the contracting TTEB Company or product that has been subjected to TTEB source inspection do not need to include copies of the material certifications with the product delivery. However, certifications shall be made available during source inspection.

5.2.3.3. If the raw material was purchased from a distributor, include the distributor's Certificate of Conformance along with the mill certification.

5.2.3.4. Recertification by any means other than by the original mill is not authorized unless specifically directed through specific TTEB Quality Requirements.

5.2.3.5. Castings and forgings procured in support of TTEB purchases of machined parts must have documented evidence of TTEB/ customer qualification acceptance prior to production. All chemical analysis and physical test certifications shall also be provided for castings and forgings.

- Suppliers using TTEB provided material may provide evidence of TTEB consignment in lieu of raw material certifications.
- This category also applies to machined / sheet metal assemblies where the assembly consists of the machined/sheet metal part and standard hardware such as bearings, bushings, nut plates, and/ or sleeves.
- The supplier must clarify the type of information being provided by typing the words "Date Code," "Control Number," etc, next to the information provided. When the shipment of deliverable items includes multiple date codes, control numbers, etc., each must be listed on the "Certificate of Conformance" document.
- When required by TTEB PO or Quality Requirement, Certificates of Conformance for metallic products shall contain hardness and conductivity values.
- TTEB may specifically identify what surfaces to perform hardness tests, and what methods to utilize.
Incorrect scale or location may result in a scrap part of which the supplier shall be responsibility.

- When special processing is performed, the suppliers manufacturing detail end item parts, shall list the order in which special processing was performed, the supplier that performed the process, the processor's special process approval number, and the Certificate of Conformance number from the special processor.
- The supplier shall apply the actual date of manufacture, date code(s) or control number(s) to the shipping document and/or "Certificate of Conformance", signed by a supplier's designated Quality Representative.

5.2.4. **C of C - Distributors of Standard Parts / Hardware / Raw Materials**

- To discourage the potential for counterfeit parts or materials from entering the supply chain, TTEB does not accept raw materials from pass through distributors (Level 3) that have not been procured directly from the manufacturer, unless certified copies from the original mill are available or prior written approval has been provided by the TTEB Group. Any purchase of recertified raw material or raw material that has departed from direct control of the manufacturer is prohibited. Attempts to make such sales to TTEB shall be grounds for supplier disapproval.
- TTEB approved distributors of raw material shall provide certified copies of manufacturer's test reports with each shipment.
- The TTEB classifies a supplier as an approved distributor for a specific manufacturer when the distributor has written authorization from the manufacturer to procure and distribute specific products produced by the manufacturer. It is the distributor's responsibility to provide a copy of the manufacturer's authorization letter to TTEB upon request.
- Suppliers who procure from distributors are to utilize only distributors with Quality Management Systems that comply with either AS/EN/SJAC9100, "Quality Management Systems – Requirements for Aviation, Space and Defense Operations," and/or AS/EN/SJAC9120, "Quality Management Systems – Requirements for Aviation, Space and Defense Distributors." TTEB Group's first tier suppliers shall evaluate and select distributors based upon their ability to comply with this requirement. Note that methods for demonstrating compliance can include, but are not limited to, Quality Management System certification, second party audit, survey, etc.
- Distributors shall ensure that standard parts / hardware/material are marked in accordance with specification requirements. Original mill marking shall be affixed and legible on raw materials and shall not show signs of tampering or altering.
- TTEB does not accept standard hardware or other items from pass through distributors (Level 3 Quality System approval) unless they are procured directly from the manufacturer, or a copy of the original manufacturer certification / test report is provided. In addition, hardware or other items that have been altered by a pass-through distributor will not be accepted without prior written permission by the TTEB Group. Distributors wishing to provide "value added" services shall be approved to a TTEB Supplier Quality System Survey Level 2 (See Table 1).

5.2.5. **C of C - Suppliers of Age-Sensitive Materials**

- Suppliers must provide the original manufacturing / cure date, lot number(s), expiration date or length of shelf life (if indefinite, so state), and any special storage/handling instructions.
- For age-sensitive rubber products, the supplier's "expiration date" or "length of shelf life" data is not required if the cure date and applicable specification number are stamped on the deliverable hardware. Supplier is responsible for determining if acceptance test report submittal is required in accordance with applicable material specification.

5.2.6. C of C - Rework/Repair/Replacement/Modified

- Items on supplier's Certification of Conformance and / or packing sheets (if it contains the C of C statement) shall clearly reflect the following requirements for rework, replacement, repair or modification of items returned to a supplier, including work performed by supplier at the TTEB Group's facility:
- A clearly visible declaration that the item(s) have been reworked, repaired, replaced, or modified (as applicable), in accordance with respective nonconformance documents or applicable TT TTEB PO,
- The item(s) meets the requirements of the engineering document(s),
- The original configuration and qualification status of the item(s) remains in effect (as applicable),
- All applicable nonconformance document numbers or other references have been noted to ensure traceability.

5.2.7. C of C - FAA Repair Stations

- Suppliers shall provide a completed serviceable tag with FAA Form/Tag 8130-3, "Authorized Release Certificate, Airworthiness Approval Tag" in accordance with FAR, Part 43. Any Airworthiness Directives (AD's) or Service Bulletins (SB's) required by the contractor, or the FAA shall be documented on the 8130-3 including level of compliance.
- When applicable, the supplier shall provide FAA Form 337, "Major Repair and Alteration", and or FAA Form 8110-3, "Statement of Compliance with Airworthiness Standards". Work must be performed by a FAA FAR 145 approved repair station. When requested by TTEB, suppliers shall provide a completed copy of the final inspection work order, which details the entire scope of work performed.
- When contractually required, TTEB is required to monitor suppliers for compliance to the FAA Anti-Drug and Alcohol Misuse Prevention Program (AAMPP). When requested by TTEB, the supplier agrees to provide objective evidence that employees are being tested as required by the AAMPP.

5.2.8. C of C - FAA FAR, Part 21 (Certification Procedure for Products and Parts)

- Suppliers of new FAA products/parts shall provide documented evidence of traceability to FAR Part 21, Quality System Requirements, with each shipment. Suppliers of approved serviceable replacement parts shall provide each shipment documented objective evidence of traceability to FAA FAR 21 as outlined by Advisory Circular No. 20-62 latest revision. Supplied parts shall be airworthy and acceptable for aircraft /aeronautical installations to all specifications called out contractually.

5.2.9. C of C - Qualification Certification

- When a TTEB drawing, procurement specification or purchase order requires deliverable items to be re-qualified, the supplier shall ensure that deliverable item(s) have identical components to those parts originally qualified for the applicable specification / control drawing. In addition, the supplier shall ensure that materials, parts and/or assemblies were inspected and/or tested to TTEB designated specification control drawings (both TTEB and supplier originated), and indicate revision level of engineering drawings, specifications, and applicable design / specification changes as stated in the applicable TTEB PO. TTEB shall view the supplier's C of C document and/or packing sheet (if contains C of C) as supplier's indication of compliance with this requirement. End items delivered prior to completion of qualification testing shall be allowed only by the applicable TTEB written consent.

5.2.10. C of C - Kitted Parts

- All deliveries must be accompanied by a legible C of C or equivalent with each kit. The supplier must certify that all material / parts have been processed, inspected, and tested in accordance with the purchase order and engineering requirements. The supporting data is on file and will be made available for TTEB review upon request. Any deviations / waivers associated with material / parts in the kit are to be listed on the packing slip / C of C along with the affected part number. A first article inspection in accordance with TTEB PO requirements is required against the kit part number as well as each individual part within the kit.
- **NOTE:** Any additional data package requirements will be itemized on the respective purchase order and/or planning configuration sheet (i.e., work order, manufacturing order, etc.).

5.2.11. C of C - Assemblies/Sub-Assemblies

- All deliveries must be accompanied by a legible C of C or equivalent with each kit. The supplier must certify that all material / parts have been processed, inspected, and tested in accordance with the purchase order and engineering requirements. The supporting data is on file and will be made available for TTEB review upon request. Any deviations / waivers associated with material / parts in the assembly are to be listed on the packing slip / C of C along with the affected part number. A first article inspection in accordance with this document is required against the assembly part number as well as each individual part within the assembly.

5.3. Marking, Packaging and Handling

5.3.1. Suppliers shall mark all deliverable products and documents in accordance with the PO, TT Description, ASL Part Number, Engineering Drawing Number, Lot or Batch Number and Qty, or this document in that order of precedence. In the event there is a conflict between the requirements defined in this document, the PO, the engineering drawing and/or specification, the drawing / specification shall take precedence.

5.3.2. In the performance of the contract, the supplier shall assure that all articles are packaged in a manner and with materials necessary to prevent deterioration, corrosion, or damage in transit. Requirements for packaging shall consider conditions affecting the article while at the supplier's facility, transportation to destination, and the expected or specified conditions at the destination.

5.3.3. The supplier shall provide special handling for articles sensitive to handling damage. During fabrication and processing, special carts, boxes, containers and transportation vehicles shall be used as necessary to prevent damage due to handling. During individual packaging of parts, the use of staples is prohibited.

5.3.4. This requirement excludes multi-part box packaging. All parts shall be checked by the supplier for damage at receipt (when applicable) and prior to shipment.

5.3.5. When specific packaging requirements are flowed down to the respective TTEB Group by their customer, the same requirements shall be flowed down to the supplier. These requirements may supersede the requirements of this section, e.g., government specification packaging.

5.3.6. Any item that arrives at TTEB and is deemed unsuitably packed by the Supplier, will be returned at the Suppliers Cost. TTEB will take photographs, note Delivery Notes etc, and forward the details to the Supplier to help with any further investigations. TTEB under the current Incoterms will not take ownership of products that arrive in unfit conditions.

5.4. Interchangeability And Replaceability (I&R) Requirements

5.4.1. Supplier shall review the TTEB PO and associated drawing(s) to determine if Interchangeability & Replaceability (I&R) features apply to supplier's deliverable hardware and/or statement of work.

5.4.2. I&R records shall be maintained by the supplier and made available for TTEB for review. upon request. Supplier's packing sheets and/or attachments must include the TTEB designated I&R control numbers as specified in this purchase order's configuration statement of work.

5.5. Records Retention and Disposition

5.5.1. Records shall be readily available for review by TTEB, its customers, and Government regulatory agencies. An English version (copy of the record) shall be available for all quality data and/or approved design data. Prior to destruction of any Quality Records related to TTEB procurement, the supplier shall notify and submit a records disposition request to the appropriate TTEB Procurement Representative.

5.5.1.1. Records are those defined in AS/EN/SJAC9100 or other governing Quality Management System specifications and shall be retained in hard paper, film media, and/or electronic as required by contract requirement, purchase order or if not defined, for a minimum of ten (10) years after purchase order completion or in accordance with TTEB PO. Per 5.5.1, TTEB will be offered the first right of refusal prior to record destruction.

5.5.2. Records include but are not limited to:

5.5.2.1. Inspections and test results per the appropriate TTEB PO requirements. As appropriate, the records shall indicate the nature and quantity of nonconformance's, the quantities approved and rejected, the nature of corrective action taken and the final sign off by Quality personnel.

5.5.2.2. Manufacturing information and all supporting documentation such as raw material certifications, special processing records and certifications, manufacturing records, e.g., routers and travelers, shall be retained and remain continually accessible at no cost to the TTEB by the supplier in accordance with the terms of the purchase order.

5.6. Traceable Records

5.6.1. The supplier shall maintain parts traceability records as required per applicable drawing requirements. The supplier's certificate of conformity package shall include parts traceability data.

5.7. Foreign Object Damage (FOD) Control Program

5.7.1. When required by TTEB PO or Quality Requirement, the supplier shall establish, document and maintain a FOD control program in accordance with NAS412. The goal of the program is to control and eliminate foreign object damage and/or contamination appropriate to the supplier's manufacturing, assembly, test, inspection, packaging and shipping operations.

5.7.1.1. **Foreign Objects (FO)** is defined as a substance or article alien to a product or system that could potentially cause Foreign Object Damage if not removed.

5.7.1.2. **Foreign Object Damage (FOD)** is defined as any damage attributed to a foreign object that may be expressed in physical or economic terms, which may or may not degrade the product's required safety and/or performance characteristics.

5.7.1.3. **Foreign Object Debris (FOD)** is defined as the condition where Foreign Object Debris has invaded a product or system. Examples include (but are not limited to):

- Manufacturing by-products and materials
- Solder balls, screws, nuts, washers; insert tangs, component lead ends, wire and sleeve clippings, pieces of electronic components, flux, excess solder, tin whiskers
- Dust/dirt from bench tops, equipment, and facility infrastructure
- Finger oils or lotions, fibers from clothing, wrist bands or accessories, hair
- Consumables, expendables, hardware, personal items

5.7.2. When applicable, the supplier's Foreign Object control program shall include controls to preclude Foreign Object Damage or contamination at the supplier's sub-tier sources.

5.7.3. The following basic elements shall be included in the supplier's Foreign Object control program:

- Foreign Object prevention training,
- Performance measurement,
- Design and manufacturing planning consideration for Foreign Object prevention,
- Work sequencing,
- Cleanliness of work area (housekeeping),
- Control of tools, personal items, fasteners, scrap, etc. (accountability)
- Lost items search and documentation process,
- Protection from Foreign Objects during handling, packaging and shipping,
- Physical entry control into Foreign Object critical areas,
- Foreign Object focal point(s),
- Periodic (At least annually) evaluation of the Foreign Object control program for effectiveness,

* At the TTEB Group's discretion, the supplier's Foreign Object control program is subject to on-Company review and approval.

5.8. Invoicing

5.9. All Invoices to TT must adhere to a specific set of information, so that payments can be processed quickly and without further additional emails to confirm data. The following set of data is the minimum standard required from TT to process a Suppliers Invoice.

- Purchase Order
- Purchase Order Line Number
- TT Part Number
- Quantity of the Purchase Order
- Price as per the Purchase Order.
- Delivery Number
- It is understood that some companies will have different IT Systems, and set up of Invoice Forms etc, but TTEB will encourage Supplier to adhere to the above set of data, to ensure smooth payment is maintained.

6. **Section Six – Notice of Non-Conforming Material (NCM) and Corrective Actions**

6.1. TTEB will immediately notify the Supplier if Non-Conforming Material is found but under the standard Terms and Conditions, TT reserves the right up to twelve (12) months to return any product which fails to meet the required specification under the Agreed PO. Upon verification that TTEB has received non-conforming product from a Supplier, TTEB will issue a Supplier Nonconforming Product Notification Form (QD1004) to the Supplier, along with a DMR (Defective Material Report) document.

6.2. Evidence of defects such as digital photos will be provided when possible. A sample of the defect may be sent to the Supplier upon request and formally recorded on EPICOR for audit requirements.

6.3. TTEB will issue a DMR to the Supplier regardless of the disposition and / or use of the non-conforming material and improper PPAP submissions as per the list in Table 2 for suppliers. TTEB will apply only the number of non-conforming parts to the Parts per Million (PPM) calculation if containment actions and sorting results are forwarded within an agreed time frame.

6.4. **Containment Actions**

6.4.1. Upon receiving the QD1004 and DMR from TTEB, suppliers are to acknowledge the non-conformance by signing the QD1004 form and return to the TTEB Supplier Quality Engineer who issued the form within 24 hours of notification. All containment actions must be completed within 24 hours of notification. The containment shall include product in transit, in warehouses, at the Supplier's production facility, etc. Supplier to ensure that TTEB is supplied with enough certified stock to ensure no disruptions to production.

6.4.2. Depending on the continuity of supply situation, the following may occur:

6.4.2.1. High inventory at TTEB - Supplier may choose to have product returned or Supplier may sort at TTEB.

6.4.2.2. Low inventory at TTEB - Supplier must come on-site to TTEB to sort for defective product.

6.4.2.3. Extremely urgent (possible line down) - TTEB will take the appropriate action, and the Supplier will be responsible for all costs incurred.

6.4.2.4. **NOTE:** TTEB production facilities do not allow sorting of purchased material to take place on-site. Suppliers must plan for transporting non-conforming material from TTEB, sorting the material, re-packaging, creating new packing slips with accurate quantities, affixing new bar code labels as needed, and arranging transportation of certified stock back to TTEB. TTEB will issue off from EPICOR the stock and submit a Remittance claim for the stock.

6.4.3. TTEB will contact the Supplier for authorization to return the material at Supplier's expense.

6.4.4. TTEB will not manage Supplier sorting using an outside source. Suppliers are responsible for outside sources and must make all arrangements to ship parts between TTEB and outside source.

6.4.5. Suppliers will also be responsible for inspecting and monitoring the quality of sorted parts.

6.4.6. Defective parts returned to the Supplier, reworked, and returned to TTEB may still be counted toward the Supplier PPM. Reworked parts must meet the high specifications required.

6.4.7. The repairing of parts is not permissible without prior written authorization from TTEB.

6.4.8. The supplier is responsible for reporting accurate sorting results and forwarding the details to TTEB for future reference. This can have an impact on the Supplier's PPM calculation.

6.5. DMR Investigations

6.5.1. The QD1004 document will advise if an investigation is required and to what extent. This will be based on the information below:

- First occasion for this defect – Advisory (No investigation required, Internal corrective actions to be applied)
- Repeat occurrence – Minor Investigation (QD1005) will be invoked if same issue occurs a second time.
- Second failure after the Minor Investigation closure – Major Investigation (QD1006).

6.5.2. All DMRs and Investigations will be tracked at TTEB to show status and action.

6.5.3. TTEB implements the 1-5-20 rule for supplier feedback:

- **1** day or 24 hours after receiving the complaint, the supplier must define and communicate containment actions.
- **5** Five working days after the request, the supplier must define and communicate a root cause analysis and proposed corrective actions with dates (must be within the 20-working day period from date issued)
- **20** Twenty working days after the request, the supplier must communicate evidence of the implemented corrective actions, and any actions completed to prevent recurrence.

6.5.4. TTEB reserves the right, during Audit, to highlight and score accordingly on the investigation returns.

6.5.5. Each of the investigation forms refers to classes of the root cause, the applicable one(s) need to be selected, TTEB will record this and review for each supplier the common classifications selected and will act accordingly. The classifications are Measurement, Materials, Machines, Method, Mother Nature and Manpower.

6.5.6. If 'Manpower' is selected this refers to Human Error and will require an additional Human Behavior Survey completing (QD1007) along with the selected investigation method.

6.6. Approval and Closure

6.6.1. The appropriate TTEB Representative, prior to closure of a DMR, will approve a Supplier's final investigation Report. Any open beyond the 20-day period may negatively impact the Supplier's performance rating. A progress report can be requested at any time from the supplier.

6.6.2. If the investigation identifies the need for a change to the process or part, the TTEB Change Management requirements MUST be followed.

6.6.3. Suppliers may be requested to present their corrective actions on-site at the TTEB manufacturing site.

6.6.4. TTEB and its Customers reserve the right to verify product conformance to the requirements at the Supplier's and their subcontractor's plants. Verification of the implemented corrective action on-site at the Supplier may be accomplished during subsequent visits.

6.7. TTEB use multiple NCR and DMR Codes when dealing with Suppliers. The following table lists the Codes used for supplier related non-conformances:

6.8. The number of non-conformances raised against each code for each supplier is monitored and actions will be taken if a supplier continues to have non-conformances raised for a particular code repeatedly.

Table 2: Non-Conformance Codes

16a	Parts damaged by supplier
16b	Parts damaged sub-contract.
16c	Incorrect material used.
16d	Parts not to drawing, etc.
16e	FAIR incorrect
16f	Incorrect qty to P/O
16g	Incorrectly packaged.
16h	Inadequate ESD controls
16i	Early delivery
16z	Other

6.9. Corrective Action and Continual Improvement Process Overview

- 6.9.1 TTEB employs an electronic, closed loop, Corrective and Preventive Action methodology to address product, process, performance, Quality System and audit nonconformances.
- 6.9.2 TTEB may initiate a Supplier Corrective Action Request (SCAR) process by documenting the nonconforming product, process, Quality System or performance condition and notifying the supplier.
- 6.9.3 Supplier corrective action is accomplished by actioning the SCAR, completing all relevant data requirements and submitting the completed form back to the initiator.
- 6.9.4 A SCAR should be given the highest priority within the supplier's operations and thus requires the urgent and active participation of the supplier's management team. A request for supplier corrective action can be prompted by either nonconforming supplied parts / materials, supplier performance, Quality System issue or process / assessment finding that has produced a need for corrective action.
- 6.9.5 The appropriate TTEB Quality personnel will review the supplier's response for timeliness, completeness of the submission and the suitability of the responses. Late and / or rejected responses will be recorded and the data reviewed to determine supplier capability to perform adequate corrective action.
- 6.9.6 Suppliers who demonstrate a consistent inability to provide acceptable responses to Supplier Corrective Action Requests or within the deadlines established are subject to probationary status or introduction to the Supplier Performance Improvement Process detailed in Section 10.

7. Section Seven - Supplier First Article Inspection Requirements (FAIR)

7.1. First Article Inspection Requirements (FAIR) Overview

7.1.1. The purpose of a supplier First Article Inspection (FAI) is to ensure that all design features of a deliverable product and its subcomponents meet all applicable levels of design drawing, material, process specification, and purchase order requirements.

7.1.2. TTEB requires suppliers of direct production parts to employ a First Article Inspection (FAI) process in accordance with SAE AS9102. However, in some instances, customer formats shall be used as indicated on the purchase order. The purpose of this requirement is to develop objective evidence to support that all engineering design and specification requirements are properly understood, accounted for and verified.

7.1.2.1. All FAIR documents are to be submitted to Barnstaple_FAIR@ttelectronics.com in the first instance.

7.1.3. The part(s) may be issued to TTEB before the FAIR has been approved however parts will be held in quarantine until the FAIR has been approved. If the FAIR is incorrect then this document and the parts can be rejected back to the supplier. If the part fails inspection, then the FAIR may be rejected before it's been reviewed.

7.1.4. The FAIR is a process imposed on assemblies, sub-assemblies and detail parts (including castings, forgings, machined, composite, raw material cut to an engineering shape/part number, etc.). An acceptable first article product is a representation of those planned capable and repetitive manufacturing processes and proven tooling which produced it.

7.1.5. A FAIR product must be a true representative of the designed manufacturing / fabrication process. Therefore, suppliers shall not use prototype parts, or parts manufactured using methods different from those intended for the normal production process, for the FAIR. The "First Part" produced may not qualify as the First Article if changes to the process are made after its delivery.

7.1.6. The supplier must be able to demonstrate that the intent of FAIR was successfully accomplished and show objective evidence thereof. The supplier will ensure FAIR's submitted on behalf of sub-tier suppliers have been reviewed and are compliant with the requirements of this document.

7.1.7. Suppliers must notify TTEB if the first unit delivered does not represent the process(es) under which the subsequent production deliveries will be produced.

7.1.8. Suppliers that proceed at risk and produce products prior to acceptance of the FAIR by TTEB shall not have recourse to recover losses resulting from a failed FAIR. All costs associated with the result of a rejected supplier FAIR produced at risk by the supplier shall be borne by the supplier. Suppliers can proceed without risk to themselves (at TTEB risk) only when the supplier is authorized in writing by the appropriate TTEB representative.

7.1.9. The requirement for FAIR excludes supplied basic raw materials such as metallic plate/sheet, chemicals, fibers, fabrics, and outside processing services unless otherwise a part of approval processes administered by a TTEB Customer.

7.2. First Article Inspection Requirements

7.2.1. Partial or complete re-accomplishment of the FAIR for affected characteristics is required for changes in product design; any change in the supplier's manufacturing process, or other events as prescribed within SAE AS9102.

7.2.2. The following are the requirements of the TTEB First Article Inspection process

- First Articles are performed in accordance with SAE AS9102.
- Prior to shipment of production parts, TTEB suppliers are required to perform First Articles in accordance with SAE AS9102.

7.2.3. This data is to be developed and documented in accordance with methods prescribed within SAE AS9102 - Aerospace First Article Inspection Requirement (latest revision). Suppliers are to utilize the forms associated with this standard where possible. A supplier's equivalent forms may be used in place of those contained within SAE AS9102, provided all content prescribed within SAE AS9102 is included unless a customer FAIR specification is requested in which the forms within the specification must be used. Suppliers may acquire copies of SAE AS9102 and the associated forms at the following web- Company address: www.sae.org with customer specification forms being available via TTEB.

7.2.4. Additional First Article inspection requirements beyond SAE AS9102 may be imposed by TTEB. This can depend on customer requirements, many customers do now have their own FAI requirements, this will be advised on the purchase order.

7.2.5. Along with the First Article report, the supplier shall include "all supporting documentation" as required per TTEB PO or Quality Requirement.

7.2.6. Supplier First Articles will be submitted in accordance with PO requirements.

7.2.7. Unless otherwise authorized, a copy of the completed FAIR shall be provided to TTEB for its review and approval.

7.2.8. The supplier is required to retain the master FAIR and associated data as described, ready for review by TTEB or appropriate TTEB Business Units upon request.

7.2.9. With the exception of catalog or standard hardware, raw materials Certificates of Conformance (C of C) are not an acceptable substitute for full chemical and physical certification (mill certifications) on First Article Units.

7.2.10. For critical and other select parts, TTEB may elect to have the supplier withhold their First Article submission in order to allow TTEB Supplier Quality to conduct a verification of the First Article part and data at the supplier's production facility. Arrangements for this type of review will be addressed by a specific TTEB Quality Assurance Requirements and shall be coordinated in advance between the appropriate TTEB representative and the supplier.

7.3. First Article Build Package

7.3.1 The FAIR will not be considered complete until all build package issues are resolved. The build package consists of Engineering, Specifications, Planning, Tooling, Purchase Order and Numerically Controlled Equipment Data (as applicable).

7.3.2 The FAIR will not be considered complete until nonconformance's affecting the part or assemblies have been closed and corrective action implemented. Partial FAIR's will be performed for those affected characteristics and the results recorded.

7.3.3 A Partial or complete FAIR will be required for affected characteristics as a result of the following events:

- A change in the design affecting the form, fit or function of part.
- New issue drawings even if fit, form or function is not effected.
- A change in manufacturing source(s), processes, processors, inspection method(s), location, tooling or material with the potential of affecting form, fit or function,
- When required as part of a corrective action for a part number with repetitive rejection history (typically a part with three repeated rejections or as required by the customer),
- A change in numerical control program or translation to another media,
- A natural or human-caused occurrence, which may adversely affect the manufacturing process,
- A lapse in production for two years or as specified by a specific TTEB PO Quality Requirement.

7.4 Supplier Sub-Assembly and Kit First Article

7.4.1 When the supplier chooses to procure sub-assemblies and parts, these FAIR requirements shall be imposed by the supplier upon the sub-tier supplier. These requirements in no way limit, supersede, or abrogate any contractual obligations specified in TTEB procurement document.

7.4.2 If the supplier is furnishing kits, a FAIR must be performed and documented by the supplier for each item in the kit, as well as the kit level part number.

7.5 First Article - Digital Product Definition (DPD)

7.5.1 When engineering is based on Digital Product Definition the following guidelines shall be considered:

- All features that are defined by the 3-D model must be included in the product acceptance plan and accounted for as part of the FAIR documentation.
- When the dimensional characteristics are not defined by either a standard linear tolerance or GD&T feature control frame on the face of the model, these features are defined in the parts list and / or notes on the drawing.
- Examples of un-dimensioned part characteristics include but not limited to, gage thickness, surface locations, and part periphery.
- The FAI shall account for the entire engineering dataset (i.e., the general / flag notes, parts list, all features / characteristics per defined tolerances).

7.5.2 The item subject to the FAI will be marked/identified as such in case any measurements etc need to be confirmed.

7.5.3 To facilitate TTEB identification and verification of First Article parts and data, suppliers are required to identify the part tagging or packaging by a suitable means that conspicuously identifies the First Article part as such.

7.5.4 TTEB Review and Approval of Individual Part First Article Submissions

7.5.5 TTEB Quality Assurance personnel will review the First Article inspection report data for compliance with customer requirements and/or AS9102. TTEB may also reinspect parts to validate supplier First Article reports.

7.5.6 If applicable, suppliers will be notified of the rejection of their First Article submission through the appropriate TTEB Company.

7.5.7 Rejected First Articles will have the errors detailed and fed back to the supplier, TTEB will require re-submission of the amended FAIR for re-approval. If the FAI part has also been rejected, then this to be also re-submitted.

7.5.8 TTEB may also require any sample parts used in the First Article process. TTEB Quality Assurance personnel reserve the right to review the First Article part and associated data to assure supplier compliance to engineering requirements and for required content in accordance with AS9102 and/or customer FAIR requirements.

7.5.9 A rejected First Article may result in the issuance of a Supplier Corrective Action Request by the respective TTEB to identify the reason the rejected First Article was not detected by the supplier's Quality System.

7.6 TTEB Review and Validation of Supplier First Article Processes

7.6.1 Where appropriate, TTEB Supplier Quality may utilize a specifically tailored Process Review in order to validate the thoroughness and effectiveness of those processes developed and deployed by individual suppliers for purposes of generating and verifying their First Article documentation in accordance with SAE AS9102 or the customers required standard. Those suppliers whose processes are successfully validated in this manner will still be required to transmit their First Article Inspection reports along with the labeled part from which the data was derived but will not be required to seek TTEB First Article Verification approval for individual parts prior to commencing ongoing production shipments.

7.7 Qualified Dies for Castings & Forgings Procured to an Engineering Drawing (Part Number)

7.7.1 Prior to initial production, the die or pattern must be qualified per the requirements of the Blueprint specifications, the supplier of the castings or forgings shall perform first piece inspection. Actual dimensions are to be recorded on the First Article Inspection SAE AS9102 Form. Supplier equivalent forms are acceptable providing they address all the elements of the AS9102 form. To clarify, when the forging or casting is to be procured to an engineering drawing, the FAIR along with the qualification package (as defined by governing specifications) shall be submitted to the appropriate TTEB representative for review and approval.

8. Section Eight– Suppliers Sub-tier Controls

8.1. Sub-Tier Supplier Controls Overview

It is the contractual requirement of suppliers to ensure items procured to support a TTEB PO meets and conforms to all specified requirements. **TTEB do not authorize delegated product inspection on behalf of the supplier without providing written approval.**

8.2. TTEB Suppliers Management of Sub-tier Suppliers

- 8.2.1. TTEB suppliers are responsible for the management of their subcontractors. This management shall include compliance in addition to acceptable quality performance.
- 8.2.2. It is strongly recommended that suppliers to TTEB utilize sub-tier suppliers that are certified to the most current versions (or as allowed by a recognized accreditation agency transition plan) of AS/EN/SJAC9100, 9110, 9120, AS9003, AC7004 or ISO 9001 by a recognized standard accreditation agency (as noted in Table 1, ref. para. 3.5).
- 8.2.3. Sub-tier suppliers can be categorized as compliant if a compliance audit is performed by the supplier and the results are available for review by the TTEB or the appropriate TTEB Company. Any risk of utilizing sub-tiers without the recommended Quality System capability shall be borne solely by the supplier.
- 8.2.4. TTEB require all Suppliers to provide all Subcontractors details, Point of Contacts, Name and Email details, Certificates etc. of all Subcontractors of parts being supplied as requested. TTEB customers are now calling for this information to be held for reference purposes.
- 8.2.5. Suppliers shall provide purchasing information to their suppliers that adequately describes the product/service to be procured. It is recommended that suppliers provide specific information in lieu of general reference to specification or documentation.

8.3. Requirement Flow Down

8.3.1. Suppliers are responsible for the flow down of all the requirements and provisions of the TTEB Business Unit's purchase order and this document to the supplier's sub-contractors. Deviations to this document and/or the TTEB Company's purchase orders are not authorized without written consent of the appropriate TTEB Company. When Customer specific documents are flowed down to the supplier, the supplier shall also flow down the same documents to their sub-tier suppliers as applicable to the process / service being provided to the supplier by its sub-tiers.

8.4. Special Process Approvals

- 8.4.1. TTEB suppliers are also **required** to utilize prime contractor approved suppliers when designated, e.g., *Boeing D1-4426*. TTEB suppliers and their sub-tiers are responsible for ensuring that only approved process sources are used. When required by TTEB PO or Quality Requirement, NADCAP approved processors shall be utilized.
- 8.4.2. Customer approval does not assure nor imply that work performed by a processor listed on the approved processor list is acceptable. TTEB suppliers and their sub-tier **suppliers are solely responsible** for assuring that a processor meets all contract, purchase order, drawing and process specification requirements. When processors are not designated, the supplier must approve the processor, and the supplier becomes responsible for the processor's performance as an approved supplier.

8.5. Drawings Specifications and Quality Requirements

8.5.1. The supplier's Quality System shall ensure that the applicable drawings, specifications, and quality requirements revisions are compatible with current purchase order agreements and are available and in use by the supplier's manufacturing and inspection areas. Military standards and specifications utilized shall be at the latest revision in effect on the date of process or manufacturing process performance, unless otherwise specified.

8.5.2. For specifications controlled by OEM and / or industry sources, suppliers shall independently verify the correct revision of the same and utilize the information in support of purchase order performance. TTEB **will not** actively provide applicable revision levels for these types of documents.

8.5.3. Suppliers may contact the applicable TTEB Supplier Quality Representative for information in regard to OEM or industry web access points where the required revisions are available.

8.5.4. It is the responsibility of the supplier to notify the appropriate TTEB when Engineering does not agree with the revision data provided on the purchase order. Product or process nonconformance resulting from the failure of the supplier to notify the applicable TTEB shall be deemed the supplier responsibility.

8.6. Use Of Non-US Suppliers on Commercial Programs

8.6.1. The use of suppliers or sub-tier suppliers in countries that maintain a bilateral agreement with the United States, as listed in FAA Advisory Circular AC 21-23, will require a routine validation of the product / service supplied upon receipt or at source. This may be in the form of inspection or test as determined for the type of product and must be documented. The validation of the product or service may be accomplished by the Foreign Civil Aviation Authority and evidenced by an Airworthiness Tag supplied by that agency accompanying the shipment. The use of suppliers or sub-tier suppliers in countries that do not maintain a bilateral agreement with the United States must have a plan presented in advance for approval by the appropriate TTEB Company's Quality Assurance Department.

8.6.2. The plan must determine how the supplier will control the product or service to ensure confirmation with all the approved design data. Secondly, the plan must incorporate how the foreign supplier's Quality Assurance Organization will specifically control their operations and any foreign sub-tier suppliers to assure conformance of the product / service to the approved plan. The use of a supplier in a country that does not have a bilateral agreement with the United States is also predicated upon both that country's government and the supplier's documented assurance that the FAA will not be inhibited, in any manner, from performing a physical evaluation of the supplier.

8.7. Sub-tier Supplier/Processor Certification

8.7.1. If the supplier is not the original fabricator, processor or assembly source of the product(s) which make up the deliverable end item(s), the supplier shall obtain and retain on file sub-tier supplier/ processor certifications and test results. The supplier's sub-tier supplier/processor certifications and test results shall be made available to the TTEB upon request. Additional requirements as applicable:

- Serial Number.
- Interchangeable and Replaceable (I&R) designated control numbers
- Required parts traceability forms associated with Section 5.

8.7.2. When required by TTEB PO or Quality Requirement, additional Certs shall be provided at no extra charge.

9. Section Nine - Supplier Measurement – Balanced Score Card (BSC)

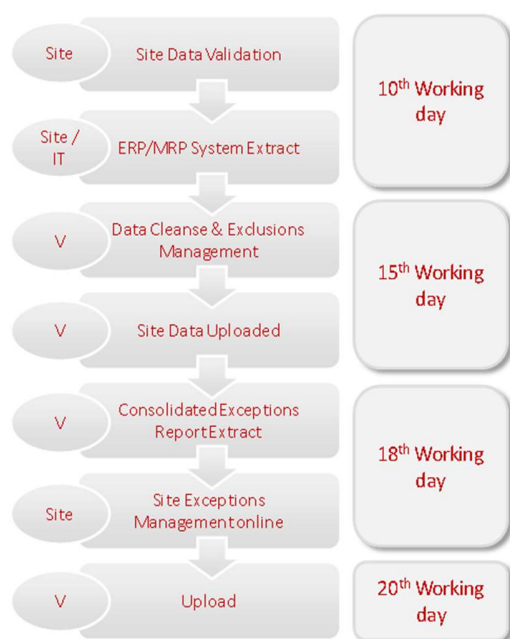
9.1. Quality Performance Measurement Overview

9.1.1. TTEB uses a Balanced Score Card (BSC) to measure suppliers based on multiple variants out of a score of 100. TTEB uses VenDigital to show all suppliers the Balanced Supplier Scorecard for each Supplier. The Scorecard shows the following data feeds:

- On Time in Full (OTIF)
- Defective Parts Per Million (DPPM)
- Number of Escapes
- Price Per Variance (PPV)
- Overall Grading

9.1.2. Any Supplier that is on the Approved Supplier List can register with VenDigital and can view the current Scorecard for their company. TTEB will pass the electronic data to VenDigital for the previous month (i.e., April Data will be processed during May up to the 19th of every month), and the live data will be available on the 20th of every month. (see Table Three (3) below: TTEB will also automatically email out on the 21st of each month to Suppliers.

Table 3 – Vendigital Data Load Process.



9.1.3. Each Supplier can view the data presented to them and it also can a Supplier to “**Challenge**” data in OTIF that the supplier believes is in correct.

9.1.4. The Supplier Quality Scorecard represents the Supplier's demonstrated performance based on those components as follows:

9.1.4.1. **On Time in Full (OTIF)** - Twelve (12) month cumulative, is calculated using Total POs in Monthly ranges, and measured on the delivery of those POs in that time frame. The data shows all deliveries to TTEB and is graded as follows:

- Above 95% is Green
- 75% to 94.999% is Standard
- Below 75% is graded as Sub Standard

9.1.4.2. TTEB calculates OTIF as the following:

- Items delivered before the Required Delivery Date (RDD) as "Early",
- Items delivered on or up to three (3) days after the RDD as "On Time". This allows for weekends.
- Each Supplier has the ability to "**Update**" data in OTIF that the supplier believes is in correct.

9.1.4.3. **Parts Per Million (PPM)** - Twelve (12) month cumulative (Number of Parts delivered in that month) and meets the specified criteria in the PO Example:

- The data shows PPM Quantity of stock delivered divided by Quantity of stock rejected times by One Million (1,000,000). Supplier PPM targets will be flowed down to key suppliers at year end reviews for the following year as they can change.

9.1.4.4. **Escapes** - Twelve (12) month cumulative Number of Escapes. Example:

- Quantity of Escapes reported to TTEB.

9.1.4.5. **Purchase Price Variant (PPV)** - Twelve (12) Month value of stock delivered since the price (In GBP) was set between the Seller and Buyer either on a PO or Long-Term Agreement (LTA).

- The Data is calculated as "Item Standard Price" – (minus) "Item Purchase Price" x (times) "Quantity Received" = PPV.

9.1.5. VenDigital then automatically Scores the Supplier in a "Numeric Value" process, which the Supplier can view monthly the current Scorecard Data.

9.1.6. The supplier risk level is calculated based on evenly weighing the Supplier's performance in each of the four individual components (Table 4).

9.1.7. For the purposes of calculating the risk score, Green = 5, Yellow = 3 and Red = 1 (the total is divided by the number of components rated).

9.1.8. **NOTE:** If a component has no data to report, then the field will reflect "N/A" and the risk calculation will be adjusted accordingly. TTEB suppliers who do not maintain a satisfactory Supplier Quality Performance Rating (SQPR) score may be required to provide formal documented corrective action plans and / or to participate in formal performance reviews with the TTEB. Where these remedial activities are unsuccessful, suppliers may be subject to the actions and activities in accordance with the Supplier Performance Improvement Program and eventual removal from the ASL.

Table 4: Vendigital Grading System

Ser	Activity	Green	Yellow	Red
(a)	(b)	(c)	(d)	(e)
1	On Tim in Full (OTIF)	100% - 95%	94.99% - 75%	74.99% - Less
2	Parts Per Million (PPM)	Below 3000	3001- 4999	5000 - Higher
3	Escapes	0	1 – 4	4.1 - Higher
4	Purchase Price Variants (PPV)	0	1 – 5	6 – More

9.2. Supplier Quality Performance Rating (SQPR) Reporting

9.2.1. Resultant scores are provided to individual suppliers through supplier access of the VenDigital Portal.

9.2.2. On a monthly basis it is the supplier's responsibility to access their supplier profile at <https://portal.vendigital.com> and review their performance data. Suppliers shall access with their secure password and review the performance data available for their business.

9.3. Delivery Performance Measurement Overview

9.3.1. Supplier Delivery Performance Ratings (SDPR's). SDPR's are the supplier's demonstrated performance with respect to on time delivery. Ratings will be calculated as the number of pieces received on time versus the total number of pieces received in a reporting period. $\text{Total pieces received on time for a reporting period} / (\text{Total pieces received for a reporting period}) = \% \text{ on time}$. The resulting % on time calculation is a measurement of total number of PIECES received on time versus total number of PIECES received. Units of Measure (UOM) will not affect the calculation.

9.3.2. Any one UOM will be viewed as one piece.

Table 5: Supplier Delivery Performance Rating

TTEB Supplier Delivery Performance Rating (SDPR) Thresholds				
12 Month Rolling Performance				
Performance Level Designation	High Threshold	Low Threshold	Supplier Performance Position	
Gold Supplier	100	85.00	Exceptional Supplier Performance	Acceptable Performance
Silver Supplier	84.99	75.00	Very Good Supplier Performance	
Bronze Supplier	74.99	60.00	Acceptable Performance	
Yellow Suppliers	59.99	45.00	Marginal Performance Informal Supplier Improvement may be Requested	
Red Suppliers	44.99	-	Unsatisfactory Performance Formal Supplier Corrective Action Required	

9.3.3. The supplier's month-to-month performance will be posted as a YTD cumulative measure of their performance.

9.3.4. The supplier's performance shall be monitored within a (Twelve) 12-month rolling SDPR window.

9.4. Supplier Performance Rating Thresholds

9.4.1. Tables 3 and 4 illustrate Supplier Quality and Delivery Performance Rating thresholds for the TTEB suppliers. The Quality and Delivery performance ratings are independent of each other and are not commingled.

9.4.2. Gold Suppliers - Excellent Performance

- Suppliers whose rolling (Twelve) 12-month ratings demonstrate excellent will retain their existing business and will be considered eligible for new business opportunities, single source supplier opportunities, supplier partnerships and business collaboration.

9.4.3. Silver Suppliers – Very Good Performance

- Suppliers whose (Twelve) 12-month rolling ratings demonstrate exceptionally good performance will retain their existing business and will be considered eligible for new business opportunities.

9.4.4. Bronze Suppliers – Satisfactory Performance

- Suppliers whose (Twelve) 12-month rolling ratings demonstrate satisfactory performance will retain their existing business and will be considered eligible for new business opportunities after improvements in areas that affect the Suppliers Score Card.

9.4.5. Yellow Suppliers - Marginal Performance

- Those suppliers whose (Twelve) 12-month rolling ratings demonstrate marginally acceptable performance will be allowed to retain existing business but may not be considered eligible for new business opportunities unless specifically directed to do so by a TTEB. Before any additional future work is placed with that Supplier, the Supplier is to show an improved score card, in conjunction with the TT Supply Chain Quality Lead observations.

9.4.6. Red Suppliers - Unsatisfactory Performance

9.4.6.1. Failure to achieve or maintain an acceptable performance level may also result in on Company assessments, formal Supplier Corrective Action and / or more extensive remedial action as described in Section 10 - Supplier Performance Improvement Program (SPIP) or source inspection control being imposed by the TTEB. Any source inspection requirements, performed at either the supplier's facility or a TTEB, imposed by the appropriate TTEB on a supplier due to performance issues may be done at the supplier's' expense.

9.4.6.2. Suppliers subject to SPIP shall both achieve and sustain targeted improvements, or they may have their existing business re-sourced and be removed from the TTEB ASL.

9.5. Supplier Appeal Process

9.5.1. Suppliers may contest a specific Quality or Delivery rating by submitting a written appeal to their TTEB Procurement Representative within ten (10) working days of issuance of their SQPR/SDPR Reports using the [Https:// portal.Vendigital.com](https://portal.Vendigital.com).

9.5.2. TTEB review the appeal and respond within an additional 10 working day period. Appeals are accomplished by contesting data specific to the month of the Quality or Delivery report. Appeal requests are submitted when logged into the supplier portal at [_Https:// portal.Vendigital.com](https://portal.Vendigital.com).

10. Section Ten - Supplier Performance Improvement Program (SPIP)

10.1. Supplier Performance Improvement Program Overview

10.2. The Supplier Performance Improvement Program is utilized by the TTEB to address chronic and / or severe performance issues with approved suppliers. This process utilizes root cause corrective action to correct supplier performance issues. Where necessary, the TTEB may terminate business with suppliers that demonstrate they are vulnerable to the required improvements.

10.3. TTEB Procurement manages the SPIP process with suppliers. Once a supplier is placed in SPIP, the supplier may become ineligible for new work until all issues are successfully corrected and sustained performance improvement is achieved. TTEB utilizing the [Https:// portal.Vendigital.com](https://portal.Vendigital.com) will notify any supplier designated for the SPIP process.

10.4. For suppliers successfully recovering from performance issues, the supplier shall be taken out of SPIP and designated as "probationary" and showing over a three-month period on the Supplier Scorecard that they have maintained the required level. Any recurrence of the same issues during the supplier's probationary period will result in the supplier being placed back in SPIP or considered for immediate termination.

10.5. Suppliers terminated from the ASL shall be required to participate in a supplier Assessment Audit prior to the supplier being considered for ASL approval reinstatement.

10.6. Any Supplier that is terminated will not be liable to claim any unused stock or claim for the purchase of stock on TTEB.

11. Section Eleven - References

11.1. Referenced Documents

- AIA/NAS NAS412: Foreign Object Damage/Foreign Object Debris (FOD) Prevention
- SAE AS/EN/SJAC9100 - Quality Management Systems – Aerospace – Requirements
- SAE AS9102 - Aerospace First Article Inspection Requirement
- SAE AS/EN/SJAC9110 - Quality Management Systems - Requirements for Aviation Maintenance Organizations
- SAE AS/EN/SJAC9120 - Quality Management Systems - Aerospace Requirements for Stockist Distributors
- SAE AS9003 - Inspection and Test Quality Systems
- ISO 9001:2015 - Quality Management Systems – Requirements

Table 6. Definitions and Acronyms

AS9102	The SAE Aerospace Standard (AS) that establishes documentation requirements for the First Article Inspection
AS9102 First Article Inspection	The SAE Aerospace Standard (AS) that establishes requirements for First Article Inspection. Method of gathering objective evidence to support that all design and specification requirements are properly understood, accounted for, and verified
Authorized or Responsible	A supplier employee that has the responsibility and Quality Representative authority to make authoritative statements for the supplier in association with part/material quality and process compliance.
TTEB Approved Supplier List.	Company Approved Supplier List is a subset of the TTEB Approved Supplier List
Certificate of Conformance	A statement of quality by the supplier that ensures all inspections and tests have been performed. It must be signed and dated by an authorized agent of the supplier with appropriate identification of the position held by the signer.
Corrective Action	Actions planned and implemented to eliminate or reduce the causes of a nonconforming product, process or service in order to prevent recurrence.
DFAR	Defense Federal Acquisition Regulation
DPD	Digital Product Definition- The electronic data elements that specify the 3-D Computer Aided Design (CAD) geometry and all design requirements for a product (including notation and parts lists), and the use of this data throughout an integrated CAC/Computer Aided Manufacturing (CAM) and Coordinate Measurement Systems (CMS)
Disposition	Engineering determination of the appropriate further actions associated with nonconforming parts/materials. Typical options include Scrap, Rework, Use as Is, etc.
E-SCAR Electronic Supplier	A request to a supplier for formal documented Corrective Action Request (E-corrective and preventive action in response to a SCAR) nonconformance or performance concern
Feature	Any hardware design attribute or characteristic. This includes physical portion of hardware such as a surface, face, edge, radius, hole, tab, slot, pin, etc., and requirements such as non-destructive inspection (NDI) and interchangeability and replaceability (I&R). All features require validation to conform the product to the design authority. All features have associated notes and/or Geometric Dimensioning and Tolerance Feature Control Frames (FCF) and one note or FCF may refer to several features
First Article Inspection	The development of objective evidence to support that all engineering design and specification requirements are properly understood, accounted for, and verified
GD&T	Geometric Dimensioning and Tolerancing
NC	Numerical Control

On-Site Supplier Assessment	An on-site review of a supplier's processes, systems, and capabilities as conducted by TTEB personnel, Customer or regulatory authority.
NoE	Notification of Escape
Pay for Source	TTEB source inspection is required, and the supplier is required to contract with a TTEB approved service provider.
Partial FAI	A Partial FAI addresses differences between the current configuration and prior approved configurations, and/or addresses features that failed the original FAI. When a partial FAI is performed, the Organization shall complete only the impacted fields in the original or partial FAI form(s). The partial FAI will inspect 100% only those features that have been addressed for the current configuration and/or that failed the original/partial FAI.
Permanent Specification Change	A modification to any specified product requirement (blueprint, specification, etc.) as approved by the appropriate design authority which is unbounded by quantity or time.
PO	Purchase Order
Process Change	Any change to the materials, methods, machinery, or location from that previously approved by TTEB
Quality Assurance Requirements	A defined special purchase order condition relative to quality assurance needs for procured direct parts/materials or processing services.
RAB	Registrar Accreditation Board
SPIP	Supplier Performance Improvement Program. The process used to address unsatisfactory supplier performance.
SPR	Supplier Process Reviews - Periodic detailed on-site examination of the manufacturing processes, procedures, and controls used in the fabrication, assembly, inspection, and delivery of individual purchased parts/materials.
QD0001	TTEB Supplier Quality Assurance Manual
SQPR	Supplier Quality Performance Rating – the TTEB quantified measure of supplier performance
SQPR Report Scorecard	Monthly report detailing the performance rating (SQPR) for the supplier. This report consists of the Supplier Quality Rating and the Supplier Delivery Rating
Supplier Application	A Supplier Application provides an overall representation of a new Supplier's business. It is the 1st step of the new Supplier approval process
Supplier Assessment	A formal documented activity performed at a Supplier's facility by TTEB personnel to assess compliance with targeted systems and measures of performance prior to addition to the TTEB Approved Supplier List
Supplier-Responsible	Any violation of a specified contractual requirement Nonconformance imposed by a TTEB PO.
Temporary Specification Change	A modification to any specified product requirement (blueprint, specification, etc.) as approved by the appropriate design authority which is bounded by quantity or time.
TTEB ASL	TTEB Approved Supplier List
TTEB	TT Electronics Barnstaple

12. Section Twelve – QD0001 Acceptance

12.1. If a new supplier is introduced to TTEB they must read, understand and comply with the requirements set out within QD0001. New suppliers will need to review all sections of QD0001 and indicate compliance on QD0015 – **QA REQUIREMENTS FOR SUPPLIERS (QD0001) Compliance Matrix**. This is to certify that the following company has read and understood the TTEB QD0001 document.

12.2. If there are specific areas to which a supplier cannot conform, then TTEB are to be notified via QD0015, and the deviation will be reviewed.

12.3. If the supplier is already on the TTEB supplier list and an update to the QD0001 is made then document QD0015b will be issued. This will detail those sections that have been updated and the amended information. The supplier will only need to re-review these sections and not the full document.

12.4. All Suppliers are required to sign and return the QD0015 or QD0015b document to TTEB with a copy also being retained by the supplier. Under formal GDPR Regulations, should the Supplier leave the procurement process then that Supplier may request the return of any signed Documentation, but TTEB reserves the right to retain a copy for full Audit Purposes.

12.5. TTEB reserves the right to withdraw the signed approval to QD0001 if any significant audit failure(s) is reported. Upon audit closure, a supplier may be asked to re-evaluate their adherence to QD0001 by completing another QD0015 form.

12.6. The QD0015 forms will have an expiry date of 3 years from the date it's signed and approved by TTE Barnstaple Quality Manager, after this point, a full review will be required again to check they are still complying to our flow down requirements. A signed copy will be returned to the supplier for their records.

12.7. Suppliers are to advise TTEB as soon as possible if they are no longer able to conform to any section within QD0001.