

## Q-Clause Requirements

Supplier is responsible for meeting all the Q-Clause requirements flowed down on Purchase Order (PO)

Q-Clause #	Subject	Requirement(s)
Q1	Not used	
Q2	Certification of Traceability (CoCT)	A C of CT is required with each shipment. The C of CT shall state that the parts or materials meet all the requirements of this order. In addition, the C of CT must provide traceability to a specific manufacturing control identifier by means of a lot, batch, or date code. If the parts or material were not manufactured by the Supplier, the name and address of the original manufacturer must be identified. The C of CT shall include Extant Aerospace's PO number, Part Number, applicable drawing/specification number, revision, and quantity in shipment. The C of CT shall be signed by the Supplier's authorized Quality representative.
Q3	Not used	
Q4	Material Test Reports	A Material Certification Test Report is required with each shipment. The test report shall state that the material has been tested, inspected, and found to be compliant with the applicable drawings/specifications. The test report shall list the specifications/drawings including revision to which the material has been tested and traceability to the material lot. The test report shall contain the actual measurements for chemical, mechanical and physical properties.
Q5	FAA PMA (14 CFR Part 21) Production Approval Holder Quality Program Requirements	Supplier shall comply with the following: <ul style="list-style-type: none"> <li>• Must maintain present approved Quality System &amp; notify Extant Aerospace of any changes to said system.</li> <li>• Must notify Extant Aerospace of any changes to its certifications.</li> <li>• Must notify Extant Aerospace of any changes to design details, materials &amp; process previously approved for this PO or Contract.</li> <li>• Must maintain measuring &amp; test equipment traceable to NIST in the performance of this PO or Contract.</li> <li>• Must have documented data retention control that meets CFR Part 21 requirements in the performance of this PO or Contract.</li> <li>• Must maintain traceability throughout the manufacturing, inspection &amp; test systems in the performance of this PO or Contract.</li> <li>• All substitutes processes for which work is performed under this PO or contract must be approved by Extant Aerospace.</li> <li>• No MRB authority is granted in the performance of this PO or Contract.</li> <li>• Must guarantee access to Customer / Regulatory agencies in the performance of this PO or Contract.</li> </ul>

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Q6	Not used	
Q7	Not used	
Q8	Not used	
Q9	Not used	
Q10	QML/QPL Listing*	<p>Parts or materials will be processed in accordance with the Military or Federal specification referenced on the purchase order, drawings or specifications, and the material will be certified to be in full conformance with these Government documents. The actual manufacturer of the material must be qualified to the specification and listed on the appropriate qualification list.</p> <p>*Note: QML-QPL</p> <p><b>Qualified Manufacturers List (QML).</b> A list of manufacturers' qualified processes and materials at each facility that have been successfully subjected to a defined set of qualification and periodic tests using processes, worst case designs or materials, to verify the end product's design, performance, quality, and reliability meet all the applicable specification requirements.</p> <p><b>Qualified Products List (QPL).</b> A list of products or families of products that have successfully completed the formal qualification process (including all specified periodic tests) that examines, tests, and verifies that a specific product design meets all the applicable specification requirements.</p>
Q11	Critical Process	The material supplied against this order requires a "critical process" in its fabrication. Evidence of objective certification of the process and/or operators must be provided to Extant Aerospace for inspection as requested.
Q12	Failure Analysis	Failure Analysis/Tear down Reports required. Supplier must submit failure analysis report or for FAA conformity items a tear down report. This shall document the Extant Aerospace purchase order number, Defective Material Tag (DMT) number (if provided), part number, serial number, cause of the failure, corrective action to preclude recurrence and effect on other delivered product. The failure analysis / Tear down report must accompany the product when returned to Extant Aerospace.
Q13	Test Data	Generated test data will be on file at the manufacturer's facility and will be available for review by Extant Aerospace as required.
Q14	Test Data Deliverable	Requested test data must be furnished with the material shipped against this order.
Q15	Data Retention	Inspection and test data must be retained for a minimum of eleven (11) years at supplier's facility and are to be made available for review by Extant Aerospace and/or Government Representative upon request.

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Q16	Acceptance at Destination	Materials on this order will be inspected and or tested upon receipt at Extant Aerospace to verify full conformance to all specified requirements. Failure to meet any specifications may result in immediate rejection and return of the material at the supplier's expense.
Q17	Not used	
Q18	Government Source Inspection	This material is subject to evaluation by a government representative prior to shipment. Upon receipt of this order, promptly notify the Government representative, who normally services your plant, so that appropriate planning for Government inspection can be accomplished. If the supplier has a difficulty in locating a government representative, Extant Aerospace's Purchasing Department will aid. Shipping papers for each lot shipped must bear evidence of Government surveillance in the form of authorized Government Quality Assurance Representative Signature and/or stamp.
Q19	Not used	
Q19A	Not used	
Q20	Limited Shelf Life	The material on this order is considered to have a limited shelf-life and must be so identified. Each container must bear a mix, batch, cure, date, and a "not to be used after" date. All storage condition limitations must be clearly detailed on each label. At the date of receipt by Extant Aerospace, at least two-thirds of such designated use life must still be remaining, or the material may be returned for replacement.
Q21	Coupons/Test Specimens Deliverable	Test specimens (micro sections) and coupons, as required by controlling specification, drawing, or Purchase Order notes, must be included in each shipment against this order. Extant Aerospace assumes Defense Logistics Agency (DLA) retention responsibilities.
Q22	Not used	
Q23	First Article Source Inspection	A "First Article" Inspection for all requirements shown on the control drawing and/or specification will be performed in the presence of an Extant Aerospace Representative at the supplier's facility.
Q23A	Not used	
Q23B	Not used	
Q23C	Not used	
Q23D	Not used	
Q24	Not used	
Q24A	Packaging of IC's	Components packaged in tubes, rails, reels, or matrix trays shall be oriented in the same direction. Components shall be restrained from flipping over and sliding back and forth.

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Q25	<b>Electrostatic Discharge Control (ESD) Program</b>	The Supplier shall have an established ESD Control Program in accordance with MIL-STD-1686, JESD-625 or ANSI/ESD S20.20. The Supplier shall take the necessary precautions to ensure that components and assemblies susceptible to static damage are adequately protected during manufacturing, inspection, test, packaging, and shipping. Packaging shall be marked with an ESD caution label.
Q26	<b>Not used</b>	
Q27	<b>MSL Packaging</b>	Moisture sensitive non-hermetic solid-state Surface Mount Devices (SMD) shall be handled, packaged, labeled, and shipped in accordance with IPC/JEDEC J-STD-020 and IPC/JEDEC J-STD-033. The applicable Moisture Sensitivity Level (MSL) as defined by the component manufacturer applies.
Q28	<b>Not used</b>	
Q29	<b>Drop Ship Items</b>	A copy of all documentation (as required by this document) shall be shipped with the item to the ship to location on the purchase order and another copy shall be delivered to Extant Aerospace's Buyer
Q30	<b>SDS Sheets</b>	Safety documents are required to be submitted to Extant Aerospace, such as Safety Data Sheets (SDS)
Q31	<b>Solderability</b>	Item must meet solderability requirements per MILSTD-202 Method 208, MIL-STD-750 Method 2026, MIL-STD-883 Method 2003, or J-STD-002
Q32	<b>Not used</b>	
Q33	<b>Not used</b>	
Q34	<b>Tubing</b>	Polytetrafluoroethylene tubing shall conform to ASTM-D-3295.
Q35	<b>Heat Shrink Tubing</b>	Heat shrinkable tubing shall conform to MIL-I-23053, except that the use of polyvinylchloride tubing is prohibited
Q36	<b>Extruded Tubing</b>	Extruded vinyl plastic tubing shall conform to MIL-I-7444, Type 1 or MIL-I-22076.
Q37	<b>Special Handling Notification</b>	Supplier shall notify Extant Aerospace of any special handling required for material being supplied to Extant Aerospace. This notification may be shipped with the material or noted on the packing slip.
Q38	<b>Not used</b>	
Q39	<b>Solder Pb content</b>	Supplier and Supplier's sub-tier suppliers shall not use lead free solder in goods. For the purposes of this clause, solder shall be considered lead free if it has a lead content of less than three percent (3%). Supplier may request a waiver of this clause by submitting a SIR form, SIF-PRO-015 to Extant Aerospace's Purchasing Department.

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Q40	<b>Lead Finish Requirements</b>	Tin finishes should be coated with a tin alloy containing not less than 3% Pb alloy. This requirement applies to internal and external surfaces of the lead. This restriction also includes plating over an existing pure tin finish.
Q41	<b>Pb Free Requirements</b>	Pb (lead) free requirements are flowed down from Customer specifications to Extant Aerospace & our suppliers – No substitutions without prior written permission from Extant Aerospace Quality Assurance. No Pb containing materials will be accepted.
Q42	<b>Replacing finish on electronic parts</b>	<p>Supplier shall adhere to GEIA- STD-0005-2 and GEIA-STD- 0006. Replace lead-free finish with Sn63/Pb37 finish.</p> <p><b>Re-balling</b> – Orange dot shall be placed as close as possible to pin one on top of part without obscuring part number, lot code, date code, or any other part marking. Supplier shall furnish a C-of-C certifying that ESD controls, part handling, MSL controls, solder re-balling processes and post re-balling co planarity shall conform to the original manufacturing requirements.</p> <p><b>Re-tinning (microcircuits)</b>- Orange dot shall be placed as close as possible to pin one on top of part without obscuring part number, lot code, date code, or any other part marking. Supplier shall furnish a C-of-C certifying that ESD controls, part handling, MSL controls, solder processes and post co planarity shall conform to the original manufacturing requirements.</p> <p><b>Re-tinning (other devices)</b> – Orange dot shall be placed, if part is of sufficient size, as close as possible to pin one on top of part without obscuring part number, lot code, date code, or any other part marking. Supplier shall furnish a C-of- C certifying that ESD controls, part handling, MSL controls, solder processes and post co planarity shall conform to the original manufacturing requirements.</p>
Q43	<b>Digital Product Definition</b>	As a part of this purchase order, Boeing or Boeing sub-contractor is providing digital product definition (DPD) material which shall be controlled, maintained, and validated in accordance with Boeing's DPD procedure D6-51991 (current revision). Within 2 weeks after the receipt of this order, the supplier shall submit procedures which demonstrate compliance with Boeing's DPD procedure D6-51991. Production shall not commence without prior and written acceptance of the DPD process by Extant Aerospace Supplier Quality Assurance representative.

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Q44	Vision Requirements	<p>Suppliers to have the following VISION REQUIREMENTS:</p> <ul style="list-style-type: none"> <li>• All inspectors performing to this procedure shall successfully pass an annual eye exam by a medically qualified / trained person in accordance with ASQR-01 and the table below:</li> <li>• Intervals shall not exceed one year.</li> <li>• Individuals shall be tested in at least one eye, either corrected or uncorrected.</li> <li>• Color Perception testing is required one time only. Individuals shall be capable of adequately distinguishing and differentiating colors used in the method for which certification is required, the process being performed or inspection activity. Documentation shall be retained 11 years.</li> </ul> <p>Records shall be retained for each individual.          Individual performing...          Visual inspection (i.e., calibration, non-weld, in- process, layout, dimensional)          Near vision requirements of Snellen 14/18. (20/30), or Jaeger 2</p> <p>Visual Inspections on Welds          American Welding Society Standard (AWS) D17.1</p> <p>Nondestructive Testing (NDT)          Aerospace Industries Association National Aerospace Standard (AIA/NAS) 410</p>
Q45	First Article Inspection (FAI)	<p>The Supplier shall perform and document First Article Inspection in accordance with SAE AS9102 (latest revision in affect at time of Purchase Order placement). The Supplier shall perform FAI the first time the Supplier produces an item for Extant Aerospace or if it has been greater than 24 months since the last production of that item or there is a change to the drawing for that item. All drawing notes and dimensions shall be verified. Inspection and measurement results shall be recorded, including actual measurements with location identified. The FAI test report, sample and material certifications for all raw materials and finishes (see Q4) shall be included with the shipment.</p> <p>Note: Tag or Identify part that the FAIR was performed on.  <b>Notes:</b></p> <ul style="list-style-type: none"> <li>• This requirement is not applicable to Commercial Off the Shelf parts.</li> <li>• Bubble Drawing is required with the FAIR submission</li> <li>• FAIR to be completed per the Extant Aerospace – Requirements document V-QUAL-FAIR-001.</li> <li>• (Applicable to PCB Parts): If the First Article requirements have been met then the applicable “Additional Requirements for Printed Circuit Boards (PCB)” are imposed for each shipment.</li> <li>• (Applicable to Machined/Fabricated Parts): If the First Article requirements have been met then the applicable “Additional Requirements for Machined/Fabricated Parts” are imposed for each shipment.</li> </ul>

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		Make sure all the notes and requirements in the Title Block are captured.
Q46	<b>ELECTRICAL COMPONENT SUPPLIERS: Inspection &amp; test requirements</b>	<p>If any source of supply cannot provide a Certificate of Conformance and traceability (CoCT) certifying the component is the part number being procured on the Extant Aerospace Purchase Order AND establishing traceability to the Original Equipment Manufacturer, the component may only be procured if the following inspection and test requirements are met. All inspection and testing performed to satisfy the conditions of this Q-Note shall be performed by an Extant Aerospace approved test laboratory. The test laboratory may be an independent, 3rd party lab or an in- house lab that is affiliated with an approved Independent Distributor. Test results will not be accepted from non- approved Test Laboratories.</p> <p>The supplier (Broker or Independent Distributor) is responsible for ensuring the required testing listed on purchase order is performed and that test results for the product supplied to Extant Aerospace are compliant.</p> <p>The term "Lot Acceptance Testing", as used herein, shall be defined as: Lot testing at specified temperature range, as defined in the OEM device data sheet. The data sheet may identify these requirements as Group A testing, critical parameters, or key performance parameters.</p> <p>PER AS5553A:</p> <ul style="list-style-type: none"> <li>• External Visual – entire lot for general inspection I.A.W. AS6081 4.2.6.4.2.1</li> <li>• External Visual – for lot size <math>\geq 200</math>: 122 pcs for detailed external visual inspection I.A.W. AS6081 4.2.6.4.2.2</li> <li>• External Visual – for lot size 1 - 199: 122 pcs or all devices whichever is less for detailed external visual inspection I.A.W. AS6081 4.2.6.4.2.2</li> <li>• Package Dimensions – 3 pcs</li> <li>• Marking Permanency – for lot size <math>\geq 200</math>: 3 pc per lot date code</li> <li>• Marking Permanency – for lot size 1 – 199: 1 pc per lot date code</li> <li>• Heated Chemical Test for resurfacing – for lot size 1 - 199: 1 pc per lot date code</li> <li>• Heated Chemical Test for resurfacing – for lot size <math>\geq 200</math>: 3 pcs per lot date code</li> <li>• Internal Visual (decapsulation) inspection – for lot size 1 - 199: 1 pc per lot date code</li> <li>• Internal Visual (decapsulation) inspection – for lot size <math>\geq 200</math>: 3 pcs per lot date code</li> <li>• X Ray Inspection – for lot size <math>\geq 200</math>: 45 pcs for X Ray inspection I.A.W. AS6081 4.2.6.4.4</li> <li>• X Ray Inspection – for lot size 1 - 199: 45 pcs or all devices whichever is less for X Ray inspection I.A.W. AS6081 4.2.6.4.4</li> <li>• Electrical Test (curve tracer or limited function) – for lot size <math>\geq 200</math>: 116 pcs for Electrical Testing</li> <li>• Electrical Test (curve tracer or limited function) – for lot size 1 - 199: entire lot for Electrical Testing.</li> </ul>

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Q47	<b>HARDWARE COMPONENT SUPPLIERS:</b> Inspection & test requirements	Information to come at a later date.
Q48	<b>Integrated Circuits (IC)</b>	<ul style="list-style-type: none"> <li>• The component supplier must verify that the physical attributes of the package meet the data sheet specifications and that the case/package marking is consistent with the marking requirements given in the OEM device data sheet and, if applicable, the Extant Aerospace drawing.</li> <li>• The component supplier must de-lid a minimum of one (1) sample IC from each date or lot code. Extant Aerospace must approve any alternative methods of compliance for the determination of authenticity in circumstances where the lot is comprised of small quantities of multiple date codes.</li> <li>• Confirm and document that the device die is a product of the OEM indicated on the case/package marking.</li> <li>• Contact the OEM to obtain verification that the die and case/package markings, as well as date/lot codes are valid. If the verification is provided, the lot is acceptable with little or no further testing.</li> <li>• If OEM date and lot codes are NOT valid or OEM verifies, they DID NOT manufacture the part, the lot must be rejected.</li> <li>• If OEM verification cannot be obtained, Lot Acceptance Testing, as defined below, must be performed.</li> </ul> <p><b>Perform Lot Acceptance testing, if required:</b></p> <ul style="list-style-type: none"> <li>• If OEM verification cannot be obtained, perform Lot Acceptance Testing, as specified on the device data sheet and, if applicable, the Extant Aerospace drawing.</li> <li>• Sample size: As specified on the OEM's data sheet. If no sample size is specified, it shall be 116/0. That is, a sample size of 116 randomly selected from each lot/date code and submitted to the specified testing.</li> <li>• If the lot size is less than the required sample size (116), each device in the lot must be tested and all failed devices removed from the lot.</li> <li>• If any device in the sample fails any parameter in the lot acceptance testing, each additional device in the lot shall be tested on the same test set-up for all parameters in the test, and all failed devices shall be removed from the lot. If this testing results in a percent defective greater than 5 percent, the results shall be submitted to Extant Aerospace for lot disposition prior to use of any device in the lot.</li> </ul>



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Q49	<b>Components that are not Integrated Circuits and Non-electronic components</b>	<ul style="list-style-type: none"> <li>• The Component Supplier must verify that the physical attributes of the part meet the data sheet/drawing specifications and that the case/package marking is consistent with the marking requirements given in the OEM device data sheet and, if applicable, the Extant Aerospace drawing.</li> <li>• Additional tests (destructive and/or non-destructive) shall be performed in accordance with AS6174 appendix E.1.3.</li> <li>• Contact OEM to obtain verification that case/package markings and date/lot codes are valid. If the verification is provided, the lot is acceptable with no further testing.</li> <li>• If OEM date and lot codes are NOT valid or OEM verified, they DID NOT manufacture the part, the lot must be rejected.</li> <li>• If OEM verification cannot be obtained, perform Lot Acceptance Testing, as specified on the device data sheet and, if applicable, the Extant Aerospace drawing.</li> <li>• Sample size: As specified on the OEM's device data sheet. If no sample size is specified on the OEM data sheet, sample size shall be 116/0. That is, a sample size of 116 shall be randomly selected from each lot/date code and submitted to the specified testing.</li> <li>• If the lot size is less than the required sample size (116), each device in the lot shall be tested and all failed devices removed from the lot.</li> <li>• If any device in the sample fails any parameter in the lot acceptance testing, each device in the lot shall be tested on the same test set-up for all parameters in the test, and all failed devices shall be removed from the lot. If this testing results in a percent defective greater than 5 percent, the results shall be submitted to the Extant Aerospace buyer for lot disposition prior to the use of any devices in the lot.</li> </ul>