SMART ELECTRONICS
& Assembly, Inc.

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Standard Supplier Quality Requirements

Last Updated 06/17/2009

This document defines restrictions and quality system requirements applicable when goods and services are procured to Smart Electronics & Assembly, Inc part numbers or Military, Federal or Industry specifications or standards. All of the following quality requirements apply to all purchase orders from Smart Electronics & Assembly, Inc, unless other wise stated by the Purchase Order.

- **CERTIFICATE OF COMPLIANCE/CONFORMANCE –** Unless otherwise specified, a Certificate of Conformance (C of C) is required with every shipment. If items procured are certified to DESC/Military standard a manufacture C of C shall need to be provided. The C of C shall certify that the material provided complies with all referenced documents and all Purchase Order requirements. The certificate must show the date, name of manufacturer, P/N, P/N revision, lot and/or date code, applicable serial numbers, PO#, quantity, compliance standard(s), and the name or signature of the authorized representative.

- **SEA AUTHORIZATION –** The SEA Buyer is the sole authority for all matters pertaining to the Purchase Order, change or release of funding and contractual commitments between Seller and SEA. Communication must be written; verbal agreements shall not be valid.

- **PACKAGING FOR SHIPMENT –** Materials, equipment shall be packaged in accordance with best commercial practices in order to provide protection against damage or degradation in transit and storage.

    - Seller shall package all products susceptible to damage from ESD as determined in accordance with MIL-STD-1686, Appendix A, in static shielding conductive containers per MIL-B-81705. The outside package shall have an ESD warning label conforming to MIL-STD-129. This same label shall be used to seal shielded bags. Conformance to equivalent industry or military standards is acceptable. Please note Smart Electronics & Assembly, Inc does not allow the use of Pink Poly as a static shielding container. It is also prohibited for Pink Poly to be in direct contact with any electronic component during shipment.

- **LABELING FOR SHIPMENT -** Containers shall be clearly labeled, tagged or marked with a) The suppliers name, SEA purchase order number, tracking number and box number if multiple boxes, and b) Special handling or environmental requirements, such as moisture or electrostatic sensitivity, shelf-life, refrigeration, or hazardous material.

- **RIGHT OF ACCESS –** SEA Buyer, buyer-authorized representatives and government regulatory agents reserve the right to enter Seller's plant(s) and those of Seller's suppliers at every tier, when reasonable, that may be engaged in work relating to the Purchase Order, for the purpose of surveillance/inspection of processes, controls, quality records and systems, as well as supplies and services procured under this Purchase Order. Surveillance/inspection of the seller's processes and controls shall not constitute acceptance of the products, supplies or services being procured.

- **RECORDS RETENTION –** Traceability, processing, inspection, test and all Quality Records shall be retained by Seller for a period of not less than **5 YEARS** beyond fulfillment of the Purchase Order, and shall be made available to SEA, SEA-authorized representatives or authorized regulatory agencies for review, upon request and with reasonable notice. SEA has the right to acquire or inspect data on-site at every tier. Upon acceptance of any SEA purchase order, Seller agrees to notify the SEA Buyer in writing 30 days prior to destruction of any records that directly impact SEA purchases.

- **ELASTOMERIC COMPOUNDS –** (i.e. adhesives, bonding materials, conformal coat, etc.) Shall have a shelf life of 10 months or 90% of manufacture specified shelf life at the time of delivery. The supplier must identify manufacturers name, the compound trade name, batch number, cure date, and specific gravity range for each lot.

- **ELECTRONIC COMPONENTS –** (i.e. transistors, integrated circuits, connectors, etc.) Shall not have a date of manufacture older than two years at the time of delivery.

- **QUALITY SYSTEM REQUIREMENTS (ISO 9001:2000)/(AS9100)** – The Seller's Quality System shall be certified or substantially compliant with ISO 9001:2000 or AS9100, "Quality Management Systems – Requirements," as evidenced by current third party certification or audit.

- **CHANGE CONTROL –** No change shall be made to materials, parts, processes, process equipment, tooling, methods or design of items procured under this Purchase Order after the acceptance or approval of design and configuration by SEA, without prior written approval by the SEA buyer. Change may be at seller's expense. Submit proposed changes in writing, detailing the change or waiver, the reasons, and evidence that the change, deviation or waiver shall not degrade performance.

- **INTERNATIONAL TRAFFIC IN ARMS REGULATIONS (ITAR) -** As specified on Purchase Orders, the Supplier and its sub-contractors shall adhere to the ITAR requirements in accordance with ITAR 22 C.F.R. 120-130. All documents identified as "ITAR Controlled" shall be identified, maintained and segregated from non-ITAR documents in a Document Control environment. Supplier shall flow down to its sub-contractors all ITAR requirements. If your company is not ITAR registered, we encourage you to do so. Questions regarding ITAR requirements, contact our Purchasing or Quality departments.

ATTACHMENT I

Smart Electronics & Assembly, Inc

Standard Quality Requirements for Manufacturing of Printed Wiring Board

This document defines restrictions and quality system requirements applicable when printed wiring boards are procured to Smart Electronics & Assembly, Inc part numbers or Military, Federal or Industry specifications or standards. The following quality requirements apply to the purchase orders from Smart Electronics & Assembly, Inc, when attached to purchase order.

1001–PACKAGING, SHIPMENT – PWBs shall be packaged in accordance with best commercial practices in order to provide protection against damage or degradation in transit or storage. In addition, unless otherwise specified, the following requirements shall apply:

1. All boards shall be packaged in lots of up to 25 boards/panels. The package shall be vacuum sealed with one desiccant and humidity indicator card inside.
2. Mixing production lots within intermediate level or final level packaging is allowed, as long as the lot number is clearly identified on each package.
3. Packaged PWBs shall be properly boxed in containers with adequate cushioning and packing material for shipment. The container weight shall not exceed 30 pounds.
4. Overrun production PWBs to be stored by supplier shall be properly packaged in order to provide protection against moisture. Overrun production PWBs shall not be accepted if the package has not been vacuum sealed with one desiccant and humidity indicator card inside regardless of the storage time.

1002–MIL STD REQUIRMENTS – All PWBs supplied under this purchase order shall meet all the requirements specified in the Purchase Order or drawing, and shall be manufactured in accordance with MIL-P-55110, General Specification for Printed Wiring Boards (rigid), MIL-P-31032, or MIL-P-50884 for flex and rigid-flex PWBs, as applicable. Unless otherwise specified, test coupons/micro-section, solder ability samples, micro-section lab report, Group A test/inspection reports, and electrical test failure print outs with specific defect is internal or external opens or shorts shall accompany each lot. There shall be no solder mask in any board holes unless specified on PWB fabrication drawings.

1003–IPC STD REQUIRMENTS – All PWBs shall meet all the requirements specified in the Purchase Order or drawing, and shall be fabricated in accordance with IPC-6011, 6012 and/or 6013, of a Type and Performance Class as specified. Boards must meet all the requirements of IPC-A-600, Class 1, 2 or 3, as appropriate. Unless otherwise specified, test coupons/micro section, solder ability samples, micro-section lab report, electrical test and inspection reports shall accompany each lot. There shall be no solder mask in any board holes unless specified on PWB fabrication drawings. Electrical test failure print outs with specific defects is internal or external opens or shorts shall accompany each lot.

1004–IDENTIFICATION I – Each bare board shall be uniquely serialized using permanent, legible ink or silk screen. Font size, location and other detail shall be as specified on the Purchase Order or drawing.

1005–IDENTIFICATION II – Each bare board shall be uniquely serialized, plus identified with the panel number from which it came. Font size, location and other detail shall be as specified on the Purchase Order or drawing.

1006–IDENTIFICATION III – Each bare board shall be a) Uniquely serialized, b) Identified with the panel number from which it came, and c) Identified with the panel location from which it came. Font size, location and other detail shall be as specified on the Purchase Order or drawing.

1007–SOLDERABILITY STD – Printed Wiring Boards must meet the solder ability requirements of ANSI/J-STD-003 upon receipt. Parts and components having terminations to be soldered must meet the solder ability requirements of any of the following upon receipt: MIL-STD-202 (Method 208H) or MIL-STD-750 (Method 2026) or MIL-STD-883 (Method 2003).

1008–SOLDERABILITY TEST – SEA requires that solder ability test be performed in all PWB's for verification of plating finish integrity. Solder ability testing is required per IPC-6012B section 3.3.6.Suppliers shall provide SEA with tested coupon per date code or job lot, accompanied by the solder ability test acceptance report. Test coupons may be the type "M" or "C" design (IPC-2221) or a 2" x 2" board sample representative of the PWB surface pattern. SEA requires that NEW solder ability test be performed to all PWBs which date code or job lot exceeds 1 year from the fabrication date. Suppliers shall provide SEA with tested coupons per date code or job lot, accompanied by the solder ability test acceptance report.

Note: "M" coupon contains surface mount patterns, ""C" coupons contains surface mount plus through-hole patterns.

1009–SOLDERABILITY HASL – When using HASL process, the finish shall be per IPC-6012 Table 3-2' all surfaces involved shall be covered and solder able. De-wetting condition shall not exceed the 5% of land areas per specification of IPC-600 section 2.4.2 for class 3. The solder surface finish on the surface mount pads should have as much solder applied as possible as to create a domed (convex) effect on the pads

1010–ELECTRICAL TEST – SEA requires that individual PWBs are electrically tested per IPC-ET-652 "Guidelines and Requirements for Electrical Testing of Unpopulated Printed Boards", and meet the testing specifications per MIL-P-31032, MIL-P-50884 and IPC-6010 series. In addition SEA requires Electrical Test printout or electronics format text or ASCII file of individual PWBs containing the following information: Tester model, date, time, serial number, PASS status, and Operators Name or Test Stamp #, or initials on the printout.

ATTACHMENT II
Smart Electronics & Assembly, Inc
Special Quality Requirements

This document defines restrictions and quality system requirements applicable when goods and services are procured to Smart Electronics & Assembly, Inc part numbers and/or Military, Federal or Industry specifications or standards. The following quality requirements apply to the purchase orders from Smart Electronics & Assembly, Inc, when attached to purchase order.

2002–INSPECTION SYSTEM – The supplier and subcontractors shall, in the performance of the Purchase Order, maintain a compliant MIL-I-45208 inspection system.

2003–GOV. SOURCE INSPECTION – Government Source Inspection is required prior to shipment from your facility. Notify the SEA Buyer, or the government representative who normally services your facility, in order to arrange Source Inspection.

2004–SEA SOURCE INSPECTION – Seller's product is subject to inspection and/or test verification, at the Seller's facility, by SEA personnel, prior to shipment. The Seller shall notify the SEA Buyer with sufficient advance notice (normally 48 hours) to permit mutually acceptable scheduling of Source Inspection prior to the delivery date. Seller's measuring and test equipment, facilities and personnel shall be made available for use by Buyer's representative when requested
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2005 – TRACEABILITY - Seller shall provide minimum ID, such as lot numbers and/or date codes and maintain traceability information needed to trace material, process and product back to raw stock.

2006 – C of T – When requested on Purchase Orders, the seller shall provide a Certificate of Traceability (C of T) with each shipment. The packing list, shipper or a separate page may be used to provide a written statement that all parts/product is traceable to a specific manufacturing control identifier by means of a lot, batch or date code reference. If the seller did not manufacture the product, the actual producer must be identified. The product for which a C of T is issued must be positively identified. The certificate must show the date, name of manufacturer (producer), P/N, P/N revision, lot and/or date code, applicable serial numbers, PO#, quantity, and the name or signature of the authorized certifying representative.

2007 – RECORDS (10 yrs.) – Traceability, processing, inspection, test and all Quality Records shall be retained by Seller for a period of not less than **10 years** beyond fulfillment of the Purchase Order, and shall be made available to SEA, SEA-authorized representatives or authorized regulatory agencies for review, upon request and with reasonable notice. SEA has the right to acquire or inspect data on-site at every tier. Upon acceptance of any SEA purchase order, Seller agrees to notify the SEA Buyer in writing 30 days prior to destruction of any records that directly impact SEA purchases.

2008 – RECORDS (15 yrs.) – Traceability, processing, inspection, test and all Quality Records shall be retained by Seller for a period of not less than **15 years** beyond fulfillment of the Purchase Order, and shall be made available to SEA authorized representatives or authorized regulatory agencies for review, upon request and with reasonable notice. SEA has the right to acquire or inspect data on-site at every tier. Upon acceptance of any SEA purchase order, Seller agrees to notify the SEA Buyer in writing 30 days prior to destruction of any records that directly impact SEA purchases.

2009–WORKMANSHIP REQUIREMENTS I – All items under the Purchase Order shall be manufactured in accordance with and meet the requirements of; IPC-A-610, "Acceptability of Electronic Assemblies."

A. Class 1 – General Electronic Products.
B. Class 2 – Dedicated Service Electronic Products.
C. Class 3 – High Performance Electronic Products.

2010–WORKMANSHIP REQUIREMENTS II – All items under the purchase order shall be manufactured in accordance with and meet the requirements of IPC/wHMA-A-620, "Requirements and Acceptance for Cable and Wire Harness Assemblies."

A. Class 1 – General Electronic Products.
B. Class 2 – Dedicated service Electronic products.
C. Class 3 – High Performance Electronic Products.

2011–LEAD FREE REQUIRED – Lead-free component terminations are required. Termination metallurgy (composition) shall be specified on Purchase Order, if needed.

2012–LEAD FREE PROHIBITED – Lead-free component terminations are PROHIBITED. Terminations shall be Sn63/Pb37 (eutectic solder) unless otherwise specified on the Purchase Order.

2013–CHANGE NOTIFICATION – Seller shall notify SEA of significant changes, such as organizational, company ownership, manufacturing location or use of outside resources or processing.

2014–PROCESS DOCUMENTATION – Seller shall record and document all process rework for historical record and traceability. Documentation shall include identification of the process step(s), component(s) affected, equipment used and process conditions.

2015–REPAIR PROHIBITED– Seller shall not perform any repair on product without written pre-authorization from SEA Buyer.

2016–REWORK/REPAIR – Rework and touchup is permitted and does not require pre-authorization from SEA. However, Seller shall not perform any repair on product without written pre-authorization from SEA Buyer.

2017–REWORK/REPAIR RESTRICTED – Rework and touchup does not require pre-authorization from SEA, but must be recorded (documented) in detail and retained by the Seller as a Quality Record of processing history for future reference (See record retention requirement). Seller shall not perform any repair on product without written pre-authorization from SEA Buyer.

2018–HAZARDOUS MATERIALS – All containers, as-received, must be clearly identified/labeled. A MSDS must be provided with each shipment if not on-file at SEA.

2019–CRITICAL AND LIMITED LIFE CERTIFICATION – Materials having characteristics susceptible to degradation of quality, due to age, shall, in addition to normal identification, be identified with the cure or manufacturing date, expiration date or period, special storage temperature, and/or special handling conditions. The maximum residual life remaining shall not be below 90% upon receipt. One certification copy shall accompany the shipment and shall bear the signature and title of an authorized representative of the supplier.

2020–MSD PACKAGING, SHIPMENT – All moisture sensitive devices/items (MSD) must be packaged in accordance with IPC/J-STD-033A. External MSD caution labels shall warn users of MSD contents. Seller shall provide MSD level and floor life classification information. If the MSD package or bag is damaged and/or opened, it shall be rejected as a non-conforming item.

2021–LIMITED SHELF LIFE MATERIAL(S) – On each container of, and on the certification for, material(s) having a limited or specified shelf life, Seller shall show the cure or manufacture date, expiration date of shelf life, lot or batch number and, when applicable, any special storage or handling conditions. The information shall be in addition to the normal identification requirements of the drawing, specification and/or Purchase Order. Time lapse between cure of manufacture date of such material(s) and date of scheduled receipt by Buyer under the Purchase Order shall not exceed one-third (1/3) of the shelf life for the material without prior written waiver from Buyer for each shipment.

2022–FAI per AS9102 – First Article Inspection shall be in accordance with AS9102 format for all items manufactured, assembled and tested to applicable drawings and specifications. A copy of the report shall be submitted at the time of delivery. All Objective evidences such as raw Material Certificate/s, Special Processes shown NADCAP certification/logo, Bubbled drawing (Preferred) etc. shall be part of AS9102 Part 2 form.

2023–FAI – First Article Inspection shall be in accordance with supplier internal process/policy for all items manufactured, assembled and tested to applicable drawings and specifications. A copy shall be submitted at the time of delivery.

2024- SPECIAL PROCESSES - SEA requires that Suppliers using *"Special Processes"* as listed below shall contact SEA for pre-approval. "Special Processes" are considered work performed by source(s) and/or sub-contractors used by the Supplier to complement their fabrication process. The following are to be considered "Special Processes": application of Chemicals, Metallurgical, Joining/Brazing, Heat-treating, Finish Coating, any other special manufacturing, nondestructive testing, and inspection processes. These special processes must be under contract from the US Government, Military, Aerospace and other Industrial concerns national or International. The supplier's documentation shall include objective evidence of compliance to Special Processes source approval (i.e. **use of NADCAP qualified suppliers**).