UNIVERSAL AVIONICS an Elbit Systems Company PROPRIETARY NOTICE This material contains proprietary information. Any disclosure without prior, written permission from Universal Avionics Systems Corporation is strictly prohibited	**WORK INSTRUCTION** **GENERAL PROCUREMENT SPECIFICATIONS** **WI-ADM-08.02 REV 18**	**APPROVALS** **PROCESS OWNER** MANUEL VALENCIA **QUALITY REPRESENTATIVE** KEVIN PHILLIPS

1. PURPOSE AND SCOPE

This document is created to ensure that all items procured by Universal Avionics (UA) Manufacturing Division contribute to the superior quality of all UA products.

The acceptability criteria outlined in this document will be used to specify to vendors the level of quality and packaging required by UA. This document is a quality control tool to verify the level of quality being accepted into UA stock.

This procedure applies to all purchase orders that are issued for the procurement of materials to be used in PMA/TSOA hardware builds. These requirements do not apply to materials purchased for Test equipment/ATE.

2. RESPONSIBILITY

UA Purchasing is required to provide this document to all suppliers that are on the ASL.

3. DEFINITIONS

- ***Approved Supplier List*** *(ASL)* – Suppliers who have met the necessary requirements to supply parts and/or services used in the manufacture of UA products
- ***ESD*** – Electro-Static Discharge
- ***Inner Packaging*** – Packaging containing the innermost packaging; examples include ESD bags for tubes, trays, and reels, bubble pack around bagged circular connectors, custom cut foam for bagged metal parts.
- ***Innermost Packaging*** – Packaging which directly contacts the product; examples include plastic or paper bags around metal parts, tubes, trays, and reels holding I.C.'s, Styrofoam with transformers.
- ***Intermediate Packaging*** – Packaging containing inner packaging, usually small boxes or bags.
- ***MSD*** – Moisture Sensitive Devices
- ***Outer Packaging*** – The shipping container in which the product is shipped.

4. PROCEDURE

4.1. SPECIFICATION

4.1.1. Introduction

Conflicts between this document and UA purchase orders must be resolved in writing.

4.1.2. ESD Sensitivity (Electronic Components Only).

All surface mount devices must be classified per JESD22-A114-A, human body model test method to an ESD sensitivity level. Devices that are ESD sensitive must be packaged in static shielded containers and marked with ESD sensitivity levels.

- Class 1 – Any part that fails after exposure to an ESD pulse of 2000 volts or less.
- Class 2 – Any part that passes after exposure to an ESD pulse of 2000 volts but fails after exposure to an ESD pulse of 4000 volts.
- Class 3 – Any part that passes after exposure to an ESD pulse of 4000 volts.

Class 1 and 2 components must be packaged in static shielding bags or boxes and labeled with the class. For class 3 components, they may be packaged in either static shielding or anti-static material.

4.1.3. Moisture Sensitivity

All plastic surface mount devices must be classified per JESD22-A112-A, test method to a moisture sensitivity level.

- Level 1 – Classified as not moisture sensitive and does not require any special packaging.
- Level 2-5 – Classified as moisture sensitive and must be dry-packed with desiccant. The level should be clearly marked on the outside of the package, in accordance with JEP113.
- Level 6 – Classified as extremely moisture sensitive. The package should be labeled with a warning label indicating that the components are level 6. Minimum bake time and temperature should also be on the label.

4.1.4. Solderability (Electronic Components Only).

Solderability testing shall be conducted according to J-STD-002 when required per Section 4.1.12. Solderability tests are considered destructive. The ‘simulated board mounting reflow solderability test method must be used for fine pitch gullwing leads (spacing less than 20 mils) and BGA devices. For all other components, use either the ‘Dip and Look’ method or the ‘simulated board mounting’ method.

4.1.5. Coplanarity (Electronic Components Only).

All leaded surface mount components must coplanar, as defined by JEDEC test method B108. Components with a lead pitch greater than 0.5 mm, must be coplanar within 0.1 mm. Components with a lead pitch of 0.5mm or less must be coplanar within 0.08mm.

4.1.6. Marking Permanency

All solid-state semiconductor components must be able to withstand the JEDEC Marking Permanency Test Method B107-A

4.1.7. General Packaging

- Appropriate innermost, inner, intermediate, and outer packaging should be used to prevent damage to the product during shipping and handling.
- All packaging except the outer packaging must be ESD safe, including fillers.
- Package weight should not exceed 25 pounds. Packages exceeding 25 pounds should be labeled indicating to lift with caution.
- Packaging must not be made from ozone-depleting materials or other hazardous materials or materials damaging to the environment. Styrofoam peanuts are not acceptable.

4.1.8. Tape and Reel Packaging (Electronic Components Only).

Tape and reel components will meet requirements in EIA-481-B, 8mm through 200mm Embossed Carrier Taping and 8mm & 12mm Punched Carrier Taping of Surface Mount Components for Automatic Handling. The clearance between the components and the cavity must be within 0.05mm to 0.50mm maximum. The component cannot rotate more than 10 degrees within the determined cavity. The allowable camber from the top view is 1mm/100mm non-accumulative over 250mm.

UA Manufacturing Division requires that all surface mount components be provided on tape and reel, unless specified otherwise in writing by an authorized representative of the UA Manufacturing Division.

No more than two date/lot codes should be on any reel. As stipulated in SOP-QA-08.13

The minimum quantity per reel is variable depending on the size of the part; however, the length of tape containing parts can be no less than 3 feet.

4.1.9. Tray/tube Packaging (Electronic Components Only).

No more than one date/lot code should be contained in any one tray/tube. Trays/tubes with different date/lot codes must be packaged in separate ESD bags. All products in the tray/tube should be oriented in the same direction.

The maximum tube length is 22 inches. Tube orientation is indicated by a green pin for pin 1 and a white or clear pin for the opposite end. Only stoppers, pins or pink cushioning material should be used to prevent products from sliding in the tube. Punched holes are not acceptable.

Appropriate trays, including lids, must be used to prevent lead damage. Stacked trays must be banded to prevent trays from shifting.

4.1.10. Bulk Packaging and Other Part Packaging

Parts must be packaged so that every date/lot code is in separate innermost and inner packaging. For example, a shipping box containing an order of printed circuit boards with more than one date code must have no more than one date code per bundle (bubble wrap, shrink wrap, etc.). Another example is a box of fasteners that can contain several internal boxes with all of the parts in each box having the same date/lot code.

4.1.11. Paperwork

Please note that UA personnel are not permitted to alter packing lists, certificates of conformance, or other documents accompanying shipments to our company. Mistakes or omissions in these documents must be corrected by the supplier. All shipments to UA must include packing lists and certificates of conformance. The following information must appear in any combination on these two documents:

4.1.11.1. Manufacturer's name, manufacturer's part number, the manufacturer's date/lot code, the quantity of each date/lot code, UA purchase order number, UA part number, and the UA Revision Number. If applicable, the shelf life expiration date must be included on the certificate of conformance or a separate certificate of raw materials. If the parts are serialized, the serial numbers must be listed. In the event the certification contains a sign-off line, a signature is required. An example C of C is attached in Appendix A.

4.1.11.2. Supplier shall identify the actual manufacturer on the packing sheet if the end item manufacturer is a company other than themselves.

4.1.12. Date/Lot Codes

All parts must be date/lot/SN code traceable. All solderable electric components (except for collapsible solder balled BGA's) received with date codes 5 years or older shall be tested for solderability by the supplier and a test report must be submitted with shipping documents. Reference Section 4.1.4.

If the part marking includes a date/lot/SN code, this date/lot/SN code must be traceable by the vendor. The packing lists and certificates of conformance must contain this date/lot/SN code.

If a vendor is adding value to a part supplied by someone else (for example, painting a machined part made by a different vendor), the vendors providing subsequent operations should certify the parts and provide traceability using the lot code provided by the initial vendor.

4.1.13. Shelf Life Material

Certain parts have a limited shelf life as defined by the manufacturer. Suppliers providing parts with shelf life must provide the date of manufacture on certification of conformance and expiration date if available. UA maintains shelf life information on these items in FourthShift and TIPQA item master.

Items with specified longevity (i.e., shelf life items) must have 75% of their life remaining upon receipt at UA.

4.1.14. RMA Requests

RMA request responses should be provided within two (2) business days.

4.1.15. Paperwork Correction

Most Receiving Inspection rejections involve paperwork problems. UA buyer will make their best effort to have paperwork issues corrected in a timely manner. If no response is received the entire shipment may be returned back to the supplier.

4.1.16. Repairs

UA requires that certain minimum information be returned with all parts sent to the supplier for repair or rework. In general, this information is the specific work that was done to accomplish the repair or rework. As an example, if a repair to a circuit card assembly involved replacing a burned part, the documentation must say that part XYZ, reference designator U123 was replaced due to being burnt.

A distributor should use date/lot codes marked on the parts whenever possible. If the parts are not marked, the distributor should use the manufacturer's date/lot code whenever possible.

4.2. LABELING

4.2.1. All boxes received by Universal Avionics shall have a box label. See Figure 2: Box Label Format on the following page for a format where:

- PKGID= Universal Avionics P/N
- TransID= Packing slip number
- QTY= quantity in the box
- PO: purchase order number

4.2.2. All innermost, inner, intermediate, and outer packaging must be labeled. All packages, reels, etc. must have a label marked with barcode, and human-readable information. See Figure 1 below.

4.2.3. Labels will contain the specified minimums:

- UA Part Number
- Mfg Part Number (if applicable)
- Qty, P.O Number
- Date code/Lot Number

- Item Description
- UA Revision Number (as applicable)

4.2.4. Barcodes may be printed in Code 128, or code 3 of 9 (code39).

Figure 1 - Reel labels must be placed as shown below

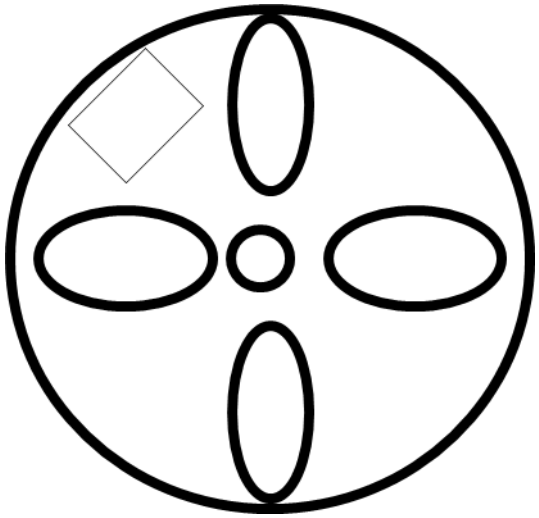

Figure 2 - Box Labels format shall contain the following

From:	**To:**
XXXXXXXXXX	**XXXXXXXXXX**
XXXXXXX	**XXXXXXX**
XXXXX, XXXX	**XXXXX, XXXX**
XXXXXXX	**XXXXXXX**

PKGID:	Human Readable
Trans ID:	Human Readable
QTY:	Human Readable
P.O.:	Human Readable

Description:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

5. ASSOCIATED DOCUMENTS

Document Type	Document Number	Title
Form	FRM-ADM-08.12	Supplier Deviation Request Form
External Document	EIA-556A	Outer Shipping Container Bar Code Standard
External Document	EIA-481-B	8mm through 200mm Embossed Carrier Taping and 8mm & 12mm Punched Carrier Taping of Surface Mount Components for Automatic Handling
External Document	EIA-625	Requirements for Handling Electrostatic-Discharge Sensitive Devices Title
External Document	J-STD-002	Solderability Test Method
External Document	EIA/JESD22-B107-A	Test Method, Marking Permanency
External Document	EIA/JESD22-A115-A	Test Method, ESD Sensitivity Testing
External Document	EIA/JESD625	Requirements for Electrostatic-Discharge Sensitive (ESDS) Devices
External Document	EIA/JEP124	Guidelines for the Packing, Handling, and Repackaging of Moisture-Sensitive Components
External Document	EIA/JEP130	Guidelines for the Packing and Labeling of Integrated Circuits in Unit Container Packing
External Document	JESD22-B100-A	JEDEC Physical Dimensions Standard
External Document	JESD22-B104-A	Test Method, Mechanical Shock
External Document	JESD22-B108	Coplanarity Test for Surface-Mount Semiconductor Devices
External Document	JEP113	Symbol and Labels for Moisture-Sensitive Devices
External Document	NIGP105	Handling Guidelines for Moisture Sensitive Plastic Surface Mount Components
External Document	NIGP108.00	Guidelines for Packing and Dunnage of Electronic Components Telecommunication Industry Form (TCIF)
External Document	BC/93-001	Shipping and receiving Transaction Barcode Label Specification
External Document	BC/93-002	Implementation guide to package Labeling Automation Identification Manufacturers (AIM)
External Document	USS-128	Uniform Symbology Specification (Code 128)
External Document	USS-39	Uniform Symbology Specification (Code 39)

6. REVISION HISTORY

Date	Revision	Changes
01/20/2021	17	Clarified section 4.1.15 to remove time frame and add current process of requesting corrected paperwork.
02/17/2022	18	Updated Section 4.1.4 and 4.1.12 electrical component solderability testing requirements.

Appendix A

ABC Corporation

1234 E. Manufacturing Way, Tucson, AZ 85716

Telephone 520-555-1212 Facsimile 520-555-1213

Certificate of Conformance

To: Universal Avionics

3260 E. Universal Way

Tucson, AZ 85756

Purchase Order Number: _____

Manufacturer Part Number: _____

UA Part Number: _____

UA Revision: _____

Lot Number: _____ (Lot numbers or serial numbers are the most common mistakes on C of C's)

Serial Number: _____

Description: _____

Quantity: _____

Materials and/or parts have been manufactured, fabricated, controlled, and tested in accordance with all engineering and purchase order requirements. Certifications for material, chemicals, paint, and other applicable records are on file at ABC Corporation and are subject to examination by Universal Avionics, the FAA, and Universal Avionics' customers during normal business hours. These records will be maintained and stored indefinitely. Materials furnished under this purchase order are free from contamination.

Signed: _____
Quality Assurance Manager or Delegate

Date: _____