

**KINGS AVIONICS, INC.**  
**DETAILED PROCEDURES MANUAL**

**CRS# KD6D661N**

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# KINGS AVIONICS INC

## DETAILED PROCEDURES MANUAL

### INTRODUCTION

This Detailed Procedures Manual has been prepared in accordance with the current Federal Aviation Regulations (FAR's), and the policies of Kings Avionics, Inc.

This manual describes the various procedures practiced by Kings Avionics, Inc. in its daily operations in detail.

The general repair, overhaul, or alteration of products will be performed in accordance with the current Federal Aviation Regulations, manufacturer's data, drawings, specifications, and bulletins, or other technical data approved by the administrator.

Each supervisor and inspector working for Kings Avionics, Inc. will have access to a current copy of this manual, located on Kings Avionics Inc main computer server. It will also be available to all repair station personnel. All personnel are required to thoroughly understand its contents.

This detailed procedures manual requires only Kings Avionics, Inc. approval. This manual describes general Policy and procedures that have previously been FAA and Repair Station approved or accepted in the RSM, QCM, Forms, and Training Manual.

## MANUAL CONTROL

This manual will be stored on Kings Avionics main computer server. Kings Avionics, Inc. will supply a direct link on every computer terminal for manual access for all employees. A computer backup will be performed every Friday and a copy will be stored in the Kings Avionics, Inc. safe in case of computer failure. Each employee will be trained on the procedure to access all the manuals at the time of hiring.

The General Manager will be notified by a department supervisor in the event this manual is not current, and valid for that department's use, and will identify needed changes using form KA-10 (Manual Change Request). A sample of this form is found in the Forms Manual. The General Manager will have the revisions found necessary, produced in a final form. The revisions will be submitted to the CHDO (Certificate Holding District Office) so they may have a copy on file. The FAA Coordinator will revise manuals as required, and explain the revisions to all employees. An entry into each employee's training record will be added after each employee has been trained to verify and acknowledge the understating of each revision. Upon approval by an authorized Repair Station representative, the repair station will commence operating within the guidelines of the new revision. The "List of Effective Pages" will reflect the Approval/Acceptance of the current revision. A file will be maintained, showing on a continuous basis, the disposition of each manual change. The CHDO will be notified each time a revision to this manual is needed. Revised areas will be identified by a vertical bar in the margin.

## RECORD OF REVISION

Rev. Ident.	Rev. Date.	Description of Revision	Repair Station Approval
C	03/2000	Complete	
C.1	10/2001	Revisions ESDS Procedures	See List of Effective Pages
C.2	06/2008	Change of Address	See List of Effective pages
C.3	07/2009	Work Order Procedure	See List of Effective Pages
C.4	12/2009	Manual Storage	See List of Effective Pages
C.5	04/2010	Changes to reflect satellite facilities	See List of Effective Pages
C.6	10/2010	Test equipment equivalency, and electronic signature and electronic storage	See List of Effective Pages
C.7	03/2011	Adding Go/No-Go procedure	See List of Effective Pages
C.8	06/2011	Modify Electronic Signature procedure	See List of Effective Pages
C.9	03/2015	Changed address of KD6R661N, from Salt Lake City UT, to Apple Valley UT; changed address of KD6D661N from St. George UT, to Salt Lake City UT	See List of Effective Pages

# LIST OF EFFECTIVE PAGES

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1	C.6	10/2010
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3	C.3	07/2009
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22	C.5	04/2010
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*C. R. Harrell*  
QA Manager

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### 1.1 SERVICE DEPARTMENT REPAIR PROCEDURES

#### 1 1.1 Work Order Initiation/Repair Preparation Procedures

1.1.1.1 Kings Avionics Inc. representative will obtain proper information, aircraft scheduling, expense limits for complaints, and open a computer generated work order listing complaints.

1.1. 1.2 The Supervisor will acquire knowledge of the new Work order pertaining to the complaints being serviced.

1.1.1.3 Will assign work order to a qualified technician.

1.1.1.4 The technician will obtain the proper technical information, any expense limits, if they apply, and parts needed for repair.

1.1.1.5 Acquire all needed test equipment and verify the calibration currency of tester to be used. Obtain location of aircraft, and acquire keys, if needed for access.

#### 1.1.2 In-Aircraft Troubleshooting/Repair Procedures

1.1.2.1 Determine aircraft operating voltage.

1.1.2.2 Perform initial system functional tests for verification of complaints.

1.1.2.3 If problem cannot be verified, consult with supervisor for any further action.

1.1.2.4 If expense limits are going to be exceeded, contact supervisor to acquire authorization from customer to exceed repair limit.

1.1.2.5 If defective units are found, remove units and refer to procedures in BENCH APPLIANCE REPAIR PROCEDURES.

1.1.2.6 Complete repairs in aircraft; complying with manufacturers, and approved repair procedures. In Progress inspections must be performed when any aircraft re-assembly is required. Complete in-aircraft repairs as required.

1.1.2.7 Upon completion of repairs, perform full tool and test equipment inventory check. If any items are not located, inform supervisor of situation. The items must be located before proceeding.

1.1.2.8 Perform full functional test of repaired equipment, or systems before requesting Return-To-Service test/inspection.



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1.1.2.9 Contact appropriate inspector for Return-To-Service test (if deemed necessary), Assess results, and assist as required.

1.1.2.10 Return to Kings Avionics, Inc. and complete all necessary paperwork to approve aircraft for return to service.

1.1.2.11 Inform supervisor of completion of repairs, and receive next assignment.

1.1.3 Samples of forms are found in the Forms Manual.

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### 1.2 INSTALLATION PROCEDURES

#### 1.2.1 Pre-Aircraft Arrival Procedures

1.2.1.1 Open computer generated Work Order with reference to customer authorized Installation proposal. Scan authorized proposal in work order Electronic Document Storage File (EDS).

1.2.1.2 Review proposal, and confirm that equipment to be installed is correct (voltage requirements, face color, compatibility, placement, etc.).

1.2.1.3 Verify equipment installation kits are complete, and acquire, or order (if not in stock) any required parts.

1.2.1.4 Gather appropriate installation data; i.e., manufacturers Installation instructions, aircraft wiring diagrams, DER engineering prints and 8110-3, etc., as required.

1.2.1.5 Initiate Installation Inspection Checklist, Form KA-INSTALL.

#### 1.2.2 Preliminary Inspection Procedures

1.2.2.1 Lead Technician shall be responsible for Pre-Installation Inspection of aircraft and equipment as received. List any discrepancies noted and inform Customer, as required. Sign Preliminary Inspection block on Work Traveler (K-03.2). Generate additional travelers, as required, for items on installation Work Order.

1.2.2.2 Acquire Aircraft Registration, current Weight and Balance, and Equipment List. Make copies of each, and return originals to aircraft.

#### 1.2.3 In-Progress Installation/Inspection Procedures

1.2.3.1 Installation In-Progress Inspections will be continuous during the installation process. The number of In-Progress inspections/signoffs will be determined by the number and complexity of items addressed in the installation Work Order.

1.2.3.2 Begin FAA Form 337 paperwork.

1.2.3.3 Photograph, or sketch existing instrument panels and radio stacks. Verify new equipment placement in panel.

1.2.3.4 Pre-fabricate and test wiring harness on bench as much as possible for new equipment.

1.2.3.5 Open up working areas in aircraft (panels, floor boards, etc.), and inspect affected locations for conflicts in mounting equipment/parts or harness routing.

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1.2.3.6 Complete FAA Form 337 and submit to FSDO.

1.2.3.7 Wire new equipment harnesses in aircraft.

1.2.3.8 Install proper circuit protection for new equipment and placard appropriately.

1.2.3.9 Perform continuity checks of all new wiring/interfaces before applying power to aircraft.

1.2.3.10 Perform necessary tests of equipment prior to tie-up.

1.2.3.11 Reassemble working area, and close access panels only after inspector's examination, and successful functional test of all affected systems.

1.2.3.12 Verify all work has been completed per FAA Form 337, and/or STC, and that any necessary placards have been properly applied.

### 1.2.4 Final Inspection/Sign Off

1.2.4.1 Update Weight and Balance and Equipment List.

1.2.4.2 Ready aircraft for final inspection by Lead Technician.

1.2.4.3 Complete appropriate documentation, and attach to aircraft records.

1.2.4.4 Sign off by authorized Inspector. Approve aircraft for Return to Service.

1.2.5 Samples of forms are found in the Forms Manual.

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### 1.3 BENCH APPLIANCE REPAIR PROCEDURES

#### 1.3.1 Incoming Equipment/Appliances

##### 1.3.1.1 Hand Carry

1.3.1.1.1 Open a computer generated Work Order, and/or initiate a Work Traveler (Form K-03.1) with the appropriate information filled in.

1.3.1.1.2 A blue and white ID tag, (Form KA-9), will be attached to the appliance. Appliance will then be enclosed in anti-static bag or other appropriate packaging along with Work Traveler.

1.3.1.1.3 Unit will then be placed on the repairable shelf to await repair action.

##### 1.3.1.2 Technician Carry-In

1.3.1.2.1 Open a computer generated Work Order, and/or initiate a Work Traveler (Form K-03.1) with the required information filled in.

1.3.1.2.2 A blue and white ID tag (Form KA-9) will be attached to the appliance. Appliance will then be enclosed in antistatic bag, or other appropriate packaging.

1.3.1.2.3 Appliance will then be placed on the repairable shelf to await repair action.

#### 1.3.2 Preliminary Inspection

1.3.2.1 The technician will visually inspect appliance for damage, noting any damage in appropriate section of Work Traveler, and initialing Preliminary Inspection block.

1.3.2.1.1 Initialing preliminary inspection on work traveler may be accomplished by any means approved in the

1.3.2.2 The technician will determine if unit is repairable at this location based on:

- Available technical repair data.
- Required test equipment with current calibration status.
  - If Technician determines that equivalent test equipment will be used, repair technician will document in "Test Equipment Equivalency Log" (see test equipment equivalency procedure on page23).

1.3.2.3 Repairs will be initiated as required, or unit will be sent out for repair at an approved facility.

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### 1.3.3 In-Progress Inspection and Repair Phase

1.3.3.1 Bench In-Progress Inspections will be conducted, and initialed on the Work Traveler during the repair cycle as required.

1.3.3.2 The technician will note and correct any hidden defects found during troubleshooting; i.e., missing or damaged hardware, incorrect parts, poor workmanship, etc. Defects will be noted on the Work Traveler in the appropriate area.

1.3.3.3 Appliances requiring parts shall be placed in a bin/container with all associated hardware and sub-assemblies. Container shall be placed in designated Awaiting Parts holding area. The Work Traveler shall be completed up to that point, placed with the unit/appliance, and a Parts Request submitted to the Parts Department to expedite as required.

1.3.3.4 All parts used in the repair, including serialized parts, will be recorded on the Work Traveler.

1.3.3.5 After repairs have been made, another In-Progress inspection will be conducted and initialed by an authorized Inspector. The unit/appliance will then be closed for Final Inspection.

### 1.3.4 Final Inspection and Return to Service

1.3.4.1 Once the unit/appliance has reached final assembly, it will be subjected to a functional test, and visual inspection.

1.3.4.2 If the final tests were completed satisfactorily, the Final Inspection block will, be initialed by the authorized Inspector.

The Work Traveler will be reviewed for completeness, and signed and dated by the repair technician, and authorized Inspector in the required blocks.

1.3.4.3 An FAA Form 8130-3 will be completed for units/appliances passing Final Inspection.

1.3.4.4 A copy of the Work Traveler will be made and attached to the completed FAA Form 8130-3 and function as a repair report. Both forms will be attached to the unit.

1.3.4.5 A copy of the FAA Form 8130-3 will be made and attached to the Work Traveler as a record of the completed FAA Form 8130-3, and scanned into the Work Order Electronic Document Storage (EDS).

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### 1.3.5 Completion Phase

1.3.5.1 The Appliance will be placed in an anti-static bag, or other appropriate packaging as required (see ESDS DEVICES), with the FAA Form 8130-3, and a copy of the Work Traveler.

1.3.5.2 Appliance will then be placed into the serviceable units/equipment locker pending reinstallation, pick-up or shipment.

1.3.5.3 The original Work Traveler will be checked for completeness and attached to the copy of the FAA Form 8130-3, along with any other appropriate documentation. All documents related to the repair and transactions associated with the work order will be scanned or stored in the Work Order Electronic Document Storage file (EDS).

1.3.5.4 The work area will be cleared and readied for the next repair.

1.3.6 Samples of forms are found in the Forms Manual.



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### 1.4 RECEIVING PROCEDURES

1.4.1 Upon receipt of part/unit, the Parts Inspector will examine packaging for damage that might affect the integrity of item received.

1.4.1.1 Damage (if any) will be noted on packing slip.

1.4.1.2 Item will be unpacked, noting any visible damage to the item.

\*Special attention will be paid to shock indicators.

1.4.1.3 If item is questionable as to condition, it will be placed in a quarantine bin until an inspector can review its condition.

1.4.1.4 When a part is determined to be damaged, a claim will be filed, and the part returned to vendor for repair or replacement.

1.4.2 Parts received in serviceable/like new condition.

1.4.2.1 Part numbers and vendor will be verified.

1.4.2.2 Quantities will be verified.

1.4.2.3 Serialized units will be verified and appropriately noted.

1.4.3 Parts received for a specific repair will be forwarded to appropriate technician, and entered in the computer in the work order parts section.

1.4.3.1 All documentation will be scanned and stored in the work order Electronic Document Storage File (EDS).

1.4.4 Parts for stock will be forwarded to stock room area, where they will be filed by vendor, P/N, quantity, and lot number and entered into the computer parts database.

1.4.5 All incoming parts and materials will be inspected for conformity to purchase orders, and authenticity of new replacement parts. Such parts will be checked for shipping damage, corrosion, rust, or other deterioration.

1.4.6 All incoming Parts and Materials orders will be scrutinized to assure that only approved parts are utilized. The procedures detailed herein, AC21- 29B, and any other resources, will be used in making this determination. If any parts are detected, or suspected to be unapproved, the parts will be specially marked and segregated. The parts will be placed in a special holding area designated by the Quality Assurance Manager. An FAA form 8120-11 will be filled out and sent to both the FAA branch that oversees unapproved parts (AVR-20), and to this repair station's assigned inspector at the local FAA Flight Standards District Office (FSDO)

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### 1.5 STOCK CONTROL, SEGREGATION, AND IDENTIFICATION

1.5.1 The system of stock control, segregation, and identification utilized is described herein to enable personnel to determine the adequacy of the stock, the location of parts, the proper identification of parts, and to assure that parts do not deteriorate, or become contaminated with foreign matter prior to use. These Shelf Life items will be so arranged that the items with the greatest shelf life will be issued first. The more recently procured items will be placed in the aft portion of the storage bin. These parts will be dated to insure that the shelf life is not exceeded.

1.5.2 All parts and materials utilized at Kings Avionics, Inc. shall be classified as to TYPE as described herein. Following are detailed procedures for disposition of these parts.

#### 1.5.2.1 TYPE "A" PARTS AND MATERIALS:

##### **Piece parts and material (non-serialized)**

1.5.2.1.1 The incoming parts inspector will physically inspect parts for correct type, quantity, condition, and vendor, using the packing slip for verification. This information will be cross-checked against the purchase order.

1.5.2.1.2 Parts received into the system will be bagged and marked with the following data: Date, purchase order number, quantity, and vendor. Vendor marked bags will be acceptable if all data is present.

1.5.2.1.3 The parts bag will be placed into an envelope, which will also be marked with date, quantity, and vendor.

1.5.2.1.4 The envelopes will be placed in an appropriate bin that will then be placed in a location accessible to authorized personnel, and segregated from other parts and materials.

1.5.2.1.5 No parts bag will contain parts that were received on more than one date. Further shipments of specific parts will be recorded on the envelope, and placed in a separate bag in the envelope. The parts envelope may contain parts bags from more than one date.

1.5.2.1.6 When a part is removed from the bag, the new quantity will be recorded on the bag under the appropriate date and vendor. This data will also be recorded on the envelope that contained the parts bag and noted in the computer system.

1.5.2.1.7 Spools containing wire and cable will have a label affixed with the Mil spec #, P.O. # and Lot #. Wire shall be stocked and ordered as required by shop demands.

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### 1.5.2.2 TYPE "B" PARTS AND MATERIALS:

**Parts and Materials that have a return to service and/or certification; i.e.: modules, circuit cards. Type "B" Parts and Materials will typically have a serial number.**

1.5.2.2.1 Incoming inspection procedure for Type "B" Parts and Materials include the same requirements as noted above for Type "A" Parts and Materials. Additionally, the approval for Return To Service, and /or certification information will be included and kept with the part or material. This information will be added to the appropriate work order upon use.

### 1.5.2.3 TYPE "C" PARTS AND MATERIALS:

**Aircraft parts that have not been returned to service, but are repairable. Parts and Materials not intended for use in aircraft.**

1.5.2.3.1 Type "C" Parts and Materials are segregated from new and serviceable parts in a manner that prevents accidental use.

### 1.5.2.4 TYPE "D" PARTS AND MATERIALS:

**Expendable parts; window splices, terminals, screws, hardware, etc.**

1.5.2.4.1 Type "D" Parts and Materials will be stocked as free stock in parts bins. New parts only will be stocked.

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### 1.6 ESDS DEVICES

#### 1.6.1 INTRODUCTION

Industry has become increasingly aware of the damage electrostatic discharge (ESD) can cause to MOS devices. Low production yields gave initial early evidence of this. More recently this same evidence has suggested similar ESD sensitivity in other parts; evidence strengthened through use, testing, and failure analysis. The tendency toward greater complexity and increased packaging density has heightened this sensitivity to the point where some state-of-the-art micro technology parts can be destroyed or damaged by static voltages as low as 20 volts.

Microelectronic and semiconductor devices, thick and thin film resistors, chips and hybrid devices, and piezoelectric crystals are all susceptible to common electrostatic voltage levels. All equipment, not having adequate protective circuits, containing these components are ESD sensitive. The human body, all work surfaces, floors (especially if waxed), furniture, personal clothing, clean room garments, packaging materials, and high velocity gas or liquid flow equipment are prime generators of electrostatic voltages. Movements such as sliding, rubbing, or separating of materials can frequently result in electrostatic voltages of 15,000 volts.

Maintenance shops absorb the majority of the expense associated with ESD failure. Latent failures reduce the mean time between repairs (MTBR). To support this maintenance activity, a large inventory of spares must be on hand. Proper ESDS handling will have substantial cost benefits.

ESDS information and procedures is provided in the following paragraphs

1.6.2 General Information

1.6.3 Definition of Terms

1.6.4 Static Safeguarded Work Station

1.6.5 Repair Tools and Supplies

1.6.6 Handling Procedures/Precautions

1.6.7 Transportation and Storage

1.6.8 Component Level

1.6.9 Assembly Level

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### 1.6.10 Additional Precautions

### 1.6.11 Anti-static Device Testing

### 1.6.2 GENERAL INFORMATION

The primary objective of all electrostatic prevention methods is to eliminate static charge accumulation. Any subassembly, assembly, or printed circuit board containing ESDS devices is considered electrostatic sensitive and should be handled according to the handling procedures called out in this section.

Top level assemblies or equipments that are fully assembled with all covers and shields in place and properly attached are not normally considered electrostatic sensitive. Follow any packaging or special handling procedures specified for the equipment.

Storage of units should be in anti-static bags or better with anti-static covers on the unit connectors.

### 1.6.3 DEFINITION OF TERMS

**Anti-static Materials** — Anti-static materials do not charge tribo-electrically and exhibit a surface resistivity between  $10^9$  to  $10^{14}$   $\Omega$  per square. These materials are used to replace insulating and static generating materials and also may be used to line static shielding containers.

**Buried Layer Containers** — Containers (bags or tote bins) with a conductive layer placed between insulating or anti-static materials and thus not exposed to the outside. Static shielding is accomplished by this layer.

**Conductive Materials** — Conductive materials exhibit a surface resistivity of less than  $10^5$  to  $10^9$  per square as measured with a surface resistivity meter. Static shielding containers are made from conductive materials.

**Electrostatic Charge** — An electrical charge at rest, caused by the transfer of electrons within a body or from one body to another.

**Electrostatic Discharge (ESD)** — A transfer of electrostatic energy between substances of different electrical potentials. The discharge may occur without direct contact.



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**Electrostatic Discharge Sensitive (ESDS) Device** — Electronic devices that are susceptible to damage from electrostatic discharge. These items include all semiconductors, which use MOS, CMOS, P-MOS, N-MOS, MES, and Ga As technology, and other select electrical devices.

**Electrostatic Discharge Sensitive Assemblies** — Any assembly that contains an ESDS device is considered an ESDS assembly. Circuit cards, subassemblies, and modules internal to equipment are also included.

**Foot Strap** — A foot strap is a conductive device that attaches to the foot of an operator to ground the operator to a conductive floor surface. It is not necessary for the foot strap to contact bare skin.

**Static-Dissipative Materials** — Static-dissipative materials exhibit a surface resistivity of  $10^5$  to  $10^9$  per square as measured with a surface resistivity

meter. These materials may be used in place of conductive materials to control the rate of electrical discharge and limit the possibility of sparking.

**Static Charge Generator** — This is a general term for nonconductive or insulating materials (eg. Adhesive tape, untreated plastic foam, and most plastics). This type of material easily generates and holds a static charge and is a potential hazard to ESDS devices/assemblies.

**Surface Resistivity** — Surface resistivity is a value that indicates the ability of a material to dissipate electrical charges.

**Triboelectric Charge** — Triboelectric charge is a buildup of static charge due to the contact and separation of two materials. Friction or rubbing enhances this effect due to the contact and separation of many parts of the surfaces.

**Wrist Strap** — A wrist strap is usually an elastic band that an operator wears around the wrist. The wrist strap has an electrical connection that is used to connect to a cable. The cable is connected to a conductive work surface pad at ground potential. The wrist strap must contact the bare skin to be effective.

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### 1.6.4 STATIC SAFEGUARDED WORKSTATION:

A static safeguarded workstation or static protective work area can be any area so designated for the repair and/or handling of ESDS devices or assemblies.

#### 1.6.4.1

A static safeguarded work station should, as a minimum, have dissipative work surfaces (conductive mats) which are connected to ground. There should be a conductive cable or cord from the work surface that can be connected to a wrist strap. Grounded work surfaces must be kept clean. These surfaces should be cleaned with a Static Control Mat cleaner or spray. Other cleaners may leave a film residue that can reduce the effectiveness of the grounded work surface.

#### 1.6.4.2

Dissipate floor coverings or mats may be applied to all floors in a static safeguarded area. These surfaces should be cleaned with a Static Control Mat cleaner or spray. Other cleaners may leave a film residue that can reduce the effectiveness of the grounded work surface. Do not apply floor wax to any floor covering or mat. The wax acts as an insulator.

#### 1.6.4.3

Ionized air blowers may be used when the repair process requires the use of static charge generators, and other methods of charge dissipation do not work.

#### 1.6.4.4

All electrical equipment and machinery in static safeguarded work areas must be electrically grounded so that the resistance from exposed metallic surfaces to work station ground connections does not exceed 100 K $\Omega$ .

#### 1.6.4.5

Special considerations for test stations:

- Electrical power and electrical test signals should be turned off before ESDS devices or assemblies are connected to or disconnected from test connectors.

- Power supply voltages should be applied before and removed after test stimuli/signals are applied or removed.

#### 1.6.4.6

Unacceptable practices at or within 2 feet of static safeguarded areas include:

- Unpacking of parts or material contained in static generating material when ESDS devices are exposed.

- Storing of static generating packaging material within 2 feet of exposed ESDS devices.

- Trash cans.

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### 1.6.4.7

- Brushes with nonconductive nylon or Materials that are known static generators must be kept at least 2 feet away from static safeguarded work areas. Examples of static generating materials include:
- Gloves and smocks made from synthetic materials.
- Nonconductive solder removal tools.
- Nonconductive plastics such as plastic and Styrofoam cups, plastic work instruction protectors, clear plastic bags, will untreated foam padding packaging material, and tape.
- Plastic bristles.

### 1.6.5 REPAIR TOOLS AND SUPPLIES

Special care should be taken when installing or removing ESDS devices to ensure that the proper tools and supplies are being used.

Hand-tools available with handles made of anti-static or static- dissipative materials should be used. Where insulating handles are necessary, separate ground connectors are required, such as on 3-wire soldering irons. Maintenance personnel should always ground the tip of the tool on a conductive table prior to applying it to an ESDS device. Place tools and fixtures on a grounded surface when not in use to help minimize static charge buildup.

### 1.6.6 HANDLING PROCEDURES/PRECAUTIONS

The following procedures apply for handling ESDS parts or assemblies:

#### 1.6.6.1

Special precautions may be required at test stations to prevent shorting of the assembly under test. Placing the assembly on an insulator is unacceptable.

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### 1.6.6.2

The handling of ESDS devices should be restricted to static safeguarded work areas by personnel wearing either foot straps or wrist straps connected to ground.

#### [NOTE]

If wrist straps cannot be used, the work surface must be static safeguarded using an ionized air blower.

### 1.6.6.3

Anti-static packages should be placed on the grounded surface prior to removal, transfer, or insertion of their contents. This allows dissipation of any accumulated charge.

### 1.6.6.4

Personnel must be grounded with a wrist or foot strap when handling ESDS devices or assemblies.

#### [CAUTION]

Use lotion, when necessary due to dry skin, to improve electrical contact between skin and wrist straps. Use only lotion that contains no mineral oil, glycerin, silicone, or lanolin that could contaminate the assembly.

### 1.6.6.5

Regular inspections should be made to ensure that wrist and foot straps have continuity and that the required series impedance is present. Grounding of the work surface should also be checked. Refer to "Anti-Static Device Testing" for foot, wrist, and work surface testing information.

### 1.6.6.6

Personnel should minimize contact of ESDS parts or assemblies with their clothing. Synthetic material is an excellent source of static electricity.

### 1.6.6.7

Paper should not be placed between ESDS anti-static packaging and the static safeguarded work surface, or between ESDS devices and the static safeguarded work surface.

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### 1.6.6.8

Tools and fixtures used should be conductive between the working surface and the gripping point or bases to provide charge neutralization through the operators or stations.

### 1.6.6.9

Place all ESDS devices or assemblies in anti-static packaging (one item per bag) before removing them from a static-free workstation.

### 1.6.6.10

Materials that are known static generators must be kept at least 2 feet away from ESDS devices. Examples of static generating materials include:

- Gloves and smocks made from synthetic materials. -Nonconductive solder removal tools.
- Nonconductive plastics such as plastic and Styrofoam cups, plastic work instruction protectors, clear plastic bags untreated foam padding packaging material, and tape.
- Brushes with nonconductive nylon or plastic bristles.

### 1.6.6.11

Paper notebooks are acceptable if they do not contain plastic sheet protectors. The 2-foot rule does not apply.

## 1.6.7 TRANSPORTATION AND STORAGE

### 1.6.7.1

Ionized air blowers neutralize charge on all contacted areas but are limited in range. Blowers are especially useful in removal of static charge from insulating surfaces; however, ESDS assemblies should not be placed on these surfaces unless absolutely necessary.

### 1.6.7.2

If ESDS devices must be transported away from a static safeguarded work area, the ESDS devices must be placed in an anti-static bag. The anti-static bag must cover the ESDS device completely.

### 1.6.7.3

When moving or storing a complete unit, it should be fitted in an anti-static bag or better.

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### 1.6.8 COMPONENT LEVEL

Transportation and storage of ESDS parts at the component level require that all device leads be effectively shorted together. To accomplish this, one or a combination of the following methods should be used.

#### 1.6.8.1

Insert all leads of the device into high-density conductive foam (typically black).

#### 1.6.8.2

Insert devices in an anti-static container.

#### 1.6.8.3

Short all leads together with metal clips or store in grounded metal containers.

#### [NOTE]

Conductive bags with paper or other insulating materials bonded to their exterior should not be used unless a conductive path is present from the interior of the bag to an area on the exterior. This path is needed to allow neutralization of internal charges. Foil-lined, nonconductive containers must have foil around the outside and on the bottom for the same reason.

### 1.6.9 ASSEMBLY LEVEL

Anti-static protection is required for all assemblies containing ESDS parts anytime an assembly is removed from a static safeguarded workstation.

#### 1.6.9.1

The assembly must be entirely enclosed by an anti-static bag. Partial coverage, laying the assembly on the anti-static bag, or wrapping the assembly in the anti-static bag is unacceptable.

#### 1.6.9.2

Whenever anti-static bags are impractical, ionized air may be used.

#### 1.6.9.3

Do not open an anti-static bag without a properly connected wrist/foot strap.

#### 1.6.9.4

All procedures that apply to ESDS devices at the component level also apply to the assembly level.

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### 1.6.10 ADDITIONAL PRECAUTIONS

These additional precautions should be taken to minimize static accumulation and subsequent damage to parts or assemblies.

#### 1.6.10.1

Nylon or synthetic gloves and smocks should not be worn.

#### 1.6.10.2

Plastic cups, paper protectors, and other nonconductive plastics should not be allowed at a static safeguarded workstation.

#### 1.6.10.3

Handle ESDS devices by their cases whenever possible; avoid touching the leads or contacts.

#### 1.6.10.4

Use natural bristle brushes, not synthetic ones.

#### 1.6.10.5

Paper should not be placed between ESDS devices and the static safeguarded work surface.

#### 1.6.10.6

Placing a hand on the static safeguarded work surface provides a ground path equal to the wrist strap as long as the contact is maintained. When the hand is removed from the static safeguarded work surface, the ground path is lost.

### 1.6.11 ANTI-STATIC DEVICE TESTING

All antistatic equipment should be tested on a regular basis. The following information provides general guidelines that should be maintained as recommended by Kings Avionics, Inc. Tests shall be performed in accordance with test equipment manufacturers Operator's Manual.

#### 1.6.11.1

Wrist Strap Cord — Check on a weekly basis.

The resistance as checked from the wrist strap metal to the end of the wrist strap cord should be from 470 K $\Omega$  to 2M $\Omega$ .

#### 1.6.11.2

Work Surface Mat — check on a monthly basis.

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The resistance as checked across the ground cord terminal and the wrist strap cord terminal should be less than '1MΩ.

### 1.6.11.3

Work Area — Check on a monthly basis.

The resistance from the metal on the wrist strap through the wrist strap cord, work surface mat, and ground cord to the ground cord's termination connector should be from 1 to 10 MΩ.

Table 6-1. ESDS Work Station Test Equipment

STATIC SAFEGUARDED WORKSTATION	METER	MEASUREMENT PARAMETER
WRIST STRAP	3M Company 746 or equivalent Model	Pass/Fail Indication is shown
WORK SURFACE MAT	3M Company Model 701 or equivalent	10/100-V megohmmeter shows a total resistive reading as measured across two 5 lb electrodes.



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All satellite facilities will receive static tester quarterly. All ESD mat and wrist straps will be tested and signed for QA compliance.

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### **1.7 PROCEDURES FOR INSURING CURRENCY OF TECHNICAL DATA.**

1.7.1 The Repair Station will use, and has approved for use, the following sources for technical data.

1.7.1.1 ATP Microfiche Library.

1.7.1.2 CD ROMs provided by manufacturers.

1.7.1.3 Internet sources provided by manufacturers and third party sources approved by manufacturers such as "Resource One."

1.7.1.4 Limited printed library.

1.7.1.5 Other sources after review and approval of the Chief Inspector.

1.7.2 Checking currency of printed manuals.

1.7.2.1 Currency of printed manuals will be recorded on a sticker (Form KA-13) applied to the front cover of the manual. The sticker will be initialed by the person checking currency, along with the date checked. (Sample of sticker found in the Forms Manual.)

1.7.2.2 The sources for this check will be the manufacturers' yearly or current Tech. Pub's Index, or phone contact with manufacturer.

1.7.2.3 A special class of printed manuals is the "static" class. These manuals are no longer updated by the manufacturers and will be marked as "Static." The last revision date available will be marked on the sticker.

1.7.3 The ATP Microfiche Library is checked for currency by the following method:

1.7.3.1 ATP updates the microfiche monthly and provides a new Pub's Index. The Pub's Index will be used to ensure currency of the data.

1.7.4 The CD ROMs are checked for currency by the following method:

1.7.4.1 Accessing the manufacturer's website or Pub's Index. These resources are maintained by the manufacturer or an approved third party.

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### 1.7.5 Sources for Special Conditions.

1.7 5 1 These sources of data are Kings Avionics, Inc., Vendors (with current audit), or other manufacturers. These will include, but not limited to: Tech Rep's, faxes, and other forms of communication.

1.7.6 If current repair data is not available, the repair will be suspended until data is available, or equipment will be forwarded to an appropriate repair facility.

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All satellite facilities under Kings Avionics, Inc. will adhere to all currency of technical data procedures set forth by this Detailed Procedures manual.

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### 1.8 PROCEDURE FOR TEST EQUIPMENT EQUIVIALANCY

Equivalency for special tools and equipment is established by comparing the specifications of the recommended and equivalent test equipment. This goes beyond the basic functional criterion used for test equipment. Potentially equivalent test equipment must be proved to be equivalent in function to those recommended by the repair, overhaul and maintenance manual supplied by the appliance manufacture. This may include equivalency in accuracies, tolerances and functional specifications.

Kings Avionics, Inc. has identified a need to implement a test equipment equivalency during the overhaul/repair bench procedure. Therefore, the following procedure has been implemented to ensure all personnel have a resource for initial and recurrent training.

1.8.1 After repairman conducts preliminary inspection (See page 5 section 1.3.2.1 for Preliminary inspection details) and determines that test equivalency is required; the following procedure must be followed according to the Test Equipment Equivalency Log.

1.8.1.2 Obtain and copy the current required test equipment section from the maintenance manual.

1.8.1.3 Obtain a blank equivalency data sheet located in Test Equipment Equivalency Log.

1.8.1.4 Using the manufactures required test equipment data, inventory the test equipment to be used. Note any equipment that is not listed on required equipment list on the equivalency data sheet.

1.8.1.5 Verify all non-listed equipment, using specifications of the listed as the standard. List all references used to prove the equivalency of the listed equipment.

1.8.1.6 Attach the manufactures required equipment list to the equivalency data sheet and insert then into the Test Equipment Equivalency Log.

1.8.1.7 Continue with 1.3 Bench Appliance Repair Procedures of appliance according to the set procedure set forth on page 5.

\*\*\* An Example is supplied in the Test Equipment Equivalency Log. This log is located in all Kings Avionics locations in the appliance bench repair area

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All satellite facilities under Kings Avionics, Inc. will adhere to all test equipment equivalency procedures set forth by this Detailed Procedures manual.

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### 1.9 Procedure for Form/Documentation Signatures

All repair stations controlled under Kings Avionics, Inc. are required to have signatures traceable to the individual making the entry, and must be handwritten or part of an electronic signature acceptable to the FAA in coordination to the repair and installation procedures set forth in this manual. All handwritten signatures and initials will be authenticated by a signature log kept in the Roster of Repair Station Personnel. All digital initials and signatures are electronically stored on Kings Avionics, Inc. main server and are password protected.

#### 1.9.1 Electronic Signature

1.9.1.1 Technician must login with his/her personal username and password in AVM

- This will insure the correct initial and/or signature will be applied

##### 1.9.1.1.1 TRAVELER (Form K-03.2)

For traveler form reference see Page 52 in the Kings Avionics Forms manual

1. Select "Entries" on top tool bar
2. Select "Work Order" from drop down
3. Click on "browse/search" tab
4. Type in either work order, Tail Number or Customer Code
5. Select work order number that corresponds to work performed and press Enter
6. Select tab labeled "Tasks"
7. Select task number for work completed
8. Select tab labeled "Details"
  - a. Adding signature for box labeled "Repair Technician"
    - i. Select dropdown on the right side of section labeled "RTS Signature 1"
    - ii. Choose Apply Sig.
    - iii. Password box will appear
      1. Type your given password (the same password that you would use to login to AVM)
      2. Your signature file should fill the space to the left  
.Example: AVMSIGN\_yourname.jpg is what you should see. If this does not happen you will need to go to your direct supervisor for instruction.

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- b. Adding signature for box labeled “Authorized Inspector”
  - iv. Select dropdown on the right side of section labeled “RTS Signature 2”
  - v. Choose Apply Sig.
  - vi. Password box will appear
    - 1. Type your given password (the same password that you would use to login to AVM)
    - 2. Your signature file should fill the space to the left .Example: AVMSIGN\_yourname.jpg is what you should see. If this does not happen you will need to go to your direct supervisor for instruction.
- c. Adding initials in for boxes labeled “Inspection records”
  - vii. Select button labeled “Traveler “ located on the top right hand corner of the Details page
  - viii. Apply initials to all boxes that apply
- d. Applying date for RTS
  - ix. Select button labeled “Traveler “ located on the top right hand corner of the Details page
  - x. You may either type RTS date or select “AI Date” to receive calendar and double click on the appropriate date.
- e. Selecting Yes or No for “Approved for Return to service” section
  - xi. Select ” button labeled “Traveler “ located on the top right hand corner of the Details page
  - xii. Click on drop down labeled “RTS”
    - 1. Select correct option
- 9. Select “Save – No Print “
  - a. **\*Always verify warranty status is correct before saving traveler**
  - b. **\*Always verify the correct facility and CRS has been applied before saving and printing document**
- 10. Inform service department assistant of work order status



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### 1.9.1.1.2 8130 Form

For 8130 form reference see Page 4 in the Kings Avionics Forms manual

1. Select "Documentation" on top tool bar
2. Choose "8130-3 Forms" from drop down.
3. Click on "browse/search" tab
4. Type in either work order or ID number and press enter
5. Select the ID number that corresponds to the work order number for the work performed
  - a. **NOTE: there may be more than one 8130 per work order. Make sure you choose the correct task as well**
6. Choose "Main Data" Tab
7. Click on the drop down arrow to the right of signature and below the Name block #22
8. Choose Apply Sig.
9. Password box will appear
  - a. Type your given password (the same password that you would use to login to AVM)
  - b. Your signature file should fill the space to the left .Example: AVMSIGN\_yourname.jpg is what you should see. If this does not happen you will need to go to your direct supervisor for instruction.
    - i. **\*Always verify the correct facility and CRS has been applied before saving and printing document**

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### 1.1.1.1.3 337 Form

1. Select "Documentation" on top tool bar
2. Choose "337 forms" from drop down
3. Click on "browse/search" tab
4. Type in either document number , Tail Number or Customer Code
5. Select the ID number that corresponds to the work order number for work performed
  - a. Applying Name, Date and authorized signature to section 6-D Authorization
    - i. Select tab labeled "Conformity 6-7"
    - ii. select "Conf. Date" or type to add correct date to this section
    - iii. Tab to section labeled "Individual"
      1. You may now start typing your full name. It should auto fill this after a few key strokes. \*\*However, if it does not auto fill your name; you must type you full name
    - iv. Select dropdown on right side of section labeled "signature"
    - v. Choose "Apply Sig."
    - vi. Password box will appear
      1. Type your given password (the same password that you would use to login to AVM)
      2. Your signature file should fill the space to the left .Example: AVMSIGN\_yourname.jpg is what you should see. If this does not happen you will need to go to your direct supervisor for instruction.
  - b. Applying Name, Date and authorized signature to section 7 Approval By
    - i. Type or select "Date Approved" to add correct date to this section
    - ii. Tab to the next section labeled "Authorized Individual"
      1. You may now start typing your full name. It should auto fill this after a few key strokes. \*\*However, if it does not auto fill your name; you must type it exactly as you sign for your electronic signature.

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- a. Confirm the correct repairmen number is auto filled in the section labeled "Certificate NO.". If an incorrect number is auto filled, you will need to ask a Supervisor to correct.
- iii. Select dropdown on right side of section labeled "signature"
- iv. Choose "Apply Sig."
- v. Password box will appear
  - 1. Type your given password (the same password that you would use to login to AVM)
  - 2. Your signature file should fill the space to the left .Example: AVMSIGN\_yourname.jpg is what you should see. If this does not happen you will need to go to your direct supervisor for instruction.
    - a. **\*Always verify the correct facility and CRS has been applied before saving and printing document**

### 1.9.1.1.4 Logbook Stickers

- 1. Select "Documentation" on top tool bar
- 2. Choose "Logbook Stickers" from drop down
- 3. Select Tab labeled "Main"
  - a. Applying Name, Date and authorized signature
    - i. Type or select "Date " to add correct date to this section
      - 1. Located on the top Left of Main Tab
    - ii. Select box labeled "Individual" located on the bottom left
      - a. Start typing your full name. It should auto fill this after a few key strokes.  
\*\*However, if it does not auto fill your name; you must type it exactly as you sign for your electronic signature.
  - iii. Select dropdown on right side of section labeled "signature"
  - iv. Choose "Apply Sig."

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### v. Password box will appear

1. Type your given password (the same password that you would use to login to AVM)
2. Your signature file should fill the space to the left .Example: AVMSIGN\_yourname.jpg is what you should see. If this does not happen you will need to go to your direct supervisor for instruction.

### 1.1.1.1.3.1 Training Sheets

1. Select "Databases" on top tool bar
2. Select "Employees" from drop down
3. Click on "browse/search" tab
4. Type the employees initials that you will be signing for
5. Select the correct employee and press enter
6. Select the tab labeled "Training"
7. Select the "Add" button located below the "Browse/Search" tab in the upper right corner

#### a. Applying the employee signature

- i. Select the dropdown on the right side of the section labeled "Emp. Signature"
- ii. Choose "Apply Sig."
- iii. Password box will appear
  1. Type your given password (the same password that you would use to login to AVM)
  2. Your signature file should fill the space to the left .Example: AVMSIGN\_yourname.jpg is what you should see. If this does not happen you will need to go to your direct supervisor for instruction.

#### b. Applying the supervisor signature

- i. Select the dropdown on the right side of the section labeled "Super. Signature"
- ii. Choose "Apply Sig."
- iii. Password box will appear
  1. Type your given password (the same password that you would use to login to AVM)
    - a. Your signature file should fill the space to the left .Example: AVMSIGN\_yourname.jpg is what you should see. If this does not happen you will need to go to your direct supervisor for instruction.

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### 2.0 Procedure for Go/No-Go testing

All repair stations controlled under Kings Avionics, Inc. are required to follow the Go/No-Go testing procedure in the event avionics items are removed from an aircraft for the intent of troubleshooting an aircraft, aircraft radios and/or systems.

#### 2.1.1 Go/No-Go Test

2.1.1.1 Technician completes all initial preliminary inspection and during the troubleshooting process determines a Go/No-Go procedure will be required to verify or eliminate suspect equipment

2.1.1.2 Technician removes all suspect equipment from aircraft

2.1.1.3 Technician delivers equipment to service department assistant

2.1.1.4 Service Department Assistant logs in equipment

1. Attach identification sticker KA-9 (see example in Form Manual)

a. Add all identifying information to KA-9 sticker

1. Reference line will be filled in with Work order number and task

2. Check appropriate CRS block

**Note:** At this time the following sections will not be completed:

1. Repair description blocks

2. Warranty "Thru" date

2. Technician notes equipment on the aircraft task 'Major Parts History' as a removed item

a. Description, P/N and S/N will be documented

b. Mark boxes as 'OFF' and 'SV'

3. Deliver equipment to technician for Go/No-go testing

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### 2.1.1.5 Technician performs Go/No-Go Testing procedure

1. Item will be bench tested to determine if the item will meet manufactures' specifications

- a. PASSED-If equipment meets manufactures specifications

- i. Complete sticker KA-9
  1. Check "OPS CHK" box
  2. Label line named "THRU" with N/A

**Note:** If equipment meets manufactures specifications it is deemed serviceable and **no** FAA 8130 is required

- ii. Technician reinstalls suspect equipment in aircraft

- iii. Technician adds an entry on traveler aircraft task 'Major Parts History' section showing unit removed as being reinstalled in the aircraft as 'ON' 'SV'. (For traveler form reference see Page 52 in the Kings Avionics Forms manual)

1. Unit will be list on "Major Parts History" with Serial number, part number and denoting the unit was removed and reinstalled as serviceable

- b. FAILED-If equipment does not meet manufactures specifications

- i. Unit is returned to Service department Assistant

- a. Assistant will change the status of the line item on the 'Major Parts History' section for the removed item from 'SV' to 'RP' and open a bench task following the Appliance Procedure 1.3 (Technician Carry-In)

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All satellite facilities under Kings Avionics, Inc. will adhere to all service department repair procedures set forth by this Detailed Procedures manual.