HIGH INTENSITY RADIATED FIELDS (HIRF) - INSPECTION/CHECK

1. General

A. This section includes the procedures to do the high intensity radiated fields (HIRF) inspection/checks. The inspection/checks are necessary to find if the protection is not sufficient, and to restore the it to its original condition.

B. This inspection/check can be performed any time you think that the system protection is not sufficient.

2. Access Panels and Doors Bonding

A. Get the maximum allowable resistance value in ohms for the applicable access panel or door. For resistance listings refer to, Electrical Bonding - Maintenance Practices, Table 210.

B. Use an approved bonding meter to make sure that the access panel or door has the maximum allowable resistance value.

3. Equipment Bonding

A. Get the maximum allowable resistance value in ohms for the applicable equipment. For resistance listings refer to, Electrical Bonding - Maintenance Practices, Table 210.

B. Use an approved bonding meter to make sure that the equipment has the maximum allowable resistance value.

4. Wire Bundle Protection

NOTE: Before you do a wire bundle shield bonding check, examine the shield connections where the testing is to be performed and the points from which the testing is to be performed. Refer to the Model 208 Wiring Diagram Manual.

A. Get the maximum allowable resistance value in ohms for the applicable wire bundle shield. For resistance listings refer to, Electrical Bonding - Maintenance Practices, Table 210.

B. Use an approved bonding meter to make sure that the wire bundle shielding has the maximum allowable resistance value.

5. Visual Check

A. General.

(1) In this section, a visual check of an affected system or area will be performed. The checks look for general condition, corrosion, environmental concerns, correct mounting, and wire routing.

B. Visual Check.

(1) This inspection is used following maintenance that disturbs the wiring. The extent of maintenance determines what needs to be inspected. This includes moving, removing or replacing wire bundles, wire ties, clamps, brackets, and wiring feed-thru parts. Mounting trays, mount holders, mounting brackets, and shock mounted components are also inspected.

C. Wire Bundles Visual Inspection

(1) In the area where maintenance was performed, examine the installation of the wiring for corrosion, environmental damage, and general condition.

(2) Examine all wire bundles in the general area for mounting security.

(3) Examine the wire routing to make sure that the routing has not changed from its initial routing.

(4) Make sure that no unnecessary strains are placed on wire segments between the clamps and the wire holders.

(5) Examine the external shielding and coverings as necessary to make sure that the shielding is not interrupted and the coverings are in good condition.

(6) Examine the adjacent access panels and doors for necessary bonding jumpers and/or local grounding studs.

(a) Perform bonding and grounding checks as necessary.

NOTE: After maintenance is complete, it is necessary to do an electrical check after the grounding studs are installed.

D. Data Bus Wiring Visual Inspection.

(1) Data bus wiring can be identified by markings or referring to the Model 208 Wiring Diagram Manual to find reference designators of connectors. Data bus wiring is critical for input/output signals to operate correctly.

(2) Examine the end terminations where the shielded and twisted shielded wiring has been disconnected because of maintenance requirements.

(a) Examine the pins for corrosion.

(3) Examine the connector shells for corrosion and to make sure that the connector threads are serviceable.

(4) Examine the backshell for corrosion.

(a) If the backshell has a ground terminal, examine it for a looseness and condition of the wire to terminal.

(5) After the maintenance is complete, make sure that the installation of the data bus wire is the same as before the maintenance.

(6) Examine the exterior of the wiring for obvious damage and shielding continuation. Breaks in shielding must be repaired.

(7) Examine the clamps, standoffs, and cable guides for correct positioning, correct hardware, and security of installation.

E. Rack Mounted Components Visual Inspection.

(1) If an electrical component that is mounted on a tray or rack is removed for maintenance, examine the component to the rack interface to make sure that the connections are correct.

(2) Examine the rack or mounting tray for correct grounding.

(a) If a screw is used, make sure that it is tight and that the bond integrity is good.

(3) If a bond jumper is installed, make sure that the jumper is in good condition and mounted correctly.

6. Electrical Wire Bundle Assembly Inspection

CAUTION: Coaxial cable assemblies identified as impedance matching units must be of a specified length. Do not shorten the cable to remove too much slack.

NOTE: Electrical wire bundle assemblies are examined when the individual component or system is examined. When you work in a zone on the airplane and the access panels or floorboards are removed, the wire bundle assemblies in that area must be examined at the same time.

NOTE: If a component is disturbed in such a way as to disturb the electrical bond to the primary structure, you must do the electrical bonding check again. Refer to Electrical Bonding - Maintenance Practices.

A. Examine the Wire Bundle Assemblies.

(1) Examine the wire bundle assemblies for correct routing and clamp installation.

(2) Examine for any signs of chafing or other damage.

(3) Make sure that the electrical connectors and the wiring do not show signs of overheating or arcing.

(4) Examine the Connector Backshells.

(a) If connector backshells are installed, examine them for security and signs of corrosion.

(b) Examine the condition of the silicone sealant (RTV-157).

(c) If sealant is missing, do the steps that follow:

1 Make sure that the backshell is tight.

2 Clean the outside of the backshell.

3 Apply a bead of RTV-157 sealant approximately 1/4 inch long on outside of connector, between the connector and backshell. Refer to Electrical Bonding - Maintenance Practices.

a Make sure that the sealant does not interfere with disconnecting or connecting the connector.

(5) Examine for any crossovers, twists, sharp bends, or kinks.

(6) Make sure that the wiring is not attached to or supported by the plumbing lines that contain flammable liquids or oxygen.

(a) Wiring that is less than six inches from lines that contain flammable liquids or oxygen must be firmly supported and where possible, routed above the lines.

(7) Cables installed in locations where fluid can be trapped must be protected against contamination by the fluid.

(8) Where possible, wires must be kept away from high temperature equipment.

(9) Make sure that a nylon grommet is installed where wiring passes through cutouts or holes in the airplane structure.

(10) Make sure that wire bundles have enough slack to do the following:

(a) Allow staking of terminals.

(b) Allow ease of maintenance.

(c) Allow free movement of shock mounted equipment.

(d) Prevent tension and strain on wires and supports.

(e) Give sufficient drip and service loops.

1 Make sure that drip loops are arranged so that a drip from the loop does not fall on the equipment.

NOTE: On moisture resistant connectors, drip loops can be omitted where space is limited.

(11) Examine the wires for any sharp bends.

(a) The minimum bend radius for wires is 10 times the outside diameter of the wire.

(b) At terminal strips where the wire is sufficiently supported, the minimum bend radius is 3 times the outside diameter of the wire.

(12) Make sure that the wire groups or bundles are tied at intervals not more than 12 inches.

(a) Make sure that the ties are not too tight that it can cut or penetrate the insulation.

(b) Make sure that the tying cord is not used to support a wire or wire bundle.

(c) Make sure that when the wires or bundles cross, they are tied together at the point of contact.

(d) In areas where the operating temperature is 200°F (93°C) or less, the ties can be made with waxed twine.

(e) In areas where the operating temperature is above 200°F (93°C), the ties must be made with fiberglass cord.

(f) Wire bundle assemblies installed outside of the engine compartment that have QUIK-TY connector clamps can be secured by ties and lacing cords or with plastic tie wraps.

(13) To keep the wires from shorting to ground, especially in the engine compartment, make sure that the wiring is not tied to the plumbing, and that standoff clamps are used to correctly secure the wires.

(14) Visually examine the cable assembly that routes through the cabin floor for the following:

(a) The cable assembly is secured with tie wraps, anchors, and clamps.

(b) The cable assembly must be supported and clamped to make sure that it does not chafe the structure or contact the bleed air ducts.

(c) Make sure that grommets are installed where the cables routes through the bulkhead.

(d) Do a visual examination of the shield terminations for damage or corrosion.

B. Internal Zonal Visual Inspection of Lightning and High Intensity Radiated Fields

(1) General

(a) In this section, a visual check of an affected system or area will be performed. The checks look for signs of a lightning strike, general condition, corrosion, environmental concerns, correct mounting, and wire routing.

NOTE: This includes wire bundles, wire ties, back shells, bonding straps, clamps, brackets and wiring feed-thru parts. Mounting trays, mount holders, mounting brackets and shock mounted components are also examined.

(b) Examine for corrosion, environmental damage, and general condition.

(c) Examine for any signs of chafing or other damage.

(d) Examine all wire bundles in the general area for mounting security.

(e) Examine the external shielding and coverings as necessary to make sure that the shielding is not interrupted and the coverings are in good condition.

(f) Examine the clamps, standoffs, and cable guides for correct positioning, correct hardware, and security of installation.

(g) If a bond jumper is installed, make sure that the jumper is in good condition and is mounted correctly.

(h) Examine the adjacent access panels and doors for necessary bonding jumpers and/or local grounding studs.

(i) Examine the backshell for corrosion.

1 If the backshell has a ground terminal, examine it for a looseness and condition of the wire to terminal.

(j) Examine the rack or mounting tray for correct grounding.

1 If a screw is used, make sure that it is tight and that the bond integrity is good.

(k) Examine the wire ties for security.

(l) Examine for signs of lightning strike, look for burnt wires, discolored structure, and exit holes in the structure and/or skin.

C. External Zonal Visual Inspection of Lightning and High Intensity Radiated Fields

(1) General

(a) In this section, a visual check of an affected system or area will be performed. The checks look for signs of a lightning strike, general condition, corrosion, environmental concerns, correct mounting and wire routing.

NOTE: If applicable this includes wire bundles, wire ties, back shells, bonding straps, clamps, brackets, and wiring feed-thru parts.

(b) Examine for corrosion, environmental damage, and general condition.

(c) Examine all wire bundles in the general area for mounting security.

(d) Examine the external shielding and coverings to make sure that the shielding is not interrupted and the coverings are in good condition.

(e) Examine the clamps, standoffs, and cable guides for correct positioning, correct hardware, and security of installation.

(f) If a bond jumper is installed, make sure that the jumper is in good condition and is mounted correctly.

(g) Examine the adjacent access panels and doors for necessary bonding jumpers and/or local grounding studs.

(h) Examine the backshell for corrosion.

1 If the backshell has a ground terminal, examine it for a looseness and condition of the wire to terminal.

(i) Examine the wire ties for security.

(j) Examine for evidence of a lightning strike, burnt wires, discolored structure, and exit holes in the structure and/or skin.