Aircraft: _____

Equipment: _____

Radio Racks and Radio Equipment Installation
7/30/09

In order to ensure proper regulatory compliance this checklist should be completed for each radio equipment installation and submitted as an attachment to the Field Approval Package.

1. FAR 23 Aircraft

2. § APPLICABLE FEDERAL AVIATION REGULATIONS §

21.305 Approval of Materials, Parts, Processes and Appliances
23.25 Weight Limitations
23.29 Empty Weight and Corresponding Center of Gravity
23.301 Loads
23.303 Factory of Safety
23.305 Strength and Deformation
23.307 Proof of Structure
23.321 Flight Loads General
23.471 Ground Loads General
23.561 Emergency Landing Conditions General
23.603 Materials and Workmanship
23.605 Fabrication Methods
23.607 Fastenings
23.609 Protection of Structure
23.611 Accessibility Provisions
23.613 Material Strength Properties and Design Values
23.771 Pilot Compartment
23.1301 Function and Installation
23.1309 Equipments, Systems, and Installations
23.1311 Electronic Display Instrument Systems
23.1321 Arrangement and Visibility
23.1351 Electrical System Capacity
23.1357 Circuit Protective Devices
23.1359 Electrical System Fire Protection
23.1365 Electrical Cables and Equipment
23.1431 Electronic Equipment
23.1529 Instructions for Continued Airworthiness
23.1585 Operating Procedures

Radio racks and radio equipment installations, which are the same as those, made by the airframe manufacturer, or other installations which are already approved, may be accepted without further investigation. On other installations, the following points should be checked to determine that the installation is satisfactory.

3. CHECKLIST:

Please initial as indicated and provide requested data. You can reference information contained on other documents such as STC, Block 8 of FAA Form 337, or other attachments.

a. Approval of Materials, Parts Processes and Appliances

 Aircraft: _____

Equipment: _____

(1) Are all parts, processes and/or appliances previously approved by FAA Technical Standard Order (TSO, Supplemental Type Certificate (STC) Original Type Design (TC) or Parts Manufacturing Approval (PMA)? (§21.305)

Yes_____ No_____

Explain:_____

NOTE: If no previous approval exists the parts, processes and/or appliances may not be eligible for Field Approval.

(2) Do all wiring, circuit breakers, and other materials meet aircraft quality standards, i.e., Military Specification, TSO, etc. (§§ 23.1357, 23.1359, 23.1365, and 23.1431).

Yes_____ No_____

Explain:_____

b. Structural Requirements:

(1) Is the equipment installed in such a manner that it can withstand the required loads? (§§ 23.301, 23.305, 23.307, 23.321, 23.471, and 23.561)

NOTE: See item 4 below.

Yes_____ No_____

Explain:_____

(2) Do shock mounted items have sufficient clearance for normal vibration and swaying of the equipment without hitting adjacent equipment or parts of the airplane? (§ 23.1309)

Yes_____ No_____

Explain:_____

(3) Are junction boxes of sufficiently rigid construction to prevent "oil-canning" of the sides to avoid possibility of inside shorting? (§§ 23.301, 23.305, and 23.1309)

Yes_____ No_____

 Aircraft: _____

Equipment: _____

Explain: _____

(4) Is the structure of the radio rack adequate to support the required loads? The effect on other structure (either primary or secondary) should be considered. (§§ 23.301, 23.303, 23.307, 23.321, 23.471 and 23.561)

This answer can be determined by either of two methods:

(a) By direct comparison with an existing approved installation having the same or similar (approximately the same weight, size, and arrangement) equipment installed.

(b) By structural analysis or static test. Such installations do not necessarily lend themselves to analysis but are adaptable to static test. In conducting the test, the following procedure may be used?

1 Determine the wt. and c.g. position of the equipment item.

2 Mount the rack either in its position in the airplane or in a rig simulating the actual installation insofar as attachments to the airplane are concerned.

3 Dummy equipment or a rig simulating the equipment items should be installed utilizing the attaching points to which the equipment is to be attached. The dummy equipment or rig should be so that the required loads can be applied at the c.g. position of the actual equipment.

4 The required loads should then be applied by any suitable means.

All items of mass which would be apt to injure the passengers or crew in the event of a crash landing should have their supporting structure designed to the crash load requirements of FAR 23.561 or the applicable critical flight or landing load factors of § 23.321, whichever is greater. (§§ 23.321, and 23.471)

Supporting structure of other mass items should be designed to the critical flight or landing load factors of §§ 23.321 and 23.471. The values shown in § 23.561 may be used in lieu of a determination of these values.

5 Are suitable materials used in the construction, including standard fasteners, and will the method of fabrication result in a consistently sound structure? (§§ 23.603, 23.605, 23.607, 23.609, 23.613 and 21.305)

Yes_____ No_____

Explain: _____

c. Hazards to the Aircraft or its Occupants:

Aircraft: _____

Equipment: _____

(1) Is the rack installed so that it does not adversely affect other structure (either primary or secondary) or cause interference with any controls, emergency exits, or necessary access provisions? (§ 23.1309)

Yes_____ No_____

Explain:_____

(2) Will the installation of the rack and related equipment adversely affect weight and balance and c.g. position? (§§ 23.25 and 23.29)

Yes_____ No_____

Explain:_____

(3) Is a fuse or circuit breaker of the rating appropriate to the cable used installed? (§ 23.1357)

Yes_____ No_____

Explain:_____

(4) Do all the appliances, parts, and materials meet the fire protection requirements of §§ 23.863 and 23.1182? (§ 23.1359)

Yes_____ No_____

Explain:_____

d. Operating Aspects:

(1) In the case of dual installations, are the operating controls and instruments suitably identified to prevent misapplication by the pilot? (§ 23.1309)

Yes_____ No_____

Aircraft: _____

Equipment: _____

Explain: _____

(2) Have the necessary operational tests been performed to assure that the equipment will not adversely affect the operation of other communication or navigation systems? (§ 23.1431 and 23.1301)

Yes_____ No_____

Explain: _____

(3) Do all electronic displays meet the applicable visibility, color and lighting requirements? (§ 23.1311)

Yes_____ No_____

Explain: _____

(4) Does the arrangement and visibility of the instruments and indicators meet the requirements of § 23.1321 and 23.771?

Yes_____ No_____

Explain: _____

(5) Is A Flight Manual Supplement or Supplemental Flight Manual required and/or was one issued with the original STC approval for the equipment? (§ 23.1585)

Yes_____ No_____

Explain: _____

e. Detail Design Standards:

(1) Is the battery-generator combination adequate for the electrical loads imposed? (§§ 23.1309 and 23.1351)

Aircraft: _____

Equipment: _____

Yes_____ No_____

Explain:_____

(2) Are terminal strips designed or mounted so that loose metallic objects cannot fall across the terminal posts? (§ 23.1309)

Yes_____ No_____

Explain:_____

(3) If plug and receptacle type of connections are used, are the soldered connections of the wire to the plug and receptacle inserts individually insulated from each other and from metallic parts of the plug and receptacle? (§ 23.1309)

Yes_____ No_____

Explain:_____

(4) Are junction boxes made of fire-resistant or nonabsorbent plastic material? (§ 23.1309)

Yes_____ No_____

Explain:_____

(5) Are interconnecting wires and cables supported by insulated clamps to avoid chafing? (§ 23.1309)

Yes_____ No_____

Explain:_____

(6) Are the interconnecting cables and wires installed in such a manner that they are suitably protected from fuel, oil, water, and other detrimental substances, and mechanical damage? (§ 23.1309)

Yes_____ No_____

Aircraft: _____

Equipment: _____

Explain: _____

(7) Is the equipment located where it will obtain sufficient cooling and will not be a smoke hazard or ignite readily flammable parts of the airplane? (§ 23.1309)

Yes_____ No_____

Explain: _____

(8) Are adequate means provided for inspection of the rack, related equipment, or adjacent components, which require periodic inspections? (§ 23.611)

Yes_____ No_____

Explain: _____

(9) Do the Instructions For Continued Airworthiness meet the requirements of Part 23 Appendix G? (§ 23.1529)

Yes_____ No_____

Explain: _____

I certify the alteration described above has been made in accordance with the requirements of the applicable regulations and that the information contained herein is true and correct to the best of my knowledge.

Date: _____

Signature: _____ Certificate# _____