

## Title 14—AERONAUTICS AND SPACE

### Chapter I—Federal Aviation Admin- istration, Department of Transporta- tion

[Docket No. 10182; Amdt. 145-14]

#### PART 145—REPAIR STATIONS

##### Equipment Material Requirements for Radio Rated Repair Stations

The purpose of these amendments to Appendix A of Part 145 of the Federal Aviation Regulations is to update the minimum material and equipment requirements for all classes of radio ratings.

These amendments are based on a notice of proposed rule making (Notice 70-10) published in the FEDERAL REGISTER on March 13, 1970 (35 F.R. 4523). Several comments were received in response to the notice and consideration has been given to all relevant matter presented.

One comment recommended that for a repair station holding a Class 2 rating, the repairing of speakers should be a job function which may be performed under contract by another agency. The FAA agrees. Since speakers are not common components of navigation radio systems, it is reasonable to permit speaker repairs to be performed by another agency and the regulation has been revised accordingly.

One comment objected to retaining "The determination and compensation for quadrantal error in aircraft direction finder equipment" as a job function under a Class 2 rating. It was pointed out that quadrantal error determination in automatic direction finders should be,

and in the majority of instances is, determined by the manufacturer of the particular equipment in close association with airframe manufacturers. However, the FAA is aware that there are instances where manufacturers do not provide the required information for retrofit installations on older aircraft. Therefore, Class 2 rated repair stations must have the equipment necessary to perform this function.

Another comment recommended that repair stations should have the equipment necessary to test pressure sensitive components. However, it appears that this recommendation is based solely on difficulties involving air carrier airplanes. The maintenance on such airplanes is performed in accordance with the air carrier's maintenance manual and the requirements of Part 121. Therefore, the FAA does not consider that it is necessary to add such a requirement to Part 145.

A comment was also received indicating that the regulations need clarification since DME and transponder equipment could both come within the scope of Class 1, 2, or 3. The FAA does not agree with this comment. DME and transponder equipment operate on radar and pulsed radiofrequency principals and under the provisions of § 145.31, such equipment is covered by a Class 3 rating only.

It was suggested by one commentator that since loop antennas used by airlines are sealed and checked at the vendor's facility, "The measuring of loop antenna sensitivity by appropriate methods", should be deleted as a job function under a Class 2 rating. The FAA does not agree. While the air carriers may, as a matter of practice, return the loop antenna to the vendor for the measuring of sensitivity, this is not the practice of general

aviation operators. Therefore, repair stations holding a Class 2 rating need the equipment necessary to perform that job function.

One commentator stated that no commercial radar system in use today requires pressurization with dry air, or nitrogen, and recommended that this job function should be deleted from Class 3 rating. The FAA does not agree. There are radar systems in use today in general aviation operations which require pressurization with dry air, nitrogen, or other gases. Therefore, a repair station holding a Class 3 rating must have the equipment necessary to perform this job function.

Finally, one commentator recommended that the painting and refinishing of containers; the making and reproducing of drawings, wiring diagrams, and other similar material required to record alterations and/or modifications to radios; and the metal plating of transmission lines, wave guides, and similar equipment, should all be deleted as job functions for repair stations. However, there was no information submitted to support these recommendations and the FAA considers that all of the job functions are appropriate. Moreover, since all of these job functions may be performed by outside agencies, the repair stations need not maintain on their premises the equipment and material necessary to perform them.

After further consideration, the FAA has decided that it is not necessary for a repair station holding a Class 2 rating to provide the equipment and material necessary for performing the job function of testing and repairing microphones and the proposed requirement is withdrawn.

(As published in the Federal Register  
/35 F.R. 247/ on December 22, 1970)

In consideration of the foregoing, paragraph (d) of Appendix A of Part 145 of the Federal Aviation Regulations is amended, effective March 24, 1971, as hereinafter set forth:

APPENDIX A

(d) An applicant for a radio rating must provide equipment and materials as follows:

(1) For a Class 1 (Communications) radio rating, the equipment and materials necessary for efficiently performing the job functions listed in subparagraph (4) and the following job functions:

The testing and repair of headsets, speakers, and microphones.

The measuring of radio transmitter power output.

(2) For a Class 2 (Navigation) radio rating, the equipment and materials necessary for efficiently performing the job functions listed in subparagraph (4) and the following job functions:

The testing and repair of headsets.

The testing of speakers.

The repair of speakers.\*

The measuring of loop antenna sensitivity by appropriate methods.

The determination and compensation for quadrantal error in aircraft direction finder radio equipment.

The calibration of any radio navigational equipment, enroute and approach aids, or similar equipment, appropriate to this rating to approved performance standards.

(3) For Class 3 (Radar) radio rating, the equipment and materials necessary for efficiently performing the job functions listed in subparagraph (4) and the following job functions:

The measuring of radio transmitter power output.

The metal plating of transmission lines, wave guides, and similar equipment in accordance with appropriate specifications.\*

The pressurization of appropriate radar equipment with dry air, nitrogen, or other specified gases.

(4) For all classes of radio ratings, the equipment and materials necessary for efficiently performing the following job functions:

Perform physical inspection of radio systems and components by visual and mechanical methods.

Perform electrical inspection of radio systems and components by means of appropriate electrical and/or electronic test instruments.

Check aircraft wiring, antennas, connectors, relays, and other associated radio components to detect installation faults

Check engine ignition systems and aircraft accessories to determine sources of electrical interference.

Check aircraft power supplies for adequacy and proper functioning.

Test radio instruments.\*

Overhaul, test, and check dynamotors, inverters, and other radio electrical apparatus.\*

Paint and refinish equipment containers.\*

Accomplish appropriate methods of marking calibrations, or other information on radio control panels and other components, as required.\*

Make and reproduce drawings, wiring diagrams, and other similar material required to record alterations and/or modifications to radio (photographs may be used in lieu of drawings when they will serve as an equivalent or better means of recording).\*

Fabricate tuning shaft assemblies, brackets, cable assemblies, and other similar components used in radios or aircraft radio

installations.\*

Align tuned circuits (RF and IF).

Install and repair aircraft antennas.

Install complete radio systems in aircraft and prepare weight and balance reports\* (that phase of radio installation requiring alterations to the aircraft structure must be performed, supervised, and inspected by qualified personnel).

Measure modulation values, noise, and distortion in radios.

Measure audio and radio frequencies to appropriate tolerances and perform calibration necessary for the proper operation of radios.

Measure radio component values (inductance, capacitance, resistance, etc.).

Measure radiofrequency transmission line attenuation.

Determine wave forms and phase in radios when applicable.

Determine proper aircraft radio antenna, lead-in and transmission line characteristics and locations for type of radio equipment to which connected.

Determine operational condition of radio equipment installed in aircraft by using appropriate portable test apparatus.

Determine proper location for radio antennas on aircraft.

Test all types of electronic tubes, transformers, or similar devices in equipment appropriate to the rating.

(Secs. 313(a), 601, 606, 607, Federal Aviation Act of 1958, 49 U.S.C. 1354(a), 1421, 1426, 1427; sec. 6(c), Department of Transportation Act, 49 U.S.C. 1655(c))

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J. H. SHAFFER,  
Administrator.

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