(ii) Connected to the antenna terminal of the transponder with a correction for transmission line loss; or

(iii) Utilized radiated signal.

(2) Verify that the difference in Mode 3/A and Mode C receiver sensitivity does not exceed 1 db for either any class of ATCRBS transponder or any class of Mode S transponder.

(d) Radio Frequency (RF) Peak Output Power:

(1) Verify that the transponder RF output power is within specifications for the class of transponder. Use the same conditions as described in (c)(1)(i), (ii), and (iii) above.

(i) For Class 1A and 2A ATCRBS transponders, verify that the minimum RF peak output power is at least 21.0 dbw (125 watts).

(ii) For Class 1B and 2B ATCRBS Transponders, verify that the minimum RF peak output power is at least 18.5 dbw (70 watts).

(iii) For Class 1A, 2A, 3A, and 4 and those Class 1B, 2B, and 3B Mode S transponders that include the optional high RF peak output power, verify that the minimum RF peak output power is at least 21.0 dbw (125 watts).

(iv) For Classes 1B, 2B, and 3B Mode S transponders, verify that the minimum RF peak output power is at least 18.5 dbw (70 watts).

(v) For any class of ATCRBS or any class of Mode S transponders, verify that the maximum RF peak output power does not exceed 27.0 dbw (500 watts).

NOTE: The tests in (e) through (j) apply only to Mode S transponders.

(e) Mode S Diversity Transmission Channel Isolation: For any class of Mode S transponder that incorporates diversity operation, verify that the RF peak output power transmitted from the selected antenna exceeds the power transmitted from the nonselected antenna by at least 20 db.

(f) Mode S Address: Interrogate the Mode S transponder and verify that it replies only to its assigned address. Use the correct address and at least two incorrect addresses. The interrogations should be made at a nominal rate of 50 interrogations per second.

(g) Mode S Formats: Interrogate the Mode S transponder with uplink formats (UF) for which it is equipped and verify that the replies are made in the correct format. Use the surveillance formats UF=4 and 5. Verify that the altitude reported in the replies to UF=4 are the same as that reported in a valid ATCRBS Mode C reply. Verify that the identity reported in the replies to UF=5 are the same as that reported in a valid ATCRBS Mode 3/A reply. If the transponder is so equipped, use the communication formats UF=20, 21, and 24.

(h) Mode S All-Call Interrogations: Interrogate the Mode S transponder with the Mode S-only all-call format UF=11, and the ATCRBS/Mode S all-call formats (1.6 microsecond P_4 pulse) and verify that the correct address and capability are reported in the replies (downlink format DF=11).

(i) ATCRBS-Only All-Call Interrogation: Interrogate the Mode S transponder with the ATCRBS-only all-call interrogation (0.8 microsecond P_4 pulse) and verify that no reply is generated.

(j) Squitter: Verify that the Mode S transponder generates a correct squitter approximately once per second.

(k) Records: Comply with the provisions of §43.9 of this chapter as to content, form, and disposition of the records.

[Amdt. 43–26, 52 FR 3390, Feb. 3, 1987; 52 FR 6651, Mar. 4, 1987, as amended by Amdt. 43–31, 54 FR 34330, Aug. 18, 1989]

PART 45—IDENTIFICATION AND REGISTRATION MARKING

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AUTHORITY: 49 U.S.C. 106(g), 40103, 44109, 40113–40114, 44101–44105, 44107–44108, 44110–44111, 44504, 44701, 44708–44709, 44711–44713, 44725, 45302–45303, 46104, 46304, 46306, 47122.

SOURCE: Docket No. 2047, 29 FR 3223, Mar. 11, 1964, unless otherwise noted.

Subpart A—General

§45.1 Applicability.

This part prescribes the requirements for—

(a) Identification of aircraft, and identification of aircraft engines and propellers that are manufactured under

the terms of a type or production certificate:

(b) Identification of certain replacement and modified parts produced for installation on type certificated products; and

(c) Nationality and registration marking of U.S. registered aircraft.

[Doc. No. 2047, 29 FR 3223, Mar. 11, 1964, as amended by Amdt. 45–3, 32 FR 188, Jan. 10, 1967]

Subpart B—Identification of Aircraft and Related Products

§ 45.11 General.

(a) *Aircraft and aircraft engines.* Aircraft covered under § 21.182 of this chapter must be identified, and each person who manufacturers an aircraft engine under a type or production certificate shall identify that engine, by means of a fireproof plate that has the information specified in § 45.13 of this part marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate for aircraft must be secured in such a manner that it will not likely be defaced or removed during normal service, or lost or destroyed in an accident. Except as provided in paragraphs (c), (d), and (e) of this section, the aircraft identification plate must be secured to the aircraft fuselage exterior so that it is legible to a person on the ground, and must be either adjacent to and aft of the rear-most entrance door or on the fuselage surface near the tail surfaces. For aircraft engines, the identification plate must be affixed to the engine at an accessible location in such a manner that it will not likely be defaced or removed during normal service, or lost or destroyed in an accident.

(b) *Propellers and propeller blades and hubs.* Each person who manufactures a propeller, propeller blade, or propeller hub under the terms of a type or production certificate shall identify his product by means of a plate, stamping, engraving, etching, or other approved method of fireproof identification that is placed on it on a noncritical surface, contains the information specified in § 45.13, and will not be likely to be defaced or removed during normal service or lost or destroyed in an accident.

(c) For manned free balloons, the identification plate prescribed in paragraph (a) of this section must be secured to the balloon envelope and must be located, if practicable, where it is legible to the operator when the balloon is inflated. In addition, the basket and heater assembly must be permanently and legibly marked with the manufacturer's name, part number (or equivalent) and serial number (or equivalent).

(d) On aircraft manufactured before March 7, 1988, the identification plate required by paragraph (a) of this section may be secured at an accessible exterior or interior location near an entrance, if the model designation and builder's serial number are also displayed on the aircraft fuselage exterior. The model designation and builder's serial number must be legible to a person on the ground and must be located either adjacent to and aft of the rear-most entrance door or on the fuselage near the tail surfaces. The model designation and builder's serial number must be displayed in such a manner that they are not likely to be defaced or removed during normal service.

(e) For powered parachutes and weight-shift-control aircraft, the identification plate prescribed in paragraph (a) of this section must be secured to the aircraft fuselage exterior so that it is legible to a person on the ground.

[Amdt. 45–3, 32 FR 188, Jan. 10, 1967 as amended by Amdt. 45–7, 33 FR 14402, Sept. 25, 1968; Amdt. 45–12, 45 FR 60183, Sept. 11, 1980; 45 FR 85597, Dec. 29, 1980; Amdt. 45–17, 52 FR 34101, Sept. 9, 1987; 52 FR 36566, Sept. 30, 1987; Amdt. 45–24, 69 FR 44863, July 27, 2004]

§ 45.13 Identification data.

(a) The identification required by § 45.11 (a) and (b) shall include the following information:

(1) Builder's name.

(2) Model designation.

(3) Builder's serial number.

(4) Type certificate number, if any.

(5) Production certificate number, if any.

(6) For aircraft engines, the established rating.

(7) On or after January 1, 1984, for aircraft engines specified in part 34 of this chapter, the date of manufacture as defined in § 34.1 of that part, and a