

[Docket No. 12849; Amdt. No. 171-9]

PART 171—NON-FEDERAL NAVIGATION FACILITIES

Performance Requirements for VOR, ILS, and SDF Facilities

The purpose of these amendments to Part 171 of the Federal Aviation Regulations is to revise certain performance requirements for non-Federal very high frequency omnidirectional radio (VOR), instrument landing systems (ILS), and simplified directional facilities (SDF).

This amendment is based on a notice of proposed rulemaking (Notice No. 73-9) issued March 14, 1973, and published in the FEDERAL REGISTER on March 21, 1973 (38 FR 7401). Interested persons have been afforded an opportunity to participate in the making of these amendments, and due consideration has been given to all comments received in response to that Notice.

Notice 73-9 stated that the FAA had determined that future requirements for air navigation aids in the National Airspace System could not be met with the number of frequencies now available for assignment, and that examination of alternative solutions to this problem indicated that reduction of radio channel spacing from the present 100 kHz spacing to 50 kHz spacing was the most economical and practicable method of increasing the number of assignable frequencies.

The Federal Communications Commission, at the request of the FAA, has amended Parts 2 and 87 of the FCC regulations (47 CFR 2, 87; 38 FR 14106, May 29, 1973) to provide for 50 kHz channel spacing in the frequency band 108-117.95 MHz. This amendment doubles the availability of assignable channels for VOR and ILS facilities.

As indicated in Notice No. 73-9, implementation of 50 kHz channel spacing will require an increase of frequency stability for the ILS glide slope and localizer, SDF, and VOR ground transmitters. In order to provide for satisfactory adjacent-channel operations, the frequency tolerance of these transmitters must necessarily be reduced from the previous performance requirement of 0.005 percent to 0.002 percent. The FCC rules change cited above requires 0.002 percent frequency tolerance effective July 1, 1973. The FAA and Department of Defense (DOD) have accomplished frequency stabilization for federally operated facilities.

The Notice proposed that operators of non-Federal VOR facilities be required to suppress subcarrier harmonics (to perform in accordance with paragraph 3.3.5.7 of Annex 10 to the Convention on International Civil Aviation) within 180 days after notification by the Administrator that 50 kHz channel spacing was to be implemented in the area and that a requirement existed for suppression of 9960 Hz subcarrier harmonics. While it was proposed that this requirement be made effective July 1, 1973, it was also anticipated that with the additional frequencies available for assignment, adjacent-channel interference could be avoided for some period of time and suppression of harmonics at non-Federal facilities could be avoided until 1975.

Objection was expressed in comments received to the early effective date for this requirement as imposing an unnecessary requirement. It was recommended that the requirement not be imposed until 1975.

Another comment recommended that harmonic suppression be required to be accomplished as soon as possible, and no later than January 1, 1974, to eliminate the problem of adjacent-channel interference or reception, without a warning flag, when a 50 kHz receiver is inadvertently tuned to an unoccupied channel adjacent to a VOR ground station.

Data available to the FAA indicates that suppression of harmonics to the ICAO standard proposed, or even 3dB and 5dB below that standard does not eliminate the undesirable flag action under the inadvertent mistuning condition. Additionally, FAA believes that the problem of mistuning an airborne receiver is most appropriately resolved by crew training and indoctrination, or by modification of airborne equipment. In this connection, FAA issued Advisory Circular 90-58, February 16, 1972, advising of the potential hazards of inadvertent mistuning of 50 kHz receivers.

With respect to the effective date for requiring harmonic suppression, the FAA believes that with the additional flexibility in frequency assignment afforded by 50 kHz channel spacing adjacent-channel interference from non-Federal facilities can be avoided for the immediate future. Accordingly, § 171.7(e) has been changed to provide for suppression of harmonics on non-Federal VOR facilities after January 1, 1975. VOR facilities operated by the United States (FAA and DOD) will have harmonics suppressed as necessary to avoid adjacent-channel interference.

These amendments are made under the authority of sections 305, 307, 313(a), 601, and 606 of the Federal Aviation Act of 1958 (49 U.S.C. 1346, 1348, 1354(a), 1421, and 1426), and section 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

In consideration of the foregoing, Part 171 of the Federal Aviation Regulations is amended effective November 19, 1973, as follows:

1. By amending paragraph (a) of § 171.7 and by adding a new paragraph (e) to § 171.7 to read as follows:

§ 171.7 Performance requirements.

(a) The VOR must perform in accordance with the "International Standards and Recommended Practices, Aeronautical Telecommunications," Part I, paragraph 3.3 (Annex 10 to the Convention on International Civil Aviation), except that part of paragraph 3.3.2.1 specifying a radio frequency tolerance of 0.005 percent, and that part of paragraph 3.3.7 requiring removal of only the bearing information. In place thereof, the frequency tolerance of the radio frequency carrier must not exceed plus or minus 0.002 percent, and all radiation must be removed during the specified deviations from established conditions and during periods of monitor failure.

(e) After January 1, 1975, the owner of the VOR shall modify the facility to perform in accordance with paragraph 3.3.5.7 of Annex 10 to the Convention on International Civil Aviation within 180 days after receipt of notice from the Administrator that 50 kHz channel spacing is to be implemented in the area and that a requirement exists for suppression of 9960 Hz subcarrier harmonics.

2. By adding a new paragraph (a) (4) to 171.47 to read as follows:

§ 171.47 Performance requirements.

(a) * * *
(4) The frequency tolerance of the radio frequency carrier must not exceed plus or minus 0.002 percent.

3. By amending paragraph (a) (4) of § 171.109 to read as follows:

§ 171.109 Performance requirements.

(a) * * *
(4) The SDF must operate on odd tenths or odd tenths plus a twentieth MHz within the frequency band 108.1 MHz to 111.95 MHz. The frequency tolerance of the radio frequency carrier must not exceed plus or minus 0.002 percent.

4. By amending paragraph (a) (1) of § 171.111 to read as follows:

§ 171.111 Ground standards and tolerances.

(a) * * *
(1) The SDF must operate on odd tenths or odd tenths plus a twentieth MHz within the frequency band 108.1 MHz to 111.95 MHz. The frequency tolerance of the radio frequency carrier must not exceed plus or minus 0.002 percent.

Issued in Washington, D.C., on October 3, 1973.

ALEXANDER P. BUTTERFIELD,
Administrator.

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