

## RECOMMENDATION ITU-R TF.374-5

## PRECISE FREQUENCY AND TIME-SIGNAL TRANSMISSIONS

(Question ITU-R 102/7)

(1951-1953-1956-1959-1963-1966-1970-1974-1998-1999)

The ITU Radiocommunication Assembly,

*considering*

- a) that the World Administrative Radio Conference (Geneva, 1979) (WARC-79), allocated the frequencies 20 kHz  $\pm$  0.05 kHz, 2.5 MHz  $\pm$  5 kHz (2.5 MHz  $\pm$  2 kHz in Region 1), 5 MHz  $\pm$  5 kHz, 10 MHz  $\pm$  5 kHz, 15 MHz  $\pm$  10 kHz, 20 MHz  $\pm$  10 kHz and 25 MHz  $\pm$  10 kHz, to the standard-frequency and time-signal service;
- b) that the same Conference allocated the following frequencies for use by the standard-frequency and time-signal satellite service:
- 400.1 MHz  $\pm$  25 kHz,
  - 4 202 MHz  $\pm$  2 MHz (space-to-Earth),
  - 6 427 MHz  $\pm$  2 MHz (Earth-to-space),
  - 13.4-14 GHz (Earth-to-space),
  - 20.2-21.2 GHz (space-to-Earth),
  - 25.25-27 GHz (Earth-to-space),
  - 30-31.3 GHz (space-to-Earth);
- c) that additional standard frequencies and time signals are emitted in other frequency bands, e.g. at frequencies 14-19.95 kHz and 20.05-70 kHz and in Region 1 also in the bands 72-84 kHz and 86-90 kHz, which have been designated by other conferences (see No. S5.56 of the Radio Regulations (RR));
- d) that time and/or frequency are also obtained from signals from other services, such as Radio Navigation Satellite Service at 1 215-1 260 MHz and 1 559-1 610 MHz (GPS/GLONASS), fixed-satellite services at 14/11 GHz, 14/12 GHz and 6/4 GHz (two-way satellite time and frequency transfer), and radio navigation at 100 kHz (Loran-C);
- e) the provisions of RR Article S26;
- f) that transmissions in the bands mentioned in *considering* a) and predominantly those in *considering* c) provide widely accepted means of distributing time signals and standard frequencies;
- g) that for many purposes worldwide time synchronization with an uncertainty of less than 1 ms is required, which in an ideal case should be based on simple and inexpensive equipment;
- h) that interference may reduce the usefulness of standard-frequency and time-signal services to a serious degree,

*recommends*

- 1** that Radiocommunication Study Group 7 continue its study of worldwide standard-frequency and time-signal services and explore the application of new techniques for this purpose;
- 2** that existing standard-frequency and time-signal services be operated in conformity with the detailed Recommendations of the ITU-R;
- 3** that all efforts be made to prevent or reduce the mutual interference between emissions in the bands specified in the *considering*;

- 4** that the methods and results of measurements of phase instabilities over paths in bands 4 and 5 be made available to Radiocommunication Study Group 7;
- 5** that appropriate stations existing in band 5 be employed for distributing standard frequencies by precise control of their carrier frequencies as a complement to satellite systems distributing a time reference;
- 6** that the documentation of services in Recommendations ITU-R TF.583 and ITU-R TF.768 and in Chapter 2B of the ITU-R Handbook on: Selection and use of precise frequency and time systems, be taken into consideration when using existing services or planning new services.
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