



Recommendation ITU-R TF.374-6
(12/2014)

**Precise frequency and time-signal
transmissions**

TF Series
Time signals and frequency standards emissions

Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

Series	Title
BO	Satellite delivery
BR	Recording for production, archival and play-out; film for television
BS	Broadcasting service (sound)
BT	Broadcasting service (television)
F	Fixed service
M	Mobile, radiodetermination, amateur and related satellite services
P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

Electronic Publication
Geneva, 2014

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RECOMMENDATION ITU-R TF.374-6

Precise frequency and time-signal transmissions

(Questions ITU-R 152-2/7, 244/7, 248/7, 250/7)

(1951-1953-1956-1959-1963-1966-1970-1974-1998-1999-2014)

Scope

This document describes the frequency assignments for precise frequency and time-signal transmissions including new emerging satellite navigation systems and the frequency bands occupied by their services. The emerging systems will rapidly be of equal importance for time and frequency dissemination as the systems established today.

The ITU Radiocommunication Assembly,

considering

- a)* that over the years World Radiocommunication Conferences allocated the frequency bands 19.95-20.05 kHz, 2 495-2 505 MHz (2 498-2 502 MHz in Region 1), 4 995-5 005 MHz, 9 995-10 005 MHz, 14 990-15 010 MHz, 19 990-20 010 MHz and 24 990-25 010 MHz, to the standard-frequency and time-signal service;
- b)* that in addition the following frequency bands for use by the standard-frequency and time-signal satellite service were allocated:
 - 400.05-400.15 MHz,
 - 4 200-4 204 MHz (space-to-Earth),
 - 6 425-6 429 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. 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. **5.56** of the Radio Regulations (RR));
- d)* that time and/or frequency are also obtained from signals from other services, such as Radionavigation-satellite service at 1 164-1 300 MHz and 1 559-1 610 MHz (GPS/GLONASS/Galileo/BeiDou), fixed-satellite services at the Ku-band (10.7-14.5 GHz) and the C-band (4-8 GHz) (two-way satellite time and frequency transfer), and radionavigation at 100 kHz (Loran-C);
- e)* that the time and frequency transfer through Global Navigation Satellite System signals is, next to other usage, instrumental for synchronization of mobile and fixed telecommunication networks and power distribution networks;
- f)* the provisions of RR Article **26**;
- g)* 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;

- h)* 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;
- i)* that interference may reduce the usefulness of standard-frequency and time-signal services to a serious degree,

recommends

- 1** that ITU-R continues 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 (as defined in Article 2 of the RR) be made available to ITU-R;
 - 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, in Chapter 2B of the ITU-R Handbook “Selection and Use of Precise Frequency and Time Systems”, and in the ITU-R Handbook “Satellite Time and Frequency Transfer and Dissemination”, be taken into consideration when using existing services or planning new services.
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