05 April 2018

Data submission guidelines

(for UTC and rapid UTC)

Requirements for participation in UTC

See document http://www.bipm.org/utils/common/pdf/CC/CCTF/CCTF-WGMRA-Guideline_8.pdf.
The laboratory information sheet
(http://webtai.bipm.org/database/documents/spreadsheet.doc) has to be completed and reported to tai@bipm.org. Then the BIPM Time department will answer providing all necessary information to start data submission.
For information about GNSS receivers available, see infos-receivers.pdf.

Requirements for participation in rapid UTC (UTCr)

The contribution to rapid UTC is possible under condition that the laboratory already contributes to UTC and is able to produce daily clock and time transfer files. To start contributing to UTCr, a laboratory have to send an email to tai@bipm.org (subject starting with "UTCr") to express its intention to participate in UTCr and an email contact address should be communicated in this message.

Data exchange procedure

A **laboratory** should only use FTP procedure to send data files. Laboratories post their data (clock data, time transfer data and Primary and Secondary Frequency Standards) on the BIPM FTP server following the standard names described below and the transmission must be done in ASCII format with carriage return character (CRLF) or line feed character (LF) as end of the line marker.
No compression is allowed with the exception of PPP data files.
All comments, notes or any other complement of information relative to the computation of TAI have to be sent in a separate message to "tai@bipm.org".

FTP access and authorizations (common for UTC and UTCr)

URL address of BIPM FTP server is "ftp://tai.bipm.org/".
Individual ftp accounts are allocated to contributing laboratories. A unique FTP account serves to data submission for both UTC and UTCr.

Connexions to BIPM FTP server can be done either by FTP (File Transfer Protocol) or by FTPS protocol (FTP over SSL/TLS, using explicit TLS mode) for higher security. The SSL/TLS certificate is a self-signed certificate.
Each protocol can be used indifferently; the choice is left to the laboratories.
Port number for control connection is 21 and server run in passive mode for data connection with a port range between 50000 to 53000.

Each laboratory using its specific user account has writing privileges to its own directories and reading privileges to all directories.
An additional general read-only account exists for user "labotai" with login "dataTAI".

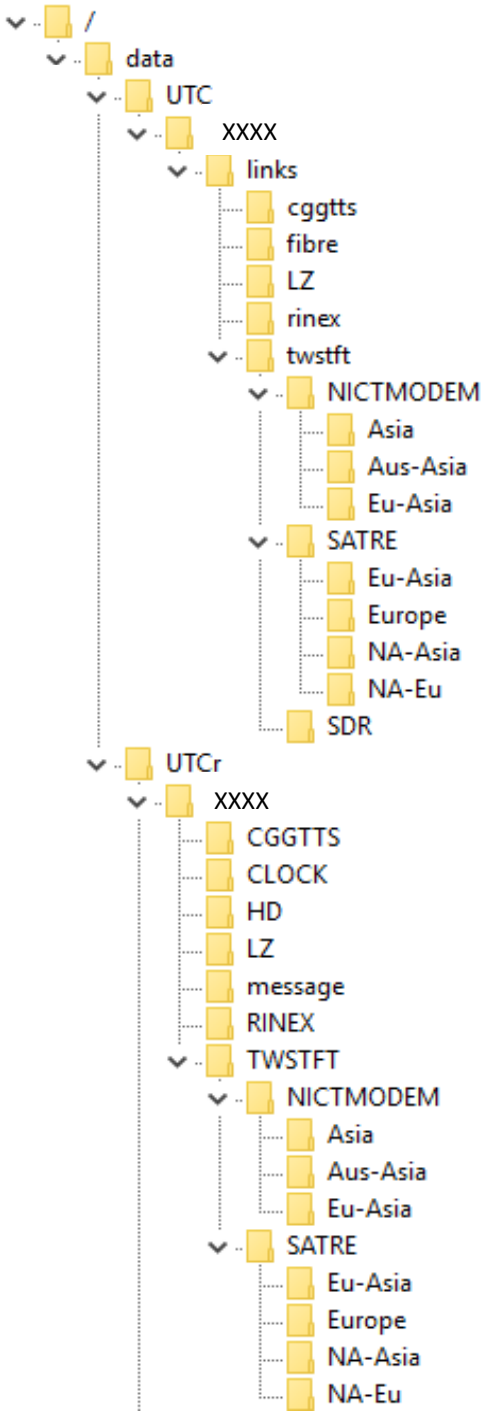
On the FTP server, in "soft" directory, programs for CGGTTS creation and related to TTR6 can be accessed.
A specific directory "temp" has been created for data exchange between different FTP-users, this folder is dedicated to additional data not to be used in Circular T.

On the BIPM Time Department'database webpage, useful documentation related to data submission and data format for Circular T is also available.

FTP structure and data files deposit

Data from each laboratory will be posted on specific directories, see FTP structure illustration below:

Regarding files submission for UTC:



Put your data in the remote directory **"/data/UTC/XXXX/"** where **"XXXX"** is the BIPM acronym of your laboratory, as in Section 1 of Circular T (see laboratory list).

Use the FTP data structure and put the data files in the appropriate subdirectory (refer to "Names convention" for more details on file names):

/data/UTC/XXXX/clocks
The standard name for the clock data files is:
CDLL__yy.mm_ (see format and clock codes)
New clocks have to be registered here.

/data/UTC/XXXX/clocks/PFS_eval
The standard names for the PFS and SFS data files are the Circular T interval corresponding to the period of evaluation (see PSFS format)

/data/UTC/XXXX/links
For time transfer data files exchange.

/data/UTC/XXXX/links/cggtts
-CGGTTS files named as for example : **GMLLmodd.ddd, GSLLmodd.ddd, GZLLmodd.ddd, RMLLmodd.ddd,** etc… (see cggtts format v1 , cggtts format v2, cggtts format v2E, CGGTTS headers). Check and update antenna coordinates in case of new values.

You may also create additional subdirectories in "/links/cggtts" if you have several receivers according to the name convention **LLmo**

/data/UTC/XXXX/links/fibre
- Optical fiber files named **FBAABBdd.ddd**
where **"AA"** and **"BB"** are the two alphabetical character codes of the two laboratories under comparison.

/data/UTC/XXXX/links/LZ
- LZ file: **LZLLmodd.ddd needed f**or a GNSS station reference not referenced to UTC(k) (see details)

/data/UTC/XXXX/links/rinex (see details)
- Rinex files named ssssdoy0.yyc.Z (IGS receivers) or LLmodoy0.yyc.Z (not IGS receivers)
-Header files named **HDLLmodd.ddd** (not IGS station) or HDssssdd.ddd (IGS station)

/data/UTC/XXXX/links/twstft
- files named **TWLABdd.ddd** (see TW header, and twstft directory structure)

/data/UTC/XXXX/meteo (starting from October 2017)
- Meteorological information (see format).

Please inform tai@bipm.org about any structure change of your specific directories.

Data submission deadline for UTC:
Data for Circular T participation must be uploaded before the 4th of the month following the month of the data, laboratories are encouraged to post data as soon as they are available. The use of daily data and their daily submission is recommended when applicable.

Regarding files submission for rapid UTC (UTCr):

The FTP directory structure is different from the one of UTC submission and there are some more additional specific directories. No modification in the structure is possible.
Note that the duration of data inside each file **must** not be longer than one day.

/data/UTCr/XXXX/CLOCK
daily clock data naming convention is **CDLL__dd.ddd**

/data/UTCr/XXXX/HD
for RINEX data, contains files **HDLLmodd.ddd** or **HDssssdd.ddd** (case for IGS station) with information on receiver used and their regular updates when necessary (see format).

/data/UTCr/XXXX/LZ
link to UTC(k) data files, named **LZLLmodd.ddd** or **LZssssdd.ddd** (case for IGS station) (see format).

/data/UTCr/XXXX/message
the information messages related to equipment (clock or time transfer) has to be communicated using informative text files **MELL__dd.ddd** which should be named according to the event's date and are free format and ASCII encoded.
Emails regarding UTCr should be sent to tai@bipm.org with subject of the email starting with "UTCr".

For other directories, there is no difference with the guidelines for data submission for Circular T.

Data submission deadline for UTCr:
Daily data upload are requested and data of day D must be uploaded before D+2, 12:00 UTC.

Publication of BIPM results

BIPM publications and files used in TAI computation are available at http://www.bipm.org/en/scientific/tai/ftp_server/introduction.html.

Naming conventions

1) The 2-character identification of the file (first 2 characters of the filename)

"CD" stands for Clock Data
"LZ" stands for a link to UTC(k) file
"HD" stands for a header file (used with RINEX)
"TW" stands for a Two way satellite time and frequency transfer data file
"FB" stands for a FIBRE observation file

For CGGTTS data file, file name shoud be : **XFLLmodd.ddd .**

For CGGTTS files up to version 02:
- **X** is the code character indicating the constellation
  - **"G"** for a GPS ,
  - **"R"** for a GLONASS ,
  - **"M"** for mixed GPS+GLONASS,
- **F** is the code character indicating the frequencies and channels:
  - **"S"** a Single-frequency single-channel observation file [obselete]
  - **"M"** for a single-frequency multi-channel observation file
  - **"Z"** for a dual frequency observation file (always multi-channel)

For GNSS data files version 2E:
- **X** is the code character indicating the constellation, using the same convention as in the RINEX standard :
  - **"G"** for a GPS ,
  - **"R"** for a GLONASS (R stands for Russia),
  - **"E"** for Galileo (Europe),
  - **"C"** for BeiDou (China),
  - **"J"** for QZSS (Japan),

- **F** is the code character indicating the frequencies and channels:
  - **"S"** a Single-frequency single-channel observation file
  - **"M"** for a single-frequency multi-channel observation file
  - **"Z"** for a dual frequency observation file (always multi-channel)

2) Special case for RINEX

RINEX files should be either RINEX 2.11 or RINEX 3.0 which file name should be : **ssssdoy0.yyc.Z** .

3) Acronyms used in patterns

"LLmo" is a unique GNSS station identifier (receiver + antenna), as follow :
"LL" is the two alphabetical character code for the laboratory
(see attached list)
"m" is the receiver identification first character (your choice),
it can be "_" if not applicable or "0 to 9"
"o" is the receiver identification second character (your choice),
it can be "_" if not applicable or "0 to 9"

"ssss" is a 4-character acronym for the receiver (same as "LLmo" or IGS station ID, if applicable).

yy.mm are the year and the month of the data
"yy" are the last two digits of the year number
"doy" is the day of year number
dd.ddd is the MJD of the first observation in the file.