



<p><i>Sector LOZ, Setup description</i></p> <p>Setup TWSTFT (Two Way Satellite Time and Frequency transfer)</p> <p>Application of CALR values from calibration report CAL-TIM-RP-0001</p>	<p>Document no: 119.37 Created: 11.09.2015/Scch Changed: 07.01.2016/Scch</p> <p>Released: Origin: 119.37 O01</p>
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1 Introduction

The results of the TWSTFT calibration campaign of 2012, summarized in the calibration report referred to as listed in table 1, have to be introduced into the TWSTFT ITU-files as shown in this document.

2 Calibration report reference

Table 1: Identification of calibration report

Calibration report	CAL-TIM-RP-0001
Iss./Rev	1/10
Date	10 Nov. 2014
Signed	10 and 12 Nov. 2014

3 Calibration switch S

According to the calculation of the calibration report on pages 20 and 21 the CALR values include all terms of the two-way equation except the time transfer measurements TI and the reference measurements REFDELAY, and are specific for each link.

Therefore the calibration switch $S = 1$ must be applied.

4 ESDVAR and ESIG

It is assumed that the ESDVAR and its uncertainty the parameter ESIG, will both be set to zero.

5 Calibration identification CI and calibration results

The calibration identifications CI have to be assigned by the BIPM. In the following they are written as placeholders, defined in table 2.

On applying them in the ITU-files with the corresponding calibration results, the here listed placeholders will be replaced by the calibration identifications, provided by the BIPM.

The calibration results in table 2 are taken from the calibration report from table 18-1.

Table 2: Calibration identifications with calibration results¹

Link	CI	MJD	U /ns	S	CALR /ns	ESDVAR /ns	ESIG /ns
TIM01 – PTB01	282	56264	1.07	1	-688.35	999999999	0.000
TIM01 – OP01	BBB	56264	0.93	1	7127.41	0.000	0.000
TIM01 – CH01	283	56264	1.07	1	25.01	999999999	0.000
PTB01 – CH01	284	56264	0.98	1	713.36	999999999	0.000
OP01 – CH01	285	56264	0.84	1	-7102.40	999999999	0.000

6 Header lines of ITU-files

The following lines should be appended to the header of the ITU-files, if applicable:

```
* CAL 282 TYPE: PORT ES REL          MJD: 56264 EST. UNCERT.: 1.070 ns
* CAL BBB TYPE: PORT ES REL          MJD: 56264 EST. UNCERT.: 0.930 ns
* CAL 283 TYPE: PORT ES REL          MJD: 56264 EST. UNCERT.: 1.070 ns
* CAL 284 TYPE: PORT ES REL          MJD: 56264 EST. UNCERT.: 0.980 ns
* CAL 285 TYPE: PORT ES REL          MJD: 56264 EST. UNCERT.: 0.840 ns
```

7 Data lines of ITU-files

If measured by the participants on ongoing TWSTFT operation and if applicable, the data lines in the ITU-files should contain the following parameters:

```
* EARTH-STAT  CI S      CALR      ESDVAR      ESIG
* LOC         REM
TIM01 PTB01 282 1    -688.350 999999999 0.000
PTB01 TIM01 282 1     688.350 999999999 0.000
TIM01 OP01 BBB 1    7127.410 999999999 0.000
OP01  TIM01 BBB 1   -7127.410 999999999 0.000
TIM01 CH01 283 1     25.010 999999999 0.000
CH01  TIM01 283 1    -25.010 999999999 0.000
PTB01 CH01 284 1     713.360 999999999 0.000
CH01  PTB01 284 1    -713.360 999999999 0.000
OP01  CH01 285 1   -7102.400 999999999 0.000
CH01  OP01 285 1    7102.400 999999999 0.000
```

¹ CI issued by Z Jiang on 15/0/2012