

# **Report on PTB's TWSTFT Activities in 2005**

**TWSTFT Working Group Meeting  
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Delft**

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## **2005 Activities**

- 1) Establishment of the link NICT-PTB**
- 2) Participation in calibration exercises**
  - a) USNO-PTB**
  - b) 4th European calibration campaign**
- 3) Modernisation of PTB's TWSTFT setup**  
**Implementation of a 3-channel SATRE modem**

## **1) Establishment of the link NICT-PTB**



**Setup provided by NICT in  
late 2004**

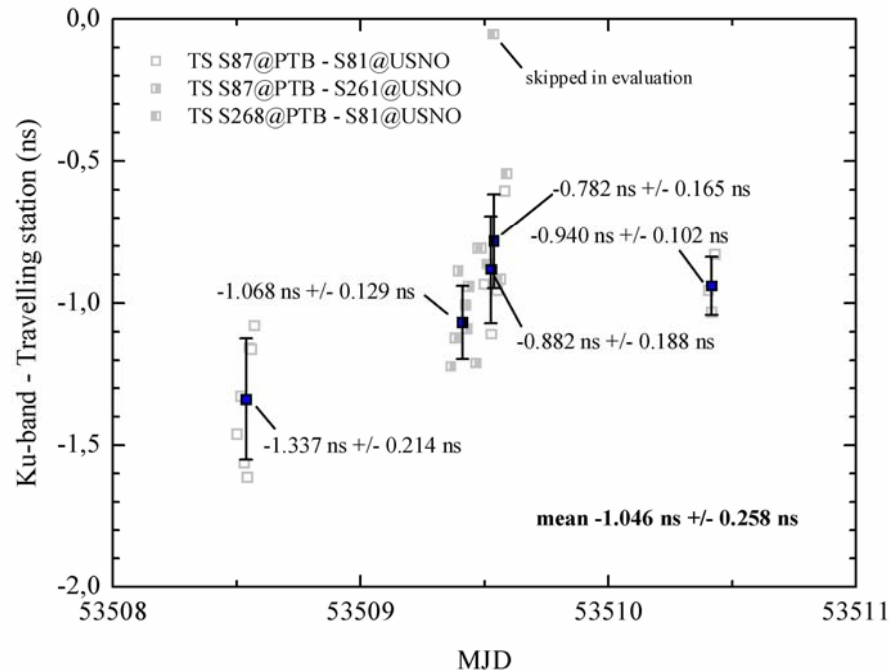
**Installation of the Vertex 2.4 m  
antenna, outdoor and indoor  
hardware in 2005**

**Operation since 22 July 2005**

## 2) Participation in calibration exercises

### a) USNO-PTB - Results presented at FCS/PTTI 2005

#### Calibration - May 2005



Double differences, e.g.

**Ku-band** - fly-away station

resulting in:

**differential correction**

**Ku-band** 1.05 ns

**X-band** 1.00 ns

**standard deviation**

**Ku-band** 0.26 ns

**X-band** 0.37 ns

**day-to-day stability**

both links < 0.7 ns

## 2) Participation in calibration exercises

### a) USNO-PTB - results presented at FCS/PTTI 2005

#### Calibration - Uncertainty Contributions

statistics

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$u_{A,1}$	precalibration at USNO  0.2 - 0.3 ns
$u_{A,2}$	comparison at PTB  0.2 - 0.5 ns

systematics

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$u_{B,1}$	stability of fly-away station  0.5 - 0.7 ns
$u_{B,2}$	TIC specifications  0.5 ns
$u_{B,3}$	other effects  0.2 ns

#### Combined Uncertainty for May 2005 Calibration

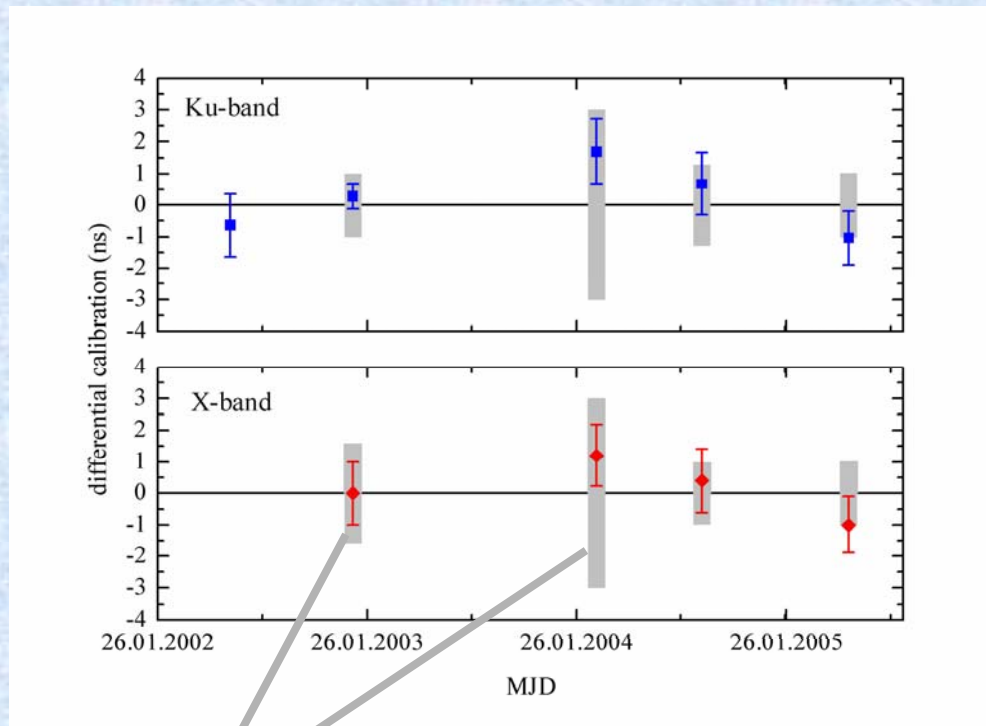
Ku-band 0.85 ns

X-band 0.89 ns

## 2) Participation in Calibration exercises

### a) USNO-PTB - results presented at FCS/PTTI 2005

#### Calibration - Reproducibility



#### Differential Correction

mean

Ku-band 0.21 ns

X-band 0.16 ns

RMS

Ku-band 1.00 ns

X-band 0.81 ns

estimated uncertainty at the day of the calibration exercise (including uncertainties due to bridging)

## **2) Participation in Calibration exercises**

### **b) 4th European Calibration campaign**

**20 Oct @ PTB - SP- VSL - NPL - OP - IEN - 9 Nov @PTB**



**Results to be presented on EFTF 2006**

### 3) Modernisation of PTB's TWSTFT setup

#### Implementation of a 3-channel SATRE modem

Old

Single channel SATRE

only MITREX codes 0-7

external TIC

New

3-RX-channels

higher codes available

built in TIC

Operation of a multi-Rx-channel modem enables parallel sessions.



### 3) Modernisation of PTB's TWSTFT setup

#### Implementation of a 3-channel SATRE modem

