

The TWSTFT Lab report

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National Time Service Center, the Chinese Academy of Sciences (NTSC)

- NTSC is located in Lintong, Xi'an where is the geographic center of China.
- Welcome to China and welcome to NTSC.

National Time Service Center, the Chinese Academy of Sciences (NTSC)

- *National time authority of China.* It is charged with the responsibility for precise time determination, time keeping for national standard time scale, local atomic time TA(NTSC), local coordinated universal time UTC(NTSC), dissemination of time and frequency signal, accurate measurement of time and frequency, research of time and frequency as well as providing time service which is the Official Source of Time for navigation, and a Standard of Time in China.

Research Groups

- Time keeping laboratory
- Quantum Frequency Standards laboratory
- Dissemination of standard of time
- Time-keeping Theory and Method department
- Orbit and Time Transfer department
- Time and Frequency Measurement department
- Time Transfer Method and Technology department
- Time and Frequency Service System department
- Navigation and Communication department

NTSC Time keeping lab Introduction

- *National time authority of China. National time keeping and time dissemination*
- *Twenty cesium clocks and two hydrogen masers contributed to TAI*
- *Three sets of TWSTFT equipments (Asia-Asia links :NICT modem, Asia-Europe links: Satre modem, domestic link: Satre modem)*
- *GPS receivers: two single frequency RCVs, three dual frequency RCVs*

• Dissemination of standard of time

- ❑ The branch part, division of time service is situated at Pucheng county with two radio stations:
BPL long wave station, BPM short wave station
- ❑ The BPM station disseminates the standard time and standard frequency signals at 4 frequency by turn (2.5, 5.0, 10.0 and 15 MHz, alternately 24 hours a day).
- ❑ The BPL station disseminates high accuracy LF time and frequency signal with carrier of 100kHz.
- ❑ The BPC lower frequency station is situated at Shang Qiu city of He Nan province of China. The low frequency station disseminates signal with 68.5 KC.

TWSTFT group is a part of **Time keeping laboratory**

□ Members:

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Time keeping System



TWSTFT stations in NTSC



NICT modem
for Asia-Asia
TW link

SATRE modem
for Asia-Europe
TW link

TWSTFT laboratory



Up/ Down
converters

Temperature control



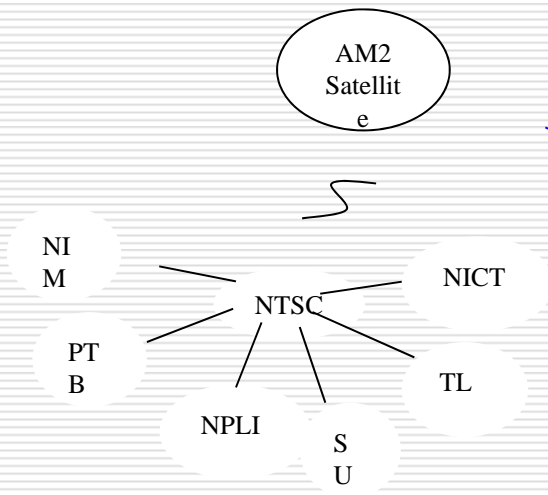
TWSTFT Status

- ❑ **NTSC01: link to Asian laboratories**
stopped

- ❑ **NTSC02: link to European laboratories**
satellite: AM-2, will be changed to ?
frequencies: Ku-band
modem: SATRE
Lab: PTB,NICT,TL,NIM,NPLI,SU
data format: ITU-R TF.1153-2 (type 1, individual)

- ❑ ***NTSC 03 Link only for domestic stations with C band***

NTSC TWSTFT ANTENNA SYSTEM (NTSC02):



- From June 2012, the data of two way link between NTSC and PTB was contributed to TAI.
- From 2013, satellite will be changed to another.

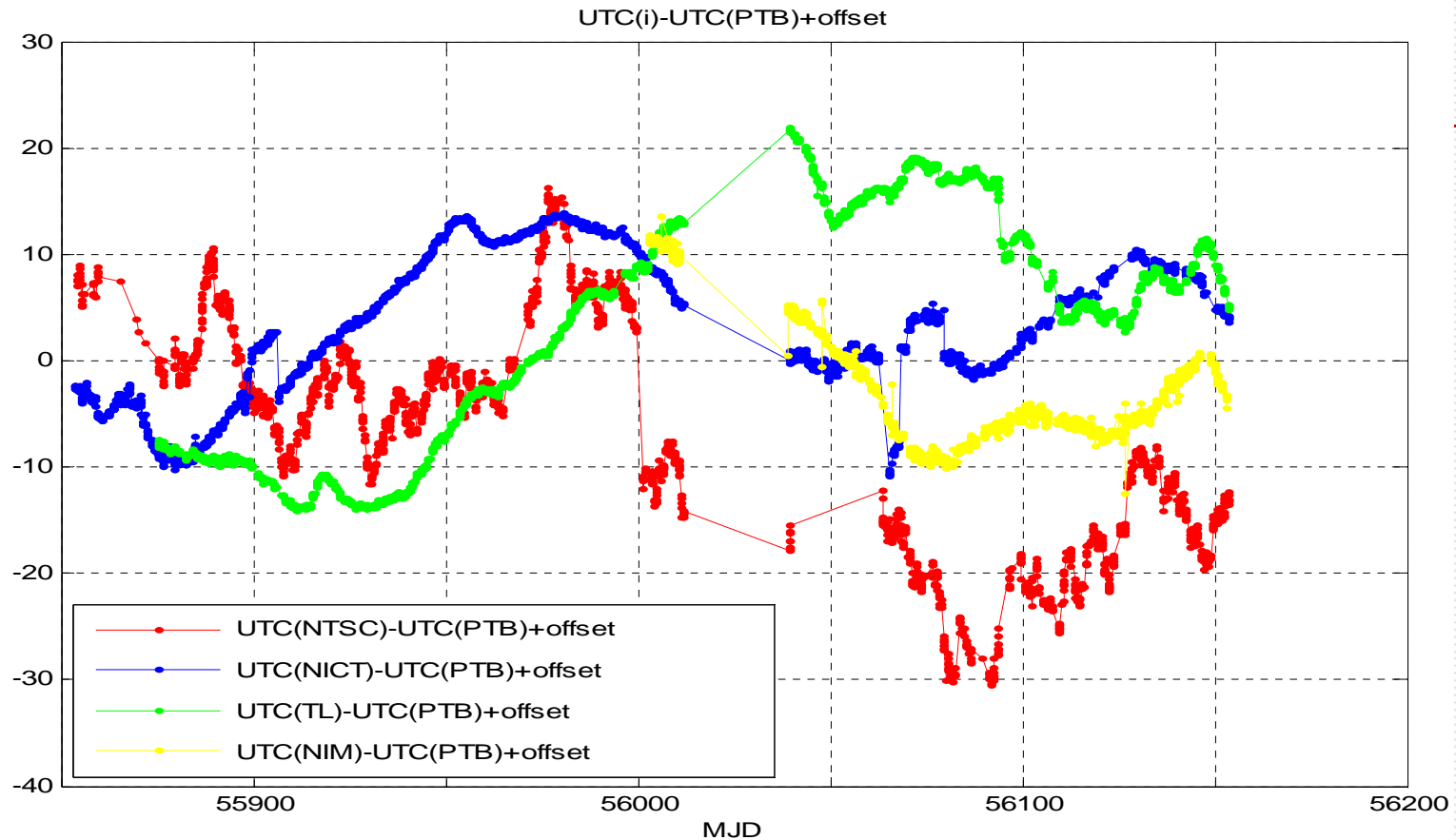
NTSC TWSTFT ANTENNA SYSTEM (**NTSC03**):



NTSC03 link with
inland stations

- Two way link with inland stations in 2009 with C band.

The time link result (NTSC02)



□ From MJD 56079 (2012/06/01), TW link of NTSC-PTB data have been contributed to TAI

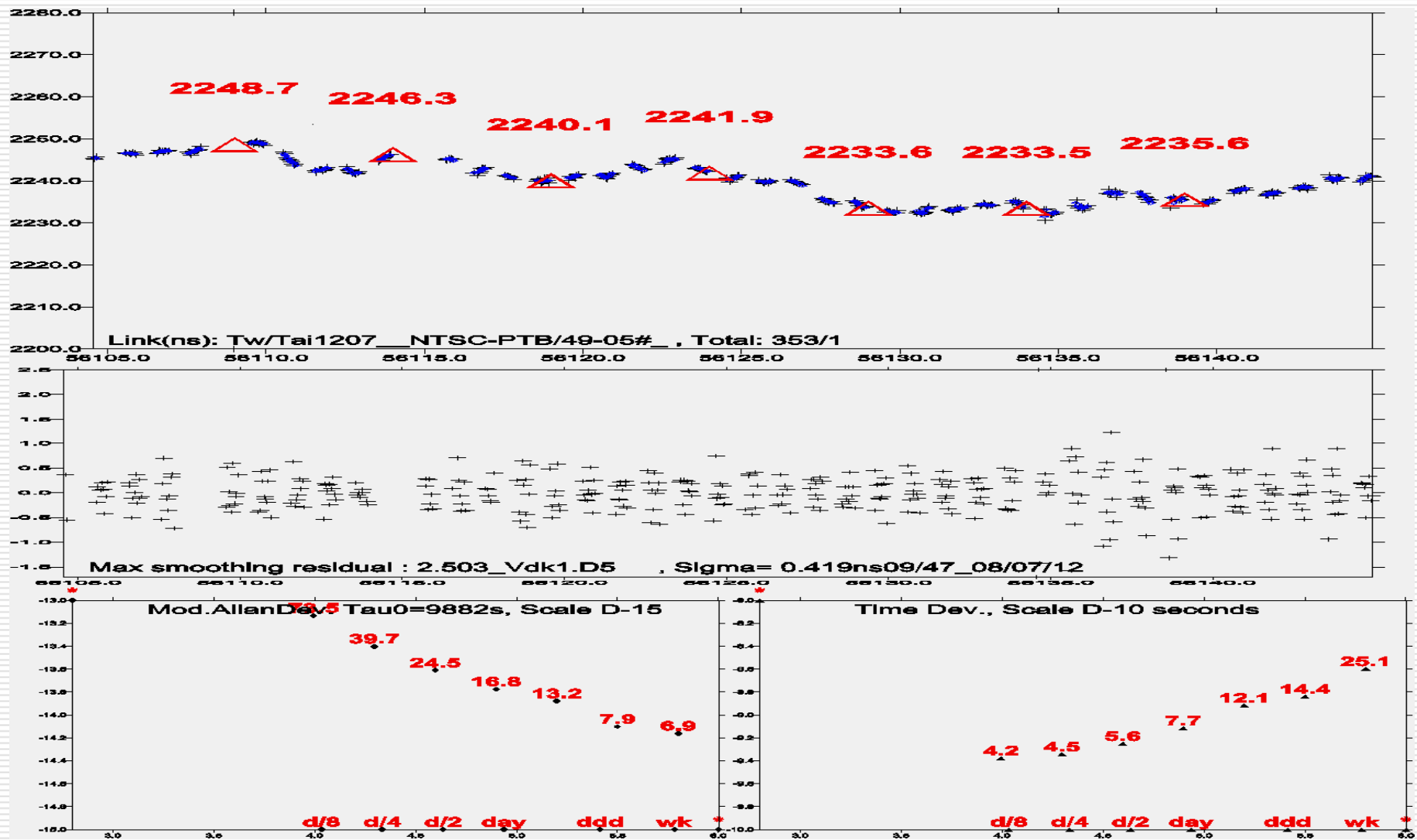


Fig2. Time link result of [UTC(NTSC)-UTC(PTB)] by TWSTFT in July 2012

- The SD (Standard Deviation) of the TW data is 0.419ns.

Future

- Will restart to Asia-Pacific Link
- Keep Europe-Asia Link operation, continue to be contributed to TAI
- Will pay for AM2 payment for 2012(two months)

Thank you

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