



SPACE  
RESEARCH  
CENTRE  
POLISH  
ACADEMY  
OF SCIENCES

Borowiec, 11.08.2022

## CALIBRATION CERTIFICATE 08/2022

**Astrogeodynamical Observatory Space Research Centre (SRC) certifies that:**

- From Jul. 29<sup>th</sup> 2022, 00:00 UTC, till Aug. 03<sup>rd</sup> 2022, 00:00 UTC the following set of instruments supplied by:

*Piktime Systems Ltd*  
*company having its registered office at:*  
*Mazowiecka 59, 60-623 Poznań, Poland,*

was calibrated by a **Common View** method at the Time and Frequency Laboratory of the Observatory:

- TTS-5 receiver, s.n. 1027,
- Choke ring antenna, RinGant G5T sn: RA10041,
- Antenna cable assembly (TTS5-1027A),
- Antenna cable assembly (TTS5-1027B),
- Antenna cable assembly (TTS5-1027C).

- The calibration was carried with respect to the main GPS/GLONASS s.n. 112 TTS-4 receiver at the Observatory.

- The s.n.112 receiver was several times calibrated against traveling receivers from BIPM Time Section, in particular, in January 2017 against absolutely calibrated BIPM BP1K receiver.

**The calibration yielded the following results:**

Differential delays of the calibrated receiver:

GPS, L1C: 33.02, RMS: 0.71 [ns],

GPS, L1P: 30.58, RMS: 0.50 [ns],

GPS, L2C: 57.74, RMS: 0.95 [ns],

GPS, L2P: 41.30, RMS: 0.96 [ns],

GLONASS, L1C: 42.77, RMS: 2.80 [ns],

GLONASS, L1P: 43.45, RMS: 2.40 [ns],

GLONASS, L2C: 38.31, RMS: 1.35 [ns],

GLONASS, L2P: 38.21, RMS: 1.27 [ns],

Antenna cable assembly TTS5-1027A: 122.43, RMS: 0.5 [ns],

Antenna cable assembly TTS5-1027B: 20.35, RMS: 0.5 [ns]

Antenna cable assembly TTS5-1027C: 185.68, RMS: 0.5 [ns]

**The obtained results should be implemented into the receiver.**

Dr Jerzy Nawrocki

Head, Time and Frequency Department

Astrogeodynamical Observatory, Space Research Centre, Polish Academy of Sciences

Ul. Drapańska 4, 62-035 Kornik, Borowiec, Poland

Phone: +48 61 8170-187, fax: +48 61 8179-219, e-mail: nawrocki@cbk.poznan.pl

POLSKA AKADEMIA NAUK  
Centrum Badań Kosmicznych  
OBSERWATORIUM ASTROGEODYNAMICZNE  
w Borowcu  
62-035 Kornik, tel. Poznań (61) 8170-187  
fax (61) 8179-219