

SVTL IGS Station Report 2003–2004

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Permanent GPS station SVTL is installed in 1996 at the Svetloe Radio Astronomical Observatory (SvRAO) located at the Karelian Neck in about 100 km towards North from St. Petersburg, and is operated by the Institute of Applied Astronomy of the Russian Academy of Sciences. The station is continuously operated since March 1996. In 1996 SVTL station was included in the EUREF/EPN network, and in December 2003 it has been added to the IGS network. GPS antenna is installed on concrete pillar on the flat roof of the 2-story laboratory building. It is collocated with IVS station SVETLOE.

Till December 2004 the station was equipped with Trimble 4000SST receiver and TRM14532.00 antenna provided by UNAVCO (Fig. 1). On December 1, 2004 it was replaced with Leica SR520 receiver and LEIAT504 antenna with LEIS radome (Fig. 2). Table 1 shows significant improvement in data quality after the change of equipment.



Figure 1. Trimble antenna and VLBI telescope.

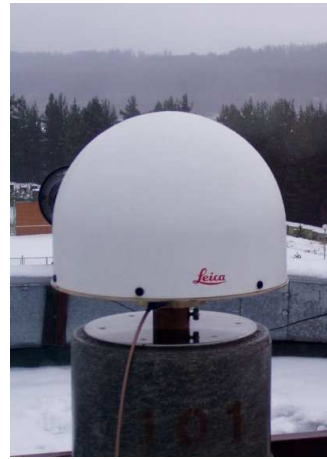


Figure 2. Leica antenna.

Table 1. Comparison of Trimble and Leica receivers (IGS data used for the first four lines).

| Value | Trimble 4000SST, November 2004 | Leica SR520, December 2004 |
|---|-----------------------------------|-------------------------------|
| Daily number of observations | 22500 | 26000 |
| Data collection percentage | 86 | 99 |
| Multipath, m | 3 | 0.2 |
| Cycle slips / 1000 observations | 15 | 4 |
| Uncertainty of weekly station coordinates, mm, X/Y/Z | 3.3/2.3/6.2 | 2.2/1.4/4.1 |

In November–December 2004 we performed parallel observations with old (Trimble) and new (Leica) receivers/antennas installed on two adjacent marks spaced by about 2 m. During the first 20 days the Trimble antenna was installed on the mark 101 (SVTL), and the Leica antenna was installed on the mark 113. Then the antennas were transposed for the next 19 days. Processing of the observations showed the systematic difference between coordinates obtained with two receivers of about 8 mm in U and N directions, and about 2 mm in E direction.