GNSS Antenna Signal to Noise Comparison

775 Henry Berglund October 17, 2016 GNSS Antenna and Dome Test Reports, GNSS Antennas 4895

This article presents a comparison of measured signal to noise ratio (SNR) values observed from several GNSS antenna types. The results presented below were collected using a monument located on the UNAVCO Facility Roof in Boulder, CO. Each test antenna was installed on the test monument for approximately one week.

Utilizing the same monument for the duration of the experiment reduces the error contribution from near-field and far-field site dependent effects. To reduce the impact of ionospheric and troposheric effects we computed four day averages of SNR in 5 degree elevation bins for each antenna type.

The same receiver was used throughout the experiment. Signal to noise observables obtained from different receiver types can vary significantly. Receiver manufactures apply different algorithims to obtain the S1 and S2 observables reported in the RINEX format.

GPS S1 and S2 observables were analyzed. GLONASS S1 observables were also evaluated.

Experiment Location: UNAVCO Facility Roof

Antenna List:

1. LEIAR20
2. SEPCHOKE_MC
3. TPSCR.G3
4. TPSPG_A1+GP
5. TRM41249.00
6. TRM57971.00
7. TRM59800.00
8. TRM59900.00

Note: Antenna radomes were not used in this experiment.

Test Receiver Model:

- Trimble NetR8
- 24hr, 30sec sessions

Results

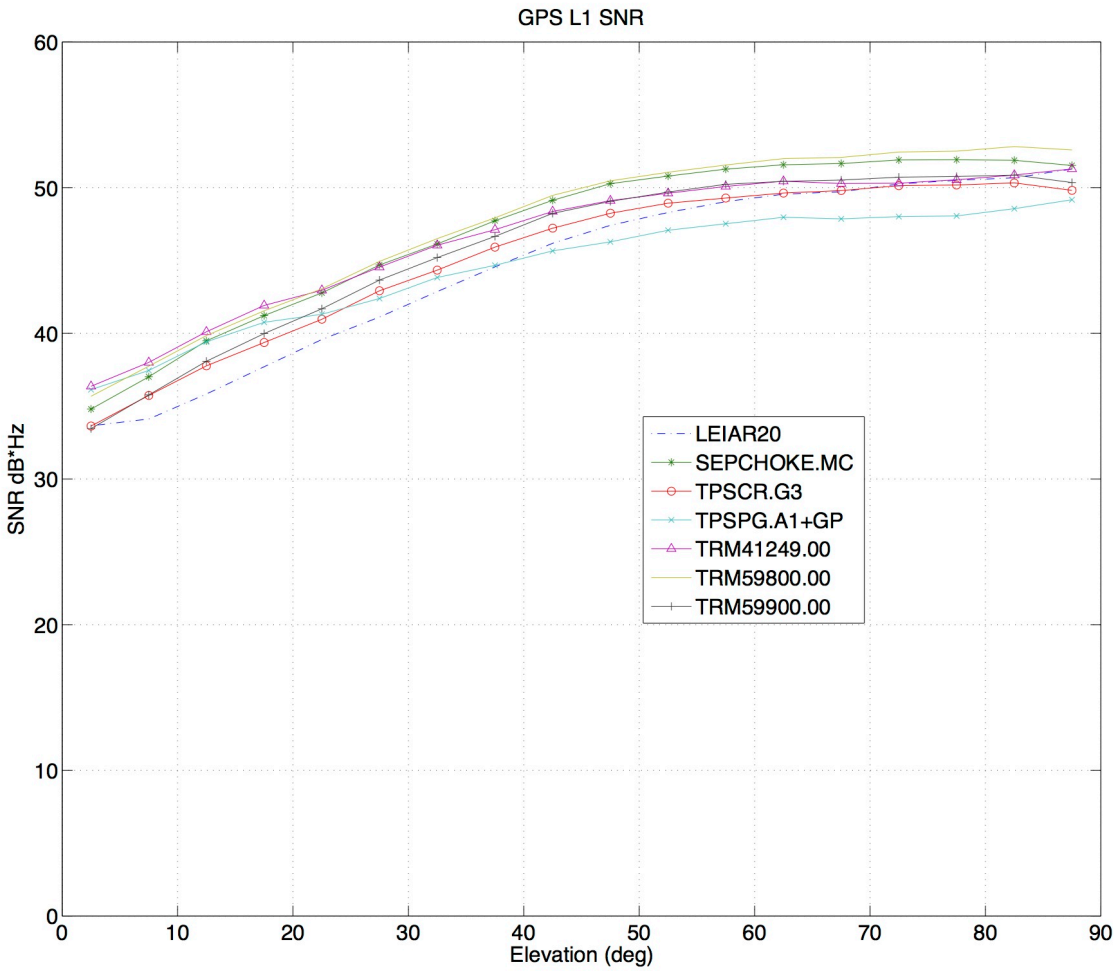


Figure 1. Computed four day averages of S1 in 5 degree elevation bins for each antenna type. (full size)

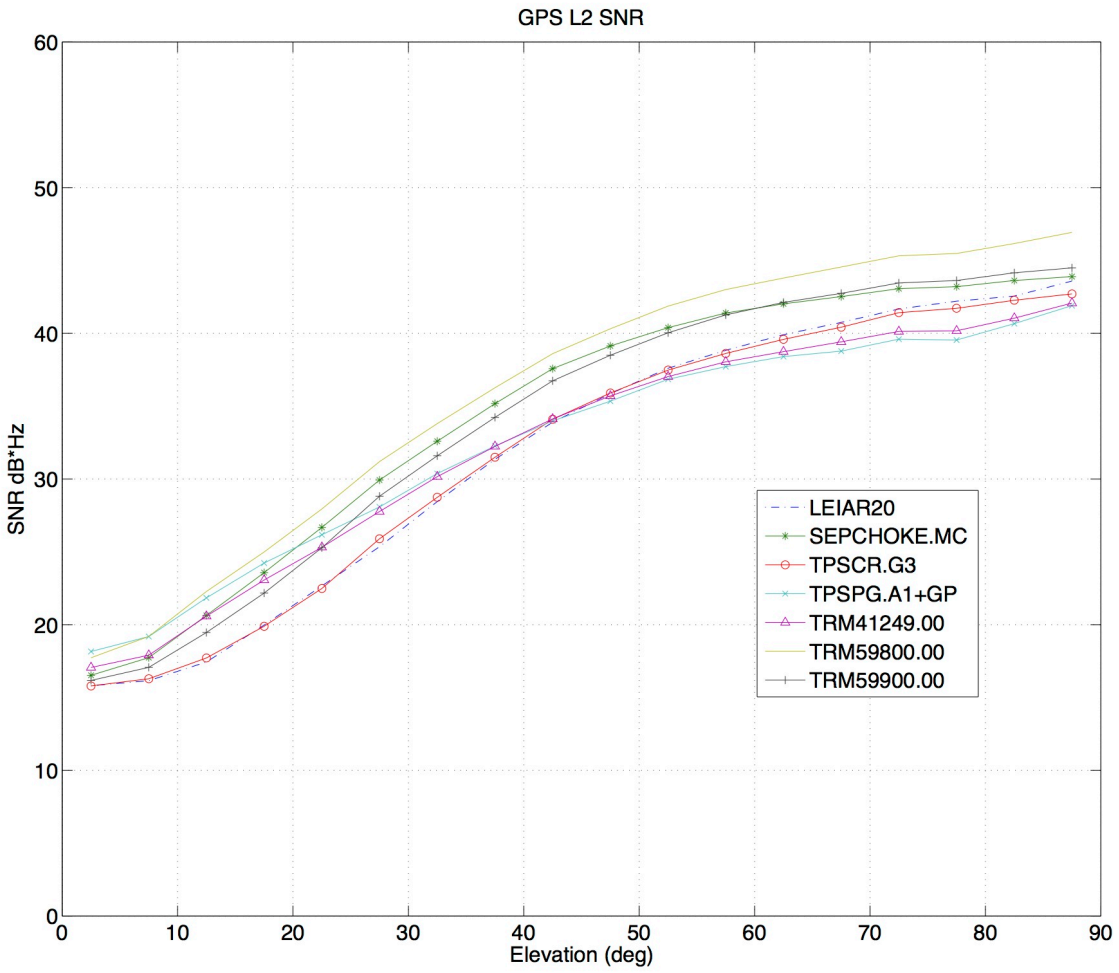


Figure 2. Computed four day averages of S2 in 5 degree elevation bins for each antenna type. (full size)

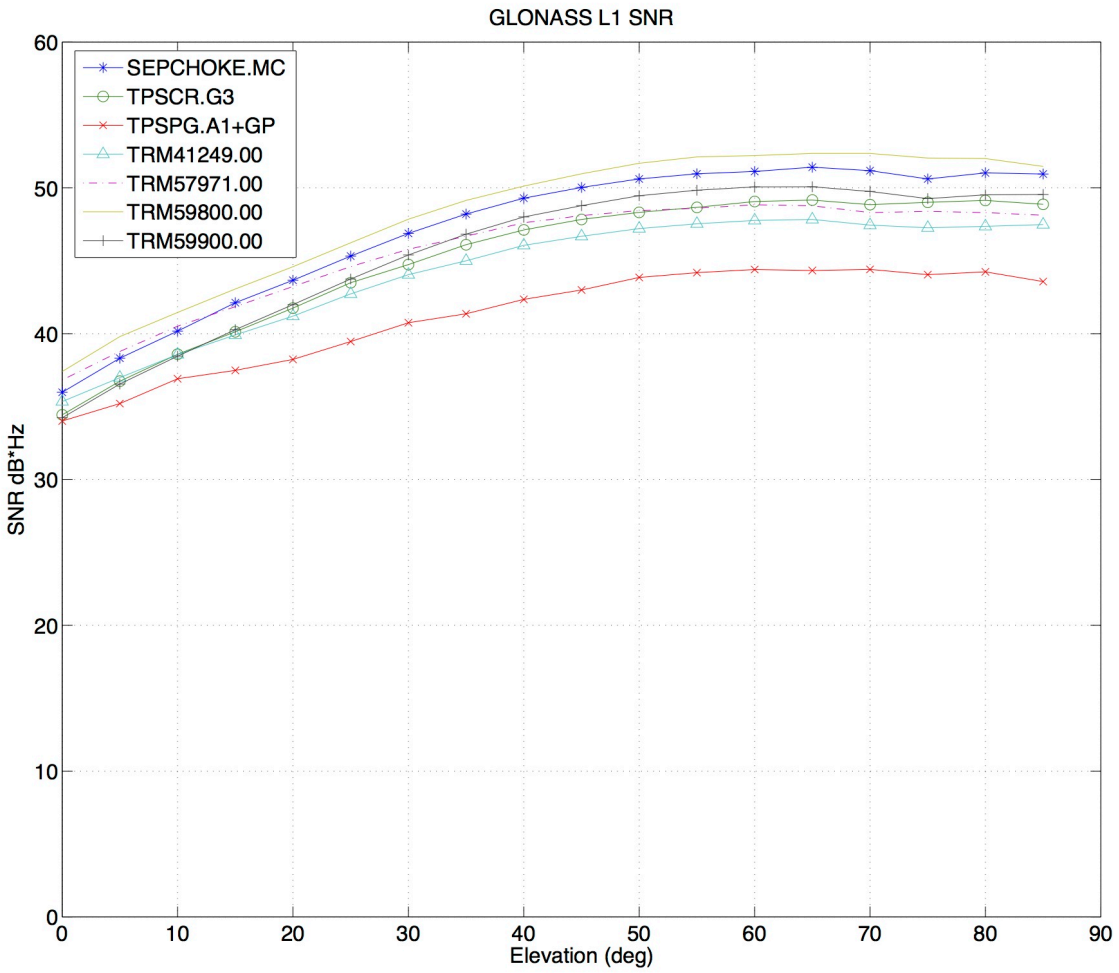


Figure 3. Computed four day averages of GLONASS S1 in 5 degree elevation bins for each antenna type. (full size)

Antenna Model	Antenna Make	SNR Figures
LEIAR20	Leica	figure
SEPCHOKE_MC	Septentrio	figure
TPSCR.G3	Topcon	figure
TPSPG_A1+GP	Topcon	figure
TRM41249.00	Trimble	figure
TRM57971.00	Trimble	figure
TRM59800.00	Trimble	figure
TRM59900.00	Trimble	figure

Table 1. Individual figures showing SNR vs. elevation angle for all PRN's. The computed average and the

standard deviation for each 5 degree elevation bin is also displayed.

Questions or Comments? Please contact Henry Berglund; email: berglund @ unavco.org

Online URL: https://kb.unavco.org/article/gnss-antenna-signal-to-noise-comparison-775.html