

St George RTK Bases (SGU1 and SGU2)

18 September 2022

SGU1 & SGU2 Mail List Signup / Signoff: <https://signup.ymlp.com/xguqjwsugmgw>
Mail List Past Notices: http://ymlp.com/archive_guqjwsugigm.php
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2022 Information

There are two public GNSS bases in St. George available for public use at no charge: SGU1 and SGU2.

The last page of this PDF is intended as a *Quick Reference* for connection information. **Please consider printing it out and keeping a copy in the instrument case with your GNSS Rover.**

It is very difficult to keep both stations running 100.000% of the time. Configure and test both profiles in your field software to allow switching back and forth if required by station down-time.

You should use GEOID18 in your data collector with both stations for new jobs.

If you have a modern receiver results from SGU2 will be more stable, you will get faster FIXes and you will be able to work a longer distance from the station.

SGU1 (GPS + GLO only)



SGU1 has been in place since January 2004. The original Z-Max receiver (GPS Only) was replaced by the current Ashtech PF500 (tracking GPS L1C,L1P(Y),L2P(Y); GLOANSS L1C,L2C) receiver in February 2012. SGU1 is part of the NGS CORS network: https://geodesy.noaa.gov/cgi-cors/corsage_2.prl?site=sgu1

SGU1 has a few issues, however there is a commitment to keep it running for as long as possible with the original historic coordinates, see the table below for coordinate details and offsets.

SGU1 is available via DIP/TCPIP internet connection and via 3 UHF 35-Watt Base Radios that provide coverage to most of southern Washington County:



RINEX observation file archives are available from the NGS UFCORS page. RINEX observation files for SGU2 are available from the FTP server detailed in the table below.

Coordinates for SGU1 **by local consensus** are unchanged from the CORS96 adjusted coordinates from 9-years ago. (If you would like to talk about this, contact Mark Silver for a political overview.) The coordinate difference to NGS CORS booked station results are shown in the table below.

SGU2 (GPS + GLO + GAL + BDS)

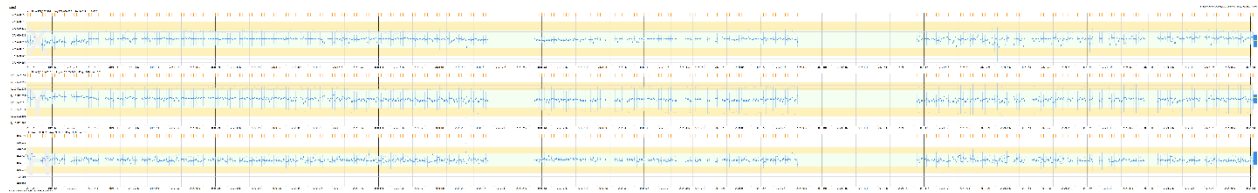


SGU2 has been in service since August 2018. This receiver has a fully enabled BD990 Trimble board tracking GPS L1,L2E,L2C,L5; GLONASS L1C/A,L1P,L2P,L3; Galileo E1,E5A,E5B,E5AltBOC,E6; BeiDou B1,B1C,B2,B2A,B2B,B3 with a IGS absolute calibrated choke-ring antenna. The mount and location have been chosen to not interfere with the roof membrane and should be stable for a very long time.

Currently **SGU2** access is available only by DIP/TCPIP or NTRIP internet connection. See the last page for details.

Observation file archives are available via FTP: apis1.us, user igage, password 2337

Coordinates and velocity for **SGU2** have been derived from averaging 664 individual 24-hour observation files through NGS OPUS-Static and using the solution average. This averaged solution has been found to match an OPUS-Projects based position within a millimeter.



Station Details for SGU1 and SGU2

Designation	SGU1	SGU2
Receiver Type	ProFlex 500	BD990
Receiver Serial Number	201050011	5951C03261
Firmware Version	S767G224	5.53
Antenna Type	ASH701945E_M SNOW	CHCC220GR CHCD
Antenna Serial Number	CR520030204	13190137
RTK Broadcast Coordinates	37 06 47.48170 N 113 34 13.02341 W 895.579 m ARP BAM L1 ofs +0.0889 m => 895.6679 m PC	37 06 47.51342 N 113 34 14.00939 W 896.037 m ARP BAM L1 OfS + 0.1181 m = 896.1551 m PC
NGS Coordinates	Booked NGS Station Coordinates 37 06 47.48130 N 113 34 13.02325 W 895.565 m ellipsoid	Averaged NGS OPUS Solutions 37 06 47.513419 N 113 34 14.009385 W 896.0366 m ellipsoid
Difference between Broadcast and NGS coordinates	2-D Horz: 0.013 m S 16 29 39 E Vert: 0.014 m	(nil)
Velocity NAD_83 (2011)	Computed by NGS	Computed via NGS OPUS solutions

	0.0013 m/yr northward -0.0004 m/yr eastward -0.0012 m/yr upward	0.0003 m/yr northward -0.0008 m/yr eastward -0.0005 m/yr upward
IP Address	209.33.248.96	209.33.248.86
IP DIP/TCPIP Ports Easiest to use, no user name or password required	See table on last page 7201 RTCM3.x 7202 CMR+ 7203 RTCM3.x 7204 RTCM3.x 7205 RTCM2.3 7206 RTCM3.2 7207 CMR+	See table on last page 2105 RTCM3.3 MSM7 2106 CMR+ 2107 sCMRx (NOT CMRX !) 2108 RTCM3.x (legacy) 2109 RTCM27 1Hz, everything 2110 BINEX 1Hz
NTRIP Caster Most drone and machine control applications will need to use the port 2101 output	(not available) call MarkS if you need one <i>If your application needs an NTRIP source, it would probably be better to use SGU2.</i>	See table on last page Address 209.33.248.86 User: user Password: SgU2user 2101 RTCM32 2102 CMRP 2103 sCMRx (NOT CMRX !)

Quick Reference St George Community Reference Stations March 2022

SGU1: UHF Radio



Correction Protocol	CMR+
Radio Protocol	TrimTalk450 (TrimTalkII, TrimTalkIle, TT450HW also work)
Over the air baud rate	4800. (12.5 KHz Channel Bandwidth)
West (Utah Hill)	453.400 Mhz (this radio probably covers all of Washington County)
Main (center of town)	453.500 Mhz
East (Washington City)	453.250 Mhz

SGU1 DIP/TCPIP (Direct IP Connection)

IP Address:	209.33.248.89
Port:	7201 RTCM3.x << MOST COMMON
	7202 CMR+
	7203 RTCM3.x
	7204 RTCM3.x
	7205 RTCM2.3
	7206 RTCM3.2
	7207 CMR+

SGU2: DIP / TCPIP

IP Address:	209.33.248.86
Port:	2105 RTCM3.2 (MSM) << MOST COMMON
	2106 CMR+
	2107 sCMRx (NOT CMRx !)
	2108 RTCM3 (legacy)
	2109 DIP RT27 (all signals + options + ephemeris)

If you have any modern GNSS receiver (like an R10, R8, Novatel/Leica, Septentrio, Javad, DJI) the **RTCM3.2 (MSM)** port will be the best. If you have an older legacy receiver, then **RTCM3 (legacy)** may be the best. If you have a CHC, iGage or other Trimble OEM based receiver (but not a Trimble receiver) the **sCMRx** port will be equivalent to RTCM3.2 MSM with less transmitted data. The **CMR+** port is GPS+GLONASS only and does not have L2C/L5/L3 corrections.

SGU2 NTRIP

User:	user
Password:	SgU2user
IP Address:	209.33.248.86
Port:	2101 RTCM3.2 (MSM) << MOST COMMON
	2102 CMR+
	2103 sCMRx