

# Champion Instruments

## How-To Guide

### Table of Contents

<b>Introduction</b>	<b>Welcoming, Items Needed and Abbreviations.</b>	<b>Pg. 1-2</b>
<b>Chapter 1</b>	<b>TKO Configuring</b>	<b>Pg. 2 - 4</b>
<b>Chapter 2</b>	<b>Collecting Static Data</b>	<b>Pg 4-5</b>
<b>Chapter 3</b>	<b>Downloading/Converting to RINEX.</b>	<b>Pg. 5-9</b>
<b>Chapter 4</b>	<b>Submitting to OPUS.</b>	<b>Pg. 9-14</b>

### Introduction:

Welcome to Champion Instruments. This guide will show you how to set up the Champion TKO for static surveying, log the data, download the .ZHD file, convert it to RINEX and submit the RINEX file to the National Geodetic Survey (NGS) Online Positioning User Service (OPUS).

### The items you will need are:

- ✓ TKO
- ✓ Y-Cable
- ✓ Computer
- ✓ Rover Pole with Bi Pod
- ✓ Software
  - a. Hi Target GPS-V Series GPS receiver management Software v1.3.0
  - b. Hi-Target Geomatics Office (HGO)
- ✓ Internet connection.

### Abbreviations and Symbols:

-  = Intelligent Voice

- **NGS = National Geodetic Survey**
- **OPUS = Online Positioning User Service**
- **HGO = Hi Target Geomatics Office**
- **ARP = Antenna Reference Point**
- **APC = Antenna Phase Center**
- **HGMS = Hi Target GPS-V Series GPS receiver management Software v1.3.0**

## Chapter 1 Configuring TKO

### Steps:

1. Power on computer.

2. Power on TKO. *“Single Press”*



3. *“Double Press”*



4. Listen to



for “MODE”

5. Scroll rough the “Modes” by *“Single Press”* until states “Static”.



until



6. *“Single Press”* .



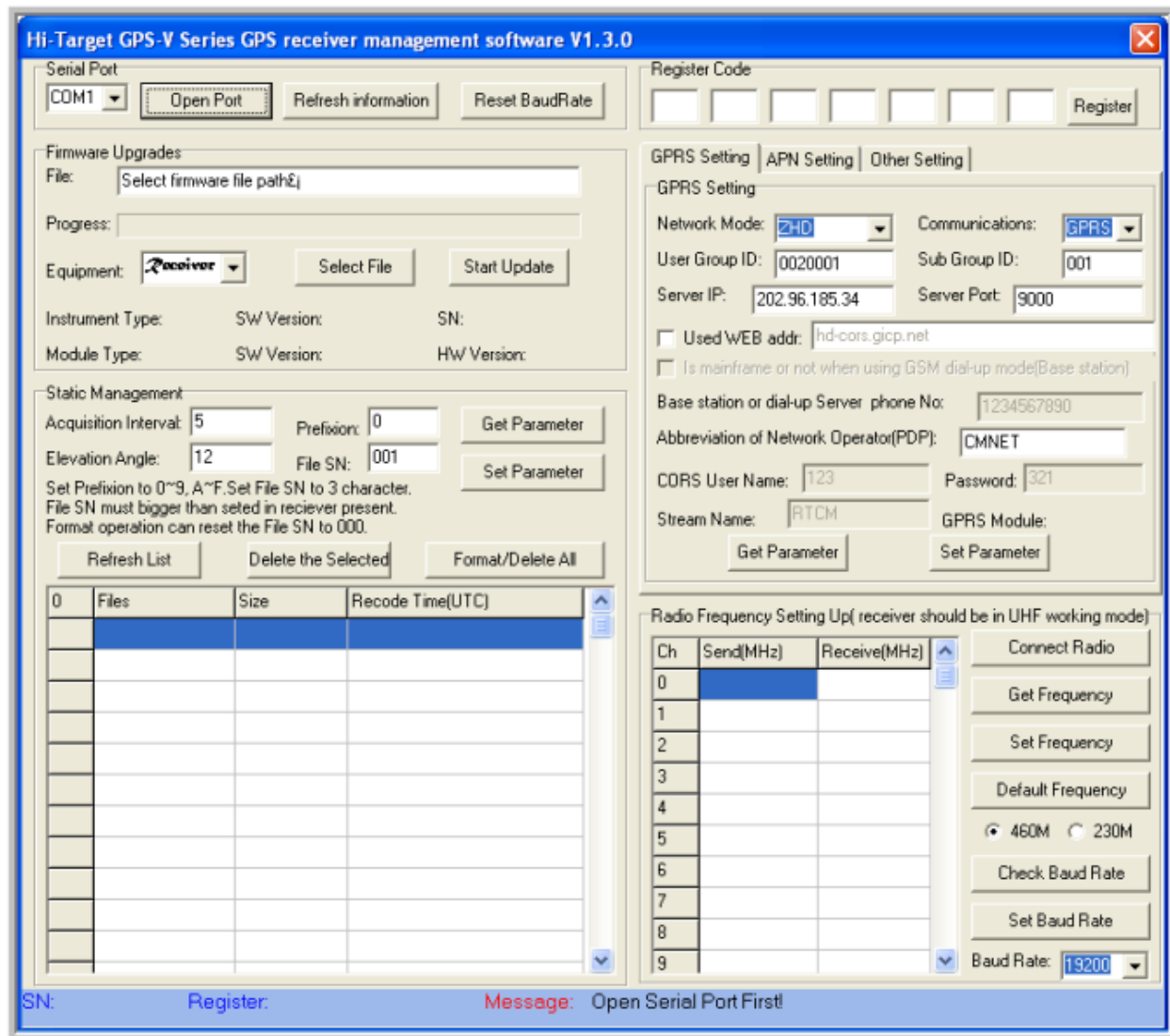
7. Plug in Y-Cable into bottom of TKO “COM1/PW1”

8. Plug in “COM” end into “COM 1” on computer.

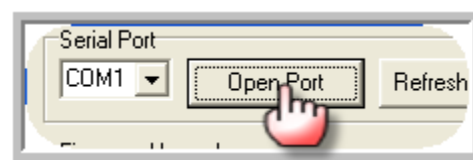


9. **“Double Click”**: **“HGMS”**

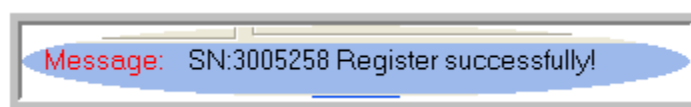
10. This is what should appear:



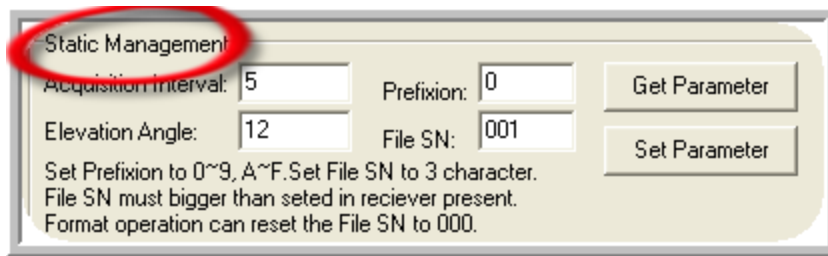
11. **“Single Click”** the **“Open Port”**.



12. **Check the message.**



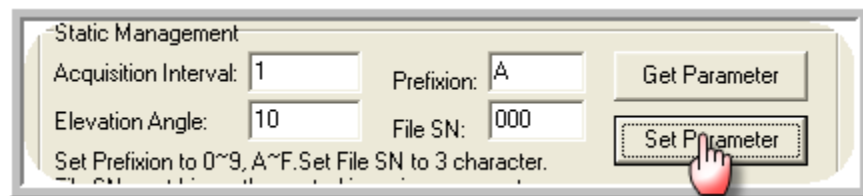
13. Go to the “**STATIC MANAGEMENT**” area of the software.



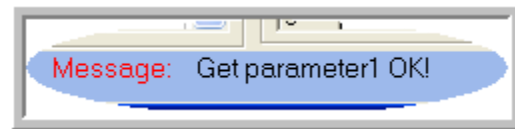
14. Set the appropriate settings in the:

- a. Acquisition interval = what epoch rate you desire to collect at.
- b. Elelevation Angle = Elevation Mask (Usually set to 10°).
- c. Prefixion = is the leading Character at the beginning of the file.
- d. File SN = this will designate the session and naming convention.

15. *“Single Click”*



- a. Check Message: If message states:



- b. *“Single Click”* “Close Port”:




16. Power Down TKO. *“Single Press and Hold”*



## Chapter 2 Collecting Static Data

1. Head to the field and Set up over desired Point.

2. **Power on TKO.** *“Single Press”* . 

3. Listen for  to say **“TRACKING”** then **“Tracked”**.

4. *“Double Press”*  

***You should hear!! 2 dings***

a. Then it will begin to Beep for every epoch of data the TKO is logging.

5. To Stop the Logging:

a. *“Double Press”* 

6. Power Down the TKO: *“Single Press and Hold”* 

## Chapter 3 Downloading/Converting to RINEX

1. Return to office and Power on computer and verify Internet connection.

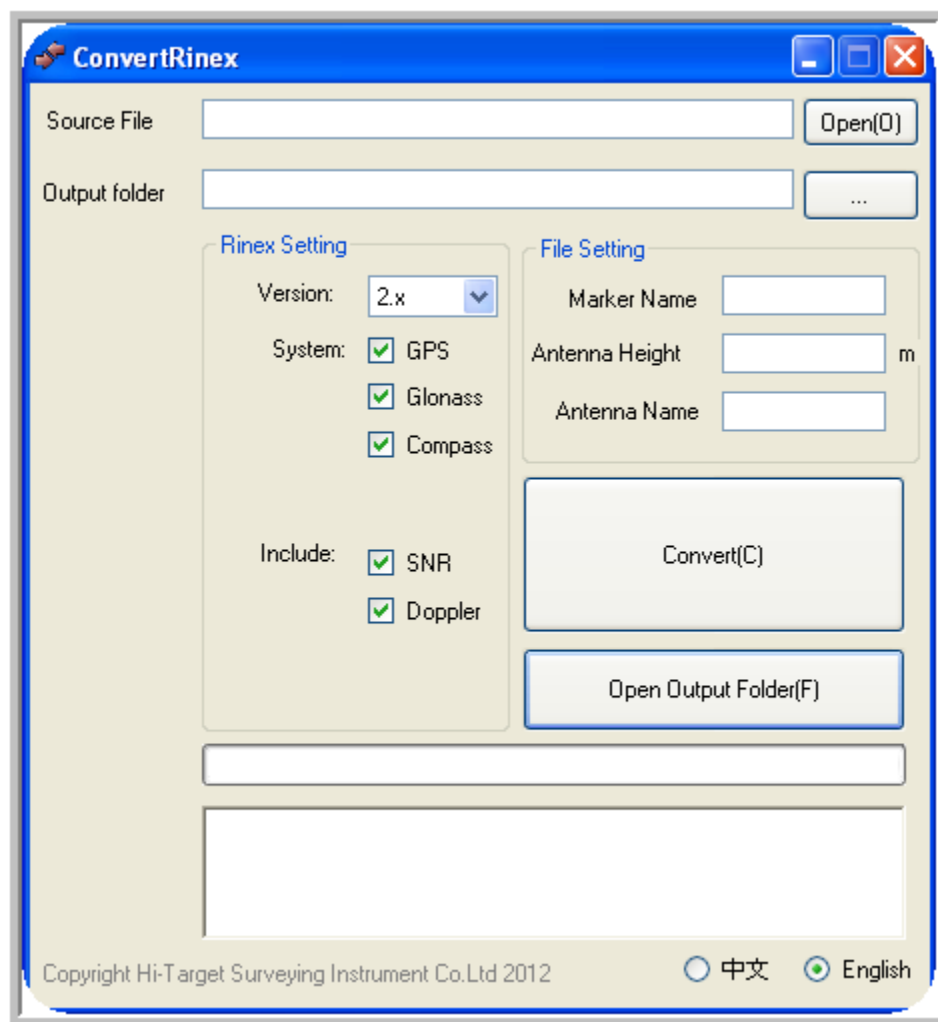
2. Power on TKO: *“Single Press”* . 

3. Plug in the Y-cable to the bottom of TKO **“COM1/PW1”** and utilize the USB connection from the Y-Cable to connect to PC.

4. Once connected:



- a. Navigate to the
  - b. **“Double Click” “GNSS Folder”** Select and copy your .ZHD file and place on your PC in desired location.
5. Navigate to the **HGO** Software and select **ConvertRinex.exe** through Start menu on your PC under all Programs.
6. **“Single Click”** the **ConvertRinex.exe**. This should appear:



7. **“Single Click”**:



in the **“Source File”** section and Navigate to

your **.ZHD** static file and select it.

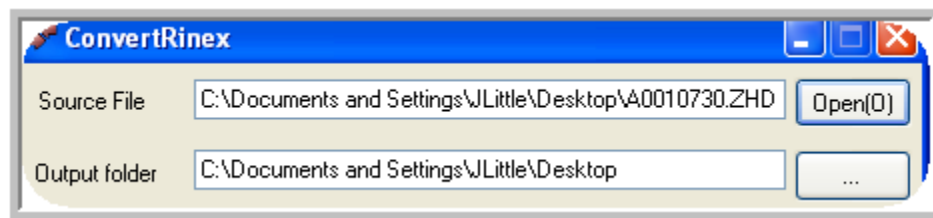
8. **“Single Click”**:



under the **“Output Folder”** section and Navigate

to where you want the **RINEX** file stored.

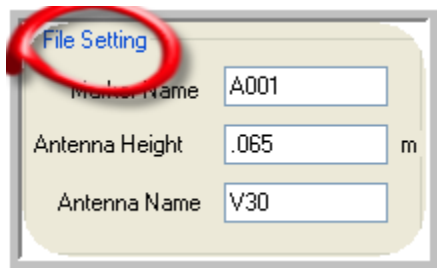
9. You should now see the paths of the **.ZHD** file in the Source file section and the path of the file to be stored in the output folder section as shown below:



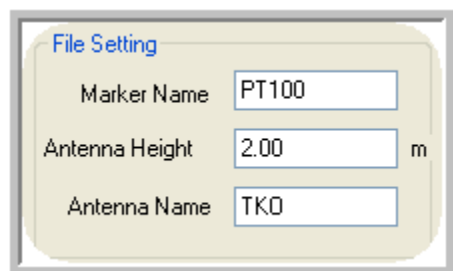
10. You

move to the: **File Settings** section.

can now

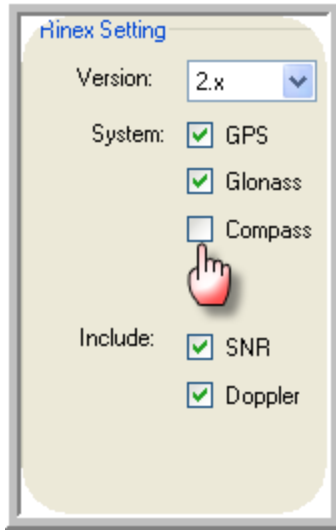


11. **Edit Settings:**



**Marker Name = what Point Number or Point Name you desire to have stored in the RINEX Header**

Bottom  
the  
12. Go

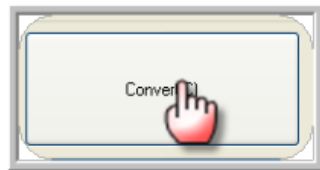


**Antenna Height = what antenna height you used to the of antenna mount ARP in meters.**

**Antenna Name = TKO so that it is correctly stored in RINEX header.**

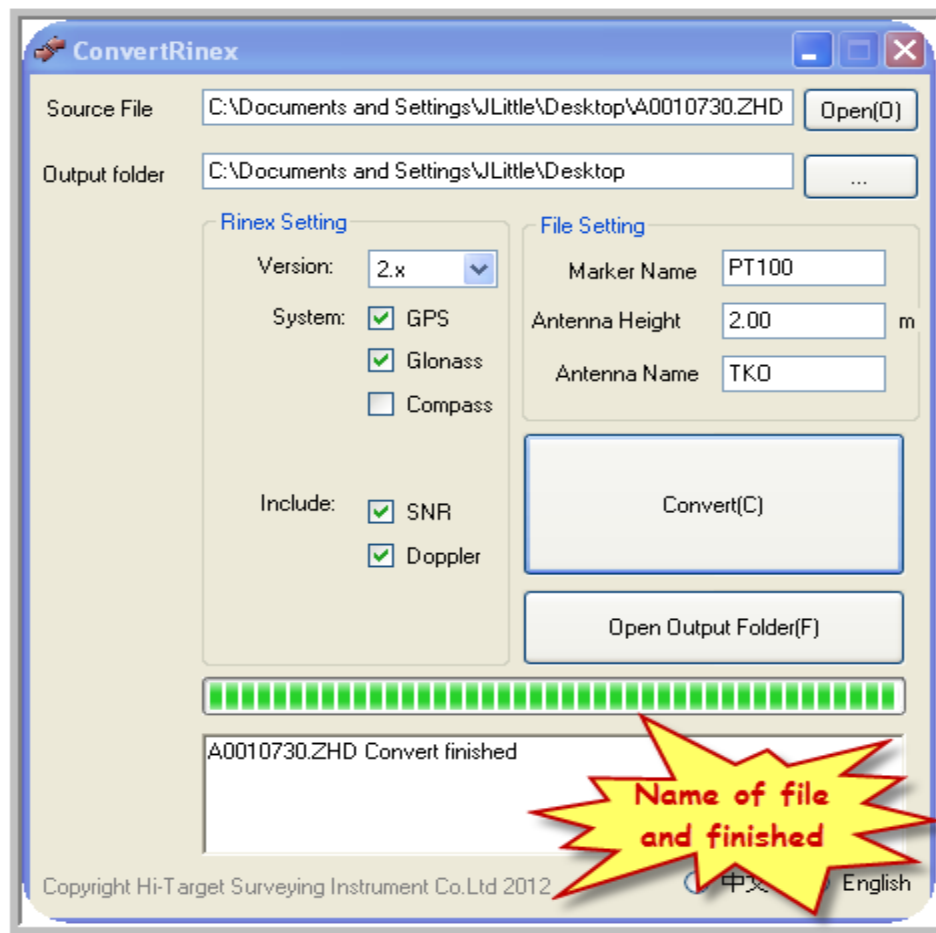
**to the RINEX Settings section: and UN-CHECK Compass:**

13. *“Single Click”*:






You should see this on your screen:




## Chapter 4 Submitting to OPUS

1. We are now ready to send RINEX file to OPUS:
  - a. Open internet browser
  - b. Go to: <http://www.ngs.noaa.gov/>
  - c. *“Single Click”*:

www.ngs.noaa.gov



NGS Home   About NGS   Data & Im



**Most Popular**

- Contact Us
- CORS
- Survey Mark Datasheets
- Geodetic Tool Kit
- NA2011
- OPUS
- Publications
- Geodetic Advisors
- Storm Imagery
- UFCORS

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2. You should be redirected to the OPUS Home Page.

www.ngs.noaa.gov/OPUS/

## OPUS: Online Positioning User Service

National Geodetic Survey

NGS Home | About NGS | Data & Imagery | Tools | Surveys | Science & Education

On September 6, 2011 NGS's CORS group released **revised coordinates** for all CORS sites. The new coordinates update both the gl

New Frames		Previous Frames	
IGS08	Epoch 2005.00	ITRF00	Epoch 1997.00
NAD 83(2011)	Epoch 2010.00	NAD 83(CORS96)	Epoch 2002.00
NAD 83(MA11)	Epoch 2010.00	NAD 83(MARP00)	Epoch 2002.00
NAD 83(PA11)	Epoch 2010.00	NAD 83(PACP00)	Epoch 2002.00

NGS is in the process of completing an **adjustment of the passive control network**. Until the adjustment is complete, OPUS will allow reference frames. Once the passive network is adjusted to NAD 83(2011, MA11, PA11) then the OPUS support for ITRF00 and NAD 83

**Choose a frame to upload your data:**

**for new frames, click below:**

- NAD 83(2011,MA11,PA11)
- Mexico(IGS08)
- epoch 2010.00
- International IGS08
- epoch of observation

**for previous frames, click below:**

- NAD 83(CORS96,MARP00,PACP00)
- epoch 2002.00
- ITRF00

3. *“Single Click”* which reference frame your data should be processed in.

**Choose a frame to upload your data:**

**for new frames, click below:**

- NAD 83(2011,MA11,PA11)
- Mexico(IGS08)
- epoch 2010.00
- International IGS08
- epoch of observation

**for previous frames, click below:**

- NAD 83(CORS96,MARP00,PACP00)
- epoch 2002.00
- ITRF00

4. Your page should look like the below:

www.ngs.noaa.gov/OPUS/index.jsp

# OPUS: Online Positioning User Service

National Geodetic Survey

NGS Home | About NGS | Data & Imagery | Tools | Surveys | Science & Education



**Upload your data file.**

Tie your GPS observation to the National Spatial Reference System.  
**What is OPUS? FAQs**

You selected 96 frame for processing your observation.

\* **Email address** - your solution will be sent here.

\* **Data file** of dual-frequency GPS observations. [sample](#)

no antenna selected

**Antenna type** - choosing wrong may degrade your accuracy.

meters above your mark.  
**Antenna height** of your antenna's reference point.

to **customize** your solution.

for data > 15 min, < 2 hrs.      for data > 2 hrs, < 48 hrs.

**This Page  
Should be  
visable**

5. Type in your e-mail address: This is what e-mail your results will be sent to.

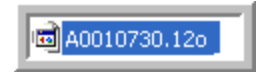
\* **Email address** - your solution will be sent here.

6. **“Single Click”**

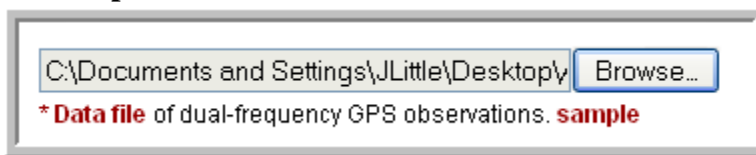


and navigate to and select your RINEX file.

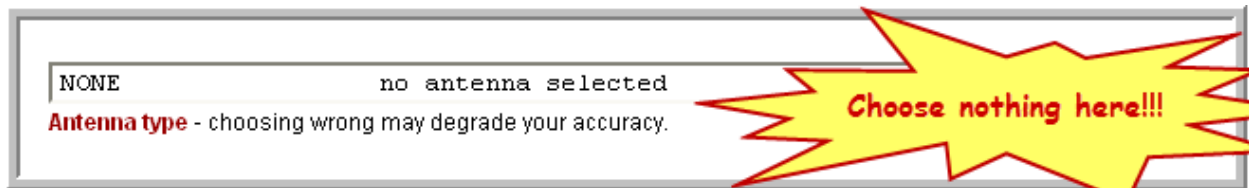
*It will have the 0 for observation in the end of the extension as shown here:*



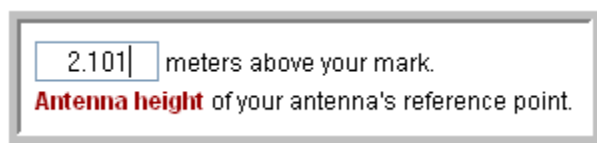
7. The file path should now be filled like this:



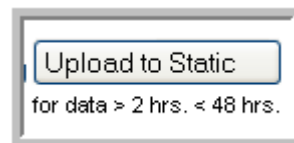
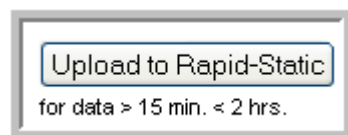
8. Do not choose antenna type: At this time we are currently working to have our Champion Receivers placed into the NGS database. We will inform you once this is completed.



9. Enter Your Antenna Height from the bottom of antenna ARP + APC offset which is currently 101mm. For example 2 m rod + 101mm = 2.101m as shown below:



This will get you to the correct position from APC to your mark on the ground correctly in the OPUS results.



10. Now select either **OR** depending on collection time and or desired precision. Please read the OPUS information to choose correctly.

11. Now you will receive conformation that your file has been sent:



**Upload successful!**  
You will receive an email when processing is complete.

**uploaded:**

data file	<b>A0010730.12o</b>
converted to	<b>a001073p.12o</b> (RINEX format)
antenna type	<b>NONE</b>
antenna height	<b>2.101 meters</b>
email address	<b>jlittle@egps.net</b>
processor	<b>Rapid-Static</b>

**Solving with:**

solution format	<b>Standard</b>
base sta. used	--
base sta. excluded	--
state plane zone	<b>AUTO</b>
geoid model	<b>Geoid09</b>
project ID	--

[return to OPUS](#)

Thank you for using OPUS!

## 12. Check e-mail

- a. **Open and review results: As per the NGS guidelines.**
- b. **Choose your coordinates from correct reference frame.**

***You are Finished!!!***