RTK Rover Workflow for Eclipse OEM

Part Number 874-0002-000 Released August 27, 2010

I'M AN EXPERT:

- Power on

- Provide corrections to any receiver port in ROX, RTCMv3, CMR or CMR+ format

- The **GPGGA** and **GPGST** messages will show the RTK rover solution and accuracy, respectively

I'M A NOVICE:

A. Apply power to the receiver

B. Check **$JAPP** to ensure **RTK** application is running

C. Check **$JK** to ensure the subscription code is ready to work as an RTK rover (**3004** or **3005**)

D. Ensure the corrections are being received on a receiver port in either ROX, RTCM version 3, CMR or CMR+ format at the correct baud rate

E. Monitor the quality indicator, correction age, and reference station ID number in the **GPGGA** message for performance. Monitor the standard deviations of latitude, longitude, and height from the **GPGST** message to determine positioning accuracy.

WALK ME THROUGH IT SLOWLY:

1. Place the GPS antenna outside in an open area where it will be able to track as many satellites as possible.

2. Connect the antenna to the antenna cable, and then connect the cable to the receiver.

3. Apply power to the receiver.

4. Connect your PC COM port to the receiver's port. Port A will be used in this workflow.

5. Select software to communicate with the Eclipse. SLXmonDF or HyperTerminal can be used, along with other choices. If you have trouble connecting, ensure you are selecting the right port and baud rate, and ensure the correct cables are connected properly.

6. Once connected, from a screen that allows commands to be sent to the receiver, send a **$JAPP** command. The response may be like this:

   `$>JAPP,RTK,WAASRTKB,1,2`

   The important item is that **RTK** appears immediately after **$JAPP**. If the word **RTK** is in

the text but not as the first application (see below), you will have to switch applications inside the receiver:

```
$>JAPP,WAASRTKB,RTK,2,1
```

To switch applications, issue `$JAPP,OTHER` to the receiver and it will reboot in the new application. You may need to reconnect your PC software once this happens.

If the `RTK` application is not installed on the receiver, you will have to do that before you can have it work as an RTK rover. Consult your dealer or Hemisphere GNSS Technical Support for more details.

7. Once you have confirmed the `RTK` application is active, issue a `$JK` command to ensure the subscription code is ready to work as an RTK rover. The response will be something like this:

```
$>JK,01/01/3004,04
```

The number `3004` here is important. This is the subscription code. If the code is `3004` or `3005`, the receiver will be able to work as an RTK rover. If the number is not one of these two values, contact your dealer or Hemisphere GNSS Technical Support. They will need to have all of the information from the response to the $JI command. For example:

```
$>JI,1800072,1,7,30062008,01/01/1900,01/01/3000,1.5L,46
```

8. Once you have confirmed that the subscription code is capable of working as an RTK rover, you are ready to start receiving corrections on one of the ports. This workflow will use Port B for receiving corrections.

9. Ensure your corrections port is set to the correct baud rate. You can use `$JSHOW` to verify what it is currently set to, or you can just re-define it as needed. For example, assuming you are connected to Port A through your software, issue `$JBAUD,9600,OTHER` to set Port B to 9600 baud.

10. Typically corrections are transmitted over a radio modem link from the base to the rover. Ensure the rover radio modem device is set to the correct baud rate and is ready to receive corrections. Ensure the radio antenna is connected properly and is located in an appropriate location. Apply power to the radio modem. Connect the radio modem data port to the GPS receiver's correction port (Port B for this workflow).

11. The RTK corrections are in a certain format. The receiver accepts 4 different correction formats. Use ROX format (Hemisphere GNSS proprietary) for the highest performance of your RTK system – it is best suited for use with all-Hemisphere GNSS equipment. Use RTCM version 3 format when you may be using GPS from Hemisphere GNSS and also from some other manufacturers. If the other GPS receivers do not support RTCMv3, use CMR or CMR+ format – these formats will have the slowest RTK performance on your Hemisphere GNSS rovers.

12. The Eclipse RTK rover will automatically sense which correction format is being received and will start functioning as an RTK rover.

13. You can issue the `$JASC,GPGGA,1` and `$JASC,GPGST,1` commands to watch the performance and accuracy of the RTK rover.

Watch the quality indicator, correction age, and reference station ID number in the **GPGGA** message for RTK performance. The quality indicator will be **4** when RTK is working properly. If it is **2** you should check the correction age to ensure the radio modem link is receiving corrections consistently. If it is **1** then no corrections have come through and you should ensure the baud rates are correct at the rover GPS receiver, rover radio modem, base radio modem, and base GPS receiver. The correction age should be **1**, representing 1 second of delay since the last correction was received – this should be steady at 1 if your radio modem link is working properly. If it starts counting up, your link is not stable. The reference station ID number will indicate the identification number of the base station that is being used. If it is blank, then you likely have not received any corrections yet and you should check the radio link.

Watch the standard deviations of latitude, longitude, and height from the **GPGST** message to determine positioning accuracy. They are in meters. Under proper RTK operation, the values should be around 0.010m, representing centimeter level accuracy.

NOTES ON RTK ROVER OPERATION:

Your Hemisphere GNSS RTK rover receiver can provide information about the base station. Issue **$JRTK,17** to see the latitude, longitude, and height of the base station. You can also display the distance to the base station (in meters) by issuing the **$JRTK,18** command.

FURTHER INFORMATION:

Consult www.HemisphereGNSS.com for the latest information, or contact your dealer.

For support via email, please contact TechSupport@HemisphereGNSS.com