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Juno Series Handhelds: Ensuring Best Performance

This Support Note describes how to ensure best performance from the Juno™ series handhelds—small field computers with an integrated GPS receiver. This document includes recommendations for orienting the receiver, techniques for collecting data, and conditions for postprocessing data.

This Support Note covers the Juno SB and Juno SC handhelds only. It does not apply to the earlier Juno ST handheld.

Orienting the receiver

The Juno series handheld is designed to be used with the antenna non-horizontal, and with a clear view of the sky. For best performance, Trimble recommends that you orient the handheld vertically while recording GPS positions.

Note: *The antenna for the Juno SB and SC handhelds is located at the top center of the handheld.*

The integrated GPS receiver will track satellites if it is used in a non-horizontal orientation, for example, if you carry it in a shirt or pants pocket, but this is not recommended. If you use the receiver in this way it may not necessarily alter the number of satellites tracked, but it can significantly increase the number of weak and multipath signals received, which can degrade the accuracy of GPS positions.

Logging data

- Collect multiple positions for a static feature. This helps to improve accuracy by averaging out the errors in individual GPS positions.
 - When collecting point features or vertices, Trimble recommends that you log GPS data for at least 30 seconds, using a 1-second logging rate.
 - In heavy canopy, or other difficult environments, Trimble recommends that you log data for 1 - 2 minutes.
- Pause briefly (5 - 10 seconds) before you log a point feature or vertex. This gives you time to ensure that the receiver is correctly located over the feature that you are mapping.

It also allows the receiver to “settle” so that positions are not influenced by the receiver’s recent movement.

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Postprocessing data

- To collect data for postprocessing, use one of the following:
 - TerraSync™ software version 3.30
 - GPSCorrect™ extension for ESRI ArcPad software, version 2.42
 - An application developed with GPS Pathfinder® Tools SDK version 2.32
- You cannot postprocess data that was collected in GPS field software using the NMEA protocol.
- For standard differential postprocessing, you must use one of the following, each with the latest updates applied:
 - GPS Pathfinder Office software version 4.10
 - GPS Analyst™ extension for ESRI ArcGIS Desktop software, version 2.10
- The accuracy of positions using a Juno series handheld is within 2 to 5 meters, whether it is corrected in real-time or postprocessed. The accuracy cannot be improved beyond this by postprocessing real-time SBAS corrected positions. However, if your data files contain autonomous (uncorrected) as well as corrected positions, Trimble recommends that you postprocess the data. During postprocessing you can choose whether to correct only autonomous positions or all positions.
- The Juno series handhelds do not output carrier data, so you cannot use carrier postprocessing techniques.
- The Juno series handhelds are designed to receive all GPS signals, to maximize yield of positions in tough GPS environments. However, in tough environments such as under tree canopy and urban locations, the receiver may also receive a number of reflected signals, known as multipath. Postprocessing positions where a large amount of multipath is present may actually lower the accuracy, as the errors present in these reflected signals may get magnified. Based on the environment and the existing accuracy of your positions you should decide whether postprocessing is required.

Tips

- Where possible, select Base Providers that are nearby and that have a high Integrity Index value, and that log 1-second data.
- You cannot alter GPS settings when collecting data in the field with a Juno series handheld. If required, you can apply PDOP, and Elevation and SNR masks during differential correction in the GPS Pathfinder Office software, or in the GPS Analyst extension. However, because this may result in decreased yield of positions and/or degrading of position accuracy, Trimble recommends that you use the default setting of *Use data collection filter settings*.