

AREA CALCULATION TIPS FOR SELECTED GARMIN GPS RECEIVERS

(Etrex Venture, Legend, & Vista models; and all Rino models)

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The owner manuals for Garmin GPS receivers provide only minimal information about the area calculation features of these versatile units. The information below, drawn largely from field-testing experience, is intended to help maximize your unit's usefulness as an area measurement tool. First become generally familiar with your receiver's operations, then try out some of these suggestions. If you have questions or suggestions, please contact Mike Clifford at frogholler@tds.net .

General

- The **Legend** and **Vista** models have the capability of calculating land area in two distinct ways:
 - 1) utilizing the **track log** that you generate by traveling the tract perimeter.
 - 2) estimating area from a **route** that you create from perimeter waypoints.The **track log** method is only method available on the **Venture** and **Rino** models. Details of the advantages and techniques for both methods are discussed below.
- Update your software. The Garmin website [www.garmin.com] provides free software updates for these models. To maximize your unit's area measurement capabilities and other features, be sure that the latest software version is installed in your receiver. To check this, go to: MAIN MENU > SETUP > SYSTEM > highlight & click on Option Menu button at the top > select & click on SOFTWARE VERSION. If needed, download the latest software version to your computer, then upload it to your receiver using the supplied* PC connector.
- Enabling WAAS (Wide Area Augmentation System) will usually improve accuracy of your unit's area calculations. However, if you have difficulty in maintaining contact with the WAAS satellite (#35 in our area) because of tree cover or other terrain obstacles, you may be better off to disable WAAS. To enable/disable WAAS, go to: MAIN MENU > SETUP > SYSTEM > WAAS.
- Wait for accuracy after turning on your receiver. Before marking waypoints or laying tracks, give it time (usually just a minute or two) to "settle down" and make full contact with the available satellites. When the accuracy reading on the satellite page becomes relatively steady - usually at 20-25 ft (6-8 m) or so - then you are ready to put it to work. If WAAS is enabled, wait until satellite #35 is providing differential correction - small D's will show up on several satellite strength bars. You should then get accuracy readings of about 10 ft (3 m) in the open with a clear view of the southern sky.
- These GPS models allow measurements to be displayed in your choice of units. Go to: MAIN MENU > SETUP > UNITS > DISTANCE/SPEED to initially select from Nautical, Statute, Metric, and Yards. If you wish to change from one measurement system to another, your receiver will automatically and instantly handle the conversions.
- Once your receiver has performed an area calculation, whether by track or route, you can instantly convert the solution to variety of other units. Options are: square feet, square yards, square meters, acres, hectares, square kilometers, square miles, and square nautical miles.

Track Log Method (Etrex Venture, Legend, & Vista models; and all Rino models)

- As you travel the perimeter of an area, the GPS unit records track points and uses the resulting GPS track log to internally calculate the size of the enclosed tract. This method works well when you can reasonably transport the receiver directly along the boundary of the tract.
- On small and irregularly shaped tracts of land, you might want to increase the track log interval - the frequency at which tracks points are recorded. Otherwise, you will lose accuracy when the receiver occasionally "cuts corners" as you travel the boundary. Go to: MAIN MENU > TRACKS > highlight & click on Option Menu button at the top > select SETUP TRACK LOG. You have choices here. The default setting for Record Method is: *Auto* (a combination of distance and time) and Interval: *Normal*. If you choose to keep the *Auto* setting, you can set the Interval to *More Often* or *Most Often* to increase the frequency of track points. Instead of *Auto*, you can choose to record by *Distance* or *Time*, each with its own Interval choices.
- Generally you should clear the current active track log just before you begin laying tracks. Go to: MAIN MENU > TRACKS > CLEAR. [If you wish to save the previous track log, first select SAVE, then clear the log].
- Now go to: MAIN MENU > ACCESSORIES > AREA CALC. Click on START and begin traveling along the perimeter of the tract. The screen displays your progress. Zoom in or out as appropriate to view your tracks. Slightly before you return to your starting point, click on STOP. Your receiver will automatically complete the loop with a straight shot from your current position to your starting point. Both perimeter distance and enclosed area will be displayed in appropriate units. To change area units, highlight and click on the unit abbreviation to bring up a selectable list of choices.
- If the calculated solution is of value to you, name and SAVE the track. However, **before** you hit save, you should record the data elsewhere. Once a track log is saved, the total number of track points is condensed (to max. of 750) and less precision is displayed (fractions are rounded to one decimal point). The eTrex models allow a maximum of ten saved tracks; the Rino models allow up to twenty saved tracks.
- Don't despair if heavy tree cover causes you to occasionally lose contact with the satellites as you track. These receivers will "connect the dots" and link your recorded track points in an attempt to estimate the enclosed area. View the saved track screen to decide whether or not the integrity of the track was maintained.
- To view all of your saved tracks, go to: MAIN MENU > TRACKS. Highlight and click on the desired track. Note that these GPS models will loop the starting and ending points in an attempt to calculate acreage on **all** saved tracks, even those not intended for area measurement. These unintentional calculations are usually of little value.

Route Method (Etrex Legend and Vista models only)

- For area calculation purposes, a route is a sequential set of perimeter waypoints linked together to describe the boundary of a tract of land. The route method of area calculation has some definite advantages. You don't need to travel along the entire border of the tract, as long as you can mark the major corners and turns of the boundary line. For very large tracts and for areas with severe terrain restrictions, this may be the only practical GPS technique in the field. The route method also allows you to perform estimated acreage comparisons of several tracts while in the field.
- Accuracy of the route method depends largely on your ability to locate and mark all the key twists and turns that enclose the tract. It works best on rectangular areas with straight-line boundaries. Irregularly bordered, oddly shaped tracts are more difficult to work with, requiring a much larger number of waypoints to accurately describe the tract. Recent software updates have increased the maximum number of waypoints allowed in creating a route.
- To set up a route for area calculation, first mark and save the key perimeter waypoints that you will need. Go to: MAIN MENU > ROUTE. Click on NEW and then on the highlighted blank to insert the first waypoint. Continue adding sequential waypoints until the route is complete.
- You are not required to re-enter the starting point again as the ending point. Your receiver will automatically close the loop for you when calculating route area.
- To view the resulting area calculation, highlight & click on the Option Menu button and select Route Area. You can display the solution in whatever units you select.
- The route is automatically assigned a name consisting of the first and last waypoint. You can highlight this name and change it as you wish.

MapSource Area Calculation

MapSource is Garmin's line of digital mapping products. These are the (only) maps that you can actually download from your computer into your Garmin receiver. Waypoints, tracks, and routes can be moved back and forth between MapSource and your GPS unit using the supplied* PC connector. MapSource also serves as an accessible storage medium for GPS data. A recent MapSource update has added some very useful area calculation and display features that compliment your GPS receiver's capabilities.

* Rino 110 package does not include a PC connector, but it can be purchased separately. Note that all Rino models use PC connector # 010-10326-01. All Etrex models use PC connector #010-10206-00.

Additional references:

www.gpsinformation.net/

www.gpsinformation.org/dale/wgarmin.htm

www.garmin.com