XF2 Data Controller – Enable Internal GPS Module

Part Number 874-0305-000 Released: February 13, 2013

Overview

This document describes how to enable and use the internal GPS module in the XF2 data collector. It describes how to select the COM Ports and Baud rates to output GPS data from the XF2's internal GPS module to software programs installed on the XF2 data controller that can include the u-Center Mobile GPS Evaluation software and the Carlson SurvCE software.

Equipment and Software Required:

- Hemisphere GNSS XF2 Data Collector, Part Number: 940-2097-000
- Carlson SurvCE software, Part Number: 750-2008-000
- u-Blox u-Center Mobile software

The free ublox Mobile Terminal Application – GPS Evaluation software can be downloaded from the following link: http://www.u-blox.com/en/evaluation-tools-a-software/u-center/u-center-

Unzip and install the ublox mobile u-Center software onto the XF2 using the USB cable and Windows Mobile Device Center software.

The Carlson SurvCE software can be downloaded from the following link:

http://www.hemispheregps.com/Products/SurveyConstruction/S320LandingPage/tabid/640/Default.aspx

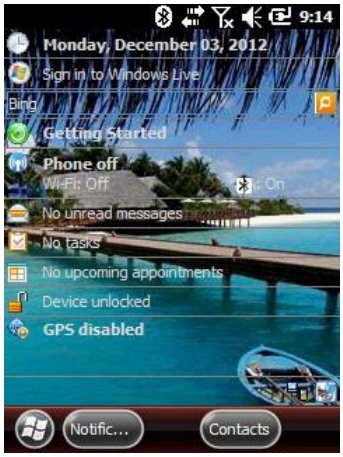
From the S320 Landing page, the SurvCE software can be downloaded from the **Resources**, **XF Series Data Collectors** area.

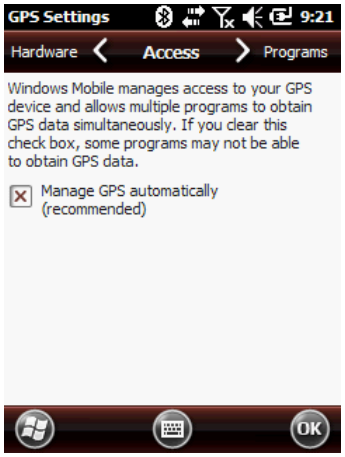
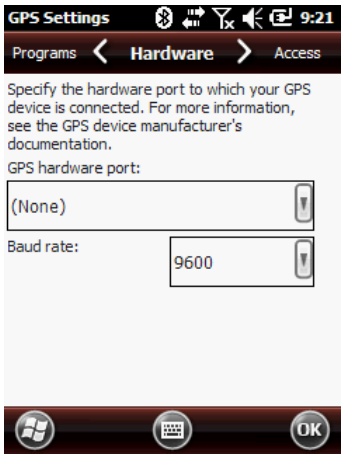
- **SurvCE Software Download for XF2 (English and Spanish)**

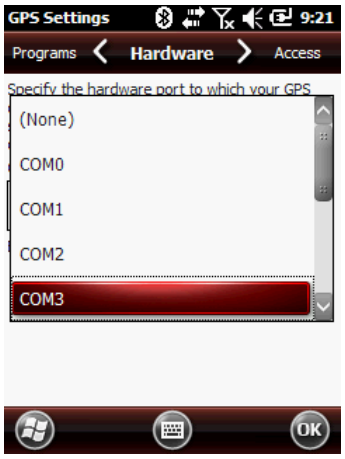
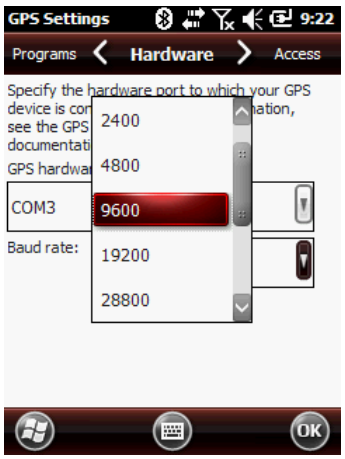
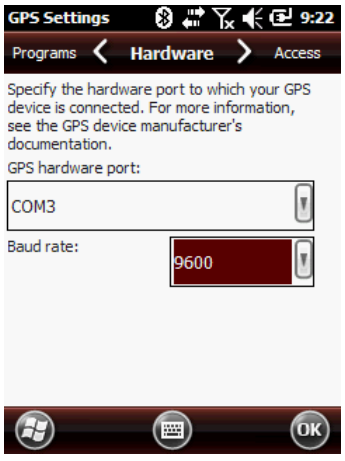
For the XF2 Data Collector, download the file: XF2_SurvCE_ENG_SPA.zip

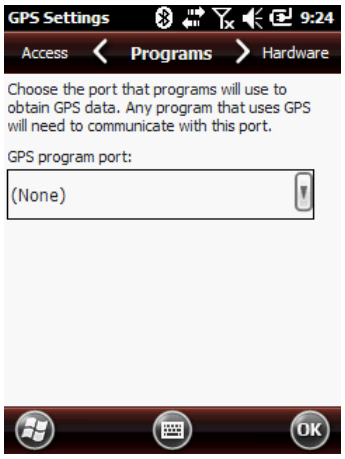
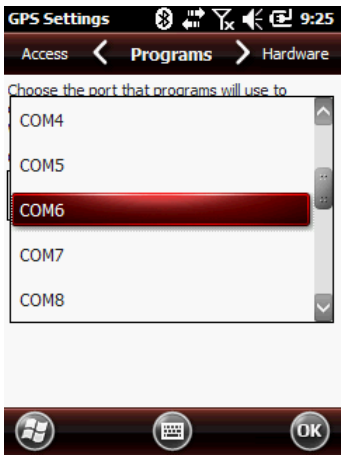
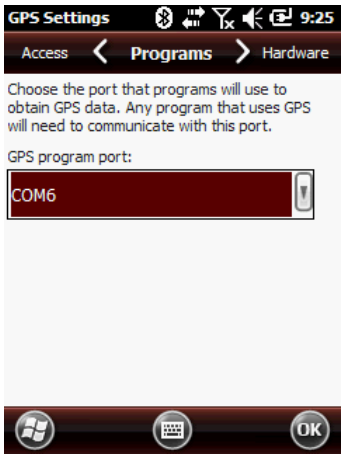
Unzip and install the Carlson SurvCE software in the preferred language onto the XF2 using the USB cable and Windows Mobile Device Center software.

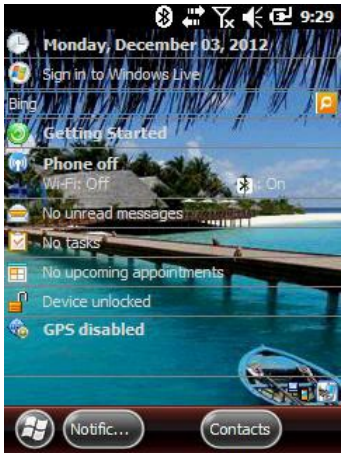
Procedure

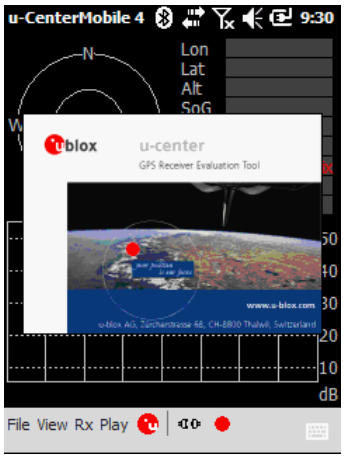
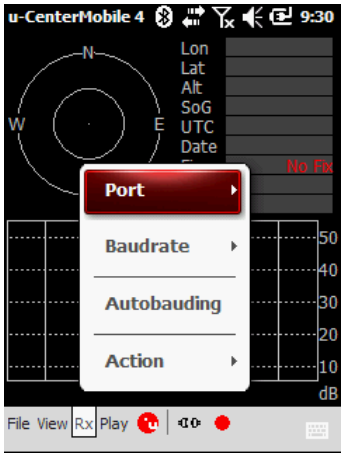
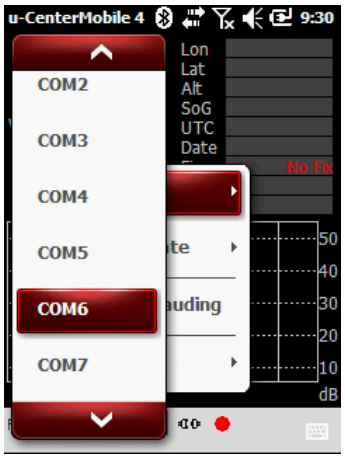
Screenshot or Graphic	Step
	1. Press the Power button the XF2 data collector, turning the XF2 unit On, 2. From the Windows Mobile Desktop, tap/select the Windows Start icon on the lower left corner of the task bar,
	3. From the **Start** menu, navigate to the **Settings** icon, tap/select **Settings,**
	4. From the **Settings** menu, navigate to the **System** icon, tap/select **System,**

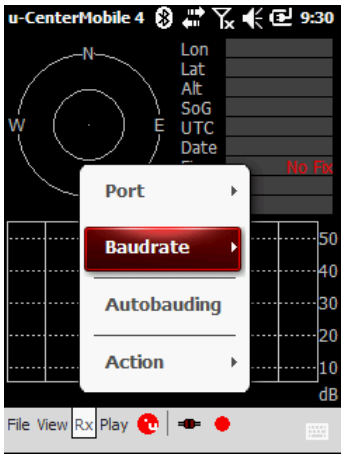
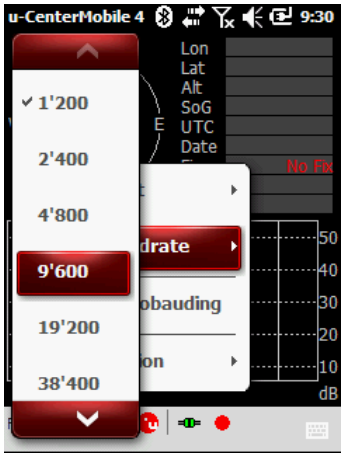
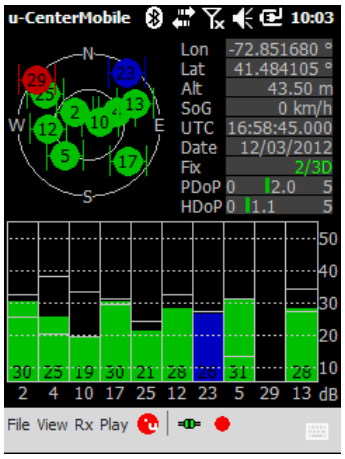
Screenshot or Graphic	Step
	5. From the **System** menu, navigate to the **External GPS** icon, tap/select **External GPS,**
	6. From the **GPS Settings** menu, select the **<Access>** menu, 7. Activate the **[X] Manage GPS automatically (recommended)** option,
	8. From the **GPS Settings** menu, select the **<Hardware>** menu, From **GPS hardware port: (none)** option, tap/select the down-arrow to reveal the COM port options,

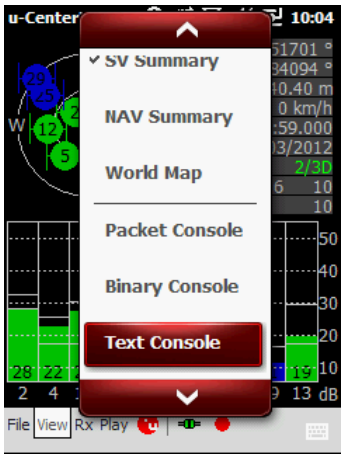
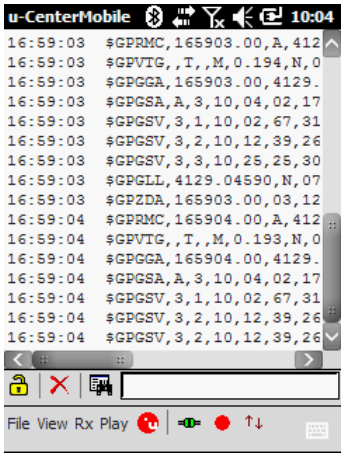
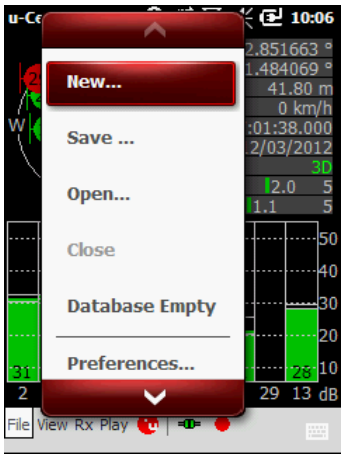
Screenshot or Graphic	Step
	9. From the **GPS Hardware port:** COM port options, tap/select **COM3,**
	10. From the **GPS Hardware port:** **Baud rate:** option, tap/select the down-arrow to reveal to Baud rate options, select **9600,**
	11. **GPS Settings** **<Hardware>** **GPS hardware port: COM3** **Baud rate: 9600**

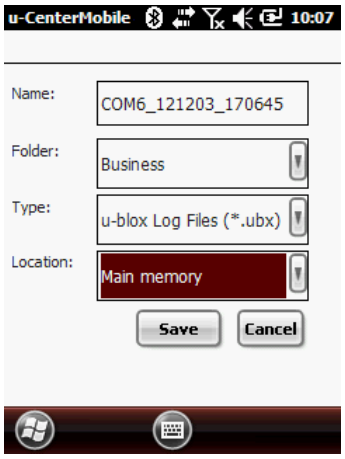
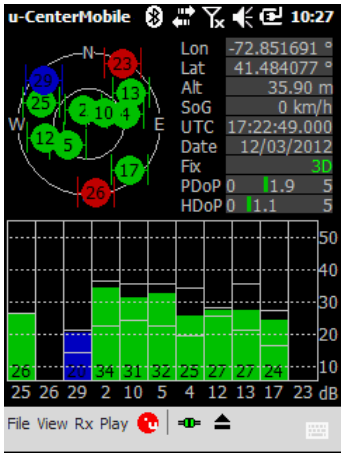
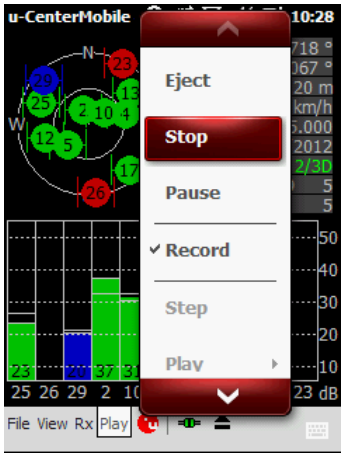
Screenshot or Graphic	Step
	12. From **GPS Settings** menu, select **<Programs>** menu, From **GPS program port: (none),** tap/select the down-arrow to reveal the **Port** options,
	13. From the **GPS Program Ports** options, tap/select **COM6**
	14. **GPS Settings** **<Programs>** menu **GPS program port: COM6** Tap/Select the **OK** button on the task bar.

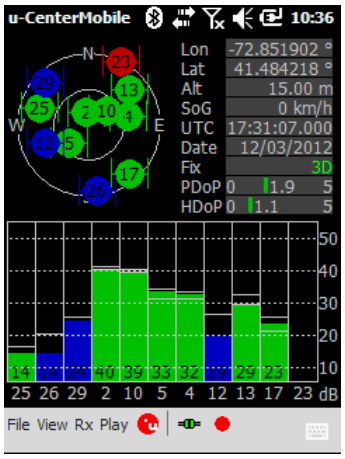
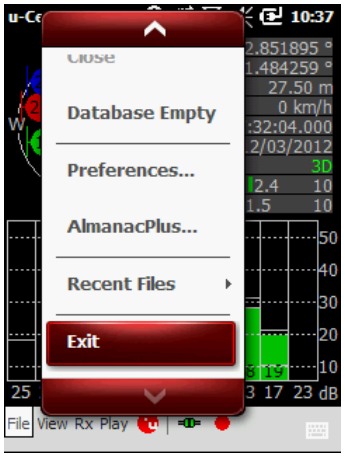
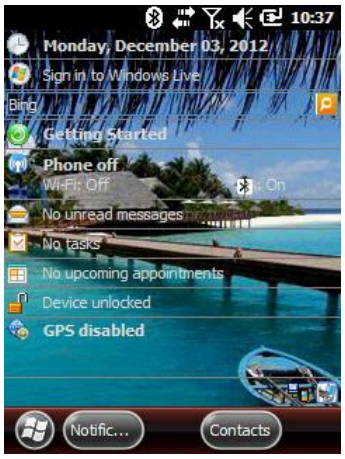
Screenshot or Graphic	Step
	15. User is returned to the **System** menu, Tap/Select the **(X)** icon on the task bar. The user will be returned to the Windows Mobile Desktop. **This completes the required steps to enable the internal GPS module on the XF2 data controller.**
	**The following steps describe how to view GPS satellite data and record log files in the u-Center Mobile software.** *The following steps presume the u-Center Mobile software has already been installed on the XF2 data collector.* 1. From the Windows Mobile Desktop, tap/select the Windows Start icon on the lower left-corner of the task bar,
	2. From the **Start** menu, navigate to the **u-Center Mobile** icon, tap/select **u-Center Mobile,**

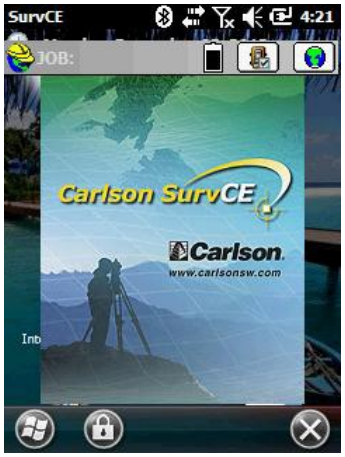
Screenshot or Graphic	Step
	3. **U-Center Mobile 4** splash screen,
	4. From the **u-Center Mobile 4** software, From the task bar menu along the bottom of the display, tap/select **RX** menu, The **RX** menu will pop-open, Tap/Select **Port >**
	5. From the **Port >** menu Browse the Ports list, select **COM6**

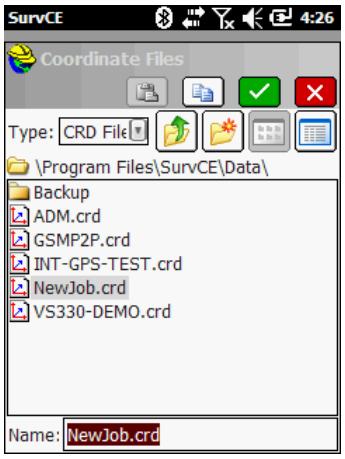
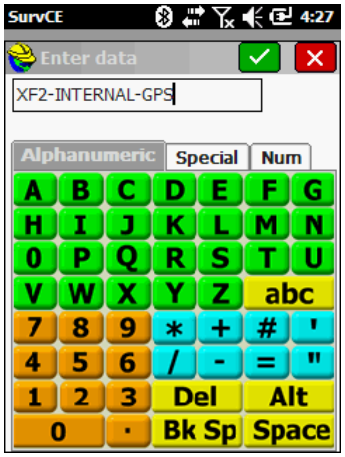
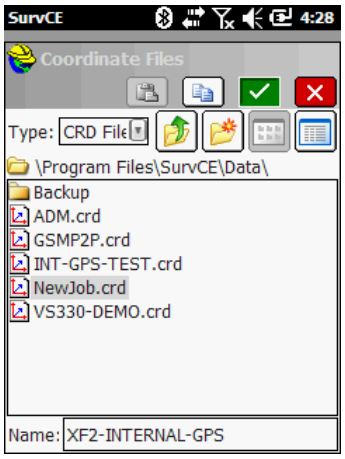
Screenshot or Graphic	Step
	6. From the **u-Center Mobile 4** software, From the task bar menu along the bottom of the display, tap/select **RX** menu, The **RX** menu will pop-open, Tap/Select **Baudrate >**
	7. From the **Baudrate >** menu, Browse the list, select **9600**
	8. The u-Center Mobile software will connect to the internal GPS module in the XF2 data controller. The user should observe live/active GPS data being displayed in SV Summary menu. Note the Green (active) connection icon on the task bar. To disconnect from the internal GPS module, tap on the connection icon on the task bar. The connection icon will separate, disconnect from the internal GPS module. To restore the connection, simply tap on the connection icon again. This will refresh the display.

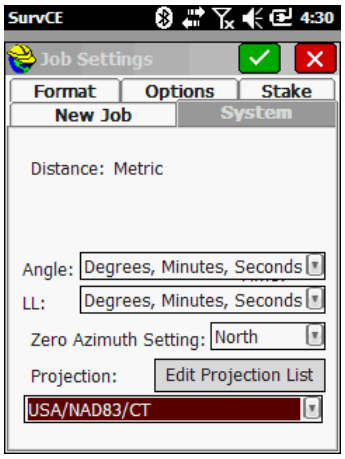
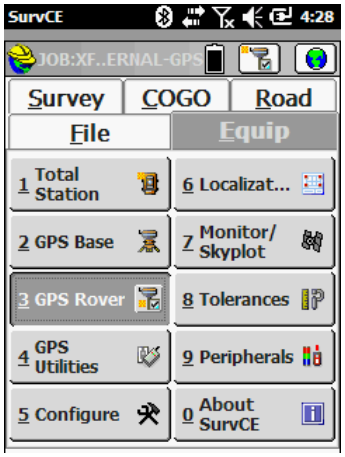
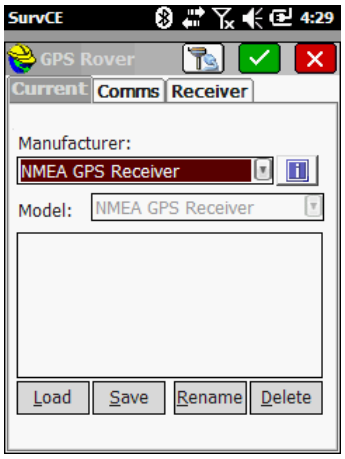
Screenshot or Graphic	Step
	9. From the u-Center Mobile software, From the task bar menu along the bottom of the display, tap/select **View** menu, The **View** menu will pop-open, Browse the list, select **Text Console,**
	10. Example **Text Console** display, The current GMT time with corresponding NMEA message sentences are displayed. The NMEA messages include: GSA,GSV,GLL,ZDA,GGA and VTG. To change the View, tap/select **View** on the task bar menu, select **SV Summary,** or select other available views,
	11. To capture Log Files from the internal GPS module in the XF2, tap/select **File** from the task bar menu, ***Note, the Log files consist of a series of NMEA messages output by the internal GPS module.*** 12. From the **File** menu, browse the list, select **New…**

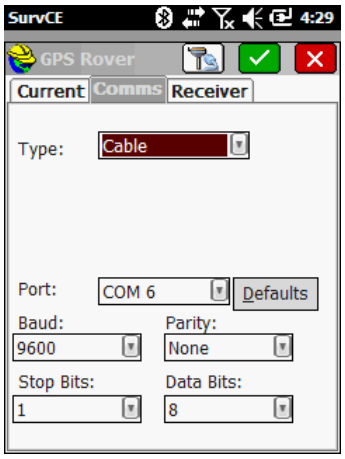
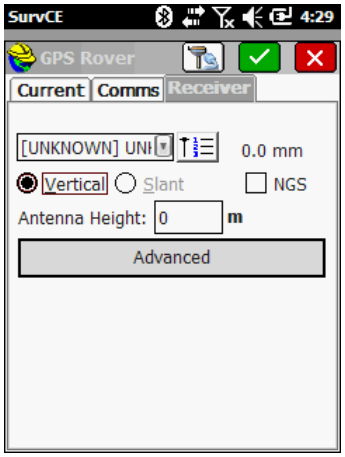
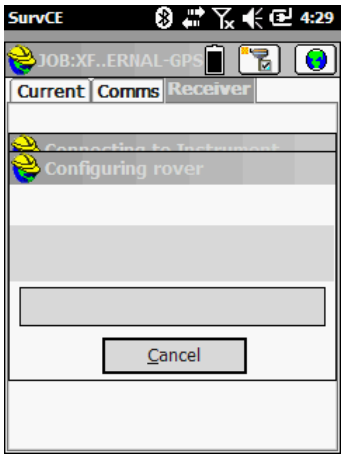
Screenshot or Graphic	Step
	13. New File configuration menu, **Name:** S/w automatically names the file: COM6_MMDDYR_GPS Seconds of the Week format. The filename can be change by the user if required. **Folder:** tap down-arrow to select Folder. **Type:** u-blox Log Files (*.ubx) **Location:** Select from options: **Main memory** or **Storage Card** Note: If Storage Card option is selected, the user must insert a Micro SD-Card into the XF2 battery compartment. Tap/Select **Save** Log File is opened and stored in specified folder location.
	14. From the SV Summary display, note the Green connection (Active) icon and the Record File icon on the task bar.
	15. To stop the data collection, close the Log file, on the task bar tap/select **Play** Browse the list, select **Stop.** Alternatively, the user can also tap/select the **Play** icon on the task bar, toggling the icon to **Stop.**

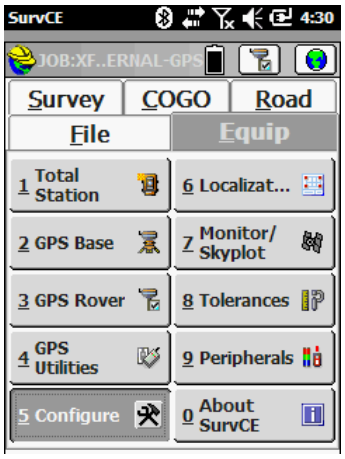
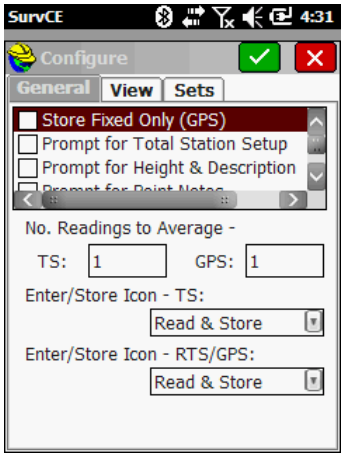
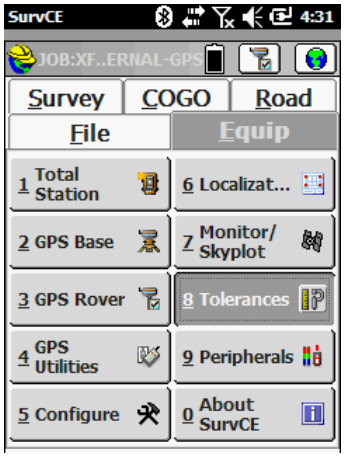
Screenshot or Graphic	Step
	16. From the **SV Summary** menu, Note the u-Center Mobile is still connected to the internal GPS module green (active) connection icon, but the software is not currently logging a file; the red circle icon is displayed on the task bar. To start a new Log file, tap the Red circle icon on the task bar, the new file menu will be displayed to the user, tap/select **Save,** a new log file will be opened, NMEA messages recorded into the log file.
	17. To exit from the u-Center Mobile software, tap/select **File,** browse the list, select **Exit** 18. The user is returned to the Windows Mobile Desktop. 19. If needed, the u-Center Mobile Log files can be copied from the XF2 data controller to the office PC using USB cable and Windows Mobile Device Center software.
	1. The following steps describe the steps to output data from the XF2's internal GPS module to the Carlson SurvCE software. *The following steps presume the Carlson SurvCE software has already been installed on the XF2 data collector.* 2. From the Windows Mobile Desktop, tap/select the Windows Start icon on the lower left-corner of the task bar,

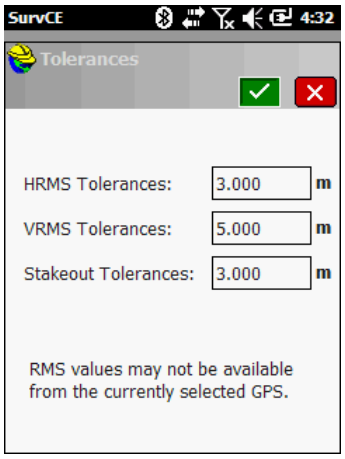
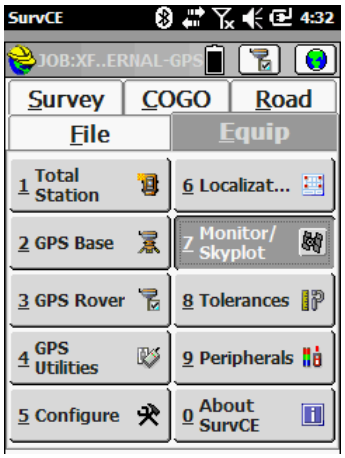
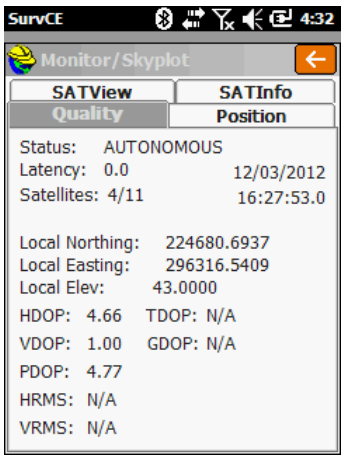
Screenshot or Graphic	Step
	3. From the **Start** menu, navigate to the **SurvCE** icon, tap/select **SurvCE,**
	4. Carlson SurvCE splash screen,
	5. From the **File** menu, Select from the two available options, Continue Last Job Select New/Existing Job, In this Example, choose: Tap/select **Select New/Existing Job**

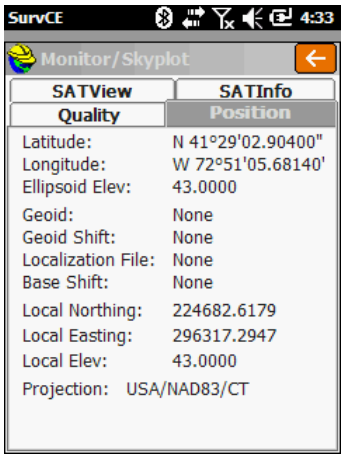
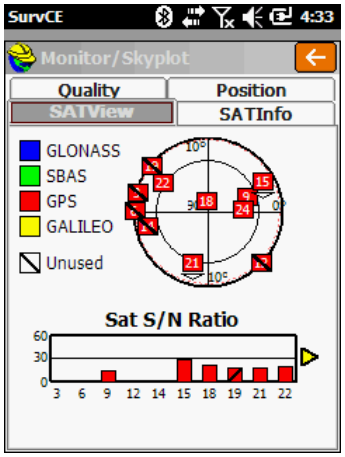
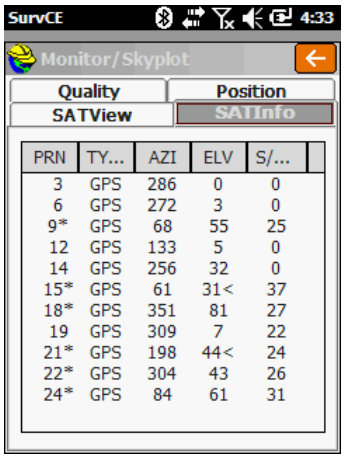
Screenshot or Graphic	Step
	6. From the **Coordinate Files** menu Tap/Select into the **Name:** template,
	7. The virtual keyboard will pop-open, Using the stylus, tap into the Name template, enter a new job name, when finished entering a suitable job name, tap the green check mark, the virtual keyboard will close.
	8. From the **Coordinate Files** menu, **Name: XF2-Internal-GPS** The name of the new job has been entered, tap the green check mark again, Select the Linear Units for the new job. In this example: Metric was selected.

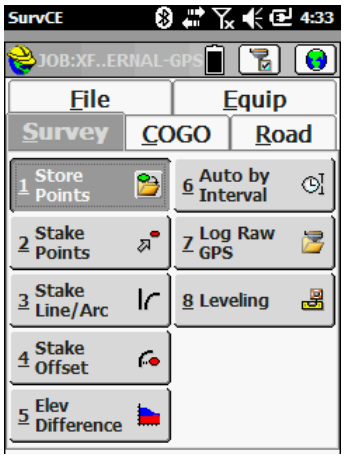
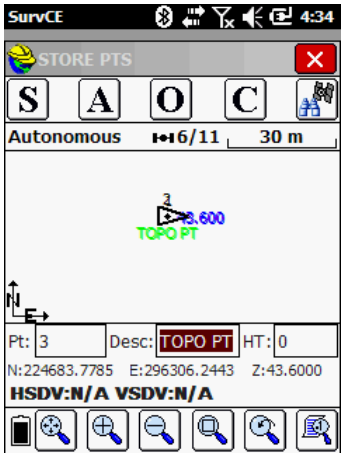
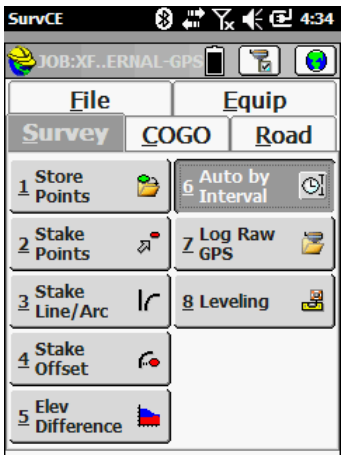
Screenshot or Graphic	Step
	9. From the **Job Settings | System** menu, **Projection:** tap/select the down-arrow to select a previously used Projection. If the Projection you need is not available from the drop-down menu; tap/select on the **Edit Projection List,** then tap/select the **Add Predefined** menu button, set the **Country:** (in this example) **USA/NAD83,** Browse the list of States/Zones, select the Projection needed for your project, then tap/select the green check mark. Tap/select the green check mark again to save the Job Settings.
	10. User is returned to the SurvCE main menu, 11. Select the **Equip | 3 GPS Rover** menu,
	12. From the **GPS Rover | Current** menu, Select the following options, Manufacturer: **NMEA GPS Receiver** Model: defaults to NMEA GPS Receiver,

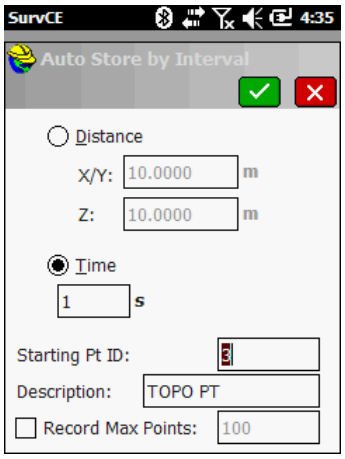
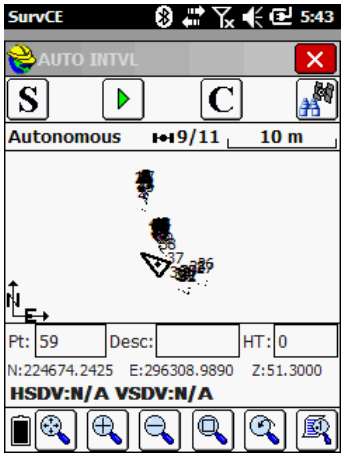
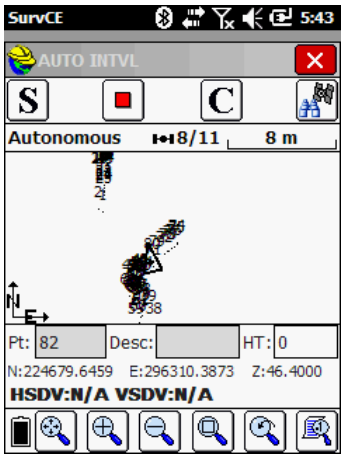
Screenshot or Graphic	Step
	13. From the **GPS Rover | Comms** menu, Select the following options, **Type: Cable** **Port: COM 6** **Baud: 9600** Parity: None Stop Bits: 1 Data Bits: 8
	14. From the **GPS Rover | Receiver** menu, Select the following options: **[Unknown] Unknown** **(•) Vertical** This sets the antenna model for the GPS Rover. In this case, it's best to select the Unknown GPS antenna model. The GPS antenna is an internal antenna inside the XF2 data collector. Tap the Green check mark to accept these settings and continue…
	15. **Configuring rover display…** **Connected to NMEA GPS Receiver**

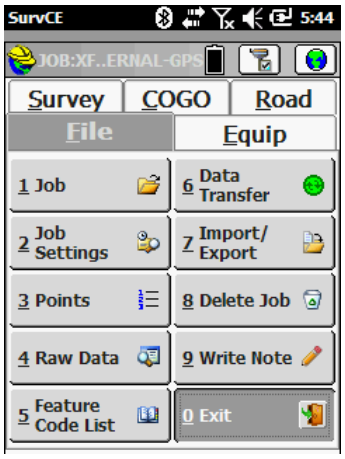
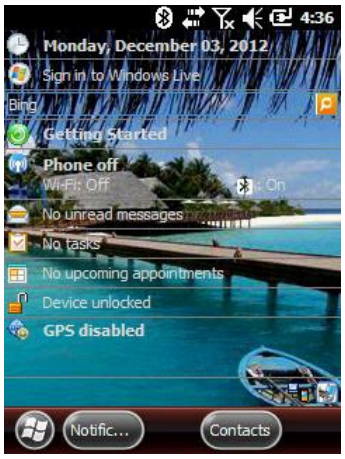
Screenshot or Graphic	Step
	16. User is returned to the **Equip** menu 17. Select **Equip | 5 Configure,**
	18. From the **Configure | General** menu, 19. Un-check the option for **Store Fixed Only (GPS).** This setting applies only for RTK surveying, when the user only wants to store Fixed RTK measurements. When using the Internal L1 only GPS module, (NMEA GPS Receiver), the accuracies will be at Autonomous GPS level, not differentially corrected. Set **No. Readings to Average** for **GPS: 1** Tap the Green check mark to save settings and continue.
	20. User is returned to the **Equip** menu 21. Select **Equip | 8 Tolerences,**

Screenshot or Graphic	Step
	22. From the **Tolerances** menu, Set reasonable HRMS, VRMS and Stakeout Tolerances for the NMEA GPS Receiver equipment currently being used. In this example, **HRMS Tolerance: 3.000 m** **VRMS Tolerance: 5.000 m** **Stakeout Tolerance: 3.000 m** Note: the RMS values may not be available from the currently selected GPS Tap the Green check mark to save settings and continue,
	23. User is returned to the **Equip** menu, 24. Select **Equip | 7 Monitor/Skyplot,** In this menu, the user will be able to confirm the NMEA GPS Receiver is sending data into SurvCE; the user can view the **Quality, Position, SATView and SATInfo** menus to confirm the NMEA data streams.
	25. From the **Monitor/Skyplot | Quality** menu, The Status: Autonomous Latency: 0 Date: 12/03/2012 Satellites: 4/11 Time: 16:27:53.0 Local Northing, Local Easting, Local Elev HDOP, TDOP, VDOP, GDOP, PDOP HRMS: N/A VRMS: N/A

Screenshot or Graphic	Step
	26. From the **Monitor/Skyplot | Position** menu, The Latitude, Longitude and Ellipsoid Elev are coordinates displayed. Local Northing, Local Easting and Local Elev coordinates are displayed. Selected Projection is displayed.
	27. From **Monitor/Skyplot |SatView** menu, The currently tracked GPS SV's are displayed in a Sky Plot view. The Sat S/N (Signal to Noise Ratios) are displayed.
	28. From the **Monitor/Skyplot | SATInfo** menu, The Individual PRN, SV Type, Azimuth, Elev and S/N Ratio are displayed. SV's depicted with an asterisk * are above the Elev Mask Angle and being used. All four of these menus confirm the NMEA GPS receiver data is being sent into SurvCE. If there is no data displayed in these menus, check/verify the NMEA GPS Receiver Port and Baud Rate settings in the Equip | GPS Rover menu. Tap/Select the Orange Left arrow (Return) button in the upper right corner.

Screenshot or Graphic	Step
	29. The user is returned to the SurvCE main menu, 30. The user can start collecting data, 31. Select **Survey | 1 Store Points,**
	32. From the **Store Points** menu, Enter a starting PT: number Enter a Description: Leave the HT: 0000 m When ready to Store the Point/Feature, Tap/Select the **[S],** or Store button, Continue storing Points/Features as needed, When finished Storing Points, tap/select the Red **[X]** button in the upper right corner of the menu,
	33. If the user wants to store a continuous line or trajectory, 34. Select **Survey | 6 Auto by Interval** menu,

Screenshot or Graphic	Step
	35. From the **Auto Store by Interval** menu, Select from the two available options: Distance or Time method, In this example, to get best data coverage, select the **Time** option Enter a 1-second time interval, Enter a Starting PT ID and Description, Tap the Green check mark to save settings and start the Auto Store,
	36. From the **Auto INTVL** menu, Note the **Green [>]** icon, this indicates the **Auto INTVL** is active, storing points every second… Points stored are displayed in the Map view screen, Tap the **[C]** icon, or Configure to control what information is displayed in the Map View, To stop the **Auto INTVL** Store Pts, tap/Select the Green [>] arrow, this will stop the Auto INTVL Store Pts, it will toggle the icon to a **Red [■]**
	37. From the **Auto INTVL** menu, If the **Red [■]** icon is displayed, no **Auto INTVL** points are being stored. To start the **Auto INTVL** again, tap/Select the **[■]** icon again, it will toggle the icon to **[>]** again, resume storing **Auto INTVL** points again. If the user is finished storing Auto INTVL points, tap/Select the **Red [X]** in the upper right corner of the menu.

Screenshot or Graphic	Step
	38. User is returned to the main menu, 39. To exit SurvCE, select **File | 0 Exit,**
	40. SurvCE confirmation message, **Are you sure you want to exit?** Select **Yes** or **No** In this example, **Yes** was selected, The user is returned to the windows Mobile Desktop.
	The data files from the SurvCE software can be copied from the XF2 to the office PC using the USB cable and Windows Mobile Device Center software. The SurvCE data files can be found on the XF2 \Program Files\SurvCE\Data folder. Files to copy: CurrentJobName with file extensions: .crd,.inf, .ref, .rw5, .sys

Further Information

The Precision Products Technical Support team in Scottsdale has coordinated defining these Quick Reference Guides. You can contact Precision Products Technical Support at techsupport@hemispheregnss.com for further information.

This document is provided for technical support purposes only. Refer to the product documentation for warranty, license, and safety information associated with the product.

Notes: