

Veris NIRS Spectrophotometer QUICK REFERENCE CARD

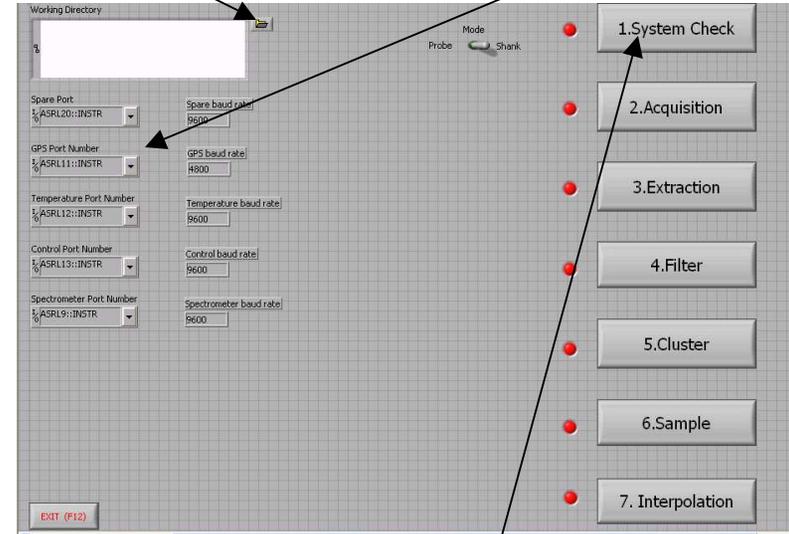
(Refer to Operations Manual for complete instructions, including software installation, safety, maintenance, and troubleshooting.)

1. Start up spectrometers 20 minutes before using. Leave vehicle running to keep battery charged. (amperage draw is 10 amps if cooler is running; 1 amp otherwise)

2. Start software. Refer to Operating Instructions for software installation procedure.

3. Select field folder

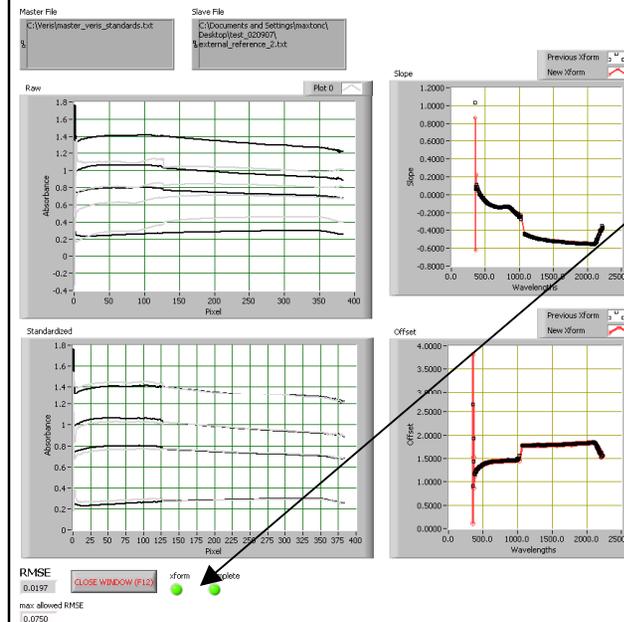
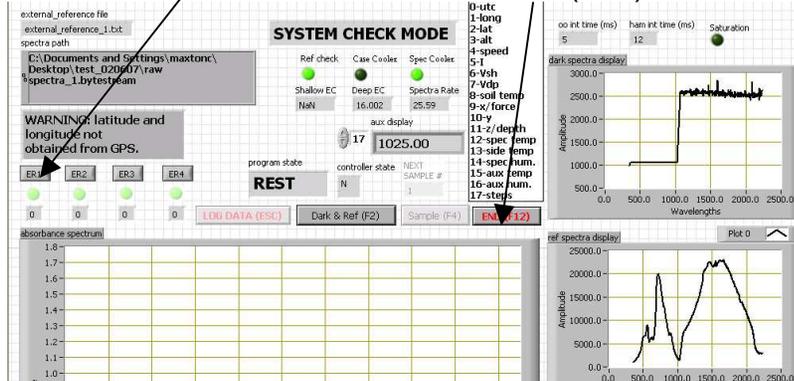
4. Set port order (if changed)



5. Press System Check button

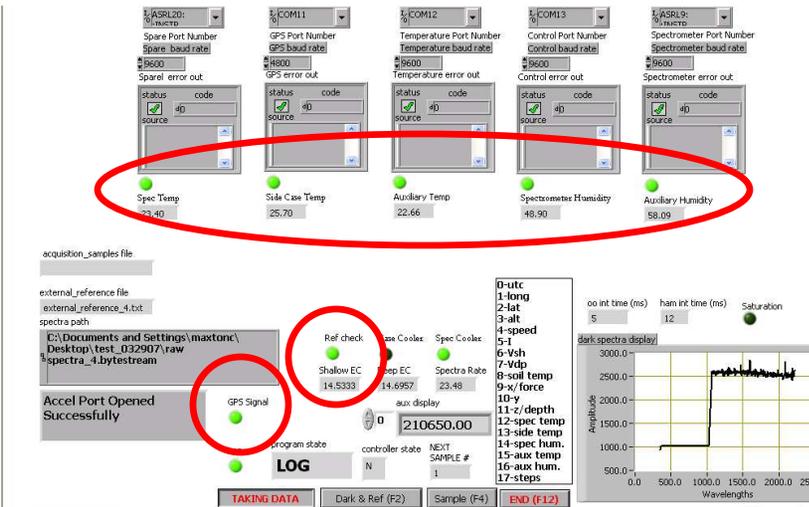
6. Clean window, and place external references (ER) against window. Soil may need to be removed from shoe holes. Press corresponding button when Program State reads REST. Continue until all ER lights are green or yellow.

7. Press End (F12) to transform.



8. Green light indicates when transform is complete. READY TO MOVE TO NEXT STEP—DATA ACQUISITION. Press Close Window/F12 to move back to main interface screen.

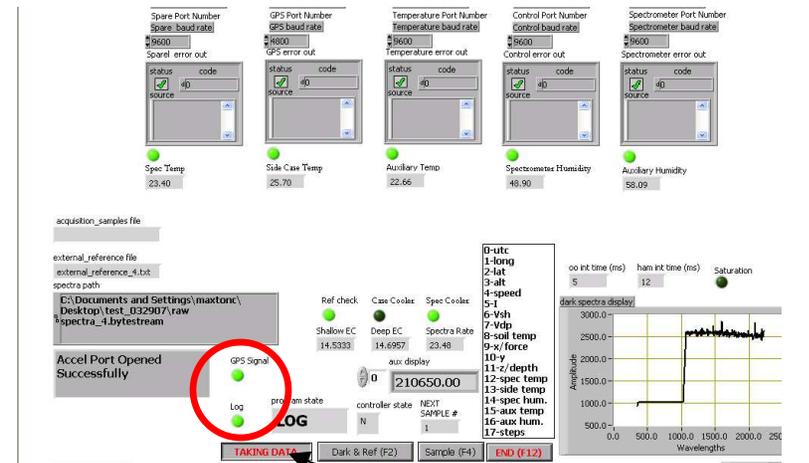
9. Before mapping complete all steps above. Make sure Reference Check (Ref Check) light is green, all Auxiliary Case lights are green, and GPS data are being received.



10. Set depth of EC coulters approximately 1.5" in soil.

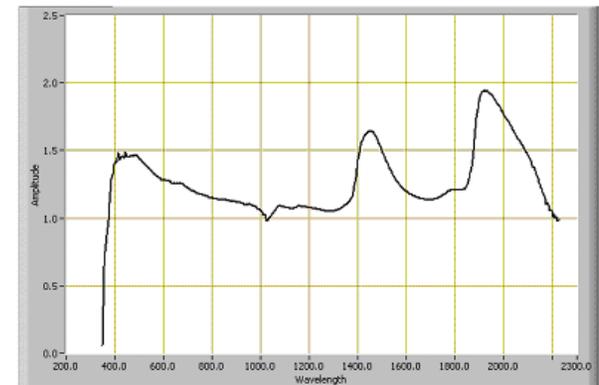


Make sure the implement frame is level.



11. Begin mapping: Pressing LOG button or ESC key stores spectrum data and auxiliary data, which includes EC data, until LOG button or ESC key has been pressed again. GPS and Log lights must be green for data to be recorded.

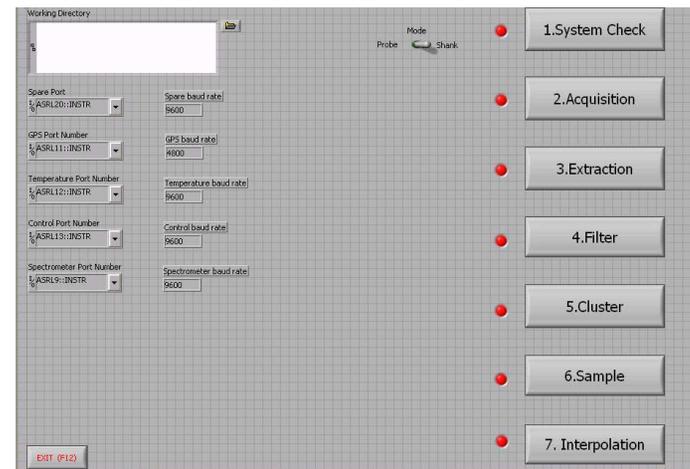
12. Pull forward with shank in ground. The absorbance should not rise more than 0.1. If absorbance jumps more than 0.1, readjust shank so it tilts back slightly, and retest.



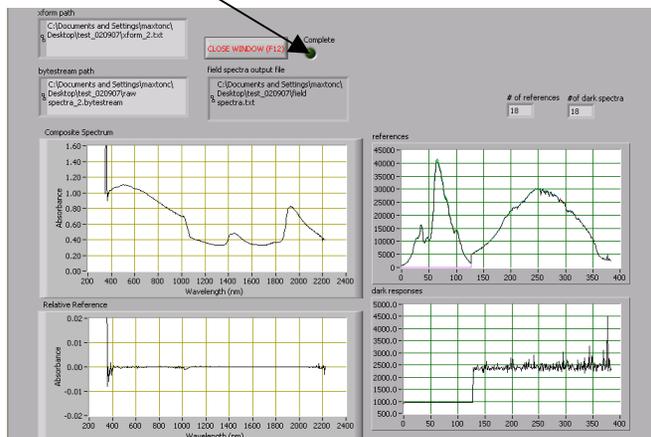
13. While mapping: watch display for following:

- Log light must be green while collecting data; if not green stop immediately and determine problem
- GPS data light is green
- EC data—no negatives, numbers changing and in normal ranges
- auxiliary case information—green lights and data
- program is in LOG mode when attempting to collect data
- whenever shank is raised out of the soil, press LOG button or ESC key to stop logging, re-press LOG button or ESC key to re-start logging when shank is in soil.
- system will automatically collect a dark and reference every 10 minutes—the next time the LOG button or ESC key is pressed after a 10 minute period. Before re-starting at the end of each round, check to make sure system isn't collecting a dark and reference.

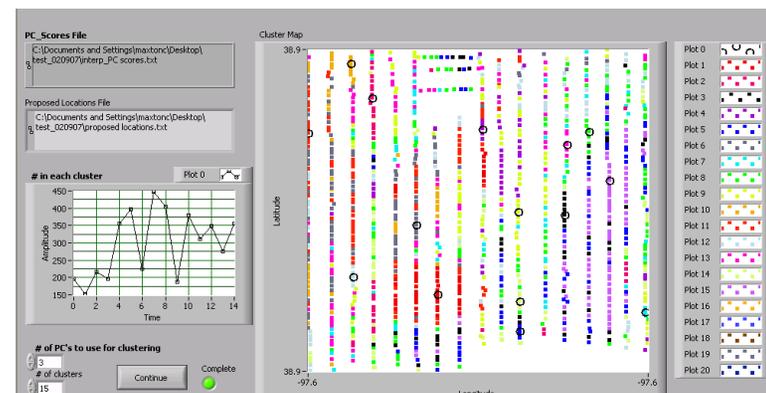
14. When all data have been acquired press F12 or End to return to the main interface screen, shown below. Press #3 Extraction to the bytestream files and apply the appropriate transform, then output the data into a single text file.



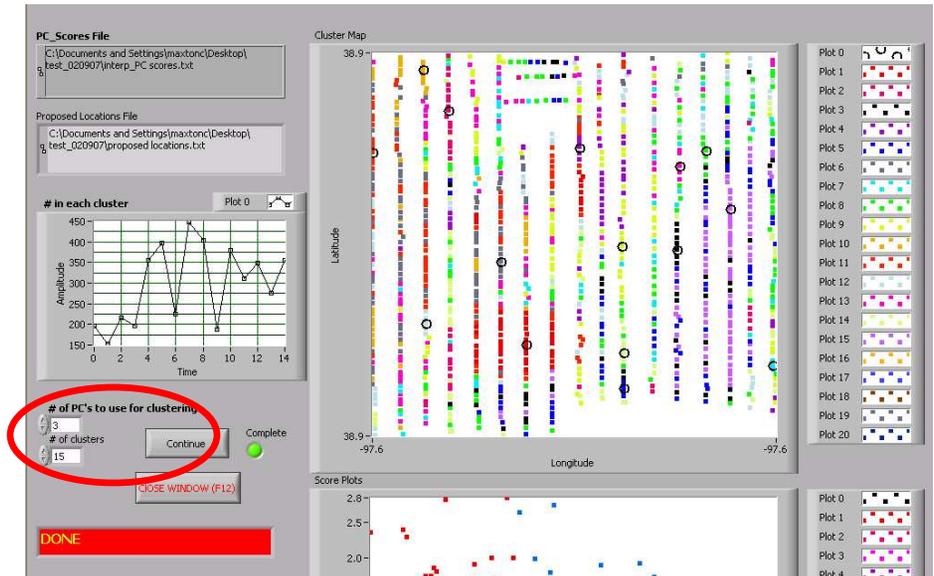
15. After each bytestream file has been extracted, the message “EOF” will appear. Press enter to continue on to the next file. Once all the data have been processed, indicated by a green complete light, click on close window or F12 to return to main interface.



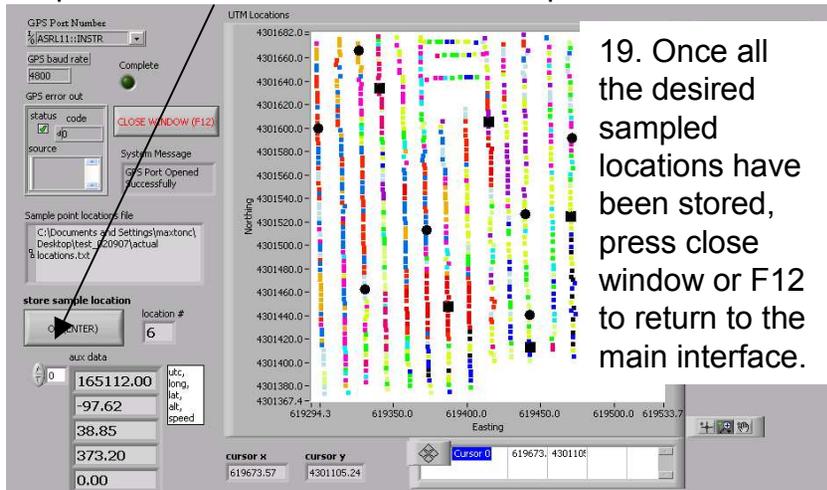
16. Press #4 on main interface to begin filtering: the spectra are compressed using principal components compression, and outliers are removed. Maps of each principal component (up to 10) are displayed, and the results of the PC analysis and filtering are output to ASCII formatted files. Press F12 to return to main interface.



17. Press #5 to initiate the clustering program—it will ask if the settings are correct. The settings are the number of clusters or sample locations, and the number of PC's to use for clustering. By default there will be 3 PC's used and 15 locations to sample. If more sample locations are desired, then this can be changed at this time. Up to 10 PC's can be chosen, however 95% of the data is contained within the first 3 PC's. If these settings are acceptable, then select YES or, to update the settings press NO. If NO was selected, update the settings and press continue to begin clustering the data. Once the data have been clustered, the program status will say done and the complete light will be lit. Press close window or F12 to return to the main interface. EC data file is in folder—file is named ec.txt



18. Press #6 to conduct soil sampling. Navigate to the GPS coordinates of desired sample locations from previous step, and press ENTER to record actual sample locations.



19. Once all the desired sampled locations have been stored, press close window or F12 to return to the main interface.

20. Press #7 to interpolate/average spectra near sampled locations. Outputs a file named spectra@locations.txt to the working directory. This file contains the spectra and auxiliary data for each sampled GPS location. If settings other than defaults are desired, see Operations Manual for detailed information. After the interpolation is done the complete light will be green.

Press close window or F12 to return to the main interface.

