APPLICATIONS NOTE

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HunterLab

Insight on Color May, 1999, Vol. 11, No. 5 (Rev. 5/02)

Using DIAGNOSE.EXE with a ColorQuest Sphere

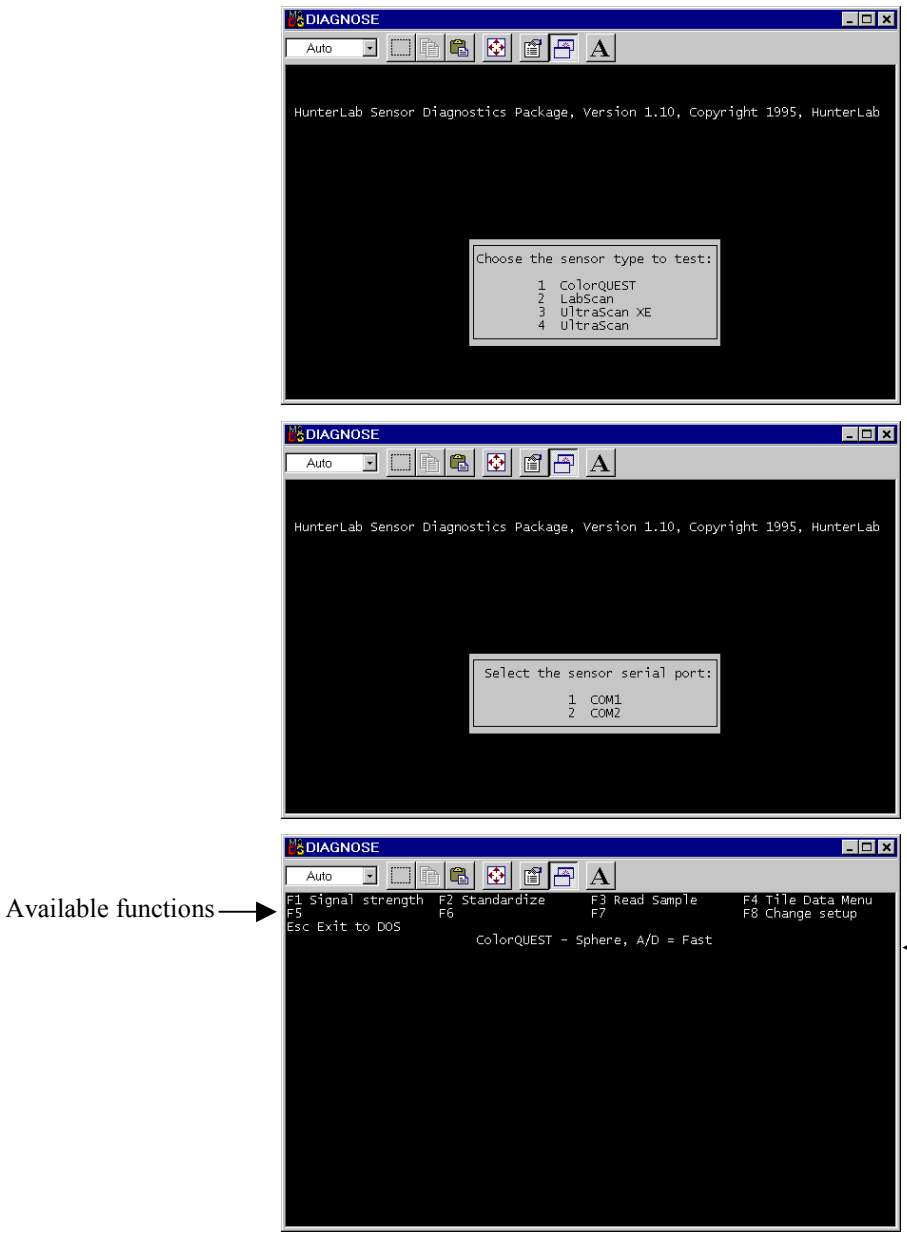
The DIAGNOSE.EXE program, which may be used to assess instrument performance and diagnose potential problems, is installed automatically with HunterLab's Universal and EasyMatch Coatings software packages. For users of other software packages, the program may be forwarded to you from HunterLab Customer Support if a problem with your instrument is suspected. Three files must be installed in the same folder on your computer in order to run the diagnostics: DIAGNOSE.EXE, ENGLISH.DGM, and CQ####.CAL, the instrument calibration file.

Note: Only one ColorQuest calibration file, the one matching the instrument to be tested, may be located in the folder containing DIAGNOSE.EXE while the program is in use.

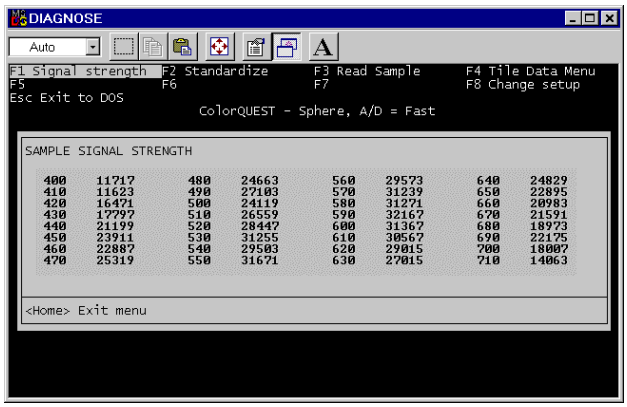
Perform the following steps periodically to assess instrument performance or if there is any reason to suspect that the instrument is not operating properly.

Perform the following steps to complete all the available diagnostics. If any diagnostic results are outside the stated range, follow the instructions for contacting HunterLab that are given at the end of the procedure.

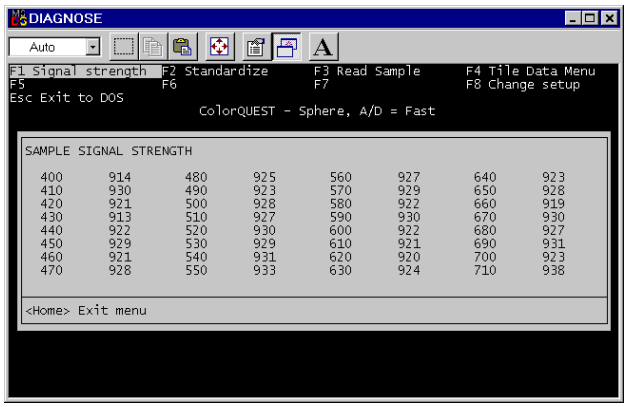
1. Exit Universal, EasyMatch, or your instrument control software.
2. Clean the white and gray tiles as described in your User's Manual. The instrument and lamp should be warm before running the diagnostics. The standard tiles should be dry and at room temperature.
3. Locate the DIAGNOSE.EXE program file (in your UNIVERSE or EZMATCH folder if you are using one of those packages) using the Windows File Manager or Windows Explorer. Double-click on the DIAGNOSE name to open the program.
4. On the opening Diagnose screens, choose 1, ColorQUEST, and the serial port to which the instrument is connected. The main menu screen then appears.



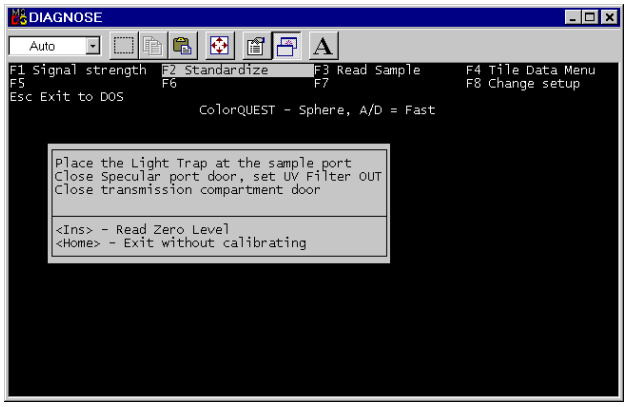
5. Place the white calibrated tile at the reflectance port. Press **F1** to perform the **Signal strength test**. The raw A/D counts for the white tile are then displayed for each measurement wavelength. The highest A/D value shown should be between 32,768 and 45,875. Press Home to exit the menu.

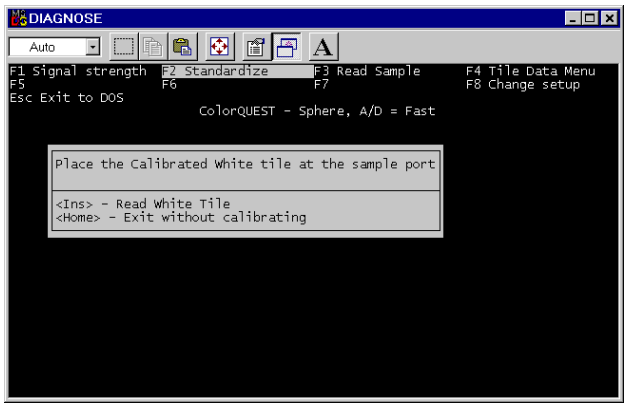


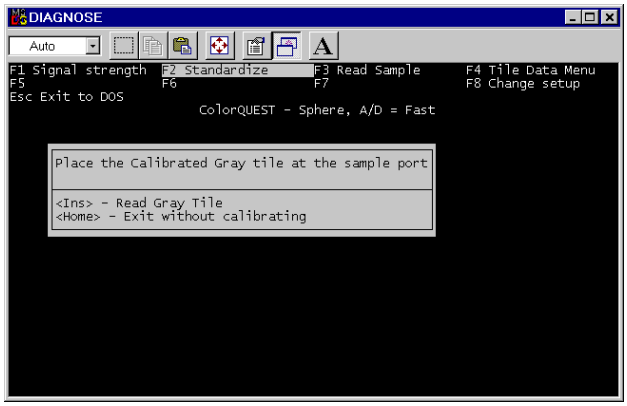
6. Place the black card over the lens in the transmission compartment and press **F1** again. All of the A/D values should be between 655 and 2,621. Press Home to exit the menu.



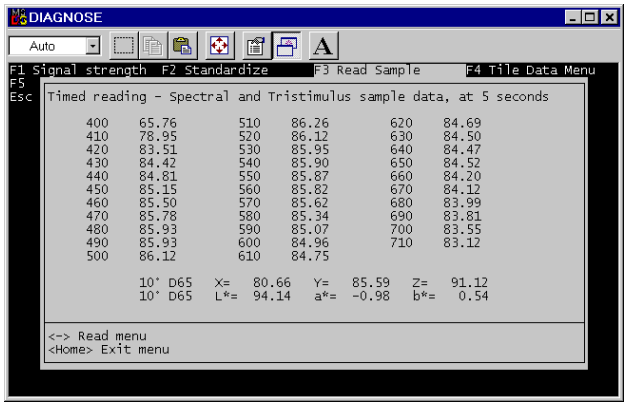
7. Press **F2** to **standardize the instrument** in RSIN mode. Standardization prompts very similar to those seen in Universal Software will be obtained. Press Insert after completing the instructions described by each prompt.







8. Place a sample or tile at the reflectance port and press **F3**, **Read Sample**. Press 1 to perform timed readings of the sample. Type an interval between reads and press Enter. This interval should be short enough that you can examine several measurements quickly, but long enough that you have time to note the values. Five seconds is suggested. The spectral and tristimulus readings of the sample will be shown and continuously updated at the interval selected. Press - on the number pad to return to the Read Sample menu.

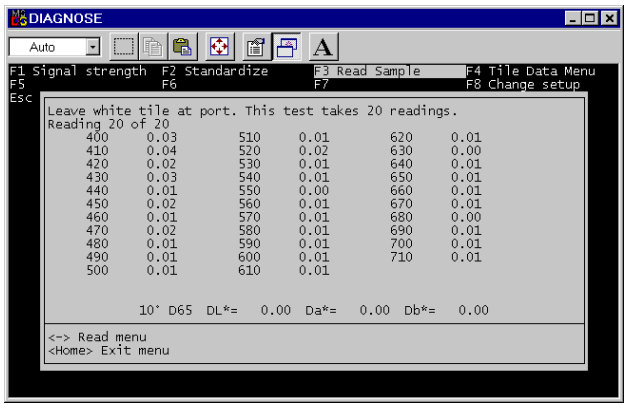


9. Press 2 to perform the repeatability test. Place the white calibrated tile at the reflectance port. Press Insert. Twenty reads of the tile will commence and Delta L*, a*, and b* values (between the first and last readings) will be displayed on the screen along with delta values for reflectance at each wavelength read. If any of the spectral value deltas is outside the following specifications, record the result and contact HunterLab Customer Support.

Spectral Data Specifications, Delta, Spectral reflectance:

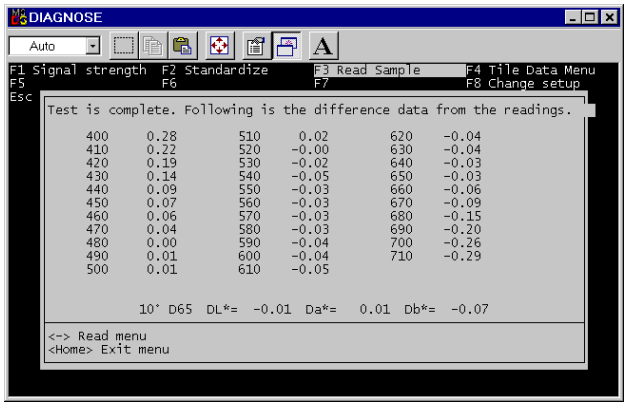
Should be <0.16 at 400, 410, 700, and 710 nm

Should be <0.11 at all other wavelengths.

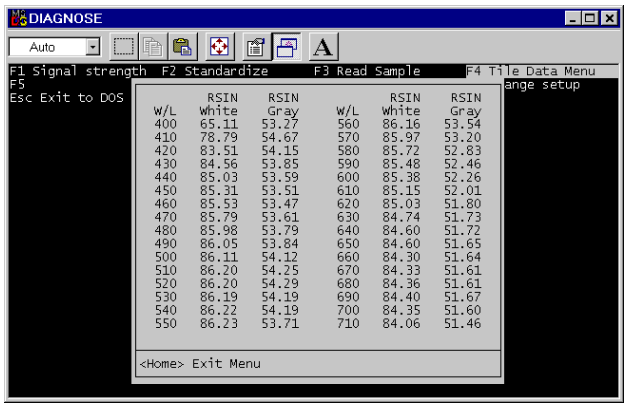


Press - on the number pad to return to the Read Sample menu.

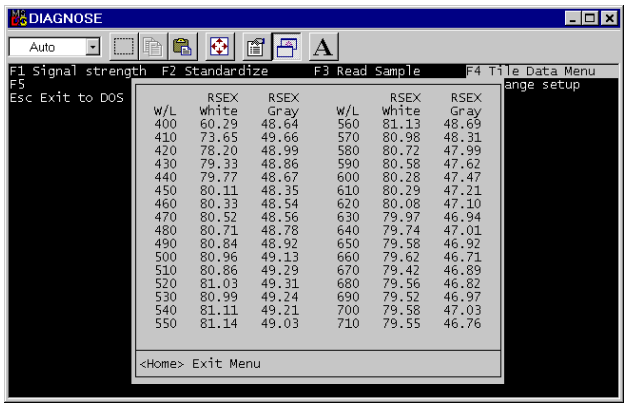
10. Press 3 to perform the drift test. Place the white tile at the reflectance port, press Insert, and wait 30 minutes for the test to be automatically performed. Delta L*, a*, and b* values (between the first and last readings) will be displayed on the screen along with delta values for reflectance at each wavelength read. If any of the delta values for L*a*b* are greater than ±0.10 unit, record the result and contact HunterLab Customer Support. Press Home to return to the diagnostics menu.



11. Press **F4** to display the **white and gray tile data** stored in the instrument. Press 1 to display the RSIN data and then Home to exit to the diagnostics menu.



12. Press **F4** again. Press 2 to display the RSEX data and then Home to exit to the diagnostics menu.



13. Press **F8** to **change the setup** for diagnostic testing. You will obtain the same selection screen listing the instruments that was shown when the software was first entered.

14. When all diagnostics are complete, press Esc to exit the diagnostics program.

If any of these diagnostics indicates a problem, contact HunterLab Customer Support at (703) 471-6870 and describe the tests performed and the exact results obtained.

If the sensor passes all diagnostics, enter your software package, standardize the ColorQuest, and commence normal operation.

Other Diagnostics for the ColorQuest Sphere

Several diagnostic procedures are described in your instrument's User's Manual and may also be used to assess instrument operation and performance. These tests are performed within your normal software package.

- **White Tile Check:** Standardize the instrument in RSIN mode using large area view with the UV filter out. Set your data display to show absolute XYZ values using the D65 illuminant and 10° observer. Read the white calibrated tile and compare the values read to those shown on the standards card. All values read should be within ±0.05 units of the values shown on the standards card immediately after standardization. If any of the values are out of this specification, clean the white and gray tiles and standardize and read again.

- **Green Tile Check:** Standardize the instrument in RSIN mode using large area view with the UV filter out. Set your data display to show absolute XYZ values using the D65 illuminant and 10° observer. Read the green calibrated tile and compare the values read to those shown on the back of the tile. All values read should be between ±0.30 units of the values on the back of the tile immediately after standardization of the instrument. If any of the values are out of this specification, clean all the tiles and perform the test again. More complete instructions on checking the green tile are given in your User's Manual.

For Additional Information Contact:

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