

Using DIAGNOSE.EXE with a ColorQuest 45/0

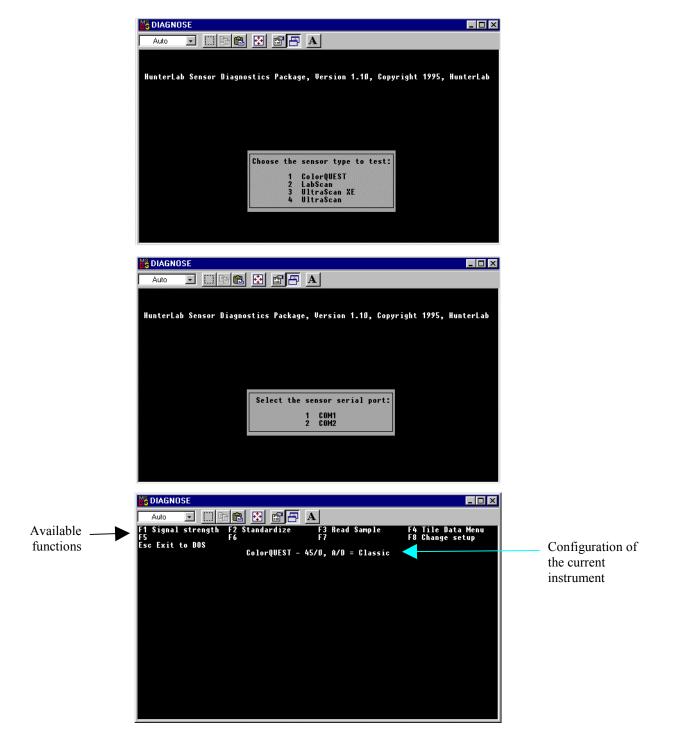
The DIAGNOSE.EXE program, which may be used to assess instrument performance and diagnose potential problems, is installed automatically with HunterLab's Universal and EasyMatch Coatings software packages. For users of other software packages, the program may be forwarded to you from HunterLab Customer 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 tile and black glass 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 sample 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.

Ĵ.	strength to DOS	F2 Stand F6		F3 Read F7			e Data Menu nge setup
			rQUEST - 4	, H/U	= 6185510		
SAMPLE	SIGNAL STRE	NGTH					
400	8993	480	25279	560	29863	640	24823
410	10063	490	27959	570	31111	650	22831
420	15365	500	24799	580	30791	660	21007
430	17319	510	26903	590	31495	670	21855
440	21319	520	28535	600	30791	680	19823
450	24359	530	31383	610	30213	690	24351
460	23399	540	29879	620	28903	700	21207
470	25831	550	32111	630	27013	710	17943
(Home>	Exit menu						

6. Place the black glass at the sample port and press F1 again. All of the A/D values should be between 655 and 2,621. Press Home to exit the menu.

Signal Exit	ž	F2 Stand F6		F3 Read F7			e Data Menu 1ge setup
			rQUEST - 4	570, A/D :	= Classic		
AMPLE	SIGNAL STRE	NG TH					
400	1283	481	1759	560	1703	640	1815
410	1871	490	1885	570	1799	650	1807
420	1927	500	1855	580	1639	660	1903
430	1925	510	1823	590	1831	670	1823
440	1879	520	1623	600	1797	680	1725
450	1879	530	1917	610	1735	690	1679
460 470	1863 1895	540 550	1693 1887	620	1863 1735	700	1631 1687
4/0	1895	550	1887	630	1735	710	1687
Home>	xit menu						
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7. Press F2 to standardize the instrument. Standardization prompts very similar to those seen in Universal Software will be obtained. Press Insert after completing the instructions described by each prompt. No confirmation is given when standardization is complete.

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F1 Signal strength F2 Standardize F3 Read Sample F5 F6 F7 Esc Exit to DOS ColorQUEST - 45/0, A/D = Classic	F4 Tile Data Menu F8 Change setup
Place the Black glass at the sample port <ins> - Read Zero Level <nome> - Exit without calibrating</nome></ins>	

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F1 Signal strength F2 Standardize F3 Read Sample F5 F6 F7	F4 Tile Data Menu F8 Change setup
Esc Exit to DOS ColorQUEST - 45/D, A/D = Classic	
Place the Calibrated White tile at the sample port	
✓Ins> - Read White Tile	
<pre><home> - Exit without calibrating</home></pre>	

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.

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	ignal stre		ndardize		ead Sample	F4 Tile Dat	a Menu
sc	Timed rea	iding - Spect	ral and Tr	istimulu	s sample data	, at 5 seconds	
	400 410	67.31 78.97	510 520	85.62 85.71		84.97 84.61	
	420	82.15 83.39	530 540	85.63	640	84.91	
	440	83.66 84.20	550 560	85.46 85.66	660	84.39	
	460	84.68	570 580	85.71	680	84.64 84.77	
	480	85.18	590 600	85.32 85.12	700	85.11 84.89	
	500	85.62	610	84.99	110	04.07	
		10° D65 10° D65	X= 80.5 L*= 94.0		85.41 Z= -0.83 b*=	90.12 1.10	
	<-> Read <home> Ex</home>						

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 ≤0.15 at 400, 410, 700, and 710 nm

Should be ≤ 0.10 at all other wavelengths.

Si Si	ignal streng	jth F2St F6	andardize	F3 Re 177	ad Sample		Tile Data Menu Change setup
iC	laana white	tile at	port. This t	tast take	c 20 readin		
_	Reading 20	of 20	port. Inis	ιεσι ιακα	S 20 ICauin	195.	
_	400	0.74	510	0.03	620	0.03	
_	410	0.65	520	0.00	630	0.01	
_	420	0.02	530	0.02	640	0.04	
_	430	0.05	540	0.05	650	0.09	
_	440	0.08	550	0.04	660	0.04	
_	450	0.02	560	0.04	670	0.09	
_	460	0.03	570	0.04	680	0.11	
_	470	0.04	580	0.04	690	0.04	
_	480 490	0.07 0.03	590 600	0.06 0.04	700 710	0.05 0.03	
_	500	0.07	610	0.00	710	0.05	
	200	0.07	010	0.00			
		10° D65	DL*= 0.0'	1 Da × =	0.01 Db*=	0.02	

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.

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Esc	lest is c	omplete. Fo	llowing is	the diff	erence data	from the	readings.	
	400 410 420 430 440 450 460 470 480	1.16 1.45 0.93 0.52 0.47 0.22 0.23 0.21 0.15 0.12	510 520 540 550 560 570 580 590	0.24 0.28 0.31 0.23 0.16 0.17 0.10 0.16 0.18	620 630 640 650 670 680 680 700 700	0.16 0.10 0.17 0.11 0.21 0.13 0.15 0.07 -0.02 -0.30		
	490 500 <-> Read ((Home> Ex	0.11 10° D65 menu	600 610 DL*= 0.0	0.18 0.13 8 Da*=	710 0.04 Db*:			

11. Press F4 to display the white tile data stored in the instrument. Press Home to exit to the diagnostics menu.

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	Standard	ize	F3 Read	Sample	F4 Tile Data Menu
5	W/L	White	W/L	White	F8 Change setup
SC EXIT TO DUS	400	Wnite 67.28	560	White 85.62	
	400	78.63	570	05.62 85.68	
	410	81.99	580	05.00 85.49	
	430	83.25	590	85.29	
	440	83.61	600	85.09	
	450	84.09	610	84.99	
	460	84.61	620	84.93	
	470	84.71	630	84.52	
	480	85.10	640	84.90	
	490	85.35	650	84.44	
	500	85.57	660	84.37	
	510	85.56	670	84.65	
	520	85.64	680	84.60	
	530	85.57	690	84.73	
	540	85.76	700	85.11	
	550	85.39	710	84.88	
	<home></home>	Exit Men	u		

- 12. 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.
- 13. 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 45/0

Several diagnostic procedures are described in your instrument 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 using the standard area of 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 ±0.10 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 tile and black glass and standardize and read again.
- Green Tile Check: Standardize the instrument using the standard area of 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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