



StellarNet Tutorial

Using SpectraWiz[®] VBA-NIST-CRI/CQS for MS Excel

Contents

This tutorial describes the basic measurement procedure for using a StellarNet SpectroRadiometer system with the free SpectraWiz VBA-NIST-CRI/CQS program for MS excel.

Requirements

All StellarNet customers who purchase a SpectroRadiometer system may fill out the official StellarNet Software License Agreement found <http://stellarnet.us/public/download/StellarNet-SLA.doc> and send it to ContactUs@StellarNet.us and a copy of the SpectraWiz VBA-NIST-CRI/CQS program will be sent to you.

Disclaimer

The SpectraWiz VBA-NIST-CRI/CQS is a free program that uses the StellarNet VBA source code demo program for MS excel to instantly grab and graph data from the StellarNet spectrometer (SWDLL) and place the results into the NIST CQS version 7.4 spreadsheet. One of the main purposes of this spreadsheet is to compare CIE CRI and NIST CQS for various existing lamps and various white LED models (RGB, RGYB, phosphor, etc). StellarNet has only modified this spreadsheet by adding several pages that control spectrometer parameters such as calibration coefficients, spectral averaging and smoothing, spectrometer integration time, and dark current subtraction. All other functions of the spreadsheet have been preserved to its original condition. This spreadsheet is designed for scientific research and exchange. StellarNet and NIST are not responsible for any loss to your company caused by any errors in this program.

Setup Instructions for SpectraWiz VBA

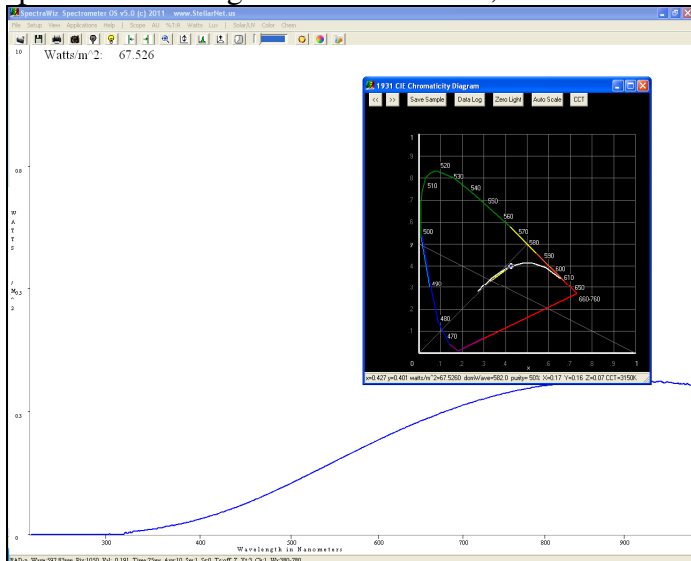
After copying the Excel file to your desired location, open Excel and go to the "Tools" menu. Then go to "Options" and under the "General" Tab change the "Default file location:" to C:\Program Files\StellarNet\SpectraWiz. Then select "OK" and close Excel. You can also place a copy of "StellarNet_NIST_CRI_CQS_7.4.xls" program into the SpectraWiz directory and launch the program.

Verification Using SpectraWiz

As with all software programs that are provided free with your StellarNet spectrometer, you must first verify proper working conditions in the SpectraWiz program before using the SpectraWiz VBA-NIST-CRI/CQS program. This is important to make sure all the spectrometer parameters are set correctly. This includes proper installation of your MyCal.exe calibration files and the spectrometer calibration coefficients. More instructions on general procedure for SpectraWiz can be found at <http://stellarnet.us/techsupport.htm>

Example #1: Halogen Lamp Spectra

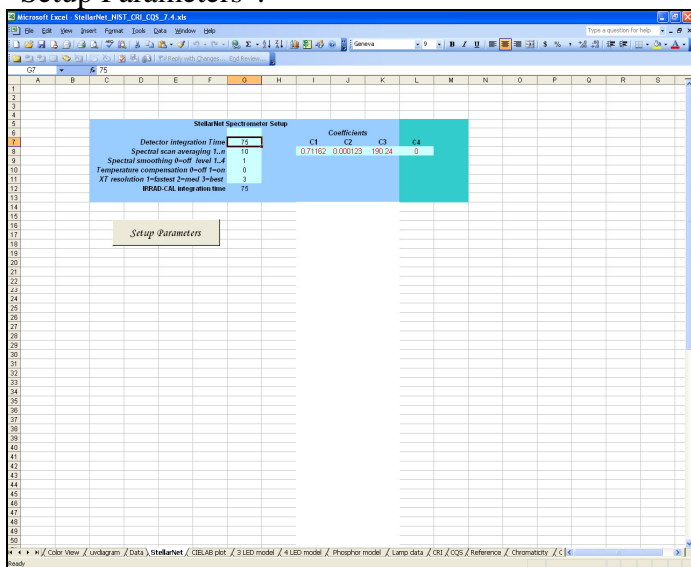
1. Verify halogen lamp in SpectraWiz. Make sure the SpectroRadiometer's MyCal.exe calibration file has been correctly installed and that the proper calibration coefficients are set. Optimize spectral parameters such as detector integration time, spectral smoothing controls, and spectral averaging. Verify that the spectrometer x-timing resolution is set to 3. For example below by reading the bottom tab of SpectraWiz you can see that the spectrometer integration time is 75ms, # of scans to average is 10, smoothing is set to 1etc.



Results-

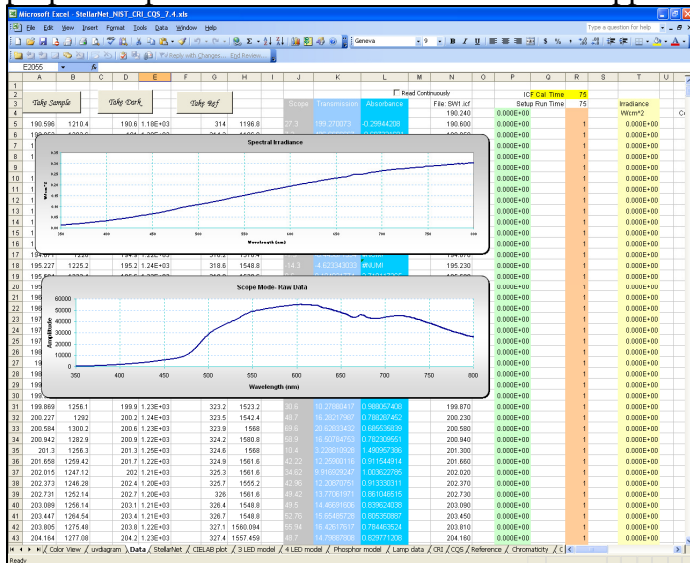
x,y chromaticity; $x = 0.427$, $y = 0.401$
CCT= 3,150K

2. Launch the "StellarNet_NIST_CRI_CQS_7.4.xls" program from the SpectraWiz directory and verify that the correct Setup Parameters are listed on the "StellarNet" tab. Correct them if they are not. If you need to adjust your spectrometer integration time from the time at which it was calibrated, you must do so here and click "Setup Parameters".

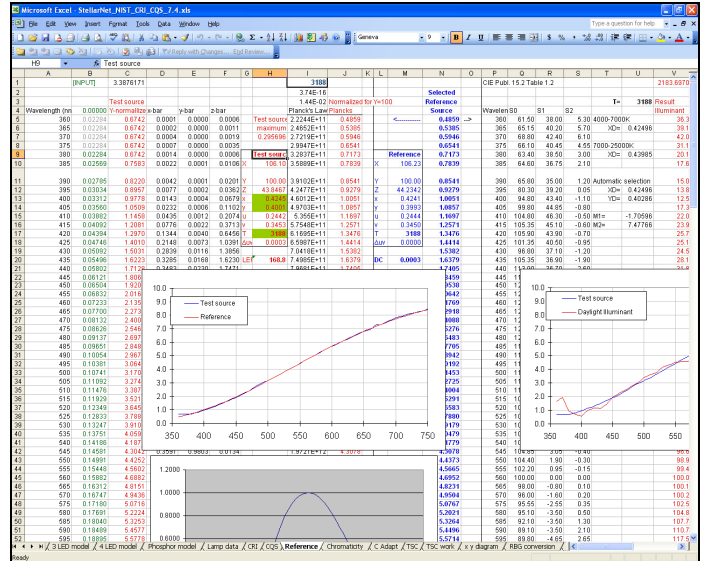
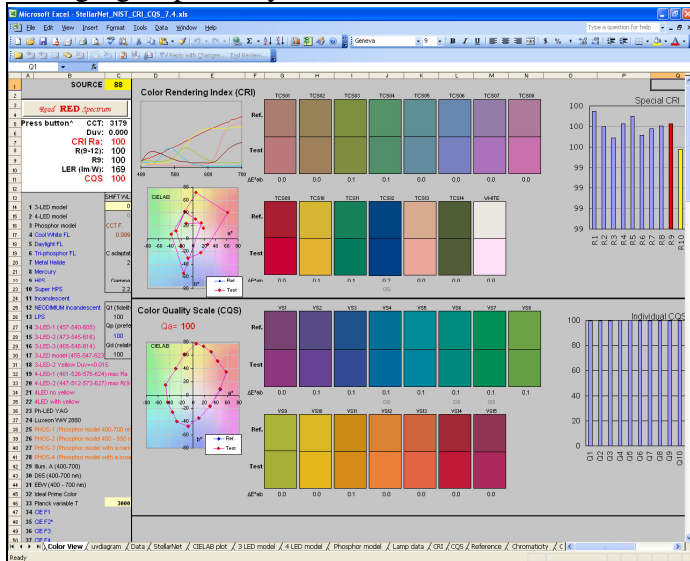




3. Go to the “Data” tab and take a new spectral dark by turning off your light source and clicking the “Take Dark” button. Next, turn on your light source and click the “Take Sample” button. You should now see your proper Scope Mode and Irradiance mode data appear on the excel graphs.



4. Go to the “Color View” tab and the “Reference” tab and verify that your results for x,y chromaticity and CCT match what was acquired in SpectraWiz. Please note that very small changes in measurement setup such as positioning of sphere head or receptor and software parameters may affect results. Additionally, scan to scan variance will also contribute to your measurement repeatability and accuracy. Increasing the amount of spectral averaging improves your results.

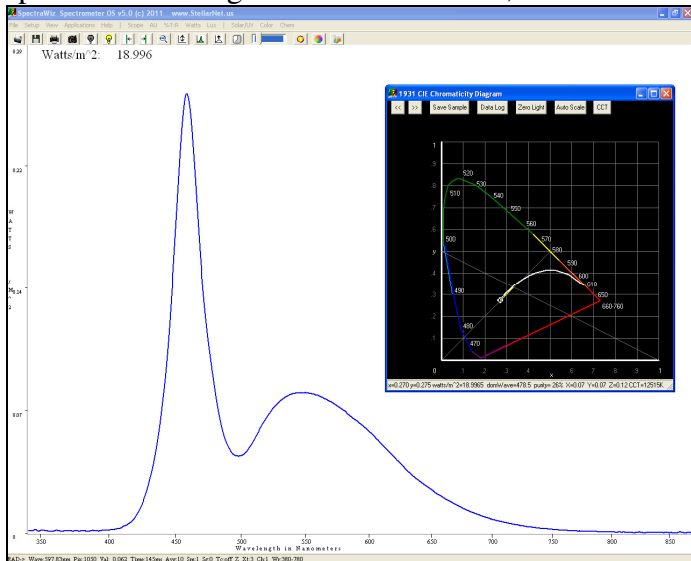


Results-
x,y chromaticity; x= 0.4245, y= 0.4001
CCT= 3,188K



Example #2: White LED

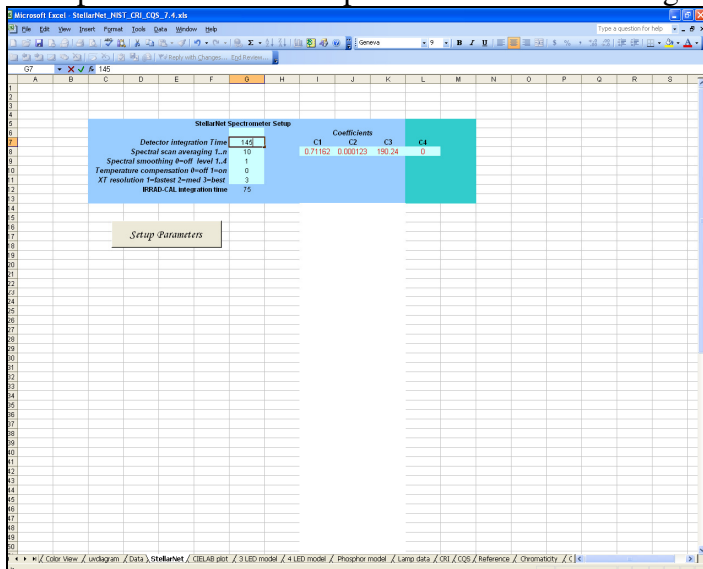
1. Verify the LED in SpectraWiz. Make sure the SpectroRadiometer's MyCal.exe calibration file has been correctly installed and that the proper calibration coefficients are set. Optimize spectral parameters such as detector integration time, spectral smoothing controls, and spectral averaging. Verify that the spectrometer x-timing resolution is set to 3. For example below by reading the bottom tab of SpectraWiz you can see that the spectrometer integration time is 145ms, # of scans to average is 10, smoothing is set to 1etc.



Results-

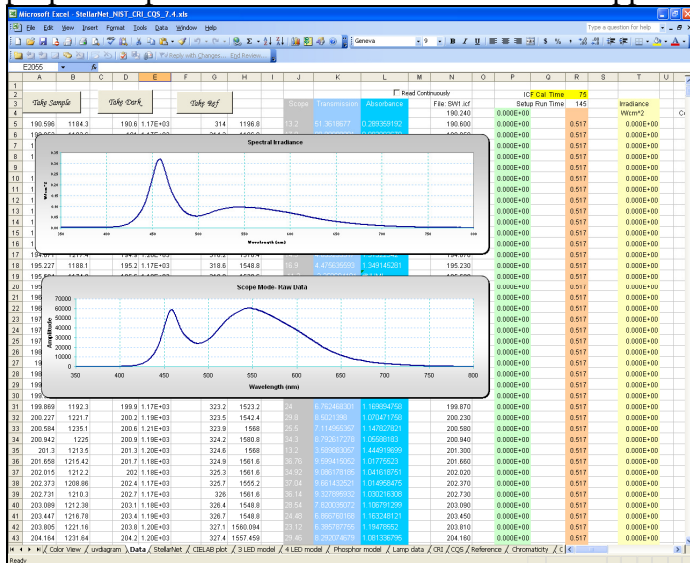
x,y chromaticity; $x = 0.270$, $y = 0.275$
CCT= 12,515K

2. Launch the "StellarNet_NIST_CRI_CQS_7.4.xls" program from the SpectraWiz directory and verify that the correct Setup Parameters are listed on the "StellarNet" tab. Correct them if they are not. If you need to adjust your spectrometer integration time from the time at which it was calibrated, you must do so here and click "Setup Parameters". The spectrometer detector integration time below is changed to 145ms.

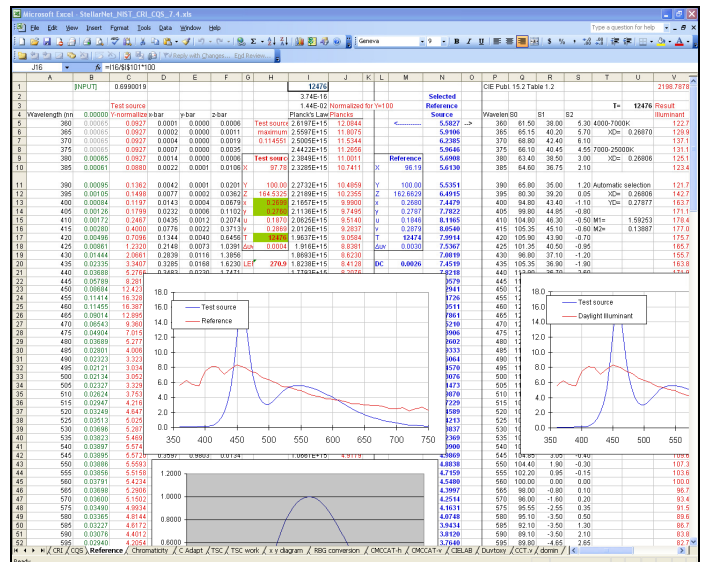
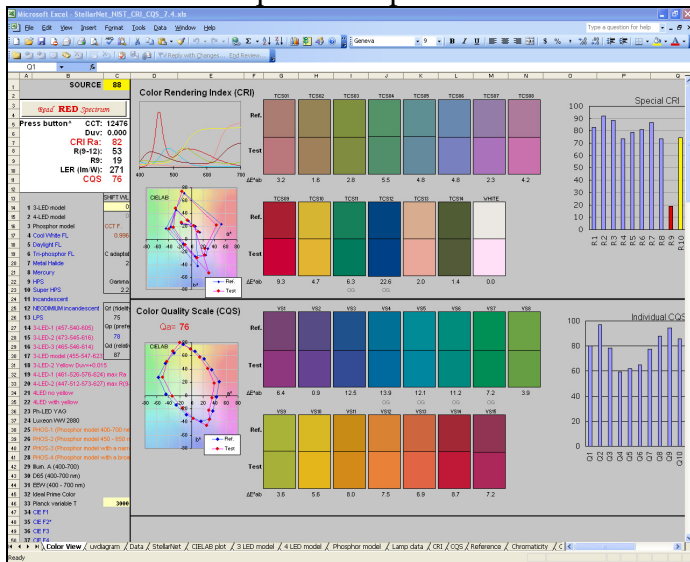




3. Go to the “Data” tab and take a new spectral dark by turning off your light source and clicking the “Take Dark” button. Next, turn on your light source and click the “Take Sample” button. You should now see your proper Scope Mode and Irradiance mode data appear on the excel graphs.



4. Go to the “Color View” tab and the “Reference” tab and verify that your results for x,y chromaticity and CCT match what was acquired in SpectraWiz.



Results-
x,y chromaticity; x= 0.2699, y= 0.2760
CCT= 12,476K