

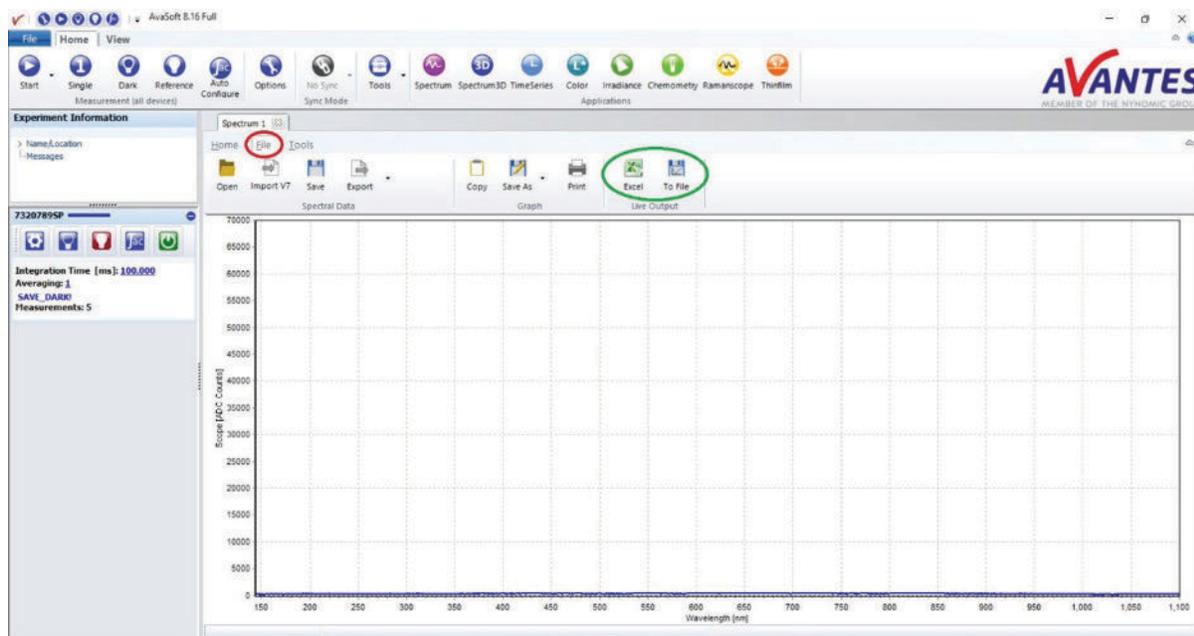
SPECTRAL TIPS AND TECHNIQUES: USING SPECTRUM TOOLS IN AVASOFT 8 – LIVE OUTPUT



INTRODUCTION AND GUIDE

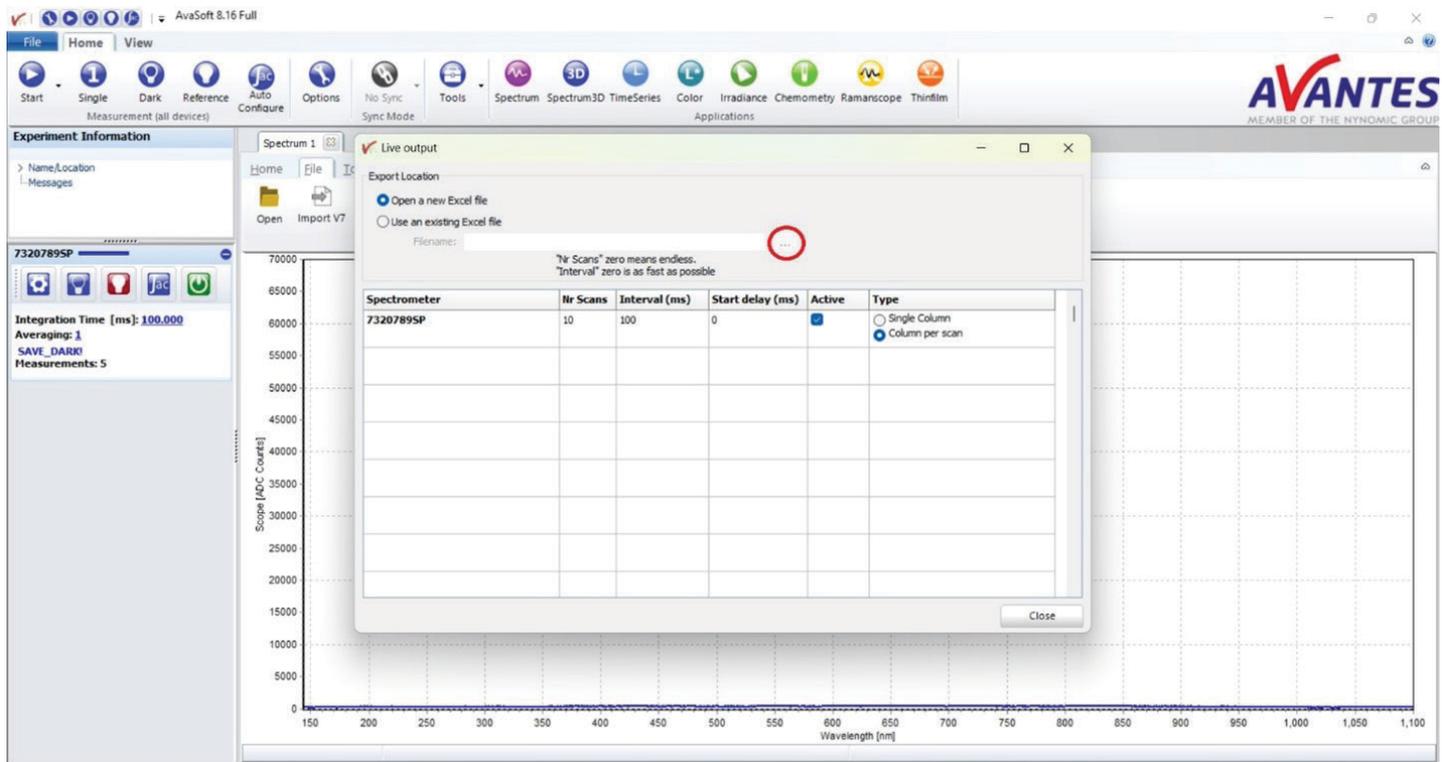
Many users of AvaSoft 8 are aware of the different measurement modes and modules available in the software, such as absorbance and irradiance measurement modes and TimeSeries and Color modules. Just within the standard Spectrum module, however, are many useful tools for analyzing data. Previously, we discussed the scaling, display, and post-processing tools available in the Spectrum module, as well as opening previously saved spectral data. In addition to these features, the Spectrum module also offers means of saving data in real time at pre-defined intervals as either AvaSoft files, ASCII files, or to an Excel spreadsheet. Below is a short guide covering these saving methods utilizing the Live Output function in the Spectrum module in AvaSoft 8.

To utilize the Live Output function, click the File tab of the Spectrum window (circled in red below) and click either the 'Excel' button or the 'To File' button in the Live Output section (circled in green below), depending on if the goal is to save the data to an Excel file or to AvaSoft/ASCII files, respectively. Two important notes for this function are that all settings should be defined while measurements are not being taken, and that if a measurement mode is being used that requires a dark or reference measurement (such as Scope-Minus-Dark, Absorbance, or Absolute Irradiance), it is recommended to start measurements, take these dark and reference measurements first, stop measurements, then utilize the Live Output function. Alternatively, the Start Delay portion of the Live Output function can be used to take a dark and reference measurement before data is saved to files, but this will be covered later.



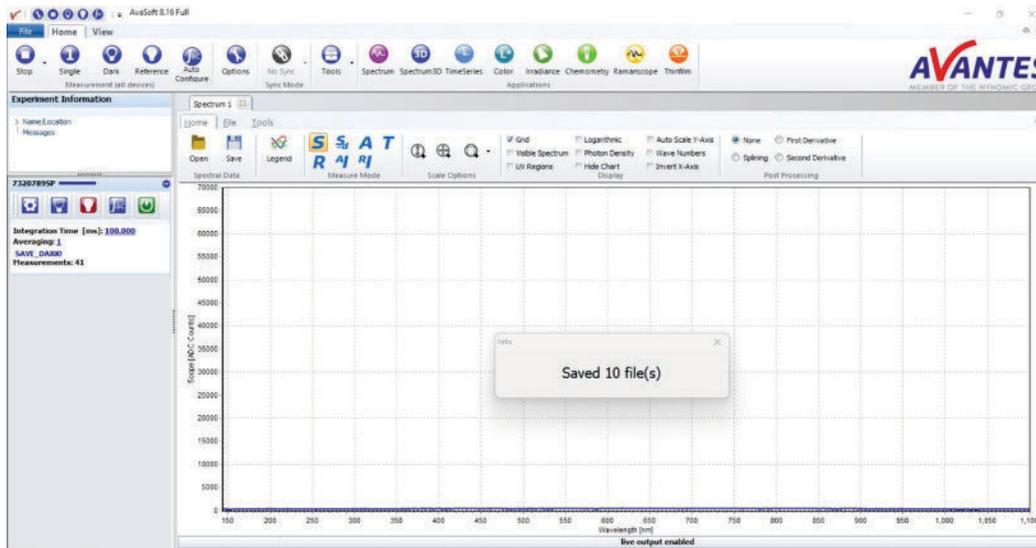
If the 'Excel' button is selected, a window will pop up with settings for this saving function. First, an option to save either to a new Excel file or an existing Excel file. If the latter is chosen, the file name and location must be defined either manually or by clicking the '...' button (circled in red below). Below this are six columns that define, from left to right, the spectrometer serial number, the number of scans, the interval between saved measurements, the start delay before measurements begin saving, which spectrometers are active for the Live Output function, and if the data is saved to the Excel spreadsheet as a single column that is overwritten after each measurement or individual columns for each measurement. For the number of scans, this can be set to a pre-defined number of measurements from 1 to theoretically however many the computer can store, though an alternative method can be setting the number to 0, as this will set AvaSoft to save measurements indefinitely until measurements are no longer being taken.

The interval section can similarly be set to 0 to save measurements as fast as possible (i.e., whenever a new measurement is received by AvaSoft), though longer intervals can be defined if data is not needed at such short intervals. For example, if a user only needed data at 1-minute intervals, the interval value could be set to 60000 (as the interval value is in terms of milliseconds). The start delay value is also in milliseconds, so a value of 1000 gives a 1 second delay before data begins to be saved to the Excel file. This function can be useful if the application being measured requires a warm-up time that does not need to be included in the measurements, such as an initial chemical reaction or a light source warming up. Additionally, as previously mentioned, the start delay can be set to a few seconds to give some time to take a new dark and reference measurement when starting measurements again before data is saved to the Excel file. The Active column is critical, as this determines which spectrometers actually have their data saved to an Excel file. Checking this box enables the data to be saved for the respective spectrometer. The last column determines if the data is saved to the Excel file either as a single column that is overwritten after every interval, or to a new column per scan. Column per scan is very typically the type used, so it is odd that Single Column is the default option here. In some cases, it may be preferred for integration with other software, but Column per scan is the often the recommended choice.



With everything set, click OK and start measurements. For this example, the number of scans was set to 10, the interval was set to 1000ms, the start delay was set to 0ms, and the type was set to Column per scan. Below is a screenshot of the Excel file generated by AvaSoft from these settings. It should be noted that the data is just the spectrometer taking a dark measurement and therefore does not show anything of significance. Additionally, while the date/time values initially are filled with # signs, expanding the columns reveals the actual value, as shown in the first data set. From here, the user can simply save the Excel file to save the data.

With the settings saved, click the 'Save' button and begin measurements. For this Live Output function, a small window will appear with a count of how many files have been saved so far.



If a pre-defined number of files is set (in this example, 10), the count will stop once the number is reached. If the number of scans is set to 0, this number will increase indefinitely until measurements are stopped. If To File is used to save AvaSoft files, loading these files is similar to previously discussed methods and therefore will not be covered further here. For the ASCII files, an example of how the saved data would look is shown below.

```

73207895P_24Mar25_005220_000
File Edit View
|
| Integration time [ms]: 100.000
| Averaging Nr. [scans]: 1
| Smoothing Nr. [pixels]: 0
| Data measured with spectrometer [name]: 73207895P
| Wave :sample :Dark :Reference
| [nm] :[counts] :[counts] :[counts]
|
144.103; 248.591; 244.140; 0.000
144.406; 150.016; 182.570; 0.000
144.709; 238.988; 251.093; 0.000
145.012; 201.984; 227.018; 0.000
145.316; 240.576; 307.007; 0.000
145.619; 241.980; 231.962; 0.000
145.922; 255.021; 271.629; 0.000
146.225; 172.998; 243.261; 0.000
146.528; 280.016; 271.523; 0.000
146.831; 173.997; 198.242; 0.000
147.135; 294.018; 324.592; 0.000
147.438; 230.997; 209.236; 0.000
147.741; 297.995; 327.106; 0.000
148.044; 194.990; 235.249; 0.000
148.347; 248.013; 265.504; 0.000
148.650; 187.993; 220.169; 0.000
148.953; 277.008; 278.417; 0.000
149.256; 165.998; 185.255; 0.000
149.559; 207.018; 229.579; 0.000
149.862; 220.987; 228.000; 0.000
150.165; 254.985; 208.027; 0.000
150.469; 225.995; 247.205; 0.000
150.772; 284.000; 300.417; 0.000
151.075; 191.000; 202.423; 0.000
151.378; 246.005; 268.373; 0.000
151.681; 173.020; 164.754; 0.000
151.984; 263.992; 293.155; 0.000
152.287; 170.989; 200.105; 0.000
152.590; 247.010; 303.403; 0.000
152.893; 193.987; 220.074; 0.000
153.196; 250.988; 272.086; 0.000
153.499; 214.977; 237.912; 0.000
|
| Lin 1, Col 1 106/357 characters 100% Windows (CRLF) UTF-8

```

This data shows wavelength, a sample measurement, the saved dark, and the saved reference (with the latter being all zeros, meaning no reference data was stored). If a different measurement mode was saved rather than Scope mode, such as Absorbance or Absolute Irradiance, these values would be shown in a new column to the left of the saved reference measurement.

With these steps complete, the Live Output function can be utilized in the Spectrum module to save data to an Excel spreadsheet, to separate AvaSoft files, or to ASCII files. Please reach out to our support team at support@avantes.com for further explanation or troubleshooting options.

CONTACT

WE'RE HAPPY TO HELP

Curious how spectroscopy can help you reveal answers by measuring all kind of materials, in-line, at your production facility, in a lab or even in the field? Please visit our website or contact one of our technical experts, we're happy to help you.

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