BioRad Microplate Reader Model 680 Quick Guide

Filters are 415nm, 450nm, 455nm and 650nm. Temperature can be set from ambient to 45oC. Plate-shaking available in 3 speeds. The Microplate Reader can generate End-point, Kinetic and Multiple Plate protocols. For more details see the Microplate Manager User Guide, available on the computer desktop and GCF website.

1. Plate reader power button is behind the instrument, near the plug. Enter password 00000 on the reader and hit "enter" key. Use the computer to the left to operate the instrument using the Microplate Manager software. Computer is always on, hit the power button in the bottom center of the monitor to turn on the display.

2. Set up a folder on your computer to store your data. You will need a thumb drive to transfer your data.

3. **Templates** can be designed and saved for future use. FILE> New Template> and save it as a data file (.mpm). When you select your protocol there will be an option to select your template. It is possible to import plate information such as sample names using TXT, CSV and other formats. It is possible to run up to 12 assays on a single plate. See user guide for more details.

4. **Protocols** are found under the FILE> menu. Select Endpoint (.epr), Kinetic (.kpr) and Multiple plate (.mpr) protocol. Use the software to select your wavelength, time, shaking, location of blanks and controls, and other parameters.

5. Each protocol automatically generates a template (if one wasn't pre-loaded) but needs to "RUN" to generate a data file (.mpm). Generating the data file saves your template.

6. Protocols are not saved automatically when you click on **RUN**. Save Protocol….or Save Protocol As….

7. Be sure your plate is loaded in your intended orientation and set securely in the plate tray. Hit the **RUN** button to read the plate. After reading your plate you can select what information to display and print using the **REPORTS** button.

8. It is possible to re-analyze your data by uploading a different template. This will not change the reading parameters (wavelengths, temperature, shaking…..) but can change sample names, standard concentrations or calculations, if needed.

9. Data can be exported directly to Excel, or exported as a .csv or .txt using FILE>Export.

10. After reading and saving your data please turn off both the reader and the computer monitor, and clean up any spills. There is a biohazard trash bin available to you (provided no radiation or non-standard toxic chemicals are in your assay).

End-point Reports

1. Raw Data = uncorrected absorbance (without blank subtraction).
    a. Single-wavelength= absorbance at set filter.
    b. Dual-wavelength = measurement filter absorbance – reference filter absorbance
2. Absorbance Report = Raw Data absorbance – Blank absorbance (or average blank absorbance)
3. Limit report = qualitative YES/NO report. Asterisk (*) = values between the upper and lower limits; Minus signs (-) = values below the lower limit; Positive signs (+) = values greater than the upper limit
4. Matrix Report = qualitative report of the relative magnitude of the plate. Wells are ranked 1-10; over limit will be marked (+), and under limit are marked (-).
5. Cutoff Report = qualitative report of the relative magnitude of the absorbance values or converted concentrations on the plate. See user manual for details. (Cutoff Constant Ranged ,Cutoff Constant, Cutoff Control Ranged Cutoff Control, Cutoff Formula, Cutoff Ratio)
6. Curve Fit = regression analysis based on the absorbance values of a series of standards. See user manual for details.

Kinetic Reports

1. Kinetic plots = absorbance plots of each well in the plate, available for readers with the optional internal printer or with an external ESC/P printer which accepts ESC/P code.
2. Linear Regression = calculates reaction rate (Km) for each well using the linear regression.
3. GALT = (R2 – R1) * k Where: R1 = 1st reading R2 = 2nd reading k = GALT factor