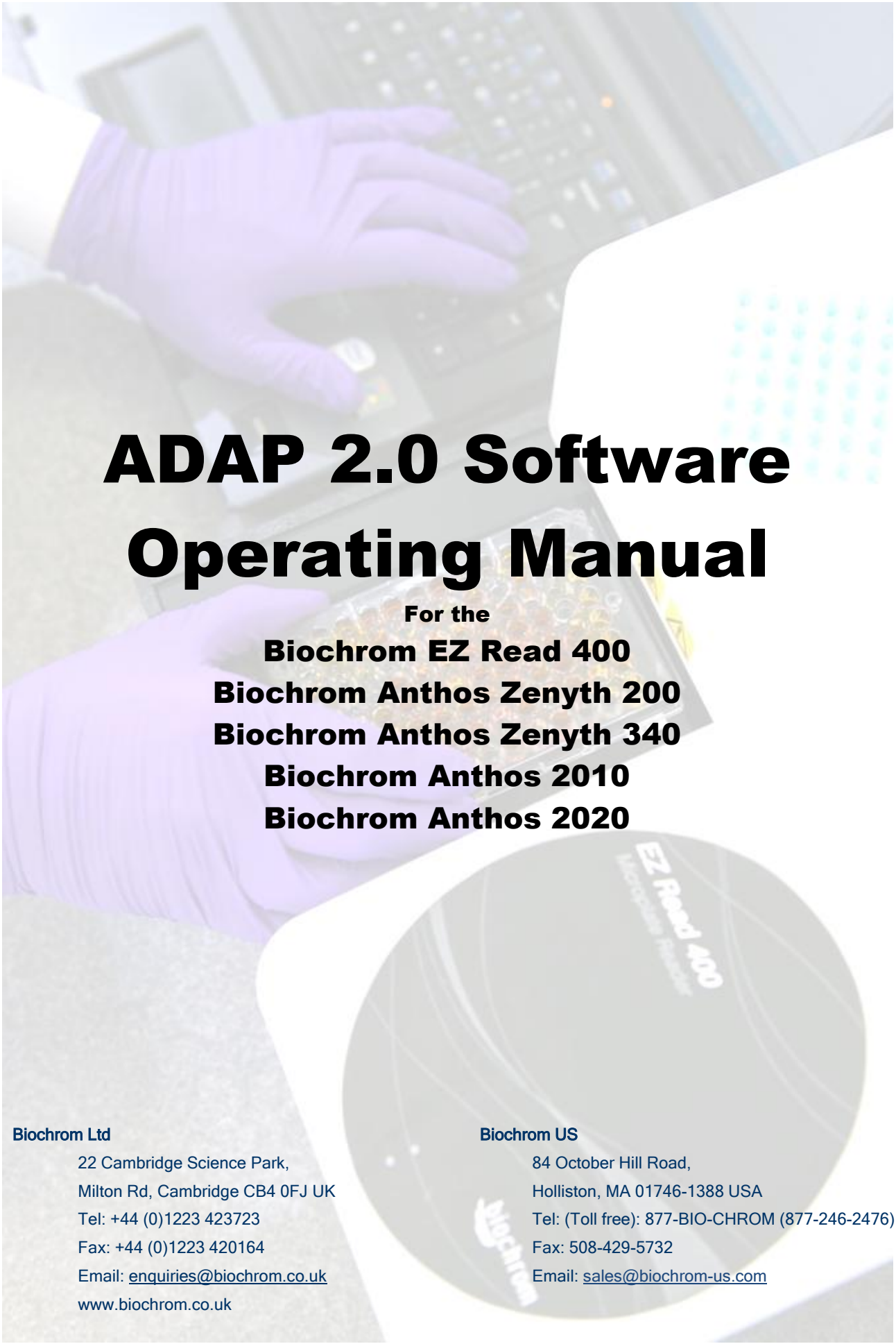


ADAP 2.0 Software Operating Manual

For the

Biochrom EZ Read 400
Biochrom Anthos Zenyth 200
Biochrom Anthos Zenyth 340
Biochrom Anthos 2010
Biochrom Anthos 2020

Biochrom Ltd

22 Cambridge Science Park,
Milton Rd, Cambridge CB4 0FJ UK
Tel: +44 (0)1223 423723
Fax: +44 (0)1223 420164
Email: enquiries@biochrom.co.uk
www.biochrom.co.uk

Biochrom US

84 October Hill Road,
Holliston, MA 01746-1388 USA
Tel: (Toll free): 877-BIO-CHROM (877-246-2476)
Fax: 508-429-5732
Email: sales@biochrom-us.com

Except as provided in writing signed by an officer to Anthos, this system and any related documentation are provided "as is" without warranty of any kind, expressed or implied, including that the system is "error free." This information is presented in good faith, but Biochrom does not warrant, guarantee, or make any representations regarding the use or the results of the use of this system and related documentation in terms of correctness, accuracy, reliability , omissions, or otherwise. The entire risk as to the use, results, and performance of this system and related documentation is assumed by the user.

Except as expressly provided herein, Biochrom makes no other warranty, whether oral or written, expressed or implied, as to any matter whatsoever, including but not limited to those concerning merchantability and fitness for a particular purpose, nor is freedom from any patent owned by Biochrom by others to be inferred.

LIMITATIONS OF LIABILITY
Biochrom shall not be liable, to any extent whatsoever, for any damages resulting from or arising out of the use or performance of this system and related documentation or the procedures specified in this manual, regardless of foresee ability or the form of action, whether in contract, tort (including negligence), breach of warranty, strict liability or otherwise, and including but not limited to damages resulting from loss of data, loss of anticipated profits, or any special, indirect, incidental or consequential damages. In no event shall Biochrom liability to the user exceed the amount paid by the user to Biochrom. The user assumes full responsibility for the results obtained from the use of this system and related documentation and for application of such results.

Warranty and Returned Goods Requirements

All standard Biochrom policies governing returned goods apply to this product. Subject to the exceptions and upon the conditions stated below, the Company warrants that the products sold under this sales agreement shall be free from defects in workmanship and materials for one year after delivery of the products to the original Purchaser by the Company, and if any such product should prove to be defective within such one year period, the Company agrees, at its option, either (1) to correct by repair or at the Company's election by replacement, any such defective product provided that investigation and factory inspection discloses that such defect developed under normal and proper use, or (2) to refund the purchase price. The exceptions and conditions mentioned above are as follows:

a. Components or accessories manufactured by the Company which by their nature are not intended to and will not function for one year are warranted only to reasonable service for a reasonable time. What constitutes a reasonable time and a reasonable service shall be determined solely by the Company. A complete list of such components and accessories is maintained at the factory.

b. The Company makes no warranty with respect to components or accessories not manufactured by it. In the event of defect in any such component or accessory, the Company will give reasonable assistance to Purchaser in obtaining from the manufacturer's own warranty.

c. Any product claimed to be defective must, if required by the Company, be returned to the factory, transportation charges prepaid, and will be returned to Purchaser with transportation charges collect unless the product is found to be defective, in which case the product must be properly decontaminated of any chemical, biological, or radioactive hazardous material.

d. The Company shall be released from all obligations under all warranties, either expressed or implied, if any product covered hereby is repaired or modified by persons other than its own authorized service personnel, unless such repair by others is made with the written consent of the Company.

e. If the product is a reagent or the like, it is warranted only to conform to the quantity and content and for the period (but not in excess of one year) stated on the label at the time of delivery.

It is expressly agreed that the above warranty shall be in lieu of all warranties of fitness and of the warranty of merchantability, and that the company shall have no liability for special or consequential damages of any kind or from any cause whatsoever arising out of the manufacture, use, sale, handling, repair, maintenance, or replacement of any of the products sold under the sales agreement.

Representatives and warranties made by any person, including dealers and representatives of the Company, which are consistent or in conflict with the terms of this warranty, shall not be binding upon the Company unless reduced in writing and approved by an expressly authorized officer of the Company.

Parts replaced during the warranty period are warranted to the end of the instrument warranty.

➔ Performance characteristics and specifications are only warranted when Biochrom Instruments replacement parts are used.

Table of Contents

1. Installing the ADAP Software

1.1. Overview

The ADAP software is a Windows®-based control and analysis program for Anthos and Biochrom microplate readers. The ADAP software is capable of performing single or dual wavelength endpoint, kinetic, well scan and wavescan photometric measurements. It automatically recognizes whether the connected instrument is a standalone model (Anthos 2020) or controlled by the computer (for example, the Zenyth 340rt) and enables the appropriate device control and data transfer functionality.

The ADAP Plus software contains the same functionality as the ADAP Basic software, as well as these programming and evaluation capabilities:

- Quantitative evaluation, including quantitation, curve fitting, and standard curves.
- Qualitative evaluation, including cutoff formulas and groups.
- Plate layout, including programming of blanks, standards, and controls.
- Replicate elimination and test validation formulas.
- Detailed graph view of multiwavelength and linear scan measurement results.
- Detailed curve information for multiwavelength and linear scan measurement results.

➔ Refer to Chapter 8, *Defining and Running Tests*, for more information about the programming and evaluation capabilities of the ADAP Plus and ADAP Expert software.

The ADAP Expert software comprises the ADAP Plus software and adds the following features:

- Reduced data from kinetic assays may be recalculated.
- Sample IDs (refer to Chapter 9, *Defining and Running Multitest Assays*).
- Multitest functions (refer to Chapter 9, *Defining and Running Multitest Assays*).
- 3-D scanning graphs (refer to Section 7.3.6.4, *Viewing the Transmission Profile of a Single Well*).

➔ An instrument-dependent license code is required to access the ADAP Plus or ADAP Expert software functions. The code is provided when purchasing an ADAP Plus or ADAP Expert software license. Refer to Section 1.3, Launching *the ADAP Software for more information*.

This chapter covers:

- Installing the ADAP software (refer to Section 1.2, *Installing the ADAP Software*).
- Launching the ADAP software (refer to Section 1.3, *Launching the ADAP Software*).

1.2. Installing the ADAP Software

Installing the ADAP software requires:

- Meeting the minimum computer system requirements for the ADAP software (refer to Section 1.2.1, *System Requirements*).
- Installing the ADAP software (refer to Section 1.2.2, *Running the Setup Program*).

1.2.1. System Requirements

Before installing the ADAP software, refer to Table 1-1 to ensure the target computer system meets the minimum requirements. Where relevant, Table 1-1 also lists recommended requirements.

Component	Minimum Requirements
CPU	Pentium® 133 Mhz minimum Pentium® II 500 Mhz recommended
RAM	16 MB minimum 64 MB recommended
Hard Drive	50 MB free space
CD-ROM Drive	4X
Monitor	640x480 resolution
Keyboard	101 key
Mouse	IBM® compatible
Serial Port	1 free serial port per instrument connected
Operating Systems	Windows® 95 (Y2K update required) Windows® 98 (Y2K update 2 required) Windows® 98 Second Edition Windows® Millennium Edition Windows NT® 4 (Service Pack 5 or higher) Windows® 2000 Windows® XP
Web Browser	Internet Explorer 4.01 (Service Pack 2 or later)
Database	Microsoft Data Access Components (MDAC) 2.6

Table 1-1: ADAP Software System Requirements

1.2.2. Running the Setup Program

The ADAP software setup program installs all of the components required for the ADAP software to run.

To install the ADAP software:

➔ Before installing the ADAP software on a computer equipped with Windows® NT 4, 2000, or XP set up with multiple user accounts, the user must log into an account with Administrator access. Users logged into an account with Limited access are not permitted to install the software.

1. Exit all open Windows programs before running the ADAP software setup program.

2. Insert the ADAP software installation CD into the CD-ROM drive. After a few seconds, the ADAP set up page will open automatically in your default internet browser (Figure 1-2 ADAP 2.0 Automatic Start Up Page

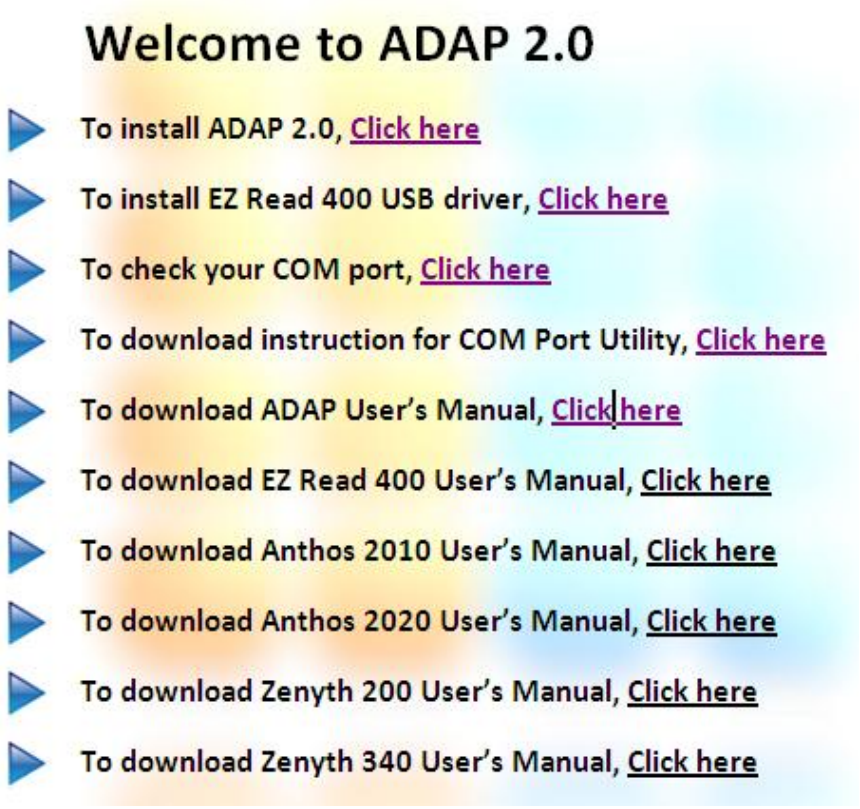


Figure 1-1 ADAP 2.0 Automatic Start Up Page

➔If the ADAP software setup program does not appear automatically, use Windows Explorer to locate the CD-ROM drive and open **E:\ADAP_Software\ADAP Setup[V2.0.0].exe**

3. Follow the instructions in the setup wizard to install the software.

4. When the software installation is complete, choose **Finish** to exit the setup program. The ADAP software is ready to use.

   OR

5. If prompted, choose **Restart**. After the computer restarts, the ADAP software will be ready to use.

➔ All existing files created by the ADAP Basic software and the database that stores measurement results are accessible to the upgraded software.

1.2.3. Installing USB drivers

The EZ Read 400 uses a USB A to B connector to communicate with the PC.

To install the USB drivers:

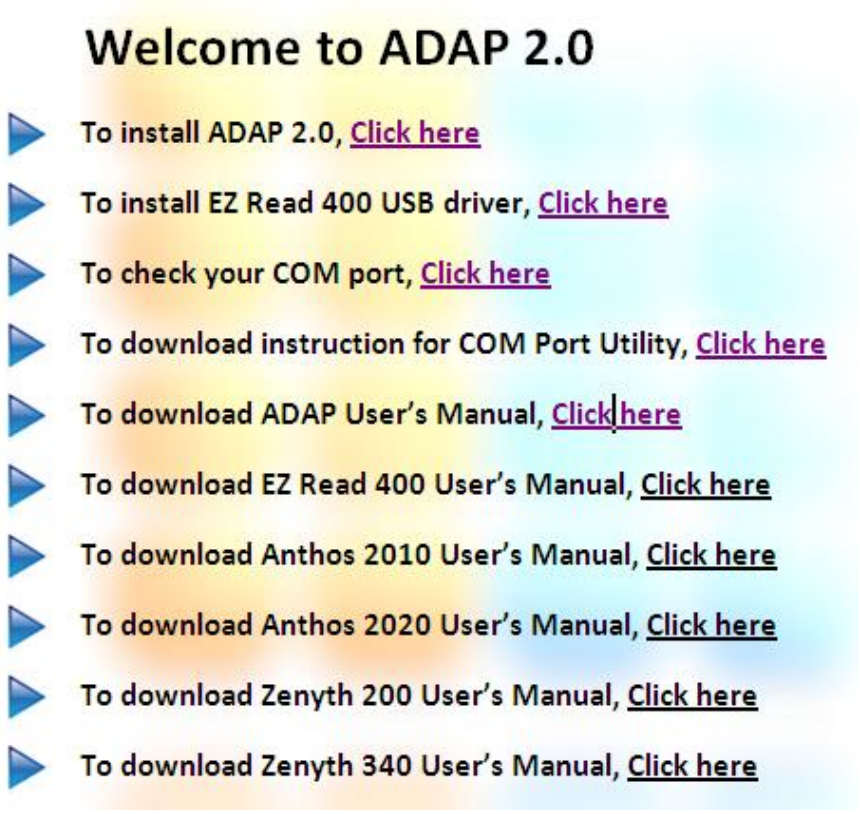


Figure 1-2 Welcome to ADAP 2.0 Start Up Page

1. Click on **To install ADAP 2.0 Click here.**

2. Either open or save the file: CDM20814_Setup(1).exe and then select OK to install.

3. Program will close when installation is completed.

1.3. Launching the ADAP Software

To launch the ADAP software:

1. From the Windows® Start menu, choose **Programs >ADAP>ADAP**.

2. The first time the ADAP software is launched; License Code appears (Figure 1-). If necessary, enter the 25-digit license code printed on the cover of the software CD.

➔ A license code is required only for upgraded versions of the ADAP software such as ADAP Plus or ADAP Expert.

➔ To access License Code after running the ADAP software for the first time, from the Windows menu, choose **About**, and then choose **License Code**.

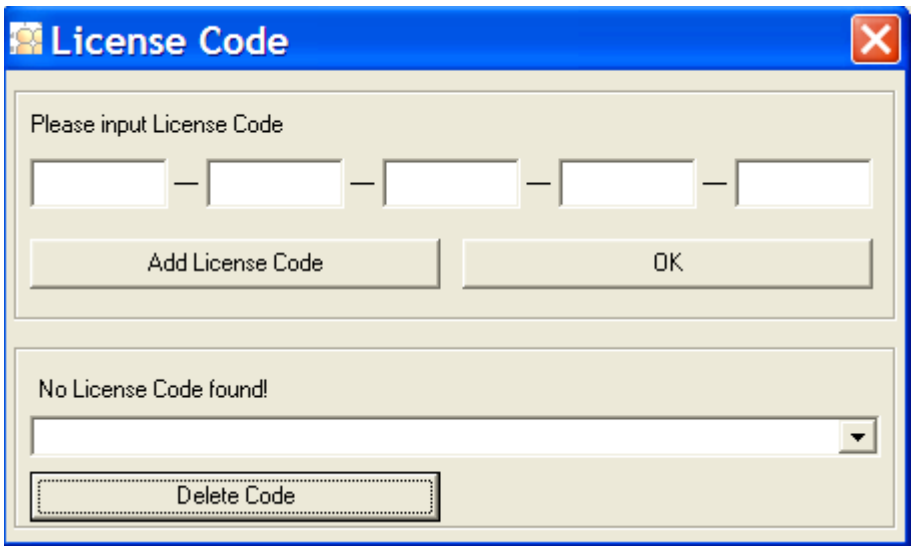


Figure 1-3: License Code

3. Choose **Add License Code** to verify the License Code entered.

➔If the license code cannot be verified, re-enter it and choose **Add License Code** again.

OR

Choose **OK** to close License Code if no License Code was entered. Login appears (Figure 1-).

➔ Delete Code is used to delete time-limited promotional License Codes used to demonstrate advanced software features. Service codes used by Biochrom service engineers to test instrument functionality may also be deleted.

4. After the license code is verified, choose **OK** to close License Code. Login appears (Figure 1-).

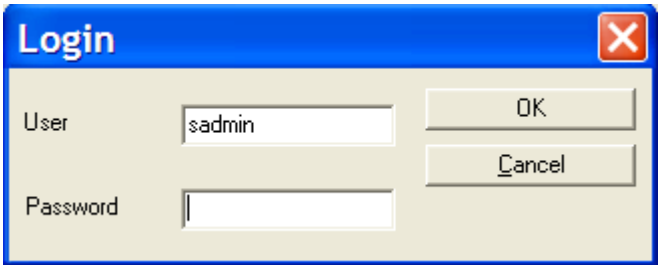


Figure 1-4: Login

5. Enter the User Name and Password. Refer to Chapter 2, *User Login and System Administration*, for more information on logging into the ADAP software.

➔ If a password is forgotten, contact the system administrator or Biochrom service.

➔The first user who logs into the ADAP software should accept the role of system administrator. Log in using the generic system administrator user name and password in Table 1-1. After logging in the first time, the password must be changed (refer to Section 2.2, *Accepting the Role of* System Administrator).

User Name	Password	User Level
sadmin	sadmin	System administrator (user level 3)
admin	admin	Local administrator (user level 2)
user	user	User level 1

Table 1-2: Generic User Names and Passwords

6. Choose **OK**. The ADAP software main window appears (Figure 1-).

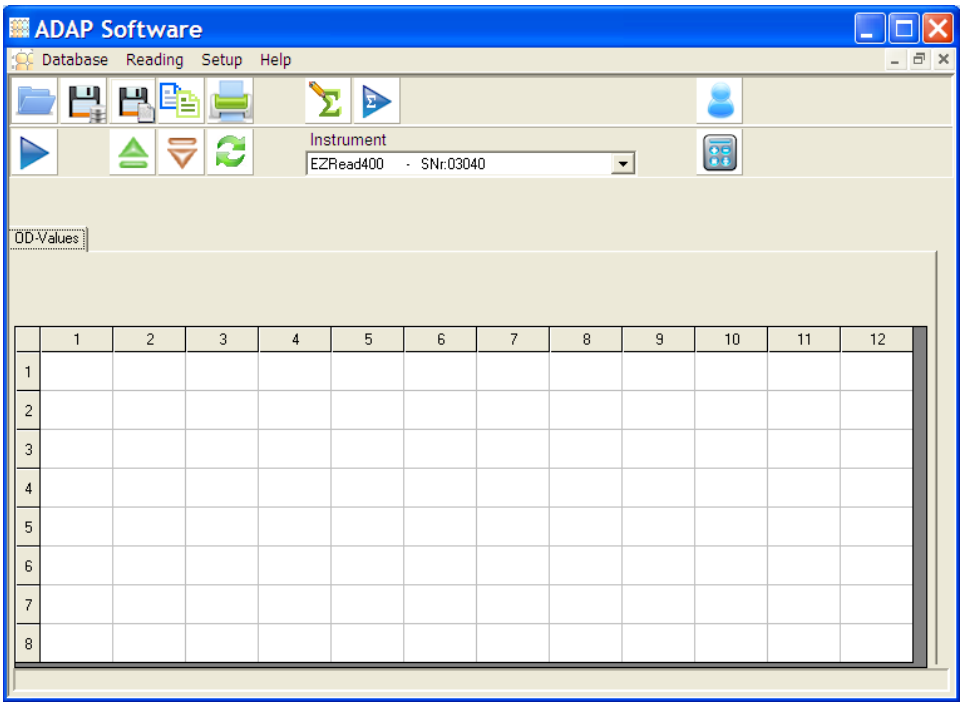


Figure 1-5: ADAP software main window

1.3.1. Using the Help Menu

Use the Help menu to access this user's manual, as well as the user's manual for the instrument currently being controlled by the ADAP software. To view the user's manuals, Acrobat® Viewer must be installed on the computer.

➔The Acrobat® Viewer installer is included on the ADAP software installation CD, but is not automatically installed with the ADAP software.

To install the Acrobat® Viewer from the ADAP software installation disc, open Readme.html, choose the link to Acrobat® Viewer, and follow the onscreen instructions.

The Help menu also provides a link to the Biochrom website. To use this link, a default web browser must be installed and configured on the computer.

2. User Login and System Administration

2.1. Overview

The ADAP software has the ability to manage up to 50 different users. Only authorized users are able to operate the system, and are identified in the user log table and on printed reports generated by the software. A hierarchy with three different user levels is implemented:

- Level 1 — Users can perform Quick, Test, and Multitest measurements. However, they cannot create, edit, or delete test definitions or configure system and instrument parameters.
- Level 2 (local administrator) — Along with performing Quick, Test, and Multitest measurements, Level 2 users are allowed to create, edit, and delete test definitions and configure system and instrument parameters.
- Level 3 (system administrator) — These users have the same privileges as Level 1 and Level 2 users, and may also add and delete Level 1 and Level 2 users, edit existing user information for Level 1 and Level 2 users, and provide user passwords. They may add additional Level 3 users, but may not edit or delete Level 3 accounts after they are created.

➔ Test measurements are available in the ADAP Plus and ADAP Expert software; Multitest measurements in the ADAP Expert software only.

User administration includes:

- Accepting the role of system administrator the first time the software is run (refer to Section 2.2, Accepting the Role of System Administrator in ADAP).
- Logging into the ADAP software (refer to Section 2.3, *Logging Into the ADAP Software*).
- Changing a password (refer to Section 2.4, Changing a Password*).*
- Adding and deleting users, as well as editing user information (refer to Section 2.5*, Adding, Deleting, and Editing Users*).
- Viewing the user log (refer to Section 2.6, *Viewing the User Log Table*).

2.2. Accepting the Role of System Administrator in ADAP

The first time the software is run, the person logging in must accept the role of system administrator (Level 3) and immediately change the default provided password. Refer to Section 2.4, *Changing a* Password, for information on changing a password.

➔ More than one person may assume the role of a system administrator since a system administrator may add other system administrators.

A system administrator (Level 3) can:

- Add Level 1, Level 2, and Level 3 users.
- Delete Level 1 and Level 2 users.
- Edit existing user information of Level 1 and Level 2 users.
- Provide user passwords for Level 1, Level 2, and new Level 3 users.

A system administrator (Level 3) cannot:

- Delete other Level 3 users.
- Edit existing user information of other Level 3 users.

2.3. Logging Into the ADAP Software

Authorized users must log in with their individual user name and password each time the ADAP software is started.

➔ After seven minutes of inactivity, users are automatically logged out and must log in again to continue using the software.

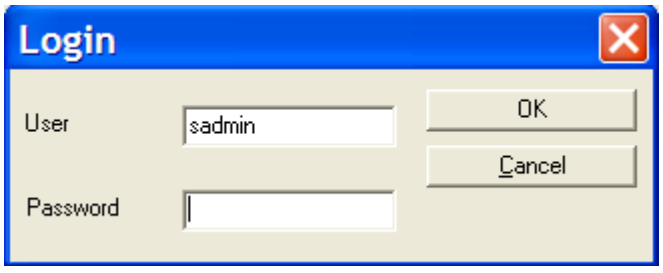
The first time a user logs in, the default user name and password in Table 2-1 must be used according to the user level. After logging in with a default user name and password, the password should be changed (refer to Section 2.4, *Changing a* Password).

User Name	Password	User Level
sadmin	sadmin	System administrator (user level 3)
admin	admin	Local administrator (user level 2)
user	user	User level 1

Table 2-1: Default User Names and Passwords

To log in to the ADAP software:

From the Start menu, choose Programs>ADAP>ADAP**. The ADAP software starts up and Login appears (**

Figure 

2-1).

Figure 2-1: Login

7. Enter the **User** and **Password**.

➔ If a user forgets their password, contact the system administrator or Biochrom service.

8. Choose **OK**.

➔ If a Level 1 or Level 2 user attempts to access a software function they do not have permission to perform, Login appears. To access the software function, a User and Password for a user with permission to perform the function must be entered.

2.4. Changing a Password

The user should change the password after logging in the first time with a default user name and password (Table 2-1). However, users may change their password at any time.

To change a password:

1. Start the ADAP software.

2. From the Setup menu, choose **Change User**.

   Or select 

   Or choose User from the toolbar. **Login** appears **(**

Figure 2-1).

Enter a valid **User Name** and **Password**. **Change Password** appears **(**

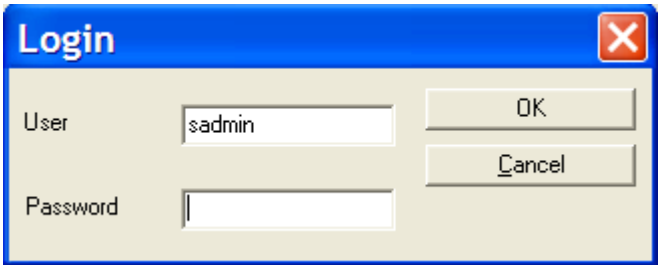


Figure2-2).

Figure2-2: Login

3. Choose **Change Password**. Login expands to display password information.

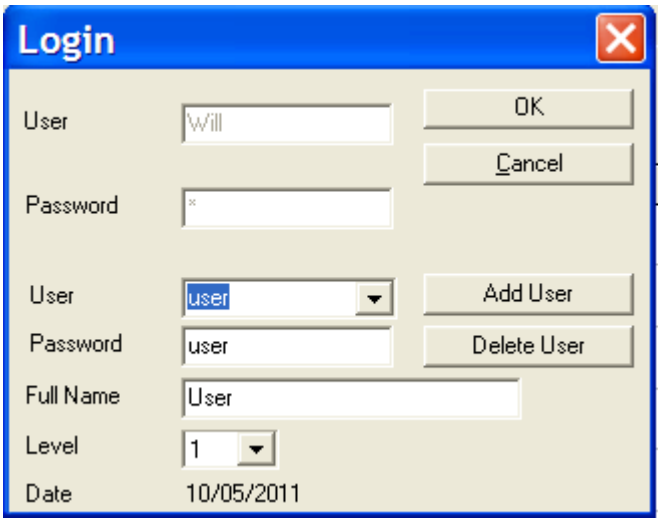


Figure 2-3: Login – Change Password options

4. In New Password, enter the new password.

➔ Passwords are case sensitive, may include spaces, and are limited to 15 characters.

5. In Confirm, enter the new password a second time.
6. Choose **OK**. The user is logged in and the password is changed. The next time the user logs in, the new password is required.

2.5. Adding, Deleting, and Editing Users

Only system administrators (Level 3) can add, edit, and delete users. For Level 1 and Level 2 users, a system administrator can add and delete users, edit user information, and assign passwords. A system administrator can create new system administrator (Level 3) accounts, but cannot edit or delete information for system administrator accounts after they have been created.

2.5.1. Adding New Users

The system administrator creates a user name and password for a new user. To add a new user:

1. Start the ADAP software.

   OR

   From the Setup menu, select **Change User**.

   OR 
   Choose **User** from the toolbar. Login appears.

2. Enter a valid system administrator (Level 3) User Name and Password. A Change Password button appears (Figure 2-4).

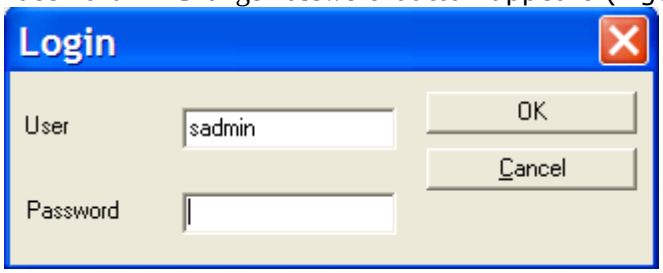


Figure 2-4: Login – system administrator login

3. Choose **Change Password**. Login expands to display detailed user information (Figure 2-5).

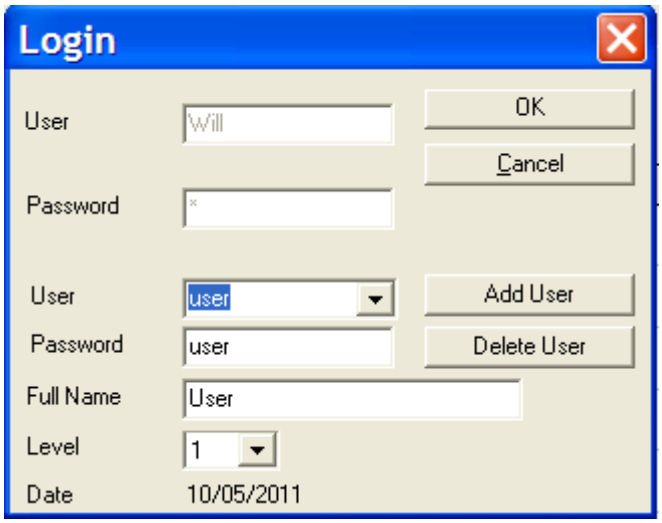


Figure 2-5: login – adding a new user

4. In User, enter a user name for the new user.

5. In Password, enter the password the new user will use to log in to the ADAP software.

➔ User names and passwords are case sensitive, may include spaces, and are limited to 15 characters.

6. In Full Name, enter the full name of the new user.

➔ A user's Full Name appears in the user log table and on printed reports generated by the software.

7. Select the desired **Level** for the new user (refer to Section 2.1, *Overview*).

8. Choose **OK** to add the user and exit Login. The user may now log on using the new user name and password.

   OR 

   Choose **Add User** to add another user.

   OR

   Choose **Cancel** to delete the new user from the list and exit Login.

2.5.2. Deleting Users

The system administrator (Level 3) can delete Level 1 and Level 2 users. To delete a user:

1. Start the ADAP software.

   OR 

   From the Setup menu, select **Change User**.

   OR
   Choose **User** from the toolbar. Login appears.

2. Enter a valid system administrator (Level 3) User Name and Password. Change Password appears (Figure 2-6).

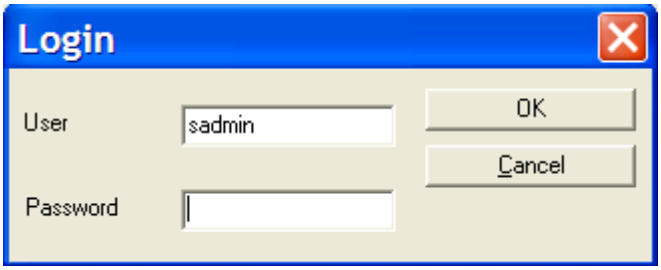


Figure 2-6: Login – system administrator login

3. Choose **Change Password**. Login expands to display detailed user information (Figure 2-7).

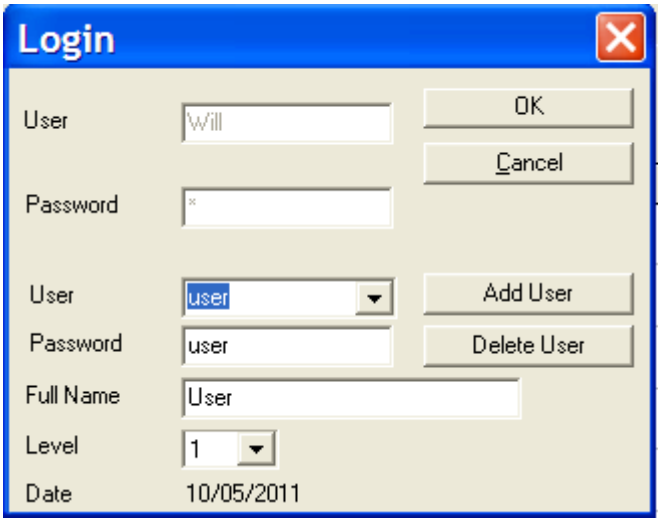


Figure 2-7: Login – selecting a User to delete

4. In User, select the user to be deleted.

5. Choose **Delete User**. The user is removed from the user list.

6. Choose **OK** to delete the selected user from the software and exit Login.

   OR

   Choose **Cancel** to prevent deleting the selected user from the software and exit Login.

➔ Only one user may be deleted each time Login is open. To delete additional users, exit Login, then reopen it to delete the next user.

2.5.3. Editing Existing User Information

A system administrator (Level 3) can edit existing user information, including user name, password, full name, and user level, for Level 1 and Level 2 users.

To edit user information:

1. Start the ADAP software.

   OR

   From the Setup menu, select **Change User**.

   OR 
   Choose **User** from the toolbar. Login appears.

2. Enter a system administration (Level 3) User Name and Password. Change Password appears (Figure 2-8).

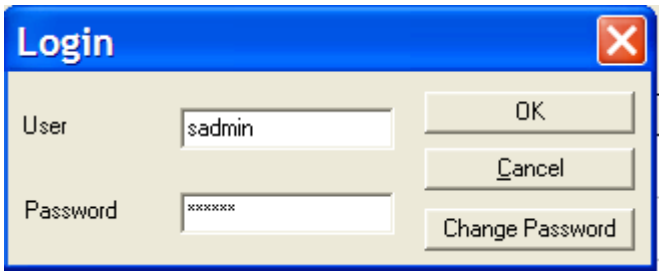


Figure 2-8: Login – system administrator login

3. Choose **Change Password**. Login expands to display detailed user information (Figure 2-9).

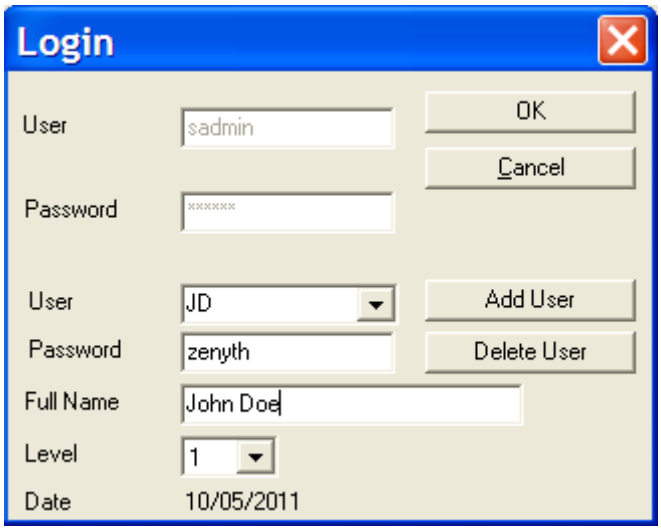


Figure 2-9: Login – editing Full Name

4. In User, select the desired user to edit.

5. Edit the user information as desired.

6. Choose **OK** to save changes made to the user information and exit Login.

   OR

   Choose **Cancel** to discard changes made to the user information and exit Login.

2.6. Viewing the User Log Table

The ADAP software maintains a log of many activities performed in the software. The log may be saved in text format so that it can be imported into other software applications.

An event is added to the log whenever:

- A user logs into the ADAP software.
- A test definition is created or modified (ADAP Plus and Expert only).
- Quick measurements are run and results saved.
- Tests are run or reevaluated (ADAP Plus and Expert only).
- A database error is reported.
- The ADAP software is closed.

To view the log table:

From the Database menu, choose **View Log Table**. Log-Table appears (Figure 2-10).

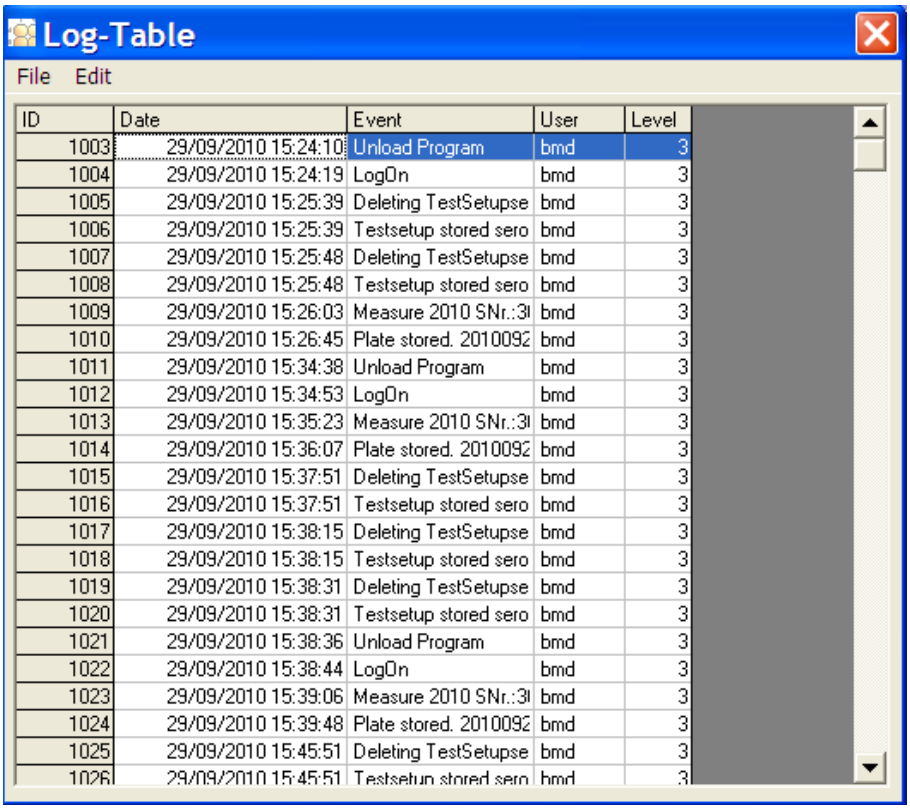


Figure 2-10: Log-Table

2.6.1. Saving the Log Table as a Text File

The log table can be saved as a tab-delimited text file which can be imported into another software application such as a spreadsheet or database.

To save the data in Log-Table as a text file:

1. From the File menu, choose **Save**. Save As appears.
2. Browse to the desired folder to save the history log file.
3. In File name, enter a file name for the history log.
4. Choose **Save** to save the history log to a text file.

2.6.2. Copying the Log Table to the Clipboard

The log table can be copied to the clipboard as tab-delimited text and pasted into any application using the Paste command.

➔The contents of the entire log table will be copied. Portions of the log table cannot be copied separately.

To copy the data in Log-Table to the clipboard:

1. From the Edit menu, choose **Copy**. The contents of the Log-Table are copied to the clipboard.
2. Open or switch to the application where the log contents will be pasted.
3. Paste the history log into a new or existing file using the Paste command for the application.

   ➔ Most applications have a standard shortcut of CTRL+V assigned to the Paste command.

3. Configuring the ADAP Software

3.1. Overview

To perform measurements, the ADAP software must be configured to the specific microplate reader connected to the computer.

Configuring the ADAP software includes:

- Configuring the microplate reader in the ADAP software (refer to Section 3.2, *Configuring the Microplate Reader*).
- Configuring system settings (refer to Section 3.3, *Configuring System Settings*).

3.2. Configuring the Microplate Reader

The ADAP software must be configured for the specific microplate reader through the reader configuration screen. This configuration must be done the first time the software is used and when an additional or different instrument is used.

To access the reader configuration screen: From the Setup menu, select **Instrument**. Instrument appears.

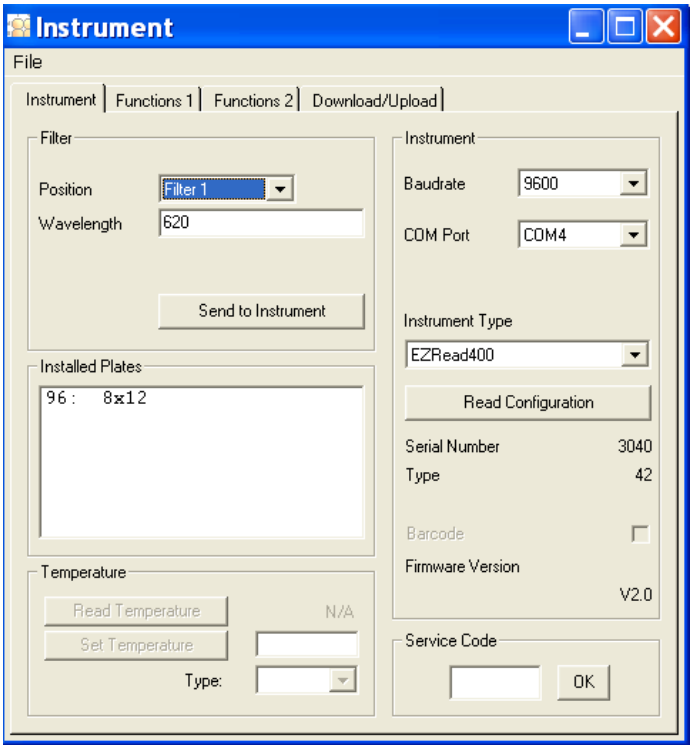


Figure 3-1: Instrument settings – EZ Read 400

Instrument is divided into five configuration areas:

- Instrument — Communication settings and instrument (refer to Section 3.2.2, *Configuring Instrument Settings*).
- Filter — Lists filters installed in the instrument. Allows users with Level 3 (system administrator) access to configure filters installed in the Zenyth 340. (Refer to Section 3.2.3, Viewing and Configuring Filters).
- Installed Plates — Plates that can be used by the instrument (refer to Section 3.2.4*, Viewing Installed Plates*).
- Temperature — Temperature settings for instruments that support temperature control (refer to Section 3.2.5, *Setting the Temperature)*.
- Service Code — For Biochrom Service Engineers only.

3.2.1. Setting the COM port

The instrument connects to a PC using a COM port either using a RS232 connection (Anthos 2010, Anthos 2020, Zenyth 340 and Zenyth 200) which can be used in conjunction with the supplied USB adaptor or via a USB A to B connection (EZ Read 400).

3.2.1.1. To determine the COM port number for instruments that use an RS232 or USB to RS2323 adaptor for PC connection (Anthos 2010, Anthos 2020, Zenyth 340 and Zenyth 200):

1. Open Device Manager

    a. In Windows 9x/2000/XP
    Select Start > Run, enter the text: 'devmgmt.msc' into the 'Open:' text box, click OK button

    b. In Windows Vista/7

    Select Start, in the Search box, type 'Device Manager', it should appear in the results above, click to open).

2. Expand the section marked 'Ports (COM & LPT)'. This will show a list of ports on your PC followed by the COM number in brackets. The standard RS232 serial port (if you have one) on the back of your PC is normally listed as 'Communication Port (COM1)'. If you are using a USB to serial converter, will usually be listed as a virtual com port.

The COM port number must be 1 – 9 in order to work correctly.

If the COM port number is not 1 – 9:

1. Follow steps 1 & 2 above.
2. Right click on the port which the instrument is connected to and select 'Properties'
3. Click on the 'Port Settings' tab.
4. Click on the 'Advanced' button.
5. Change the COM port number to anything between 1 and 9, do not use number which say (in use).
6. Click OK to save and exit back to the Device Manager window. The change to COM port number may not show until you close and re-open Device Manager (step 1).

3.2.1.2. To determine the COM port for instruments that use USB connections:

1. Insert the ADAP CD that was supplied with the instrument.
2. The page: Welcome to ADAP 2.0 should open automatically in your default internet browser:

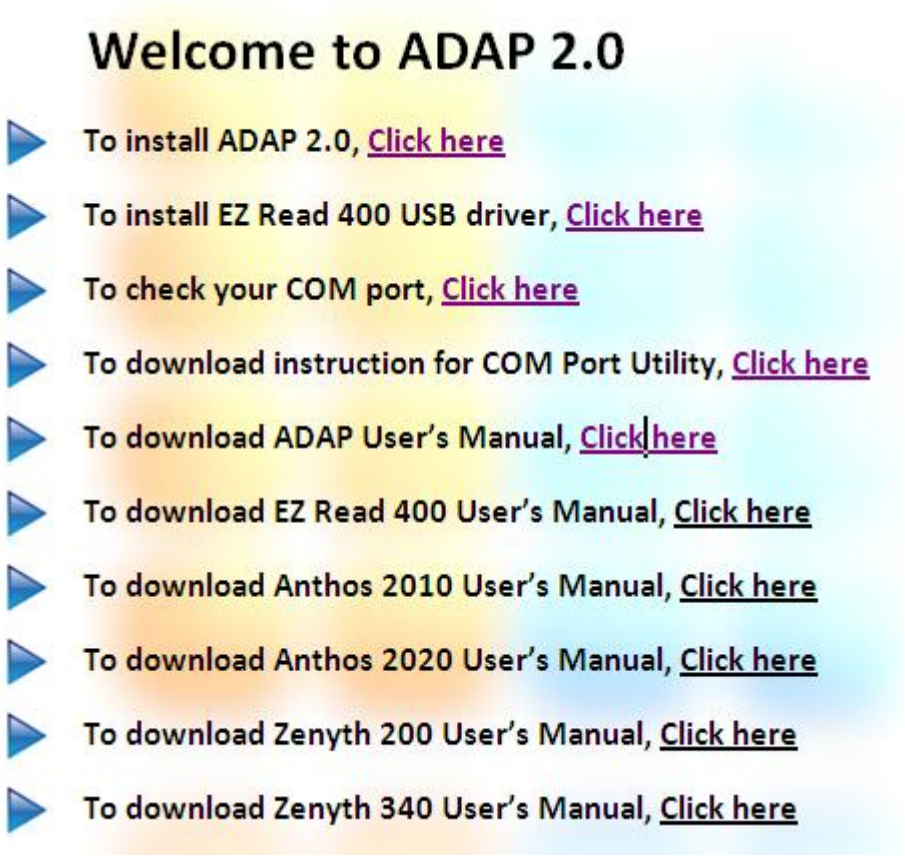


Figure 3-2: Welcome to ADAP 2.0 Page

3. Select **To check your COM port Click here**.
4. Save the resulting utility **ReAssignCOMPortNumb.exe** to your PC and then open from the saved location.
5. The COM port utility will open:

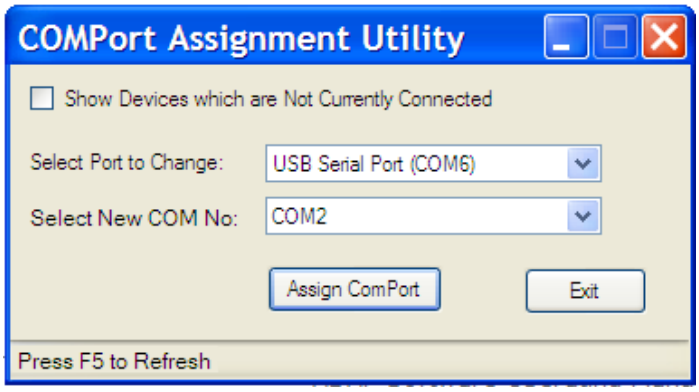


Figure 3-3: COMPort Assignment Utility

6. The utility will automatically detect the COM port used by the instrument.

If the COM port is not 1-9 it must be changed:

1. In the the COMPort Reassignment utility set the new COM port by selecting **Select New COM No.:**

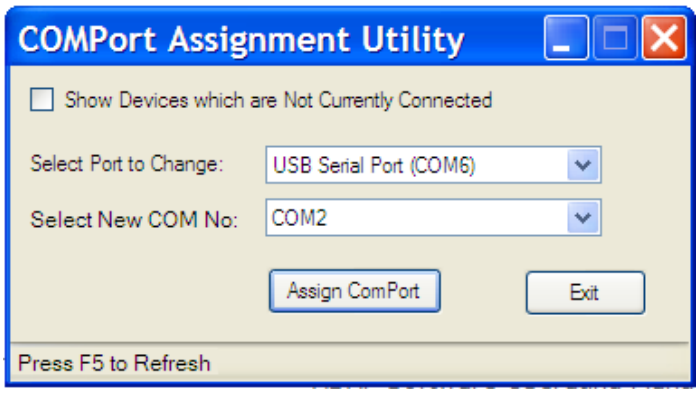


Figure 3-4: COMPort Assignment Utility

2. Set the COM port to any unused COM between COMs 1-9.

3.2.2. Configuring Instrument Settings

Instrument includes configuring communications settings and selecting the type of microplate reader connected to the computer.

To configure the instrument settings:

1. In Baud rate, select **Auto Sense** or the desired baud rate for communication between the ADAP software and the microplate reader. Setting a specific Baud rate, such as 9600, requires that the Baud rate setting on the reader match that in the ADAP software.

   ➔ The Zenyth 340 microplate reader supports baud rates of 9600, 19200, and 38400. The EZ Read 400 and Anthos 2010/2020 microplate readers support a baud rate of 9600.

2. In COM Port, select the communications port (COM) that is used to connect the instrument to a PC. (As determined in the previous section: 3.2.1.1).

   ➔ If more than one instrument is connected to the computer, select the specific COM Port the reader is connected to.

3. In Instrument Type, select the type of microplate reader to control using the ADAP software.

   ➔ After selecting the Instrument Type, the ADAP software communicates to the instrument attached to the selected COM Port and automatically displays the serial number and firmware version of the instrument. If the Instrument Type selected does not match the data from the instrument, an Instrument not found error will occur.

   ➔ Selecting Simulator allows simulated measurements to be created, edited, and run without having an instrument connected to the computer. Simulator is useful for testing new protocols.

   The Simulator emulates a microplate reader but does not provide the ability to simulate scan measurements.

4. Select **Read Configuration**. The filter configuration and defined plates stored in the instrument are read and displayed in Filter and Installed Plates.

3.2.3. Viewing and Configuring Filters

Filter displays the Position on the filter wheel and Wavelength of each filter installed in the instrument. Filter information is populated automatically when Read Configuration is selected in Instrument.

Filters installed in the Zenyth 340 can be changed by the user. After filters are physically added, removed, or moved to a different location on the filter wheel, the filter settings must be updated. Only users with Level 3 (system administrator) access can update filter settings.

To update the filter settings:

1. In Position, select the filter position which has been changed.
2. In Wavelength, enter the wavelength of the new filter.
3. Repeat steps 1 and 2 for each filter position that has changed.
4. Choose **Send to Instrument** to send the information to the instrument and update the instrument settings. Message appears (**Error! Reference source not found.**).

➔ Send to Instrument appears only when a user with Level 3 (system administrator) access is logged into the software.

Choose **Yes** to adjust the lamp.

➔ The lamp must be adjusted if a filter has been installed or changed. New filter wavelengths cannot be used in measurements until the lamp adjustment is made.

➔ The lamp adjustment process cannot be interrupted.

OR

Choose **No** to return to Instrument Settings without adjusting the lamp.

➔ Choose **No** only if a filter has been removed from the reader. Adding or changing filters requires that the lamp be adjusted before they can be used in measurements.

3.2.4. Viewing Installed Plates

Installed Plates displays all the plate definitions that can be used in measurements performed by the microplate reader selected in Instrument Type.

➔ Installed Plates is automatically populated when Read Configuration is selected in Instrument.

➔Refer to Section 5.2.2, *Editing and Transferring Plate Formats* for more information about using microplates with the instrument.

3.2.5. Setting the Temperature

The Zenyth 340rt microplate readers feature the ability to perform temperature-controlled incubations. For more information, refer to the user's manual for the Zenyth 340.

To set the temperature:

1. In Type, select **Celsius** or **Fahrenheit**.

   ➔ The Fahrenheit scale is only available on readers sold in the United States.

2. Choose **Read Temperature** to get current temperature of the microplate reader.

3. In Set Temperature, enter the desired temperature for incubation.

   ➔ The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).

4. Choose **Set Temperature** to prepare the microplate reader for incubation.

5. To determine when the desired incubation temperature has been reached, choose **Read Temperature** until the current temperature of the reader matches the desired incubation temperature.

   ➔ The incubation temperature will remain at the current setting until Set Temperature is changed.

➔ To turn temperature control off, in Set Temperature, enter **0**.

3.3. Configuring System Settings

System settings, including data storage path, raw data format, and printout headers, are configured in Setup-System.

To configure system settings:

1. From the Setup menu, select **System**. Setup-System appears (Figure 3-).

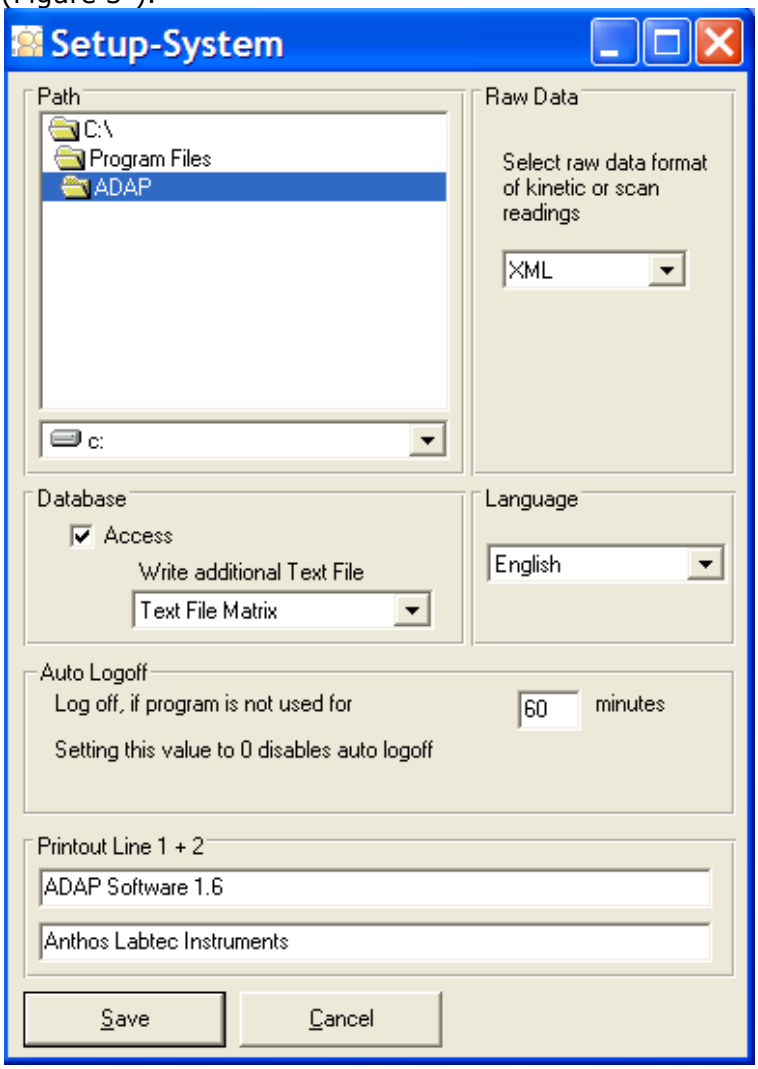


Figure 3-5: Setup-System

2. To create a new database, in Path, select the desired local or network drive. All folders on the drive are displayed.

3. Browse to the desired location on the selected drive to create the database by double-clicking on the desired folders.

➔ A database created before changing the Path will not be accessible if the Path is changed to a different drive or folder. Plate layouts, test definitions, and test results stored in the database will not be available to the ADAP software unless the original Path to the database is restored.

4. In Raw data, choose the desired file format for saving raw data:

   - TXT — Saves the raw data as a text file readable by most word processing applications.
   - XML — Saves the raw data as an XML file. XML is a format designed for sharing information over the Web.

5. In Database, select **Access** to store measurement data in the ADAP software database.

   ➔ Selecting Access ensures that *all* measurement data is saved and may be exported to text files for viewing in other software applications. For example, after a measurement is completed and saved, exporting the measurement data from the database is the only method available to create a text file with the data arranged in an 8 x 12 array.

6. In Database, select a text file format to store measurement data in text files.

   - None — Text files are not saved.
   - Text File PLT — Saves measurement results as a *.plt file with text formatting that can be read by the AD 340S standalone software.
   - Text File Structure, TAB — Saves measurement results in tab-delimited columns that can be imported into many spreadsheet and database applications.
   - Text File Structure, Semicolon — Saves measurement results in semicolon-delimited columns that can be imported into many spreadsheet and database applications.
   - Text File Matrix— Saves measurement results in tab-delimited matrices that can be imported into many spreadsheet and database applications.

   ➔ Measurement data may be saved simultaneously in the ADAP software database and in text files.

   ➔ If no Database options are selected, manual options for saving data appear after each measurement. If no save option is selected at this time, the measurement data is not saved.

7. In Language, select whether to run the ADAP software in **English** or **German**.

8. In Printout Line 1 + 2, enter the header text that will appear on all printouts of measurement results.

9. Choose **Save** to save the new settings. Setup-System closes.

OR

Choose **Cancel** to close Setup-System without saving changes.

4. Manually Controlling Readers with the ADAP Software

4.1. Overview

The ADAP software provides two Functions tabs that permit manually controlling many instrument operations independently from measurements. Functions 1 controls operations such as loading and ejecting microplates and displays instrument information (refer to Section 4.2, *Using Functions 1*). Functions 2 adjusts several instrument parameters and controls operations such as dispensing fluids and shaking microplates (refer to Section 4.3, *Using Functions 2*).

To access the Functions tabs:

1. From the Setup menu, choose **Instrument**. Instrument appears (Figure 4-1).

2. Choose the desired Functions tab to display: **Functions 1** or **Functions 2**. The selected tab is displayed (Figure 4-1).

4.2. Using Functions 1

Functions 1 tab is divided into two sections: Functions and Information (Figure 4-1). The Functions tabs control several common instrument operations. Information displays information about the connected instrument.

➔ Operations available depend on the instrument being controlled by the ADAP software and the access level of the user currently logged into the software. For example, Figure 4-1 shows operations for the Zenyth 340 microplate reader available to a user with User Level 3 (system administrator) access.

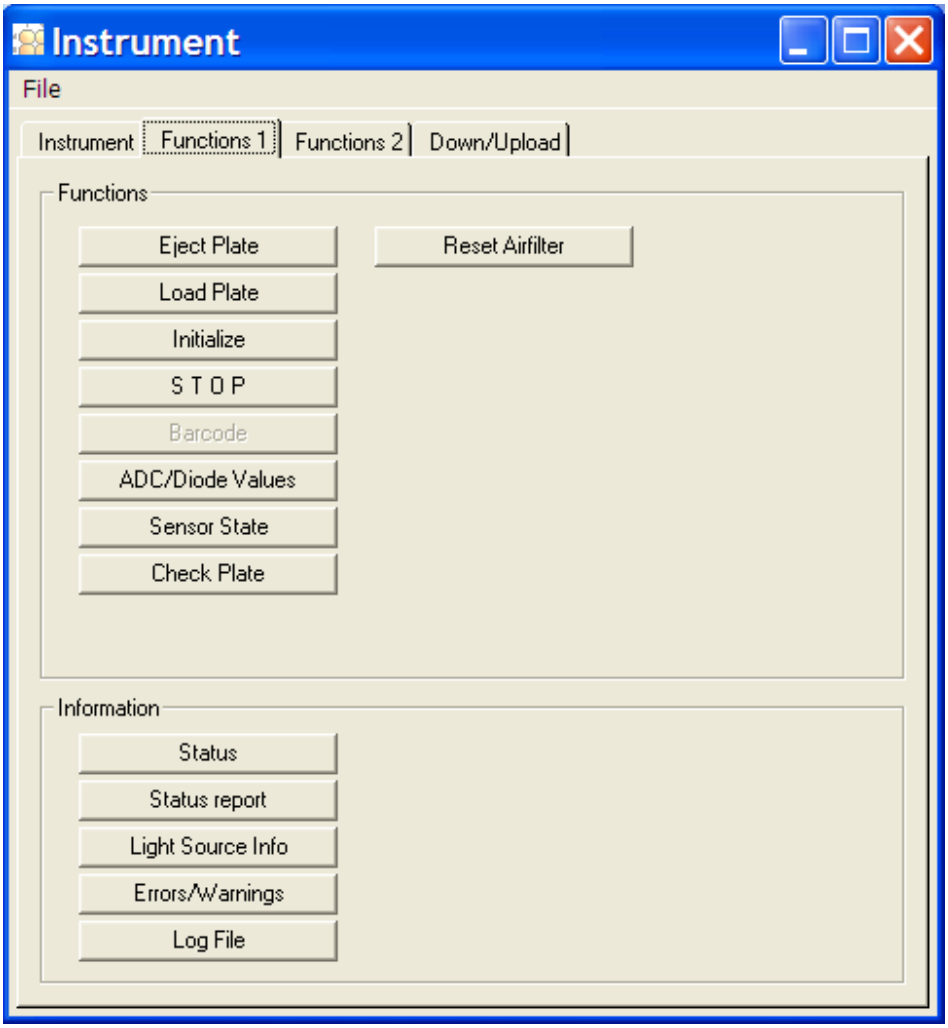


Figure 4-1: Instrument – Functions 1

4.2.1. Performing Functions

The options in Functions control basic instrument operations as described in Table 4-1.

Functions	Zenyth 340 Operation
Load Plate	Moves the plate transport inside the instrument
Eject Plate	Moves the plate transport outside the instrument.
Initialize	Moves all mechanical components of the instrument to home positions
STOP	Stops all operations in progress
ADC/Diode Values	Continuously updates and displays in Information the ADC value of the instrument until Information is closed
Sensor State	Continuously updates and displays in Information the current state of all instrument sensors until Information is closed.
Check Plate	Checks that a microplate is inserted in the instrument
Reset Air Filter	Resets the air cycle count after replacing the air filter on the instrument. ➔ This function is available only to users with User Level 3(system administrators) access.

Table 4-1: Functions by Instrument Capability

4.2.2. Viewing Information

The options in Information display instrument setting information as described in Table 4-2.

Information	Operation
Status	Displays in Information the current state of the instrument: OK, Ready, Error, or Standby
Status Report	Displays in Information the current status of several mechanical components including the transports and filter wheel
Light Source Info	Displays the current status of the light source for each filter in Information.
Errors/Warnings	Displays current alerts, errors, and warnings in Information.
Log file	Displays in Information the instrument log file that records all commands sent by the software to the instrument and execution errors. ➔ The instrument Log File is primarily intended for service technicians.

Table 4-2: Functions 1: Information Options

When an option is selected in Information, the specific instrument information relating to the selected option appears in Information (Figure 4-2).

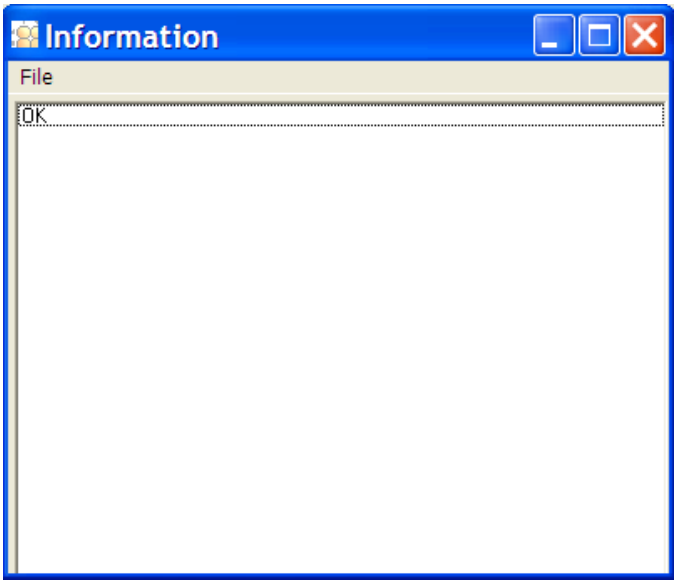


Figure 4-2: Information displaying Light Source Info

Information can be:

- Copied to the clipboard (refer to Section 4.2.2.1, *Copying Instrument Information to the Clipboard*).
- Saved as a text file (refer to Section 4.2.2.2, *Saving Instrument Information in a Text File*).
- Printed (refer to Section 4.2.2.3, *Printing Instrument Information*).

4.2.2.1. Copying Instrument Information to the Clipboard

Information can be copied to the clipboard and then pasted into another application such as a word processor.

To copy the information to the clipboard:

From the File menu, choose **Copy**. The information is copied to the clipboard and can be pasted in any application using the Paste command.

➔Most applications have a standard shortcut of CTRL+V assigned to the Paste command.

4.2.2.2. Saving Instrument Information in a Text File

Information can be saved as a text file (*.txt), a format that can be opened by most word processors.

To save the information as a text file (*.txt):

1. From the File menu, choose **Save**. Save As appears.
2. In Save As, browse to the desired directory where the file will be saved.
3. In File name, enter a name for the text file.
4. Choose **Save**. The text file is saved in the specified directory location with the specified File name.

4.2.2.3. Printing Instrument Information

To print the information in Information:

1. From the Database menu, choose **Print**. Print appears (Figure 4-3).

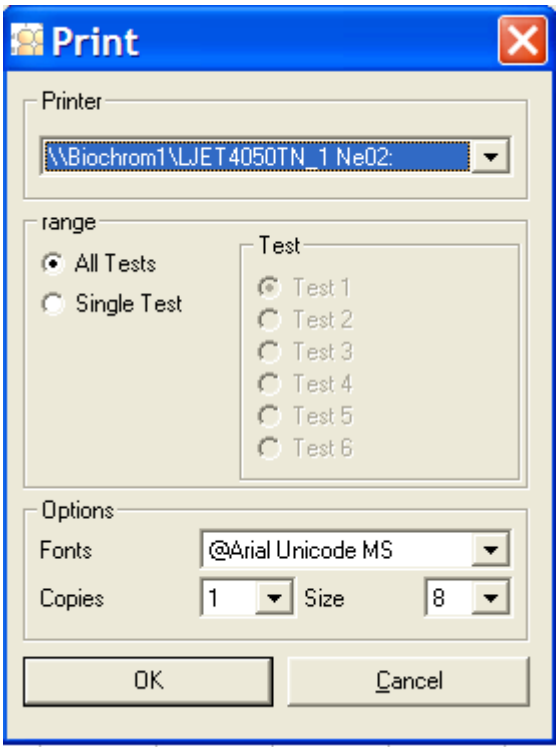


Figure 4-3: Print

2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.

3. In Options, select the desired **Font** and text **Size**.

➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print the information.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

4.3. Using Functions 2

Functions 2 is divided into two sections: Adjustments and Functions (Figure 4-4). Adjustments calibrate mechanical parameters for the Zenyth 340. Functions provide manual control of dispensing and shaking operations.

➔ Adjustments are available only for the Zenyth 340, and may be accessed only by users with User Level 3 (system administrator) access.

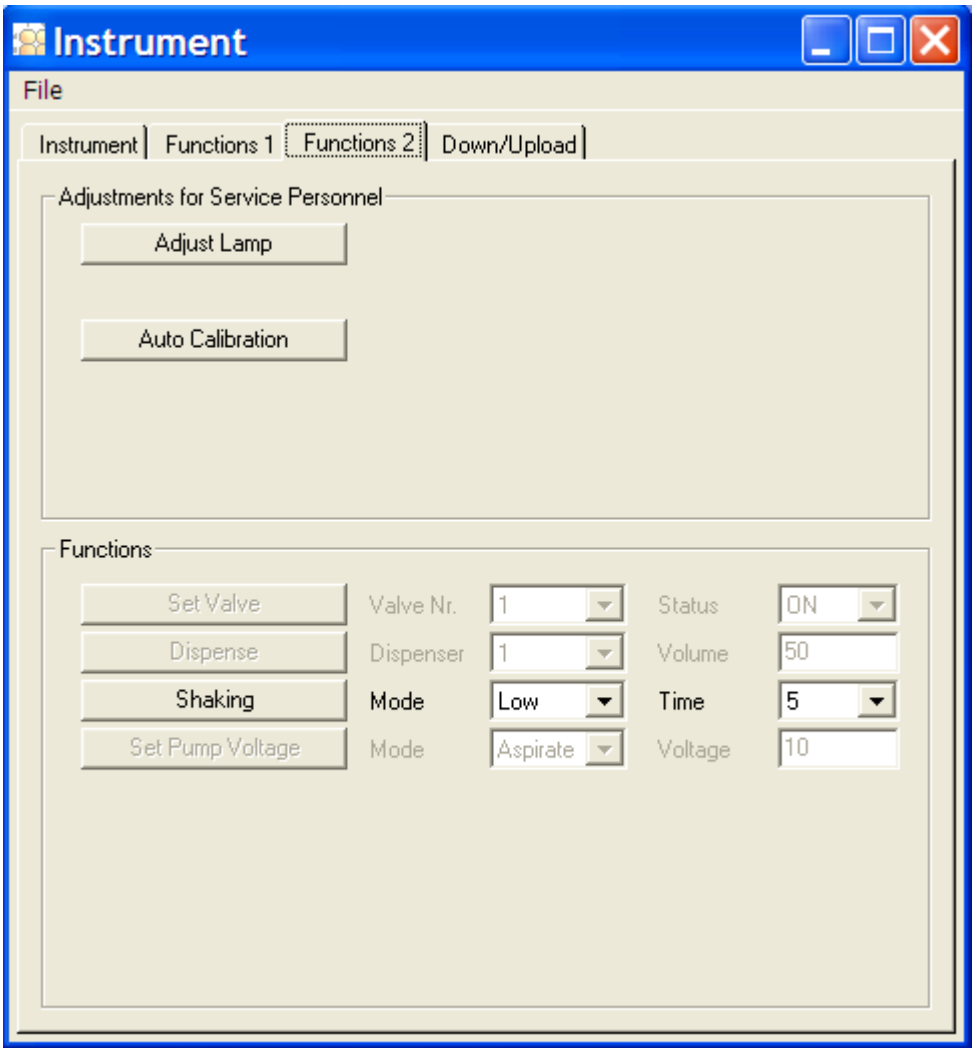


Figure 4-4: Instrument – Functions 2 (Zenyth 340)

4.3.1. Adjusting the Zenyth 340 Microplate reader

When the ADAP software controls the Zenyth 340, two adjustment options, Adjust Lamp and Auto Calibration, are available to users with User Level 3 (system administrator) access. Select the desired operation to perform the action described in Table 4-3.

Adjustment	Operation
Adjust Lamp	Checks the lamp source and filter and sets new energy and gain values for each filter. Displays the status for each filter position in Information.
Auto Calibration	Calibrates the plate and optics transports. Displays the name and value of the calibrated parameters in Information. ➔Calibration may take a few minutes.

Table 4-3: Functions 2: Adjustment Options

4.3.2. Performing Additional Functions

The options in Functions perform operations such as dispensing liquid and shaking the microplate. Unlike the operations in the other sections of the Functions tabs, these require further configuration. Select the desired operation to perform the action described in Table 4-4.

Function	Zenyth 340 Operation	EZ Read 400 /2010/2020 Operation
Shaking	Shakes a microplate in the plate carrier. Refer to Section 4.3.2.1, *Shaking Microplates*, for more information.	N/A

Table 4-4: Functions 2: Additional Functions

4.3.2.1. Shaking Microplates

Shaking performs a shaking operation on the Zenyth 340 microplate reader.

To perform a shaking operation:

1. In Intensity, select the desired shaking intensity: **Low**, **Medium**, or **High**.
2. In Time, enter the length of time to perform the shaking operation.
3. Choose **Shaking** to shake at the specified Intensity and Time.

4.4. Quick Access to Common Operations

Several frequently performed operations can be accessed quickly from the ADAP software menus and toolbar:

- Set Temperature (refer to Section 4.4.1, *Setting Instrument Temperature*).
- Eject Plate (refer to Section 4.4.2, Ejecting *Plates*).
- Load Plate (refer to Section 4.4.3, *Loading Plates*).
- Initialize Instrument (refer to Section 4.4.4, *Initializing the Instrument*).

➔ Operations available depend on the instrument connected to the computer.

4.4.1. Setting Instrument Temperature

The Zenyth 340rt microplate reader is capable of performing temperature controlled incubations of microplates. Refer to the user's manual for Zenyth 340 for more information.

To set the temperature:

1. From the Reading menu, choose **Set Temperature**.

   OR

   Choose the **Temperature** icon. Temperature appears (Figure 4-5).

➔ The Temperature icon appears only when an instrument with temperature control is being controlled by the software.

➔ Actual Temperature displays the current temperature inside the instrument.

➔The temperature scale used is determined by the setting in Instrument (refer to Section 3.2, *Configuring the Microplate Reader*). The Fahrenheit scale is only available on instruments sold in the United States.

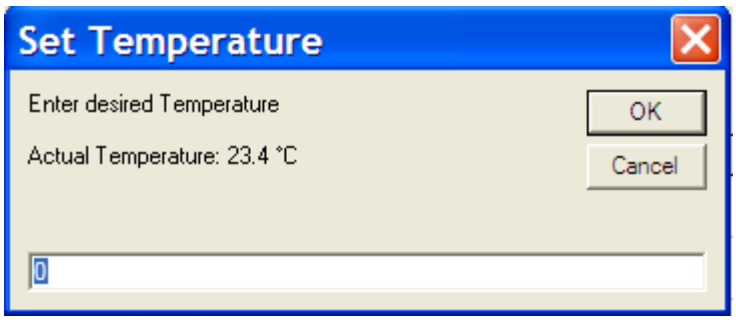


Figure 4-5: Temperature

2. In Temperature, enter the desired incubation temperature.

➔ The incubation temperature must be a minimum of 4° C (7.2° F) above ambient. The maximum incubation temperature is 45° C (113° F).

The incubation temperature will remain at the current setting until a different temperature is entered.

To turn temperature control off, enter **0**.

3. Choose **OK** to set the incubation temperature and close Temperature.

OR

Choose **Cancel** to close Temperature without changing the incubation temperature.

4.4.2. Ejecting Plates

To move the plate carrier and microplate outside the instrument:

From the Reading menu, choose **Eject Plate**.

OR

Choose the **Eject Plate** icon.

➔ Eject Plate is only available with the Zenyth 340 microplate reader.

4.4.3. Loading Plates

To move the plate carrier and microplate into the instrument:

From the Reading menu, choose **Load Plate**.

OR

Choose the **Load Plate** icon.

➔ Load Plate is only available with the Zenyth 340 microplate reader.

4.4.4. Initializing the Instrument

To move all mechanical components of the instrument to home positions:

From the Reading menu, choose **Initialize Instrument**.

OR

Choose the **Initialize Instrument** icon.

5. Transferring Data between the Instrument and Computer

5.1. Overview

Test and plate definitions; measurement results; and instrument EEPROM firmware and software updates can be transferred between the computer and instrument. Depending on instrument capabilities, data is transferred by:

- Choosing data transfer options in the Down/Upload tab within the ADAP software (refer to Section 5.2, *Transferring Data Using Down/Upload*).

  OR

- Copying files using a Local Area Network, floppy disk, or Microsoft ActiveSync® outside of the ADAP software

The ADAP software automatically recognizes whether the connected Biochrom reader is a standalone instrument with onboard software (like the Anthos 2020) or controlled by a computer (for example, the Zenyth 340r). The appropriate data transfer and device control functionality is automatically enabled for the instrument. The types of data that can be transferred vary by instrument:

- Zenyth 340r — Plate definitions, instrument firmware updates, and EEPROM updates.
- EZ Read 400, Anthos 2010 — Instrument firmware updates and EEPROM updates.

- 2020 — Test definitions, measured plate results, and instrument EEPROM firmware and software updates.

➔ Refer to Table 5-1 for more information about which data transfer functions are available for each instrument.

Function	Access	Zenyth 340r	EZ Read 400	2010	2020
EEPROM data upload	User	Yes	Yes	Yes	Yes
EEPROM data download	Service	Yes	Yes	Yes	Yes
Firmware download	Service	Yes	Yes	Yes	Yes
Onboard PC software download	User	N/A	N/A	N/A	Yes
Plate definition file upload	User	Yes	N/A	N/A	N/A
Plate definition file download	User	Yes	N/A	N/A	N/A
Test file upload	User	N/A	N/A	N/A	Yes
Test file download	User	N/A	N/A	N/A	Yes
Measured plate upload	User	N/A	N/A	N/A	Yes
Measured plate download	User	N/A	N/A	N/A	Yes
Evaluated data text file upload	User	N/A	N/A	N/A	Yes
Import test file to database	User	N/A	N/A	N/A	No
Export test file from database	User	N/A	N/A	N/A	No

Table 5-1: Data transfer functions by instrument

5.2. Transferring Data Using Down/Upload

With the 2020, all data is transferred between the computer and instrument using the data transfer options in the Down/Upload tab in Instrument. The Zenyth 340 only supports transferring plate definitions and uploading EEPROM data from the instrument with Down/Upload.

➔ With the Zenyth 340, data types other than plate definitions and EEPROM data are transferred outside the ADAP software using a Local Area Network, floppy disk, or Microsoft ActiveSync®

To access the data transfer options in Down/Upload:

1. From the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).

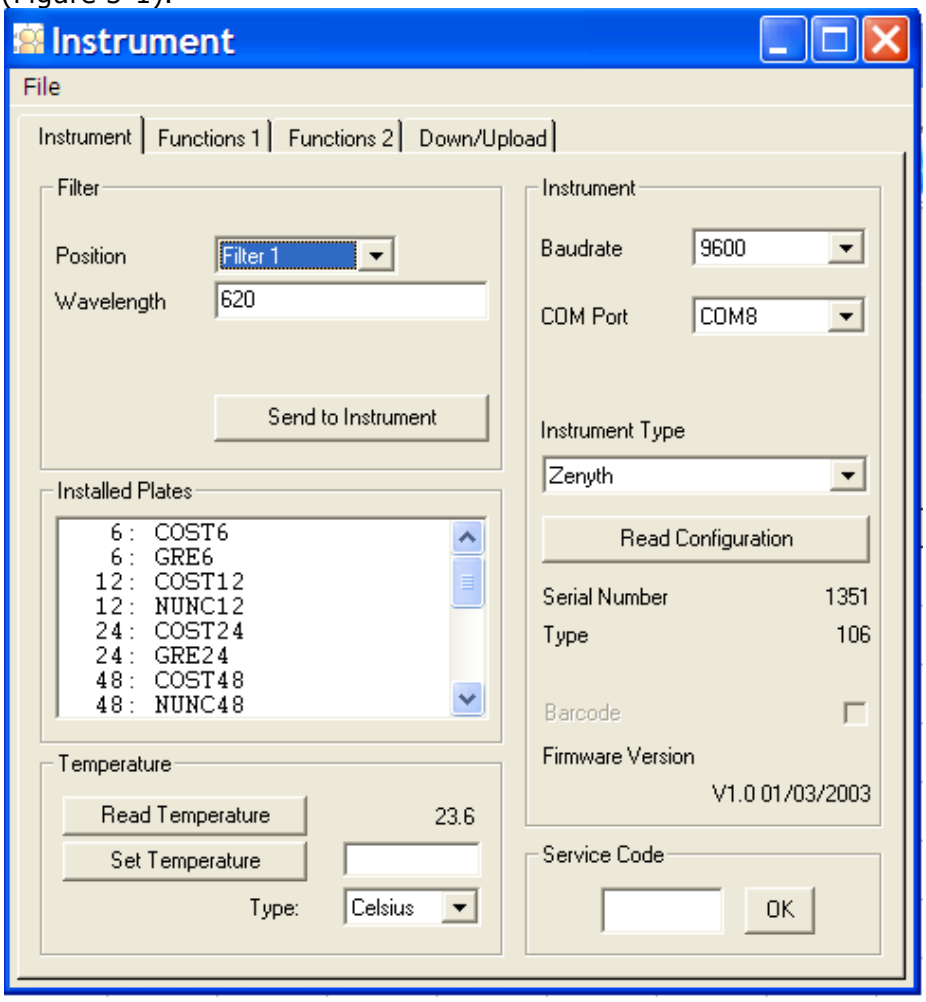


Figure 5-1: Instrument

Choose **Down/Upload** (Figure 5-2).

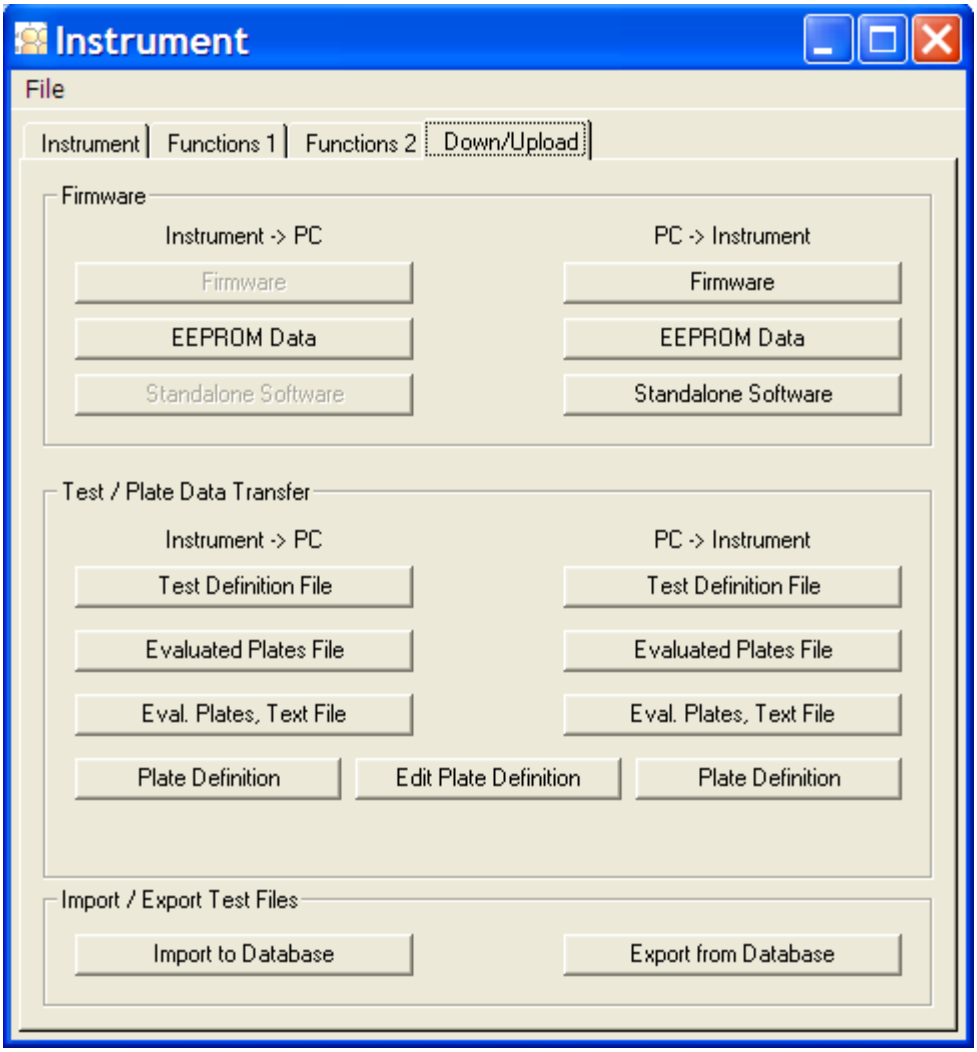


Figure 5-2: Instrument – DOWN/Upload

➔ Data transfer options available in Down/Upload vary depending on the instrument being controlled by the ADAP software.

The options in Down/Upload can be divided into three categories based on function (Figure 5-2):

- **Upload and download data** — Instrument firmware and EEPROM data can be transferred between any instrument model and computer. Standalone software can be transferred from the computer to the Anthos 2020. Test definitions and evaluated plate measurement data can be exchanged between the computer and the Anthos 2020.

Transfer options for each type of data are arranged in two columns. Choosing options in the Instrument->PC column *upload* data from the instrument to the computer; options in the PC->Instrument column *download* data from the computer to the instrument.

- **Edit and transfer plate formats** — The Zenyth 340 microplate reader supports multiple plate formats. Options in this category allow plate formats to be edited and transferred between the instrument and the computer (refer to Section 5.2.2, Editing and Transferring Plate Formats).
- **Import/Export test files** — Test definitions created by the ADAP software and the Zenyth 340s standalone software are compatible and may be transferred between the computer and instrument. However, the ADAP software stores them in a database; the Zenyth 340s stores them as individual files.

  Test definitions stored in the ADAP software database must be *exported* to individual files before being downloaded to the Zenyth 340s. Test definition files uploaded to the computer from the instrument must be *imported* to the ADAP software database before a measurement is performed (refer to Section 5.2.3, Updating Firmware, EEPROM Data, and Standalone Software).

5.2.1. Uploading and Downloading Data

The data transfer options in Firmware and Test/Plate Data Transfer allow data to be updated or transferred between computer and instrument. Transfer options for each type of data are arranged in two columns. Options in the Instrument -> PC column *upload* the desired data from the instrument to the computer; options in the PC -> Instrument column *download* data from the computer to the instrument (Figure 5-2).

Three types of data can be transferred:

- Firmware, EEPROM Data, and Standalone Software — The instrument firmware and software can be upgraded (refer to Section 5.2.1.1, Updating Firmware, EEPROM Data, and Standalone Software).
- Test Definition File — Test definitions may be transferred between the Anthos 2020 and the computer. This allows test definition files to be stored on the computer and downloaded to other instruments (refer to Section 5.2.1.2, *Transferring Test Definitions*).
- Evaluated Plates File — Evaluated Plates File — Measurement results from the Anthos 2020 standalone software may be exported to text files with all data organized in columns. Exported measurement results may be opened for further evaluation in Microsoft Excel or a similar application, but not within the ADAP software (refer to Section 5.2.1.3, *Transferring Measurement Results From an Anthos 2020 detector*).

5.2.1.1. Updating Firmware, EEPROM Data, and Standalone Software

Firmware provides options to transfer instrument firmware updates, EEPROM data, and standalone software updates.

➔ Most Firmware options are reserved for use by Biochrom Service Engineers and are accessible only with a valid service code.

- Firmware — Updates the instrument firmware. Only accessible with a valid service code.
- EEPROM Data — All instruments can upload EEPROM data to the computer. Downloading updated EEPROM data to an instrument requires a valid service code.

  ➔ EEPROM data should only be uploaded to the computer by a Biochrom Service Engineer.

- Standalone Software — updates the onboard software on standalone instruments.

5.2.1.2. Transferring Test Definitions

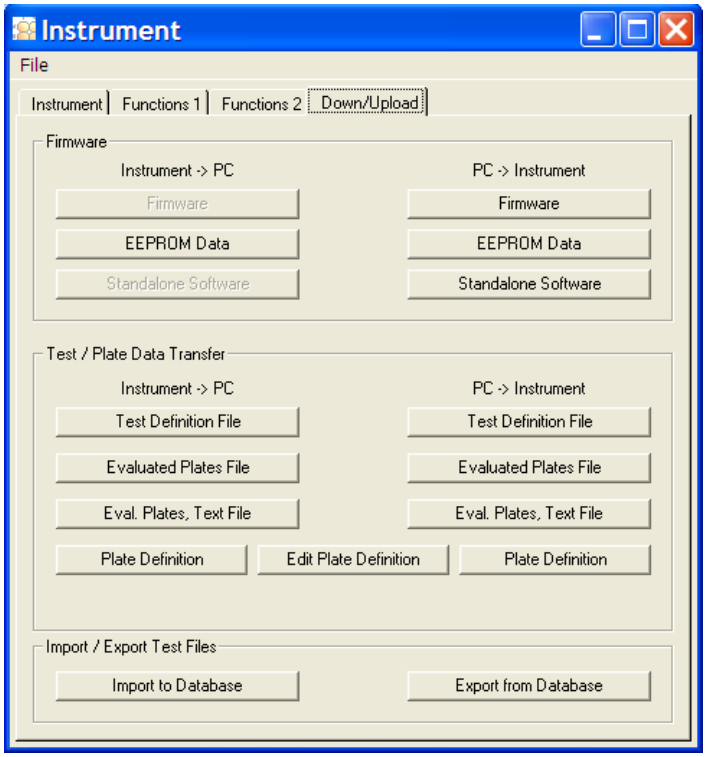
Test Definition File provides options to transfer test definitions between a standalone instrument and the computer. To transfer test definitions between the computer and the Anthos 2020:

➔ Test Definition File options are available only with the Anthos 2020.

1. Put the instrument in Data Transfer mode. Refer to the instrument user's manual for more information.

2. In the ADAP software, from the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).

Choose Down/Upload **(**



3. Figure 5-3).

Figure 5-3: Down/Upload – Test definition transfer options

In Test/Plate Data Transfer, choose the desired **Test Definition File** operation to perform. Selection appears (

Figure 5-4)

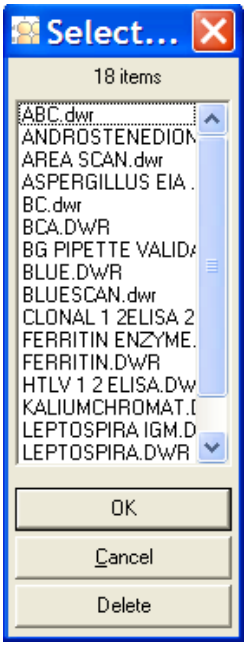


Figure 5-4: Selection for test definitions

Select the desired file(s) to transfer. Multiple files can be selected by holding CTRL and selecting additional files.

➔ Test definitions transferred to the computer are saved in the ADAP software home directory selected in Setup-System (refer to Section 3.3, *Configuring System Settings*).

4. Choose **OK** to transfer the selected files from the source to the destination.

   OR

   Choose **Cancel** to close Selection without transferring any test definition files.

   OR

   Choose **Delete** to delete the selected file(s) from the source.

5.2.1.3. Transferring Measurement Results From an Anthos 2020 detector

Evaluated Plates File provides options to transfer measurement results from evaluated plates between the computer and instrument. On the Anthos 2020, plate data is stored in non-text (*.res) files. They may be transferred between the instrument and computer as *.res or *.txt files.

➔ Evaluated Plates File options are available only with the Anthos 2020.

Non-text (*.res) files contain the measurement data and original instructions for evaluation. They can be re-evaluated by the Anthos 2020 standalone software or archived, but are not readable by software applications other than the standalone software on the instrument.

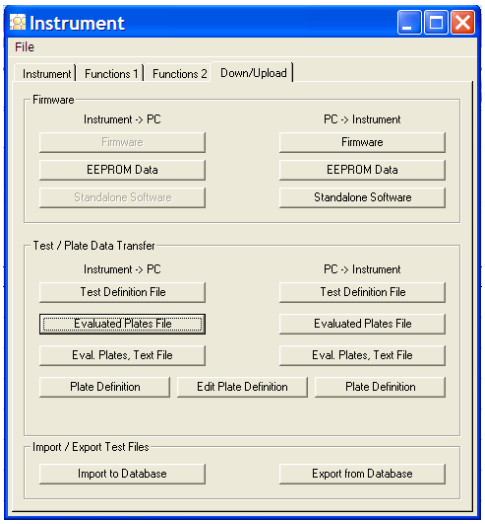
➔ Text (*.txt) files may be exported to other applications, such as spreadsheet, for further evaluation. They cannot be transferred back to the instrument.

To transfer evaluated plate data between the computer and the Anthos 2020:

1. Put the instrument in Data Transfer mode. Refer to the instrument user's manual for more information.

2. In the ADAP software, from the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).

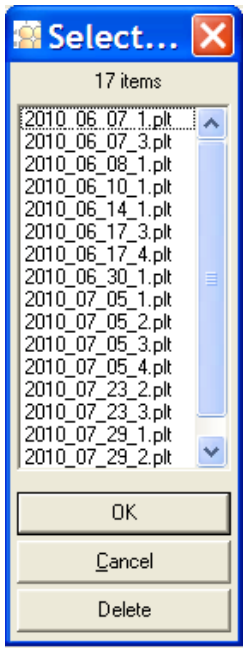
Choose Down/Upload **(**



3. Figure 5-5).

Figure 5-5: **Down/Upload – Evaluated File options**

In Test/Plate Data Transfer, choose the desired measurement results transfer operation to perform. Selection appears (



4. Figure 5-6).

   - Evaluated Plates File — Transfers plate data from evaluated tests to and from the instrument.
   - Eval. Plates, Text File — Re-evaluates plate data saved as a *.res file and converts the results to a tab-delimited text file that can be imported into spreadsheet or database application for further evaluation.

➔ Text files (*.txt) cannot be transferred from a computer back to the instrument. Therefore, Eval Plates, Text File in the PC->Instrument column has no function.

Figure 5-6: Selection for evaluated plates

5. Select the desired file(s) to transfer. Multiple files can be selected by holding CTRL and selecting additional files.

6. Choose **OK** to transfer the selected files from the source to the destination.

   OR

   Choose **Cancel** to close Selection without transferring any test definition files.

   OR

   Choose **Delete** to delete the selected file(s) from the source.

5.2.2. Editing and Transferring Plate Formats

The Zenyth 340 microplate reader supports plate formats ranging from 6 to 1536 wells. Plate dimensions, or plate formats, are stored in the instrument firmware and can be uploaded to the computer and stored in plate definition (*.plt) files. Plate definition files store the plate formats for several different plates.

➔ Not all plate types are suitable for absorbance measurements, even if the format is supported by the Zenyth 340. For example, only 1536-well plates with a well capacity = 10µl are recommended. To ensure accurate measurement results, verify plate performance before measuring samples.

When a plate definition file is downloaded to the instrument, all plate formats saved in the file are copied to the instrument firmware, erasing the plate formats previously stored there. For this reason, backing up plate definition files uploaded from the instrument is important.

Edit Plate Definition can edit plate formatting information stored in any plate definition file saved on the computer. However, it is intended to be used only to edit plate formats currently stored in the instrument firmware.

Edit Plate Definition provides the ability to:

- Create and edit plate formats (refer to Section 5.2.2.2, *Creating and Editing Plate Formats*).
- Delete plate formats (refer to Section 5.2.2.3, *Deleting Plate Formats*).
- Transfer plate definition files (5.2.2.4, *Transferring Plate Formats to the Instrument*).

The Plate Definition options next to Edit Plate Definition transfer plate definition files in the same manner as the transfer options for uploading and downloading other types of data.

5.2.2.1. Uploading and Backing Up Plate Formats Stored on the Instrument

Before editing a plate format, all plate formats uploaded from the instrument to the computer should be backed up. Backing up the original plate formatting information is critical because each time edited plate formats are downloaded to the instrument, the original plate formatting information is overwritten.

To upload and backup plate formats:

1. Put the instrument in Remote Control mode. Refer to the instrument user's manual for more information.

2. In the ADAP software, from the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).

3. Choose **Down/Upload** (**Error! Reference source not found.**).

4. In Test/Plate Definition, choose **Plate Definition** under Instrument -> PC to transfer the stored plate definition file from the instrument to the computer.

5. Browse to the directory where the uploaded plate formats will be stored in a plate definition (*.plt) file.

6. In File name, choose a name for the file; for example, default_plates_backup.plt.

7. Choose **Save** to create the backup plate definition file.

8. Repeat steps 4 and 5 to create a second copy of the plate definition file. This is the file that will be edited and transferred back to the instrument.

9. In File name, choose a name for the plate definition that will be edited and transferred back to the instrument. Use a name similar to that given to the backup file; for example default_plates.plt.

10. Choose **Save**.

5.2.2.2. Creating and Editing Plate Formats

Plate formats uploaded from the instrument and stored in a plate definition (*.plt) can be created and edited.

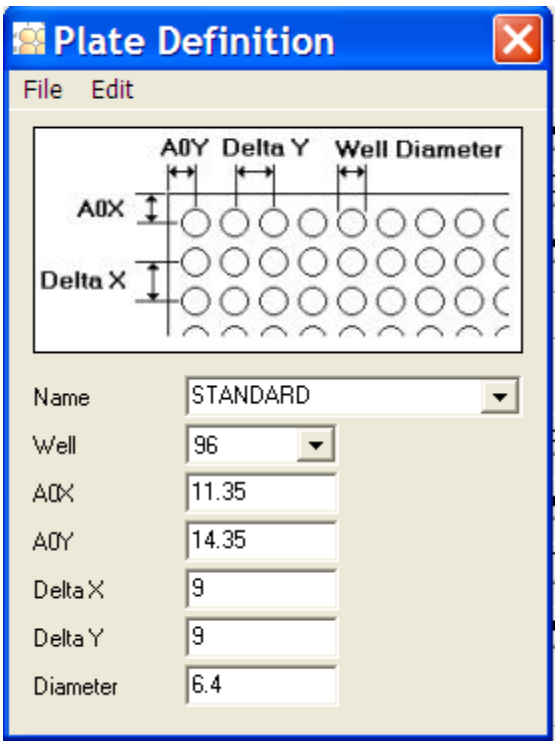
To create or edit a plate format:

1. Upload and backup plate formats using the steps detailed in Section 5.2.2.1, Uploading and Backing Up Plate Formats Stored on the Instrument.

2. In Test/Plate Data Transfer, choose **Edit Plate Definition**. Open appears.

3. Browse to and select the plate definition (*.plt) file to edit.

Choose Open**. Plate Definition appears (**



4. Figure 5-).

Figure 5-7: Plate Definition

5. To create a new plate format, in Name, enter a name for the new plate format.

   OR

6. To edit an existing plate format, in Name, select the desired plate format to edit.

7. In Well, select the number of wells on the plate.

➔ Refer to the graphic in Plate Definition (

Figure 5-) showing the dimensions when configuring steps 8-12. All measurements are in millimeters (mm). Plate dimensions should be measured, or taken from the specifications provided by the plate manufacturer.

8. In A0X, enter the distance from the edge of the X-axis of the microplate to the center of the first well in the X-axis.

9. In A0Y, enter the distance from the edge of the Y-axis of the microplate to the center of the first well in the Y-axis.

10. In Delta X, enter the distance between well centers in the X-axis.

11. In Delta Y, enter the distance between well centers in the Y-axis.

12. In Diameter, enter the diameter of each well.

➔ The Diameter must be smaller than the values for Delta X and Delta Y.

13. From the File menu, choose **Save** to save the new or edited plate format to the plate definition file.

14. From the File menu, choose **End** to close Plate Definition.

➔ To transfer the plate formats from the computer to the instrument, refer to Section 5.2.2.4, *Transferring Plate Formats to the Instrument*.

5.2.2.3. Deleting Plate Formats

Plate formats uploaded to the instrument and stored in a plate definition (*.plt) file can be deleted.

To delete a plate format:

1. Upload and back up plate formats using the steps detailed in Section 5.2.2.1, *Uploading and Backing Up Plate Formats Stored on the Instrument*

2. In Test/Plate Data Transfer, choose **Edit Plate Definition**. Open appears.

3. Browse to and select the plate definition (*.plt) file to edit.

Choose Open**. Plate Definition appears (**

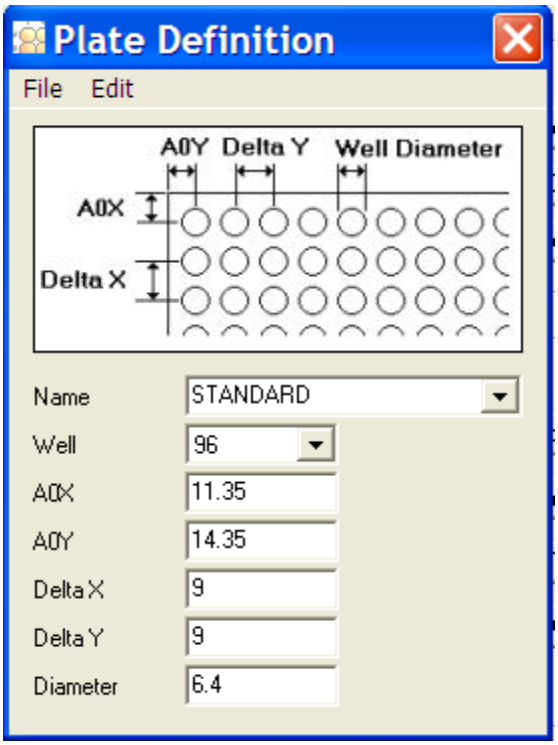


Plate Definition
File
Edit
A0Y
Delta Y
Well Diameter
A0X
Delta X
Name
STANDARD
Well
96
A0X
11.35
A0Y
14.35
Delta X
9
Delta Y
9
Diameter
6.4

4. Figure 5).

Figure 5-8: Plate Definition

5. In Name, select the desired plate format to delete from the list.

6. From the Edit menu, choose **Delete**. A confirmation appears. Select **Yes** to delete the plate format from the plate definition file.

➔ To transfer plate formats from the computer to the instrument, refer to Section 5.2.2.4, *Transferring Plate Formats to the Instrument*.

5.2.2.4. Transferring Plate Formats to the Instrument

Plate formats stored in a plate definition (*.plt) file can be transferred from the computer to the instrument.

To transfer plate formats:

1. Put the instrument in Remote Control mode. Refer to the instrument user's manual for more information.

2. From the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).

3. Choose **Down/Upload** (**Error! Reference source not found.**).

4. Choose **Plate Definition** under PC -> Instrument.

5. Browse to the directory where plate definition file is saved and select it.

6. Choose **Open** to transfer the plate definition file which includes the plate formats from the computer to the instrument.

5.2.3. Importing and Exporting Test Definitions and Measurement Results

The ADAP software stores test definitions and measurement results in a database. Test definitions created and used by the Zenyth 340s microplate reader are stored in individual *.dwr files.

Import/Export Test Files is used to import uploaded test definitions and measurement results to the test database or export test definitions and measurement from the database to *.dwr and *.plt files that can be read by the instrument.

This section covers:

- Importing test definitions to the ADAP database (refer to Section 5.2.3.1, *Importing Test Definitions to the ADAP Database*).
- Importing/Exporting test definitions from the ADAP database (refer to Section 5.2.3.2, *Exporting Test Definitions from the Test Database*).
- Importing test measurement results to the ADAP database (refer to Section 5.2.3.1, *Importing Test Definitions to the ADAP Database*).

➔ Test definitions may be imported to and exported from all types of the ADAP software; however, a valid ADAP Plus or Expert license code is required to read and modify the files.

5.2.3.1. Importing Test Definitions to the ADAP Database

Any test definition file that has been uploaded from a microplate reader can be imported into the test database. A test definition must be in the test database to perform a measurement using the ADAP software.

To import a test definition into the test database:

1. In the ADAP software, choose **Instrument** from the Setup menu. Instrument appears (Figure 5-1).

2. Choose **Down/Upload** (Figure 5-7).

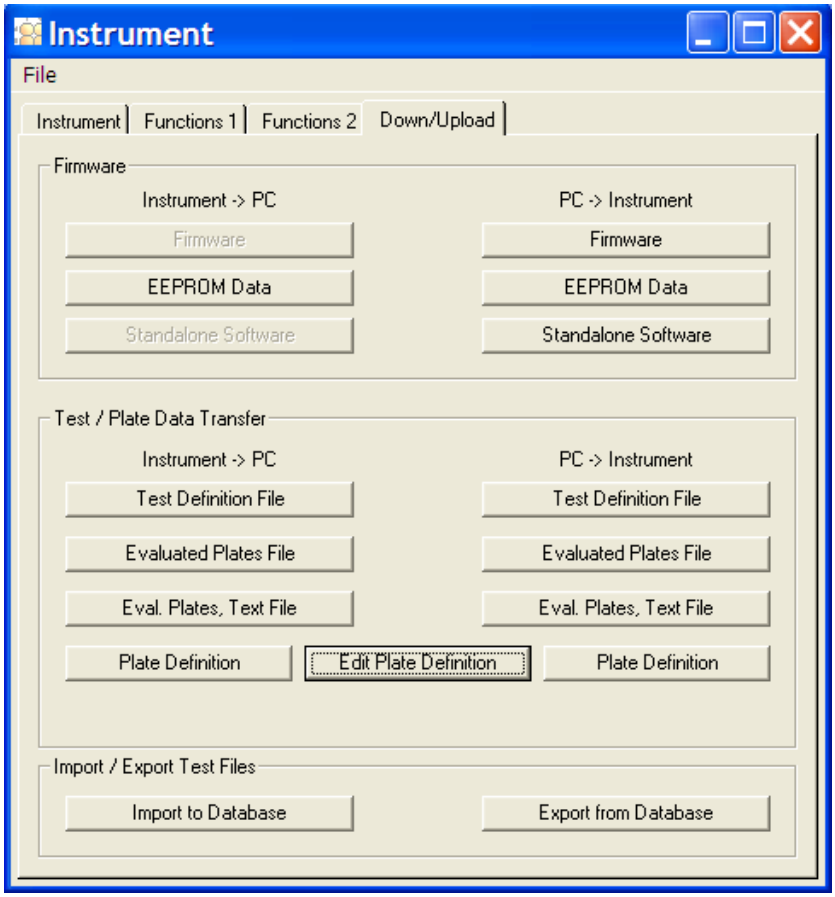


Figure 5-7: Down/Upload – Import/Export Test Files

3. In Import/Export Test Definition, choose **Import to Database**. Open appears (**Error! Reference source not found.**).

4. Browse to and select the test definition to import to the test database.

5. Choose **Open**. The selected test definition file is imported to the ADAP software database.

5.2.3.2. Exporting Test Definitions from the Test Database

Any test definition in the ADAP software database can be exported to a test definition file that can be downloaded to a Zenyth 340s.

To export a test definition from the database to a file:

1. In the ADAP software, From the Setup menu, choose **Instrument**. Instrument appears (Figure 5-1).

2. Select the **Down/Upload** tab to display it (Figure 5-7).

3. In Import/Export Test Definition, choose **Export from Database**. Selection appears (Figure 5-).

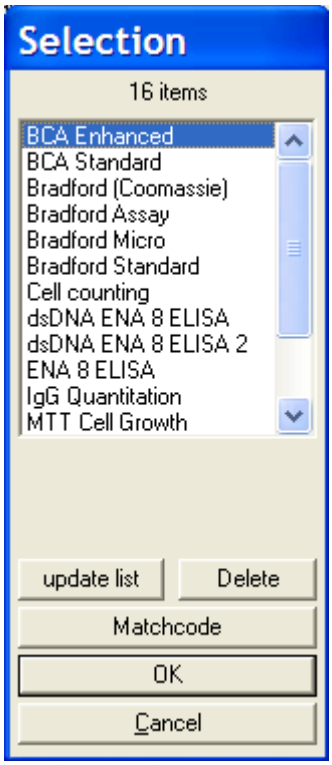


Figure 5-10: Select test to export

4. Select the test definition to export from the test database.

➔ Choose **Matchcode** to search for test definitions containing specific plate IDs (refer to Section 8.7, Using *Matchcode to* Search for Test Definitions and Saved Plates).

5. Choose **OK**. The selected test definition file is exported from the ADAP software test database as a test definition file that can be downloaded to the instrument (refer to Section 5.2.2, *Editing and Transferring Plate Formats*

6. Performing Quick Measurements

6.1. Overview

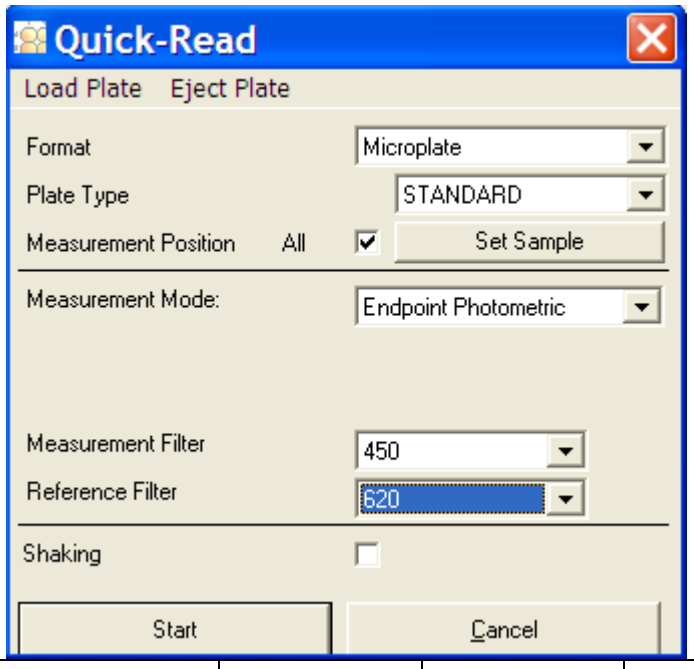
The ADAP software is capable of performing photometric and quick measurements. Quick measurements are configured in Quick-Read, which is designed to allow measurement parameters to be changed quickly and easily (

Figure 6-1). Quick measurements do not require defining tests.

➔ Tests offer additional measurement parameters that are configured in test definitions which may be saved, reused, and modified (refer to Chapter 8, *Defining and Running Tests*).

The types of Quick measurements available depend on the instrument being controlled by the software (Table 6-1).

Measurement Type	Zenyth 200	Zenyth 340	EZ Read 400/ 2010/2020
Endpoint photometric	X	X	X
Kinetic photometric	X	X	X



Multiwavelength	X	X	X
Linear scan	X	X	N/A
Area scan	X	X	N/A
Spectral scan	X	N/A	N/A

Table 6-1: Measurement Capability by Instrument

Figure 6-1: Quick-Read

➔ When Quick-Read opens, the parameters set for the last Quick measurement run are displayed. Parameters for canceled Quick measurements are not saved.

The process of configuring and performing Quick measurements is divided into three parts:

- Choosing the type of photometric Quick measurement to perform and configuring measurement parameters (refer to Section 6.2, *Configuring Photometric Quick Measurements*).
- Choosing the type of microplate and setting which wells are measured (refer to Section 6.3, *Configuring Microplate Type and* Measurement Positions).
- Running the Quick measurement and saving the results (refer to Section 6.4, Running Quick Measurements and Saving Measurement Results).

➔ Refer to Chapter 7, *Viewing Quick Measurement Results* for information on viewing measurement results.

6.2. Configuring Photometric Quick Measurements

Configuring a photometric Quick measurement requires selecting the desired Measurement Mode and configuring the available measurement parameters. Photometric Quick measurements that can be performed include:

- Endpoint photometric (refer to Section ☐, *Configuring an Endpoint Photometric Quick Measurement*).
- Kinetic photometric (refer to Section 6.2.1, *Configuring a Kinetic Photometric Quick Measurement*).
- Multiwavelength photometric (refer to Section 6.2.2, *Configuring a Multiwavelength Quick Measurement*).
- Area scan (refer to Section 6.2.3, *Configuring an Area Scan Quick Measurement*).
- Linear scan (refer to Section 6.2.4, *Configuring a Linear Scan Quick Measurement*).
- Configuring an Endpoint Photometric Quick Measurement

An endpoint photometric Quick measurement performs a single absorbance measurement on samples at a user-specified wavelength. If desired, a bichromatic endpoint measurement may also be performed. Bichromatic measurements perform a second measurement using a reference wavelength. This measurement is subtracted from the first to calculate the final result.

To perform an endpoint photometric Quick measurement:

1. From the Reading menu, choose **Quick**.

   OR

   Choose Quick-Read**. Quick-Read appears (**

Figure 6-1).

2. In Measurement Mode, select **Endpoint Photometric**. The measurement parameters available for endpoint photometric measurements appear.

3. In Measurement Filter, select the desired wavelength for the measurement (**Figure 6-2**).

➔ The measurement wavelengths available depend on the filters installed in the instrument (refer to Section 3.2, *Configuring the Microplate Reader*).

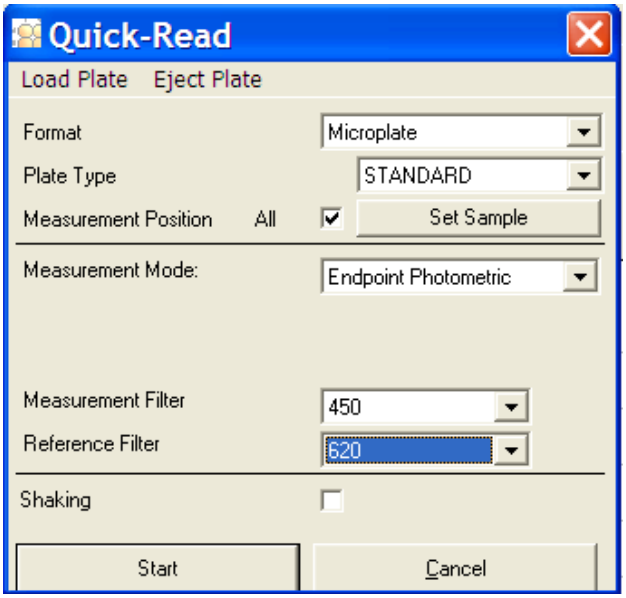


Figure 6-2: Quick Read – selecting a Measurement Filter

4. To perform a bichromatic endpoint measurement, in Reference Filter select the desired wavelength for the reference measurement.

➔ The measurement wavelengths available depend on which filters are installed in the instrument (refer to Section 3.2, *Configuring the Microplate Reader*).

➔ When a Reference Filter is selected, the reference measurement is subtracted from the first measurement to calculate the final measurement result.

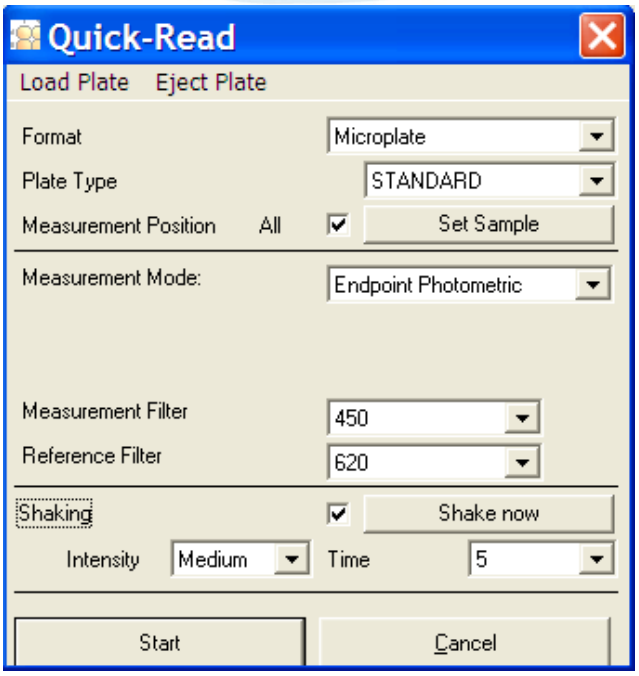
➔ If no Reference Filter is desired, select <-->. An endpoint photometric measurement will be performed.

If desired, select Shaking **to shake the microplate prior to the Quick Quick measurement. Quick-Read expands to display Shaking parameters parameters (**

5. Figure 6-3).

➔ If shaking is not desired, go to step 8.

Figure 6-3: Quick Read - Shaking



6. If Shaking is selected, select the Intensity of the shaking: **Low, Medium**, or **High**.

7. If Shaking is selected, select the **Time** to shake in seconds.

➔ Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.

8. Choose the Plate Type and Measurement Position following the steps in Section 6.4, Configuring Microplate Type and Measurement Positions.

6.2.1. Configuring a Kinetic Photometric Quick Measurement

A kinetic photometric Quick measurement performs a user-specified series of absorbance measurements on each sample at user-specified intervals. Single or bichromatic measurements may be performed at user-specified wavelengths. Bichromatic measurements perform a second measurement in each cycle using a Reference Filter. This measurement is subtracted from the first, and then final measurement results are calculated using a data reduction method.

➔ Refer to Table 6-2 for information about the data reduction methods.

➔ To perform Quick measurements using a standalone instrument (for example, the Zenyth 340s); place the instrument in Remote Control mode. Refer to the instrument user's manual for more information about Remote Control mode.

To perform a kinetic photometric measurement:

1. From the Reading menu, choose **Quick**.

   OR 

   Choose **Quick-Read**. Quick-Read appears (Figure 6-4).

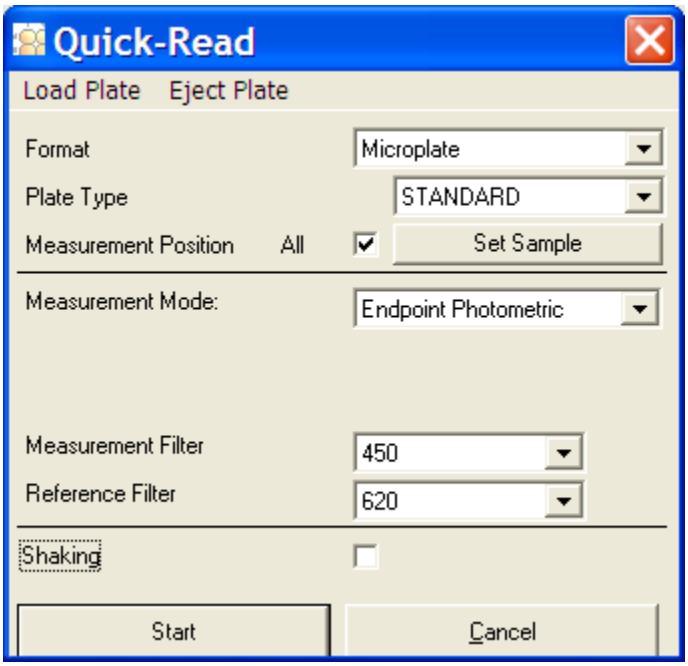


Figure 6-4: Quick Read

2. In Measurement Mode, select **Kinetic Photometric**. The measurement parameters available for kinetic photometric measurements appear (Figure 6-5).

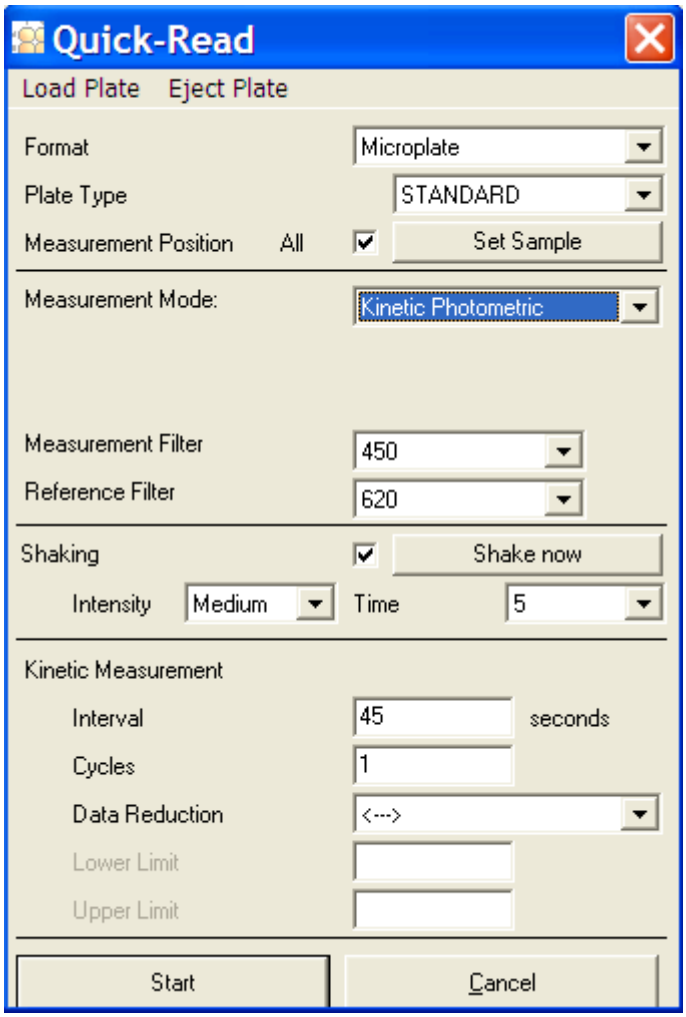


Figure 6-5: Quick Read – Kinetic Photometric parameters

3. In Measurement Filter, select the desired wavelength for the measurement.

➔ The measurement wavelengths available depend on the filters installed in the instrument (refer to Section 3.2, *Configuring the Microplate Reader*).

4. To perform a bichromatic kinetic measurement, in Reference Filter, select the desired wavelength for the reference measurement.

➔ The measurement wavelengths available depend on which filters are installed in the instrument (refer to Section 3.2, *Configuring the Microplate Reader*).

➔ When a Reference Filter is selected, the reference measurement is subtracted from the first measurement, and then final measurement results are calculated using a data reduction method.

➔ If no Reference Filter is desired, select <-->. An endpoint kinetic measurement will be performed.

5. If desired, select **Shaking** to shake the microplate prior to each cycle in the Quick measurement. Quick-Read expands to display Shaking parameters.

➔ If shaking is not desired, go to step 8.

6. If Shaking is selected, select the Intensity of the shaking: **Low, Medium**, or **High**.

7. If Shaking is selected, select the **Time** to shake in seconds.

➔ Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.

8. In Interval, enter the length of time in seconds between each measurement of the same well.

9. In Cycles, enter the number of times to measure each well.

10. Choose a **Data Reduction** method. Refer to Section 6.2.1.1, *Data Reduction Methods*, for details about each data reduction method.

➔ The configuration parameters Smoothing Points, Lower Limit, Upper Limit and In/Decrease become available depending on which data reduction method is selected. Refer to the Additional Configuration column in Table 6-2 for more details.

11. Choose the Plate Type and Measurement Position following the steps in Section 6.3, Configuring *Microplate Type and* Measurement Positions.

6.2.1.1. Data Reduction Methods

Data Reduction is used to determine a single value per sample based on the results of a sequence of measurements over a period of time. Table 6-2 describes the 12 data reduction methods for kinetic measurements supported by the ADAP software.

Data Reduction Method	Description	Additional Configuration
Average Slope	Determines the average slope of the reaction curve by calculating the average of all linear regressions calculated over each group of Smoothing Points in the kinetic reading sequence. A decreasing slope shows a decline.	Smoothing Points
Delta OD	Difference in optical density between the first and last measurements in a kinetic assay.	N/A
Delta OD — Max. Slope	Difference in OD between the first measurement and the center point of the maximum slope. ➔ The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points
Delta Time — Absolute	Time elapsed from one preselected OD value to another.	Lower Limit Upper Limit
Delta Time — Max. Slope	Time difference in seconds between the first measurement and the occurrence of the center point of the maximum slope. ➔ The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points
Delta Time — Relative	Time elapsed in seconds from the first measurement to reaching a set increase/decrease amount from the first OD measurement.	In-/Decrease
Maximum Declining	Determines the maximum declining rate of	Smoothing Points

Data Reduction Method	Description	Additional Configuration
Slope	the reaction curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.	
Maximum Inclining Slope	Determines the maximum inclining rate of the reaction curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.	Smoothing Points
Maximum Slope	Maximum slope of the curve in OD/min. The line with the highest slope is calculated. Also the maximum reaction speed. ➔ The accuracy of this calculation depends on the number of measurement cycles selected.	Smoothing Points
Mean	Determines the mean value per sample within a sequence of measurements.	N/A
Time Peak Value	Used to detect the time elapsed until the peak value is reached.	Smoothing Points
Peak Value	Used to detect the highest value per sample within a sequence of measurements.	Smoothing Points

Table 6-2: Data Reduction Methods

6.2.2. Configuring a Multiwavelength Quick Measurement

A multiwavelength Quick measurement performs up to eight absorbance measurements for each well at different user-specified wavelengths.

➔ The number of measurements that can be performed in a multiwavelength measurement depends on the number of filters installed in the instrument.

To perform a multiwavelength Quick measurement:

1. From the Reading menu, choose **Quick**.

   OR 

   Choose **Quick-Read**. Quick-Read appears (**Error! Reference ource not found.**).

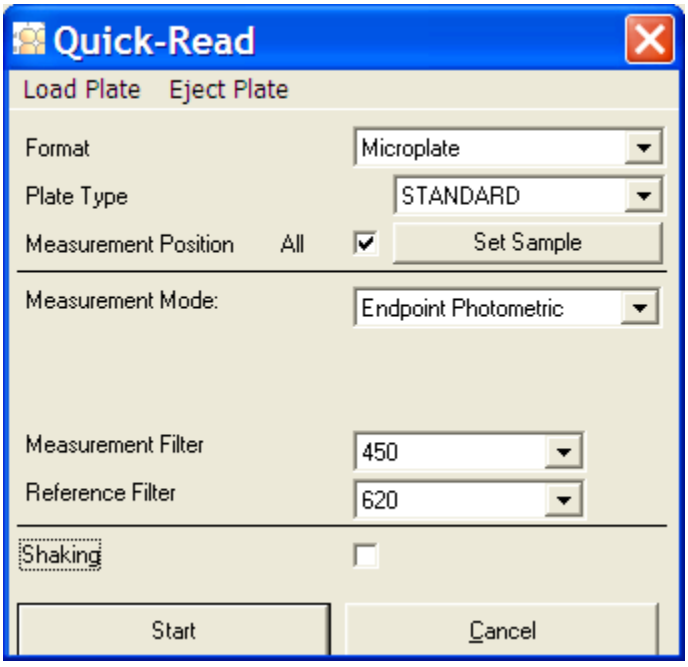


Figure 6.6 Quick Read

2. In Measurement Mode, select Multiwavelength. The measurement parameters available for multiwavelength measurements appear (Figure 6-).

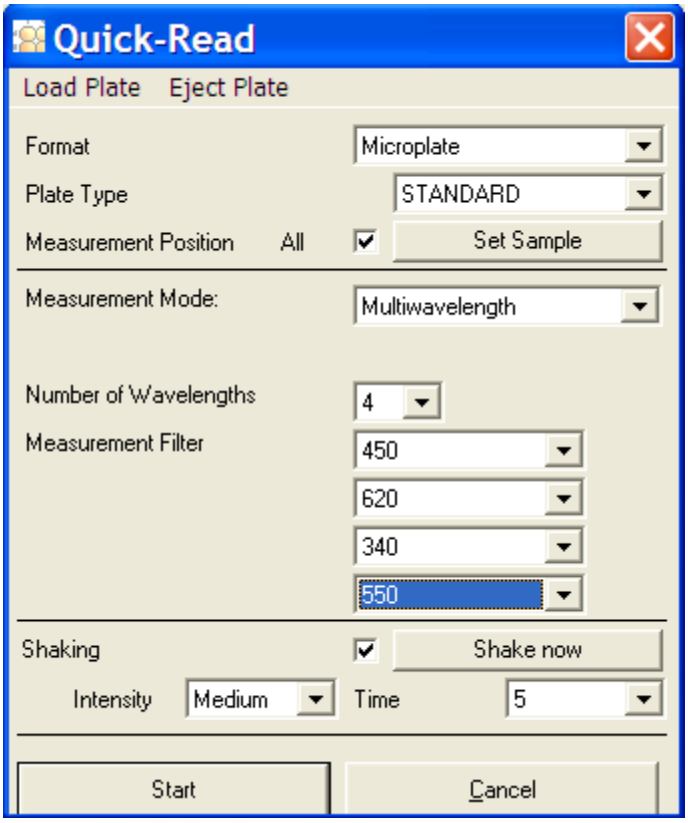


Figure 6-7: Quick-Read – Multiwavelength parameters

2. Choose the **Number of Wavelengths** to measure. A field for each Measurement Filter appears.

➔ Up to eight measurements may be performed in a multiwavelength measurement.

3. In Measurement Filter, select the desired wavelength for each measurement.

➔ The measurement wavelengths available depend on the filters installed in the instrument (refer to Section 3.2, *Configuring the Microplate Reader*).

4. If desired, select **Shaking** to shake the microplate prior to the Quick measurement. Quick-Read expands to display Shaking parameters.

➔ If shaking is not desired, go to step 8.

5. If Shaking is selected, select the Intensity of the shaking: **Low, Medium**, or **High**.

6. If Shaking is selected, select the **Time** to shake in seconds.

➔ Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.

7. Choose the Plate Type and Measurement Position following the steps in Section 6.4, Configuring Microplate Type and Measurement Positions.

6.2.3. Configuring an Area Scan Quick Measurement

Area scan Quick measurements perform absorbance or transmission measurements at a number of points across each well. Area scans can measure samples on 6-, 12-, 24-, 48-, and 96-well microplates, and are performed at the maximum resolution allowed by the plate type.

➔ Area scan Quick measurements are available only with the Zenyth 340 microplate reader.

➔ To perform Quick measurements using a standalone instrument (for example, the Zenyth 340s); place the instrument in Remote Control mode. Refer to the instrument user's manual for more information about Remote Control mode.

To perform an area scan photometric measurement:

1. From the Reading menu, choose **Quick**.

   OR 

   Choose **Quick-Read**. Quick-Read appears (Figure 6-).

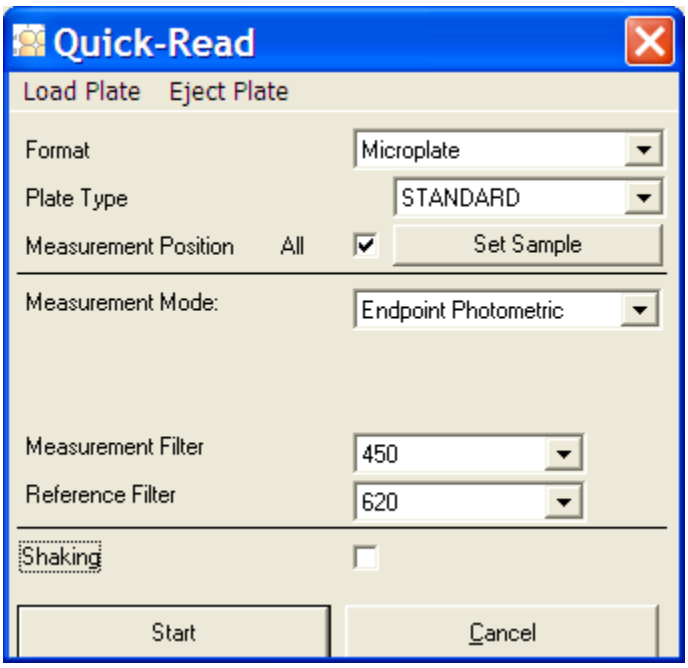


Figure 6-9: Quick-Read

2. In Measurement Mode, choose **Scan Area**. The measurement parameters available for area scan measurements appear (Figure 6-).

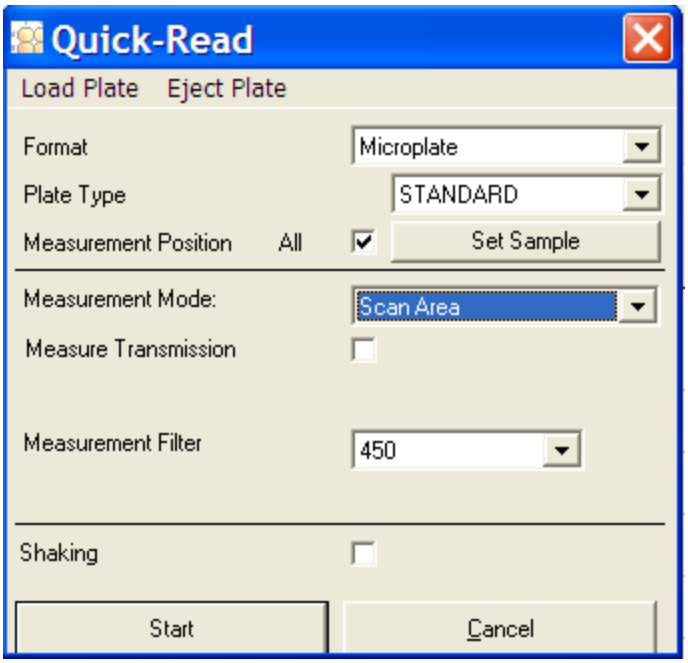


Figure 6-10: Quick-Read – Scan Area parameters

3. If desired, select **Measure Transmission** to measure transmission instead of optical density (OD).

4. In Measurement Filter, select the desired wavelength for the measurement.

➔ The measurement wavelengths available depend on the filters installed in the instrument (refer to Section 3.2, *Configuring the Microplate Reader*).

5. If desired, select **Shaking** to shake the microplate prior to the Quick measurement. Quick-Read expands to display Shaking parameters.

➔ If shaking is not desired, go to step 8.

6. If Shaking is selected, select the Intensity of the shaking: **Low, Medium**, or **High**.

7. If Shaking is selected, select the **Time** to shake in seconds.

➔ Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.

8. Choose the Plate Type and Measurement Position following the steps in Section 6.3, Configuring Microplate Type and Measurement Positions.

6.2.4. Configuring a Linear Scan Quick Measurement

Linear scan Quick measurements perform transmission measurements at 25 points along a linear axis crossing the center of each measured well. Linear scans may be performed only on 96-well plates.

➔ Linear scan Quick measurements are available only with the Zenyth 340 microplate reader.

➔ To perform Quick measurements using a standalone instrument (for example, the Zenyth 340s); place the instrument in Remote Control mode. Refer to the instrument user's manual for more information about Remote Control mode.

To perform a linear scan photometric measurement:

1. From the Reading menu, choose **Quick**.

   OR 

   Choose **Quick-Read**. Quick-Read appears (Figure 6-).

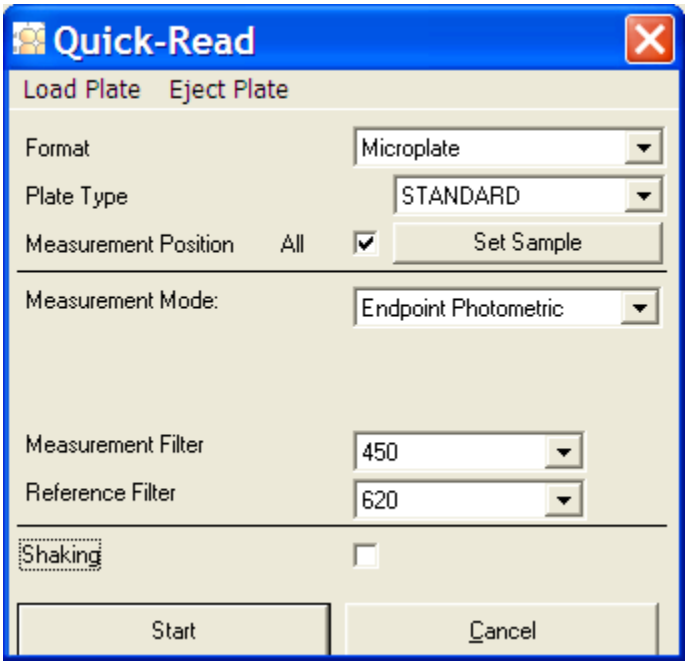


Figure 6-11: Quick-Read

2. In Measurement Mode, choose **Scan Linear**. The measurement parameters available for linear scan measurements appear (Figure 6-).

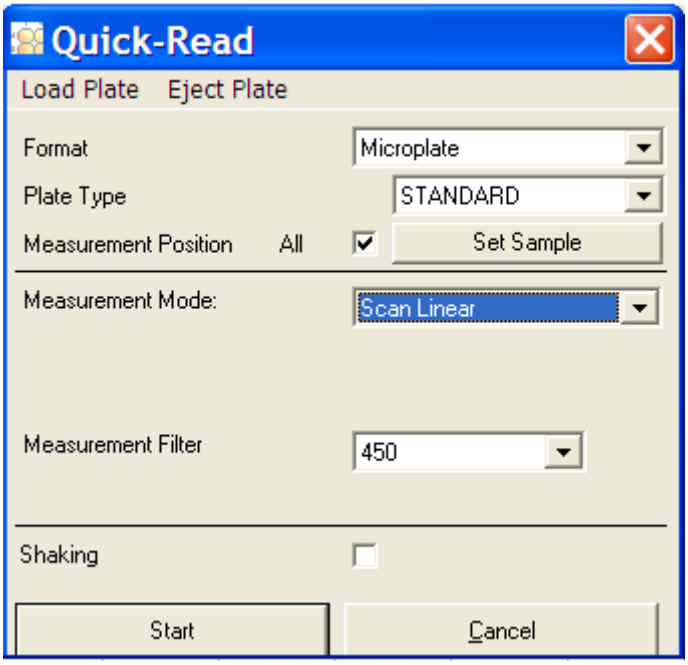


Figure 6-12: Quick-Read – Scan Linear parameters

3. In Measurement Filter, select the desired wavelength for the measurement.

➔ The measurement wavelengths available depend on the filters installed in the instrument (refer to Section 3.2, *Configuring the Microplate Reader*).

4. If desired, select **Shaking** to shake the microplate prior to the Quick measurement. Quick-Read expands to display Shaking parameters.

➔ If shaking is not desired, go to step 7.

5. If Shaking is selected, select the Intensity of the shaking: **Low, Medium**, or **High**.

6. If Shaking is selected, select the **Time** to shake in seconds.

➔ Choose **Shake Now** to immediately shake the plate for the Intensity and Time specified.

7. Choose the Plate Type and Measurement Position following the steps in Section 6.3, Configuring *Microplate Type and* Measurement Positions.

➔ Choose **Info** to view a summary of the parameter settings.

8. Choose the Plate Type and Measurement Position following the steps in Section 6.3, *Configuring Microplate Type and* Measurement Positions.

6.3. Configuring Microplate Type and Measurement Positions

After choosing and configuring a Quick measurement, the type of microplate and which wells are measured must be selected. Both parameters are configured in Quick-Read (Figure 6-).

➔ Microplate is the only available plate Format for the Zenyth 340 microplate readers.

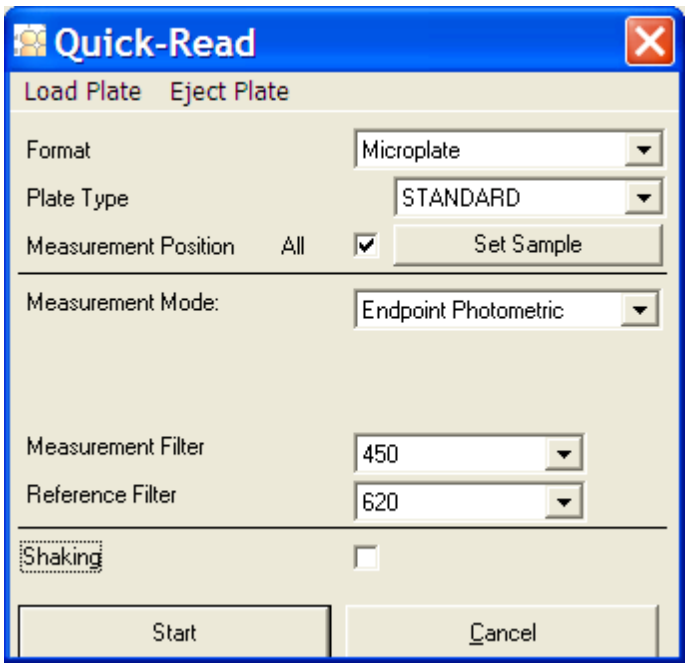


Figure 6-13: Quick-Read – Plate Type and Measurement Position

To select and configure Plate Type and Measurement Position:

1. Select the **Plate Type** being used in the Quick measurement. In Measurement Position, select **All** to perform measurements on all wells on the plate.

   ➔ Deselecting All does not deselect all wells. The measurement wells must be deselected manually in Set Sample.

   OR

   Choose **Set Sample** to specify the wells on the plate to measure. Set Sample appears (Figure 6-).

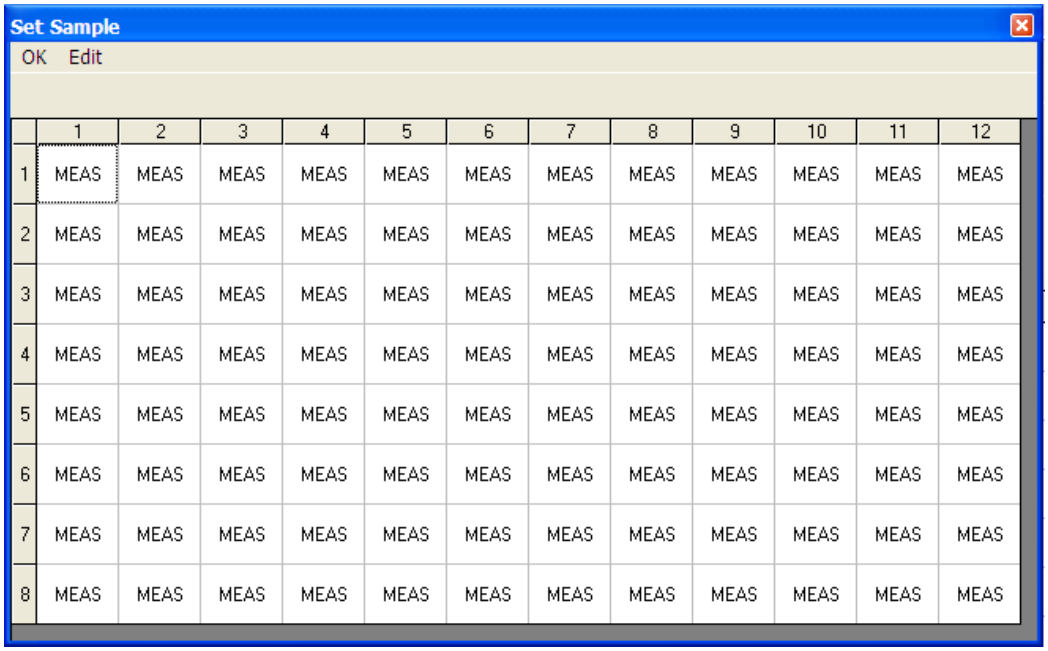


Figure 6-14: Set Sample

2. In Type of Selection, select the type of processing to configure:

   - Measurement Position — specifies the wells to measure. Click and drag over the wells to measure to select them.

3. Select a command from the Edit menu or by right-clicking within the selected area:

   - Set/De-select all wells — selects/deselects all wells on the microplate.
   - Set/De-select actual row — selects/deselects all wells in the same row as the initial well selected (Figure 6-).
   - Set/De-select actual column — selects/deselects all wells in the same column as the initial well selected (Figure 6-).
   - Set/De-select selected well — selects/deselects wells selected by dragging.

4. Repeat step 3 through step 5 to configure another type of processing, if necessary.

5. Choose **OK** to close Set Sample.

➔ The Measurement Position layouts defined in Set Sample are saved after a measurement is run.

6.4. Running Quick Measurements and Saving Measurement Results

After choosing the measurement type and configuring measurement and microplate parameters, the Quick measurement may be run from Quick-Read (Figure 6-). Measurement results are saved immediately after completing the Quick measurement.

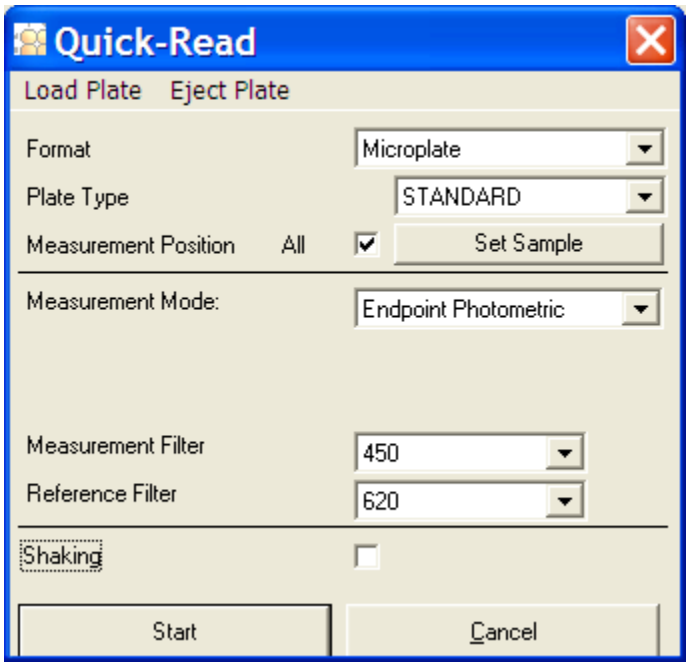


Figure 6-15: Quick-Read

To start a Quick measurement and save the measurement results:

1. If using the Zenyth 340 microplate reader, choose **Eject Plate** to move the plate carrier outside the instrument. Place the microplate to be measured on the plate carrier and choose **Load Plate** to move the plate and plate carrier inside the instrument.

   OR

   If using the EZ Read 400, Anthos 2010/2020 microplate reader, manually load the microplate into the instrument (refer to the instrument user's manual for more information about loading microplates).

2. Choose **Start** to begin reading the plate. When the measurement is complete, Plate-ID appears (Figure 6-).

➔To stop a measurement in progress before it completes, choose **STOP Measurement**.

OR

Choose **Cancel** to return to the ADAP software main screen without performing the measurement.

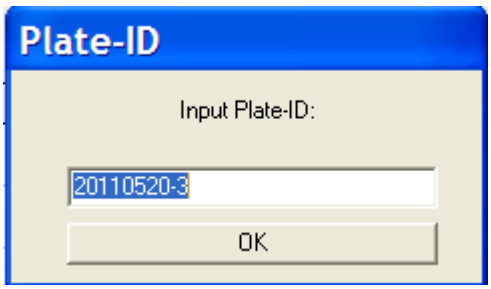


Figure 6-16: Plate-ID

3. In Input Plate-ID, rename the plate, if desired.

➔ The default format of Plate-ID names is YYYYMMDD-N, where YYYY is the year, MM the month, DD the day and N the number of the reading made that day.

4. Choose **OK** to save the measurement results to the database.

5. If using the Zenyth 340 absorbance detector, choose **Eject Plate** to move the plate carrier outside the instrument. Remove the measured microplate from the plate carrier and choose **Load Plate** to move the plate carrier inside the instrument.

7. Viewing Quick Measurement Results

7.1. Overview

After a Quick measurement is performed and saved, the measurement results are displayed in a series of tabs in the ADAP software main window. The tabs that are displayed vary depending on the type of measurement performed and instrument capability.

➔ Refer to Chapter 6, *Performing Quick Measurements* for detailed information about performing and saving Quick measurements.

All Quick measurement results are stored in the ADAP software database and may be:

- Opened for viewing, printing, or exporting (refer to Section 7.2, *Viewing Saved Quick Measurement Results*).
- Viewed in the ADAP software main window (refer to Section 7.3, *Viewing Quick Measurement* Results).
- Printed as a hard copy or data file such as an Acrobat® PDF (refer to Section 7.4, *Printing Quick Measurement Results*).
- Exported to another application such as a word processor or spreadsheet (refer to Section 7.5, *Exporting Quick Measurement Results to Other Applications*).

7.2. Viewing Saved Quick Measurement Results

All Quick measurement results are saved in the ADAP software database and may be opened for viewing, printing, and exporting (refer to Section 7.2.1, *Opening Saved Quick Measurement Results*).

Searching for saved measurement results by name is possible with Matchcode, the search feature built into the ADAP software (refer to Section 7.2.1.1, Using Matchcode to Search for Saved Measurement Results).

7.2.1. Opening Saved Quick Measurement Results

All Quick measurement results are saved in the ADAP software database and may be opened at any time.

To view saved measurement results:

1. From the Database menu, select **Open Saved Plate**. Selection appears (Figure 7-1).

➔ Saved measurement results are listed in descending chronological order by measurement date.

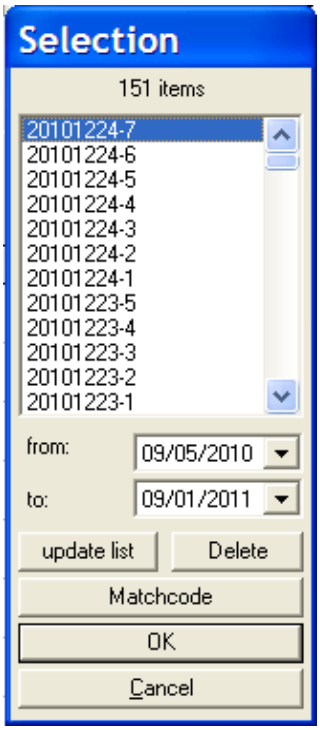


Figure 7-1: Selection – saved Quick measurements

2. Select the measurement results to view. Only one plate may be viewed at a time.

➔ To narrow the list by date, select dates in from and to, and choose **update list**.

To search for a specific plate ID by characters in the Plate ID name, choose **Matchcode** (refer to Section 7.2.1.1, *Using* Matchcode to Search for Saved Measurement Results).

3. Choose **OK** to view the measurement results.

OR

Choose **Cancel** to close Selection without opening a saved plate

OR

Choose **Delete** to delete the selected measurement results from the database.

7.2.1.1. Using Matchcode to Search for Saved Measurement Results

Matchcode is the search feature that appears in Selection. Depending on from which screen or tab Selection is accessed, Matchcode performs searches for saved measurement results or test definitions. Matchcode provides wildcard operators, * and ?, which simplify searching by allowing users to search for a set of possible characters in the filename (see Table 7-1).

➔ A valid license code for the ADAP Plus or ADAP Expert software is required to view test definitions located by Matchcode. Refer to Chapter 8, *Defining and Running Tests* for more information about test definitions.

To search for measurement results by plate ID:

1. From Selection, choose **Matchcode**. Plate-ID appears (Figure 7-2).

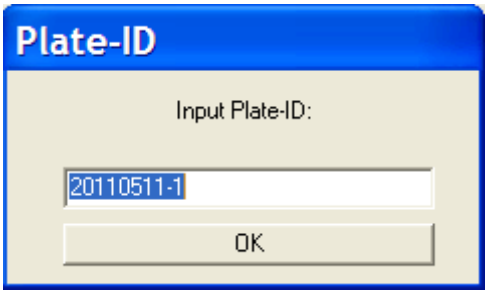


Figure 7-2: Plate-ID

2. In Input Plate-ID, enter a plate ID or test definition name.

Wildcard Pattern	Result
a	Lists all plate IDs or test definition names with an *a* in the ID or name.
a*	Lists all plate IDs or test definition names with an *a* at the beginning of the ID or name.
*a	Lists all plate IDs or test definition names with an *a* at the end of the ID or name.
alph?	Lists all plate IDs or test definition names with *alph* followed by an additional character. For example, *alpha* or *alphb*.

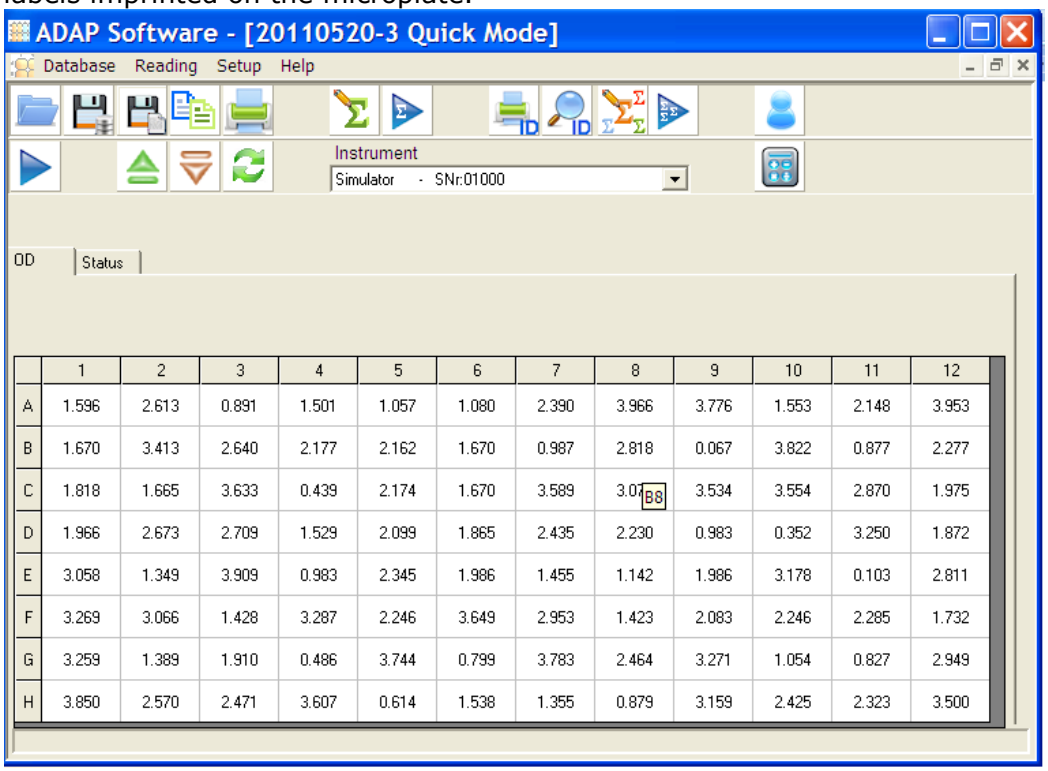
Table 7-1: Matchcode wildcard operators

3. Choose **OK**. Plate IDs or test definition names that match the search query appear in Selection.

➔ If Matchcode finds no matches to the search query, choose **update list** to display the entire list of plate IDs or test definitions again.

7.2.2. How Measurement Results are Displayed

Measurement results for microplate samples are displayed in rows and columns that correspond to the layout of wells on the plate; for example, Figure 7-3 displays results for samples on a 96-well plate. To easily identify specific samples, rows and columns use the same well labels imprinted on the microplate.



	1	2	3	4	5	6	7	8	9	10	11	12
A	1.596	2.613	0.891	1.501	1.057	1.080	2.390	3.966	3.776	1.553	2.148	3.953
B	1.670	3.413	2.640	2.177	2.162	1.670	0.987	2.818	0.067	3.822	0.877	2.277
C	1.818	1.665	3.633	0.439	2.174	1.670	3.589	3.07 B8	3.534	3.554	2.870	1.975
D	1.966	2.673	2.709	1.529	2.099	1.865	2.435	2.230	0.983	0.352	3.250	1.872
E	3.058	1.349	3.909	0.983	2.345	1.986	1.455	1.142	1.986	3.178	0.103	2.811
F	3.269	3.066	1.428	3.287	2.246	3.649	2.953	1.423	2.083	2.246	2.285	1.732
G	3.259	1.389	1.910	0.486	3.744	0.799	3.783	2.464	3.271	1.054	0.827	2.949
H	3.850	2.570	2.471	3.607	0.614	1.538	1.355	0.879	3.159	2.425	2.323	3.500

Figure 7-3: Measurement results for a 96-well microplate

7.3. Viewing Quick Measurement Results

Quick measurement results are displayed in a series of tabs in the ADAP software main window. The tabs displayed vary for each measurement type:

- Endpoint photometric — Displays OD (optical density) and Status for absorbance measurements (refer to Section 7.3.1, *Viewing* Endpoint Photometric Measurement Results).
- Kinetic photometric — Displays Reduced Data, Status, Raw Data, and Kinetic Graph (refer to Section 7.3.2, Viewing Kinetic Photometric Measurement Results).
- Multiwavelength — Displays Raw Data, Graphic, Status, and Curve Info (refer to Section 7.3.3, *Viewing Multiwavelength Photometric Measurement Results)*.
- Linear scan — Displays Raw Data Scan, Scan, Status, and Curve Info (refer to Section 7.3.4, *Viewing Linear Scan Measurement Results*).
- Area scan — Displays Raw Data, Scan, and Status (refer to Section 7.3.6, Viewing Area Scan Measurement Results).

7.3.1. Viewing Endpoint Photometric Measurement Results

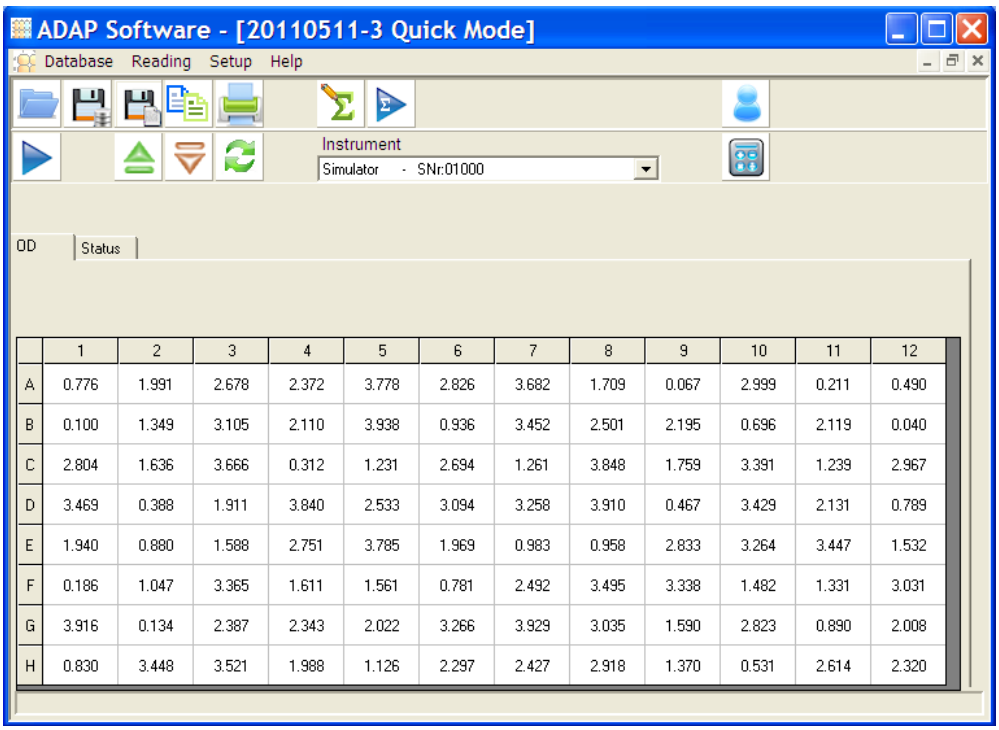
Measurement results for endpoint photometric measurements are displayed in two tabs:

- OD — in photometric measurement results, displays the optical density measurement for each sample (refer to Section 7.3.1.1, *Viewing Optical Density (OD) Measurement Results*).
- Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.2, *Viewing Sample Status*).

7.3.1.1. Viewing Optical Density (OD) Measurement Results

OD displays the optical density measurement for each sample (Figure 7-4). For bichromatic measurements, OD is calculated by subtracting measurements made with the reference filter from the measurements made with the primary filter.

➔ Refer to Section 7.4.1, *Printing General Measurement Results* for information about printing OD measurement results.



	1	2	3	4	5	6	7	8	9	10	11	12
A	0.776	1.991	2.678	2.372	3.778	2.826	3.682	1.709	0.067	2.999	0.211	0.490
B	0.100	1.349	3.105	2.110	3.938	0.936	3.452	2.501	2.195	0.696	2.119	0.040
C	2.804	1.636	3.666	0.312	1.231	2.694	1.261	3.848	1.759	3.391	1.239	2.967
D	3.469	0.388	1.911	3.840	2.533	3.094	3.258	3.910	0.467	3.429	2.131	0.789
E	1.940	0.880	1.588	2.751	3.785	1.969	0.983	0.958	2.833	3.264	3.447	1.532
F	0.186	1.047	3.365	1.611	1.561	0.781	2.492	3.495	3.338	1.482	1.331	3.031
G	3.916	0.134	2.387	2.343	2.022	3.266	3.929	3.035	1.590	2.823	0.890	2.008
H	0.830	3.448	3.521	1.988	1.126	2.297	2.427	2.918	1.370	0.531	2.614	2.320

Figure 7-4: Measurement Results - OD

7.3.1.2. Viewing Sample Status

Status displays which samples were measured successfully and which were not because of errors during the measurement (Figure 7-5):

- OK — The well was measured successfully.
- Error — The well was not measured because an error occurred.
- Calc Error — the well was not measured because an error occurred; for example, division by zero in a transformation formula.
- Overflow — a measurement could not be made because the optical density (OD) was above the indication limit.
- Underflow — a measurement could not be made because reduced data could not be calculated.
- Not used — the well was not selected to be measured in the plate layout.

➔ Calc Error and Not Used appear only in measurement results from tests run in the ADAP Plus or ADAP Expert software.

➔ Refer to Section 7.4.1, *Printing General Measurement Results* for information about printing Status results.

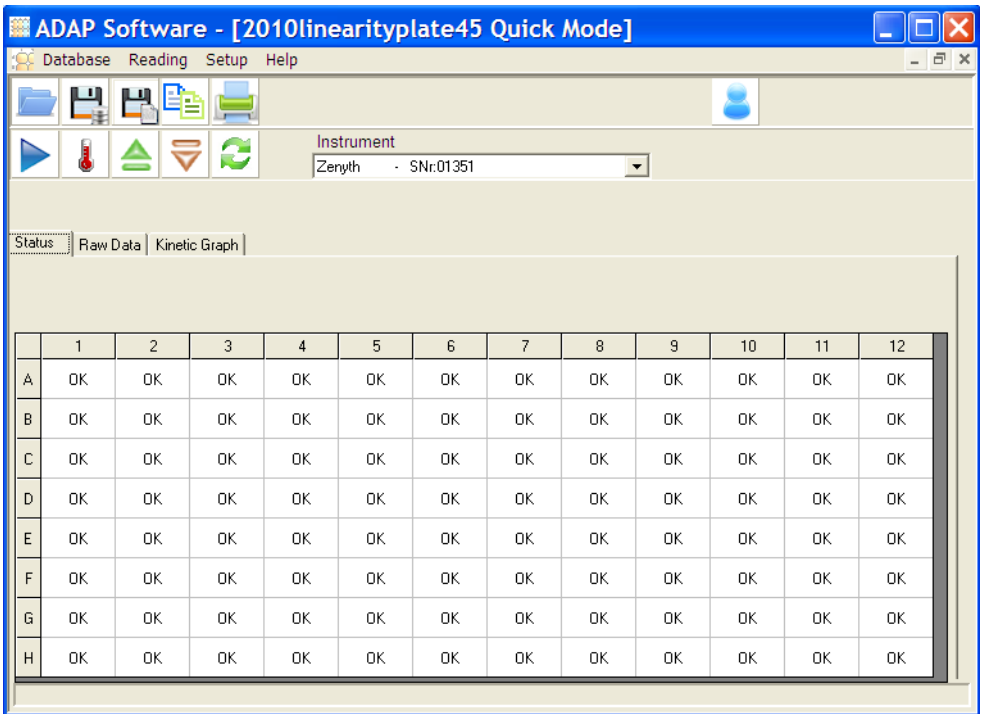


Figure 7-5: Measurement results - Status

7.3.2. Viewing Kinetic Photometric Measurement Results

Results for kinetic photometric Quick measurements are displayed in four tabs:

- Reduced Data — Displays the results for each sample calculated using the data reduction method configured for the Quick measurement (refer to Section 7.3.2.1, *Viewing Kinetic Measurement Reduced Data*).
- Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.2, *Viewing Sample Status*).
- Raw Data — Displays measurement results for each cycle performed in the measurement (refer to Section 7.3.2.2, *Viewing Kinetic Measurement Raw Data*).
- Kinetic Graph — Displays a graph of the kinetic measurement results for each sample (refer to Section 7.3.2.4, *Viewing the Kinetic Graph for an Individual Sample*).

7.3.2.1. Viewing Kinetic Measurement Reduced Data

Reduced Data displays the results for each sample calculated using the data reduction method configured in the Quick measurement (**Error! eference source not found.**). The actual tab name changes to reflect what type of results have been calculated. For example, most Slope reduction methods display OD/min; while Time reduction methods display t(sec) (refer to Section 6.2.1.1, *Data Reduction Methods*).

➔When no data reduction method is configured in the Quick measurement, the tab is labeled N/A and no data is displayed in the tab.

➔ Refer to Section 7.4.1, *Printing General Measurement Results* for information about printing Reduced Data measurement results.

7.3.2.2. Viewing Kinetic Measurement Raw Data

Raw Data displays measurement results for each cycle of a photometric kinetic measurement (Figure 7-6). The cycle currently displayed and number of cycles in the measurement are shown to the right of Next Cycle.

To view results from a different cycle:

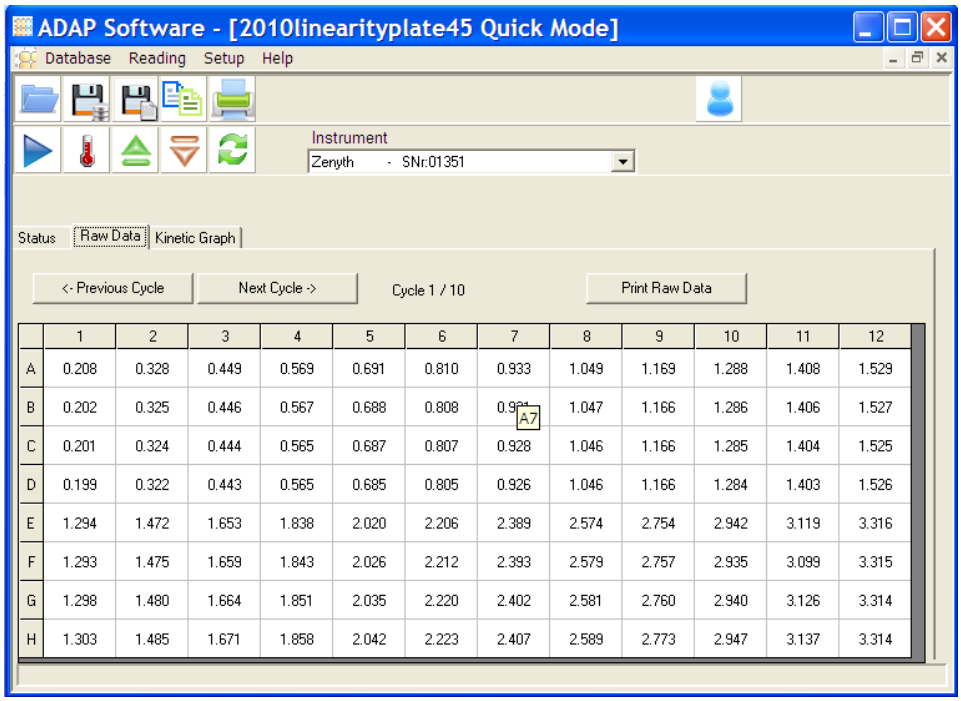
Choose **Previous Cycle** to view the measurement results from the preceding cycle.

OR

Choose **Next Cycle** to display results from the following cycle.

To print Raw Data for *all* cycles:

Choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve Info*).



	1	2	3	4	5	6	7	8	9	10	11	12
A	0.208	0.328	0.449	0.569	0.691	0.810	0.933	1.049	1.169	1.288	1.408	1.529
B	0.202	0.325	0.446	0.567	0.688	0.808	0.9[illegible]	1.047	1.166	1.286	1.406	1.527
C	0.201	0.324	0.444	0.565	0.687	0.807	0.928	1.046	1.166	1.285	1.404	1.525
D	0.199	0.322	0.443	0.565	0.685	0.805	0.926	1.046	1.166	1.284	1.403	1.526
E	1.294	1.472	1.653	1.838	2.020	2.206	2.389	2.574	2.754	2.942	3.119	3.316
F	1.293	1.475	1.659	1.843	2.026	2.212	2.393	2.579	2.757	2.935	3.099	3.315
G	1.298	1.480	1.664	1.851	2.035	2.220	2.402	2.581	2.760	2.940	3.126	3.314
H	1.303	1.485	1.671	1.858	2.042	2.223	2.407	2.589	2.773	2.947	3.137	3.314

Figure 7-6: Measurement Results – kinetic measurement raw data

7.3.2.3. Viewing Kinetic Measurement Graphs

Kinetic Graph displays graphs of the kinetic measurement results for all samples. The time or cycle number is plotted on the x-axis; Raw Data is plotted on the y-axis. The resulting graph shows how the measurement value varied over time.

To change the Kinetic Graph view:

- Use the scroll bars to view graphs for all samples, if necessary.
- Click on a well to view a detailed graph of the individual sample (refer to Section 7.3.4.2, *Viewing the Kinetic Graph for an Individual Sample*).

To print Kinetic Graph:

Choose **Print Graph** to print the graphs for all samples measured on a single page (refer to Section 7.4.3, *Printing Graphs*).

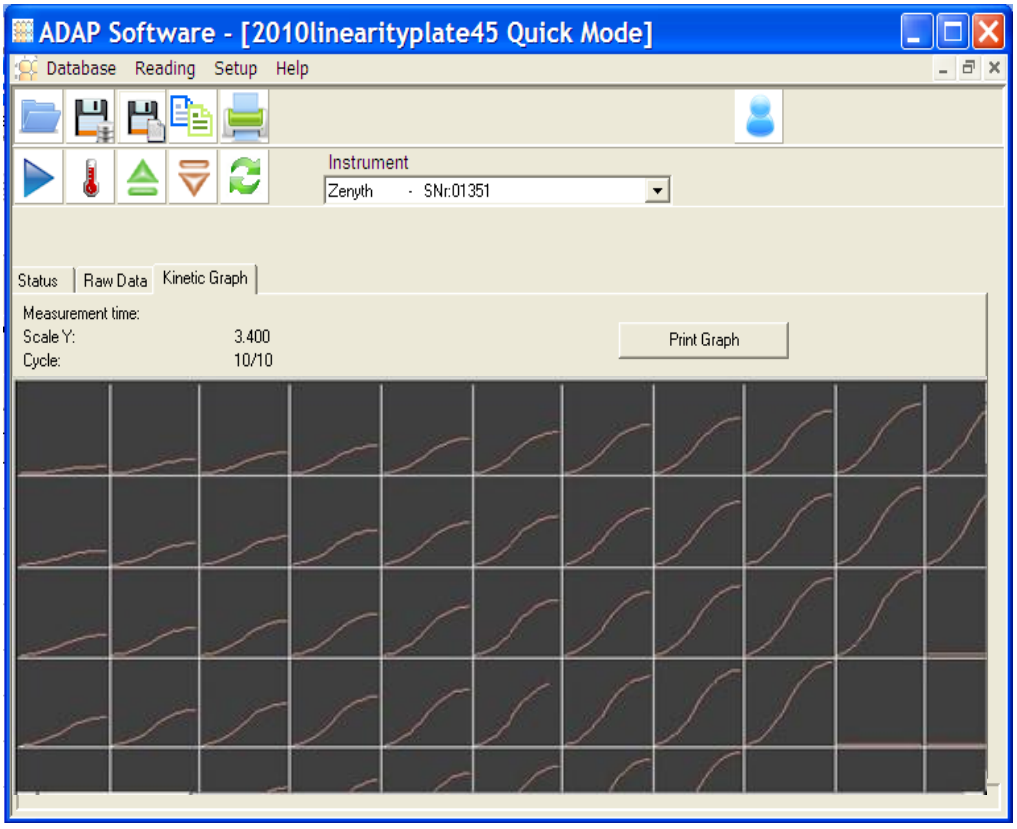


Figure 7-7: Measurement results – Kinetic Graph

7.3.2.4. Viewing the Kinetic Graph for an Individual Sample

Kinetic Graphs for individual samples can be viewed in detail. Positioning the cursor over any point on the curve displays the x and y coordinate values of that position in the upper right corner of the tab.

To display the Kinetic Graph for a single sample:

In Kinetic Graph, click on the desired well to view. Kinetic Graph displays the detailed kinetic graph for the selected sample (

Figure 7-8).

To return to the main Kinetic Graph view:

OR Click on the detailed kinetic graph. Kinetic Graph displays kinetic graphs for all samples (Figure 7-7).

➔ Print Graph prints kinetic measurement graphs for all measured samples, not the individual sample being viewed in detail (refer to Section 7.4.3, *Printing Graphs*).

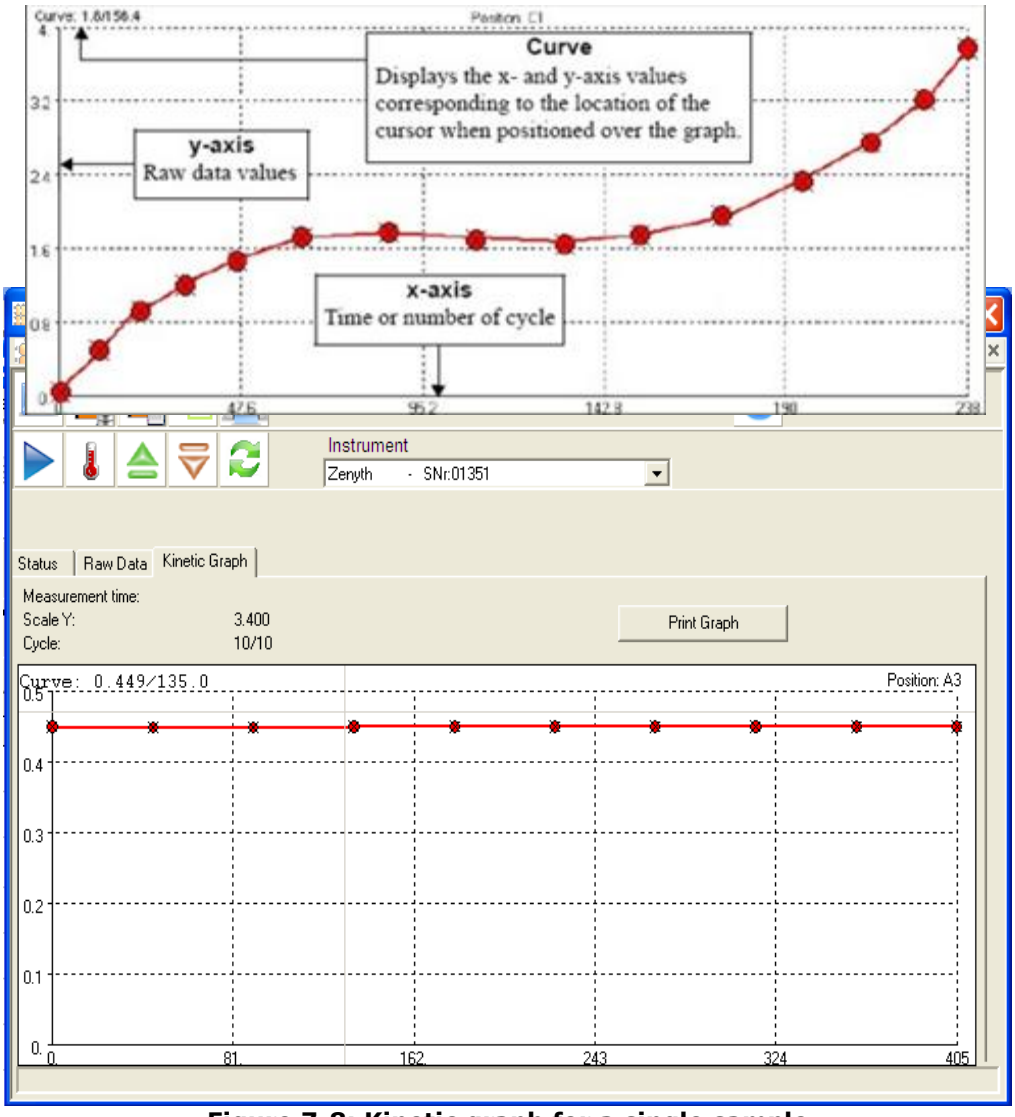


Figure 7-8: Kinetic graph for a single sample

7.3.3. Viewing Multiwavelength Photometric Measurement Results

Results for multiwavelength photometric Quick measurements are displayed in four tabs:

- Raw Data — Displays measurement results for each wavelength chosen in the Quick measurement (refer to Section 7.3.3.1, *Viewing Multiwavelength Measurement Raw Data*).
- Graphic — Displays a graph of multiwavelength measurement results for each sample (refer to Section 7.3.3.2, *Viewing Multiwavelength Measurement Graphs*).
- Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.2, *Viewing Sample Status*).
- Curve Info — Displays optical density and percentage transmission values for a single sample at each wavelength measured. In the ADAP Plus and ADAP Expert software, more detailed information about the curve, including peak and valley data, is also displayed (refer to Section 7.3.3.4, *Viewing Multiwavelength Measurement Curve Info*).

7.3.3.1. Viewing Multiwavelength Measurement Raw Data

Raw Data displays the optical density (OD) for each sample at each wavelength measured (Figure 7-9). Results for each measured wavelength are displayed separately. The wavelength currently being displayed is indicated near the center of the tab.

To view results from a different measurement wavelength:

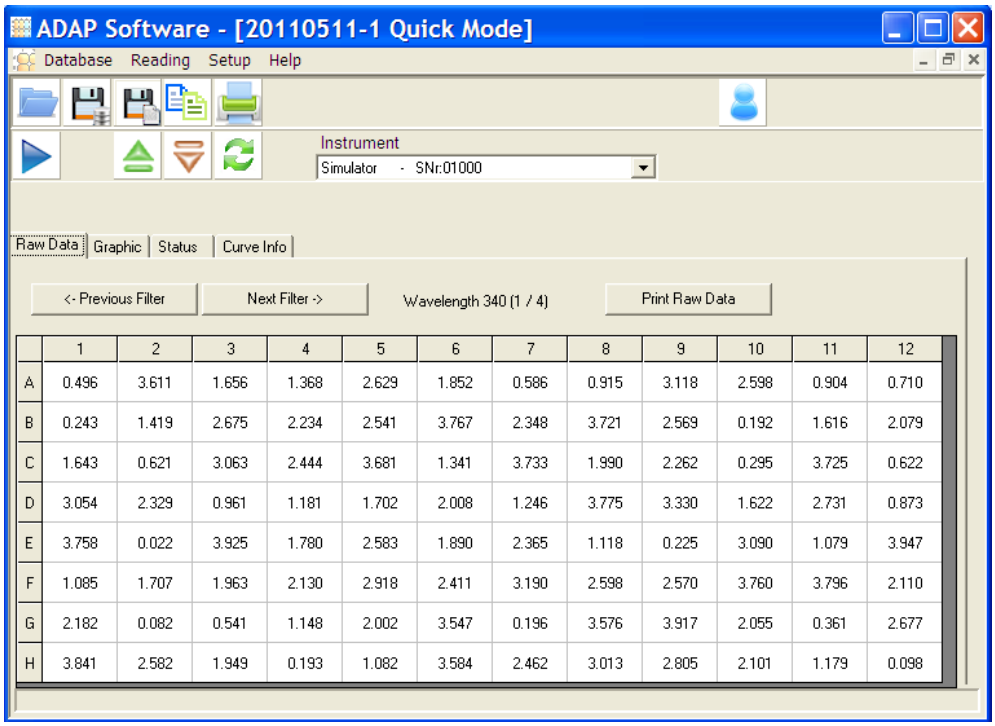
Choose **Previous Filter** to view the results from the previous measured wavelength.

OR

Choose **Next Filter** to display results from the next measured wavelength.

To print Raw Data measurement results for all wavelengths:

Choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve Info*).



	1	2	3	4	5	6	7	8	9	10	11	12
A	0.496	3.611	1.656	1.368	2.629	1.852	0.586	0.915	3.118	2.598	0.904	0.710
B	0.243	1.419	2.675	2.234	2.541	3.767	2.348	3.721	2.569	0.192	1.616	2.079
C	1.643	0.621	3.063	2.444	3.681	1.341	3.733	1.990	2.262	0.295	3.725	0.622
D	3.054	2.329	0.961	1.181	1.702	2.008	1.246	3.775	3.330	1.622	2.731	0.873
E	3.758	0.022	3.925	1.780	2.583	1.890	2.365	1.118	0.225	3.090	1.079	3.947
F	1.085	1.707	1.963	2.130	2.918	2.411	3.190	2.598	2.570	3.760	3.796	2.110
G	2.182	0.082	0.541	1.148	2.002	3.547	0.196	3.576	3.917	2.055	0.361	2.677
H	3.841	2.582	1.949	0.193	1.082	3.584	2.462	3.013	2.805	2.101	1.179	0.098

Figure 7-9: Measurement results – multiwavelength Raw Data

7.3.3.2. Viewing Multiwavelength Measurement Graphs

Graphic displays graphs of multiwavelength measurement results for all samples (Figure 7-10). The measurement wavelength is plotted on the x-axis; the OD or transmission values are plotted on the y-axis.

To change the Graphic view:

- Use the scroll bars to view graphs for all samples, if necessary.
- Click on a sample. Choose an option from the menu that appears:
  - Curve Info — Displays the Curve Info tab (refer to Section 7.3.3.4, *Viewing Multiwavelength Measurement Curve Info*)
  - Zoom Graph — Displays a detailed graph of the results for the selected sample (refer to Section 7.3.3.3, *Viewing the Multiwavelength Graph for an Individual Sample*).
  - Show Graph — Displays the Graph window where curves for all samples can be studied in greater detail with additional viewing and calculation options (refer to Section 7.3.5, *Viewing and Performing Calculations on Curves in the Graph Window*).

➔ Show Graph is only available with a valid ADAP Plus or ADAP Expert license code.

To print Graphic:

Choose **Print Graph** to print the graphs for all samples measured (refer to Section 7.4.3, *Printing Graphs*).

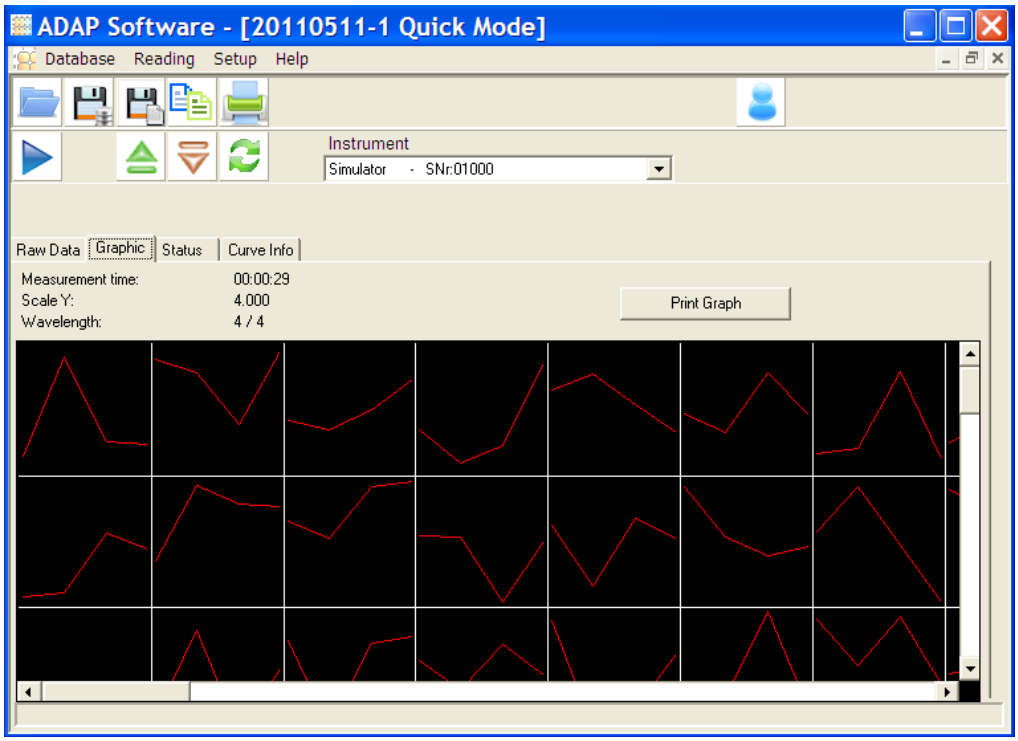


Figure 7-10: Measurement results – multiwavelength Graphic

7.3.3.3. Viewing the Multiwavelength Graph for an Individual Sample

The multiwavelength Graphic for an individual sample can be viewed in detail. Positioning the cursor over any point on the curve displays the x and y coordinate values of that position in the upper right corner of the tab.

To display the multiwavelength Graphic for a single sample:

1. In Graphic, click on the desired well to view.

2. Choose Zoom Graph from the menu that appears. Graphic displays the detailed multiwavelength graph for the selected sample (Figure 7-11).

To return to the main multiwavelength Graphic view:

Click on the detailed multiwavelength graph. Graphic displays multiwavelength graphs for all samples (Figure 7-10).

➔ Print Graph prints multiwavelength graphs for all measured samples, not the individual sample being viewed in detail (refer to Section 7.4.3, *Printing Graphs*).

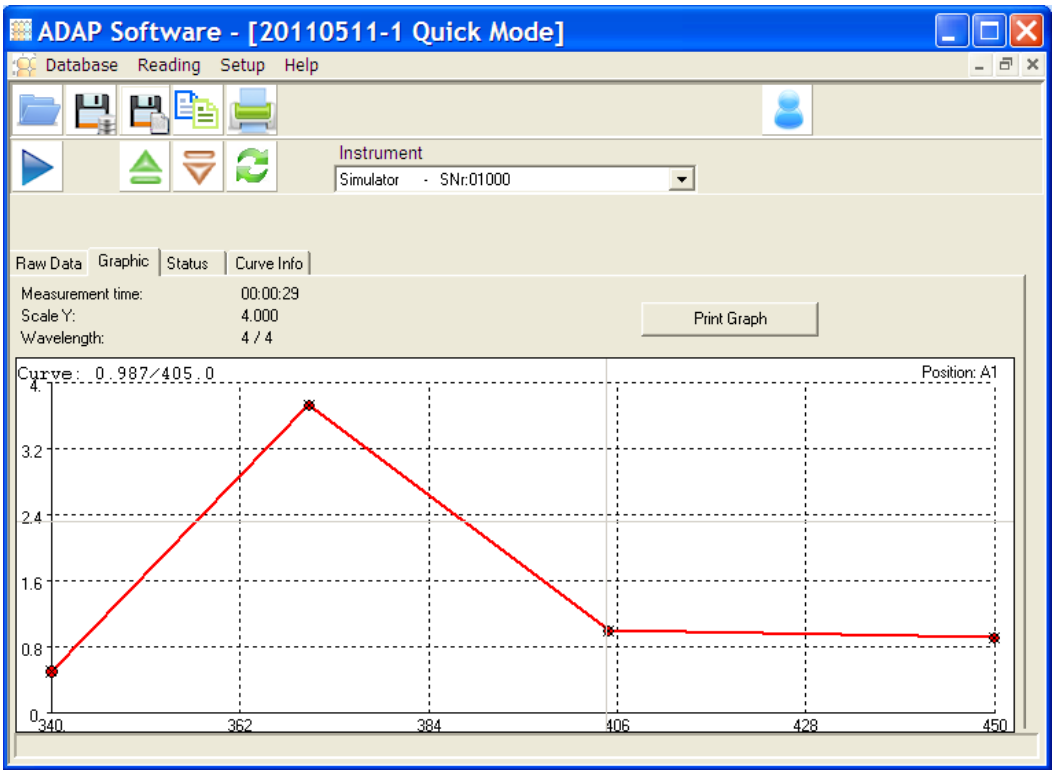


Figure 7-11: Multiwavelength Graphic for a single sample

7.3.3.4. Viewing Multiwavelength Measurement Curve Info

Curve Info displays the OD and transmission values at each wavelength measured for a single sample (**Error! Reference source not found.**). he ADAP Plus and ADAP Expert software display more detailed information about the curve, including values of peaks, valleys, and average slope.

To view Curve Info for a different sample:

Choose **Previous Sample** to view Curve Info for the previous sample.

OR

Choose **Next Sample** to view Curve Info for the next sample.

To print Curve Info measurement results for all samples:

Choose **Print**.

To print Curve Info tables for the displayed sample:

Right click in a Curve Info table and choose the desired printing option (refer to Section 7.4.2.1, *Printing Curve Info Data Tables*).

7.3.4. Viewing Linear Scan Measurement Results

Results for linear scan Quick measurements are displayed in four tabs:

- Raw Data Scan — Displays values from the 25 measurement points across center of each well (refer to Section 7.3.4.1, *Viewing* Linear Scan Measurement Raw Data).
- Scan — Displays graphs of the linear transmission profiles for all wells measured (refer to Section 7.3.4.2, *Viewing Linear Scan Graphs*).
- Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.2, *Viewing Sample Status*).
- Curve Info — Displays the transmission values for a single sample at all 25 measurement points. In the ADAP Plus and ADAP Expert software, more detailed information about the curve, including peak and valley data, is also displayed (refer to Section 7.3.4.4, Viewing Linear Scan Curve Info).

7.3.4.1. Viewing Linear Scan Measurement Raw Data

Raw Data Scan displays values from the 25 measurement points across the center of each well (Figure 7-12).

➔ Raw data values displayed are percentage transmission values, not absorbency. For example, 0.000 refers to no transmission of light, which in terms of OD is overflow. 100.000 refer to 100% transmission, which is 0 OD. 10.000 equal 10% transmission, which is 1 OD.

The currently displayed measurement point and total number of measurement points are shown to the right of Next Cycle.

To view results from a different measurement point:

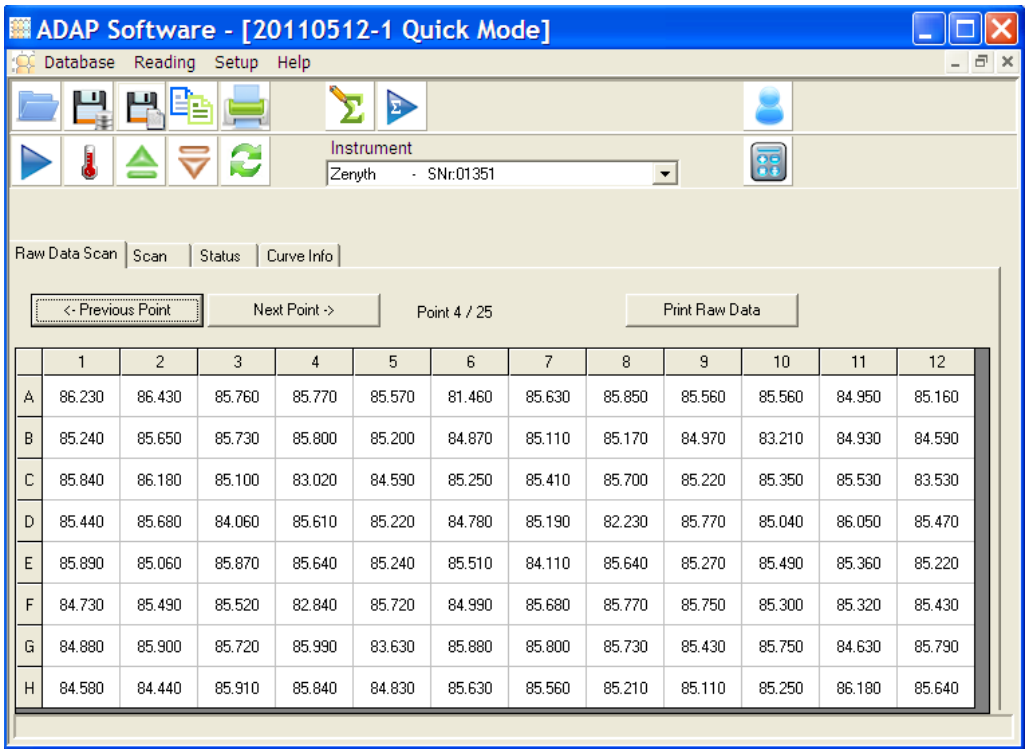
Choose **Previous Cycle** to view the measurement results from the previous measurement point.

OR

Choose **Next Cycle** to display results from the next measurement point.

To print Raw Data Scan measurement results for all cycles:

Choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve Info*).



	1	2	3	4	5	6	7	8	9	10	11	12
A	86.230	86.430	85.760	85.770	85.570	81.460	85.630	85.850	85.560	85.560	84.950	85.160
B	85.240	85.650	85.730	85.800	85.200	84.870	85.110	85.170	84.970	83.210	84.930	84.590
C	85.840	86.180	85.100	83.020	84.590	85.250	85.410	85.700	85.220	85.350	85.530	83.530
D	85.440	85.680	84.060	85.610	85.220	84.780	85.190	82.230	85.770	85.040	86.050	85.470
E	85.890	85.060	85.870	85.640	85.240	85.510	84.110	85.640	85.270	85.490	85.360	85.220
F	84.730	85.490	85.520	82.840	85.720	84.990	85.680	85.770	85.750	85.300	85.320	85.430
G	84.880	85.900	85.720	85.990	83.630	85.880	85.800	85.730	85.430	85.750	84.630	85.790
H	84.580	84.440	85.910	85.840	84.830	85.630	85.560	85.210	85.110	85.250	86.180	85.640

Figure 7-12: Raw Data tab for a Linear Scan Measurement

7.3.4.2. Viewing Linear Scan Graphs

Scan displays graphs of the linear transmission profile for all wells on the plate (Figure 7-13). A linear transmission graph displays the transmission measured at 25 points across the center of the well. The y-axis refers to transmission percentage; the x-axis refers to measurement positions.

➔ Data in the graphs are percentage transmission values, not absorbency. For example, 0.000 refers to no transmission of light, which in terms of OD is overflow. 100.000 refer to 100% transmission, which is 0 OD. 10.000 equals 10% transmission, which is 1 OD.

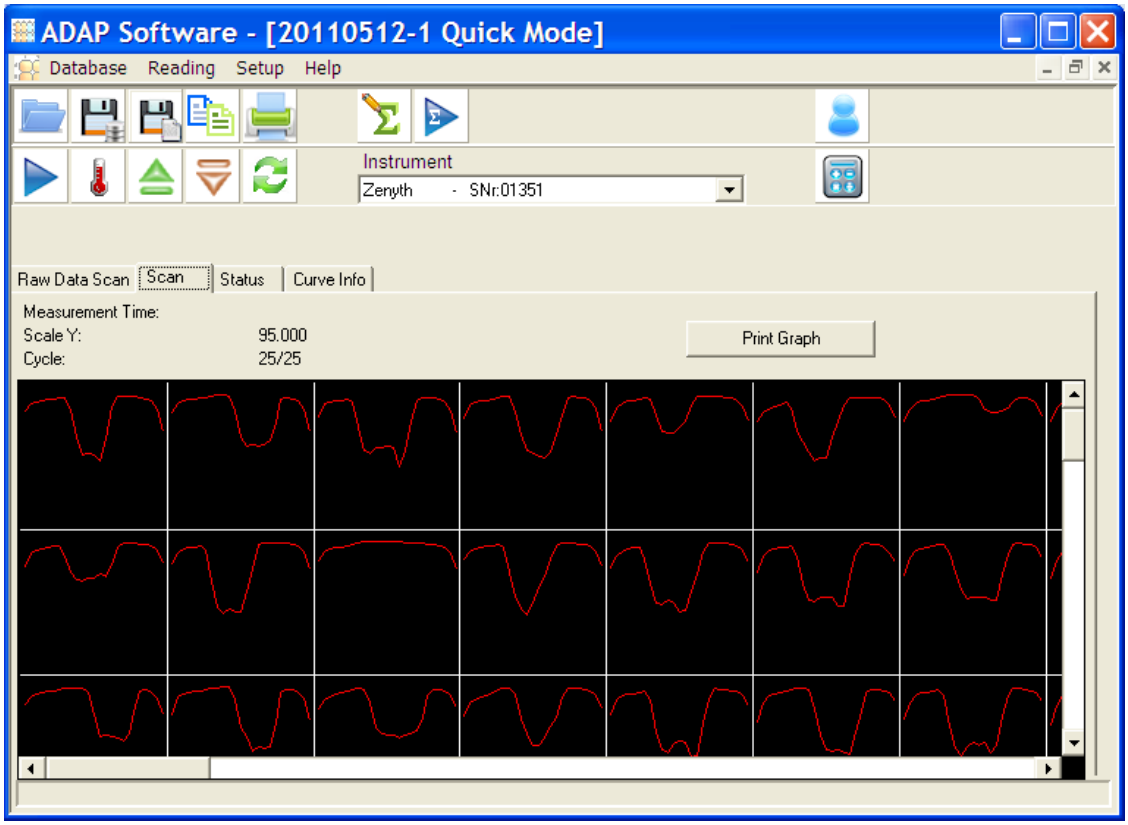


Figure 7-13: Measurement results – linear scan graphs

To change the Scan view:

- Use the scroll bars to view graphs for all samples, if necessary.
- Click on a sample. Choose an option from the menu that appears:
  - Curve Info — Displays the Curve Info tab (refer to Section 7.3.4.4, Viewing *Linear* Scan Curve Info).
  - Zoom Graph — Displays a detailed graph of the results for the selected sample (refer to Section 7.3.4.3, *Viewing the Linear Scan Graph for Individual Wells*).
  - Show Graph — Displays the Graph window where curves for all samples can be studied in greater detail with additional viewing and calculation options (refer to Section 7.3.5, *Viewing and Performing Calculations on Curves in the Graph Window)*.

➔ Show Graph is only available only with a valid ADAP Plus or ADAP Expert license code.

To print Scan:

Choose **Print Graph** to print the graphs for all wells measured (refer to Section 7.4.3, *Printing Graphs*).

7.3.4.3. Viewing the Linear Scan Graph for Individual Wells

Linear scan graphs for individual wells can be viewed in detail.

To display the linear scan graph for an individual well:

1. In Scan, click on the desired well to view.
2. Choose Zoom Graph from the menu that appears. Scan displays the detailed linear scan graph for the selected well (Figure 7-14).

To return the main Scan view:

Click on the detailed linear scan graph. Scan displays linear scan graphs for all wells (Figure 7-13).

➔ Print Graph prints linear scan graphs for all measured wells, not the individual well being viewed in detail (refer to Section 7.4.3, *Printing Graphs*).

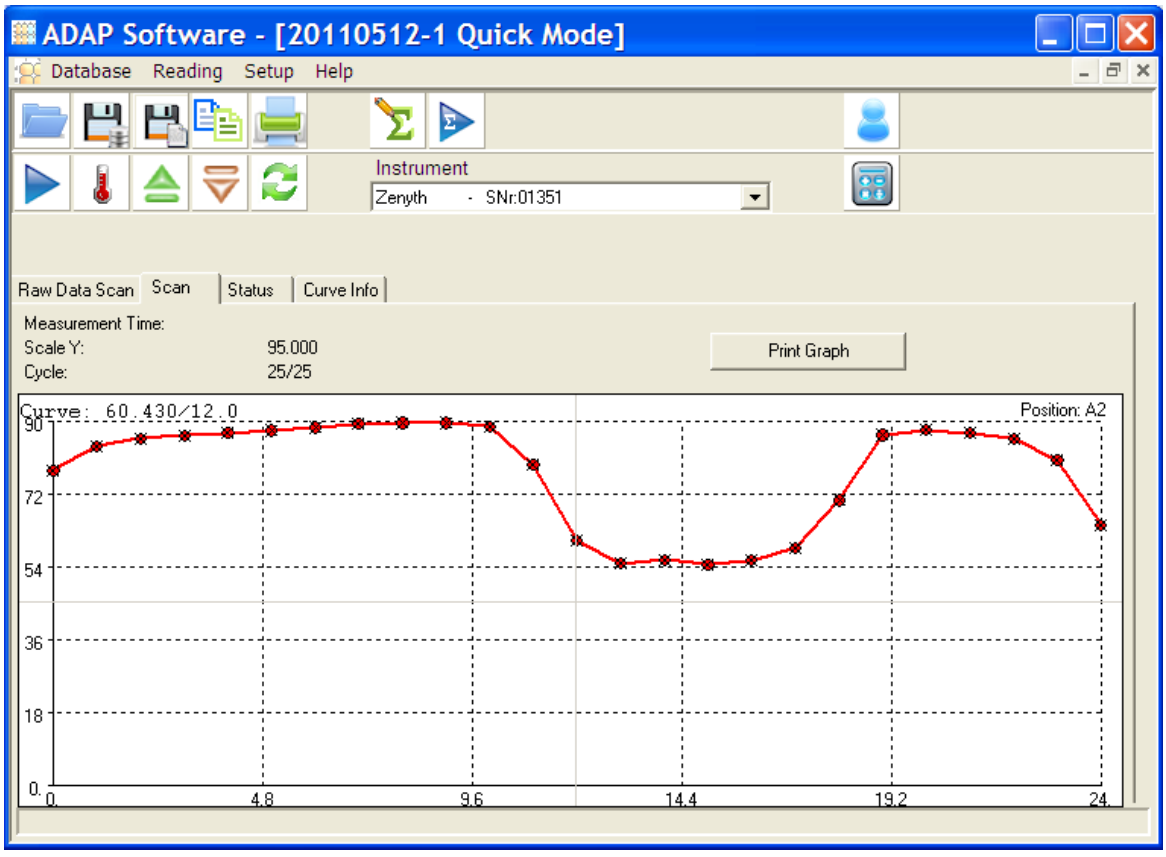


Figure 7-14: Linear scan graph for a single well

7.3.4.4. Viewing Linear Scan Curve Info

Curve Info displays the transmission values at all 25 measurement points for a single sample (**Error! Reference source not found.**). The ADAP and Plus ADAP Expert software display more detailed information about the curve, including values of peaks, valleys, and average slope.

To view Curve Info for a different well:

Choose **Previous Sample** to view Curve Info for the previous sample.

OR

Choose **Next Sample** to view Curve Info for the next sample.

To print Curve Info measurement results for all samples:

Choose **Print**.

To print Curve Info tables for the displayed sample:

Right click in a Curve Info table and choose the desired printing option (refer to Section 7.4.2.1, *Printing Curve Info Data Tables*).

7.3.5. Viewing and Performing Calculations on Curves in the Graph Window

In the ADAP Plus and ADAP Expert software, Graph provides options to view, compare, and perform curve fitting on graphs for multiwavelength and linear measurement results. Graphs for all samples measured are displayed simultaneously and color coded for differentiation (Figure 7-).

➔ Graph is available only with a valid ADAP Plus or Expert software license.

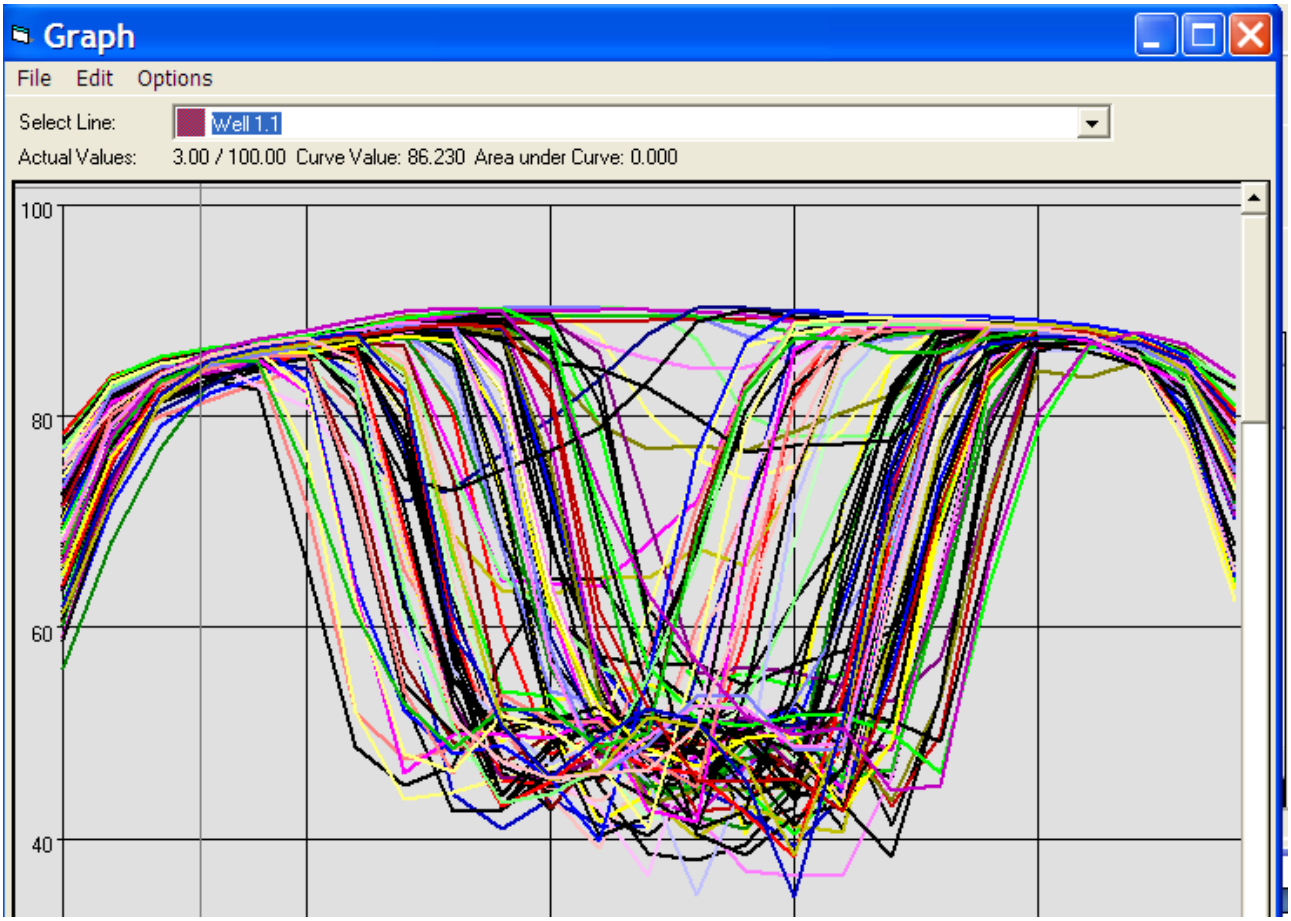


Figure 7-15: Graph

To open Graph:

From the Graph tab in multiwavelength measurement results or the Scan tab in linear scan measurement results, click on a sample graph and choose **Show Graph** from the menu that appears.

To close Graph:

From the File menu, choose **End**.

➔ To save smoothed curves before closing Graph, from the File menu, choose **Save Calc Container** (refer to Section 7.3.5.4.2, *Saving Smoothed Curves*).

➔ To clear Graph, from the Options menu, choose **Clear Graph**.

Graph provides the ability to:

- View individual curves (refer to Section 7.3.5.1, *Viewing Individual Curves)*.
- View the properties of individual curves in text form (refer to Section 7.3.5.2, Viewing the Properties of an Individual Curve).
- Change the graph view by zooming in on specific areas of Graph (refer to Section 7.3.5.3, *Changing the Graph View by Zooming*).
- Smooth curves using curve fitting methods (refer to Section 7.3.5.4, Using Curve Fitting Methods to Smooth Curves).
- Calculate the area under curves (refer to Section 7.3.5.4.4, *Calculating the Area under Curves*).
- Copy Graph as a bitmap image that can be pasted into other software applications (refer to Section 7.3.5.5, *Copying the Contents of Graph*).
- Print the contents of Graph (refer to Section 7.3.5.6, *Printing the Contents of Graph*).

7.3.5.1. Viewing Individual Curves

When Graph is opened, curves for all samples measured are displayed. Individual curves can be selected and viewed.

To view an individual curve:

1. From the Options menu, select **Draw Single Line**.

2. In Select Line, choose the individual curve to view. Graph displays only the chosen curve (Figure 7-).

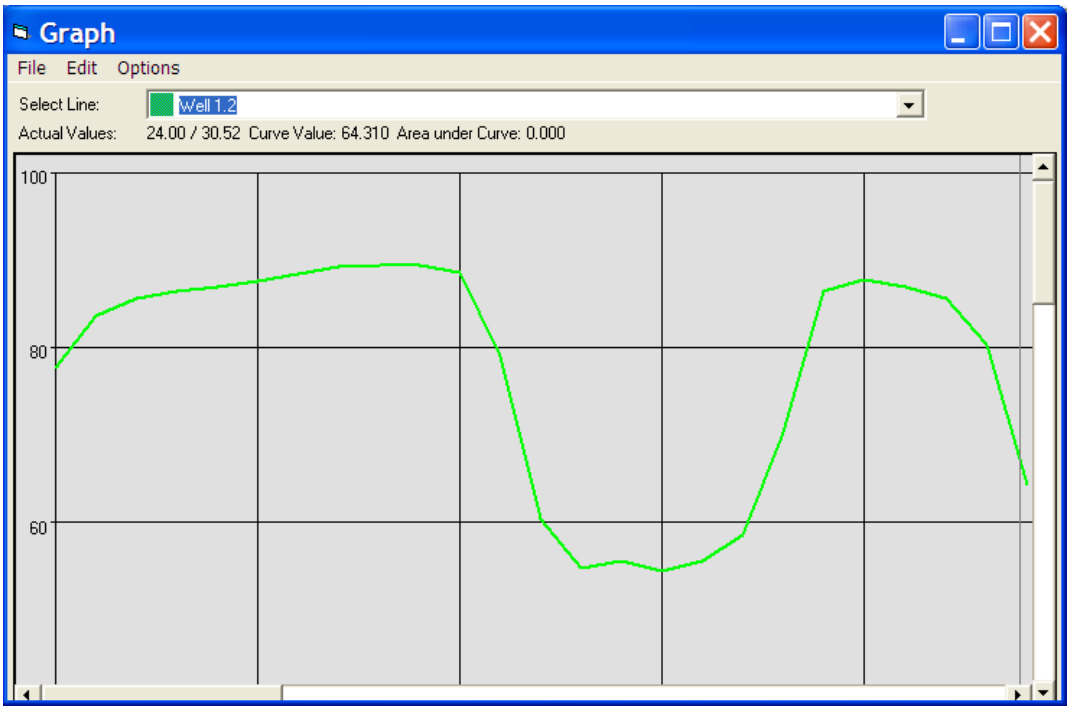


Figure 7-16: Graph displaying an individual curve

➔ To view the X and Y values for a point on the curve, position the cursor over the desired point. Actual Values displays the X and Y values at that position.

Curve Value displays the OD or transmission value at the curve peak or valley nearest to the current cursor position.

Area under Curve displays the calculated value for the area under a curve (refer to Section 7.3.5.4.4, *Calculating the Area under Curves*).

To display all curves after viewing an individual curve:

From the Options menu, choose **Restore Graph 1:1**. Graph displays all curves in the measurement results.

➔ Draw Single Line remains enabled until it is toggled off by selecting it again. When enabled, each time a curve is chosen in Select Line, Graph displays the chosen curve individually.

7.3.5.2. Viewing the Properties of an Individual Curve

Detailed information about curve properties, including OD and transmission values, curve peak and valley values, and average slope, may be viewed in text form for any curve displayed in Graph. Curve properties may also be:

- Copied to other applications (refer to Section 7.3.5.2.1, *Copying Curve Properties to Other Applications*).
- Saved as text files (refer to Section 7.3.5.2.2, *Saving Curve Properties as Text Files*).
- Printed (refer to Section 7.3.5.2.3, *Printing Curve Properties*).

To view curve properties:

1. In Select Line, choose the desired curve.
2. From the File menu, choose **Curve Properties**. Information appears (Figure 7-).

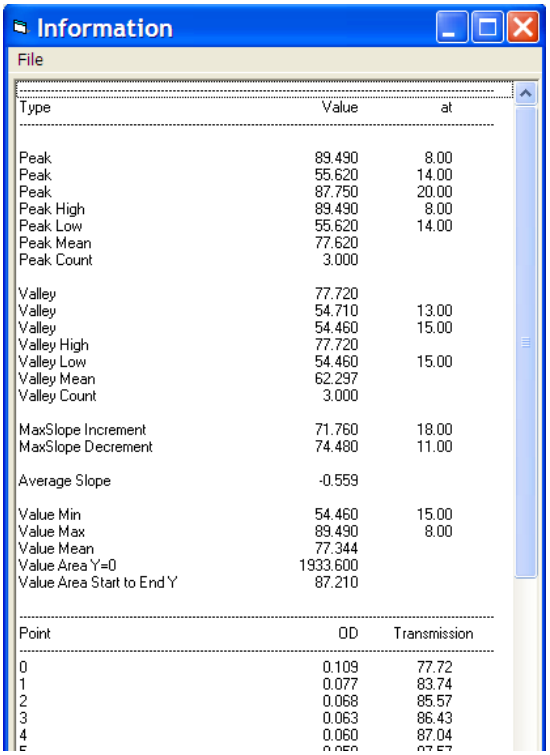


Figure 7-17: Information – curve properties

To close Information:

From the File menu, choose **End**.

7.3.5.2.1. Copying Curve Properties to Other Applications

Curve properties displayed in Information can be copied to the clipboard. The properties can then be pasted into another application for storage or further analysis.

To copy curve properties:

1. From the File menu, choose **Copy**.

2. Open or switch to the application where the curve properties will be pasted.

3. Paste the curve properties into a new or existing file using the Paste command for the application.

   ➔ Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

7.3.5.2.2. Saving Curve Properties as Text Files

Curve properties displayed in Information can be saved as text files which can be viewed in any text editor or imported into many statistical software packages or spreadsheet applications.

To save curve properties as a text file:

1. From the File menu, choose **Save**. Save As appears.

2. Browse to the desired location to save the text file.

3. Enter a **File name** for the text file.

4. Choose **Save** to save the file

   OR

   Choose **Cancel** to return to the ADAP software without saving the curve properties as a text file.

7.3.5.2.3. Printing Curve Properties

Curve properties displayed in Information can be printed. Printing may output hard copies or files; for example, Acrobat® PDF documents.

To print curve properties:

1. In the File menu, choose **Print**. Print appears.

2. In Printer, select the desired printer to print the information. All printers that are properly installed and configured on the computer are listed.

3. In Options, select the desired **Font** and text **Size**.

➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print curve properties.

➔ If the selected printer is configured to print to a file, such as an Acrobat PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

7.3.5.3. Changing the Graph View by Zooming

Graph provides two methods of zooming to change the graph view:

- Zooming in and out by fixed percentages (refer to Section 7.3.5.3.1, *Zooming by Fixed Percentages*).
- Zooming in by dragging over the desired region (refer to Section 7.3.5.3.2, *Zooming by Dragging Over the Desired Region*).

7.3.5.3.1. Zooming by Fixed Percentages

The graph view may be changed by zooming in and out at fixed increments between 50% and 200%.

➔ The ability to zoom in or out is disabled when the option the option to calculate the area under a curve is enabled (refer to Section 7.3.5.4.4, *Calculating the Area under Curves*).

To zoom in or out:

From the Options menu, choose **Zoom**, and then the desired fixed percentage to zoom.

➔ When zoomed in, use the scroll bars to access regions of the graph view not visible.

To reset the original graph view:

From the Options menu, choose **Zoom>100%.**

7.3.5.3.2. Zooming by Dragging Over the Desired Region

Zooming in on a section of the graph view may be accomplished by dragging over the desired region to enlarge.

➔ The ability to zoom by dragging is disabled when the option to calculate the area under a curve is enabled (refer to Section 7.3.5.4.4, *Calculating the Area under Curves*).

To zoom in by dragging:

1. Position the cursor at the desired starting position for the selection, then depress and hold the mouse button down.

2. Drag the mouse until the desired region is selected (**Error! eference source not found.**). The selected region is highlighted in blue.

3. Release the mouse button. Graph displays a zoomed view of the selected region.

➔ When zoomed in by selection, regions of the graph not visible are not accessible. To view regions not included in the zoom selection, choose **Restore Graph 1:1** to reset the graph view to 100%.

To reset the original graph view:

From the Options menu, choose **Restore Graph 1:1**.

7.3.5.4. Using Curve Fitting Methods to Smooth Curves

Curves can be smoothed using one of the five curve fitting methods available in the ADAP software.

Smoothed curves may also be:

- Deleted (refer to Section 7.3.5.4.1, *Deleting Smoothed Curves*).
- Saved (refer to Section 7.3.5.4.2, *Saving Smoothed Curves*).
- Opened (refer to Section 7.3.5.4.3, *Opening Saved Smoothed Curves*).

To apply a curve fitting method to a curve:

1. In Select Line, choose the curve to smooth.

   ➔ If desired, the curve to smooth can be viewed individually (refer to Section 7.3.5.1, *Viewing Individual Curves*).

2. From the Edit menu, choose the curve fitting method to apply:

   - **Smooth Curve Linear** — Curve is smoothed by a linear regression calculation.
   - **Smooth Curve Mean** — Curve is smoothed using mean values.
   - **Smooth Curve Cubic Spline Low** — Curve is smoothed by a cubic spline calculation.

     ➔ Choose this option when the deviation of measurement points is low.

   - **Smooth Curve Cubic Spline Medium** — Curve is smoothed by a cubic spline calculation.

     ➔ Choose this option when the deviation of measurement points is medium.

   - **Smooth Curve Cubic Spline High** — Curve is smoothed by a cubic spline calculation.

     ➔ Choose this option when the deviation of measurement points is high.

➔ Refer to Section 8.2.3.2.1, *Curve Fitting Models* for more information about each type of curve fitting model.

The smoothed curve is calculated and displayed with the original curve. In Select Line, smoothed curves are labeled using the format curve fitting method (original curve label); for example Mean (Well 1.1).

3. To smooth additional curves, repeat steps 1 and 2 above.

7.3.5.4.1. Deleting Smoothed Curves

Smoothed curves displayed in Graph can be deleted. Deleting a smoothed curve removes it from the graph view, but does not delete smoothed curve data saved in Calc Container files.

To delete smoothed curves:

From the Edit menu, choose **Delete Calc Container**. Smoothed curves are removed from the graph view.

7.3.5.4.2. Saving Smoothed Curves

Smoothed curve data can be saved for further evaluation. Smoothed curves are stored in a Calc Container, a text file that may be opened by most word processors, spreadsheets, and database applications.

To save a Calc Container:

1. From the File menu, choose **Save Calc Container**. Save As appears.

2. Browse to the desired location to save the text file.

3. Enter a **File name** for the file.

4. In Save as type, select the type of file to save:

   - **TXT** — Saves the smoothed curve data in a text file that can be opened by many word processing, spreadsheet, and database applications.
   - **XML** — Saves the smoothed curve data in an XML file. XML is a format designed for sharing information over the Web.

   ➔ The DWR file type is also available. DWR Calc Containers are designed to save test definition data, and should not be used to save smoothed curves.

5. Choose **Save** to save the file.

   OR

   Choose **Cancel** to return to the ADAP software without saving the Calc Container.

7.3.5.4.3. Opening Saved Smoothed Curves

Saved Calc Containers with smoothed curve data can be opened and viewed in Graph.

To open a Calc Container:

1. From the File menu, choose **Open**. Open appears .

2. Browse to and select the Calc Container file to open.

   ➔ If necessary, select the File of type that stores the Calc Container data: **Result Container TXT (*.txt)** or **Result Container XML (*.xml)**. Only files of the selected type are displayed in Open.

3. Choose **Open** to open the Calc Container.

   OR

   Choose **Cancel** to close **Open** without opening a Calc Container.

7.3.5.4.4. Calculating the Area under Curves

The area under a curve can be calculated. The actual area calculated can be modified by dragging the start and/or endpoint of the straight line that indicates the bottom border of the area calculated.

➔ The ability to calculate the area under a curve is disabled when the graph view is zoomed in or out (refer to Section 7.3.5.3, *Changing the Graph View by Zooming*).

To calculate the area under a curve:

1. In Select Line, choose the desired curve.

   ➔ If desired, select an individual curve to view in Graph (refer to Section 7.3.5.1, *Viewing Individual Curves*).

2. From the Options menu, choose **Calculate Area under Curve**. A blue straight line with endpoints appears (Figure 7-). The calculated area under the curve is displayed in Actual Values.

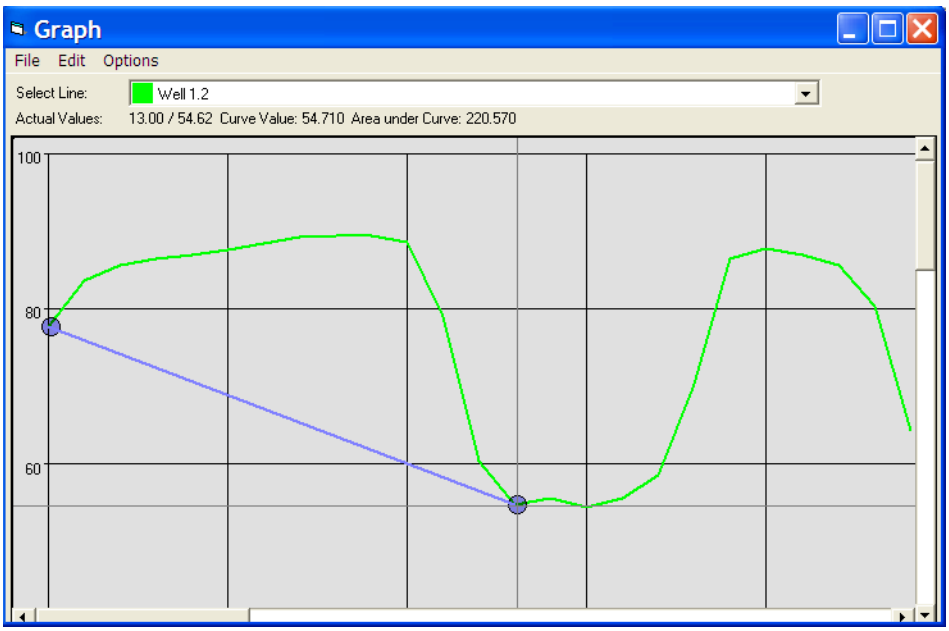


Figure 7-18: Graph – calculating the area under a curve

To move the endpoints of the straight line and recalculate the area under a curve:

Click on an endpoint and drag it to a new location on the curve. The area under the curve is automatically recalculated based on the new position of the straight line.

To turn off Calculate Area under Curve:

From the Options menu, deselect **Calculate Area under Curve**.

7.3.5.5. Copying the Contents of Graph

The contents of Graph can be copied as a bitmap image that can be pasted into other software applications such as word processors.

To copy the contents of Graph to another software application:

1. From the Edit menu, choose **Copy**. The contents of Graph are copied to the clipboard as a bitmap image.

2. Open or switch to the application where the bitmap image will be pasted.

3. Paste the bitmap image into a new or existing file using the Paste command for the application.

➔ Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

7.3.5.6. Printing the Contents of Graph

Graph may be printed. Printing may create either hard copies or files, such as Acrobat PDF documents.

To print Graph:

1. In the File menu, choose **Print**.

2. In Printer, select the desired printer to print the information. All printers that are properly installed and configured on the computer are listed.

3. In Options, select the desired **Font** and text **Size**.

   ➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print Graph.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

7.3.6. Viewing Area Scan Measurement Results

Results for area scan Quick measurements are displayed in three tabs:

- Raw Data Scan — Displays values from all measurement points across the well (refer to Section 7.3.6.1, Viewing Area Scan Measurement Raw Data*)*.
- Scan — Displays graphs of the area scan transmission profiles for all wells measured (refer to Section 7.3.6.2, *Viewing Area Scan Transmission Profiles*).
- Status — Displays which samples were measured successfully and which were not because of errors during measurement (refer to Section 7.3.1.2, *Viewing Sample Status*).

7.3.6.1. Viewing Area Scan Measurement Raw Data

For area scan measurements, Raw Data displays results for measurement points one well at a time (Figure 7-). Results are displayed in a matrix that corresponds to the layout of the measurement points for each well.

➔ Raw data values displayed are percentage transmission values, not absorbency. For example, 0.000 refers to no transmission of light, which in terms of OD is overflow. 100.000 refers to 100% transmission, which is 0 OD. 10.000 equals 10% transmission, which is 1 OD.

To view results from a different well:

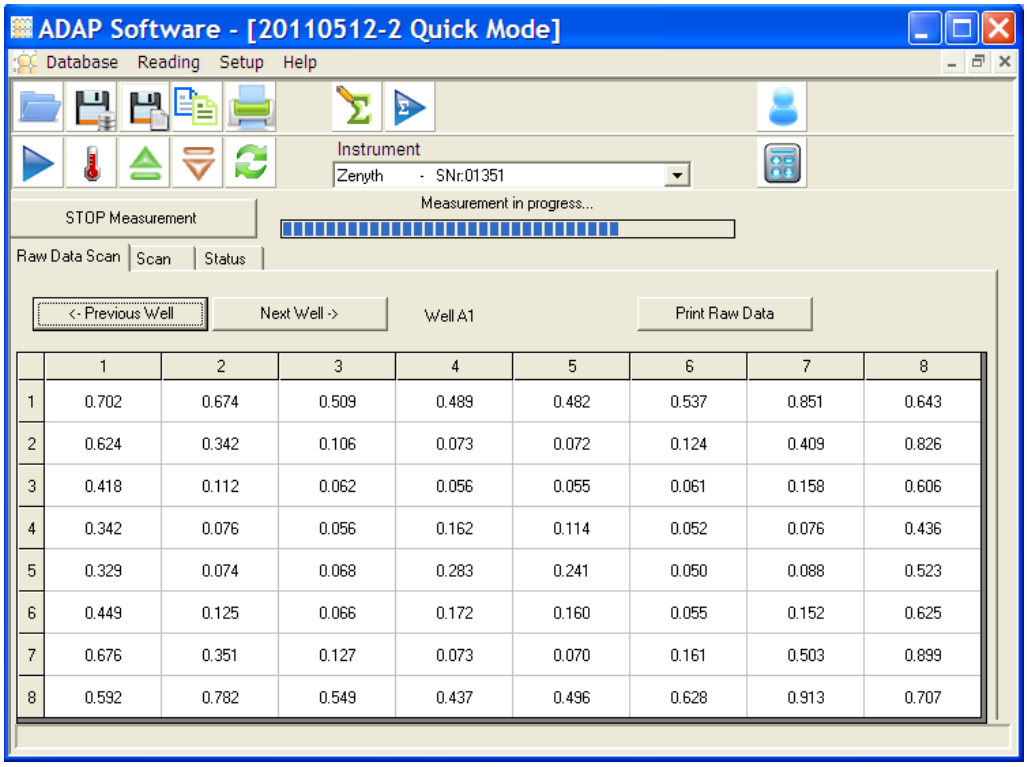
Choose **Previous Well** to view the measurement results from the preceding well.

OR

Choose **Next Well** to display results from the following well.

To print Raw Data measurement results for all wells:

Choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve Info*).



	1	2	3	4	5	6	7	8
1	0.702	0.674	0.509	0.489	0.482	0.537	0.851	0.643
2	0.624	0.342	0.106	0.073	0.072	0.124	0.409	0.826
3	0.418	0.112	0.062	0.056	0.055	0.061	0.158	0.606
4	0.342	0.076	0.056	0.162	0.114	0.052	0.076	0.436
5	0.329	0.074	0.068	0.283	0.241	0.050	0.088	0.523
6	0.449	0.125	0.066	0.172	0.160	0.055	0.152	0.625
7	0.676	0.351	0.127	0.073	0.070	0.161	0.503	0.899
8	0.592	0.782	0.549	0.437	0.496	0.628	0.913	0.707

Figure 7-19: Raw Data for an area scan measurement of Well A1

7.3.6.2. Viewing Area Scan Transmission Profiles

For area scan measurements, Scan displays three-dimensional transmission profiles for all measured wells on the plate (Figure 7-20). The values presented are a percentage of transmission.

➔ Data presented in the profiles are percentage transmission values, not absorbency. For example, 0.000 refers to no transmission of light, which in terms of OD is overflow. 100.000 refers to 100% transmission, which is 0 OD. 10.000 equals 10% transmission, which is 1 OD.

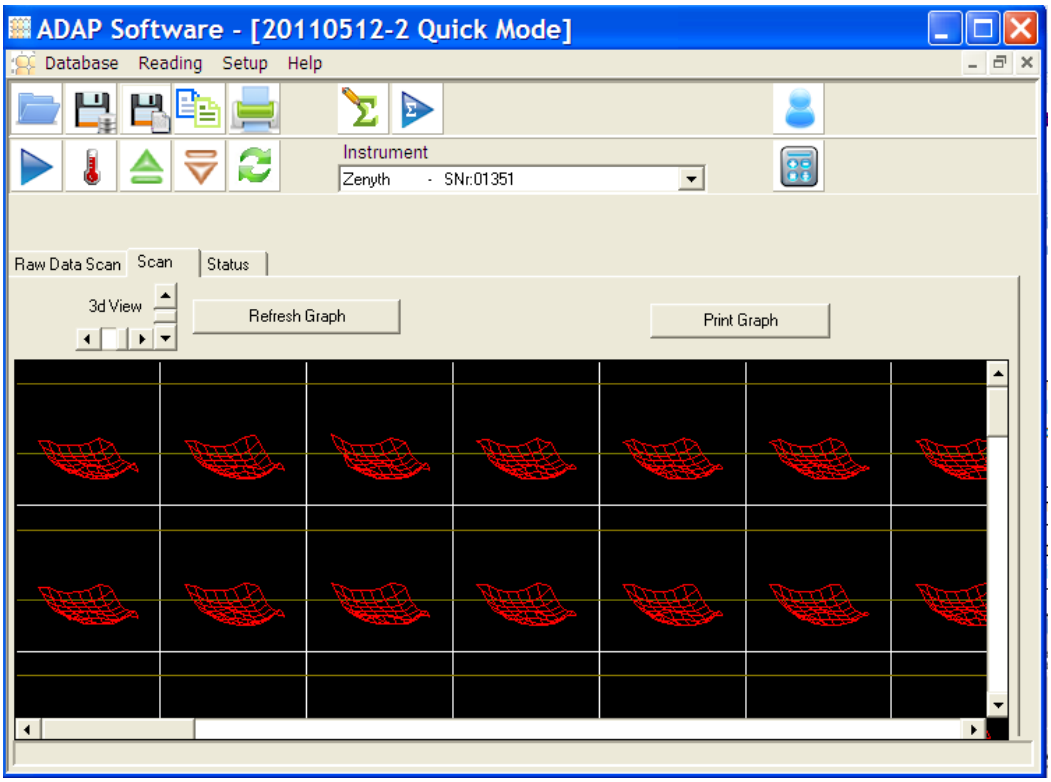


Figure 7-20: Measurement results – area scan transmission profiles

To print area scan transmission profiles:

Choose **Print Graph** to print the profiles for all wells measured (refer to Section 7.4.3, *Printing Graphs*).

To change the absorbance profile view:

- Use the main scroll bars to view the graphs for all wells on the plate, if necessary.
- Use the 3d View scroll bars in the upper left of the Scan tab to change the angle for all wells on the plate (refer to Section 7.4, *Printing Quick Measurement Results*).
- Click on an individual well to view a detailed three-dimensional rendering of the transmission profile that can be rotated, zoomed, and viewed with different colors and textures applied (refer to Section 7.3.6.4, *Viewing the Transmission Profile of a Single Well*).

➔ The ADAP Expert software is required to view transmission profiles of single wells.

7.3.6.3. Changing the Viewing Angle for All Wells

The 3d View controls in the upper left of Scan allow the transmission profiles for all wells to be viewed from different angles.

To change the viewing angle:

1. Use the horizontal scroll bar to rotate the view left and right, if desired.
2. Use the vertical scroll bar to rotate the view up and down, if desired.
3. Choose **Refresh Graph** to update the display of the absorbance profiles to the new viewing angle.

7.3.6.4. Viewing the Transmission Profile of a Single Well

➔ An ADAP Expert software license code is required to view transmission profiles of single wells.

A detailed view of the transmission profile for each measured well is available in View3D. This 3-D image can be rotated, zoomed, and viewed with different textures and colors applied.

To display View3D:

1. In Scan, click on the desired well to view. View 3D appears (Figure 7-21).

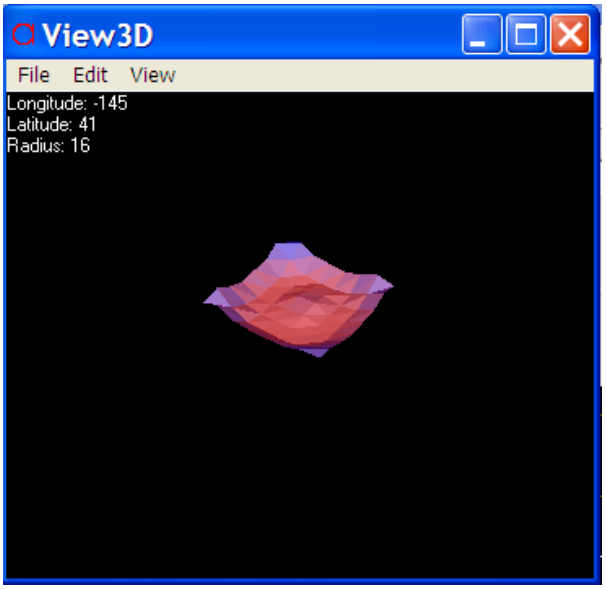


Figure 7-21: View 3D

2. To change the viewing angle of the transmission profile, click and hold the left mouse button, and move the mouse in the desired direction of rotation.

   OR

   To zoom in or out, click and hold the right mouse button, and move the mouse left or right, or up or down.

   ➔ When zooming, moving the mouse up and down produces the same zoom effect as moving the mouse left and right.

3. If desired, change the texture and brightness of the 3-D image by choosing options in the View menu:

   - **Light** — brightens the 3-D image.

- **Wireframe** — hides the surface layer so that only the underlying wireframe, or skeleton, of the 3-D image is visible.
- **Solid** — displays the 3-D image as a solid object.
- **Shaded** — Divides the surface layer into sections differentiated by color.
- **Transparent** — displays the 3-D image with a translucent surface layer.
- **Outlined** — Displays only the outer outline of the 3D image.
- **Metallic** — displays the surface texture of the 3D image with a simulated metallic finish.
- **Atmosphere** — subtly modifies the brightness and texture of the surface layer.

If desired, change the color of the surface layer by choosing options in the Edit menu:

- **Color White** — displays the surface color of the 3-D as white.
- **Color Gradient** — blends the surface layer color of the 3-D image using a gradient.

7.3.6.5. Saving Transmission Profiles

3-D images of transmission profiles can be saved as image files separate from the measurement results. Images are saved in Dex3D (*.dex) format.

To save a 3-D image of a transmission profile:

1. From the File menu, select **Save**. Save as appears.
2. Browse to directory where the file will be saved and choose a **File name**.
3. Choose **Save** to save the file.

   OR

   Choose **Cancel** to return to View3D without saving the image.

7.3.6.5.1. Loading Transmission Profiles

3-D images of transmission profiles saved in Dex3D (*.dex) format can be loaded into the ADAP software for viewing.

➔ View3D must be open to load a 3-D image.

To load a 3-D image of a transmission profile:

1. From the File menu, select **Load**. Open appears (**Error! Reference source not found.**).

2. Browse to directory where the desired image is saved and select it.

3. Choose **Open** to load the image.

   ➔ Selecting Open as read-only prevents the 3-D image from being modified while the file is open.

   OR

   Choose **Cancel** to return to View3D without opening the image.

7.4. Printing Quick Measurement Results

For record-keeping purposes, the ADAP software has the ability to print Quick measurement results and information. The printing procedure varies depending on which measurement results or information tab is being printed.

- OD, RLU, Reduced Data, and Status — From the Setup menu or toolbar, choose **Print** to print the combined measurement results and information displayed by these tabs (refer to Section 7.4.1, *Printing General Measurement Results*).
- Raw Data and Curve Info— Depending on the button available within the tab, choose **Print Raw Data** or **Print** (refer to Section 7.4.2, *Printing Raw Data and Curve Info*).
- Graphs — in the tab itself, choose **Print Graph** to print graphs for all measured samples (refer to Section 7.4.3, *Printing Graphs*).

7.4.1. Printing General Measurement Results

Measurement results and information from OD, RLU, or Reduced Data are combined with Status into a single printout.

To print results and information:

1. From the Setup menu, choose **Print**. Print appears (Figure 7-).

   OR 

   Choose **Print**. Print appears (Figure 7-2).

➔ Choosing Print from the toolbar opens a simplified type of Print (Figure 7-22).

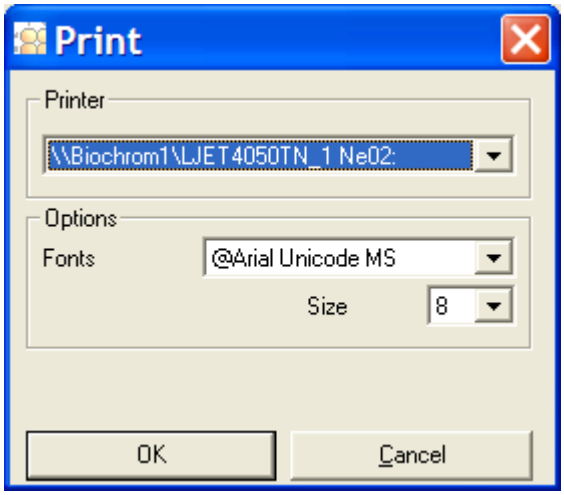


Figure 7-22: Print chosen from Setup menu

2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.

3. In Options, select the desired **Font**, text **Size**, and number of **Copies**.

➔ If printing from the simplified Print (Figure 7-22), in Options, select the desired **Font** and text **Size**. A single copy is printed automatically.

➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

➔ In range, selecting **All Tests** or **Single Test** produces the same printout for Quick measurements.

4. Choose **OK**.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

7.4.1.1. Viewing General Measurement Results Printouts

Printouts generated from OD, Reduced Data and Status display measurement results and information in a matrix that matches the plate layout (**Error! Reference source not found.**). For each well, the first line lists the plate layout label assigned to the well, the second OD, or Reduced Data results, and the third Status.

➔ A general measurement results printout of kinetic measurement results includes kinetic graphs for measured wells. Kinetic graphs can also be printed separately by choosing **Print Graph** in Kinetic Graph (refer to Section 7.4.3, *Printing Graphs*).

To print kinetic raw data, in Raw Data, choose **Print Raw Data** (refer to Section 7.4.2, *Printing Raw Data and Curve Info*).

7.4.2. Printing Raw Data and Curve Info

Raw Data, Raw Data Scan, and Curve Info can be printed from measurement results that include any of these tabs.

➔ Information in the OD, Transmission, Reduced Data and Status tabs are printed by choosing **Print** in the Setup menu (refer to Section 7.4.1, *Printing General Measurement Results*).

To print kinetic or scan graphs, choose **Print Graph** in Kinetic Graph or Scan respectively (refer to Section 7.4.3, *Printing Graphs*).

To print Raw Data or Curve Info:

1. In Raw Data or Raw Data Scan, choose **Print Raw Data**.

   OR

   In Curve Info, choose **Print**. Print appears (Figure 7-23).

   ➔ Curve Info data tables may also be printed by right-clicking on a table within the Curve Info tab.

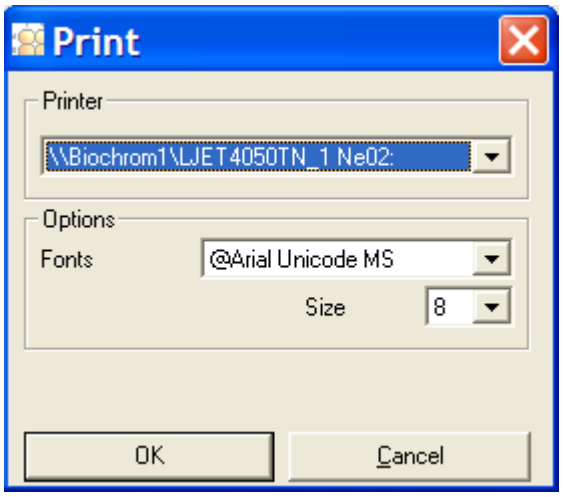


Figure 7-23: Print

2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.

3. In Options, select the desired **Font** and text **Size**.

   ➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print the raw data.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

7.4.2.1. Printing Curve Info Data Tables

Measurement results displayed in Curve Info tables may be printed using the print options built into the Curve Info tab

To print complete tables:

1. Right click on a results table. A menu with print, copy, and text file options appears.
2. Choose a printing option:
   - **Print this Table** — Prints only the table right-clicked on.
   - **Print all Tables** — Prints both tables.

   ➔ Print all Tables is available only in the ADAP Plus and ADAP Expert Software.
3. Follow steps 2–4 in Section 7.4.2, *Printing Raw Data and Curve Info*, to print the tables.

7.4.2.2. Viewing Kinetic Raw Data Printouts

Kinetic measurement raw data printouts display measurement results from all cycles sequentially for each well.

➔ Wells are labeled in Row-Column format. For example, A2 represents the well in the first row of the second column.

7.4.2.3. Viewing Linear Scan Raw Data Printouts

Linear scan raw data printouts display the 25 measurement points in a column for each well.

➔ Wells are labeled in Row-Column format. For example, A2 represents the well in the first row of the second column on the plate.

7.4.2.4. Viewing Area Scan Raw Data Printouts

Area scan raw data printouts display the measurement points for each well in a matrix that represents the layout of the measurement points.

➔ Wells are labeled in Row-Column format. For example, A2 represents the well in the first row of the second column.

7.4.2.5. Viewing Curve Info Printouts

Curve Info printouts for multiwavelength and linear scan measurement results present data in the same column format displayed when viewing Curve Info onscreen.

➔ The ADAP Plus or ADAP Expert software is required to print Curve Info other than OD and transmission results.

7.4.3. Printing Graphs

Measurement results can be printed from all Graphic tabs.

To print a graph: Print Graph

1. Choose **Print Graph**. Print appears (Figure 7-).

➔ When Print Graph is chosen from a Graphic tab displaying the results for an individual sample, graphs for all measured samples are printed.

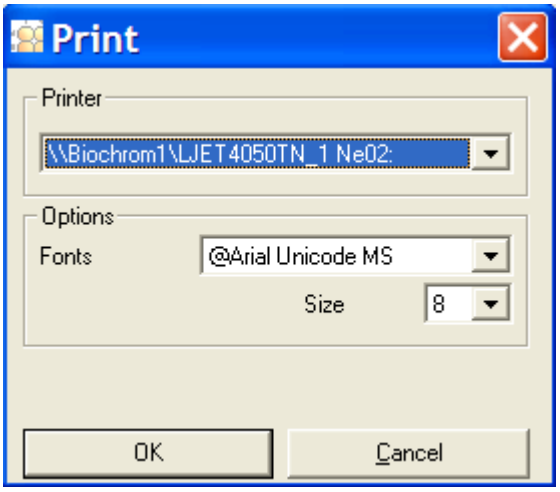


Figure 7-24: Print

2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.

3. In Options, select the desired **Font** and text **Size**.

➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print the information.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

➔ Kinetic graphs can also be printed with OD, RLU, Reduced Data, and Status results and information by choosing **Print** from the Setup menu or toolbar (refer to Section 7.4.1, *Printing General Measurement Results*).

7.4.3.1. Viewing Kinetic Graph Printouts

Kinetic graph printouts display kinetic graphs for all measured wells on the plate.

➔ Wells are labeled in Row-Column format. For example, C2 represents the well in the third row of the second column.

7.4.3.2. Viewing Linear Scan Graph Printouts

Linear scan graph printouts display linear scan graphs for all measured wells on the plate.

➔ Wells are labeled in Row-Column format. For example, C2 represents the well in the third row of the second column.

7.4.3.3. Viewing Area Scan Graph Printouts

Area scan graph printouts display area scan graphs for all measured wells on the plate.

➔ Well labels are not printed in area scan graph printouts. However, the layout matches the Row-Column format used by kinetic and linear scan graph printouts, so the well in the third row of the second column is C2.

7.5. Exporting Quick Measurement Results to Other Applications

Quick measurement results can be exported to other applications for further analysis or manipulation. The ADAP software provides two methods to export data:

- Data can be copied and pasted into another application such as a word processor (refer to Section 7.5.1, *Copying and Pasting Measurement Results into another Application*).
- Data can be saved to a text file and then opened by or imported into another application (refer to Section 7.5.2, *Saving Measurement Results as Text Files*).

7.5.1. Copying and Pasting Measurement Results into another Application

Measurement results displayed in any tab can be copied to a clipboard. These results can then be pasted into another application for storage or further analysis.

➔ For example, data from the ADAP software could be pasted into a spreadsheet with formulas or macros already configured to perform preliminary analysis on measurement results data.

To copy measurement results to the clipboard:

1. Select the desired results tab to copy to the clipboard.
2. From the Options menu, choose **Copy displayed data into clipboard** to copy only the displayed results to the clipboard.

   OR 

   From the Options menu, choose **Copy all data into clipboard** to copy all results from a kinetic or scan measurement to the clipboard.

   ➔ When copying Raw Data, choosing Copy displayed data into clipboard copies only the cycle or well displayed. To copy raw data results for all cycles or wells measured, choose Copy all data into clipboard.

3. Open or switch to the application where the measurement results will be pasted.

4. Paste the measurement results into a new or existing file using the Paste command for the application.

➔ Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

7.5.1.1. Copying and Pasting Curve Info Results into another Application

Measurement results displayed in Curve Info tables may be copied and pasted using the copy options built into the Curve Info tab (Figure 7-).

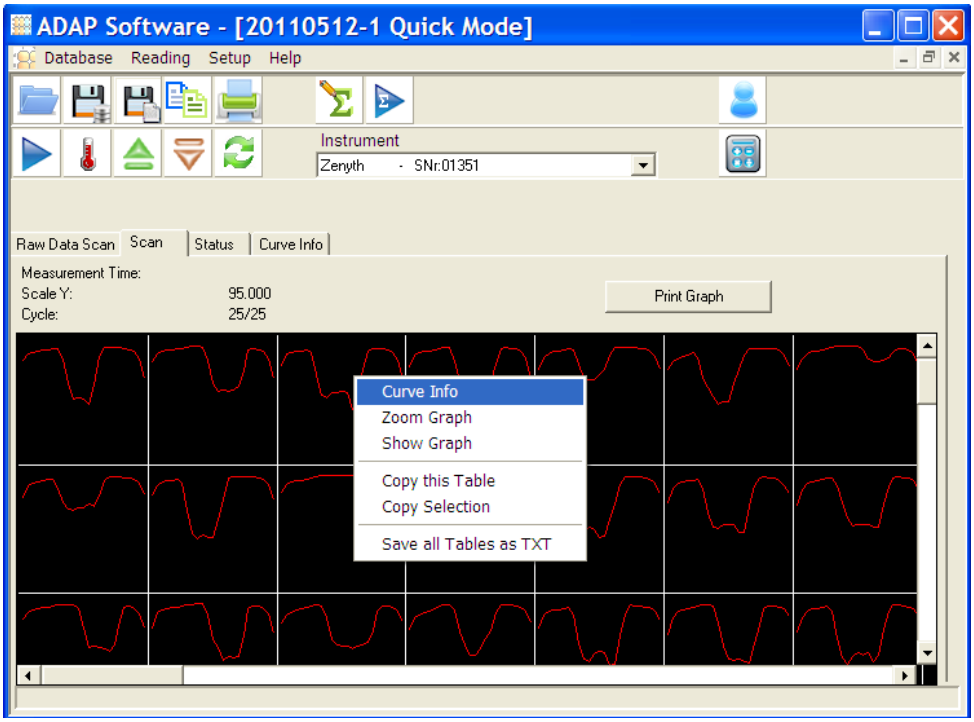


Figure 7-25: Curve Info copy options

To copy complete tables into another application:

1. Right click on a results table. A menu with print, copy, and text file options appears (Figure 7-).

2. **Copy this Table** — Copies all data in the table clicked on to the clipboard.

3. Open or switch to the application where the measurement results will be pasted.

4. Paste the measurement results into a new or existing file using the Paste command for the application.

➔ Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

To copy selected data from a table into another application:

1. Click and drag over the table data desired to copy. The selected data is highlighted.

2. Right click on a results table. A menu with print, copy, and text file options appears (Figure 7-).

3. Choose **Copy Selection**. The selected data is copied to the clipboard.

4. Open or switch to the application where the measurement results will be pasted.

5. Paste the measurement results into a new or existing file using the Paste command for the application.

➔ Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

7.5.2. Saving Measurement Results as Text Files

Measurement results can be saved as text files which can be viewed in any text editor or imported into many statistical software packages or spreadsheet applications.

To save measurement results to a text file:

1. Select the desired results tab to save as a text file.

2. From the Options menu, choose **Save displayed data as TXT** to save only the displayed results as a text file.

   OR

   From the Options menu, choose **Save all data as TXT** to save all measurement results as one text file.

   OR

   Select the desired command from the toolbar.

   ➔ When saving Raw Data to a text file, choosing **Save displayed data as TXT** copies only the cycle or well displayed. To save raw data results for all cycles or wells measured, choose **Save all data as TXT**.

3. Save As appears. Browse to the desired location to save the data.

➔ If the ADAP software is configured in Setup-System to automatically save measurement results as text files, these files may also be opened in a text editor or other application. Refer to Section 3.3, *Configuring System Settings* for information about configuring the ADAP software to automatically save measurement results as text files.

7.5.2.1. Saving Curve Info Table Data as a Text File

Table data in the Curve Info tab for multiwavelength and linear scan measurements can be saved to a text file within the Curve Info tab.

To save table data as a test file:

1. Right click on a results table. A menu with print, copy, and text file options appears (Figure 7-).
2. Choose **Save all Tables as TXT**. Save As appears.
3. Browse to the desired location to save the text file.
4. Enter a **File name** for the text file.
5. Choose **Save** to save the file.

   OR

   Choose **Cancel** to return to the ADAP software without saving the curve info data as a text file.

8. Defining and Running Tests

8.1. Overview

➔ An ADAP Plus or ADAP Expert software license code is required to access the functions described in this chapter.

A test is a protocol for making and evaluating measurements using Biochrom microplate readers. Tests offer more programming and evaluation options than Quick measurements, and may be saved for future use.

Tests performed with Biochrom microplate readers are defined and edited using a series of test definition tabs in the ADAP software. The ADAP software provides options to:

- Define new tests (refer to Section 8.2, *Defining New Tests*).
- Save new tests (refer to Section 8.3, *Saving Test Definitions*).
- Run existing tests (refer to Section 8.4, *Running Existing Tests*).
- Edit, copy, or delete tests (refer to Section 8.5, *Editing, Copying, and Deleting Tests*).
- Print tests (refer to Section 8.6, *Printing Test Definitions*).
- Search for specific microplates (refer to Section 8.7, Using Matchcode to Search for Test Definitions and Saved Plates).

➔ Tests may be performed by all authorized users; however, tests may only be defined, edited, and deleted by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System Administration*).

8.2. Defining New Tests

The ADAP software can define a wide range of test protocols. Test protocols define how the Biochrom reader performs measurements and interprets the resulting data.

Tests are defined using a series of test definition tabs that configure different categories of parameters. Based on the instrument configuration, a test definition may include parameters set in any of the following categories:

- General — Configures general information about the test, including name, instrument, shaking, measurement filters, and variables (refer to Section 8.2.1, *Configuring General Options*).
- Plate Layout — Accessed from General, sets the location of standards, blanks, controls, replicates, and samples on the plate (refer to Section 8.2.2, *Defining Plate Layout*).
- Quantitative — Configures standard curve data (refer to Section 8.2.3, *Configuring a Quantitative Evaluation*).
- Qualitative — Configures cutoff groups and formulas (refer to Section 8.2.4, *Configuring a Qualitative Evaluation*).
- Option — Configures printing options and tools for test evaluation (refer to Section 8.2.5, *Configuring Test Options*).
- Kinetic — Configures kinetic measurement parameters (8.2.7, *Configuring Scan Measurements*).
- Scan — Configures scan measurement parameters (refer to Section 8.2.7*, Configuring Scan Measurements*).

  ➔ Scan measurements may only be performed by the Zenyth 340 microplate reader.

- Rejection/Validation — Programs replicate elimination and test validation formulas (refer to Section 8.2.8, *Programming Rejection/Validation Formulas*).

To open ADAP test definition setup:

From the Setup menu, choose **Calculation**.

OR 

Choose **Create/Edit Calculation**. ADAP test definitions options appear with the General tab open (Figure 8-1).

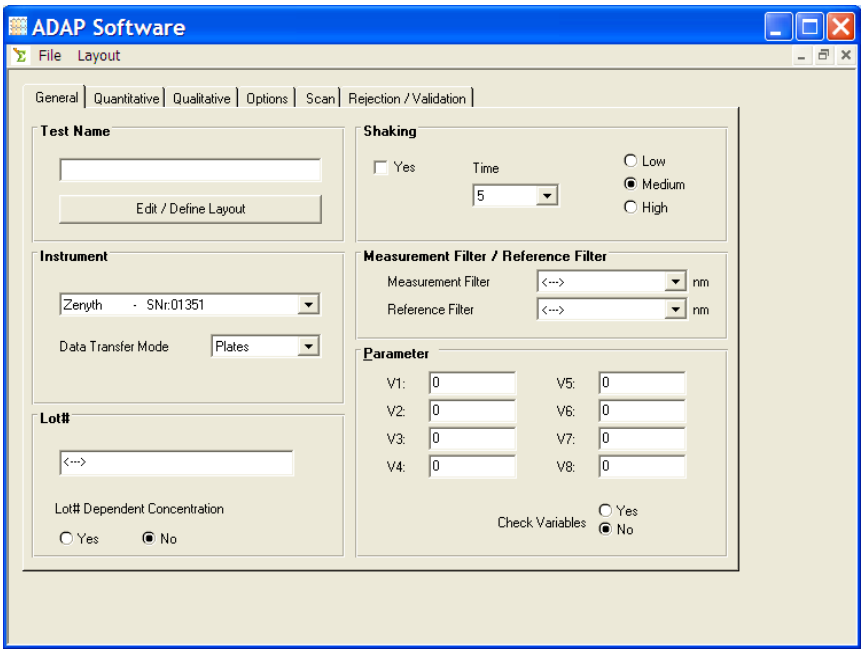


Figure 8-1: ADAP test definition - General

8.2.1. Configuring General Options

General provides options to set up the basic parameters of a test definition.

1. In Test Name, enter a name for the test.

➔ Test names cannot be longer than 20 characters in length.

2. In Instrument, select the instrument to be used to perform the Test.

➔ The type and serial number of the instrument currently connected or used in the previous test is automatically selected. The instrument setting only needs to be selected manually if a different instrument will be used to perform the Test currently being defined.

In Data Transfer Mode, if desired, select how measurement results are transferred from the instrument to computer:

- Plate — Transfers data for the entire plate at one time.
- Row — Transfers data one row at a time.
- Well — Transfers data one well at a time.

➔ The ADAP software automatically chooses a Data Transfer Mode that is supported by the connected instrument and is most applicable to the type of measurement being performed.

3. In Lot# , if desired, enter the lot number of any reagent or kits being used in the test and select **Yes** if the concentration is lot-number dependent.

4. In Shaking, if desired, select **Yes** to shake the plate before the measurement is made.

➔ In kinetic measurements, the plate is shaken before each measurement cycle.

5. If Shaking is selected, in Time, select the number of seconds to shake.

6. If Shaking is selected, select **Low**, **Medium**, or **High** shaking intensity.

7. In Measurement filter/Reference filter, select the desired wavelengths for the Measurement filter and the Reference filter.

➔ All filters installed on the instrument appear in the Measurement filter and Reference filter lists.

➔ When a Reference filter is selected, the final measurement result is calculated by subtracting the reference filter measurement from that of the Measurement filter.

➔ If no reference filter is needed, select <-->.

8. In Parameter, enter numeric values for up to six variables that can be used in any formula defined in the test definition.

➔ Parameter variables are typically used with test kits that have cutoff values or standard correction values based on lot number.

9. In Check Variable, select **Yes** to display the Parameter variables after the measurement, but before the results are evaluated. This

allows the variables to be changed to account for variations in lot-dependent reagents.

➔ Changes made to Parameter variables during a test run are automatically saved in the test definition.

8.2.2. Defining Plate Layout

Define Layout configures the parameters and well layout of the plate to be measured. Define Layout is divided into four sections:

- Options — Configures plate parameters including plate type, strip use, filling direction, replicates, and well labeling format (refer to Section 8.2.2.1, *Configuring Plate Parameters in Options*).
- Control-Position — Configures the type and label numbering of wells to be laid out on the plate (refer to Section 8.2.2.2, *Configuring Well Types and Labels in Control-Position*).
- Plate Layout — Defines the location of standard, control, blank, and sample wells on the plate (refer to Section 8.2.2.3, *Defining Well Location in Plate Layout*).
- Factor — Configures multiplication factors for wells on the plate (refer to Section 8.2.2.4, *Entering* Dilution Factors for Wells). To open Define Layout:

  In ADAP test definition options, choose **Layout**.

  OR

  In General, under Test Name, choose **Edit/Define Layout**. Define Layout appears (Figure 8-2).

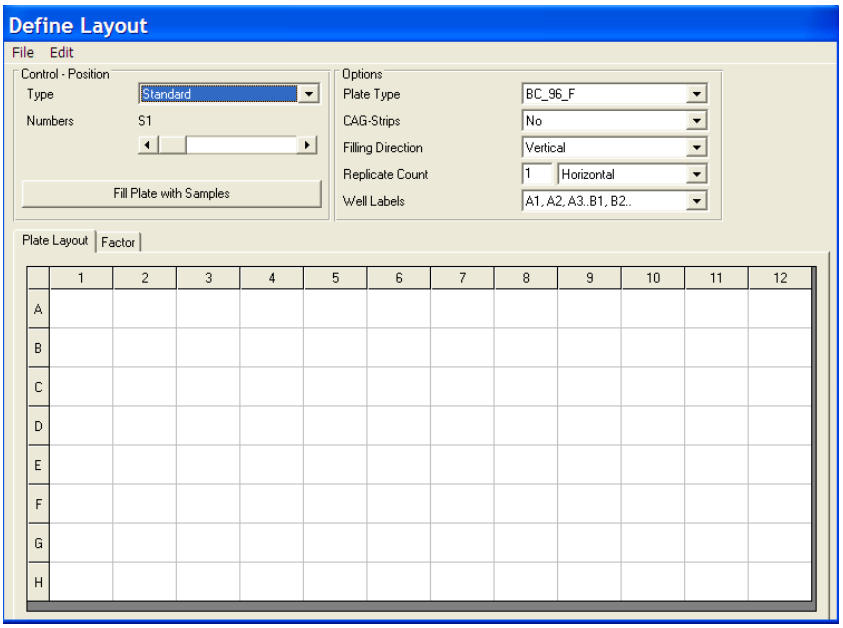


Figure 8-2: Define Layout

8.2.2.1. Configuring Plate Parameters in Options

Options configures plate parameters including plate type, strip use, filling direction, replicates, and well labeling format.

To configure plate parameter, in Options:

1. In Plate Type, select the type of plate used in the test.

   ➔ Available plate types vary depending on the instrument in use.

2. In CAG-Strips, select the location of antigen control strips if they are used in the test. CAG wells are assigned to the plate layout:

   - No — Antigen control strips are not used.
   - 1st - Horizontal — Antigen control well is located horizontally before the samples.
   - 2nd - Horizontal — Antigen control well is located horizontally after the samples.
   - 1st - Vertical — Antigen control well is located vertically before the samples.
   - 2nd - Vertical — Antigen control well is located vertically after the samples.

➔ When CAG-Strips is selected, the measurement of the control antigen well is automatically subtracted from the full antigen well.

3. In Filling Direction, select how samples are numbered based on the filling direction of the plate:

   - Vertical — Sample labels are numbered in ascending order column by column.
   - Horizontal — Sample labels are numbered in ascending order row by row.

4. In Replicate No./Direction, select the number of replicates to be used for each sample, and set the filling direction of replicates:

   - Vertical — Replicate labels are numbered in ascending order column by column.
   - Horizontal — Replicate labels are numbered in ascending order row by row.

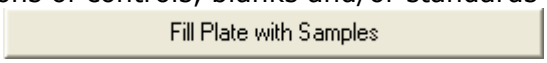
5. In Well Labels, select the format of the well labels:

   - A1, A2, B1, B2— Labels rows by letter, columns by number.
   - 1.1, 1.2, 1.3...2.1, 2.2, and 2.3. — Labels rows and columns by number.

8.2.2.2. Configuring Well Types and Labels in Control-Position

The options in Control-Position work in conjunction with Plate Layout to configure well types, label numbers, and locations on the plate. Standards, controls, and blanks are configured using Control-Position, and then placed on the plate using Plate Layout.

➔ All controls used in the subsequent assay analysis must be defined plate layout.

➔Define the locations of controls, blanks and/or standards first and then use the automatic 

to fill the remaining empty wells in the plate.

To configure well types and label numbers:

1. In Type, select the control or sample to place in the selected well:

   - Standard (S) — A solution with known concentration to generate a standard curve.
   - Positive Control (PC) — a solution that gives an absorbance value that that allows samples to be categorized as positive. Positive controls are also used for test validation.
   - Negative Control (NC) — a solution that gives an absorbance values that allows samples to be categorized as negative. Negative controls are also used for test validation.
   - Control (K) — a solution with a known, expected signal used to verify the results of the plate. Or to be used in a transformation formula to be applied to sample measurements.
   - Quality-Control (Q) — A solution with a known absorbance measurement which is used to check lot-dependent variations between kits or reagents.
   - Blank (B) — a solution that contains the assay reagents but not controls or samples that is used to normalize the absorbance measurements of standards, controls and samples.

     ➔ The mean value of Blank wells is automatically subtracted from all other wells (refer to 8.2.5.3, *Configuring Blank Subtraction*).

   - Sample (PR) — a solution with absorbance value that will be analyzed in comparison to standards and/or controls.

2. In Numbers, click and drag the slider to change the number associated with the control. E.g. S1, S2, PC1, C

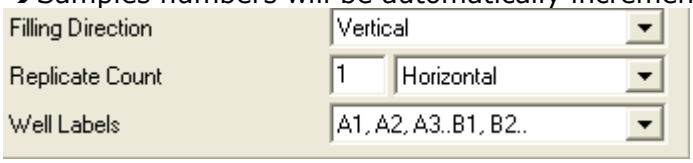
➔ Drag the slider to the right to increase the label number, or to the left to reduce it.

3. In plate layout, define the location by selecting specific wells that will contain the standards, controls, blanks or standards. Simply highlight the well with your mouse or using the keyboard arrow keys and select <enter>.

4. After defining locations for the configured well Type, repeat steps 1–3 above for each additional well type desired on the plate.

5. When all standards, controls, and blanks have been configured, choose **Fill Plate With Samples** to populate all remaining wells with samples.

➔Samples numbers will be automatically incremented using



to indicate replicates and fillingn direction.

8.2.2.3. Defining Well Location in Plate Layout

Plate Layout defines the location of standard, control, blank, and sample wells on the plate (Figure 8-3). Well locations may also be edited and deleted using the options in Plate Layout.

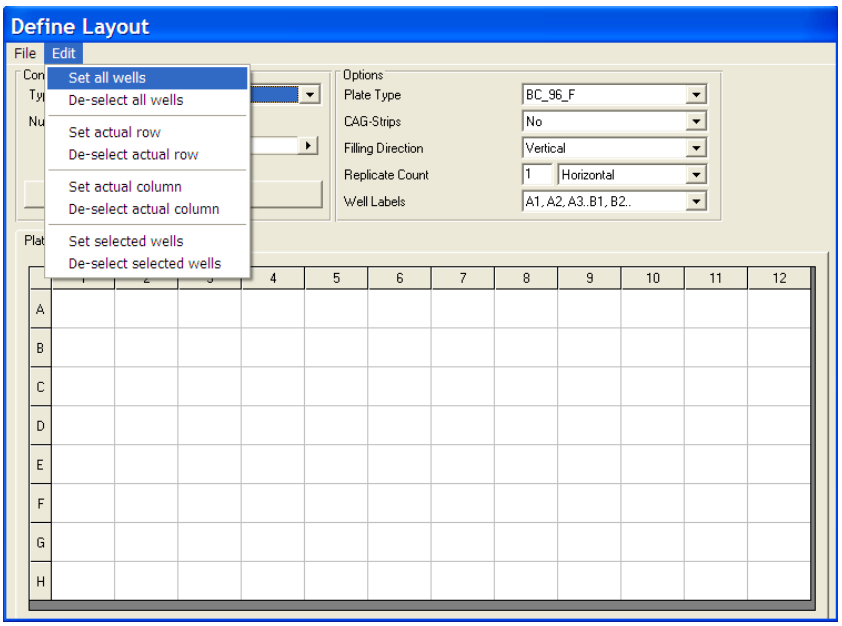


Figure 8-3: Define Layout – Plate Layout

To define locations on the plate for wells configured in Control-Position:

1. In Plate Layout, click on the desired well to define (Figure 8-3).

   ➔ Select multiple wells by clicking and then dragging over the desired wells.

2. From the **Edit** menu, choose a method for selecting which wells will be defined as the type configured in Control Position:

   OR

   Right-click on the selected well(s) and choose a method for selecting which wells will be defined as the type configured in Control Position:

3. Set/De-select all wells — Populates or clears all wells on the microplate.

4. Set/De-select actual row — populates or clears all wells in the same row as the first well selected (Figure 8-3).

5. Set/De-select actual column — populates or clears all wells in the same column as the first well selected (Figure 8-3).

6. Set/De-select selected wells — Populates or clears the selected wells.

7. In Control-Position, configure another well Type, if desired (refer to Section 8.2.2.2, *Configuring Well Types and Labels in Control-Position*).

➔ When all standards, controls, and blanks have been configured, in Control Position, choose **Fill Plate With Samples** to populate the remaining wells with samples.

8.2.2.4. Entering Dilution Factors for Wells

Factor allows entering dilution factors for wells on the plate (Figure 8-4).

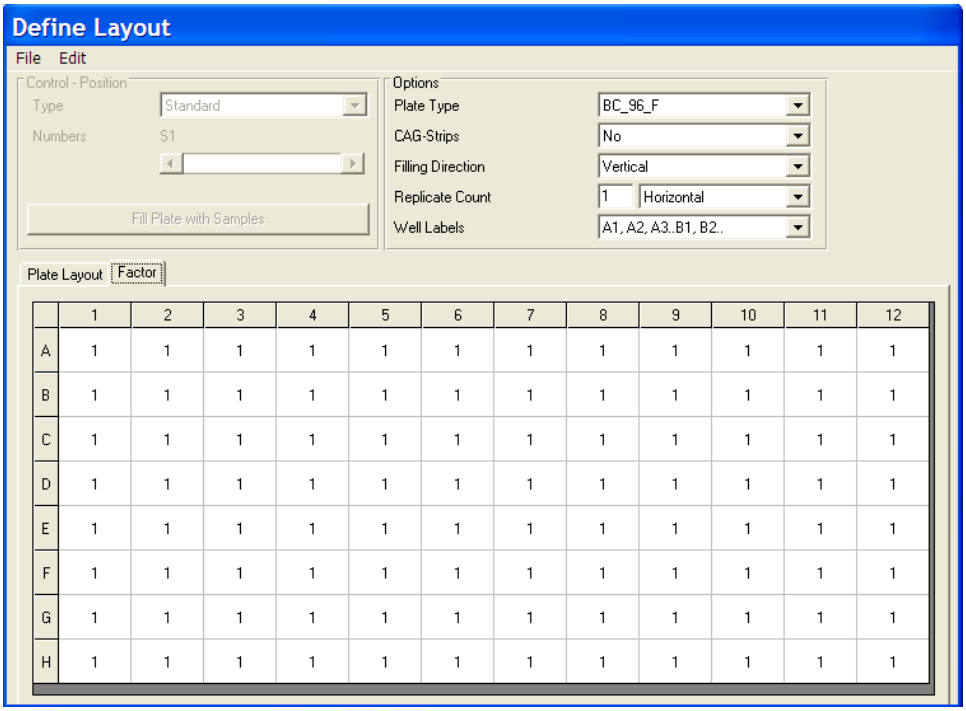


Figure 8-4: Define Layout - Factor

To enter multiplication factors:

1. Choose **Factor**.

2. Select a well and enter numerical value for the Factor (Figure 8-4).

   ➔ Select multiple wells by clicking and dragging over the desired wells. When a new factor is entered for the first well selected, all selected wells are assigned the new factor.

3. Repeat the previous step for all wells desired.

➔ F can be entered in transformation formulas and refers to the individual multiplication factor for each well position entered in Factor. F is typically used in quantitative transformation formulas to correct the concentration of samples for their dilution factor: e.g. X' = X * F.

8.2.2.5. Completing Define Layout

When all parameters are configured and the plate layout defined, save Define Layout and return to ADAP test definition options to complete the configuration of the test definition.

To close Define Layout:

From the File menu, choose **End** to save the new plate parameters.

OR

From the File menu, choose **Cancel** to exit Define Layout without saving the new plate parameters and layout.

➔ In the File menu, Print and Open perform their respective functions on the complete test definition, not Define Layout, and may not be accessible if the test definition is not completely configured.

8.2.3. Configuring a Quantitative Evaluation

Quantitative configures parameters for standard curves, concentration values, and response and transformation formulas. Quantitative is divided into five sections:

4. Standards — Configures concentration and response formula parameters for standards (refer to 8.2.3.1, *Configuring Standards*).

5. Curve — Configures standard curve fitting parameters (refer to 8.2.3.2, *Configuring Standard Curve Parameters*).

6. Factor — Sets a multiplication factor which enables the concentration value to be scaled to the desired unit (refer to 8.2.3.3, *Configuring the Factor*).

7. Use stored Standard Curve — Loads a stored standard curve into the test definition (refer to 8.2.3.4, *Opening a Stored Standard Curve*). Only available in ADAP Expert.

8. Transformation — Configures a transformation formula to apply to concentrations (refer to 8.2.4.3, *Configuring a Transformation Formula*). Only available in ADAP Expert.

To define a standard curve for a quantitative evaluation:

Select Quantitative (Figure 8-5).

***Please note*: Use stored Standard Curve** and **Transformation** features are available in ADAP Expert not ADAP Plus.

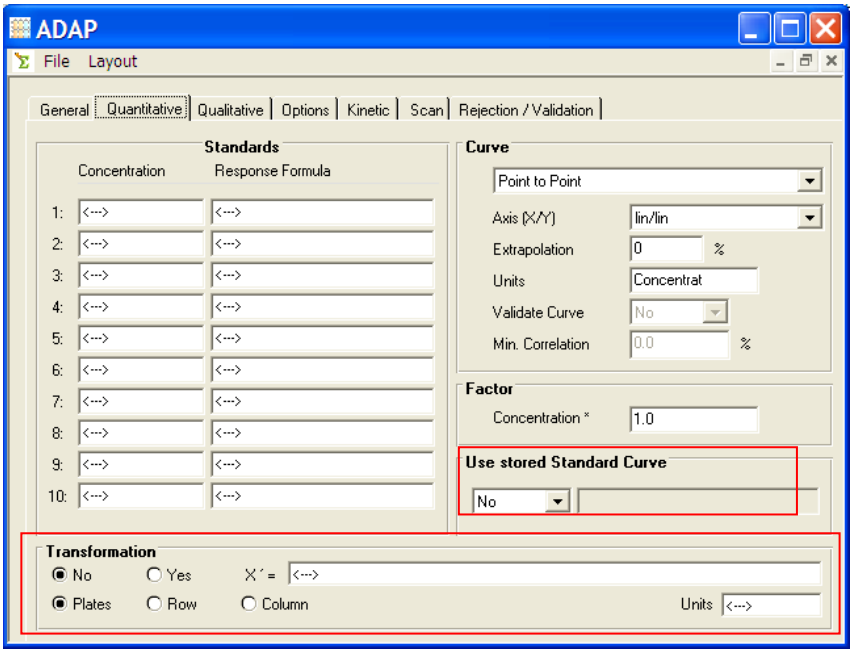


Figure 8-5: Quantitative tab

8.2.3.1. Configuring Standards

Standards configures up to 10 concentration values.

➔ To use parameters from a saved test definition, refer to Section 8.2.3.4, *Opening a Stored Standard Curve*.

To configure concentration values and response formulas:

1. Under Concentration, enter the concentration of the standard.

   ➔ For Concentration values less than 1, enter a leading 0 before the decimal; for example, 0.51. Values entered without the leading 0 produce an error when the measurement is performed.

2. Under Response Formula, enter the standards (e.g. S1…S10) used in the plate layout.

   ➔ Response formulas may contain any controls, standards, or variables defined in the test, as well as any numerical constants and mathematical operators +,-,*,/,(,),^..

   ➔ For Response Formula values less than 1, enter a leading 0 before the decimal; for example, 0.51. Values entered without the leading 0 produce an error when the measurement is performed.

3. The resulting graph will plot the concentrations on the x-axis and the absorbance measurement of the standards on the y-axis.

8.2.3.2. Configuring Standard Curve Parameters

Curve configures new standard curve parameters.

➔ To use standard curve parameters from a saved test definition, refer to Section 8.2.3.4, *Opening a Stored Standard Curve*.

1. In Curve, select the curve fit method: Point to Point, Linear Regression, Cubic Spline, or 4-Parameter Fit.

   ➔ Refer to Section 8.2.3.2.1, *Curve Fitting Models* for detailed information about Curve Fit methods.

2. In Axis (X/Y), select the scale to use for the X and Y axes.

3. lin/lin — Linear/Linear

4. lin/log — Linear/Logarithmic

5. log/log — Logarithmic/Logarithmic.

6. In Extrapolation, enter a percentage value to extrapolate the standard curve above and below the highest and lowest standard points in the curve, if desired.

   ➔ Extrapolation percentages can be used only with Linear Regression, Cubic Spline or 4-Parameter Fit curve fitting methods

   ➔ The percentage value entered in Extrapolation can be up to 99.9%

7. In Units, enter the units of concentration of the standards.

   ➔ Units are used for documentation purposes only and do not impact the standard curve. Units appears in Transform in the test measurement results window (refer to Section 10.2.3, *Viewing Concentration Results*).

8. In Validate Curve, choose **Yes** or **No** to validate the test based on an acceptable coefficient of correlation (R^2).

   ➔ Validate Curve is only available with the Linear Regression curve fitting method.

   ➔ For most standard curves, an acceptable R^2 value is >95% or 0.95

8.2.3.2.1. Curve Fitting Models

Table 8-1 describes the four curve fitting models supported by the ADAP software.

Method	Description
Linear regression	Construction of a straight line using the least squares method with the highest possible approximation to all standard points. **Requires a minimum of 2 standard points**. Linear regression is used in assays such as total protein quantitation assays.
Point to Point	Direct connection of all standard points. **Requires a minimum of 2 standard points.** Point to point, also called interpolation should only be used if other curve-fitting algorithms are not suitable. Curve extrapolation cannot be used with Point to Point.
Cubic Spline	All standard points are connected by the best fitting curve. ➔Can only be used for nonlinear and non-sigmoid functions. **Requires a minimum of 3 standard points.** Curve extrapolation cannot be used with Cubic Spline.
4 Parameter	his procedure can be used only to characterize sigmoid curves. **Requires a minimum of 4 standard points** 4-parameter fits are used in competitive binding assays and most ELISA assays.

Table 8-1: Curve Fitting Models

8.2.3.3. Configuring the Factor

In Factor (Figure 8-5), if desired, enter a dilution factor to enable the concentration value to be scaled to the desired unit.

Please note: Use of Factor with 4-parameter curve-fitting is not recommended.

8.2.3.4. Opening a Stored Standard Curve

Use stored Standard Curve permits standard curve parameters from saved test definitions to be loaded into the current test definition.

To open standard curve parameters from an existing test definition:

1. In Use stored Standard Curve, choose **Yes**. Selection appears (Figure 8-6):

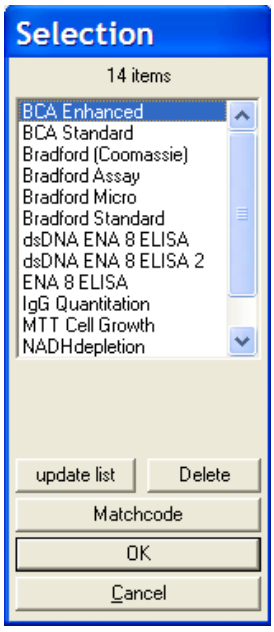


Figure 8-6: Selection – test definition

2. Select the desired test and choose **OK**. Fields in Standards and Curve are automatically populated with the standard curve parameters from the selected test. The name of the selected test appears in Use stored Standard Curve.

➔ Selecting **No** after a stored standard curve has been loaded removes the test name from Use stored Standard Curve, but not the parameters loaded in Standards and Curve. Parameters in Standards and Curve must be edited or deleted manually.

8.2.3.5. Configuring a Transformation Formula

Transformation inserts the absorbance measurement into a mathematical function.

➔ X is defined as the absorbance value and must be included in a transformation formula.

Transformation formulas do not need to be defined for concentration values calculated from standard curves. ADAP performs these calculations automatically once a standard curve is defined in **Quantitation** and **Plate Layout**.

To configure a transformation formula:

1. Choose **Yes** or **No** to indicate whether a transformation formula will be used.

2. If Yes is selected, in X'=, enter the transformation formula.

   For example: if the absorbance value of a sample is to be expressed relative the positive control than the formula would appear:

   X'=X/PC1

   X' is the result of the calculation

   X is the absorbance measurement

   PC1 is the positive control (which must be defined in plate layout)

   ➔ The formula may contain any controls, standards, or variables defined in the test, any numerical constants, as well as mathematical operators ( ) * +, - . / ^, ABS, SQR, L, F, X, and V (refer to Section 8.2.8.3, *Logical and Mathematical Operators*).

   Standards and controls are abbreviated as: S for standard, K for control, QC for quality control, PC for positive control, and NC for negative control.

3. Select **Plate**, **Row**, or **Column** to define how the transformation formula is applied to the wells on the plate:

4. Plate — applies the transformation formula to all wells on the plate.

5. Row — applies the transformation formula to all wells in a row with a defined control position.

6. Column — applies the transformation formula to all wells in a column with a defined control position.

7. In Units, enter the units of the resulting calculation, which will be displayed in the Test measurement results.

➔ Units are used for documentation purposes only and do not impact the standard curve. Units appears in Transform in the test measurement results window (refer to Section 10.2.3, *Viewing Concentration Results*).

8.2.4. Configuring a Qualitative Evaluation

Qualitative configures qualitative evaluations that classify measured samples according to defined cutoff values. Up to five groups of samples may be classified using cutoff formulas. Qualitative is divided into three sections:

Groups — Defines sample group names (e.g. "positive" or "negative" and cutoff formulas (refer to 8.2.4.1, *Configuring Groups and Cutoff Formulas*).

Factor — Sets a dilution factor that enables the measurement value to be scaled to the desired unit (refer to 8.2.4.2, *Configuring the Factor*).

Transformation — Configures a mathematical formula to apply to raw data (refer to 8.2.4.3, *Configuring a Transformation Formula*).

To configure qualitative evaluation options:

Select Qualitative (Figure 8-7).

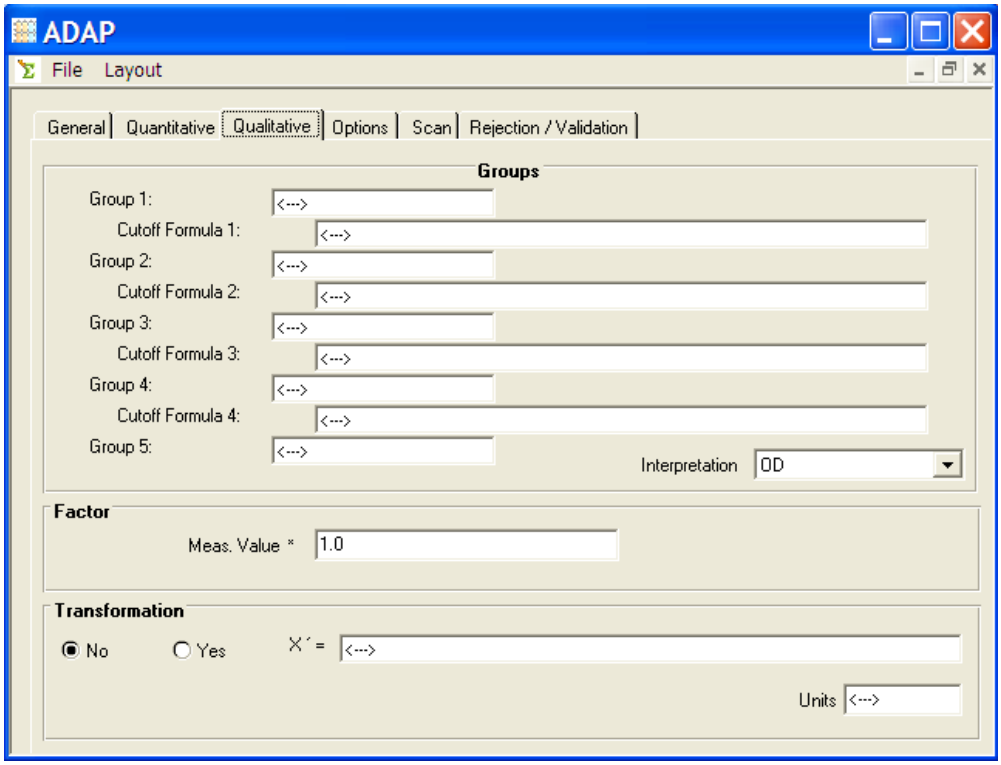


Figure 8-7: Quantitative tab

8.2.4.1. Configuring Groups and Cutoff Formulas

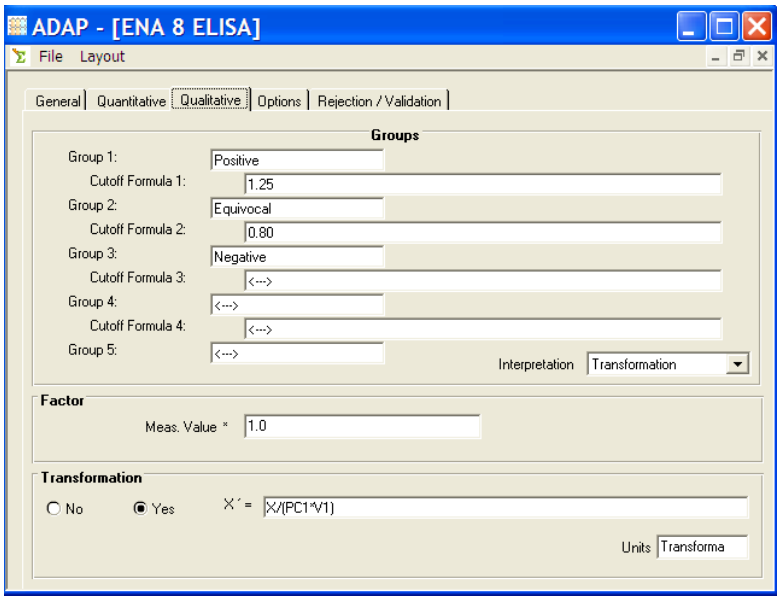
Groups define group names and cutoff formulas to separate them. Up to five group names and four cutoff formulas may be defined.

1. In Group 1 – Group 5; enter names (e.g. positive or negative) for the groups to be separated by the cutoff formulas.

2. In Cutoff Formula 1 – Cutoff Formula 4, enter the cutoff formulas that separate the samples into groups. The cutoff formula can be thought of as group 1>group 2>group 3 where the > sign is followed by the formula that describes the difference between the two groups (see example below).

➔ Each cutoff formula may be defined as one of the controls defined on the plate layout or as a mathematical formula. The result of the formula is then used as the related cutoff value.

3. In Interpretation, select the basis for the cutoff calculation: OD (Optical Density), Concentration, Transformation (from mathematical formula described in the Qualitative page, or Transf. (Conc) (as described on the Quantitative page).



➔For example: In this example the qualitative test will defines a transformation formula to express the samples as transform the absorbance as a ratio of PC1 and V1. The result of the formula is used in the Cutoff Formula to define the groups that categorizes the samples. All values >1.25 will be assigned to Group 1 and thus labeled "Positive". Values which are <1.25 but >0.80 are assigned

to Group 2 and thus labeled “Equivocal”. The remaining samples will be assigned to Group 3 and will be labeled as “Negative”.

8.2.4.2. **Configuring the Factor**

In Factor, if desired, enter a dilution factor to scale the measurement value to the desired unit.

8.2.4.3. Configuring a Transformation Formula

Transformation configures transformation formulas, which are used to transform raw data (X) based on an algebraic formula (X'=).

➔ X must be included in a transformation formula.

To configure a transformation formula:

1. Select **Yes** or **No** to indicate whether a transformation formula will be used.

2. If Yes is selected, in X'=, enter the transformation formula.

   An example of a transformation formula:

   X'=X/ (PC1-NC1)

   Where X is the absorbance measurement

   PC1 is a positive control defined on the plate

   NC1 is a negative control defined on the plate

   ➔ The formula may contain any controls, standards, or variables defined in the plate layout, any numerical constants, as well as mathematical operators ( ) * +, - . / ^, ABS, SQR, L, F, X, and V (refer to Section 8.2.8.3, *Logical and Mathematical Operators*).

   Standards and controls are abbreviated as: S for standard, K for control, QC for quality control, PC for positive control, and NC for negative control.

3. Select **Plate, Row**, or **Column** to define how the transformation formula is applied to the wells on the plate:

4. Plate — applies the transformation formula to all wells on the plate.

5. Row — applies the transformation formula to all wells in a row with a defined control position.

6. Column — applies the transformation formula to all wells in a column with a defined control position.

7. In Units, enter the units of the transformed value.

   ➔ Units are used for documentation purposes only and do not impact the standard curve. Units appears in Transform in the test

measurement results window (refer to Section 10.2.2, *Viewing Transformation Formula Results*).

8.2.5. Configuring Test Options

Options page is divided into four sections that configure replicates, printing, validating blanks, and evaluating controls:

Replicate Mean Values — Configures how mean values for replicates are calculated (refer to Section 8.2.5.1, *Configuring Replicate Mean Values*).

Print Options — Configures how test reports are formatted (refer to Section 8.2.5.2, *Configuring Print Options*).

Blank Validation — Configures where the mean value of blanks is to be applied (refer to Section 8.2.5.3, *Configuring Blank Subtraction*).

Evaluate Controls — Configures how standards and controls are evaluated (refer to Section 8.2.5.4, *Configuring* Evaluation Controls).

To configure Options:

Select Options (Figure 8-8).

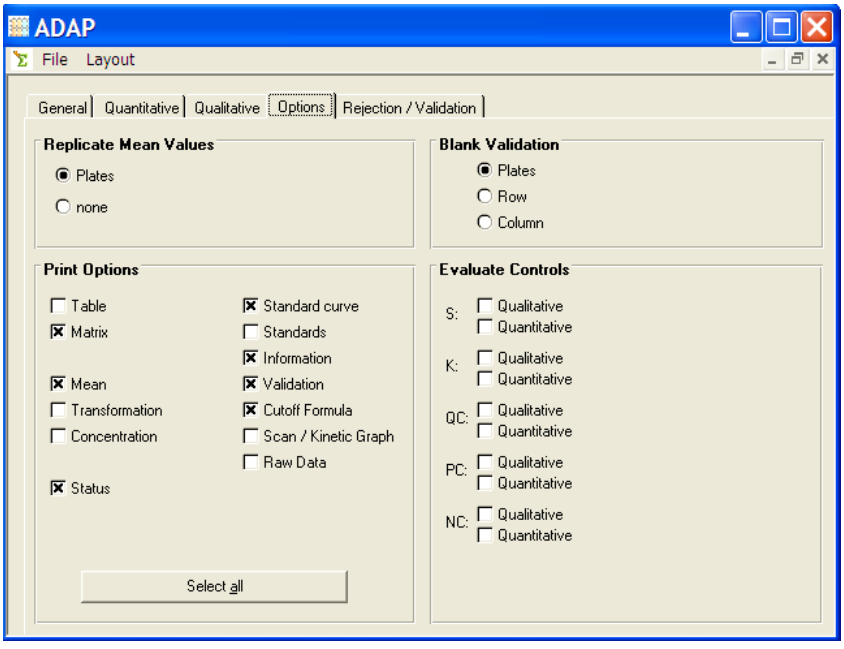


Figure 8-8: Options tab

8.2.5.1. Configuring Replicate Mean Values

Replicate Mean Values configures how mean values for replicates are calculated.

To select where replicate mean values are calculated:

Select the mean calculation method:

8. Plate — applies the mean calculation to all replicates of a sample or standard across the plate, regardless of well location.

9. Row — Applies the mean calculation to replicates of a sample or standard located within an individual row.

10. Column — applies the mean calculation to replicates of a sample or standard located within an individual column.

11. None — turns the mean calculation off. The first value of the replicate group is used for further calculation.

➔ In none, the first value of the replicate group refers to the left most or uppermost replicate in the group.

➔ Test results display the mean value in the first replicate position based on filling direction.

➔ If the selected mean calculation does not correspond to the defined replicate order, no mean calculation is performed.

8.2.5.2. Configuring Print Options

Print Options configures how test reports are formatted and which test measurement results they include.

1. Select how the test results are formatted on the page: **Table** (as a list), **Matrix** (values shown in the plate layout format), or both.

2. Select the measurement data to be printed as part of a test report after a test measurement is completed.

8.2.5.3. Configuring Blank Subtraction

Blank Subtraction configures where the mean value of blanks is to be applied.

Select how mean values are applied:

3. Plate — across the entire plate.
4. Row — Only within the row containing the blanks.
5. Column — Only within the column containing the blanks.

8.2.5.4. Configuring Evaluation Controls

Evaluate Controls configures whether standards and controls are evaluated using quantitative or qualitative methods.

For each type of standard or control, select the evaluation method: **Quantitative** or **Qualitative**.

➔ In Options, standards and controls are abbreviated as: S for standard, K for control, QC for quality control, PC for positive control, and NC for negative control.

8.2.6. Configuring a Kinetic Photometric Measurement

A kinetic photometric measurement performs a specified number of measurements for each selected well on a microplate. The final result of a kinetic measurement is produced by a specified data reduction method. Kinetic is divided into two sections:

Kinetic Measurement — Configures the basic parameters of a kinetic Measurement (refer to 8.2.6.1, *Configuring a Kinetic Measurement*).

Parameter — Selects and configures the data reduction method (refer to Section 8.2.6.2, *Configuring the Data Reduction Parameters*).

➔Kinetic test analysis is only available in ADAP Expert.

To configure a kinetic photometric measurement:

Select Kinetic (Figure 8-9).

➔ Additional configuration options in Parameter are enabled only as needed by the Data Reduction method chosen.

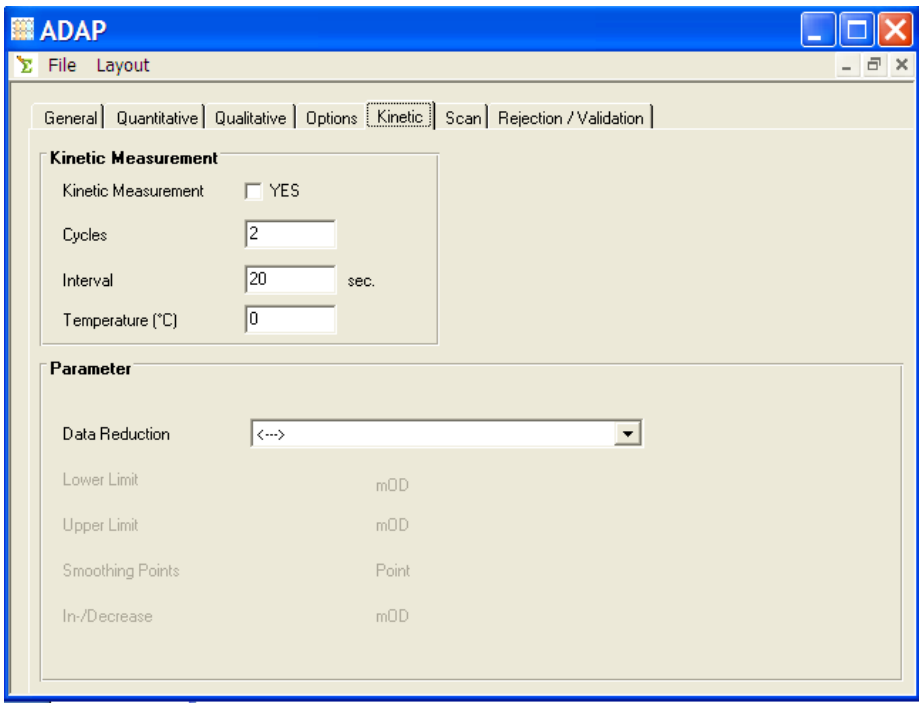


Figure 8-9: Kinetic tab

8.2.6.1. Configuring a Kinetic Measurement

The options in Kinetic Measurement configure the basic parameters of a kinetic measurement.

1. In Kinetic Measurement, select **Yes** to perform a kinetic measurement.

2. In Cycles, enter then number of times each well will be measured.

3. In Interval, enter the length of time, in seconds, between each measurement of the same well.

4. In Temperature, set the internal instrument temperature, if desired.

➔ Temperature control appears only when a kinetic measurement is configured to run on a Zenyth 340 microplate reader with temperature control.

8.2.6.2. Configuring the Data Reduction Parameters

Parameters selects and configures the data reduction method used to calculate the results of a kinetic measurement. The ADAP software supports 12 data reduction methods.

To select and configure a data reduction method:

1. In Data Reduction, select the method of data reduction.

   ➔ Depending on the data reduction method selected, additional parameters may need to be configured using the four options displayed below Data Reduction. Refer to Table 8-2 for the additional configuration requirements of each data reduction method.

2. Configure the parameters required by the data reduction method.

Data Reduction Method	Description	Additional Configuration
Average Slope	Determines the average slope of the reaction curve by calculating the average of all linear regressions calculated over each group of Smoothing Points in the kinetic reading sequence. A decreasing slope shows a decline.	Smoothing Points
Delta OD	Difference in optical density (OD) between the first and last kinetic measurements.	N/A
Delta OD — Max. Slope	Difference in OD between the first measurement and the center point of the maximum slope. ➔The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points
Delta Time — Absolute	Time elapsed from one preselected OD value to another	Lower Limit Upper Limit

Data Reduction Method	Description	Additional Configuration
Delta Time – Max. Slope	Time difference in seconds between the first measurement and the occurrence of the center point of the maximum slope. ➔ The center point of the maximum slope is calculated by determining the center point between the smoothing points of the regression line with the maximum slope.	Smoothing Points
Delta Time - Relative	Time elapsed in seconds from the first measurement to reaching a set increase/decrease amount from the first OD measurement.	In-/Decrease
Maximum Declining Scope	Determines the maximum declining rate of the reaction curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.	Smoothing Points
Maximum Inclining Scope	Determines the maximum inclining rate of the reaction curve by calculating a linear regression over each group of Smoothing Points in the kinetic reading sequence.	Smoothing Points
Maximum Slope	Maximum slope of the curve in OD/min. The line with the highest slope is calculated. Also the maximum reaction speed. ➔The accuracy of this calculation depends on the number of measurement cycles selected.	Smoothing Points
Mean	Determines the mean value per sample within a sequence of measurements.	N/A
Time Peak Value	Used to detect the time elapsed until the peak value is reached.	Smoothing Points
Peak Value	Used to detect the highest value per sample within a sequence of measurements.	Smoothing Points

Table 8-2: Data Reduction Methods

8.2.7. Configuring Scan Measurements

Scan measurements are only available with the Zenyth 340 microplate reader. Linear and area scan measurements make a series of measurements at defined points within a well. Three scan measurement options are available:

Normal Scan Measurement/96 Well Plate — Configures a linear scan with up to 25 user-defined measurement points (refer to Section 8.2.7.1, *Performing an Area Scan Measurement*).

Area Scan/6, 12, 24, 48 or 96 Well Plate — Configures an area scan with user-defined measurement points and resolution (refer to Section 8.2.7.2, *Performing a Normal Scan Measurement*).

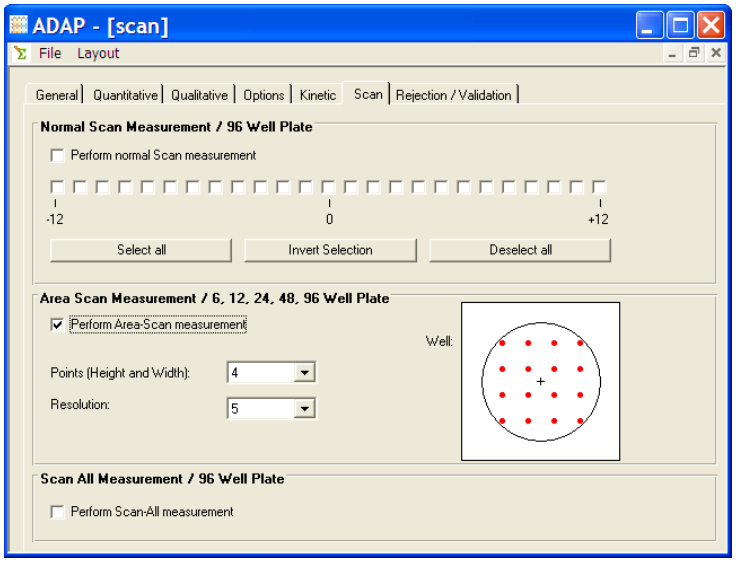
Scan All/96 Well Plate — Configures a linear scan with 27 measurement points across the well (refer to Section 8.2.7.3, *Performing a Scan All Measurement*).

➔ Evaluation functions such as qualitative and quantitative analysis, and transformation, rejection, and validation formulas are not available with scan measurements. Any configured evaluation functions are ignored.

To configure a linear or area scan measurement:

1. Define the plate layout if it has not been done (refer to Section 8.2.2, *Defining Plate Layout*).

Select Scan (



2. Figure 8-10).

Figure 8-10: Scan tab (Zenyth 340 absorbance detector only)

8.2.7.1. Performing a Normal Scan Measurement

Normal Scan Measurement/96 Well Plate performs a linear scan of measurement points across the center of each well measured on a 96-well plate. The number and location of measurement points are user defined.

➔This feature can ONLY be used with a 96-well plate

To perform a Normal Scan Measurement/96 Well Plate:

1. Select **Perform normal Scan measurement**.
2. Select each measurement point to be scanned individually.

   ➔ 25 measurement points are available and are labeled -12 to +12, with point 0 being the center of the well.

   OR
3. Choose a selection option:
4. Select all automatically selects all 25 measurement points, if desired.
5. Deselect all deselects all measurement points, if desired.
6. Invert Selection selects the opposite set of measurement points from those currently selected. Points selected before choosing Invert Selection are deselected.

8.2.7.2. Performing an Area Scan Measurement

Area Scan Measurement/6, 12, 24, 48, 96 Well Plate performs an area scan of measurement points arranged in grid across the well. The distance between and number of measurement points are user-defined. Area scan measurements may be performed on 6, 12, 24, 48, and 96 well plates.

➔ The plate format must be defined in Define Plate before configuring an area scan measurement (refer to Section 8.2.2, *Defining Plate Layout*).

To perform an Area Scan Measurement/6, 12, 24, 48, 96 Well Plate:

1. Select **Perform Area Scan Measurement**.
2. In Points (Height and Width), select the number of measurement points.

   ➔ The number of points selected in Points defines how many points will be measured both vertically and horizontally; for example choosing 6 means that 36 measurement points will be laid out in grid across the well.

   ➔The number of point selections available depends upon the plate format selected in the plate layout. 12-well plates have a resolution of about 20 x 20 points; 24-well plates about 14 x 14; 96-well plates about 8 x 8. The exact resolution depends on plate type.
3. In Resolution, select the resolution, or space, between each measurement point. The highest resolution value is 1, where the distance between measurement points is the smallest.

   ➔ Well displays the layout and resolution of measurement points currently selected. Reducing resolution maintains the same coverage, but spaces fewer measurement points further apart; increasing resolution adds measurement points to the same coverage area.

8.2.7.3. Performing a Scan All Measurement

Scan All Measurement performs a linear scan of 27 measurement points across the center of each well measured on a 96-well plate.

To perform a Scan All Measurement:

Select **Perform Scan All Measurement**.

8.2.8. Programming Rejection/Validation Formulas

Formulas programmed in Rejection/Validation are used to reject replicates or invalidate tests that do not meet certain conditions. After the first replicate elimination, the mean value of the remaining replicates is recalculated and the condition re-evaluated. If necessary, the elimination cycle is repeated. If the minimum number of replicates is available, the test is considered valid. If not, the test is marked invalid on the printout.

Rejection/Validation is divided into two sections:

4. Replicate Rejection — Programs up to 12 replicate rejection formulas (refer to Section 8.2.8.1, *Programming Replicate Rejection Formulas*).

5. Validation — Programs up to 12 validation formulas for tests (refer to Section 8.2.8.2, *Programming Test Validation Formulas*).

To program replicate rejection or test validation formulas:

Select Rejection/Validation (Figure 8-11).

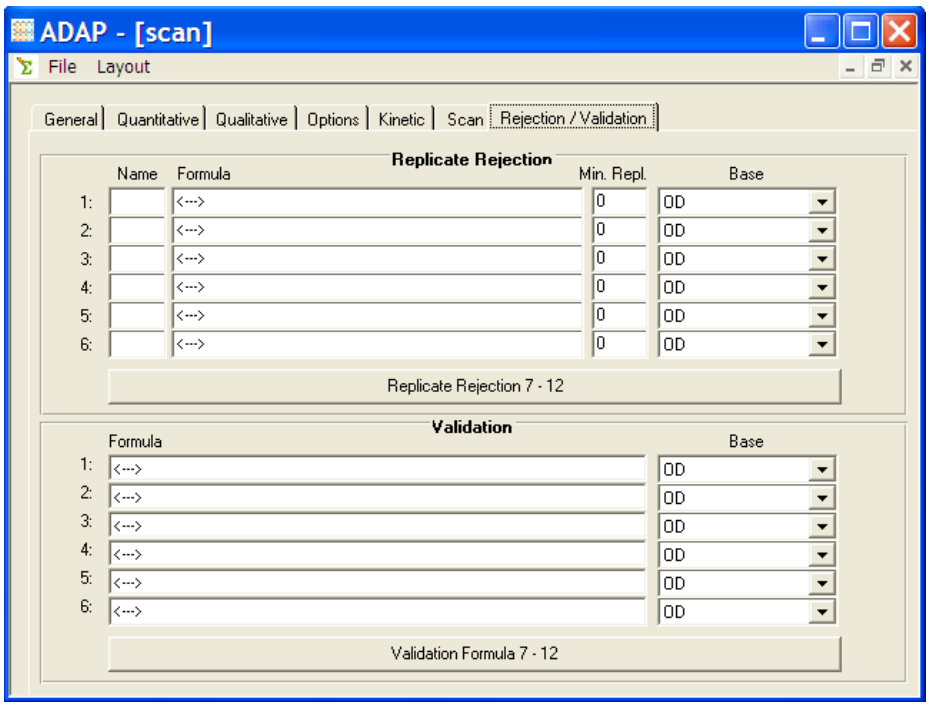


Figure 8-11: Rejection/Validation tab

8.2.8.1. Programming Replicate Rejection Formulas

Replicate rejection formulas eliminate individual replicates which do not fulfill conditions defined in the formula.

To program replicate rejection formulas:

1. In Name, enter the type of well to be evaluated by the formula; for example use the label PC1 to evaluate wells that are defined as PC1.

   ➔ Well types entered in Name should match those configured in Define Layout (refer to Section 8.2.2, *Defining Plate Layout*).

2. In Formula, enter the replicate rejection formula used to evaluate the replicates.

   ➔ The original measurement value, X, must be used in the replicate rejection formula.

   ➔ Refer to Section 8.2.8.1.1, *Replicate Rejection Examples* for examples of replicate rejection formulas.

   ➔ Replicate rejection formulas may contain any controls, standards, or other variables that were previously defined in the test. It is also possible to use numerical values, mathematical operators (+,-,*, /, (,), ^, <=, >=, =), and the additional mathematical and logical operators listed in Table 8-3.

3. In Min. Repl. (Minimum Replicates), enter the minimum number of replicates that must be left after elimination for the test to remain valid.

   ➔ If, after elimination, the minimum number of replicates for a well type is not met, the test is marked **Invalid**.

4. In Base, select the basis for the evaluation:

   OD — the raw measurement value(s).

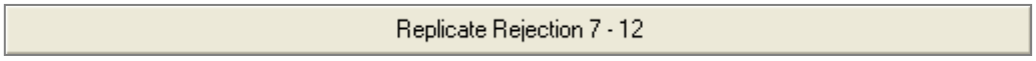
   Transformation — Uses the results of the transformation formula as defined in the Qualitative tab (refer to 8.2.4, *Configuring a Qualitative Evaluation*).

   Concentration — Uses the concentration value that is calculated by applying the standard curve as configured in the Quantitative tab to the absorbance measurement. (refer to 8.2.3, *Configuring a Quantitative Evaluation*).

5. Repeat steps, 2 – 4 to program additional replicate rejection formulas.

➔ A total of 12 replicate rejection formulas may be entered at one time.

6. Choose **Replicate Rejection 7 -12**



to toggle back and forth between formulas 1–6 and 7–12.

➔ When replicate rejection formulas 7 – 12 are displayed, Replicate Rejection 7 - 12 is named Replicate Rejection 1 -6.

8.2.8.1.1. Replicate Rejection Examples

Table 8-3 illustrates several practical applications where replicate rejection formulas are used. All examples use the measurement data as the Base for the evaluation of formulas. The Replicate Rejection formula is applied to all wells of the type specified in Name when evaluating replicates.

➔ In replicate rejection formulas, the variable X can be used to refer to the individual replicates of the control specified by in the previous window under Name. The name itself refers to the mean value of currently valid replicates. Both may be used in the same formula.

Application	Name	Replicate Rejection Formula
The absorption of a blank well may not exceed 0.020 OD	BL	**X<=0.02**
The absorption of each negative control well NC1 must be less than or equal to 0.150 OD.	NC1	**X<=0.15**
Each standard well S1 must not deviate from the mean value of all standard wells S1 by more than 20%.	S1	**S1*0.8<X<S1*1.2**
The absorption of each negative control well NC1 must be less than 0.200 OD. Additionally, they must not deviate from the mean value of all negative control wells NC1 by more than 30%.	NC1	**X<0.2 AND 0.7*NC1<X<1.3*NC1**
The absorption of each positive control well PC1 must be greater than the mean value of the first two standard wells (S1 and S2) and less than the mean value of the last two standard wells (S3 and S4).	PC1	**(S1+S2)*0.5<X<(S3+S4)*0.5**
This formula uses the logical operator, AND, to examine each individual replicate of PC1 to find if it is smaller than the mean plus 10% and if it is bigger than the mean minus 10%.	PC1	**X<PC1*1.1 AND X>PC1*.09**

Table 8-3: Example replicate rejection formulas

8.2.8.2. Programming Test Validation Formulas

Test validation formulas invalidate tests that do not meet certain conditions. To program test validation formulas:

1. In Formula, enter the validation formula used to evaluate the test.

   ➔ Refer to Section 8.2.8.2.1, *Test Validation Examples* for examples of validation formulas.

   ➔ The validation formula may contain any controls, standards, or variables defined in the test, any numerical constants, mathematical operators (+,-,*, /, (,), ^, <=, >=, =), and the additional mathematical and logical operators listed in Table 8-3.

2. In Base, select the basis for the evaluation:

   OD — the raw measurement value(s).

   Transformation — Uses the results of the transformation formula as defined in the Qualitative tab (refer to 8.2.4, *Configuring a Qualitative Evaluation*).

   Concentration — Uses the concentration value that is calculated by applying the standard curve as configured in the Quantitative tab to the absorbance measurement. (refer to 8.2.3, *Configuring a Quantitative Evaluation*).

3. Repeat steps, 1 and 2 to program additional test validation formulas.

   ➔ A total of 12 test validation formulas may be entered at one time.

4. Choose **Validation Formula 7 - 12** to toggle back and forth between formulas 1–6 and 7–12.

➔ When validation formulas 7 – 12 are displayed, Validation Formula 7 -12 is named Validation Formula 1 - 6.

8.2.8.2.1. Test Validation Examples

Table 8-4 illustrates several practical applications using test validation formulas. All examples use the OD measurement data as the Base for the evaluation of formulas.

Application	Test Validation Formula
The test is valid only if the mean absorption value of the positive control wells PC2 is less than or equal to 0.8 OD.	**PC2<=0.8**
The test is valid only if both controls are within the linear range of the photometer.	**0.1<=K1<=3.0 AND 0.1<=K2<=3.0**

Table 8-4: Example test validation formulas

8.2.8.3. Logical and Mathematical Operators

Replicate elimination and validation conditions may include any of the logical or mathematical operators defined in Table 8-5.

Operator	Definition
AND	True if all conditions are fulfilled.
OR	True if one of more of the conditions is fulfilled.
NOT	True if the condition is not fulfilled.
XOR	True if exactly one of the conditions is fulfilled.
ABS	Absolute value.
POW	Raises a number to the power of an exponent.
SQR	Returns the square root of a number.
L	Returns the natural logarithm of a number.
CV	CV% value of replicates
V	Variable 1 to variable 6
F (Rejection formulas only)	Well factor (dilution)
X (Rejection formulas only)	Actual well value of base (OD, Transformation, or Concentration) during calculation

Table 8-5: Logical and mathematical operators

8.3. Saving Test Definitions

When the plate layout and all required parameters for a test definition have been properly configured, the test definition may be saved. Test definitions must be saved before measurements can be performed.

To save a test definition and return to the main ADAP screen:

1. From the File menu, choose **Save**. The test definition is saved in the database and may be used to run a test.

2. From the File menu, choose **End** to return to ADAP main screen.

8.4. Running Existing Tests

Tests may be run as soon as they are defined and saved. All test definitions are stored in the ADAP software database.

To run a Test:

1. From the Reading menu, choose **Single Test**.

   OR 

2. Selection appears (Figure 8-12).

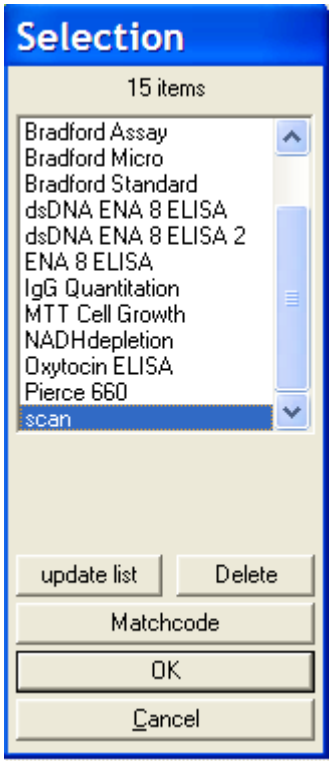


Figure 8-12: Selection – test definitions

3. Select a test definition and choose **OK**. Numbers of Samples appears (Figure 8-13).

➔ Choose **Matchcode** to search for test definitions by name (refer to Section 8.7, *Using Matchcode to* Search for Test Definitions and Saved Plates).

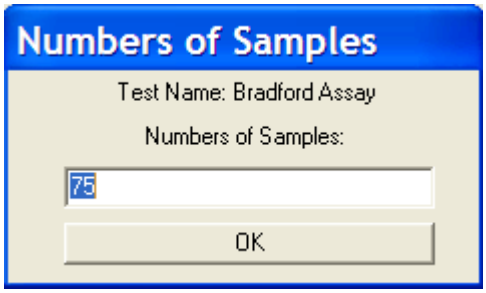


Figure 8-13: Number of Samples

4. Enter the number of samples to be measured on the plate and choose **OK**. The measurement results screen appears and the measurement procedure begins. After the measurement is complete, the results are displayed (refer to Chapter 10, *Viewing Test and Multitest Assay Measurement Results*).

8.5. Editing, Copying, and Deleting Tests

Tests stored in the database can be edited, copied, or deleted using the ADAP software.

➔ Tests may edited, copied, and deleted only by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System Administration*).

8.5.1. Editing Tests

Test definition parameters may be edited by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System Administration*).

To edit a test stored in memory:

1. From the Setup menu, choose **Test Definition**.

   OR 

2. Select File>Open for current test definition options appear (**Error! eference source not found.**).

3. From the File menu, choose **Open**. Selection appears with a list of saved tests (Figure 8-14).

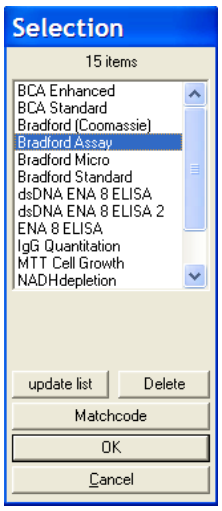


Figure 8-14: Selection – test definitions

4. Select a test to edit and choose **OK**. The chosen test definition appears.

➔ Choose **Matchcode** to search for test definitions by name (refer to Section 8.7, *Using Matchcode to* Search for Test Definitions and Saved Plates).

5. Edit the desired test definition parameters.

➔ Refer to Section 8.2, *Defining New Tests* for detailed information about defining test definition parameters.

6. From the File menu, choose **Save**. The test definition is saved in the database and may be used to run a test.

7. From the File menu, choose **End** to return to ADAP main screen.

➔ Refer to Section 8.3, *Saving Test Definitions* for more information about different methods of saving test definition data and returning to the main ADAP screen.

8.5.2. Copying Tests

Test definition parameters may be copied by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System Administration*).

To copy a test definition:

1. From the Setup menu, choose **Calculation**. ADAP test definition options appear (**Error! Reference source not found.**).

   OR 

   Choose **Create/Edit Calculation**. ADAP test definition options appear (Figure 8-15).

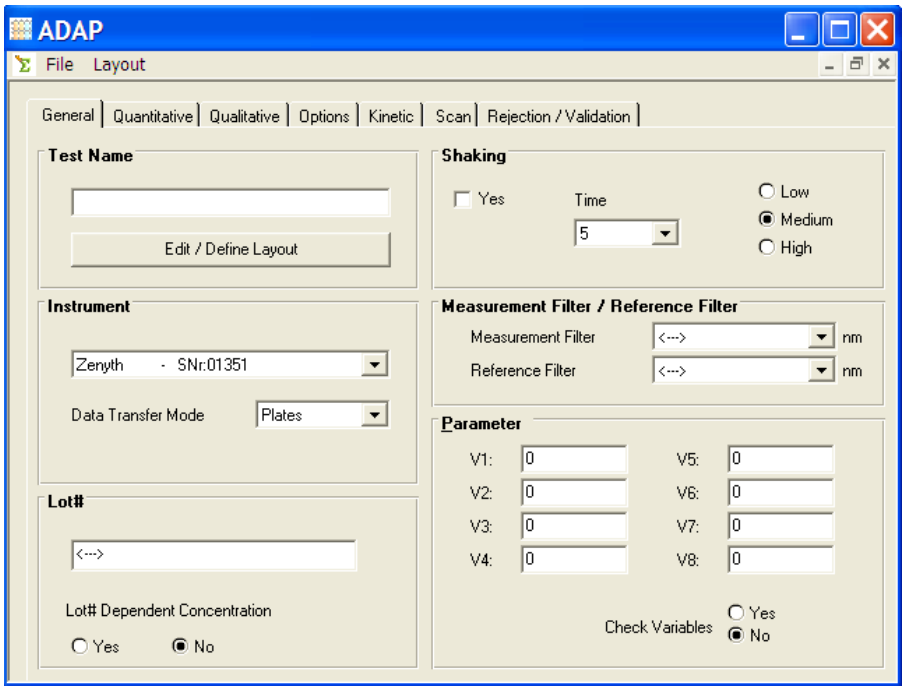


Figure 8-15: ADAP software test definition options

From the File menu, choose Open**. Selection appears with a list of saved saved tests (**

2. Figure 8-16).

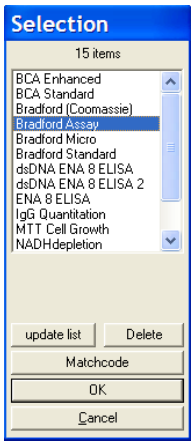


Figure 8-16: Selection – Test definitions

3. Select a test to copy and choose **OK**. The chosen test definition appears.

➔ Choose **Matchcode** to search for test definitions by name (refer to Section 8.7, *Using Matchcode to* Search for Test Definitions and Saved Plates).

4. In Test Name, enter a new name for the test (Figure 8-15).

➔ Test names cannot be longer than 20 characters in length.

5. From the File menu, choose **Save**. The test definition is saved in instrument memory with the new name and may be used to run a test.

6. From the File menu, choose **End** to return to ADAP main screen. ➔ Refer to Section 8.3, *Saving Test Definitions* for more information about different methods of saving test definition data and returning to the main ADAP screen.

8.5.3. Deleting Tests

Test definition parameters may be deleted by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System Administration*).

To delete a test definition:

1. From the Setup menu, choose **Calculation**. ADAP test definition options appear (Figure 8-17).

   OR 

   Choose **Create/Edit Calculation**. ADAP test definition options appear (Figure 8-17).

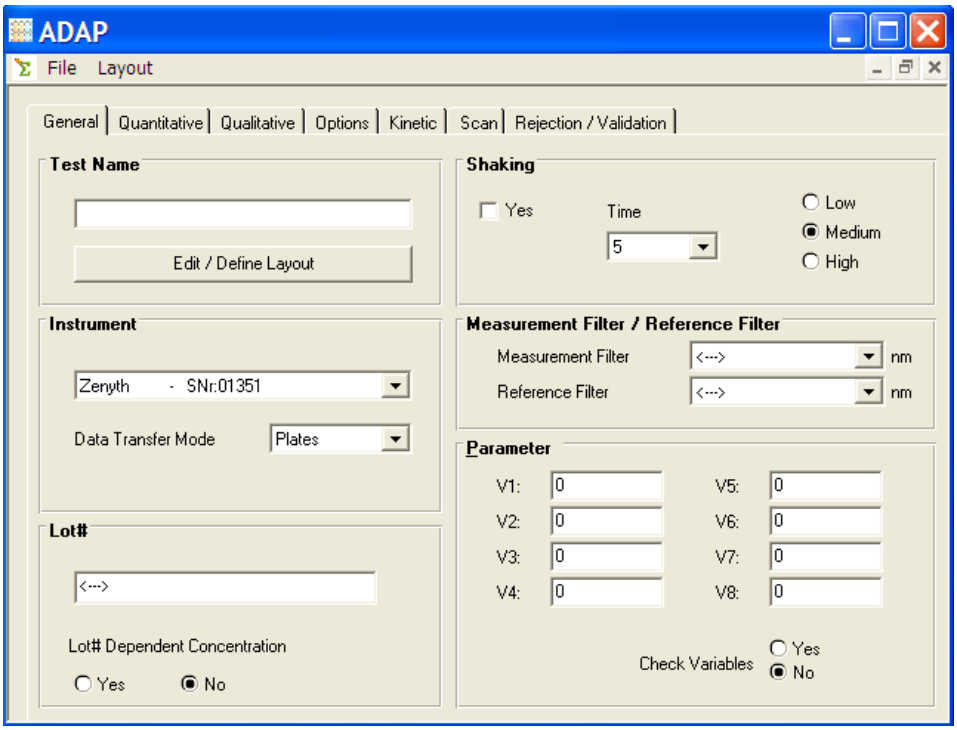


Figure 8-17: ADAP software test definition options

From the File menu, choose Open**. Selection appears with a list of saved saved tests (**

2. Figure 8-18).

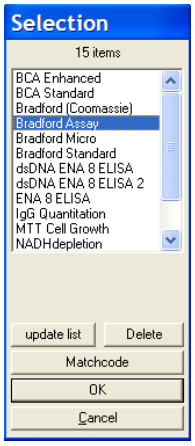


Figure 8-18: Selection – test definitions

3. Select a test definition(s) to delete.

➔ Choose **Matchcode** to search for test definitions by name (refer to Section 8.7, *Using Matchcode to* Search for Test Definitions and Saved Plates

➔ To select multiple test definitions, hold **Ctrl** while selecting each test definition name.

4. Choose **Delete**. Message appears (Figure 8-19).

Figure 8-19: Message – Delete selected Tests?

5. Choose **Yes** to delete the test definition, or **No** to cancel the deletion and return to Selection.

8.6. Printing Test Definitions

Test definitions may be printed out to provide a record of the test protocol.

➔ Test definitions may be printed by Level 2 (administrator) and Level 3 (system administrator) users (refer to Chapter 2, *User Login and System Administration*).

To print a test definition:

From the Setup menu, choose Calculation**. ADAP test definition options options appear (**

1. Figure 8-21).

   OR 

   Choose Create/Edit Calculation**. ADAP test definition options appears appears (**

Figure 8-21)

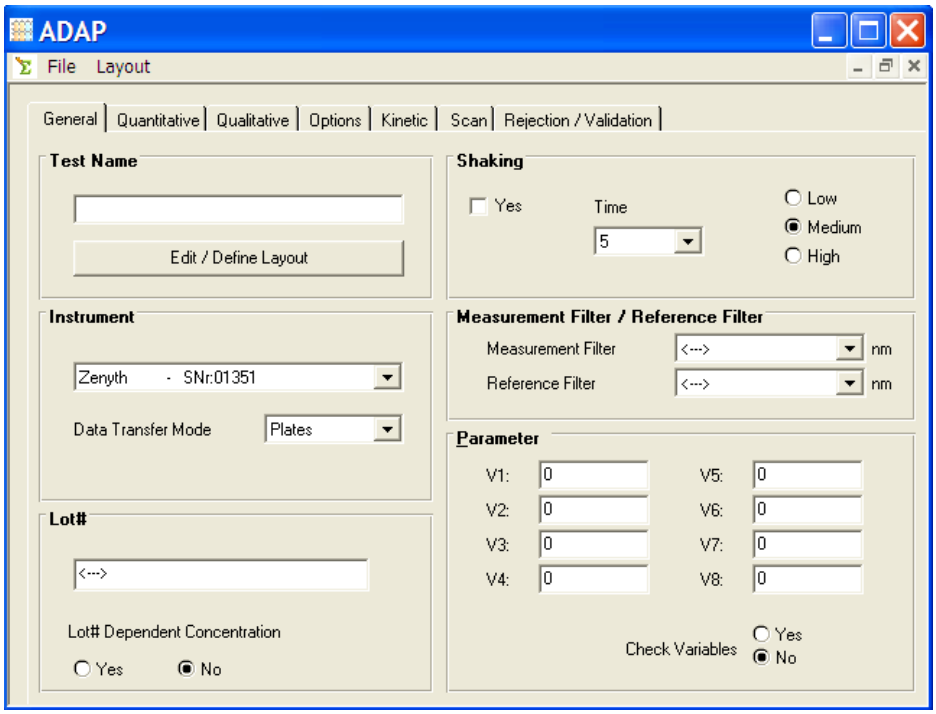


Figure 8-20: ADAP software test definition options

2. From the File menu, choose **Open**. Selection appears with a list of saved test definitions (Figure 8-23).

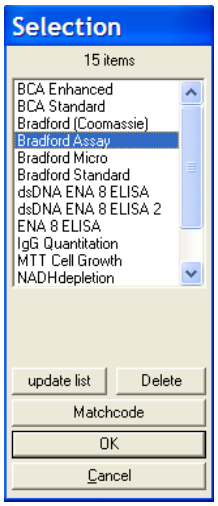


Figure 8-21: Selection – test definitions

3. Select a test to be printed and choose **OK**. The chosen test definition appears.

➔ Choose **Matchcode** to search for test definitions by name (refer to Section 8.7, Storing Measurements in the Database).

4. From the File menu, select **Print**. Print appears (Figure 8-22).

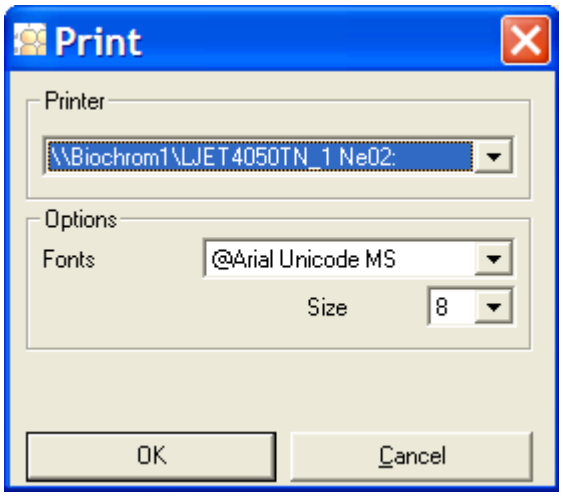


Figure 8-22: Print

5. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.

6. In Options, select the desired **Font** and text **Size**.

➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

7. Choose **OK** to print the raw data.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

8.7. Using Matchcode to Search for Test Definitions and Saved Plates

Matchcode is the search feature that appears in Selection. Depending on from which screen or tab Selection is accessed, Matchcode performs searches for saved test definitions or measured plate results. Matchcode provides wildcard operators which simplify the search procedure.

To search for measured plate results by plate ID, or test definitions by name:

1. Choose **Matchcode**. Plate-ID appears.

2. In Input Plate-ID, enter a plate ID or test definition name.

   ➔ Input Plate-ID appears when searching for a test definition name.

   ➔ The wildcards * and ? may be used in searches (refer to Table 8-6). Table 8-6.

Wildcard Pattern	Result
a	Lists all plate IDs or test definition names with an a in the ID or name.
a*	Lists all plate IDs or test definition names with an a at the beginning of the ID or name.
*a	Lists all plate IDs or test definition names with an a at the end of the ID or name.
alph?	Lists all plate IDs or test definition names with alph followed by an additional character. For example, alpha or alphb.

Table 8-6: Matchcode wildcard operators

3. Choose **OK**. Plate IDs or test definition names that match the search query appear in Selection.

➔ If Matchcode finds no matches to the search query, choose **update list** to display the entire list of plate IDs or test definitions again.

9. Defining and Running Multitest Assays

9.1. Overview

➔ An ADAP Expert software license code is required to access the functions described in this chapter.

Multitest assays combine up to 12 user-selected tests into one assay. Up to six tests may be combined onto one plate. To define a Multitest assay, test definitions are selected, sample IDs are assigned, and single or multiple tests are selected to be performed on each sample ID. Based on the parameters of the tests selected, the ADAP software automatically creates plate layouts for the assay, combining tests on plates, if possible.

➔ Multitest assays are ideal for use with commercial ELISA kits that use removable well strips.

Defining and running Multitest assays includes:

4. Selecting tests to be performed (refer to Section 9.2, *Defining a Multitest Assay*).

5. Assigning sample IDs and tests to specific samples (refer to Section 9.2.2, *Assigning Sample IDs*).

6. Creating and viewing plate layouts (refer to Section 9.2.3, *Creating and Viewing a Multitest Plate Layout*).

7. Deleting Multitest configurations (refer to Section 9.3, *Deleting Multitest Configurations*).

8. Performing the Multitest assay (refer to Section 9.4, *Running a Multitest Assay Measurement*).

9.2. Defining a Multitest Assay

Defining a Multitest assay is a four-step process:

Select up to twelve previously defined tests (refer to Section 9.2.1, *Selecting Tests to Use in a Multitest Assay*).

Assign sample IDs (refer to Section 9.2.2, *Assigning Sample IDs*).

Select which tests will be performed on each sample ID (refer to Section 9.2.2.3, *Selecting Tests to Perform on Sample IDs*).

Creating and Viewing a Multitest Plate Layouts (refer to Section 9.2.3, *Creating and Viewing a Multitest Plate Layout*).

➔ Multitest definitions are not saved to external files. Instead, all plates configured for a Multitest assay are saved by default after the plate layouts have been determined (refer to Section 9.2.3, *Creating and Viewing a Multitest Plate Layout*).

To define a Multitest assay:

From the Setup menu, choose **Multitest**.

OR 

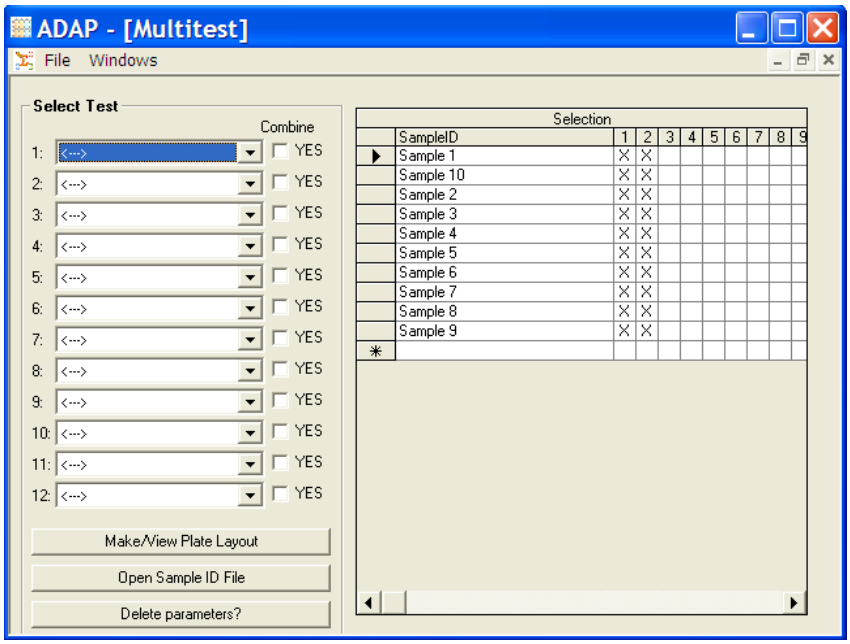


Figure 9-1: Multitest assay definition

9.2.1. Selecting Tests to Use in a Multitest Assay

Up to 12 previously defined tests may be selected for use in a Multitest assay. Selected tests are not automatically performed on every sample ID. The tests performed on each sample ID are selected independently.

To select the tests to use:

1. In Select Test, select up to 12 previously defined tests.

   ➔ All existing tests in the database are available for use in multiplate assays.

2. For each test, select **Combine** to combine the tests onto one plate, if desired.

   ➔Multiple tests cannot be combined on a single plate.

➔ From the File menu, choose **End** or the **End** button to return to the ADAP software main screen. Tests selected for the Multitest assay are automatically saved.

9.2.2. Assigning Sample IDs

Sample IDs must be assigned to wells before a Multitest assay can be performed. Sample IDs may be entered manually or imported from text files.

➔ The ADAP software is capable of handling up to 32,000 sample IDs at a time.

9.2.2.1. Entering Sample IDs Manually

To enter sample IDs manually in a Multitest assay configuration:

1. In Select Sample IDs, click a **SampleID** field and enter the sample ID (Figure 9-2).

   ➔ Sample IDs may not include spaces or exceed 20 characters in length.

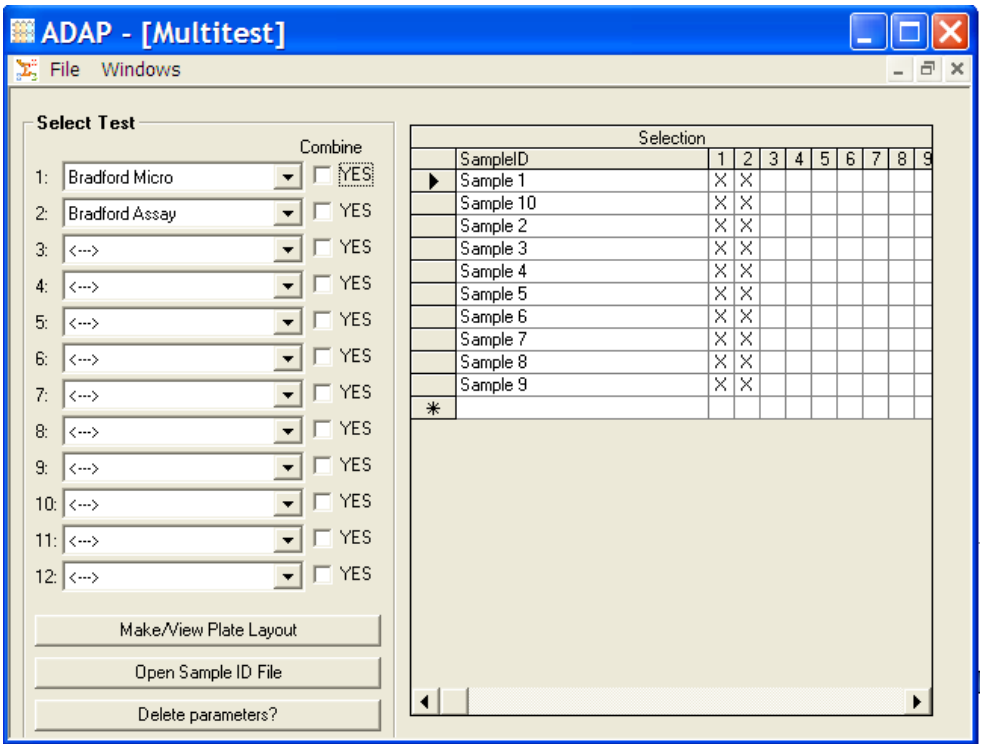


Figure 9-2: Multitest assay with tests selected and sample IDs assigned

2. Repeat step 1 for as many sample IDs as desired.

   ➔ Up to 32,000 sample IDs may be assigned to wells.

9.2.2.2. Importing Sample IDs from Text Files

Sample IDs can be imported from text (*.txt) files. To import correctly, each sample ID must be listed on a separate line in the text file.

➔ The ADAP software is capable of handling up to 32,000 sample IDs at a time.

To import a text file:

1. From the File menu, choose **Open**.

   OR

   Choose **Open Sample ID File**. Open appears

2. Browse to and select the desired sample ID text file to import, and then choose **Open**. The list of sample IDs is imported to the Multitest assay configuration.

9.2.2.3. Selecting Tests to Perform on Sample IDs

After assigning sample IDs, the specific tests to perform on each must be selected.

To select tests to perform on sample IDs:

1. In Select Sample IDs, click the desired test selection field(s) next to each sample ID. An X indicates the test will be performed on the sample ID.

   ➔ Deselect a specific test by clicking the X in the test selection field.

   A test may be selected or deselected for all sample IDs by clicking the test number in the header line of Select Sample IDs.

2. Repeat until all desired tests are assigned to the desired sample IDs.

3. When all sample IDs and tests are configured, choose **View/Make Plate Layout** to set up and view the plate layout for the Multitest assay (refer to Section 9.2.3, *Creating and Viewing a Multitest Plate Layout*).

   ➔ Choose **Select Sample IDs** to toggle to Sort Sample IDs (refer to Section 9.2.2.4, *Sorting Sample Sequences*).

9.2.2.4. Sorting Sample Sequences

Sample IDs may be sorted into groups based on tests performed. To sort sample IDs:

1. Choose **Select Sample IDs**. The mode toggles to Sort Sample IDs.

2. Click the test number header to sort sample IDs by test performed. For example, choosing test **3** sorts all sample IDs on which test 3 will be performed. Sample IDs that meet the sort criteria are grouped to the top of the list.

   ➔ Sample IDs can only be sorted by one test at a time.

   ➔ Click the Sample ID column header to sort the list back into ascending order by Sample ID.

   ➔ Choose **Sort Sample IDs** to toggle to Select Sample IDs (refer to Section 9.2.2.3, *Selecting Tests to Perform on Sample IDs*).

9.2.3. Creating and Viewing a Multitest Plate Layout

After sample IDs and tests have been assigned, the ADAP software needs to create plate layouts for the Multitest assay. If tests cannot, or are not selected to be combined, several plate layouts are designed for the assay.

➔Multiple tests cannot be combined on a single plate.

To create and view the Multitest plate layout:

From Multitest, choose **View/Make Plate Layout**. Plate Layout appears (Figure 9-).

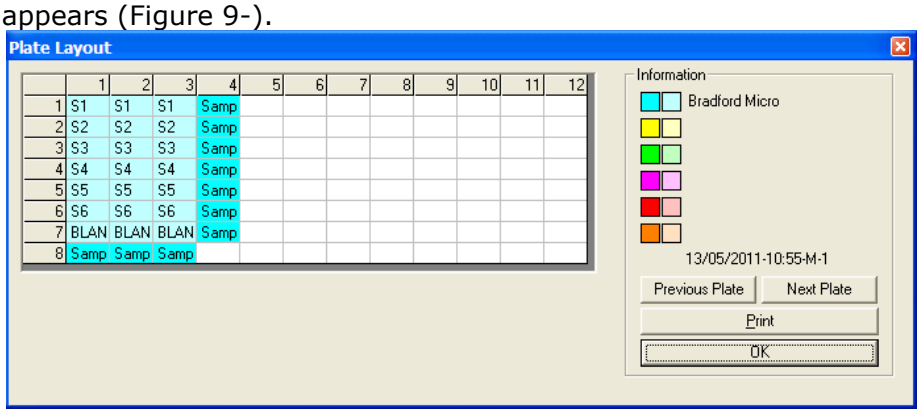


Figure 9-3: Plate Layout

The plate ID appears below the color key.

➔ Choose **OK** to close Plate Layout and return to Multitest.

9.2.3.1. Viewing Additional Multitest Plate Layouts

Multiple plates are designed for the Multitest assay when Combine is not selected, test parameters are incompatible, or there are more samples in the assay than can fit on one plate.

To view all plates in the Multitest assay:

Choose **Next Plate** to display the layout for the following plate.

OR

Choose **Previous Plate** to view the layout for the preceding plate.

➔ Choose **OK** to close Plate Layout and return to Multitest.

9.2.3.2. Printing Multitest Layout Information

Multitest plate layout information can be printed for record-keeping purposes. To print the Multitest layout:

1. Choose **Print**. Print appears (Figure 9-4).

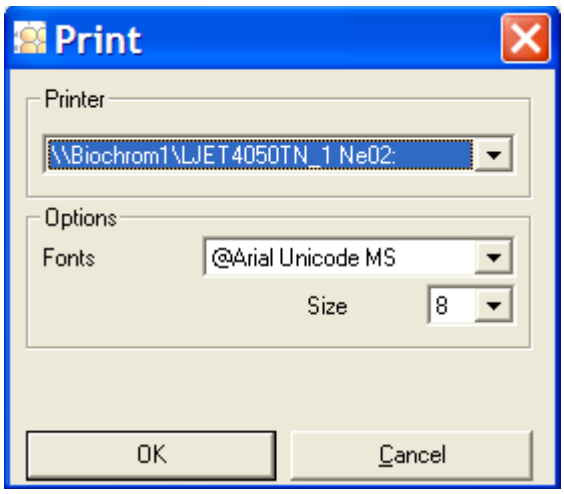


Figure 9-4: Print – Multitest layout

2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.
3. In Options, select the desired **Font** and text **Size**.

➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

4. Choose **OK** to print the layout information. The position and plate where each sample ID is located is printed.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

9.3. Deleting Multitest Configurations

The current Multitest configuration, which includes selected tests, sample IDs, and plate layouts, can be deleted to start a new Multitest configuration.

➔ Multitest configurations are not saved to an external file. All plates configured for a Multitest assay are saved by default when the Multitest plate layout has been determined.

To delete the existing selections and layouts,

1. Choose **Delete Parameters**.

   OR

   From the File menu, choose **New**. Message appears (Figure 9-).

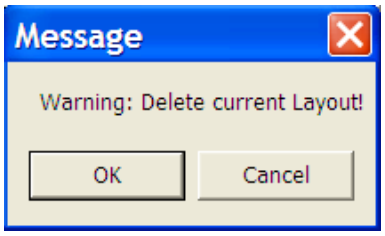


Figure 9-5: Message – Delete current Layout

2. Choose **OK** to delete the current configuration.

   OR

   Choose **Cancel** to return to the current configuration.

9.4. Running a Multitest Assay Measurement

Once a Multitest assay has been configured and the plate layouts designed, the measurement can be performed.

To perform a Multitest assay measurement:

1. In the ADAP software main screen, from the Reading menu, choose **Multitest**.

   OR 

   Choose **Measure Multitest**. Plate Selection appears (Figure 9-).

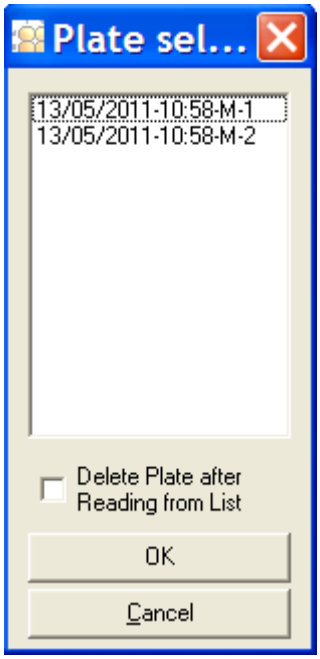


Figure 9-6: Plate selection

2. Select the desired plate to measure.

3. Choose **OK** to begin the measurement of all tests on the specified plate.

➔ To manage the sometimes large number of plates designed for Multitest assays, **select Delete Plate after Reading from List** to delete the plate layout after the measurement has been performed.

OR

Choose **Cancel** to return to the ADAP software main screen.

After the all tests are completed and evaluated, the test results are displayed in the ADAP software main screen.

10. Viewing Test and Multitest Assay Measurement Results

10.1. Overview

➔ An ADAP Plus or ADAP Expert software license code is required to access the functions described in this chapter.

After performing a test or multitest measurement, the results are displayed in a series of tabs in the ADAP software main window. The tabs displayed vary depending on the type of measurement performed, the instrument capability, and options selected in the test definition (refer to Chapter 8, *Defining and Running Tests*).

Measurement results are stored in the ADAP software database and may be exported to another application or printed.

Measurement data can be:

4. Viewed in the ADAP software (refer to Section 10.2, *Viewing Test Measurement Results* 10.3, *Viewing Multitest Measurement Results*).

5. Recalculated with different parameters following the measurement (refer to Section 10.4, *Recalculating Test Results*).

6. Printed to view and store a hard copy (refer to Section 10.5, *Printing Measurement Results*).

7. Exported to view in another application (refer to Section 10.6, *Exporting Measurement Results to Other Applications*).

8. Stored in the ADAP software database (refer to Section 10.7, Storing Measurements in the Database).

10.2. Viewing Test Measurement Results

Test measurement results are displayed in a series of tabs in the ADAP software main window. The tabs displayed depend on the type of measurement performed, the capabilities of the instrument, and options selected in the test definition.

Test measurement results include:

➔ The following results screens are identical to the results screens shown for Quick measurements, and appear depending on type of measurement performed, instrument capabilities, and options selected in the test definition. Refer to Chapter 7, *Viewing Quick Measurement Results*, for more information.

OD — in photometric measurement results, displays the optical density measurement for each well measured (refer to Section 7.3.1.1, *Viewing Optical Density (OD) Measurement Results*).

Status — in all measurements, displays the status for all measured wells (refer to Section 7.3.1.2, *Viewing Sample Status*).

Raw Data Kinetic — in kinetic measurements, displays measurement results for each cycle of a kinetic photometric measurement (refer to Section 7.3.2.2, *Viewing Kinetic Measurement Raw Data*).

Kinetic Graph — in kinetic measurements, displays a graph of the kinetic results over time for each well (refer to Section 7.3.2.3, *Viewing Kinetic Measurement* Graphs).

Raw Data Scan — in linear scan measurements, displays the values for each of the 25 points measured across wells. In area scan measurements, displays the values for all points measured within wells on the plate (refer to Section 7.3.6.2, *Viewing Area Scan Transmission Profiles*).

Scan — in linear scan measurements, displays a graph of the linear absorption profile for each well on the plate (refer to Section 7.3.4.2, *Viewing Linear Scan Graphs*). In area scan measurements, displays a three-dimensional graph of the results of the area scan from each well (refer to Section 7.3.6.2, *Viewing Area Scan Transmission Profiles*).

Curve Info — in multiwavelength measurements, displays the OD and transmission values at each wavelength measured for a single sample (refer to Section 7.3.3.4, *Viewing Multiwavelength Measurement Curve Info*). In linear scan measurements, displays the transmission values for a single sample at all measurement

points (refer to Section 7.3.4.4, Viewing Linear Scan Curve Info). The ADAP Plus and ADAP Expert software display additional details about curve peaks, valleys, and average slope.

➔ The following results screens appear depending on the type of measurement performed, instrument capabilities, and options selected in the test definition.

Mean — Displays mean values of replicates based on the mean calculation mode selected in the test definition (refer to Section 10.2.1, *Viewing Mean Results Data*).

Transform — Displays calculated measurement values for each well based on the transformation formula entered in the test definition (refer to Section 10.2.2, *Viewing Transformation Formula Results*).

Concentration — Displays calculated concentration of each well based on the standard curve data entered in the test definition (refer to Section 10.2.3, *Viewing Concentration Results*).

Concentration Transformation — Displays calculated concentration values for each well based on the concentration transformation formula entered in the test definition (refer to Section **Error! Reference source not found.**, **Error! Reference source not found.**)

Qualitative — Displays the cutoff group name for each well if cutoff formulas and groups are configured in the test definition (refer to Section 10.2.4, Viewing *Qualitative* Results).

Plate Layout — Displays the layout of the plate as defined in the test definition (refer to Section 10.2.5, *Viewing Plate Layout*).

Sample ID — Displays the sample identification number for each well (refer to Section **Error! Reference source not found.**, **Error! ference source not found.**).

CV% — Displays the coefficient of variation of the mean values of a replicate group (refer to Section 10.2.6, *Viewing CV% Results*).

Factor — Displays multiplication factors for each well as defined in the test definition (refer to Section 10.2.7, *Viewing Factor*).

Standard Curves — Displays the standard curve of the measurement if quantitative parameters are configured in the test definition (refer to Section 10.2.8, *Viewing* Standard Curves)

Test Status — Displays a summary of all steps in a test definition, indicating if each step was performed correctly or if there was an error (refer to Section 10.2.9, Viewing Test Status Information).

Evaluation Summary — Displays a summary of test evaluation data (refer to Section 10.2.10, *Viewing Evaluation Summary Results*).

➔ In any measurement result screen that displays the results in plate layout format, double-click on a well position to see a summary of measurement results for the well.

10.2.1. Viewing Mean Results Data

Mean displays the mean value of each replicate group on the plate (Figure 10-1). The mean value is displayed in the first position of the replicate group.

➔ For a kinetic measurement, the Mean value represents the mean of the data reduction value for each replicate group.

➔ If replicates are not used in the test definition, the Mean tab displays the same values as OD.

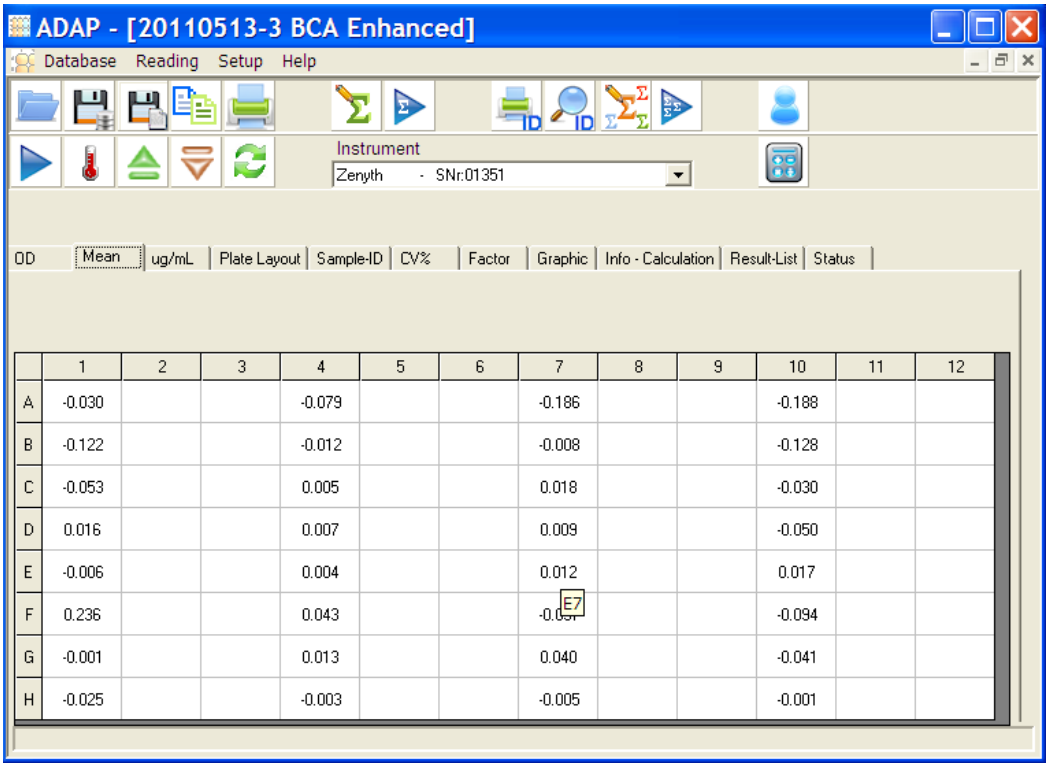


Figure 10-1: Measurement results - Mean

10.2.2. Viewing Transformation Formula Results

Transform (Figure 10-2) displays measurement values for each well calculated using the transformation formula configured in Qualitative (refer to Section 8.2.4, *Configuring a Qualitative Evaluation*).

➔ Transform is the default label for this tab. If Units for the transformation formula is defined, that name appears instead (refer to Section 8.2.4.3, *Configuring a Transformation Formula*).

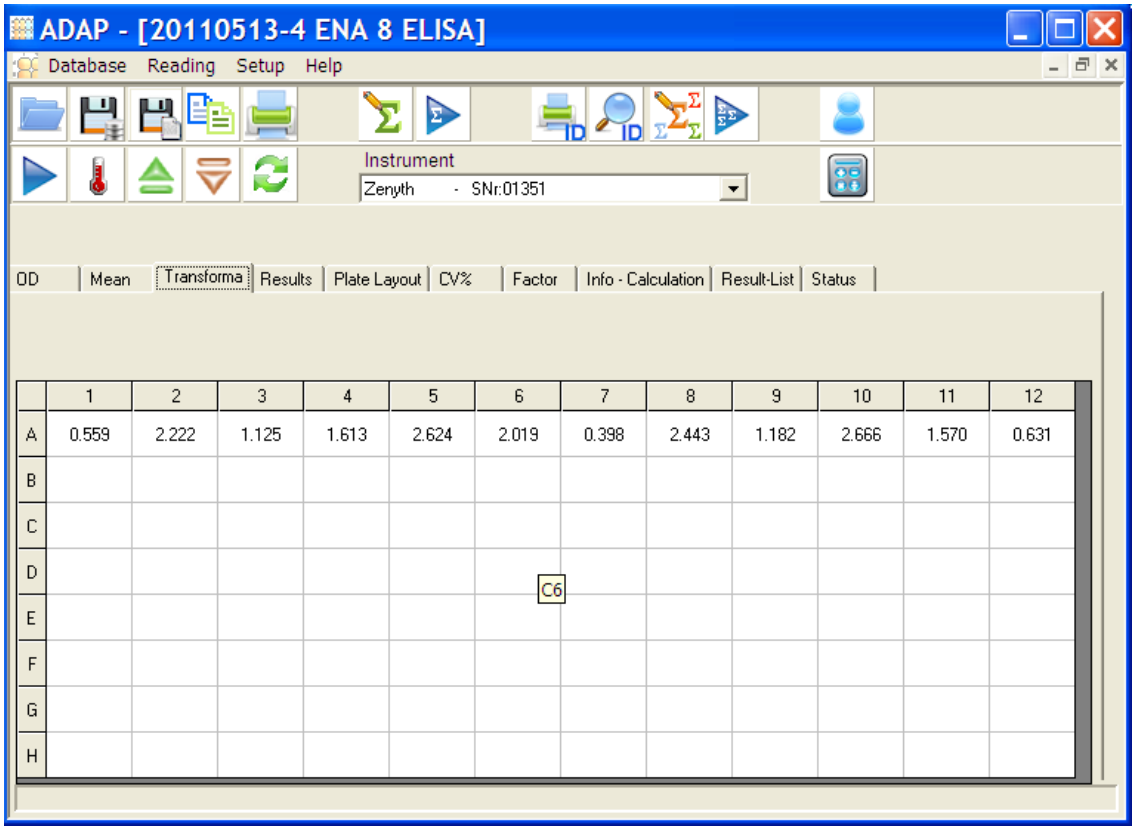


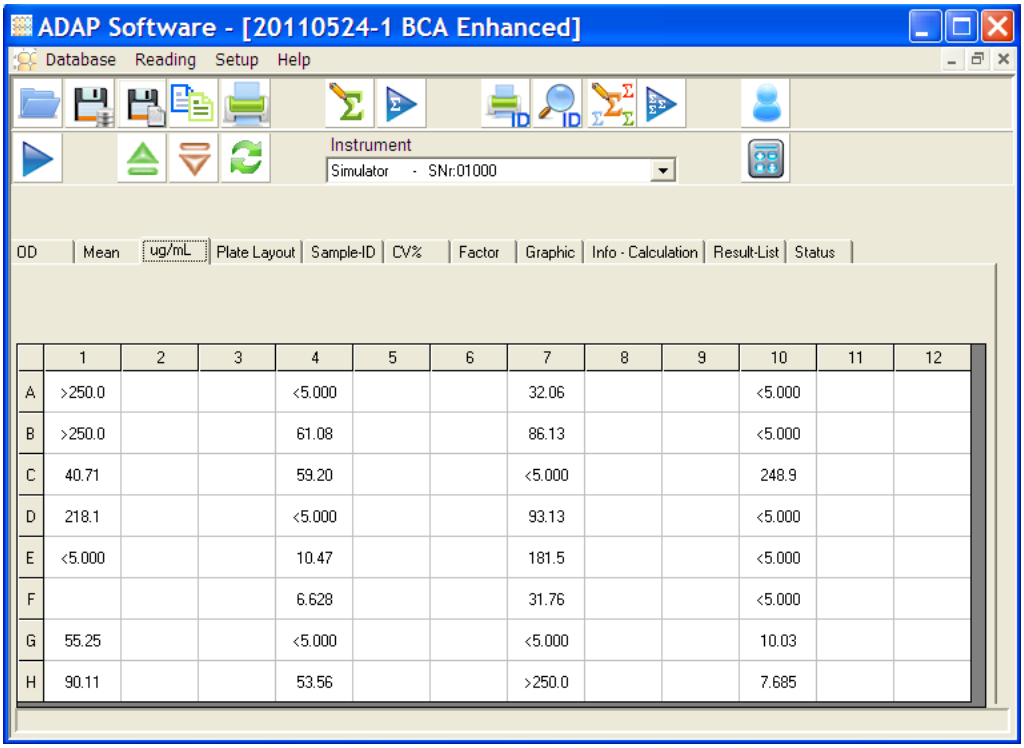
Figure 10-2: Measurement results - Transformation

10.2.3. Viewing Concentration Results

If standard curve parameters were configured in Quantitative, Concentrat displays the calculated concentration of each well based on the standard curve data results (refer to Section 8.2.3, *Configuring a Quantitative Evaluation*).

➔ Values outside of the valid range of the standard curve are displayed as < or >.

➔ Concentrat is the default label for this tab. If Units for the standard curve is defined, that name appears instead (refer to Section 8.2.3.2, *Configuring Standard Curve Parameters*).



	1	2	3	4	5	6	7	8	9	10	11	12
A	>250.0			<5.000			32.06			<5.000		
B	>250.0			61.08			86.13			<5.000		
C	40.71			59.20			<5.000			248.9		
D	218.1			<5.000			93.13			<5.000		
E	<5.000			10.47			181.5			<5.000		
F				6.628			31.76			<5.000		
G	55.25			<5.000			<5.000			10.03		
H	90.11			53.56			>250.0			7.685		

Figure 10-3: Measurement results - Concentrations

10.2.4. Viewing Qualitative Results

Results displays cutoff group names for each well (Figure 10-). Cutoff groups are created by configuring cutoff formulas in Qualitative (refer to Section 8.2.4, *Configuring a Qualitative Evaluation*).

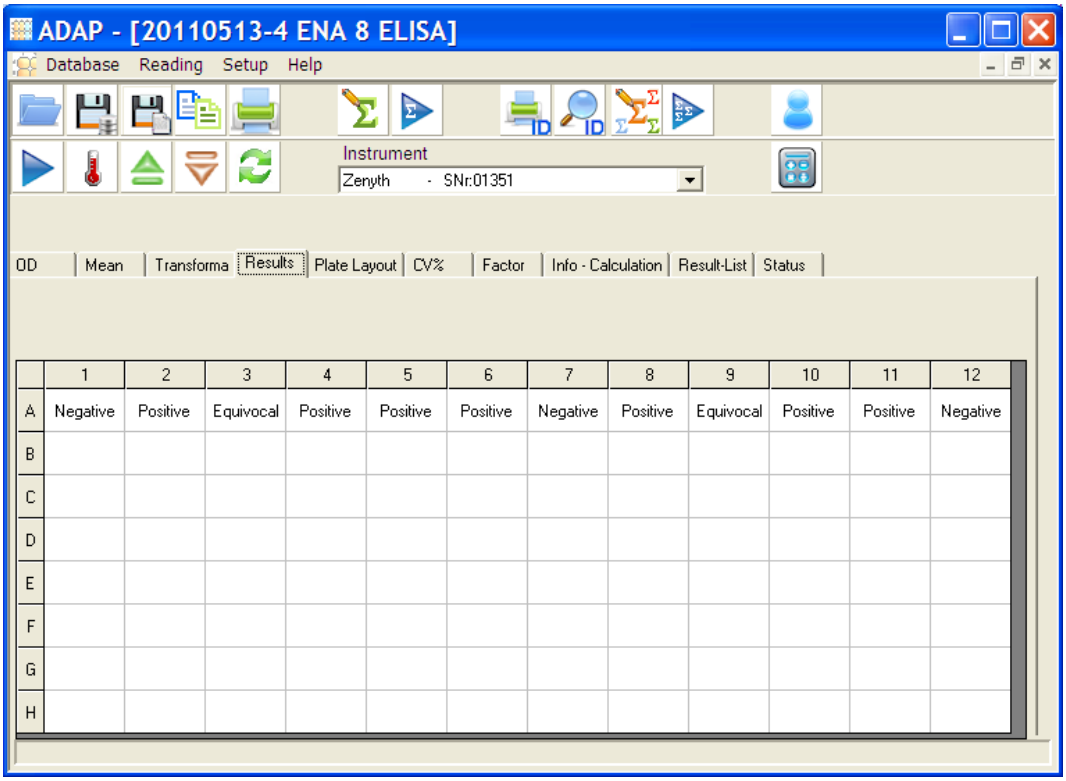


Figure 10-4: Measurement results - Results

10.2.5. Viewing Plate Layout

Plate Layout (Figure 10-) displays the layout of the plate as defined in the test definition (refer to Section 8.2.2, *Defining Plate Layout*).

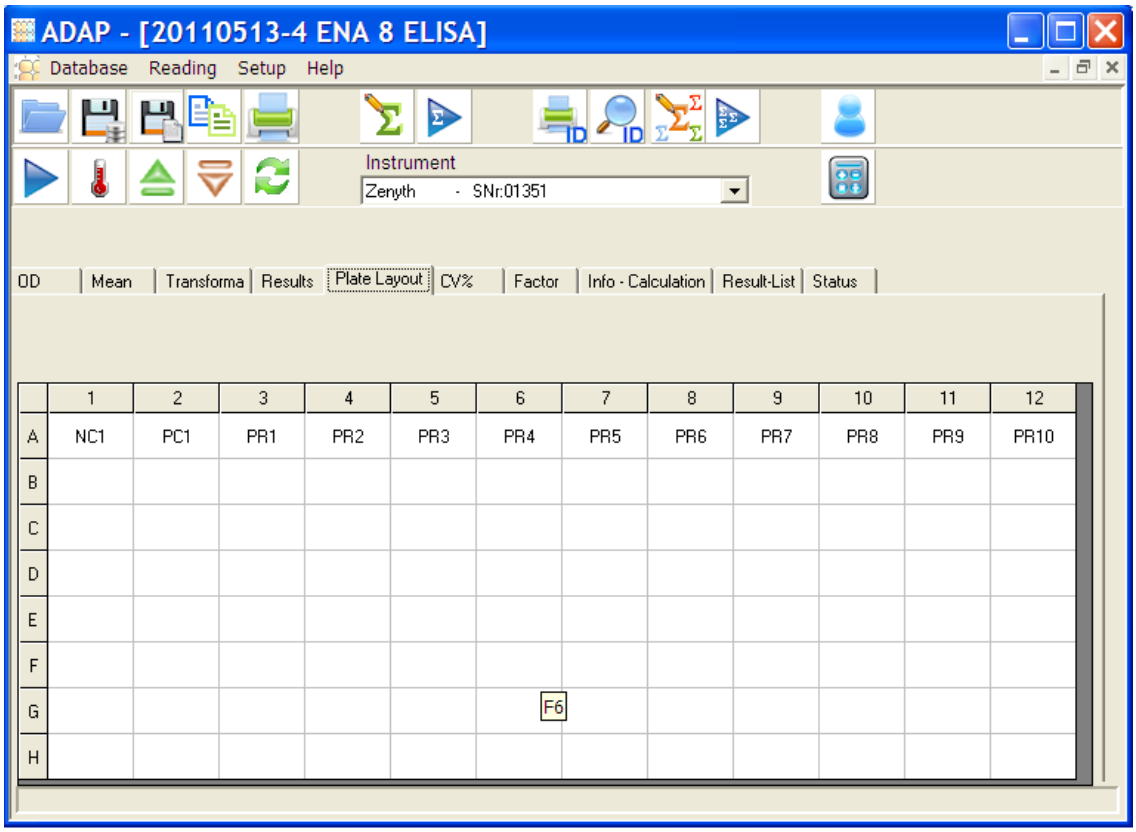


Figure 10-5: Measurement results – Plate Layout

10.2.5.1. Manually Entering Sample IDs

Sample IDs may be entered one at a time for individual wells. To manually enter sample IDs:

1. Choose Sample-ID.

2. From the Options menu, choose **Edit Sample-ID>Manual** (Figure 10-).

➔ The Edit Sample-ID function is only available when Sample-ID is the tab displayed.

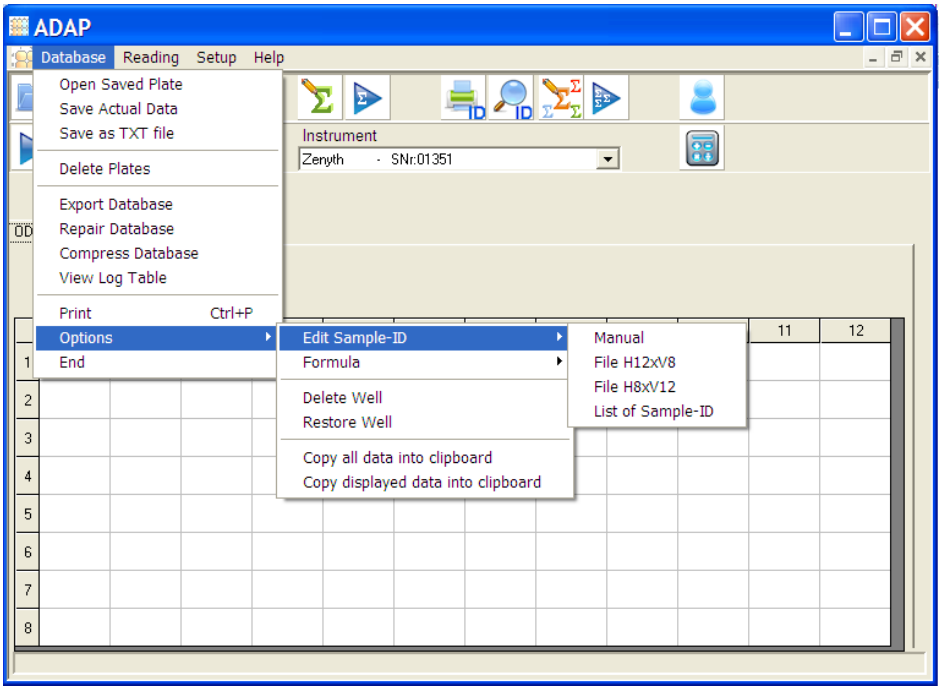


Figure 10-6: Edit Sample-ID

3. Click the desired well in the layout and enter the new sample ID.

4. Repeat step 3 until all desired sample IDs are entered.

10.2.5.2. Importing Sample IDs from Text Files

Sample IDs may be imported from standard text files or text files configured specifically for 96-well plates.

To import sample IDs from a text file:

1. Choose Sample-ID.

2. In the Option menu, select **Edit Sample-ID>**:

3. **File H12 x V8** to import a text file specifically configured for a 96-well plate with 12 horizontal positions and 8 vertical positions.

   OR

4. **File H8 x V12** to import a text file specifically configured for a 96-well plate with 8 horizontal positions and 12 vertical positions.

   OR

5. **List of Sample-ID** to import any text file.

   ➔ Sample IDs in a standard text file must be listed on separate lines.

10.2.5.3. Viewing, Printing, and Copying Individual Sample ID Information

Test information relevant to each sample ID well may be viewed, printed or copied to another file. Sample ID information that may be viewed includes sample ID, test name, well data results, plate layout position, plate number, and validation status.

To view individual sample ID information:

1. Choose **List Sample-ID**. Selection appears (Figure 10-).

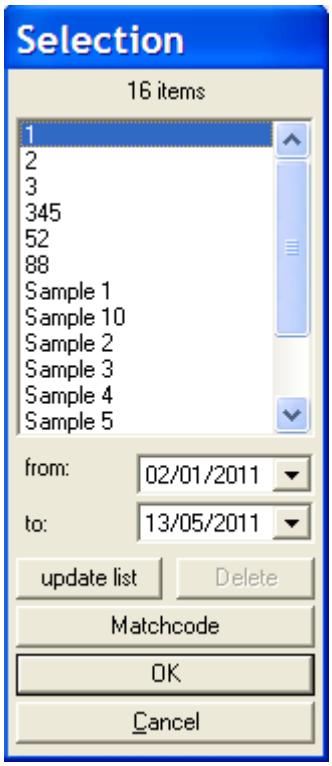


Figure 10-7: Selection – sample IDs

2. Select the desired sample ID to view and choose **OK**. Result-List appears (Figure 10-)

➔ To select several sample IDs to display in Result-List, hold Ctrl while selecting sample IDs.

➔ Choose **Matchcode** to search for specific sample IDs by characters in the sample ID name (refer to Section 8.7,Using Matchcode to Search for Test Definitions and Saved Plates).

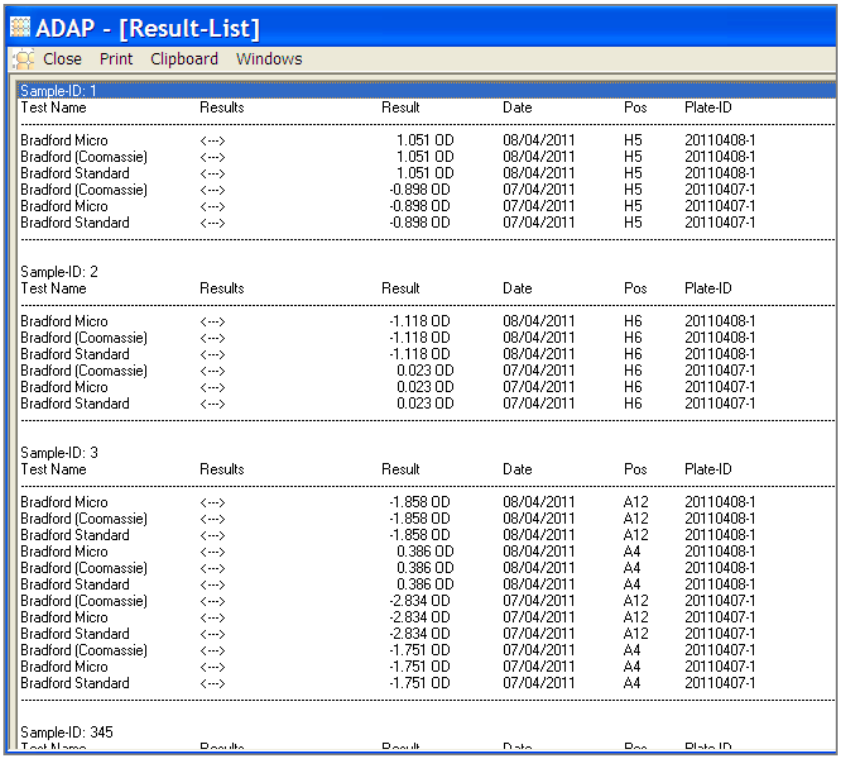


Figure 10-8: Sample ID information in Result-List

➔ If a sample ID has been used in several tests, results for all tests are displayed by date in Result-List.

➔ Choose **Close** to return to the test measurement results.

The sample ID data in Result List can be printed or copied into another application.

3. To print the contents of Result-List, refer to Section 10.2.5.3.1, *Printing Sample ID Information*.

4. To copy the contents of Result-List so that it can be used in another application, refer to Section 10.2.5.3.2, *Copying Sample ID Information to another Application*.

10.2.5.3.1. Printing Sample ID Information

Sample ID data displayed in Result-List may be printed. To print sample ID data:

1. Choose **Print**. Print appears (Figure 10-).

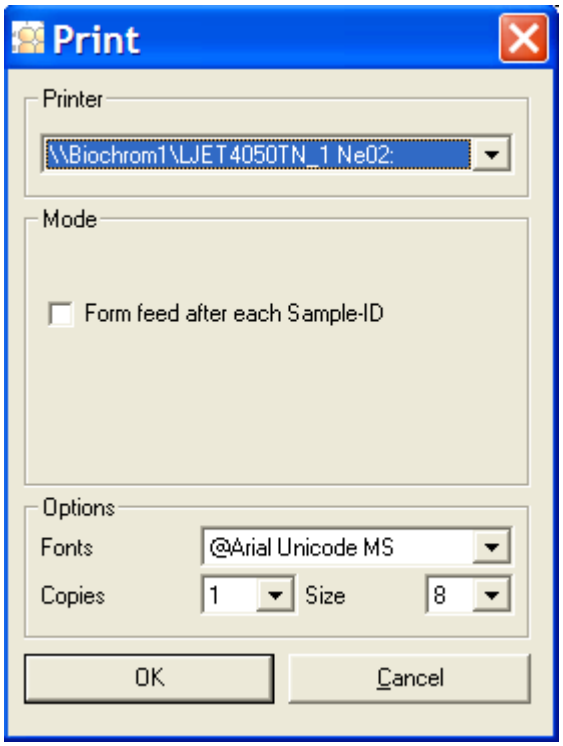


Figure 10-9: Print – Result List

2. In Printer, select the desired printer to use to print the information. All printers that are properly installed and configured on the computer are listed.

3. In Mode, select **Form feed after each Sample-ID** to print each sample ID on a separate page, if desired.

4. In Options, select the desired **Font** for the report, the **Size** of the printed text, and the number of **Copies** to print.

➔ Body text is printed in the selected Font and Size. Headlines, headings, and table text are printed using formatting defined by the ADAP software.

5. Choose **OK** to print the raw data.

6. Choose **OK** to print the sample ID data, or **Cancel** to abort printing.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

10.2.5.3.2. Copying Sample ID Information to another Application

Sample ID data can be copied into another application, such as a word processor, using the clipboard.

To copy sample ID data to the clipboard:

1. Choose **Clipboard**. Sample ID data is copied to the clipboard.

2. Open or switch to the application you want to paste the sample ID data to, and paste the data.

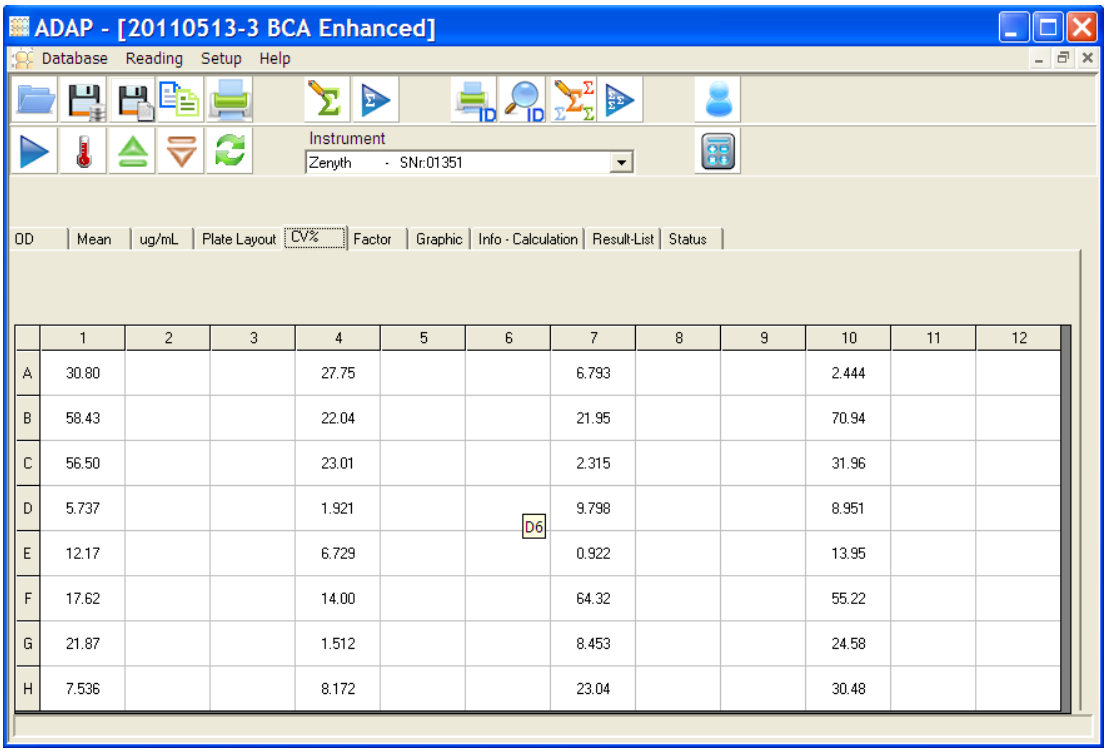
   ➔ Most applications have CTRL+V assigned as the Paste command keyboard shortcut.

➔ Choose **Close** to return to the Multitest results.

10.2.6. Viewing CV% Results

CV% displays the coefficient of variation of the mean values of a replicate group (Figure 10-). To calculate a CV, a sample or well type must have at least 2 replicates. The CV% value is displayed in the first position of the replicate group. If there are no replicates for a well type, the CV for the well is displayed as 0.

➔ The formula for CV% is standard deviation divided by mean value, multiplied by 100.

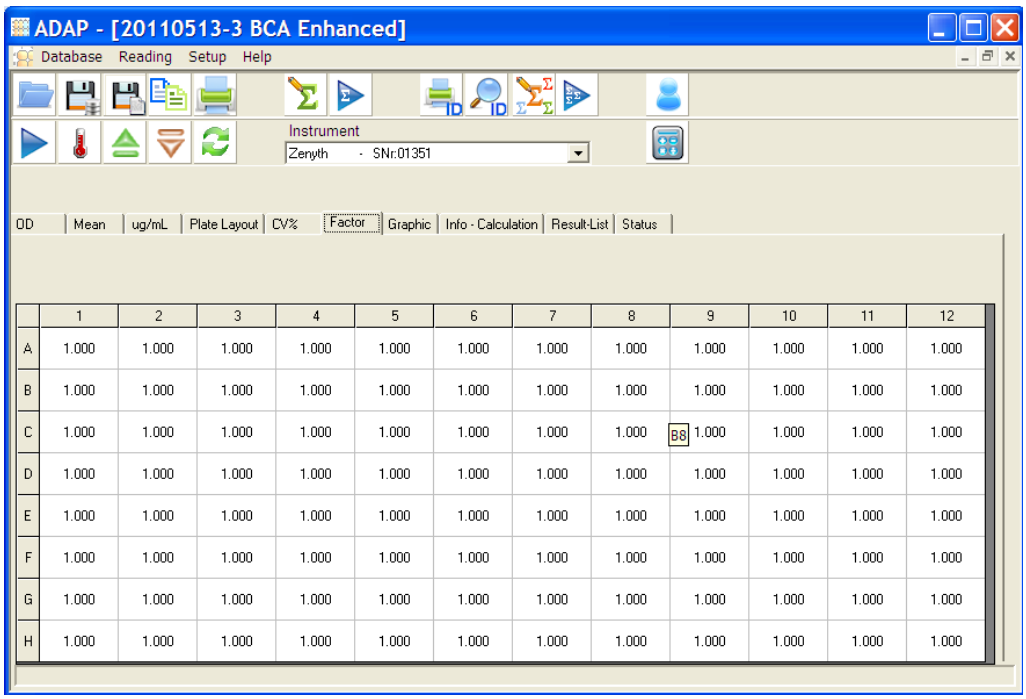


	1	2	3	4	5	6	7	8	9	10	11	12
A	30.80			27.75			6.793			2.444		
B	58.43			22.04			21.95			70.94		
C	56.50			23.01			2.315			31.96		
D	5.737			1.921			9.798			8.951		
E	12.17			6.729			0.922			13.95		
F	17.62			14.00			64.32			55.22		
G	21.87			1.512			8.453			24.58		
H	7.536			8.172			23.04			30.48		

Figure 10-10: Measurement results – CV%

10.2.7. **Viewing Factor**

Factor (Figure 10-4) displays the multiplication factors for each well configured in Define Layout in the test definition (refer to Section 8.2.2.4, 8.2.2.4. *Entering Dilution Factors for Wells*).



	1	2	3	4	5	6	7	8	9	10	11	12
A	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
B	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
C	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
D	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
E	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
G	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
H	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Figure 10-4: Measurement results - Factor

10.2.8. Viewing Standard Curves

Graphic (Figure 10-5) displays the standard curve based on the results of the concentration and response formula configured in Quantitative in the test definition (refer to Section 8.2.3, *Configuring a Quantitative Evaluation*).

➔ If the ADAP main window is resized, choose Refresh Graph to redraw the graph display so that it fits the new window size properly.

➔ To copy the standard curve graph, right-click on the graph and choose **Copy graph into clipboard**. The graph can then be pasted into another application such as a word processor.

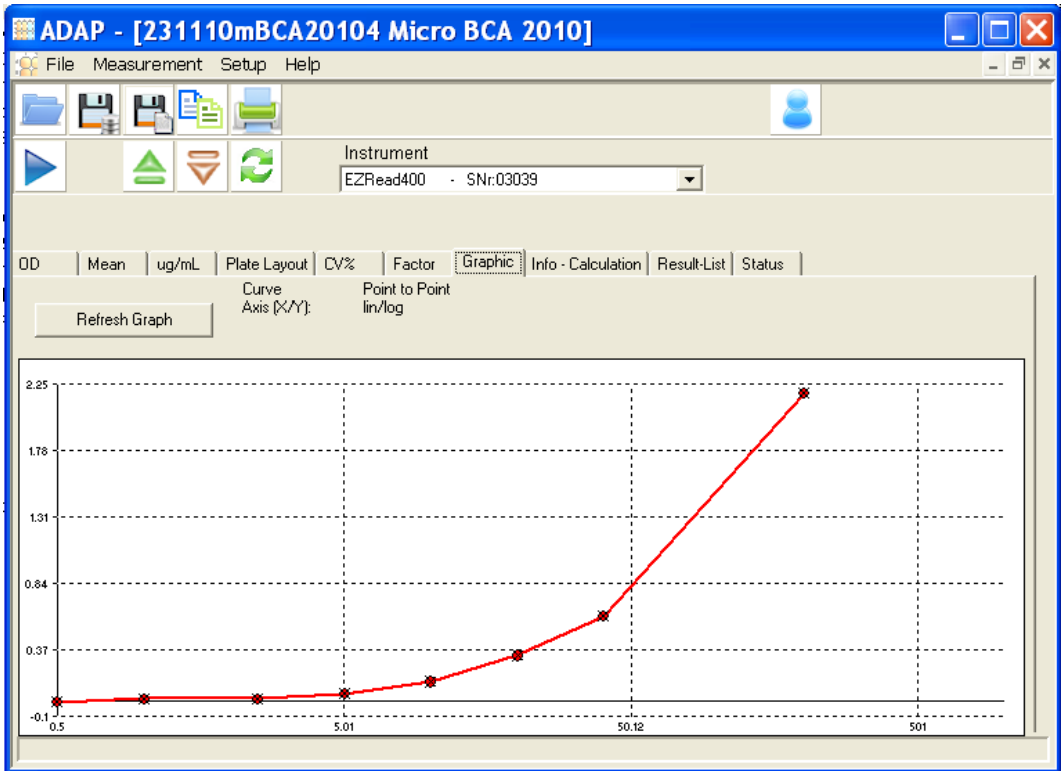


Figure 10-5: Standard curve displayed in measurement results – Graphic tab

10.2.9. Viewing Test Status Information

Info-Calculation displays a summary of each step in the test definition and indicates if each step was successful or failed (Figure 10-6). Results are displayed as OK or Error.

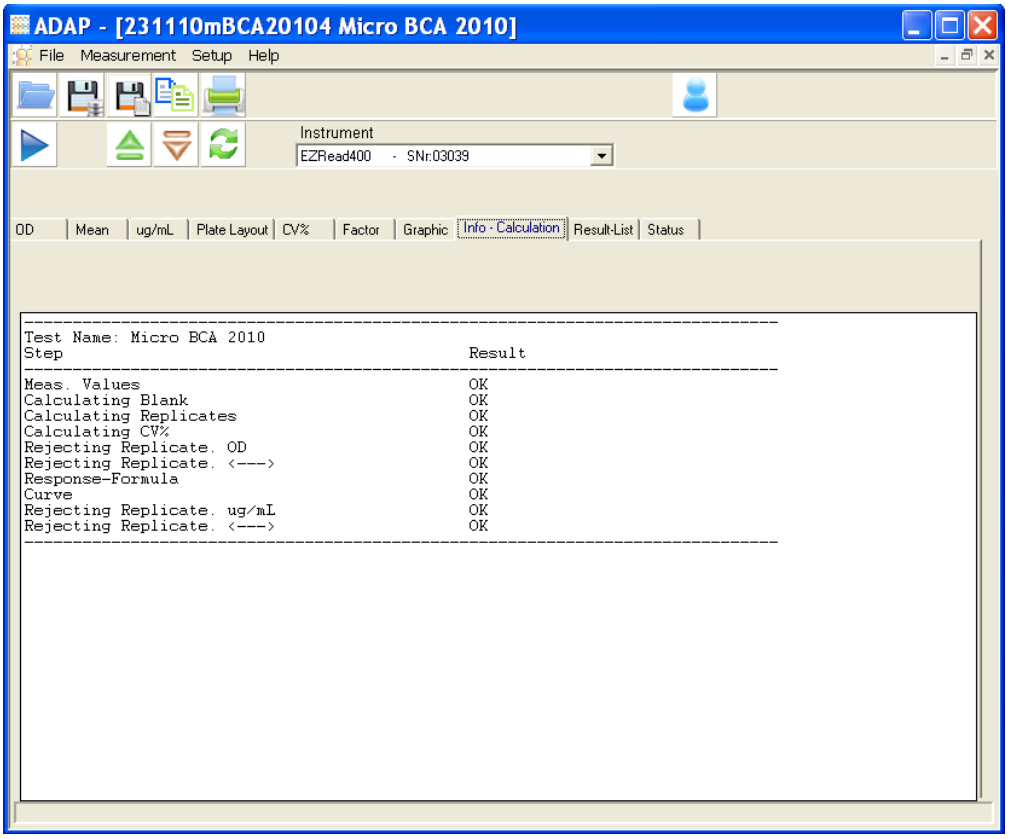


Figure 10-6: Measurement results – Info Calculations

10.2.10. **Viewing Evaluation Summary Results**

Result-List (Figure 10-7) displays a summary of test evaluation data including standard curve results, cutoff groups, replicate rejection and test validation formula summaries, and individual well data (Figure 10-7).

➔ Use the scroll bar to view all information displayed in Result-List.

➔ This Result-List contains different data than the Result-List for individual sample IDs (refer to Section 10.2.5.3, *Viewing, Printing, and Copying Individual Sample ID Information*).

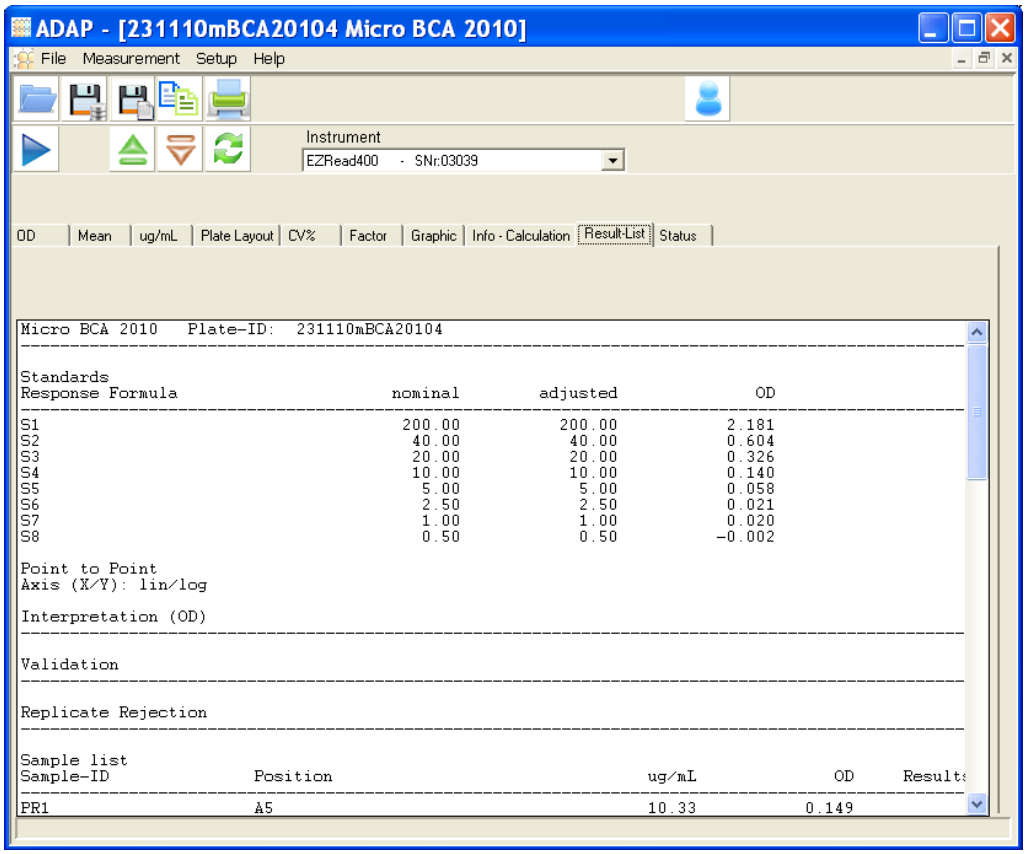
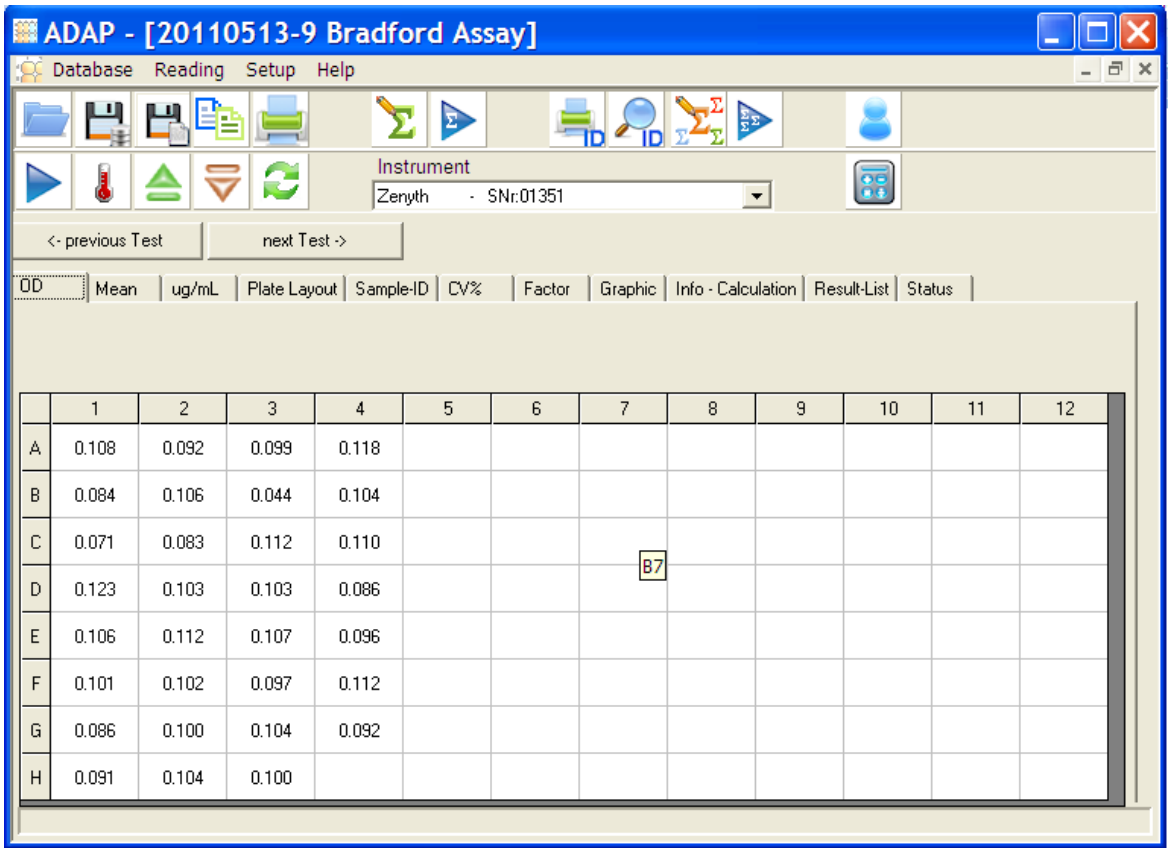


Figure 10-7: Measurement results – Result-List

10.3. Viewing Multitest Measurement Results

➔ An ADAP Expert software license code is required to perform Multitest measurements and view the results.

After a Multitest measurement is completed, all applicable measurement results are displayed for each test performed. Measurement results are displayed one test at a time (Figure 10-8).



	1	2	3	4	5	6	7	8	9	10	11	12
A	0.108	0.092	0.099	0.118								
B	0.084	0.106	0.044	0.104								
C	0.071	0.083	0.112	0.110								
D	0.123	0.103	0.103	0.086								
E	0.106	0.112	0.107	0.096								
F	0.101	0.102	0.097	0.112								
G	0.086	0.100	0.104	0.092								
H	0.091	0.104	0.100									

Figure 10-8: Multitest measurement results

➔ Refer to Section 7.3, *Viewing Quick Measurement* Results, and Section 10.2, *Viewing Test Measurement Results*, to learn more about the individual measurement result tabs.

To view results from another test on the plate:

Choose **next Test** to view the following test results.

OR

Choose **previous Test** to view the preceding test results.

10.4. Recalculating Test Results

Once the measurement has been completed, raw data associated with the test can be recalculated with different parameters, such as cutoff formulas, validation formulas, standards, and standard curve fits.

Individual wells may be rejected as outliers. Tests can be recalculated with these outliers eliminated.

➔ Only tests may be recalculated; Quick measurements may not.

10.4.1. Recalculating Test Results

To recalculate results:

1. From the Options menu, select **Formula**.

   OR

   Right-click on the displayed measurement results, and select **Formula**. The name of the most recently run test appears (Figure 10-9).

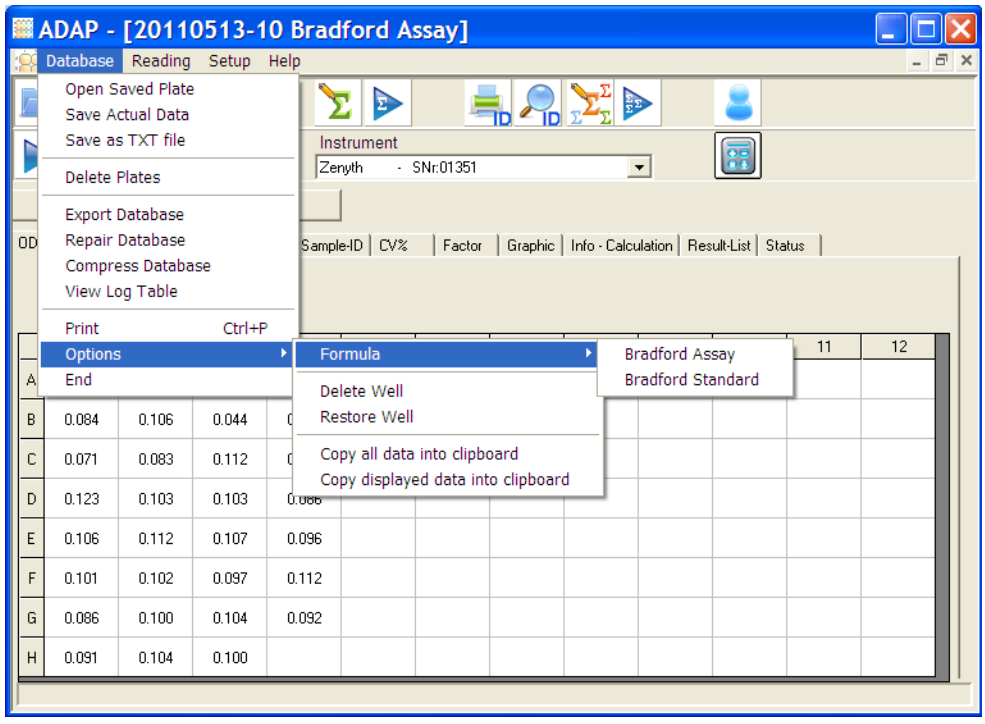


Figure 10-9: Choosing Point_2, the most recently run test, to recalculate

2. Choose the test definition name. A window named for the test definition name appears (Figure 10-10).

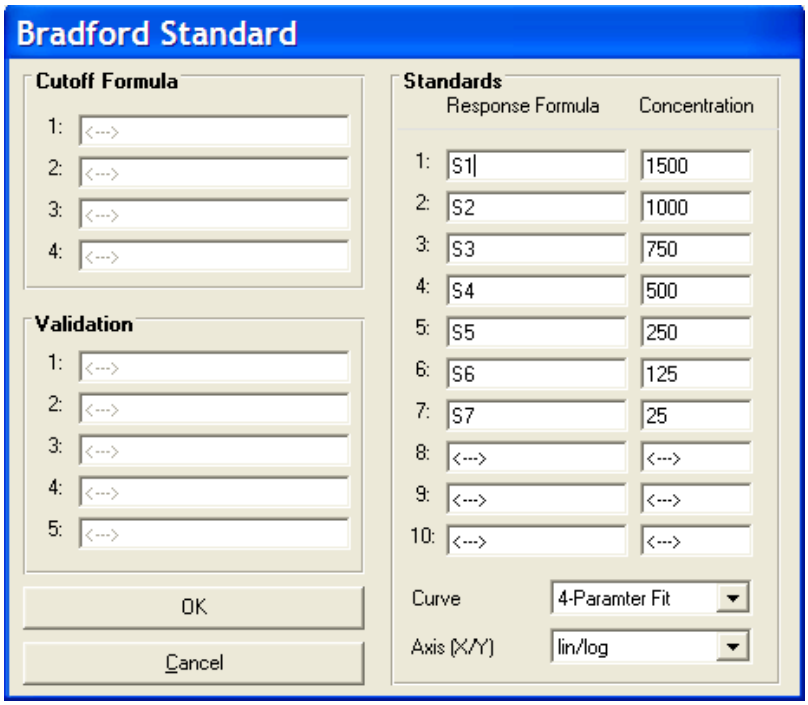


Figure 10-10: Point_2 to recalculate

3. In Cutoff Formula, if desired, enter up to four new formulas to create new cutoff groups (refer to Section 8.2.4.1, *Configuring Groups and Cutoff Formulas*).

4. In Validation, if desired, enter up to five new test validation formulas to use to validate the measurement results (refer to Section 8.2.8, *Programming Rejection/Validation Formulas*).

5. In Standards, if desired, enter new response formulas and concentrations to create a new standard curve and recalculate concentration values (refer to Section 8.2.3.1, *Configuring Standards*).

6. In Standards, if desired, choose a new Curve fit method to plot a new standard curve and recalculate the concentration values (refer to Section 8.2.3.2, *Configuring Standard Curve Parameters*).

7. In Standards, if desired, select a new Axis scale to plot the standard curve on a new scale (refer to Section 8.2.3.2, *Configuring Standard Curve Parameters*).

8. When the new parameters have been entered as desired, choose **OK**. The test is automatically recalculated and the new measurement results displayed.

➔ A message may appear stating that the plate data exists (Figure 10-11). Choose **Yes** to overwrite the existing plate data with the recalculated plate data, **No** to enter a new plate ID and save the recalculated plate data as a separate plate, or **Cancel** to cancel any changes and return to the measurement results of the test.

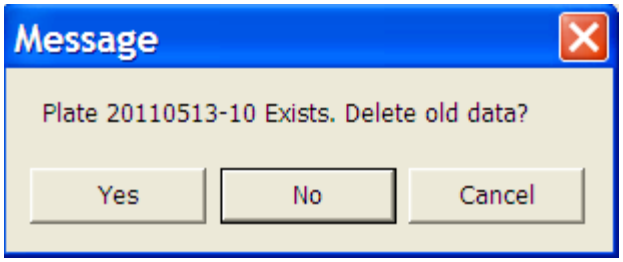


Figure 10-11: Plate data exists message

OR

Choose **Cancel** to cancel any changes and return to the original test measurement results.

10.4.2. Rejecting Outliers and Recalculating Results

Individual wells may be rejected as outliers. Tests can be recalculated with these outliers eliminated.

To reject outliers and recalculate test results:

1. In any measurement results tab that displays well data in plate format, click the well to reject.

2. From the Options menu, choose **Delete Well**.

   OR

   Right click the well to reject and select **Delete Well**. The selected well is labeled Rejected.

   ➔ To reject multiple wells simultaneously, click and drag over the wells to be rejected and choose **Delete Well** as described in step 2 above.

3. When all wells to be rejected have been marked as such, on the toolbar, choose **Calculate**. Message appears (Figure 10-12).

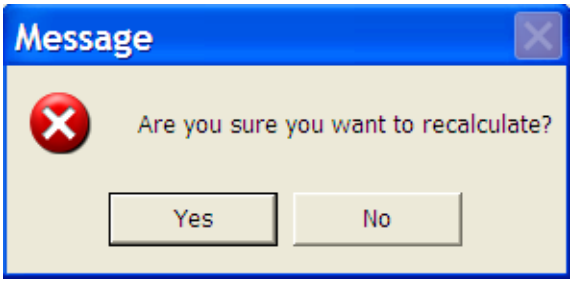


Figure 10-12: Message – Are you sure you want to recalculate?

4. Choose **Yes** to recalculate the test measurements. OR

5. Choose **No** to cancel the recalculation.

   ➔ A message appears stating that the plate data exists (Figure 10-11). Choose **Yes** to overwrite the existing plate data with the recalculated plate data, **No** to enter a new plate ID and save the recalculated plate data as a separate plate, or **Cancel** to cancel any changes and return to the original measurement results of the test.

10.4.3. Restoring Wells Rejected in Prior Calculations

Raw data from wells rejected as outliers is not included in recalculated measurements. However, this raw data has not been deleted from the database and may be restored in future calculations, if desired.

To restore a rejected well:

1. In any measurement results tab that displays well data in plate format, click the well to restore.

   ➔ Wells can be restored in any test measurement tab that displays well data in plate format. To easily find out which wells have been rejected, view the Plate Layout or Sample-ID display.

2. From the Options menu, choose **Restore Well**.

   OR

   Right-click the well to restore and choose **Restore Well**. The selected well is labeled Restored.

   ➔ To restore multiple wells simultaneously, click and drag over the wells to restore and choose **Restore Well** as described in step 2 above.

3. When all wells to be restored have been marked as such, on the toolbar, choose **Calculate**. Message appears (Figure 10-12).

4. Choose **Yes** to recalculate the test measurements. OR

5. Choose **No** to cancel the recalculation.

   ➔ A message may appear stating that the plate data exists (Figure 10-11). Choose **Yes** to overwrite the existing plate data with the recalculated plate data, **No** to enter a new plate ID and save the recalculated plate data as a separate plate, or **Cancel** to cancel any changes and return to the measurement results of the test.

10.5. Printing Measurement Results

A summary of the measurement results can be printed to any connected printer or to a file (for example, a PostScript® or Acrobat® PDF file).

The summary printout includes information about who performed the measurement, when it was performed, and when the results were printed. **Error! Reference source not found.** shows how the actual measurement results are laid out on the page. Results for each well are laid out according to the Legend.

➔ The measurement results that are included in the printout are selected in Options when configuring the test definition (refer to Section 8.2.5, *Configuring Test Options*).

To print out the measurement results summary:

1. From the Database menu, select **Print**. Print appears (Figure 10-13).

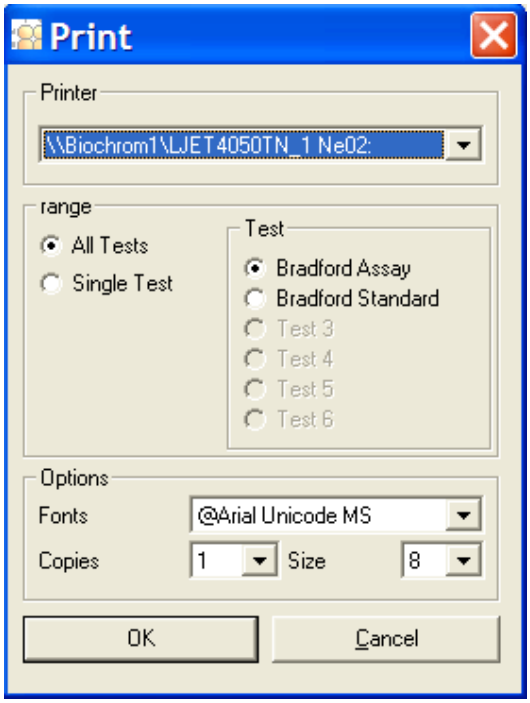


Figure 10-13: Print

2. In Printer, select the desired printer to use to print the measurement results summary. All printers that are properly installed and configured on the computer are listed.

3. In range, select whether to print **All Tests** or a **Single Test**.

➔Selecting All Tests is only applicable for Multitest assays.

4. In Test, select the Test to print summary results for.

5. In Options, select the desired **Font**, text **Size**, and number of **Copies**.

➔ Body text is printed in the selected Font and Size. Headlines and headings are printed using formatting defined by the ADAP software.

6. Choose **OK** to print the measurement results summary.

➔ If the selected printer is configured to print to a file, such as an Acrobat® PDF (*.pdf), a prompt asking for the filename appears. The printed file is saved to the ADAP software home directory.

10.6. Exporting Measurement Results to Other Applications

Measurement results can be exported to other applications for further analysis or manipulation. The ADAP software provides three methods to export test measurement data:

7. Data can be copied to the clipboard and pasted into another application such as a word processor (refer to Section 10.6.1, *Copying Measurement Results to Clipboard)*.

8. Data can be saved to a text file and then opened by or imported into another application (refer to Section 10.6.2, *Saving Measurement Results as Text Files*).

9. The entire test measurement database can be exported and opened in Microsoft® Access or a compatible database application (refer to Section 10.6.3, *Exporting the Database*).

10.6.1. Copying Measurement Results to Clipboard

The measurement results displayed in any tab can be copied to the clipboard. The data in the clipboard can then be pasted into any other application for storage or further analysis.

➔ For example, the clipboard data could be pasted into a Microsoft® Excel spreadsheet with formulas or macros already created such that some preliminary analysis is automatically performed once the data is pasted into the document.

To copy measurement results to the clipboard:

1. Select the desired results tab to copy to the clipboard.

   ➔ When copying the Raw Data tab, only the measurement results shown for the cycle are copied. To copy all raw data results, each cycle needs to be copied individually, or Copy all data into clipboard needs to be selected.

2. From the Database menu, choose **Copy displayed data into clipboard** to copy only the displayed results to the clipboard.

   OR 

   ➔Choosing this option will result in results that can be pasted as a matrix (identical to the plate layout).

Choose **Copy all data into clipboard** to copy all of the measurement results from the test to the clipboard.

3. Open or switch to the application where measurement results will be pasted.
4. Paste the measurement results into a new or existing file using the Paste command for the application.

➔ Most applications have a standard shortcut of CTRL+V assigned to the Paste command.

10.6.2. Saving Measurement Results as Text Files

Measurement results can be saved to text files which can be viewed in any text editor or imported into many statistical software packages or spreadsheet applications.

To save measurement results to a text file:

1. Select the desired results tab to save as a text file.

2. From the Database menu, choose **Save Actual Data** to save only the displayed results in the ADAP database.

   OR 

   From the Options menu, choose **Save as TXT file** to save all measurement results in one text file.

   OR 

   Select the desired command from the toolbar. Data will be saved in the ADAP program file.

➔ If the ADAP software is configured in Setup-System to automatically save measurement results as text files, these files may also be opened in a text editor or other application. Refer to Section 3.3, *Configuring System Settings* for information about configuring the ADAP software to automatically save measurement results as text files.

10.6.3. Exporting the Database

To preserve data integrity, all measurement results are stored in a database that can only be accessed by the ADAP software. However, the database can be exported in Microsoft® Access format and opened by Access or a compatible database application.

To export the database:

1. From the Database menu, choose **Export Database**. A copy of the database named PlateDataReplica.mdb is exported to the ADAP software default directory.

2. Choose **OK** when prompted to complete the export.

3. Open PlateDataReplica in Access or a compatible database application.

10.7. Storing Measurements in the Database

The ADAP software automatically stores raw data from all measured plates in a database. The data from any previously measured plate can be accessed from the Database menu.

The Database menu contains options to:

4. Load plate data from the database (refer to Section 10.7.1, *Loading or* Deleting Plate Data from the Database).

5. Save plate data to the database (refer to Section 10.7.2, *Saving Plate Data to the Database*).

6. Repair the database (refer to Section 10.7.3, *Repairing and Compressing the* Database).

7. Compress the database (refer to Section 10.7.3, *Repairing and Compressing the* Database).

10.7.1. Loading or Deleting Plate Data from the Database

To load or delete plate data from the database:

1. From the Database menu, select **Open Saved Plate**. Selection appears and displays a list of all the stored plates (Figure 10-14).

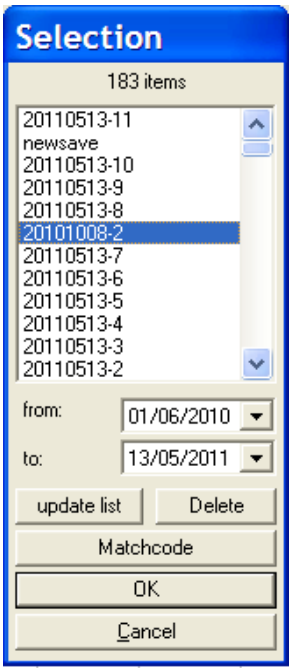


Figure 10-14: Selection – stored plates

2. Highlight the desired plate to load or delete.

➔ To narrow the list by date, select dates in from and to, and choose **update list**.

To search for a specific plate ID by characters in the Plate ID name, choose **Matchcode** (Using Matchcode to Search for Test Definitions and Saved Plates).

3. Choose **OK** to load the plate.

   OR

   Double-click the desired plate. The plate data appears in the main window.

   OR

   Choose **Delete** to remove the plate from the database.

10.7.2. Saving Plate Data to the Database

Raw data of measured plates are automatically saved to the database. Plate data can also be saved to the database manually or to a text file outside the database.

To save plate data to the database:

From the Database menu, choose **Save Actual Data**. The plate data is saved to the database.

To save plate data as a text file separate from the database:

From the Database menu, choose **Save as TXT-File**. The plate data is saved as a text file that is separate from the database and can be opened by many applications such as text editors, word processors, and spreadsheets.

10.7.3. Repairing and Compressing the Database

When a plate or test is removed from the database, only the data is deleted from the fields. The empty data fields remain, which increases the size of the database, which may slow down access. Periodically, it is recommended to remove empty fields using Compress Database. Repair Database removes unassigned entries from the database before compressing it.

To repair or compress the database:

From the Database menu, choose **Repair Database** to remove unassigned entries and empty fields. The database is repaired.

OR

From the Database menu, select **Compress Database** to remove empty fields. The database is compressed.

Index

*System Administrator System Administrator PasswordPasswordPasswordUsing Microsoft Windows®Using Microsoft Windows®Exporting Test Definitions and Measurement ResultsUsing Microsoft Windows®Firmware, EEPROM Data, and Standalone SoftwareUsing Microsoft Windows®Using Microsoft Windows®Using Microsoft Windows®*Using Microsoft Windows®*Using Microsoft Windows®Search for Test Definitions and Saved PlatesExporting Test Definitions and Measurement ResultsUsing Microsoft Windows®Measurement PositionsSaving Measurement ResultsMeasurement PositionsMeasurement PositionsMeasurement PositionsMeasurement PositionsResultsMatchcode to Search for Saved Measurement ResultsMatchcode to Search for Saved Measurement ResultsEndpoint Photometric Measurement ResultsPhotometric Measurement ResultsArea Scan Measurement ResultsLinear Scan Measurement Raw DataScan Curve InfoScan Curve InfoCurveCurve Fitting Methods to Smooth CurvesArea Scan Measurement Raw DataSearch for Test Definitions and Saved PlatesMultiplication Factors for WellsEvaluate ControlsScan MeasurementArea Scan MeasurementSearch for Test Definitions and Saved PlatesSearch for Test Definitions and Saved PlatesSearch for Test Definitions and Saved PlatesSearch for Test Definitions and Saved PlatesSearch for Test Definitions and Saved PlatesDatabaseGraphsArea Scan Measurement Raw DataScan Curve InfoResultsStandard CurvesTest Status InformationSearch for Test Definitions and Saved PlatesMultiplication Factors for WellsResultsDeleting Plate Data from the DatabaseDatabaseDatabaseSearch for Test Definitions and Saved Plates*

System Administrator PasswordPassword*Search for Test Definitions and Saved Plates*Measurement Positions*Measurement PositionsMeasurement PositionsMeasurement Positions*ResultsMatchcode to Search for Saved Measurement Results*Endpoint Photometric Measurement ResultsArea Scan Measurement Results*Linear Scan Measurement Raw Data*Scan Curve Info*Dilution Factors for WellsEvaluation Controls*Search for Test Definitions and Saved PlatesSearch for Test Definitions and Saved PlatesSearch for Test Definitions and Saved PlatesSearch for Test Definitions and Saved Plates*Graphs*Results*Standard CurvesResultsDeleting Plate Data from the Database*DatabaseDatabase*

Search for Test Definitions and Saved Plates