

Optimage User Tutorial

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Chapter 1

Tutorial

During this tutorial you can learn how to use Optimage.

Profile

- Create an new Profile
- Edit an existing Profile

Images

- Using the image file dialog
- Using the build in Dicom Viewer

Measurements

- How to perform a measurement
- What to do with the results

Reports

- Create a "Daily Report"
- Create a "Time Report"

Statistics

- How to view the results and export them.
- How to use the Statistic.

Andreas.Jahnen@tudor.lu 2008/01/17 16:03

1.1 Create an new Profile

The Profile is the central container to store measurement related parameters. For example in a Profile the used Phantom, Reference and Tolerance values, etc. are stored.

To create a new Profile for a specific Module:

1. Select the right Module.
2. Press the “Select Profile” button on the Module tab.
3. On the “select Profile” dialogue select the “New Profile” button. Be sure you selected the right Institution.
4. Follow the Profile Wizard and select if you want to create a Profile or a Procedure.
5. Give a good and significant name, you do not need to mention that the profile is for mammography or the institution.
6. The device settings page can be filled automatically by selecting a sufficient phantom image.

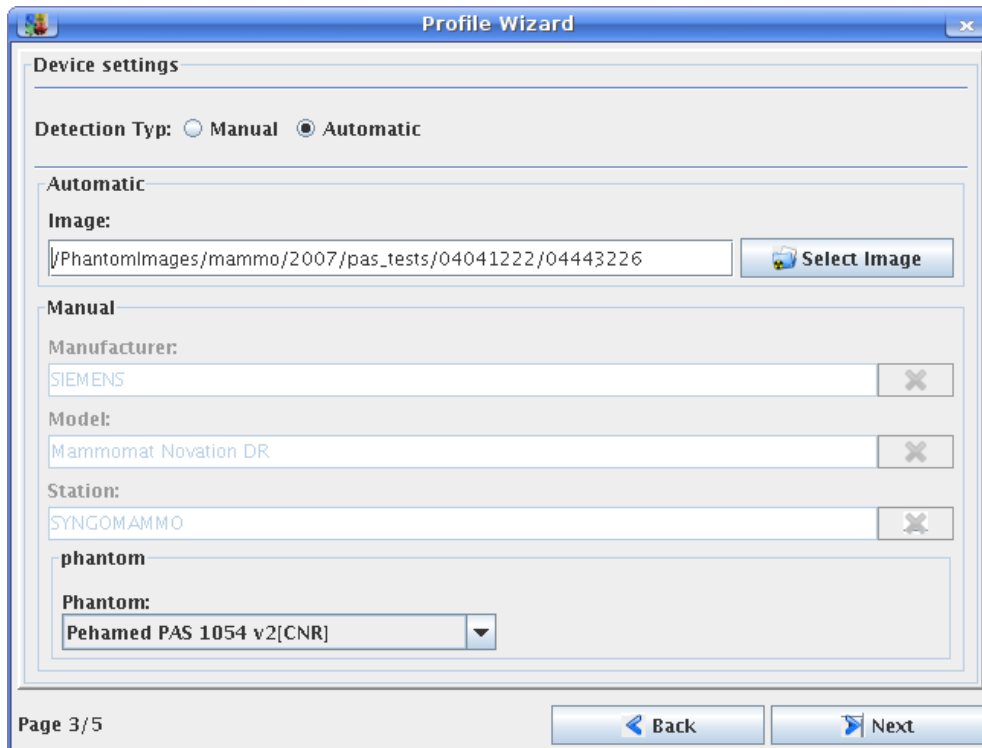


Figure 1.1: Automatic filling of device settings

7. Select the right Phantom.
8. The additional checked Parameters are also filled automatically when you selected an image in the previous step. Parameters can be escaped from being checked during the Verification Process by writing “not checked” or “0.0” in the according field.
9. In the fifth step you can edit the Reference and Tolerance Values. The suggested values are not based on a legal base, you have to check your country specific requirements for setting up correct reference and tolerance values. You can change these also later.
10. In a last step you can edit the visibility of the results. That has effects to the result view after a measurement was performed or reloaded. Also the dropbox for the graphical statistics will only show parameters that are set to visible.

1.2 Edit an existing Profile

To edit the reference and tolerance values of an existing profile open the profile selection dialogue and select the edit button. The appearing view gives you the opportunity to change the profiles' name, to set it inactive by archiving it and to change all available reference and tolerance values.

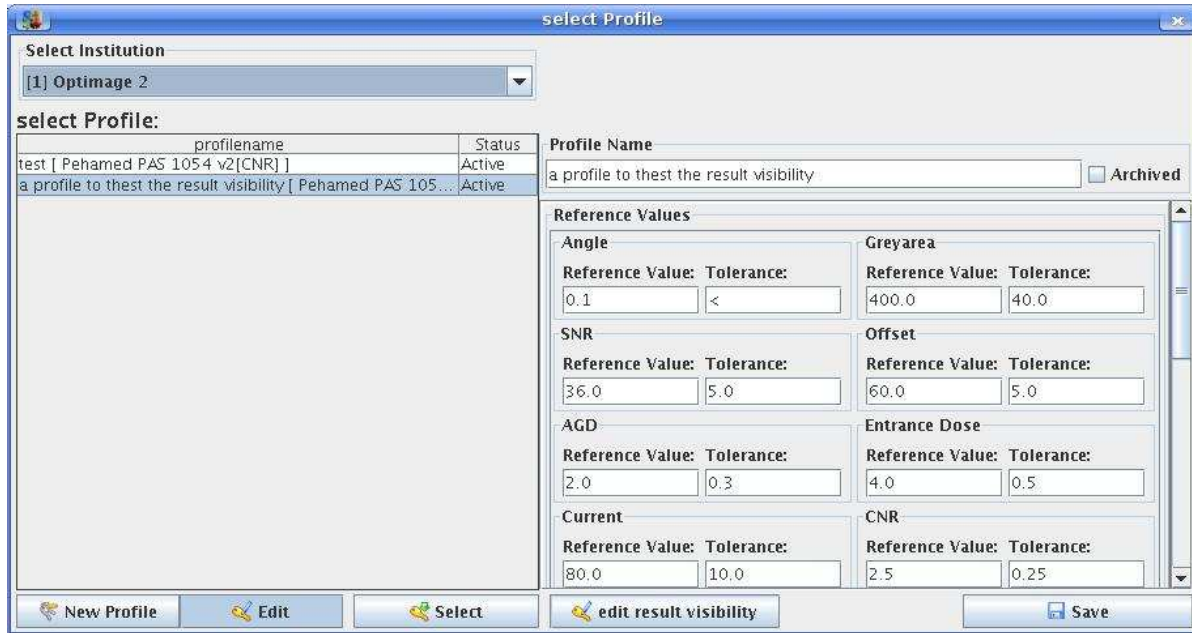


Figure 1.2: Profile editing dialogue

To enter the visibility of results edit panel, press the dedicated button. There you can edit the visibility of results in reports and result views. You only have to check (visible) or un-check (hidden) the according checkbox. A change of visibility is instantly visualised by the change of the icon.

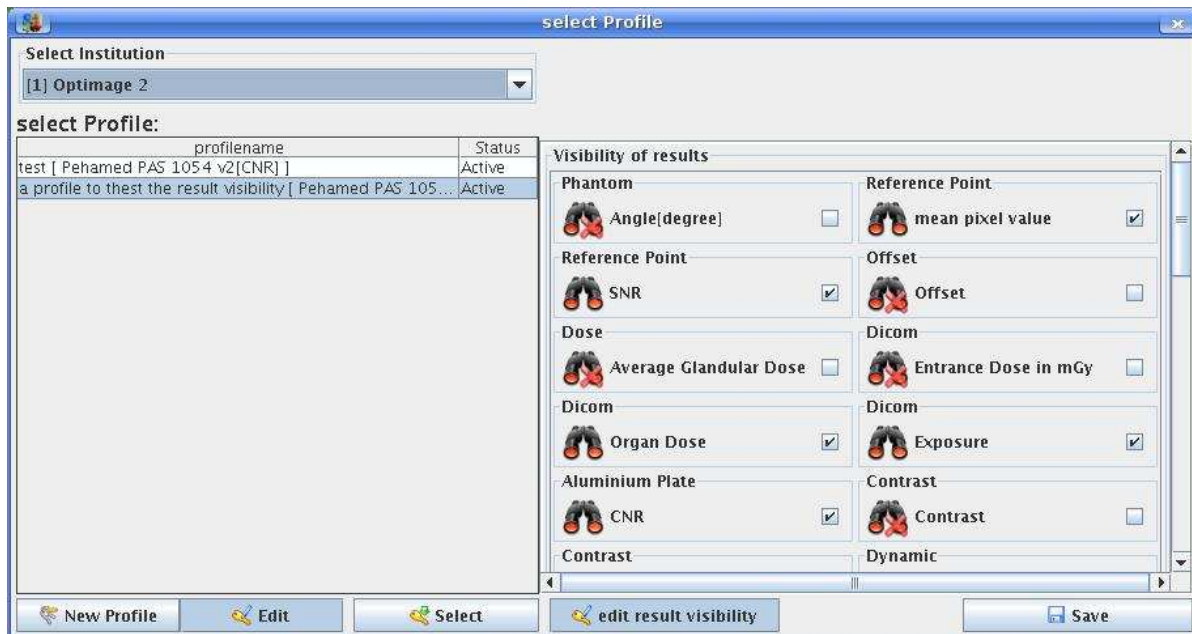


Figure 1.3: Result visibility editing dialogue

Be sure to save when done.

1.3 Using the image file dialog

1.3.1 General issues

The filechooser dialogue is separated in different possible ways to access the image files. There are opportunities to access them directly from the file system, different arranged Dicom hierarchies (as Dicom CD, Dicom store, Dicom Query or Dicomdir). There is also a possibility to have a filtered view to do a recursive directory search. Which allows you to use Dicom Tags or a combination of Tags as filter.

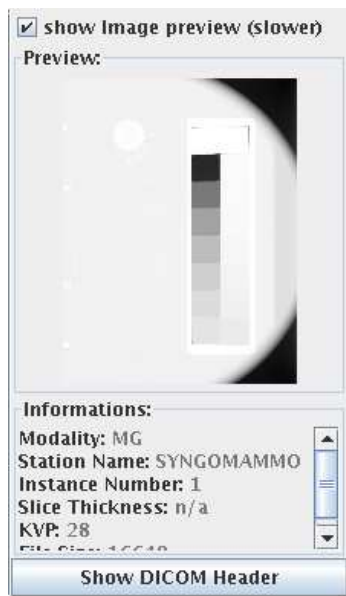


Figure 1.4: The image info section

Every view has the possibility to send the selected items to one of a predefined list of Dicom nodes. Therefore every view has a “Send to PACS¹” button, only the view for the direct access to the file system has a manage tab to assume this task.

Nearly every dialogue provides an image preview (see). To reduce waiting time the image preview can be disabled by unchecking the checkbox ahead of the image. The preview is followed by an information frame which is showing selective Dicom Header informations. The sort order and shown header can be configured in the settings dialogue. Finally the “Show DICOM Header” button gives you the possibility to browse and search within the Dicom Header of the currently selected image.

1.3.2 The Dicom Store

The Dicom Store section has direct access to the build in Dicom Store of Optimage. In there all images from already processed images are stored. But it also can receive and store images from other Dicom nodes.

The store is sorting the images in an hierarchical structure. Sorted by Patient name, studies, series and images. By choosing a patient the dialogue automatically selects the first image of the newest study of the patient. In order to transfer a complete serie or study or the complete patient to an other Dicom node, deselect the item in the next lower hierarchies.

1.3.3 The Dicom Query

The Dicom query view provides patient search on connected PACS¹. In the settings for the Dicom query you can define a Query String, for example if your default quality control patient is called “John Doe”. You can also select a modality from the combobox to reduce the database query output.

PACS¹

¹Picture Archiving and Communication System

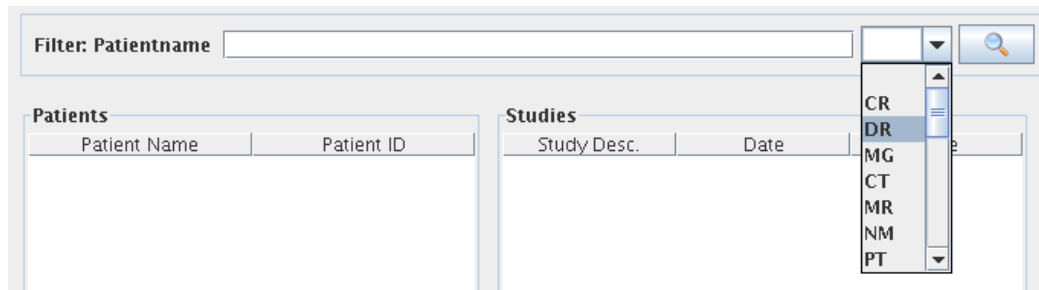


Figure 1.5: Query a PACS by Patient name

1.3.4 The Dicom CD

The Dicom CD view is automatically searching for a DicomDIR file on the root level of every device. If this fails first try the reload button. Alternatively you can specify a folder where a DicomDIR file can be found. The other usage is equal to the of the Dicom Store.

1.3.5 The DicomDIR

The DicomDIR view is equal to the Dicom CD, expect that this view is not scanning automatically. You can setup this view to a specific folder or select one by hand. This dialogue is very helpful to search through copies of Dicom CDs or Backup copies of your Dicom Store.

1.3.6 The Image Selector



Figure 1.6: adding a new filter

The image selector provides us the possibility to search in a large number of images by filtering them with Dicom Tags. You can add or delete a Dicom Tag by clicking with the right mouse button in the Filter Tags area (see). Afterwards you select a folder to inspect and after a short search time you get the results in the already known Dicom structure. You can open one of the resulting images or send them to the local Dicom Store. You can also send a selection of the result to a predefined other Dicom node by clicking on "send to PACS¹".

1.4 Using the build in Dicom Viewer

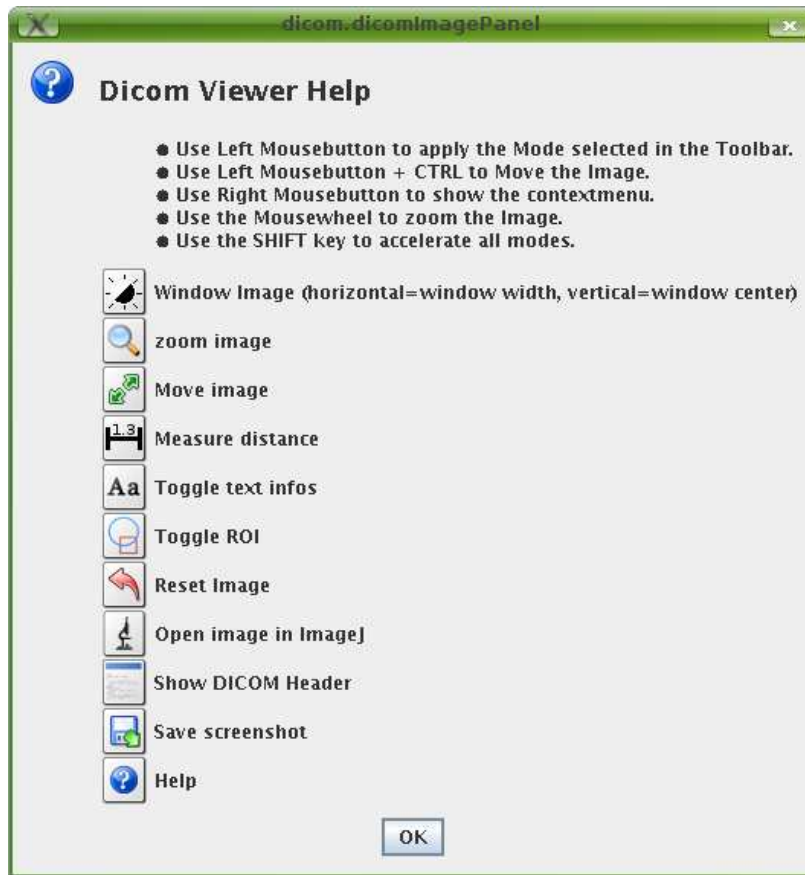


Figure 1.7: Dicom Viewer Help

Optimage also contains an embedded Version of the Tudor Dicom Viewer. You can access it by double clicking on the image areas of the Control Center or the Result View. It provides basic functionality, like windowing, magnification or distance measurements. You can use it to make screenshots out of your images. The viewer also provides the possibility to access ImageJ and examine the Dicom Header.

You can access a build in help by utilising the question mark button.

1.5 How to perform a measurement

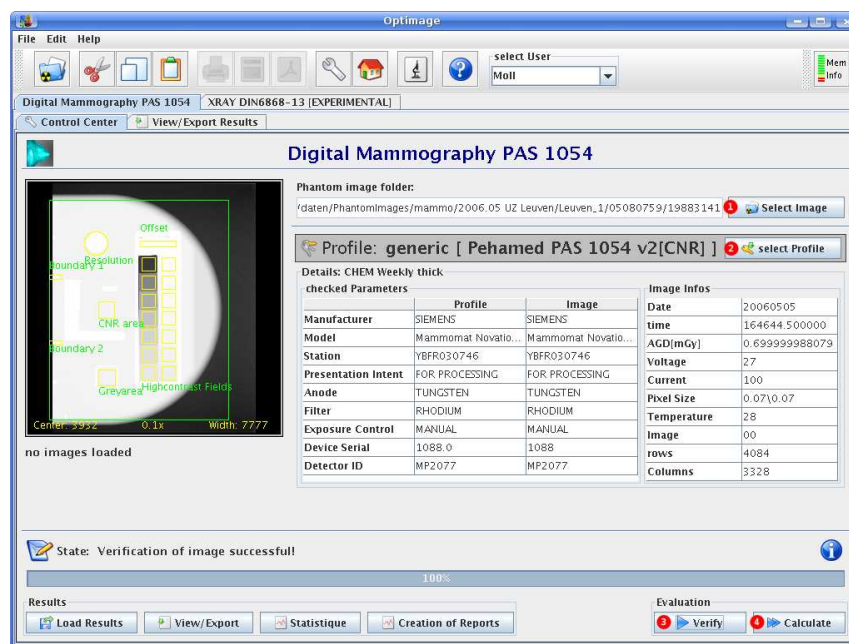


Figure 1.8: A measurement in four step

A measurement is normally done in four steps.

1. Open an image you want to measure.
2. Select a profile. This is done automatically by Optimage. Some time if there are more than one profile for a machine you may correct the selection.
3. Press the verify button to start testing if the profile matches the image and to extract the structure of the image.
4. After a successful verification, you can start the calculation by pressing the associated button.

When all these steps are done correctly the result page should appear in an appropriate time.

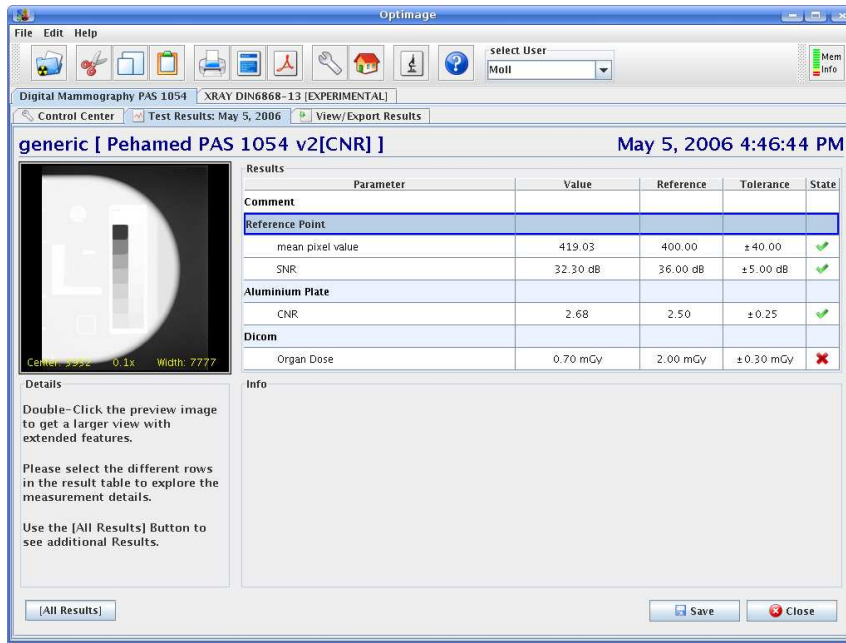



Figure 1.9: The result page

1.6 What to do with the results



Results are not stored automatically!

To prevent data loss, save the results direct after a measurement.

Always you save a result a comment dialogue opens. Use this to document inconsistency or other exceptional cases.

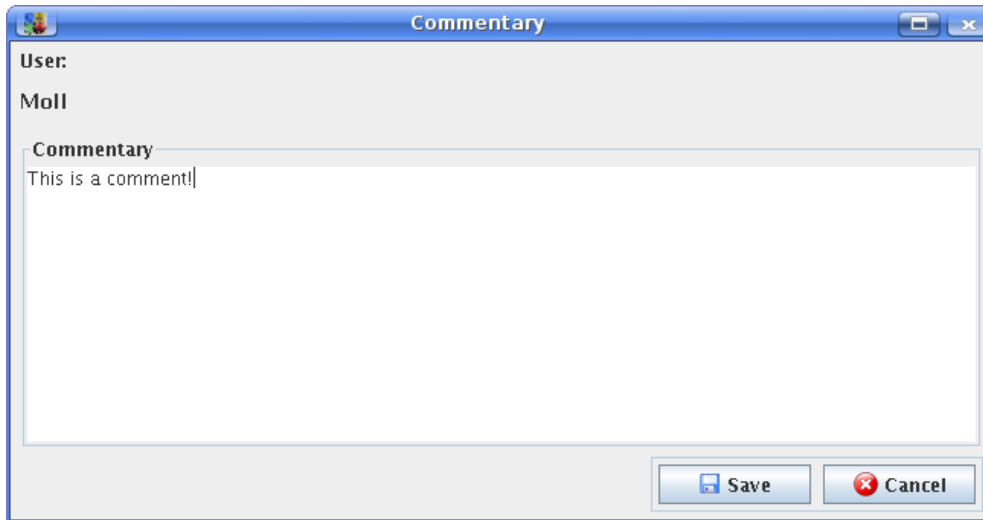


Figure 1.10: The comment dialogue

1.7 How to create a daily Report

There are two ways to generate a report of a “one day” result. You print or store it as pdf directly after the calculation. Or you use the “Load Results” button, from the modules control centre, and reload a result. The buttons to access the daily report are located in the toolbar (see).

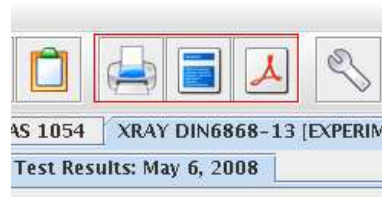


Figure 1.11: The different possibilities to create a report

During the creation of the report you can choose the language the report should have. For the most results there are at least report templates in French, German and English. Beside this you can add a comment which is printed on the report. Further you the user who made the test is taken from the select user combobox on the main frame of Optimage.

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Figure 1.12: A report

1.8 Create a Time Report

Beside the normal report printed or stored after an evaluation which just contains one result, you have the possibility to print reports over a user specified period. Therefore you only have to select a profile for the Institution you want to concentrate. From thereon the procedure is the same as for daily reports.

1.9 How to view the results and export them

Optimage provides the ability to show a table of the results collected for each existing profile. In this table all the visible results are presented. Beside this informations there is a second table calculation basic statistic functions (Mean and 2 Sigma).

The usage of this function is relatively easy. You only have to choose the Institution and Profile you want from the corresponding comboboxes and if needed limit the time period by editing the start and end date. If have to export periodically a lot of data the “freeze start Date” option may be helpful for you to disable Optimage seeking for the earliest date of every chosen profile. You can also export the result table to comma separated value (.csv) or Excel

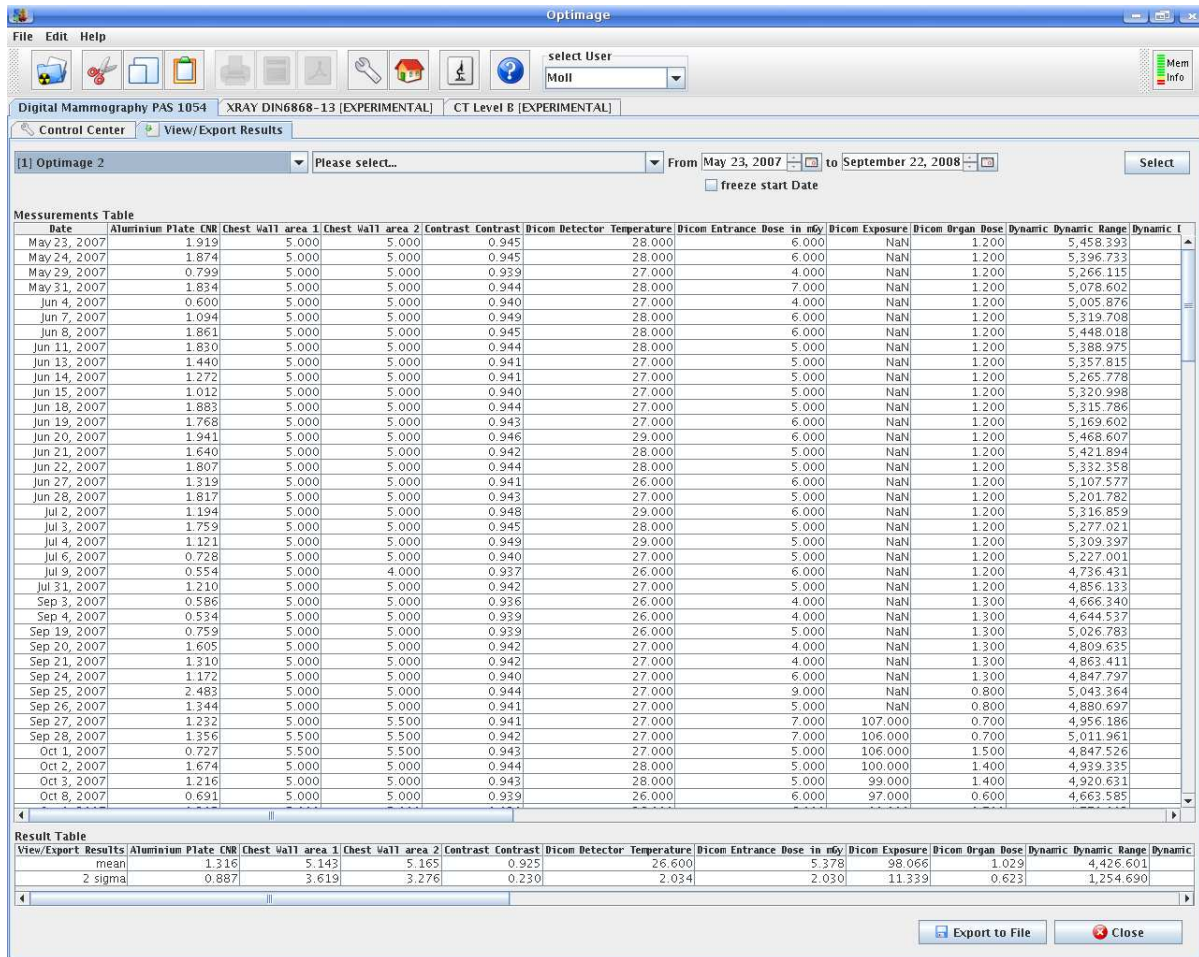


Figure 1.13: The results are also accessible in tables

compatible spreadsheets by clicking the “Export to file” button.

1.10 How to use the Statistic

The Statistic Module of Optimage provides a graphical illustration of the collected data. You can switch between two views. In the normal view (see), which is loaded by default you can add time series to a line plot. You

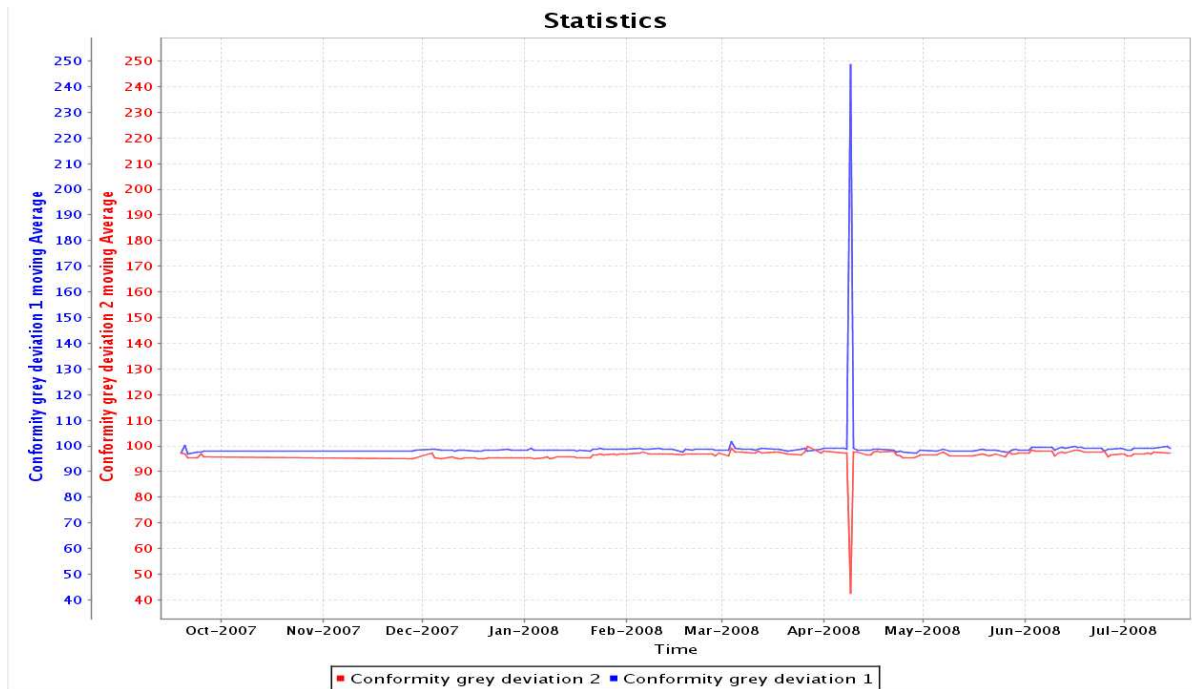


Figure 1.14: The default statistic view of Optimage

can there combine different results to find dependencies of just to compare results. The data representation in the graph can be switched between an averaged plot or the raw data. To limit the visible data range you can modify the visible time period.

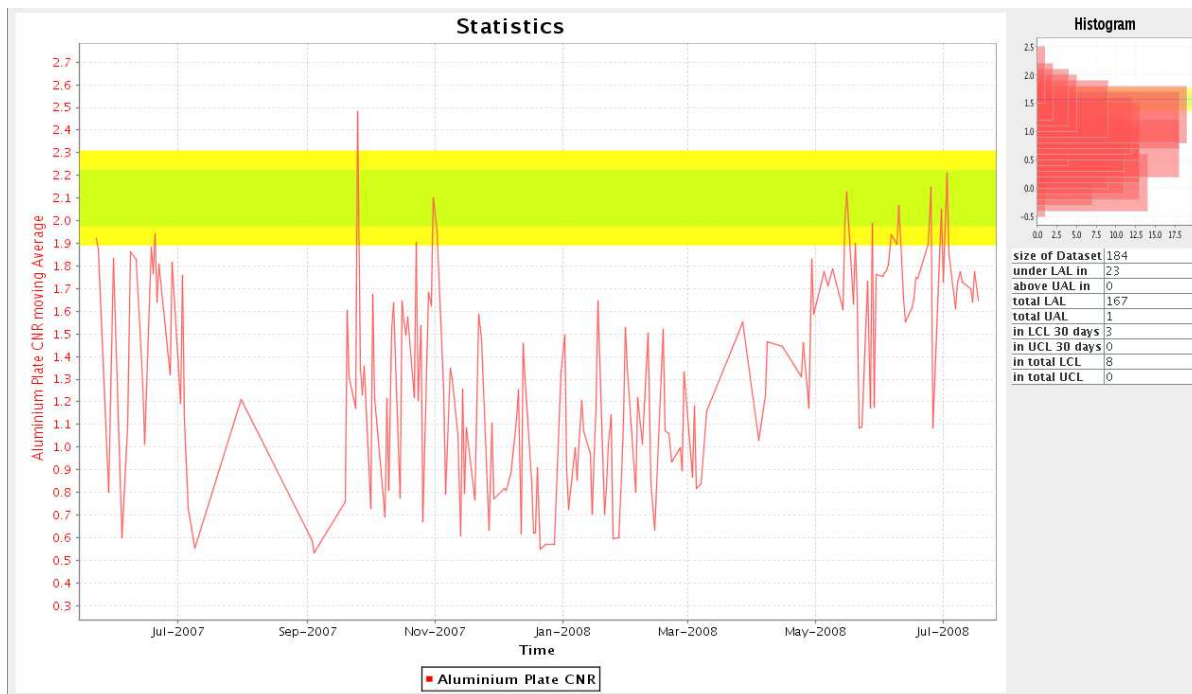


Figure 1.15: The Histogram view

The second view (see) you can only plot one result but you are supported with an additional Histogram an some information about reference value violations. This includes an analysis of the different alarm (AL) and control lines

(CL) which are separated in upper and lower regions. The control lines are the green one and are more restrictive than the used reference values. The yellow borders represent the reference values of the profile.