

FlexoIAS™ -II

Flexographic Plate Measurement System

User's Guide

© 2012 Quality Engineering Associates, Inc.
All rights reserved
Revision 3.1, October, 2012
Covers software version 3.0 and later

Quality Engineering Associates (QEA), Inc.
755 Middlesex Turnpike, Unit 4
Billerica, MA 01821 USA
Tel: (978) 528-2034
Fax: (978) 528-2033
Email: support@qea.com
URL: www.qea.com

QEA is a registered trademark of Quality Engineering Associates, Inc. FlexoIAS is a trademark of Quality Engineering Associates, Inc.

Microsoft and Windows are registered trademarks of Microsoft Corporation.

The content of this manual is subject to change without notice. No part of this manual may be reproduced in any form without explicit written permission from QEA.

Table of Contents

Software License Agreement	5
Limited Hardware Warranty	8
System Overview	14
The FlexoIAS-II Family of Systems	10
Analysis Functions.....	10
Calibration.....	12
The Light Box	16
The Software	17
Making Measurements.....	21
Software Reference Guide.....	25
File Menu	26
Open Command	26
Save Command	26
Save As Command.....	26
Save Image With Overlays Command.....	26
Save Results Command	27
Save All Detail Records Command	27
Properties Command.....	27
Default Directories Command	27
Data Logging Command.....	27
Preview Command.....	29
Density/Color Setup Command (Calibration Settings).....	29
Print Command	30
Print Table Command.....	30
Print Setup Command.....	30
Exit Command	30
Edit Menu.....	31
Copy Command	31
Copy Table Command	31
Select All Command	31
70% ROI Command.....	31
Define ROI Command	32
Reset Sub-ROIs.....	32
Flip Horizontal Command	32
Flip Vertical Command.....	32
Rotate 90° CW	32
Rotate 90° CCW	32
Rotate 180°	32
View Menu.....	33
Sequence Design View	33
Toolbar Command	33
Status Bar Command	34

Split Command	34
Image Pane Only	34
Results Pane Only	35
Restore Split Command	35
Results Display Command.....	35
Select Font Command.....	35
Channels Command.....	36
Overlays Command	36
Zoom Command	37
Dimension Mode Command.....	37
Record Command	38
Graph Command.....	39
Profile Command.....	39
Histogram Command.....	39
Color Space Command	39
Options Menu.....	40
Add/Remove Tools Command	40
Tools Menu	41
FlexoDot Tool.....	41
HiliteDot Tool.....	45
Area Tool	49
Setup Menu	51
New Plate Settings.....	51
Load Settings.....	51
Calibration Tolerances.....	51
Calibrate.....	51
Verify.....	51
Process Control.....	51
Help Menu	52
About FlexoIAS-II.....	52
QEA Customer Support.....	53
Questions?.....	53
Returning Materials	53
Replacement Parts.....	53
Appendices.....	54
Appendix A: Sequence Programming Guide.....	54
I. Programming a Sequence	54
II. Running a Sequence.....	68
Appendix B: Data Reporting Add-in	70
Report Generation.....	72
How it Works.....	71
Template Design	71
Specifying the fields for the query.....	72
Sorting the returned records.....	72
Adding filters to the query	73
Using results from one query to filter a second query	73

Presentation of results 74
Appendix C: Engineer’s Standard Operating Procedure 75
Appendix D: Operator’s Standard Operating Procedure 79

SOFTWARE LICENSE AGREEMENT

This license agreement is between Quality Engineering Associates, Inc. (“QEA”), and the customer who has procured the licensed software for use as an end user (“Customer”). QEA provides FlexoIAS-IIPC Flexographic Plate Measurement System control software in object code, including documentation, updates, revisions and other related material (collectively referred to as the “Software”) under the following terms and conditions. Please read the terms and conditions of this License carefully. BY OPENING THE SOFTWARE PACKAGE OR USING THE SOFTWARE DELIVERED WITH THIS AGREEMENT YOU INDICATE YOUR AGREEMENT WITH THE TERMS AND CONDITIONS OF THIS LICENSE.

1. License. QEA hereby grants to the Customer and the Customer hereby accepts a personal, non-exclusive, non-transferable license to use the Software solely for Customer's internal use on a number of computers equal to the number of licenses purchased, as set forth on QEA's invoice. The Customer may not assign, sub-license or transfer the Software to any third party without the prior written consent of QEA except that the Software may be transferred as part of the FlexoIAS-IIPC Flexographic Plate Measurement System (“System”), provided that the Customer does not retain any copies of the Software and the recipient of the System agrees in writing to the terms of this license.

2. Term. The term of this License shall commence upon shipment of the Software to the Customer and continue until terminated. This License shall terminate automatically if the Customer is more than thirty (30) days in default of payment in full, or sells, disposes of, or otherwise ceases to possess the Software or transfers the Software other than with the prior written agreement of QEA or as otherwise provided herein.

3. Permitted Uses and Copies. The Software, excluding Documentation, may be copied only for archival and back-up purposes and such copies must include QEA's copyright and proprietary right notices on the Software. Documentation may not be copied. The Customer is licensed to read the diskette(s) from the medium into the memory of a computer solely for purposes of executing the Software. Installation on a network server for the sole purpose of distribution to one or more other computer(s) shall not constitute “use,” however the access to the Software on such server by individual computers shall constitute “use” for which a license is required. The Software shall not be rented, leased, sold, translated, modified, altered, adapted, used to create derivative works, reverse compiled, disassembled or otherwise reverse engineered.

4. Warranty. QEA warrants that the Software will conform to QEA's prevailing published specifications in effect on the date of delivery. The Customer must notify QEA in writing of any defect within the warranty period for such Software licensed as listed on the quotation or invoice (“Warranty Period”). The warranty services described herein are contingent upon the proper use of the Software and do not cover Software which has been modified without QEA's written approval or which has been subjected to unusual physical or electrical stress.

EXCEPT FOR THE WARRANTIES SET FORTH IN THIS SECTION QEA DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. QEA DOES NOT WARRANT THAT THE OPERATION OF THE SOFTWARE IS INTERRUPTION OR ERROR FREE.

5. Remedies and Limitation of Liability. The Customer's exclusive remedy and QEA's entire liability for breach of warranty for Software supplied under this License shall be for QEA to use reasonable efforts to remedy any failure of the Software to conform to such specifications when such failure is reported to QEA within the Warranty Period, or at QEA's option, refund the purchase price.

IN NO EVENT SHALL QEA BE LIABLE TO THE CUSTOMER FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES ARISING FROM THE LOSS OF USE, DATA, OR PROFITS. QEA SHALL NOT BE LIABLE FOR DAMAGES FROM ANY DEFECT IN SOFTWARE, CLAIMS BY THIRD PARTIES OR ANY OTHER CLAIM, WHETHER IN TORT, CONTRACT, NEGLIGENCE, OR OTHERWISE ARISING MORE THAN ONE (1) YEAR PRIOR TO INSTITUTION OF A LEGAL PROCEEDING THEREON.

6. General. This License shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, and every state district court or United States district court in the Commonwealth of Massachusetts shall be competent courts of jurisdiction.

7. Customer Acceptance. The Customer acknowledges that it has read this License, understands and accepts it, and agrees to be bound by its terms and conditions.

LIMITED HARDWARE WARRANTY

Warranty. QEA warrants all Products sold to be free from defects in materials and workmanship and to conform to QEA's published specifications for the Warranty Period stated in the Quotation. QEA does not warrant peripheral products not purchased from QEA, but used in conjunction with the Products. Results of ordinary wear and tear, improper operation or maintenance, operating without a power surge protector, or use of corrosive or abrasive materials shall not be considered a defect in material or workmanship. Liability under this warranty shall be limited to the repair or replacement at QEA's plant of any defective Product, the choice between repair and replacement being at QEA's option. If Purchaser encounters a suspected defect or non-conformity in the Product, Purchaser shall so notify QEA, which may request return of the Product (with return shipping at Purchaser's expense) to QEA's plant for inspection. Any returns must be accompanied by a return material authorization number issued by QEA. Upon the repair or replacement of a defective part, QEA's warranty shall continue for the repaired or replaced part for the remainder of the Warranty Period for the original part, except that no repaired or replaced part shall carry a warranty of less than 30 days. Consumables such as light bulbs and test targets on paper are excluded from QEA warranty.

Other exclusions from this warranty include any loss, damage and/or instrument malfunction resulting from:

- Shipping
- Faulty storage or maintenance
- Accident, breakage, abuse, alteration, contamination or misuse
- Inadequate or unstable utility service or power

Any disassembly of the Product or its components, or replacement of original components by the Purchaser will render the warranty void, unless explicit instructions for disassembly are given by QEA.

For items, such as PCs, monitors and scanners, which may be supplied by QEA but are not manufactured by QEA, the warranty of the manufacturer will be transferred to the Purchaser.

The replacement cost for any lost software security key is the cost of one license.

Limitation of Liability. THE WARRANTY DESCRIBED ABOVE IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

System Overview

FlexoIAS-II brings to the shop floor a sophisticated tool previously available only in the laboratory. The simplicity of making FlexoIAS-II measurements means that objective plate quality assessment can now be done quickly, easily and reliably. This lowers costs by catching errors earlier in the workflow, reducing down-time and waste.

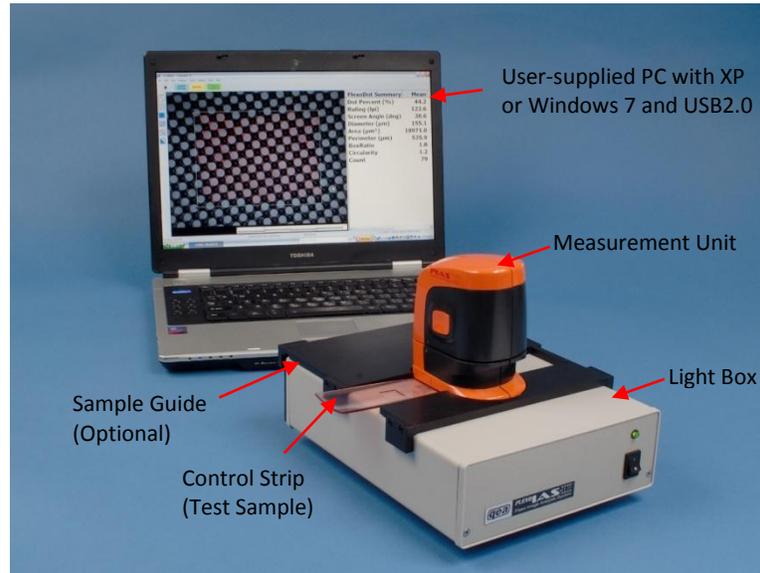


Fig. 1 FlexoIAS-II Flexographic Plate Measurement System

The FlexoIAS-II system consists of hardware, control and analysis software and documentation as follows:

- 1) Hardware:
 - a. Measurement unit and special transmission light box (Figs. 1 above and 2b below)
 - b. *Transmission Reference Standard* (Fig. 7 below)
- 2) Software and PC Requirements:
 - a. IASLab™ control software for interactive analysis of flexo plates
 - b. PC Requirements for running the control software:
 - customer-supplied PC with Windows XP or Windows 7
 - USB2.0 interface for the Measurement unit
 - Microsoft Access database (for systems with process control option)
 - Excel is recommended but optional
- 3) Documentation:
 - a. Quick Start Guide

b. User's Guide



Fig. 2a. FlexoIAS-II Measurement Unit and Light Box with test sample



Fig. 2b. Alignment Template for Measurement Unit



Fig. 3a FlexoIAS-II with optional Guide for Control Strip and Measurement Unit



Fig. 3b. Optional Guide for Control Strip and Measurement Unit

The FlexoIAS-II Family of Systems

The FlexoIAS-II families of systems are QEA instruments designed for flexographic plate and print quality analysis. They include the FlexoIAS-II, FlexoIAS-IIP, FlexoIAS-IIPC, FlexoIAS-IIPCP and FlexoIAS-IIPC2P. For details on standard operation of your specific FlexoIAS-II system, refer to Appendices C and D, *Engineer's Standard Operating Procedure* and *Operator's Standard Operating Procedure*, respectively.

The FlexoIAS-II and FlexoIAS-IIPC are used exclusively for analyzing flexo plates, while the FlexoIAS-IIP and FlexoIAS-IIPCP also have print measurement capabilities.

The FlexoIAS-II and FlexoIAS-IIP2 are designed for *interactive analysis* only (Figure 4a). In interactive mode, the operator selects a region of interest (ROI) and clicks one of the analysis icons on the tool bar. The analysis results are displayed almost instantaneously. Results are often exported to other applications, such as Excel, for further analysis and reporting.

The FlexoIAS-IIPC and FlexoIAS-IIPCP include a *Process Control* mode in which the user defines *measurement sequences* for automated processing. In process control mode, the operator is guided through the analysis sequentially and the measurement results are logged into a Microsoft Access database along with all the relevant details, such as date and time of test, plate supplier, plate type and operator, information critical for process control and quality management applications.

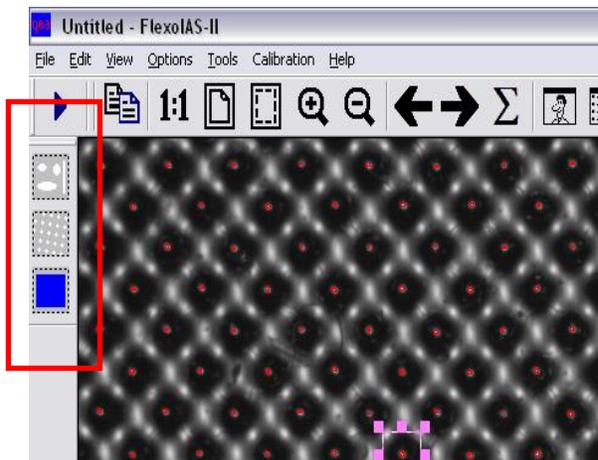


Fig. 4a Interactive Tools (FlexoIAS-II and FlexoIAS-IIP)



Fig. 4b Process Control (Programmed Sequence Measurement) Tools (FlexoIAS-IIPC and FlexoIAS-IIPCP only)

Analysis Functions

FlexoIAS-II systems are designed for ease of use. Sophisticated algorithms are built in to enable “one-click” analysis of dot and halftone attributes throughout most of the tonal range. One click of the FlexoDot tool shown in Fig. 5, and the analysis is done. For

highlight dots, the HiliteDot tool includes a spatial filter to analyze even difficult digital plates containing small dots, as shown in Fig. 6.

With the FlexoIAS-II, a user can easily obtain Dot% and Line Screen (lpi or lpcm) to assess flexo plate quality. Other quality attributes such as dot size (diameter and area), box ratio (aspect ratio), perimeter, circularity (edge roughness), screen angle, and dot locations can also be analyzed.

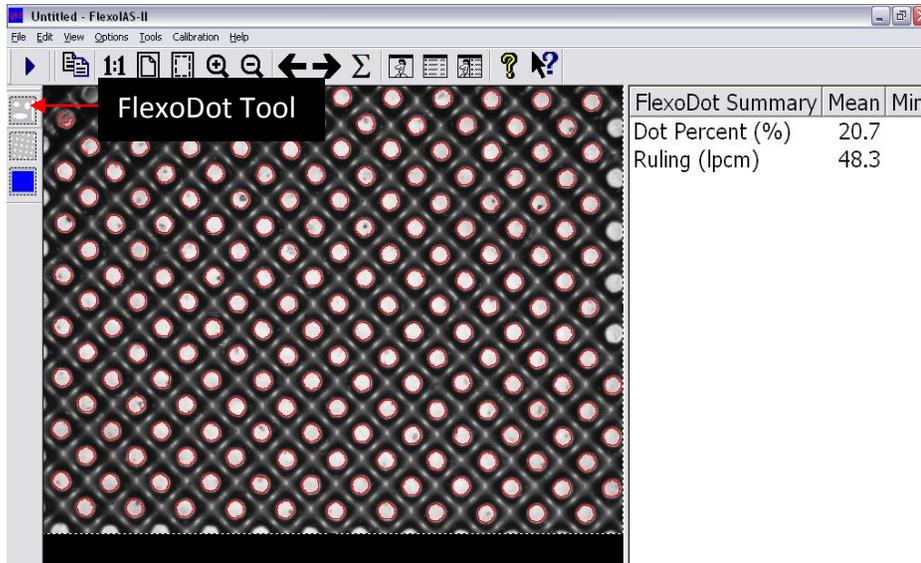


Fig. 5 FlexoDot Tool for analysis throughout most of the tonal range

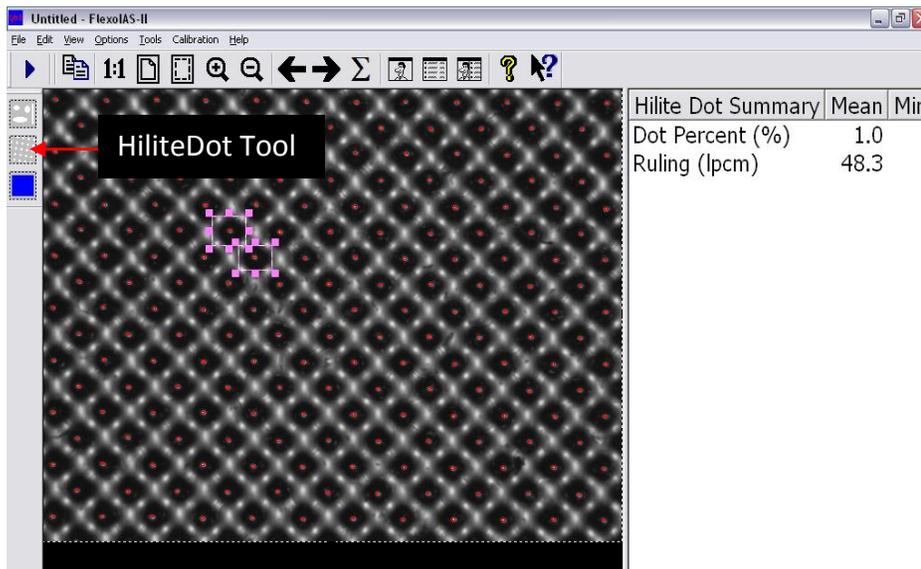


Fig. 6. HiliteDot Tool for measurement of very small dots.

Calibration

A special *Transmission Reference Standard*, shown in Fig. 7 below, and an automated calibration procedure included with the FlexoIAS-II system enable consistent, repeatable measurements, independent of plate type, thickness or color.



Fig. 7 *Transmission Reference Standard* for system calibration and performance verification

The Measurement Unit

The FlexoIAS-II system has three main components, as shown in Figs. 8 and 9 below:

- a high performance digital camera module
- a high-resolution optics module
- an external light box for transmissive measurements of flexographic plates

The camera module fits together with the optics module to form the FlexoIAS-II measurement unit.

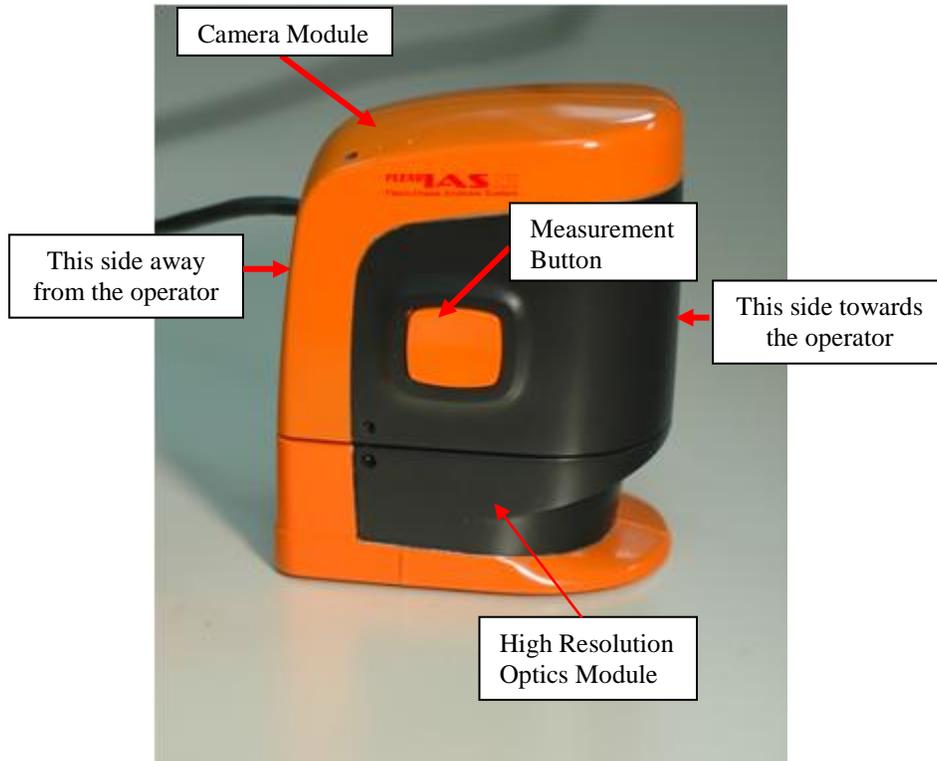


Figure 8: Camera and high resolution optics modules

There are two buttons on the FlexoIAS-II camera module. When the software is running, the button on the left side (visible above) of the module activates and deactivates camera preview mode. When the camera is in preview mode, the image pane of the user interface shows a live video image. When preview mode is turned off, the interface shows a static “snapshot”. Preview mode can also be toggled on and off by clicking the preview  icon at the upper left of the screen.

The button on the right side of the module (not visible above) is not used for interactive measurements on FlexoIAS-II systems.

Connecting the Measurement Unit to your PC

- The FlexoIAS-II software must be installed on your PC before you plug the measurement unit into the PC for the first time. Follow the instructions in the *Quick Start Guide* provided with the system for complete software installation instructions.
- Plug the measurement unit into an available USB 2.0 port on your PC. The first time you do this, follow the step-by-step *Quick Start Guide* instructions for installing the measurement unit device drivers. Be sure to give the PC sufficient time to detect the devices. If at another time you plug the measurement unit into a different USB 2.0 port, you may be prompted to reinstall the device drivers. Do so by following the same step-by-step installation procedure.
- Start the FlexoIAS-II software. Dismiss the **About** window and wait for the software to initialize. When the software is ready, three analysis icons—FlexoDot, HiliteDot, and Area—will appear in a vertical array at the left side of the image pane.

Caring for the FlexoIAS-II

- The FlexoIAS-II is an optical instrument. Dust and dirt on the optics or light source will affect the accuracy and reproducibility of measurements. Therefore, it is advisable to use and store the FlexoIAS-II in a clean environment or at least to maintain the cleanliness of all optical surfaces and the illumination source.
- Do not touch the surface of the lens or CCD with your fingers.
- Remove any dust on the lens or CCD with clean, dry compressed air.
Important: Never attempt to remove dust by blowing on the optics!
- Remove fingerprints and dust from the optical window with clean, dry compressed air or by wiping it with the cleaning cloth provided.
Important: Never use solvents to clean any part of the FlexoIAS-II!
- Keep the measurement unit in its carrying case when not in use.

The Light Box

The light box houses a high intensity white LED light source and optics that provide a consistent, collimated light source for transmissive flexo plate measurements. The light is transmitted through an optical window in the center of the box.

On top of the light box is a vinyl sticker in the shape of the FlexoIAS-II footprint, as shown in Figure 7 above. This is an aid for easy alignment of the measurement unit with the light window.

When a calibration is performed, the exposure (shutter) in the FlexoIAS-II measurement unit is set in conjunction with the light box and the *Transmission Reference Standard*. All components—measurement unit, light box, and *Transmission Reference Standard*—are serialized. Mixing components from different systems identified by different serial numbers is not recommended.

The light box and measurement unit, with and without the Optional Control Strip Guide, are shown in Figs. 9 and 10, respectively.



Fig. 9. FlexoIAS-IIPC with optional control strip guide.



Fig. 10. FlexoIAS-II without optional control strip guide.

The Software

Before you start the FlexoIAS-II software, be sure the measurement unit is plugged into a USB2.0 port in your PC. After plugging it in, wait for about 10-15 seconds to give the PC time to recognize the hardware before launching the software. Typically, you will hear three sounds indicating that the device drivers are loaded.

Note that if the measurement unit is plugged into a different USB2.0 port at a later time, you may be prompted to install the device drivers again. Follow the driver installation instructions detailed in the Quick Start Guide.

When the measurement unit is installed and functioning properly, an **About FlexoIAS-II** start-up box will appear:



Fig. 11. The **About** box appears on start-up of the FlexoIAS-II software.

Click **OK** to dismiss the **About** box. The main user interface will be displayed after a brief pause while the software initializes.

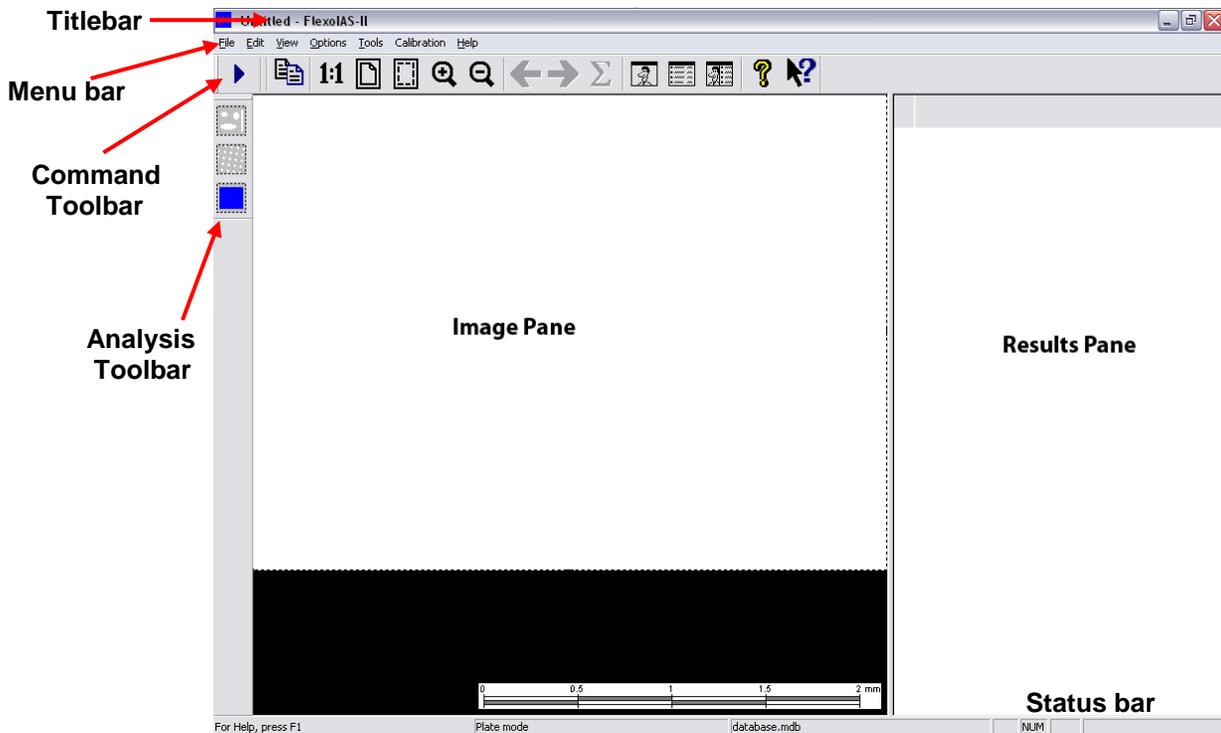


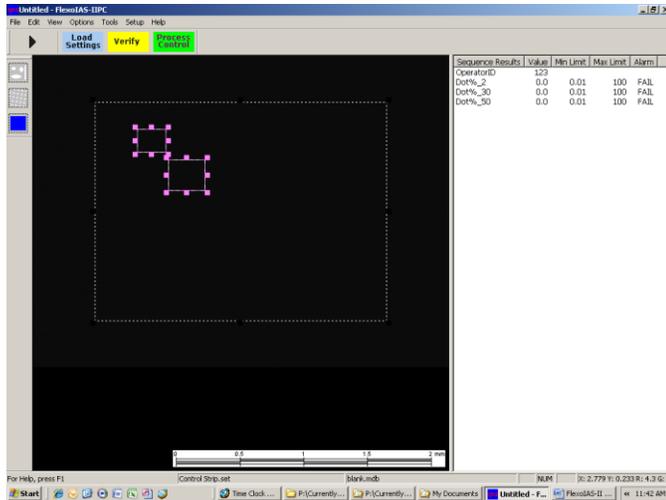
Fig. 12 The FlexoIAS-II User Interface and Nomenclature (non-Process Control software).

NOTE: In actual practice, the contents of the Menu bar will vary depending on the software package.

For systems without the process control option (FlexoIAS-II or FlexoIAS-IIP), the menu bar will look as shown in Fig 12

For systems with the process control option (FlexoIAS-IIPC, FlexoIAS-IIPCPC and FlexoIAS-IIPC2P), the menu bar will only contain four buttons; the right arrow , which activates or deactivates a live preview of the image to be analyzed, *Load Settings*, *Verify* and *Process Control*.

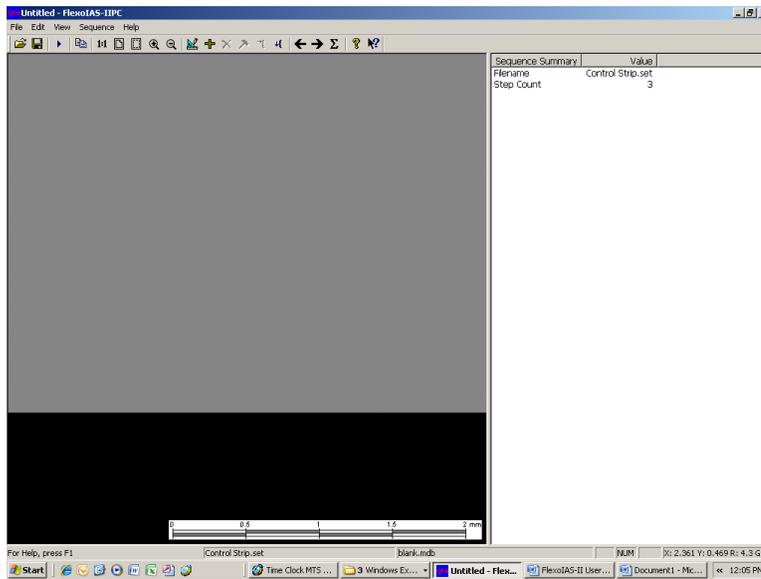
The default mode of the software is “interactive”. In this mode, the user controls every step of the measurement process, placing ROIs and, for some analyses, sub-ROIs on the image in the image pane and running the desired tests by clicking the appropriate analysis icons on the toolbar at the left. Results are displayed in the results pane.



In process control mode, an operator runs automated tests by using the Load Settings, Verify and Process Control buttons only.

In order to use the system in process control mode, however, an automated test sequence must first be created by following the procedure described in Appendix A.

While in sequence design mode, the user interface looks like this:



As you can see, the analysis toolbar at the left and the process control buttons at the top have disappeared, and an array of command icons has appeared on a command toolbar above the image pane. These are the commands used in creating an automated test sequence in sequence design mode. The command icons remain visible until the user switches out of Sequence Design View. At that point, the system is ready either for more interactive tests or for operation in process control mode.

Making Measurements

To get a feel for making measurements, start by placing a plate sample on top of the light box. Then place the measurement unit on top of the plate. as shown in Fig. 10 above.

Click the Preview button  at the top left of the user interface to display a live image of the sample in the image pane, as shown in Fig. 13 below.

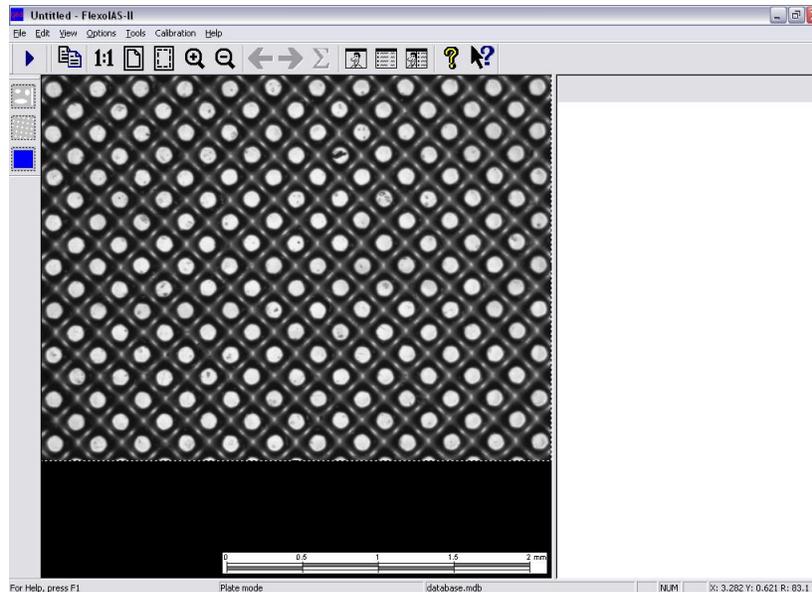


Fig. 13. FlexoIAS-II in preview mode.

Verify that the software is in preview mode by moving the sample slightly under the measurement unit. In preview mode, you should see the image move when you move the sample. If all steps described thus far have been carried out successfully, your system is ready to make measurements.

Interactive Mode

The FlexoIAS-II operates in either interactive or process control mode, depending on application requirements at a given time. Let's first acquaint ourselves with interactive mode, in which the user controls every step in the analysis of each sample.

Interactive Mode: FlexoDot Tool

Place a sample on the light box and position the measurement unit over the tone patch to be analyzed. Click on the FlexoDot icon. A FlexoDot analysis will be performed, typically on a region of interest occupying the center 70 percent of the field of view. The Dot % and Line Screen for this tone patch are shown in the results pane, as in the figure below:

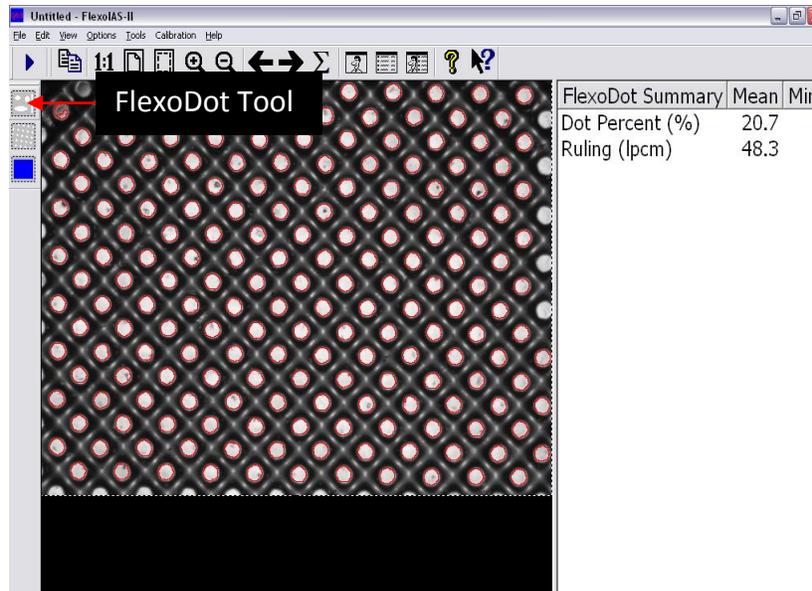


Fig. 14. Interactive analysis using the FlexoDot Tool.

Note that:

1. Real-world analyses of halftone patterns produce more results in the results pane, including dot diameter, dot shape, dot location, screen angle, etc., than are shown here. For the sake of simplicity, the results displayed in Fig. 14 are limited to Dot% and Line Screen for day-to-day process control applications. How to show additional analysis results will be described in the Software Reference Guide later in this User's Guide.
2. Line Screen units can be specified as lpcm (lines per cm) or lpi (lines per in). This is described in the Software Reference Guide below.

Interactive Mode: HiliteDot Tool

Position the FlexoIAS-II over an area of hilite dots, and click on the HiliteDot tool to analyze the dots. (Note that hilite dots can be used as a filtering device when halftone dots are on a “noisy” background.) Fig. 15 shows the results of a highlight dot analysis. The HiliteDot tool will be described in detail in the Software Reference Guide below.

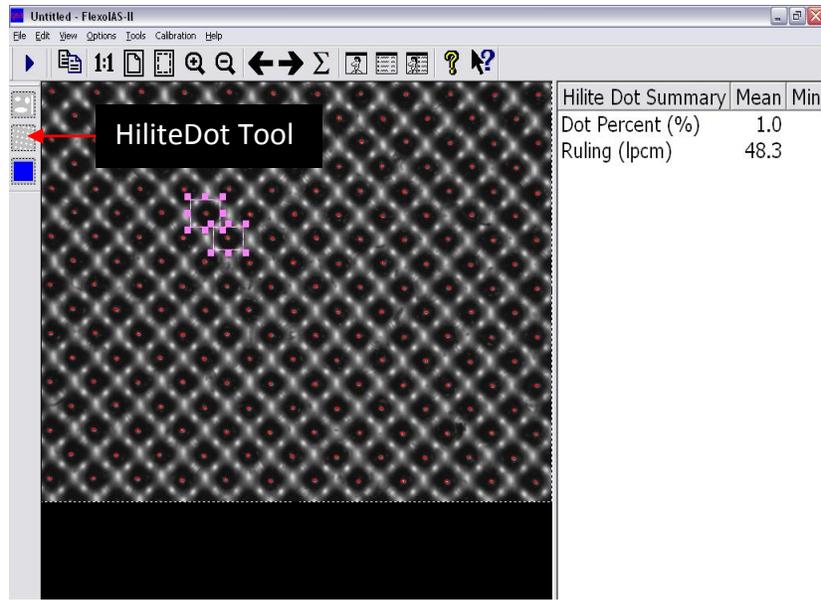


Fig. 15. Interactive analysis using the Hilite Dot Tool.

Interactive Mode: Area Tool

Finally, position the FlexoIAS-II on a solid patch, and click on the Area tool to measure the %Transmission of the patch (e.g., a 100% patch or a transmission reference target area). The results of a typical measurement are shown in Fig. 16 below.

The interactive measurements appear to be effortless, because the work is done by the software, and the “intelligence” is built into the analytical algorithms and default test parameters specified in the Options menu. For many applications, the default parameters will work well. However, on occasion, the test parameters may need to be changed to ensure appropriate analyses. Refer to the Software Reference Guide below for details on setting test parameters.

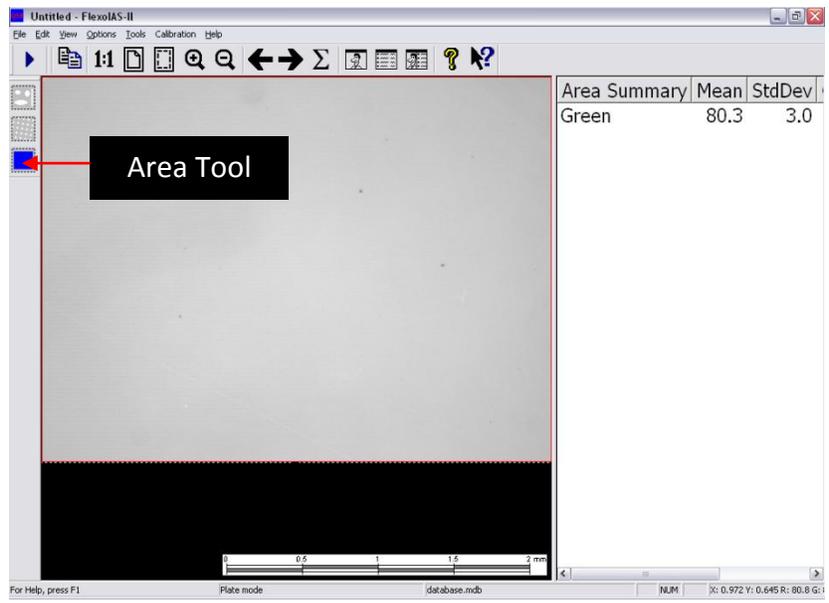


Fig. 16 Interactive Area tool analysis (for transmission measurement)

Software Reference Guide

For instructions on how to configure the software, refer to the Quick Start Guide provided with your FlexoIAS-II.

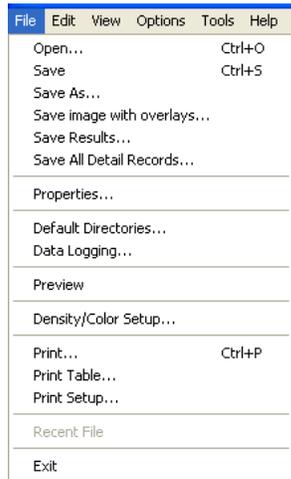
Note that the software must be installed before the measurement head is plugged in. The measurement head must be plugged in and functioning for the software to work.

Performing an analysis with the FlexoIAS-II takes just a few simple steps. First, specify a region of interest on the test sample or on a saved image you want to analyze. Then select the appropriate tool on the analysis toolbar to perform the test. The field of view will appear in the image pane, and the analysis results will appear in the results pane on the monitor. For a detailed look at the data, use the Record commands from the View menu or click on a particular feature of interest in the image pane to view detail data in the results pane.

In this section, a detailed description is given of each menu, command and dialog box. The topics are organized in menu order from left to right, as follows:

- File menu
- Edit menu
- View menu
- Options menu
- Tools menu
- Setup menu
- Help menu

File Menu



The File menu commands are described below.

Open Command

Use the File | Open command (shortcut CTRL+O) to select an existing image file. A standard Windows dialog box will open.

Save Command

Use the File | Save command (shortcut CTRL+S) to save the active image using its existing file name. To change the file name or directory before saving, use the File | Save As command below.

Save As Command

Use the File | Save As command to save the active image file under a new name. To save a document using its existing name and directory, use the Save command above.

Save Image With Overlays Command

When the FlexoIAS-II performs an analysis, graphical overlays are created. Depending on which overlay options are selected, these may represent the ROI and image features such as the contour edges of dots. Use the File | Save Image With Overlays command to save the image with any selected overlays. Use the View | Overlays command below to display or hide overlays.

Note that the overlays are destructive to the bitmap. After using the Save Image With Overlays command you will not be able to use the image for further analysis.

Save Results Command

Use the File | Save Results command to save the results pane data to a text file. Save Results displays a standard Windows Save As... dialog box.

Save All Detail Records Command

Use the File | Save All Detail Records command to name and save the results for each element in the currently displayed analysis to a text file. Save All Detail Records displays a standard Windows Save As... dialog box.

Properties Command

Depending on the source of an image, the resolution parameters may need to be adjusted. Use the File | Properties command to display image dimensions and spatial resolution. If necessary, use the File | Properties dialog box to set the image resolution.

Default Directories Command

Use the File | Default Directories command to specify default directories to save image files to. These files contain images saved with the File | Save As or File | Save Image With Overlays commands.

Note that the other directories shown in the Default Directories dialog box are not typically used. However, for specialized configurations these directories allow users to define locations for the specified file types.

Data Logging Command

Use the File | Data Logging command to automatically log analysis results to a text file.

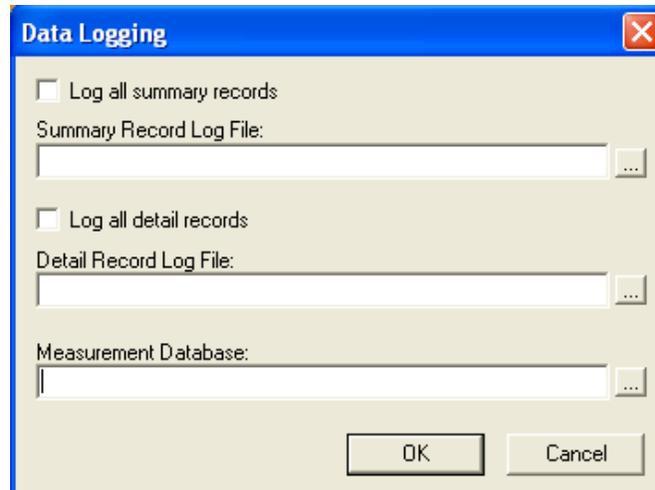
The procedure described in the Making Measurements section above is ideal when small amounts of data are being acquired. However, with large amounts of data, efficiency becomes a key consideration. The Data Logging feature is designed to make data collection and management as efficient as possible.

When logging is enabled, the results of each analysis are written to a text file for later analysis.

To enable data logging, do the following.

Create a Log File:

- Select File | Data Logging



- Click the Browse button to the right of *Summary Record Log File* and / or *Detail Record Log File*. Both may be selected.
- Navigate to the directory you want your data saved to.
- Enter a file name for your data.
- Check *Log all summary records* and / or *Log all detail records*.
- Click OK.
- When either of the summary or detail data logging option is selected, the *Logging Disabled* message on the Status bar at the bottom of the FlexoIAS-II screen will change to *Logging Active (N=0)*.
- The Measurement Database field specifies what database the results will be written to.

Note that the Measurement Database field is used only with the Process Control (FlexoIAS-IIPC and FlexoIAS-IIPCP) configurations of FlexoIAS-II.

Set the measurement parameters

Follow the instructions in *Making Measurements* above to:

- Capture an image
- Specify the ROI
- Set analysis tools parameters as needed

Make your measurements:

- Click the orange button on the measurement head to run the analysis.
- Click the button again to return to preview mode.

- Reposition the sample and measurement head to analyze a new region of interest.
 - Press the orange button again to repeat the analysis on the new ROI.
- After each measurement, the number after *Logging Active* on the Status bar will be incremented by one.

Close the Log file

After you have completed your measurements:

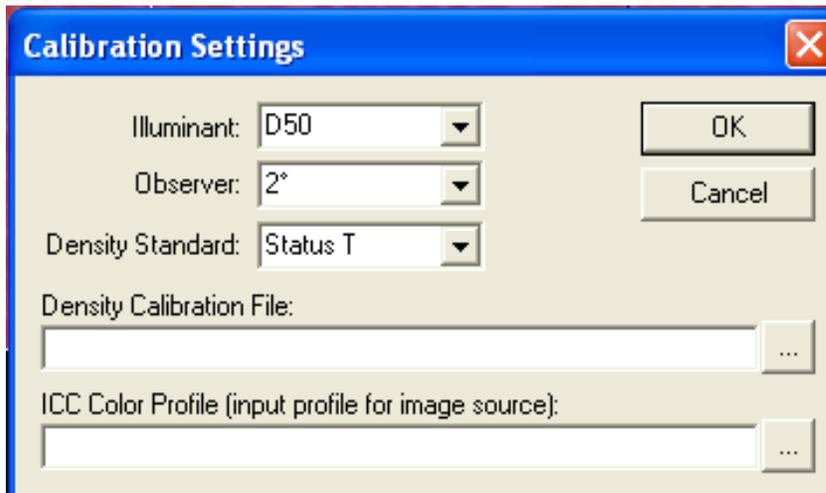
- Select File | Data Logging
- Uncheck the box next to *Log all summary records* and/or *Log all detail records*
- Click OK

The indicator on the Status bar will change back to *Logging Disabled*

Preview Command

Use the File | Preview command to toggle between live and captured images. This command corresponds to using the orange button on the measurement head.

Density/Color Setup Command (Calibration Settings)



Use the File | Density/Color Setup command to specify the Illuminant and Observer for CIE color measurements and the Density Standard to use for density measurements.

Normally the images in FlexoIAS-II are monochrome and these advanced calibration settings are not used.

Print Command

Use the File | Print command (shortcut CTRL+P) to print the current image. The current ROI and magnification will be printed, so you may need to adjust these prior to printing. If an analysis has been performed, any visible overlays will also be printed.

The Print command opens a standard Print dialog box in which you can select the range of pages to be printed, the number of copies, the destination printer, and other printer setup options.

Print Table Command

Use the File | Print Table command (shortcut CTRL+P) to print the data currently displayed in the results pane. Prior to printing, adjust the widths of the columns as desired.

The Print Table command opens a standard Print dialog box in which you can select the range of pages to be printed, the number of copies, the destination printer, and other printer setup options.

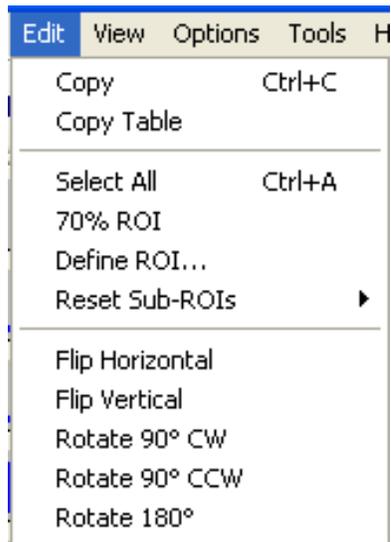
Print Setup Command

The File | Print Setup command opens a standard Print Setup dialog box that allows you to specify printer options.

Exit Command

Use the File | Exit command (shortcut ALT+F4) to exit the FlexoIAS-II software.

Edit Menu



Edit menu commands are described below.

Copy Command

Use the Edit | Copy command (shortcut CTRL+C) to copy the selected image or region of interest onto the clipboard. If no data are selected, this command is unavailable. To select the entire image, use the Edit | Select All command below, then select Copy to place the image on the clipboard.

Note that copying data to the clipboard replaces the previous clipboard contents.

Copy Table Command

Use the Edit | Copy Table command to copy the data currently displayed in the results pane to the clipboard.

Copying data to the clipboard replaces the previous clipboard contents.

Select All Command

Use the Edit | Select All command (shortcut CTRL+A) followed by the Copy command. The ROI expands to encompass the entire image.

70% ROI Command

Use the Edit | 70% ROI command to include the center 70 percent of the image in the ROI.

Define ROI Command

Use the Edit | Define ROI command to set the ROI to user-controlled dimensions.

Reset Sub-ROIs

Use the Edit | Reset Sub-ROIs command to set the sub-ROIs to the size and relative positions in the center of the field of view for an amplitude modulated (AM) dot pattern of known screen ruling.

Flip Horizontal Command

Use the File | Flip Horizontal command to flip the current image horizontally, reversing the left and right edges.

Flip Vertical Command

Use the File | Flip Vertical command to flip the current image vertically, inverting the top and bottom edges.

Rotate 90° CW

Use the File | Rotate 90° CW command to rotate the current image 90° clockwise.

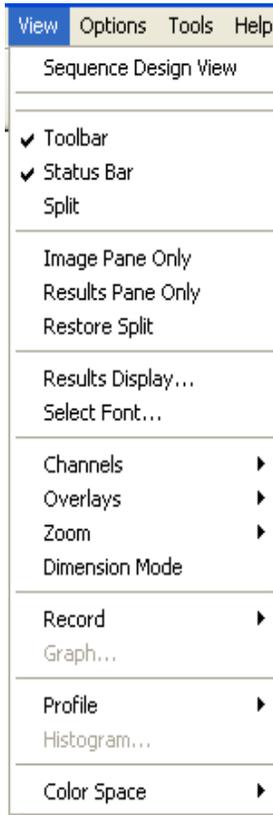
Rotate 90° CCW

Use the File | Rotate 90° CCW to rotate the current image 90° counterclockwise.

Rotate 180°

Use the File | Rotate 180° to rotate the current image 180°.

View Menu



The View menu commands are described below.

Sequence Design View

Sequence Design View is available if your software includes the sequence programming feature. Sequence programming is included on configurations with the process control option. If your system is the basic FlexoIAS-II, sequence programming is not included.

Use the View | Sequence Design View command to toggle between the normal mode for user-controlled measurements and sequence design mode for creating automated measurement sequences.

For details on sequence programming, see Appendix A, *Sequence Programming Guide*.

Toolbar Command

Use the View | Toolbar command (shortcut ALT+V+T) to hide or display the analysis toolbar. The toolbar contains analysis tools for performing interactive measurements of dots and other image elements.

The analysis toolbar is typically displayed vertically at the left-hand side of the FlexoIAS-II window. It provides quick access to all the FlexoIAS-II tools and their settings options.

To use any tool in the toolbar, first specify a region of interest on the image in the image pane and then select the desired measurement tool.

Tool	Function
	Performs a dot analysis on a flexographic plate
	Performs a highlight dot analysis
	Performs an area analysis

Note that you can right-click on any tool icon for quick access to the corresponding Options dialog box.

Status Bar Command

Use the View | Status Bar command to display or hide the Status Bar at the bottom of the screen. The status bar (shown below) indicates whether data logging is enabled or disabled, and provides image information such as the X and Y coordinates of the cursor and the color coordinates of the pixel at the cursor location (e.g., red, green and blue values on a 0-100% scale).

Color coordinates can be displayed in any of several color spaces by selecting from the View | Color Space command (see below).



The Status Bar above shows which of the following options are in use:

CAP	Caps Lock key (not in use)
NUM	Number Lock key (in use)
SCRL	Scroll Lock key (not in use)
Data Logging	<i>Logging disabled</i> indicator (Data Logging is not in use)

Split Command

Use the View | Split command to move the vertical split separating the image and results panes. This command is especially useful if the split has migrated off the screen or otherwise becomes difficult to locate.

Image Pane Only

Use the View | Image Pane Only command to move the vertical split to the far right, maximizing the image pane and hiding the results pane.

Results Pane Only

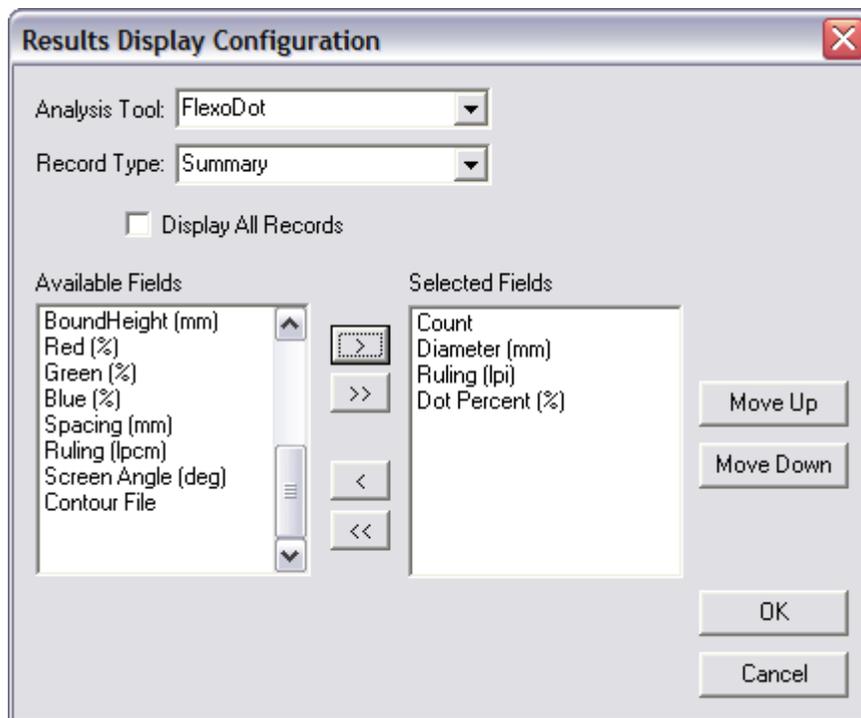
Use the View | Results Pane Only command to move the vertical split to the far left, maximizing the results pane and hiding the image pane.

Restore Split Command

Use the View | Restore Split command to restore the vertical split to its previous position (i.e., its position prior to invoking the Image Pane Only or Results Pane Only command).

Results Display Command

Use the View | Results Display command to specify which fields are to be shown in the results pane for the specified analysis. Use the navigation arrows and buttons to move fields between the Available Fields and Selected Fields lists and to change Selected Field order.



Select Font Command

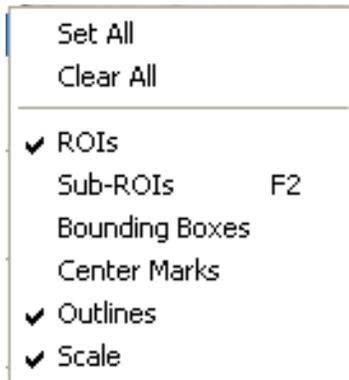
Use the View | Select Font command to specify the font to be used in the results pane.

Channels Command

In FlexoIAS-II analyses, images are normally monochrome and the View | Channels command is not used.

Overlays Command

Use the View | Overlays command to display or hide graphical overlays.



Overlays Options:

Set All. Turns on all overlays.

Clear All. Turns off all overlays.

ROIs. Hides or shows ROI boxes.

Sub-ROIs. Hides or shows sub-ROI boxes. Note that sub-ROIs are used only for certain applications and can generally be ignored.

Bounding Boxes. Hides or shows bounding boxes for analyzed elements (dots, solid areas, etc.).

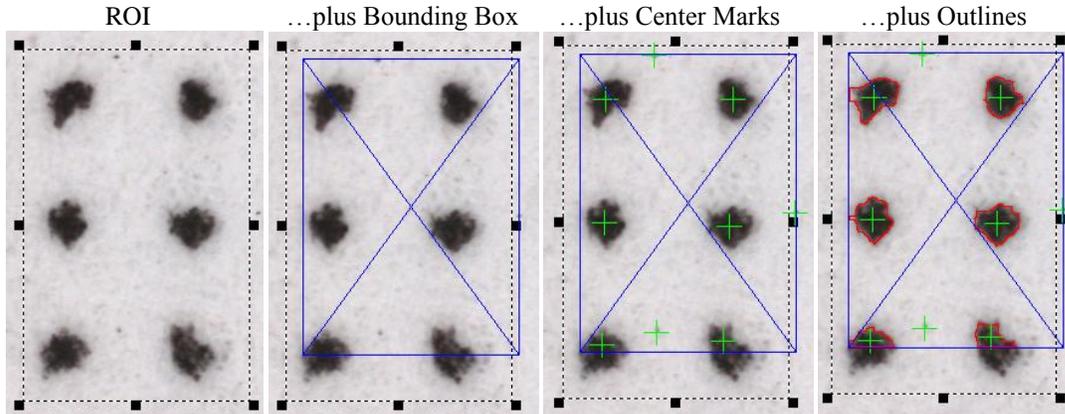
Center Marks. Hides or shows center marks for analyzed elements.

Outlines. Hides or shows contour outlines for analyzed elements.

Scale. Hides or shows a scale (displayed in mm or μm depending on magnification and ROI size) at the bottom of the image pane.

The following images show the effects of selecting the various overlay options, any combination of which can be selected.

Options selected:



Zoom Command

Use the View | Zoom command to increase or decrease the magnification of the image.

In software packages that include process control, the zoom commands are accessible from the view menu only. If your system does not include process control, the zoom options are accessible from both the command toolbar and View menu.

<i>Zoom option</i>	<i>Toolbar icon</i>	<i>Function</i>
Zoom In		Increases magnification
Zoom Out		Decreases magnification
Actual Size		Sets the magnification so each pixel in the image corresponds to one pixel in the display. This setting generally avoids artifacts in the image display.
Scale to Fit		Sets the magnification so the entire image is displayed in the image pane.
Scale to ROI		Sets the magnification (and scroll) so the contents of the current ROI are displayed in the image pane.

Dimension Mode Command

Use the View | Dimension Mode command to make manual measurements of image features. Left-click to position one marker and right-click to position a second marker. The distance and angle between the two markers appear in the results pane.

Record Command

In software packages that include process control, the record commands are only accessible from the View menu. In packages that do not include process control, the record commands are accessible from both the Command toolbar and the View menu.

Use the View | Record command to navigate through the features in the ROI and specify whether detail or summary data will appear in the results pane (individual dot diameters vs. average dot diameter, for example). Note that details can be tracked visually in the image pane when outline overlays are selected.

<i>Option</i>	<i>Toolbar icon</i>	<i>Function</i>
Summary		<p>Displays the summary data for all image elements analyzed (e.g., all dots within the ROI).</p> <p>In Sequence Design View, this is the summary of the current sequence; otherwise, following an interactive analysis or a step of a sequence, this is the summary result for the analysis tool.</p>
Previous Detail		<p>Navigates to the previous detail element (e.g., an individual dot) and displays results for that detail only.</p> <p>In Sequence Design View, this is the previous sequence step; otherwise, following an interactive analysis or a step of a sequence, this is the detail record for an individual object analyzed. Following a sequence, this is the summary record for an individual step in a sequence.</p>
Next Detail		<p>Navigates to the next detail element and displays results for that detail only.</p> <p>In Sequence Design View, this is the previous sequence step; otherwise, following an interactive analysis or a step of a sequence, this is the detail record for an individual object analyzed. Following a sequence, this is the summary record for an individual step in a sequence.</p>

Graph Command

Use the View | Graph command to display graphical data from the most recent analysis, if graphing is a feature of the tool used for that analysis.

Profile Command

Use the View | Profile command to display the reflectance profile for the selected ROI.

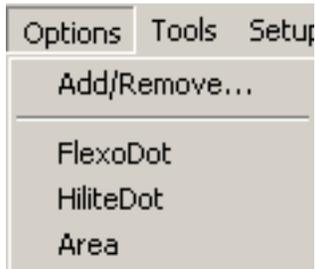
Histogram Command

Use the View | Histogram command to display the histogram for the selected ROI.

Color Space Command

Use the View | Color Space command to specify which color space to use for displaying color coordinates in the status bar.

Options Menu



The Options menu commands are described below.

Note that the Options menu is not available when the software is in sequence design mode.

Add/Remove Tools Command

Use the View | Add/Remove Tools command to activate or remove tool libraries. Activating a library inserts the tools in that library into the Options and Tools menus and places them on the analysis toolbar.

Current Tool Libraries. Lists the tool libraries currently installed.

Add. Opens a File | Open dialog box in which you can browse to select the DLL file containing the tool library you want to add. The DLL must be in the same folder as the main executable.

Remove. Removes the selected tool library from the Current Tool Libraries list. The tools in the selected library will be removed when the software is restarted.

Activate Now. Allows you to activate a new library. Note that an activation code provided by QEA is required to activate all new libraries.

Activate Automation. Allows you to activate the license for an optional component that provides an automation interface to FlexoIAS-II. The automation interface allows external control over some FlexoIAS-II features using Visual Basic for Applications or other programming languages. For more information, contact QEA.

Tools In Library. Lists the analysis tools contained in the selected library.

Options for the FlexIAS-II analysis tools—FlexoDot, HiliteDot, and Area—are detailed in the next section, *Tools Menu*.

Tools Menu

The Tools menu contains tools for performing dot, highlight dot, and area analyses, as described below.



FlexoDot Tool



The FlexoDot tool is used for analyzing dots on a flexographic plate. To access the FlexoDot tool, select Tools | FlexoDot or click the FlexoDot tool on the analysis toolbar.

To change FlexoDot tool input parameters, right-click on the FlexoDot tool icon or select FlexoDot from the Options menu.

The FlexoDot tool reports the following metrics:

Area (mm²/μm²): The area of the dot.

Diameter (mm/μm): The equivalent circular diameter of the dot, given by:

$$D = \sqrt{\frac{4A}{\pi}}, \text{ where } A = \text{area}$$

Perimeter (mm/μm): The length of the outside boundary of the dot.

BoxRatio: The height-to-width ratio of the bounding box of the dot.

Circularity: The circularity of the dot. The degree of circularity is given by:

$$C = p^2 / (4\pi A), \text{ where } p = \text{the perimeter length and } A = \text{area}$$

Note that a circularity of 1 denotes a perfectly circular dot. Dots of any other shape will have a circularity greater than 1. For very small dots, the circularity measurement may be inaccurate, giving a value of less than 1.

XCentroid (mm/μm): The horizontal coordinate of the dot centroid.

YCentroid (mm/μm): The vertical coordinate of the dot centroid.

XMidpoint (mm/μm): The coordinate of the horizontal center of the dot's bounding box.

YMidpoint (mm/μm): The coordinate of the vertical center of the dot's bounding box.

- BoundLeft (mm/μm):** The left coordinate of the dot's bounding box.
- BoundTop (mm/μm):** The top coordinate of the dot's bounding box.
- BoundRight (mm/μm):** The right coordinate of the dot's bounding box.
- BoundBottom (mm/μm):** The bottom coordinate of the dot's bounding box.
- BoundWidth (mm/μm):** The width of the dot's bounding box.
- BoundHeight (mm/μm):** The height of the dot's bounding box.
- RMS Roughness (mm/μm):** The roughness of the contour using an RMS calculation and the specified high pass filter cutoff.
- Red (%):** The average reflectance of the dot in the red channel of the image.
- Green (%):** The average reflectance of the dot in the green channel of the image.
- Blue (%):** The average reflectance of the dot in the blue channel of the image.
- Spacing (mm/μm):** The average spacing in an AM (amplitude modulated) dot pattern.
- Ruling (lpcm):** The number of lines per centimeter in an AM (amplitude modulated) dot pattern.
- Ruling (lpi):** The number of lines per inch in an AM (amplitude modulated) dot pattern.
- Screen Angle (deg):** The screen angle in an AM (amplitude modulated) dot pattern.
- Dot Percent (%):** The dot percent in an AM (amplitude modulated) dot pattern. If the dots are darker than the field, it is assumed that they occupy an unprinted area, so small dark dots correspond to a large dot percent value. If the dots are lighter than the field, it is assumed that they occupy a printed area, so small light dots correspond to a small dot percent value.

FlexoDot Settings

FlexoDot Settings

Color:

Threshold Type:

Polarity:

Units:

Threshold: %

Filter Dots By:

	Minimum	Maximum	
<input checked="" type="checkbox"/> Diameter:	<input type="text" value="50.00"/>	<input type="text" value="500.00"/>	µm <input type="checkbox"/> Auto Size
<input type="checkbox"/> Box Ratio:	<input type="text" value="0.100"/>	<input type="text" value="10.000"/>	
<input checked="" type="checkbox"/> Circularity:	<input type="text" value="0.800"/>	<input type="text" value="1.500"/>	

Roughness Cutoff (high pass): µm

Save dot contours to text files

Contour Files: ...

Exclude boundary dots

Dilation before erosion

Erode:

Dilate:

Buttons: OK, Cancel, Save..., Load..., Use default

FlexoDot settings are as follows:

Color: Specifies which Color Plane to use for dot analysis.

Threshold Type: Specifies Absolute or Relative thresholding. Relative threshold values are relative to the content of the ROI.

Polarity: Specifies whether the dots are darker or lighter than their background.

Units: Specifies the units (mm or µm) to use for reporting length and area values.

Threshold: Specifies the threshold to use for locating dot edge boundaries.

Filter Dots By Diameter: Turns on the dot size filter, specifying minimum and maximum diameters. Dots of diameters outside this range will not be reported.

Filter Dots by Box Ratio: Turns the box ratio filter on, specifying minimum and maximum box ratios. Dots with box ratios outside this range will not be reported.

Filter Dots By Circularity: Turns the circularity filter on, specifying minimum and maximum circularities. Dots of circularities outside this range will not be reported.

- Auto Size:** Turns on automatic size filtering. To use automatic size filtering, select both Auto Size and Filter Dots by Diameter. The Diameter Minimum and Diameter Maximum values are ignored when Auto Size is selected.
- Diameter Minimum:** Specifies minimum dot diameter. Dots of smaller diameter will not be reported.
- Diameter Maximum:** Specifies maximum dot diameter. Dots of larger diameter will not be reported.
- Box Ratio Minimum:** Specifies minimum box ratio. Dots with smaller box ratios will not be reported.
- Box Ratio Maximum:** Specifies maximum box ratio. Dots with larger box ratios will not be reported.
- Circularity Minimum:** Specifies minimum circularity. Dots with smaller circularities will not be reported.
- Circularity Maximum:** Specifies maximum circularity. Dots with larger circularities will not be reported.
- Roughness Cutoff (high pass):** Specifies a value for filtering the contour for roughness calculation. Dots never have perfectly smooth, regular curvatures. The Roughness Cutoff value is used to distinguish between acceptable contour curvature (with a scale larger than the cutoff), and undesirable contour roughness (with a scale smaller than the cutoff).
- Save dot contours to text files:** Saves information about the outline of each dot to a text file.
- Exclude boundary dots:** Excludes from the analysis any dot overlapping the boundary of the ROI. The areas of such dots cannot be accurately computed, and it may be preferable to exclude them.
- Dilation before erosion:** Causes the image first to dilate (if the Dilate setting is not zero) and then to erode (if the Erode setting is not zero). If this option is not selected, erosion is performed before dilation.
- Erode:** Specifies a non-negative integer value for erosion (the larger the integer the greater the erosion). Erosion “smoothes” the outer edge of a dot, removing asperities. If you do not want the dot edge eroded, set this parameter to zero.
- Dilate:** Specifies a non-negative integer value for dilation (the larger the integer the greater the dilation). Dilation “bridges” broken pieces of a dot and fills in voids. If you do not want the dot dilated, set this parameter to zero.
- Save:** Saves the current settings.
- Load:** Loads settings from a saved file.
- Use default:** Applies factory settings.

HiliteDot Tool



The HiliteDot tool is used for analyzing highlight dots on a flexographic plate.

To use the HiliteDot tool, you must define an ROI and two sub-ROIs. (Go to Edit | Reset Sub-ROIs to activate sub-ROIs, and right-click to position in the main ROI.) Each of the sub-ROIs should encompass just one highlight dot and should be positioned on two adjacent dots, as shown in the figure below. These two highlight dots establish the pattern for finding all the dots in the main ROI.

The HiliteDot tool is especially useful when the image to be analyzed features small highlight dots and also contains, in the “valleys” between the dots, artifacts of similar size and shape, as illustrated below. With the regular FlexoDot tool, such artifacts can be erroneously interpreted as printing dots.

1. Main ROI
All dots inside this region will be analyzed.

2. Sub-ROIs
Draw sub-ROIs around two adjacent dots.

Hilite Dot Summary	
Count	1399.741
Area (µm ²)	42.193
Diameter (µm)	
Perimeter (µm)	
BoxRatio	
Circularity	
XCentroid (µm)	
YCentroid (µm)	
XMidpoint (µm)	
YMidpoint (µm)	
BoundLeft (µm)	697.486
BoundTop (µm)	457.620
BoundRight (µm)	736.228
BoundBottom (µm)	497.501
BoundWidth (µm)	38.741
BoundHeight (µm)	39.881
Red (%)	83.562
Green (%)	83.848
Blue (%)	74.139
Spacing (µm)	192.240

Based on the pattern established by the adjacent dots in the sub-ROIs, the software is able to find the printing dots in the main ROI and ignore the artifacts in the image.

To access the HiliteDot tool, select Tools | HiliteDot or click the HiliteDot tool on the analysis toolbar.

To change HiliteDot tool input parameters, right-click on the HiliteDot tool icon or select HiliteDot from the Options menu.

The HiliteDot tool reports the following metrics:

Area (mm²/μm²): The area of the dot.

Diameter (mm/μm): The equivalent circular diameter of the dot, given by:

$$D = \sqrt{\frac{4A}{\pi}}, \text{ where } A = \text{area}$$

Perimeter (mm/μm): The length of the outside boundary of the dot.

BoxRatio: The height-to-width ratio of the bounding box of the dot.

Circularity: Circularity of the dot. The degree of circularity is given by:

$$C = p^2 / (4\pi A), \text{ where } p = \text{the perimeter length and } A = \text{area}$$

Note that a circularity of 1 denotes a perfectly circular dot. Dots of any other shape will have a circularity greater than 1. For very small dots, the circularity measurement may be inaccurate, giving a value of less than 1.

XCentroid (mm/μm): The horizontal coordinate of the dot centroid.

YCentroid (mm/μm): The vertical coordinate of the dot centroid.

XMidpoint (mm/μm): The coordinate of the horizontal center of the dot's bounding box.

YMidpoint (mm/μm): The coordinate of the vertical center of the dot's bounding box.

BoundLeft (mm/μm): The left coordinate of the dot's bounding box.

BoundTop (mm/μm): The top coordinate of the dot's bounding box.

BoundRight (mm/μm): The right coordinate of the dot's bounding box.

BoundBottom (mm/μm): The bottom coordinate of the dot's bounding box.

BoundWidth (mm/μm): The width of the dot's bounding box.

BoundHeight (mm/μm): The height of the dot's bounding box.

RMS Roughness (mm/μm): The roughness of the dot contour, using an RMS calculation and the specified high-pass filter cutoff.

Red (%): The average reflectance of the dot in the red channel of the image.

Green (%): The average reflectance of the dot in the green channel of the image.

Blue (%): The average reflectance of the dot in the blue channel of the image.

Spacing (mm/μm): The average spacing in an AM (amplitude modulated) dot pattern.

Ruling (lpcm): The number of lines per centimeter in an AM (amplitude modulated) dot pattern.

Ruling (lpi): The number of lines per inch in an AM (amplitude modulated) dot pattern.

Screen Angle (deg): The screen angle in an AM (amplitude modulated) dot pattern.

Dot Percent (%): The dot percent in an AM (amplitude modulated) dot pattern. If the dots are darker than the field, it is assumed that they occupy an unprinted area, so small dark dots correspond to a large dot percent value. If the dots are lighter than the field, it is assumed that they occupy a printed area, so small light dots correspond to a small dot percent value.

HiliteDot Settings

HiliteDot Settings

Color:

Threshold Type:

Polarity:

Units:

Threshold: %

Filter Dots By: Minimum Maximum

Diameter: µm Auto Size

Box Ratio:

Circularity:

Roughness Cutoff (high pass): µm

Save dot contours to text files

Contour Files:

Exclude boundary dots

Dilation before erosion

Erode:

Dilate:

HiliteDot settings are as follows:

Color: Specifies the Color Plane to use for dot analysis.

Threshold Type: Specifies Absolute or Relative thresholding. Relative threshold values are relative to the content of the ROI.

Polarity: Specifies whether the dots are darker or lighter than their background.

Units: Specifies the units (mm/µm) used for reporting length and area values.

Threshold: Specifies the threshold used for locating dot edge boundaries.

Filter Dots By Diameter: Turns on the dot size filter.

Filter Dots by Box Ratio: Turns on the box ratio filter.

Filter Dots By Circularity: Turns on the circularity filter.

- Auto Size:** Turns on automatic size filtering. To use automatic size filtering, select both Auto Size and Filter Dots by Diameter. The Diameter Minimum and Diameter Maximum values are ignored when Auto Size is selected.
- Diameter Minimum:** Specifies minimum dot diameter. Dots of smaller diameter will not be reported.
- Diameter Maximum:** Specifies maximum dot diameter. Dots of larger diameter will not be reported.
- Box Ratio Minimum:** Specifies minimum box ratio. Dots with a smaller box ratio will not be reported.
- Box Ratio Maximum:** Specifies maximum box ratio. Dots with a larger box ratio will not be reported.
- Circularity Minimum:** Specifies minimum circularity. Dots with a smaller circularity will not be reported.
- Circularity Maximum:** Specifies maximum circularity. Dots with a larger circularity will not be reported.
- Roughness Cutoff (high pass):** Specifies a value for filtering the contour for roughness calculation. Dots never have a perfectly smooth, regular curvature. The Roughness Cutoff value is used to distinguish between acceptable contour curvature (with a scale larger than the cutoff), and undesirable contour roughness (with a scale smaller than the cutoff).
- Save dot contours to text files:** Saves information about the outline of each dot to a text file.
- Exclude boundary dots:** Excludes from the analysis any dot overlapping the boundary of the ROI. The areas of such dots cannot be accurately computed, and it may be preferable to exclude them.
- Dilation before erosion:** Causes the image first to dilate (if the Dilate setting is not zero) and then to erode (if the Erode setting is not zero). If this option is not selected, erosion is performed before dilation.
- Erode:** Specifies a non-negative integer value for erosion (the larger the integer the greater the erosion). Erosion “smoothes” the outer edge of a dot, removing asperities. If you do not want the dot edge eroded, set this parameter to zero.
- Dilate:** Specifies a non-negative integer value for dilation (the larger the integer the greater the dilation). Dilation “bridges” broken pieces of a dot and fills in voids. If you do not want the dot dilated, set this parameter to zero.
- Save:** Saves current settings.
- Load:** Loads settings from a saved file.
- Use default:** Applies factory settings.

Area Tool



Use the Area tool to measure the properties of large solid-color areas. The ability to print solid areas of uniform and accurately-calibrated density is critical to producing pleasing images. Solid-color areas can reveal deficiencies in the performance of an imaging system.

To modify Area tool parameters, right-click on the Area Tool button or select Area from the Options menu.

Typically, the following area metrics are reported for all color coordinates within the ROI:

Mean: The average color coordinates for all pixels in the ROI.

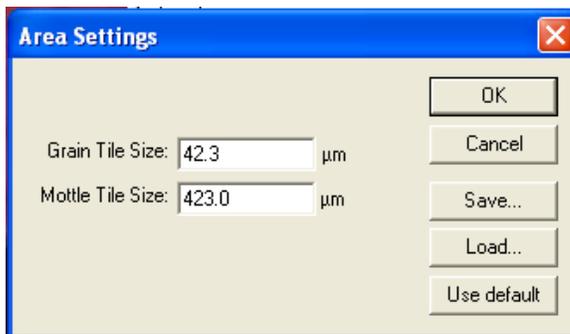
StdDev: The standard deviation of the color coordinates for all pixels in the ROI.

Graininess: Solid-area graininess in the specified color plane. Graininess refers to irregular fluctuations of density at a spatial frequency less than a specified tile size. It is calculated according to the ISO-13660 International Print Quality protocol, which uses a tile size of 42.3 μm .

Mottle: Solid-area mottle in the specified color plane. Mottle refers to irregular fluctuations of density at a spatial frequency greater than the specified tile size. It is calculated according to the ISO-13660 International Print Quality protocol, which uses a tile size of 1270 μm .

Note that by default FlexoIAS-II uses a tile size of 423 μm which is smaller than the ISO-13660 specification, but using a smaller tile size provides better sensitivity to smaller-scale non-uniformity. Users can set this tile size according to their needs.

Area Settings



Area settings are as follows:

Grain Tile Size [µm]: The low-pass filter for computing graininess.

Mottle Tile Size [µm]: The low-pass filter for computing mottle. Variations smaller than this value do not contribute to mottle.

Save: Saves data to a user-specified file.

Load: Retrieves settings from a saved file.

Use default: Applies factory settings.

Setup Menu



The Setup menu contains the following commands:

New Plate Settings: Saves new plate settings to a user-specified file.

Load Settings: Retrieves settings from a saved file.

Calibration Tolerances: Specifies transmission target value and calibration tolerance.

Calibrate: Adjusts the brightness of the sensor.

Verify: Verifies the calibration.

Process Control: Places the system in process control mode for automated testing.

Help Menu

The Help menu contains the following command:

About FlexoIAS-II

Use the About FlexoIAS-II command to display the copyright notice and version number of the FlexoIAS-II software.

QEA Customer Support

Questions?

For questions relating to the FlexoIAS-II, several resources are available to you.

First, this *FlexoIAS-II User's Guide*. The User's Guide can help you navigate through the FlexoIAS-II features and functions and show you how to use the system. We request that you read it carefully. It will probably answer your questions.

If you need further help, please contact QEA by email at support@qea.com. Email communications help us serve you better. We will respond to your specific questions with detailed instructions.

If more help is needed, we can be contacted at +1 978-528-2034. Ask for FlexoIAS-II technical support. Staff availability for telephone support is limited, so before calling please let us try to resolve your questions by email.

Returning Materials

If you must return the FlexoIAS-II or its accessories to QEA, you must first obtain a Return Material Authorization (RMA) number from QEA. If your unit needs to be returned for repair, our technical support staff will assist you by providing an RMA number and the shipping address to use. Shipping charges for returned materials must be pre-paid. No COD shipments will be accepted.

Replacement Parts

Replacement parts and accessories for the FlexoIAS-II can be purchased from QEA. Please email your request to support@qea.com. Please note that a replacement fee is charged for any lost accessories.

Appendices

Appendix A: Sequence Programming Guide

This appendix describes the sequence programming features included in FlexoIAS-II systems with process control capability, such as FlexoIAS-IIPC, FlexoIAS-IIPCP and FlexoIAS-IIPC2P. If you have the basic FlexoIAS-II, which does not include process control, sequence programming is not included.

With FlexoIAS-IIPC systems, you can create measurement sequences that automate testing for process control purposes.

This appendix will introduce you to sequence programming by leading you through the creation of a sequence to measure a tone sweep. The procedures demonstrated apply to any of the analysis tools.

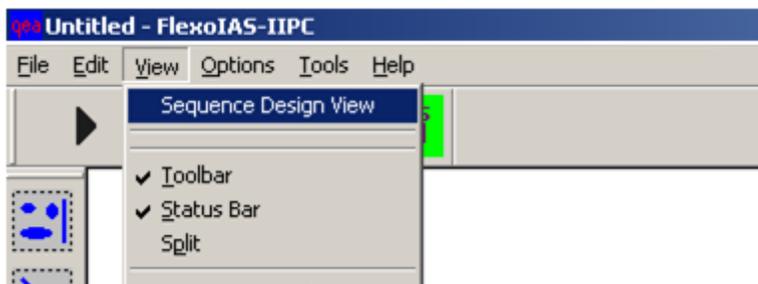
I. Programming a Sequence

Creating a Sequence comprises a number of steps:

1. Opening a new sequence
2. Specifying Analysis Steps for the new sequence
3. Replicating Analysis Steps within the sequence as needed
4. Creating a Database for the results of the sequence

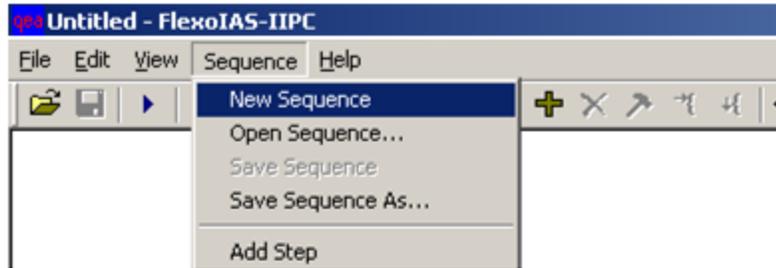
Creating a new sequence

1. Click on **View | Sequence Design View**.



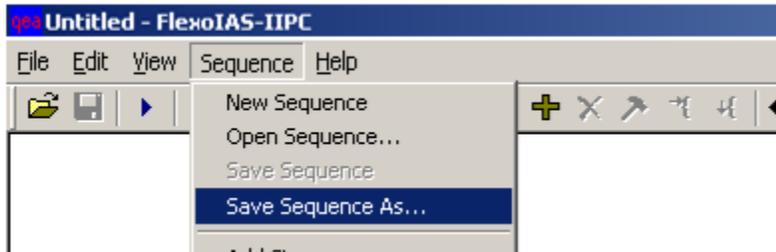
This switches the software into *Sequence Design View* mode, giving you access to the tools needed for creating the new test sequence.

2. Click on **Sequence | New Sequence**.



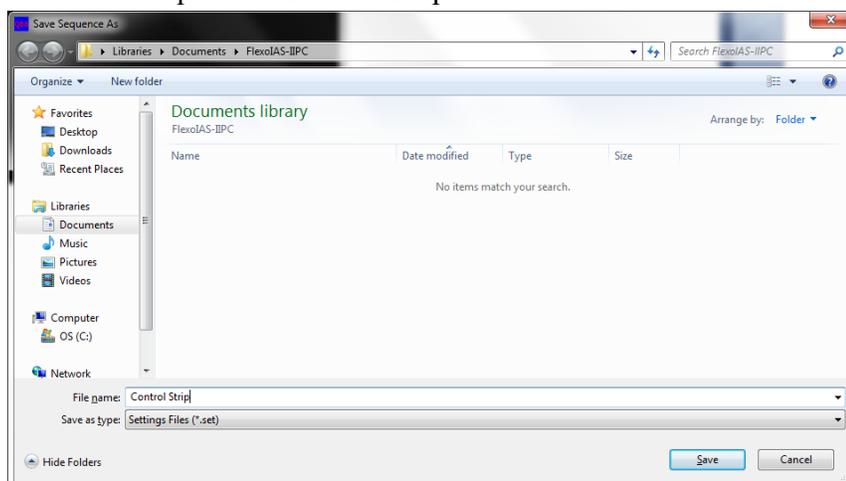
This opens the new sequence, ready for programming.

3. Click on **Sequence | Save Sequence As...**



This opens a dialog box where you can name the new sequence and navigate to where you want it saved.

4. Name the sequence “Control Strip”



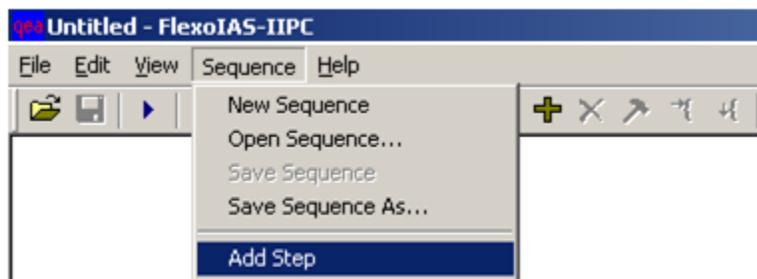
5. Click **Save** to save the sequence.

Adding an Analysis Step

Each analysis step does the following:

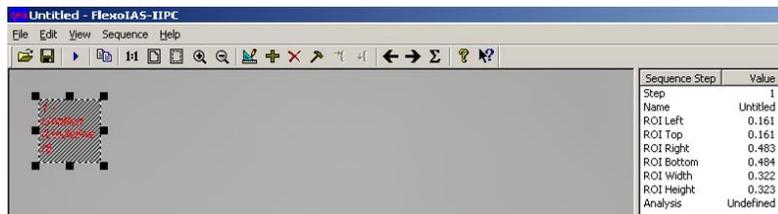
- Defines a Region of Interest (ROI) for the analysis
- Captures an Image
- Prompts the operator to move the FlexoIAS-II measurement head to a specified location
- Performs the defined analysis on the specified ROI of the captured image

1. Click on **Sequence|Add Step**

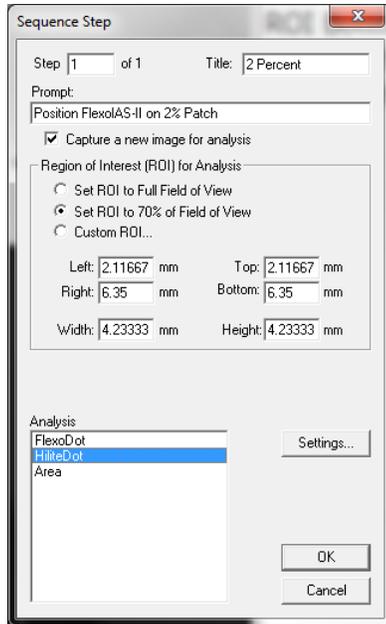


2. This will add an undefined step for analysis.

The ROI that appears is a placeholder. Its position and size are not important.



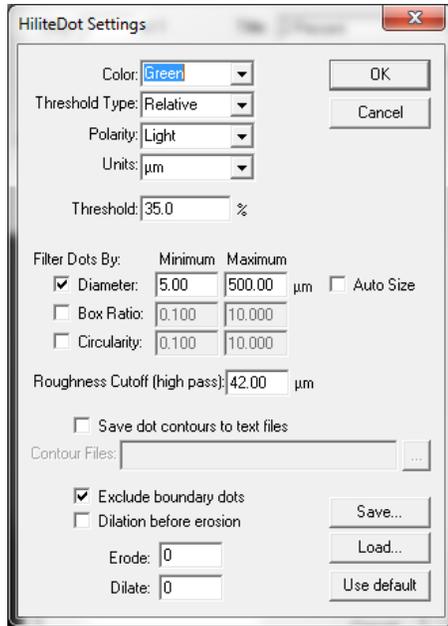
3. **Double Click** on the highlighted ROI to open the *Sequence Step* Window.



4. Enter a Title for the analysis (“2 Percent”).
5. Enter a Prompt (“Position FlexoIAS-II on 2% Patch”). The prompt will tell the operator what to do as the sequence runs.
6. Select a 70% ROI for the analysis.
7. Select the analysis you want your sequence to run at this step.
8. Click on **Settings** to change the settings for the selected analysis tool.

Refer to the Tools and Options menus in the main body of the User’s Guide for complete descriptions of analysis settings.

9. Click **OK** to close the *Settings* Window.



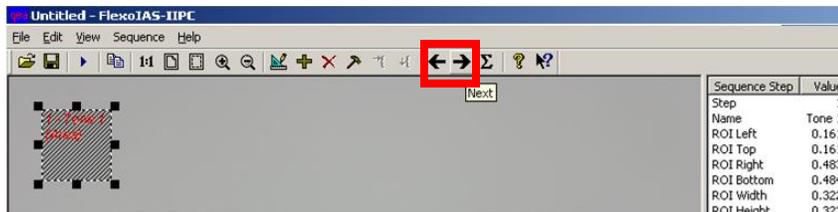
10. Click **OK** to close the *Sequence Step* Window.

11. Repeat the steps above for each new analysis.

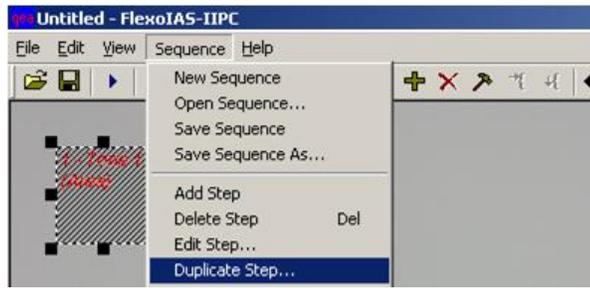
Adding an Analysis Step Using the Duplicate feature

Often the same analysis may be performed at multiple locations on a sample. Density, for example, might be measured in several regions of interest on the same sheet. Sequence programming provides a useful feature for duplicating steps that have already been defined, allowing additional steps requiring the same analysis to be created with ease.

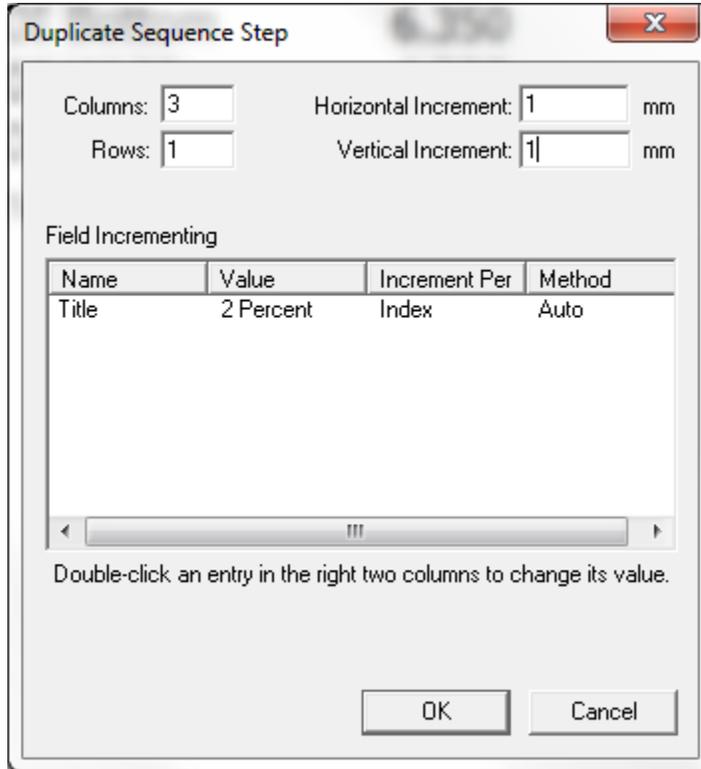
1. Using the arrows on the command toolbar to navigate among steps already created, highlight the step you want to reproduce. In this case, we want to produce two additional copies of Step 1, so highlight Step 1.



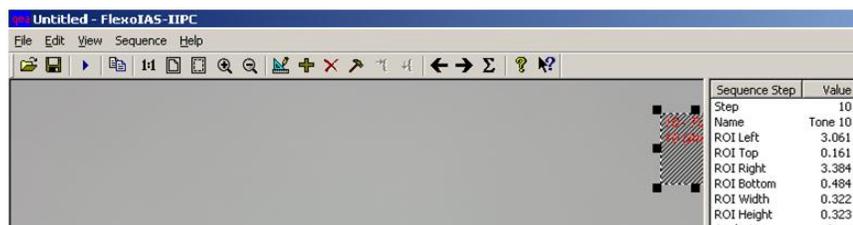
2. Click on **Sequence|Duplicate Step**.



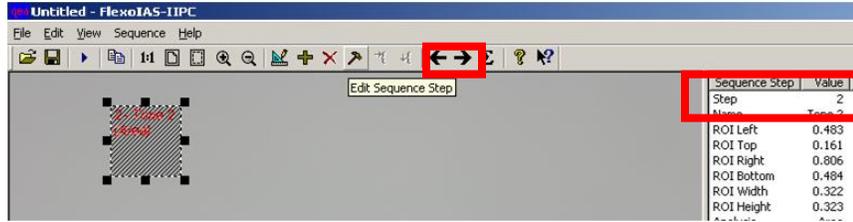
This will open the *Duplicate Sequence Step* Window.



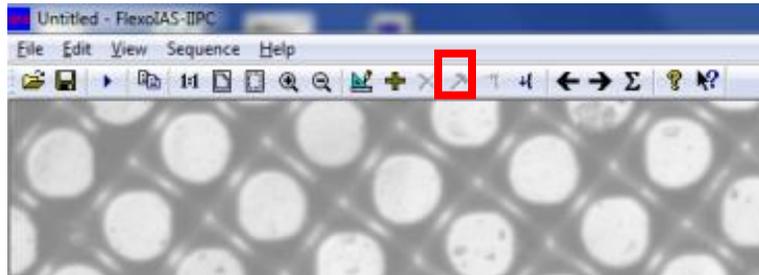
3. In the Columns field, enter the total number of times you want the highlighted step to occur in the sequence, including the current instance. The figure above shows that there will be a total of three iterations of this step in the sequence, so the existing step must be duplicated twice.
4. Click **OK** to trigger the duplications. There are now three iterations of this step in the sequence.



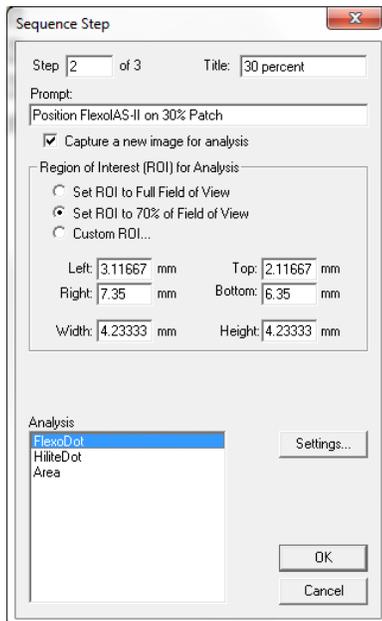
- Using the arrows on the command toolbar, navigate through the steps of the sequence until Step 2 is highlighted. This is the first of the additional copies you just created.



- Click on the hammer icon in the toolbar.



- The *Sequence Step* window for Step 2 will open.

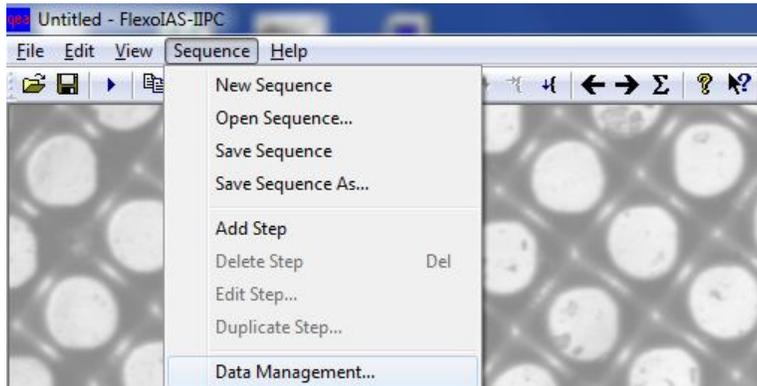


- Rename the analysis (“30 percent”).
- Change the Analysis to FlexoDot
- Change the prompt telling the operator what to do (“Position FlexoIAS-II on 30% Patch”).

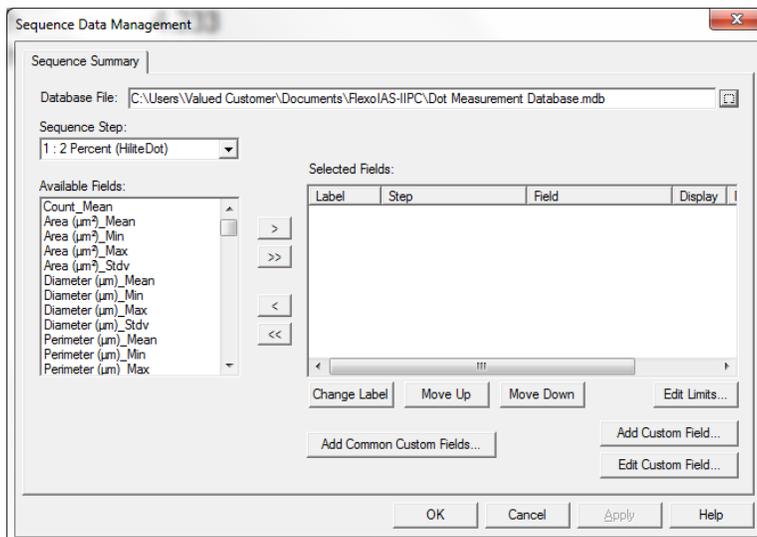
11. Repeat the process to highlight and rename the remaining iteration of this step and change the operator prompt.
12. Click on **Sequence|Save Sequence**.

Creating a Database

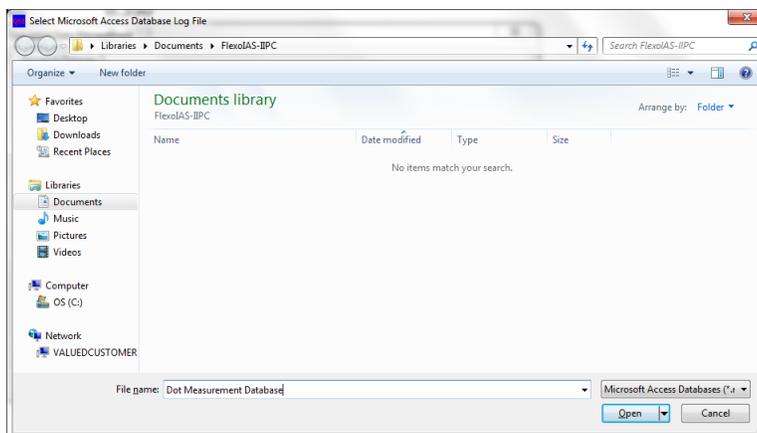
1. Click on **Sequence|Data Management**.



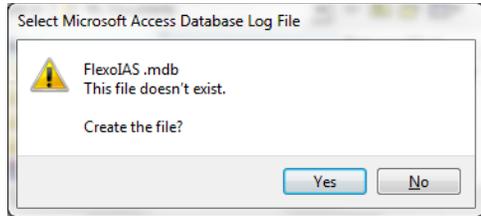
2. The *Sequence Data Management* Window will open.



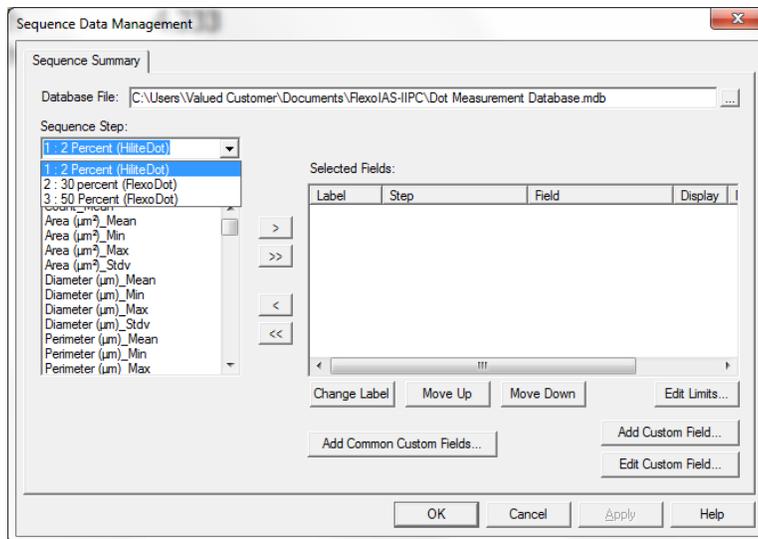
3. Click on the **Browse** button next to “Database File:”



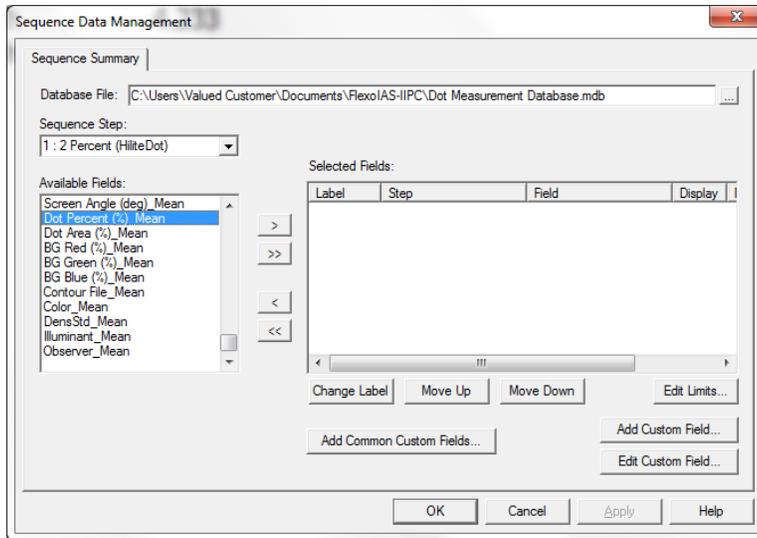
4. Create a Database called “Dot Measurement Database”, and navigate to where you want it saved.
5. Click **Open**.



6. When prompted, click **Yes** to create a new database.
7. The “Database File:” path will be updated with the database you just created.

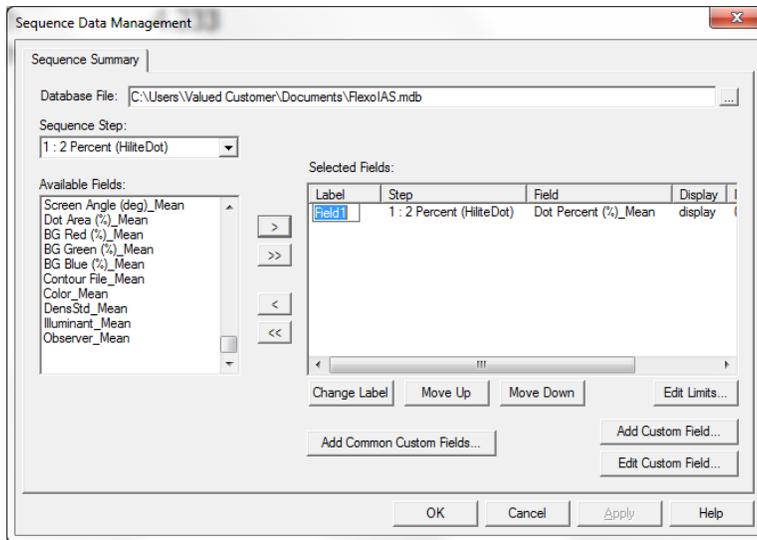


8. Click on the Sequence Step drop down menu.
9. Select Step 1: 2 Percent (HiliteDot).

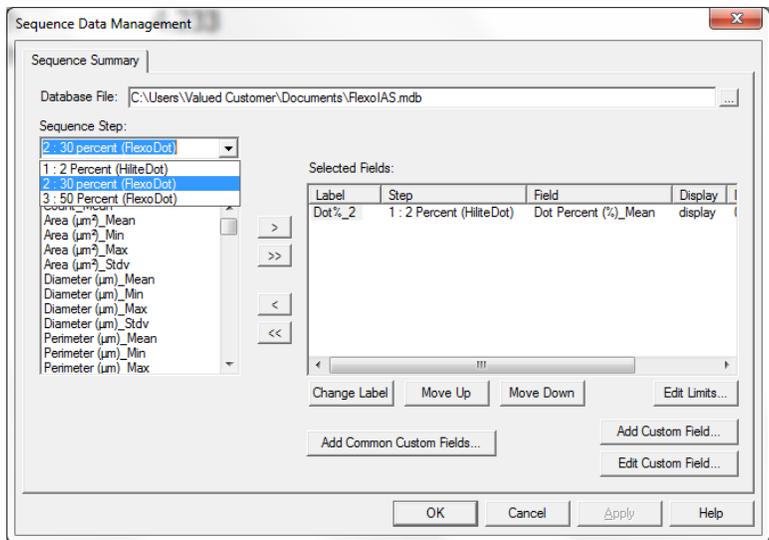


10. Scroll down and select “Dot Percent (%) Mean” from the Available Fields list.

11. Click on the arrow icon  to move the selected field to the Selected Fields list.

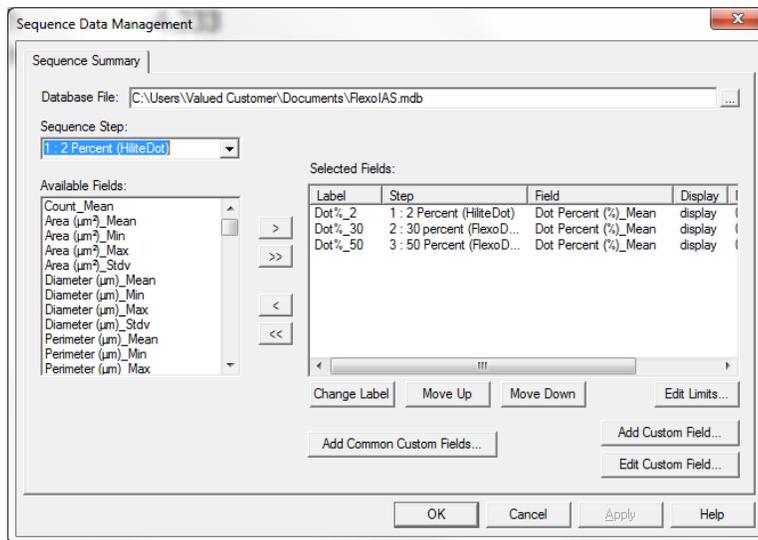


12. Change the Label for the first step in “Selected Fields” from “Field1” to “Dot%_2.”



13. Repeat steps 9-12 for each of the remaining steps.

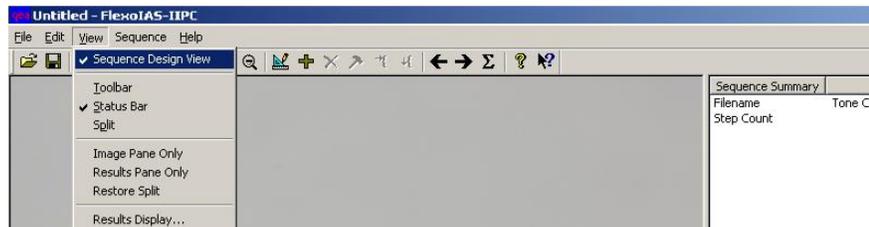
Change the Label for Step 2 to “Dot%_30” and for Step 3 to “Dot%_50”.



14. Click **OK** to close Sequence Data Management.

15. Save the sequence by selecting **Sequence|Save Sequence**.

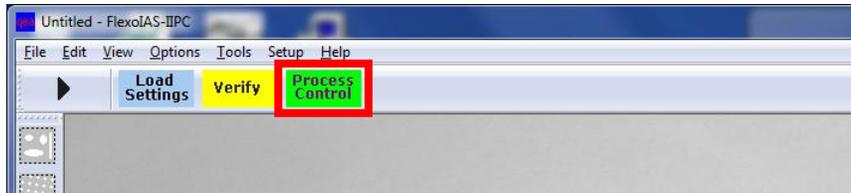
16. End your sequence design session by clicking again on **View|Sequence Design View** to deselect it.



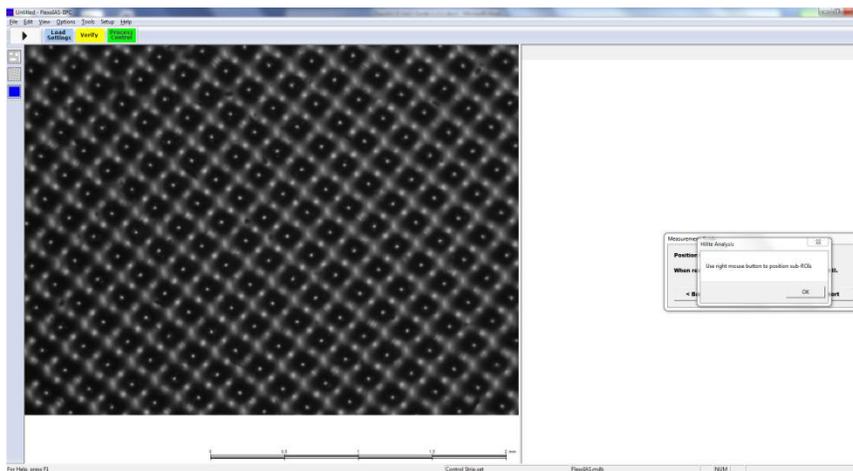
II. Running a Sequence

Follow the steps below to run your sequence.

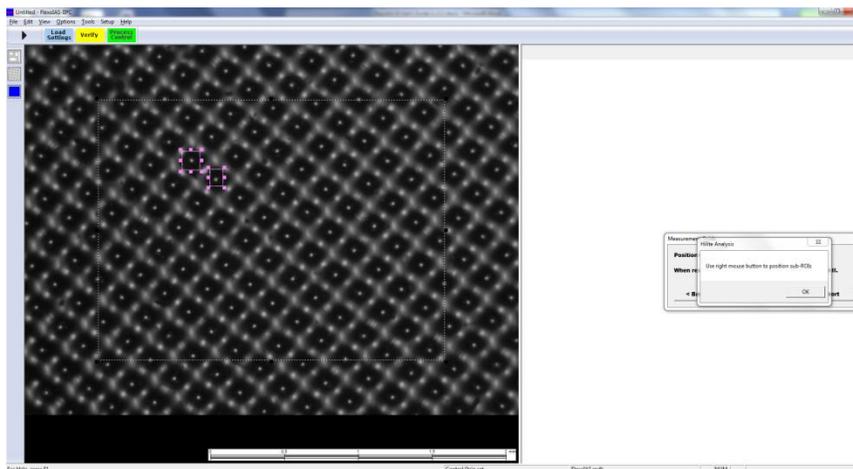
1. Click the **Process Control** button.



2. Position the FlexoIAS-II on the 2% Patch, as prompted.

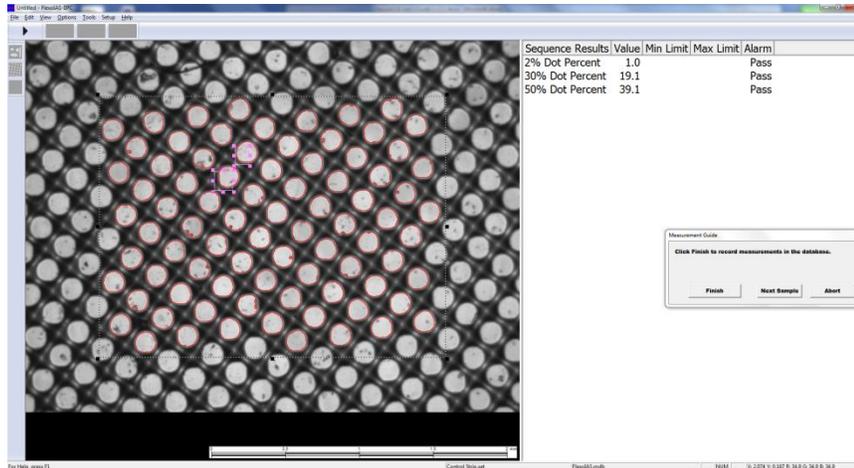


3. Position the 2 sub-ROI's on adjacent dots, as shown



4. Click **OK** to run the Hilite Dot analysis.
5. Review the results and click **OK**.
 - a. If the values do not seem reasonable, click **Back** to repeat the measurement.
 - b. If the values are reasonable, proceed to the next step.

6. Reposition the FlexoIAS-II as prompted.
7. Click **Measure**.
8. Repeat steps 4-7 until all of the patches have been measured.



9. Click Finish to save the measurements to the database.

Appendix B: Data Reporting Add-in

This Appendix describes an optional IASLab data reporting component that is a feature of FlexoIAS-II systems with process control capability, such as FlexoIAS-IIPC, FlexoIAS-IIPCP and FlexoIAS-IIPC2P. If you have the basic FlexoIAS-II, which does not include process control, the data reporting add-in is generally not included.

The data reporting add-in is a customization that runs on Microsoft Excel to facilitate generation of reports using data from the Microsoft database files created by FlexoIAS-IIPC systems.

Installation

Installing the add-in requires 3 steps:

1. Installing the add-in to make it available to Excel
2. Loading the add-in
3. Activating the add-in

Installing the Add-In

To make the add-in available to Excel, simply place a copy of the file “IASLab.xla” in any convenient folder on your computer hard drive. Once you have placed the file in the appropriate folder, go to the **Tools** menu and choose **Add-Ins....** (In Excel 2007, click the **Office** button; choose **Excel Options**; select the **Add-Ins** screen; choose **Excel Add-Ins** in the **Manage** input box; and click **Go**.) In the Add-Ins dialog box, click the **Browse** button. This will open a familiar Open File dialog box. Navigate to the folder in which you saved the .xla add-in file, select that file, and click **Open**. This will install the add-in. Generally, you need to do this only once, the first time you use the add-in.

Loading the Add-In

After an add-in has been installed, it must be loaded in order to make its functions and tools accessible. Open the Add-Ins dialog box as described above and locate the add-in in the list. Select the add-in, check the box next to it, and click OK. To unload an add-in, follow the same steps, but uncheck the box next to the add-in.

Activate the Add-In

Finally, when the add-in loads you will be presented with a “challenge code”. This code must be supplied to QEA. QEA will supply a password corresponding to the challenge code. You need to enter the password only once to activate the add-in; after that, it is ready to use.

After the add-in has been activated, a new “IASLab” menu will appear in Microsoft Excel’s main menu. In Excel 2007, an “IASLab” menu command will appear in the “Menu Commands” panel of the “Add-Ins” ribbon.

Report Generation

To generate a report, simply select **Generate Report** from the IASLab menu.

1. Use the familiar *File Open* dialog box to select the database file where the raw data are stored.
2. Use the *File Open* dialog box to select the report template file (discussed below) that defines the content and format of the report.
3. Depending on the design of the report template, you may be prompted for other input. Follow the on-screen prompts.

How it Works

The following actions are performed by the IASLab Add-In to generate a report:

1. A new workbook is created based on the specified Excel template file. This new workbook will be modified as your report.
2. The software checks each worksheet in the report to determine whether it includes a query definition. The query definition is identified by a cell with the name “QUERY_DEFINITION”. There will be a separate worksheet for each query. There can also be many worksheets with no query definitions. For each sheet where a query definition is found, the corresponding query is executed against the specified database file, and the returned records are put into the worksheet.
3. After the queried data are put into the worksheets that contain query definitions, the workbook recalculates, and all the tables, plots and other representations of the data are updated to produce the final report.

Template Design

The report format and supporting queries are contained in the report template file (*.xlt or *.xltx). To create a new template, start with an existing template, make appropriate changes, and then save it as a template (*.xlt or *.xltx) with a new filename.

The mechanism for porting data from the database file to the template-based workbook is the query. There must be a separate sheet in the template for each query. To add a new sheet with a query to a template, simply make a copy of an existing query sheet, and then change its name and contents.

Rows 4 through 7 of each query sheet define the query that will be run to get data from the database:

3			
4	Table:		
5	Field:		
6	Sort:		
7	Criteria:		
8			
9			

Specifying the fields for the query

To query for a specific field in the database, enter the table name in cell B4 and the field name in cell B5. Note that the syntax of the query must match the database exactly, including spelling and capitalization of each table and field name. Since precision is essential, it is recommended that you open the database in Microsoft Access, copy the relevant table to the Windows clipboard, and then paste it into a temporary Excel workbook. Then you can copy and paste the field names from the temporary workbook into the query worksheet you are modifying, guarantying that the field names are identical to the ones in the database.

Additional fields are specified in the same way: put the table name in row 4 and the field name in row 5. One query (one sheet in the template) can include fields from only one table. In other words, on a single query sheet all the table names in row 4 should be the same. You can query for as many fields as you want from a single table; the add-in will end the query at the first blank cell in row 4.

Sorting the returned records

When the query runs, the order of the returned records is unpredictable unless one or more of the fields are used to sort the records. Note that in row 6 you can specify fields to use for sorting, as follows:

1. (blank)
Leave the cell in row 6 blank, and the corresponding field will not be used to sort the records.
2. ASC
Enter “ASC” in the cell in row 6, and the records in the corresponding field will be sorted in ascending order.
3. DESC
Enter “DESC” in the cell in row 6, and the records in the corresponding field will be sorted in descending order.

More than one field can be used for the sort. For example, you may want to do a primary sort on “Last Name” and a secondary sort on “First Name”, in case “Last Name” is the same in multiple records. To do this, just put the desired keyword (ASC or DESC) in row 6 of the Last Name and First Name fields, and be sure the primary sort column is to the left of the secondary sort column. Likewise, more than two fields can be used. Keep in mind that sort order is from left to right in the query sheet.

Adding filters to the query

Typically you need to add filtering to the query so that only relevant records are returned. For example, the “Area Summary” table of a database may include records from uniformity measurements, tone reproduction measurements, various tone sweeps in various colors, and results from many different samples. To obtain only the records corresponding to a single sample and a single region, you will need to specify some filters.

In row 7 of the query sheet, you can enter any SQL criteria, including the “Like” operator, wildcards, and the Boolean operators OR and AND. Examples include:

```
=”printerX”
>15
<2
Like “DMa_”
>2 AND <5
```

Note that literal text strings used as arguments for Boolean expressions must be enclosed in quotation marks. You can specify filters for multiple fields in the query sheets. There are also 3 keywords that can be used in the Filter Criteria. They are:

1. **MAX**
When Filter Criteria is keyword MAX, the records will be filtered so that only the records with the given field at its maximum value will be returned. You can use the MAX keyword with the field **SampleRecID** to produce a report from the most recently analyzed sample.
2. **INPUT**
When Filter Criteria starts with keyword INPUT, the user is prompted for the value of the given field. Follow keyword INPUT with the prompt for the user.
3. **SELECT**
When Filter Criteria starts with keyword SELECT, the user is prompted to select the value for the given field from among all the values in the database. Follow keyword SELECT with the prompt for the user.

Using results from one query to filter a second query

It is often convenient to use the results from one query to filter a second query. For example, if SELECT (see above) is used to allow the user to select a single sample ID in a query (an independent query), the results of that independent query can be used to filter the records from other queries (dependant queries) in the workbook. It is important that the independent query be run before the dependant queries. To mark a query as dependant, simply put the field with the dependant filter in column B (the first column), and for the criteria (cell B7) enter an Excel expression like this:

```
=”=”&SampleLog!B12
```

...where the sheet “SampleLog” contains the independent query. Note that before the independent query runs, the cell SampleLog!B12 is blank, so this expression evaluates to the equal sign (“=”) When the add-in sees the single equal sign in cell B7, it recognizes the sheet as a dependant query and postpones running it until after all the independent queries have been run. Only then do the dependent queries run, with the appropriate filters.

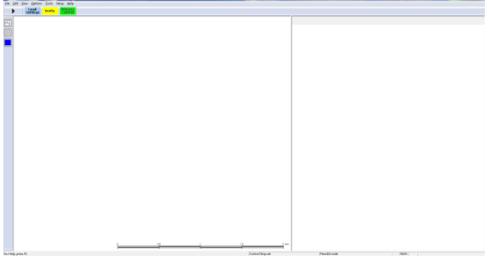
Presentation of results

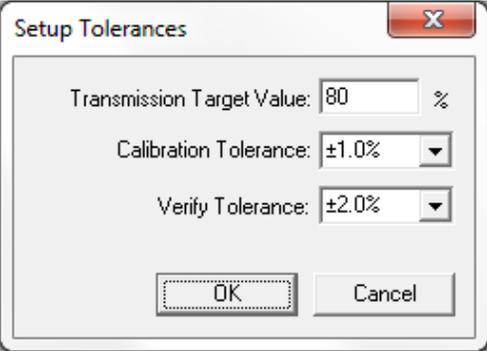
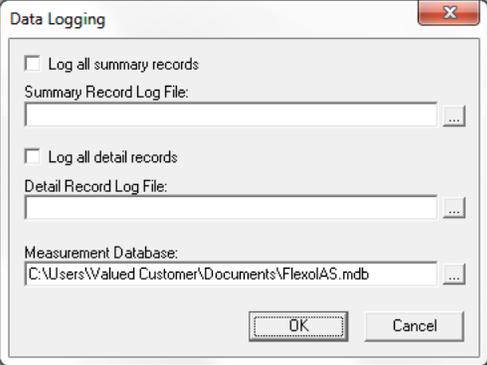
Typically a report includes summarized results and graphical presentations such as charts. The easiest way to develop these report features is to first create a simple template with queries only. Then select this template as the basis for a report with real data. With the resulting workbook, you can add worksheets and format them to present the data as desired.

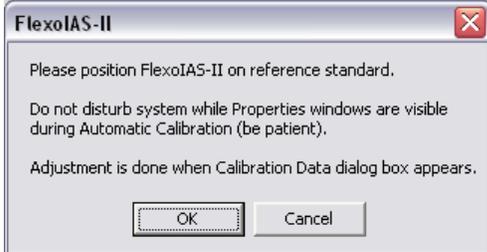
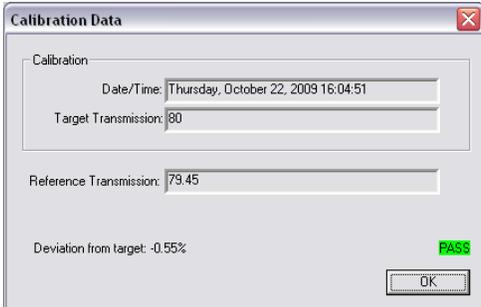
You can create a template from a report by making a new copy of the report and clearing the data from the query sheets (select all the rows after row 8 and clear contents). Be sure not to alter the query definitions in rows 4 through 7; just clear the data. Do not delete the rows or cells, just clear their contents. Finally, save the workbook as a template and use it with the add-in to generate reports with the desired formatting.

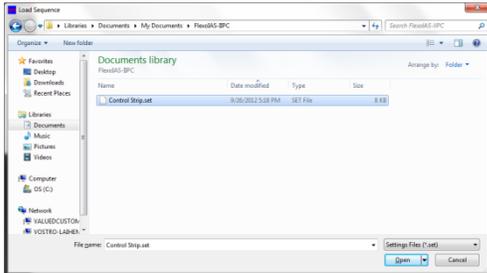
Appendix C: Engineer's Standard Operating Procedure

The engineer or system supervisor, in addition to providing general supervision, review and analysis of results, and technical support in the use of the FlexoIAS-II, is responsible for performing system calibration. The following is a step-by-step calibration procedure.

Steps	Actions	Results
<p>1) Turn on hardware</p>	 <p>Turn on light box.</p>	 <p>Light shines from the top; the green LED is on.</p>
<p>2) Launch software</p>	 <p>From the Start menu select All Programs FlexoIAS-II.exe</p>  <p>Click OK.</p>	<p>FlexoIAS-II loads; user interface appears.</p> 

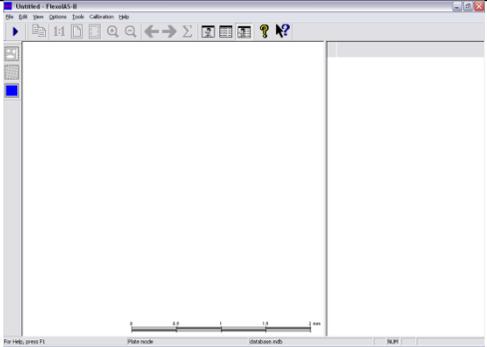
Steps	Actions	Results
<p>3) Set Calibration Tolerances</p>	<p>This action is performed once, when the FlexoIAS-II software is installed or reinstalled</p> <p>From the Setup menu, select Calibration Tolerances...</p>  <p>Verify that the tolerances are set to Transmission Target Value = 80% Calibration Tolerance = ±1.0% Verify Tolerance = ±2.0% Click OK.</p>	<p>Tolerances are set to provide Pass/Fail feedback during both the calibration and verification processes.</p>
<p>4) Set up Measurement Database</p>	<p>This action is performed once, when the FlexoIAS-II software is installed or reinstalled.</p> <p>Select File Data Logging...</p> <p>In the Measurement Database field enter the name of the database where plate data is to be recorded. Click OK.</p> 	<p>All calibration and verification data will be recorded in the selected database.</p>

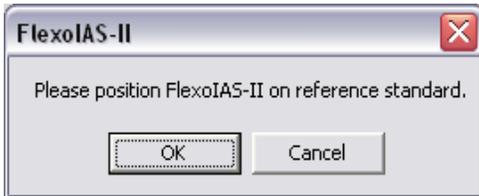
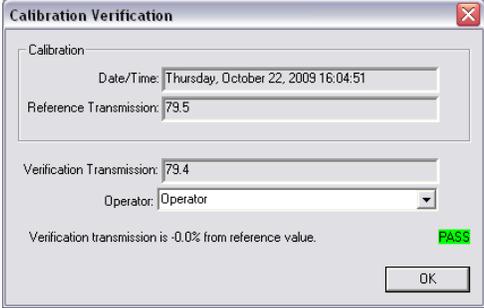
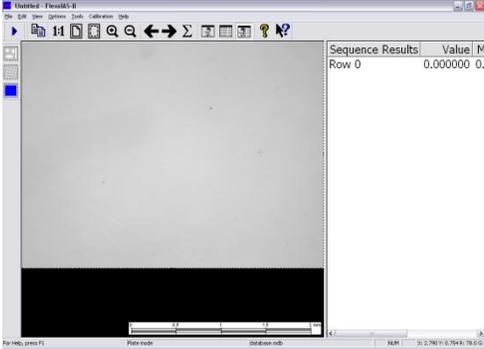
Steps	Actions	Results
<p>5) Calibration</p>	<p>Calibration is performed under two conditions:</p> <ol style="list-style-type: none"> 1) When FlexoIAS-II software is installed or reinstalled 2) When the system fails the verification test <p>Make sure the light box has been on for at least 5 minutes prior to calibration.</p>  <p>Note: The <i>Transmission Reference Standard</i> should be cleaned with compressed air when necessary. It should be stored in its case in a clean, dry place when not in use.</p> <p>Select Calibration Calibrate...</p>  <p>Place the <i>Transmission Reference Standard</i> (label-side up) on the light box underneath the Measurement Unit.</p>  <p>Then click OK.</p>	<div style="background-color: red; color: white; padding: 5px; text-align: center;"> <p>Automatic Calibration in Progress</p> <p>Please Wait...</p> <p>Do not disturb system while this message is displayed.</p> </div> <p>During calibration, the software will open a series of windows as it adjusts the camera settings. Beeps may be heard. When calibration is complete, all of the windows will close and the image pane will contain a white image of the <i>Transmission Reference Standard</i> surface.</p> <p>BE PATIENT: this procedure may take more than 2 minutes to complete. DO NOT disturb the computer or switch to other applications during this process.</p>  <p>At the end of the process, a dialog box will display a PASS/FAIL indicator. In the case of a failure, repeat the calibration.</p> <p>Click OK.</p> <p>Due to camera limitations, it may be necessary to repeat the calibration 2 or 3 times to get a successful calibration.</p>

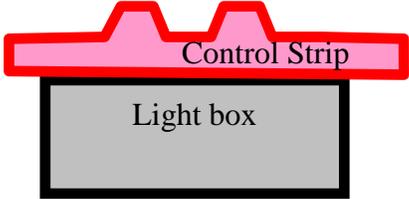
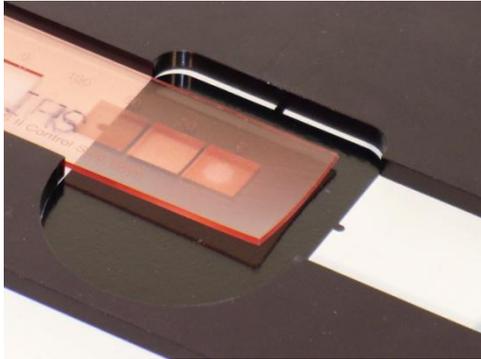
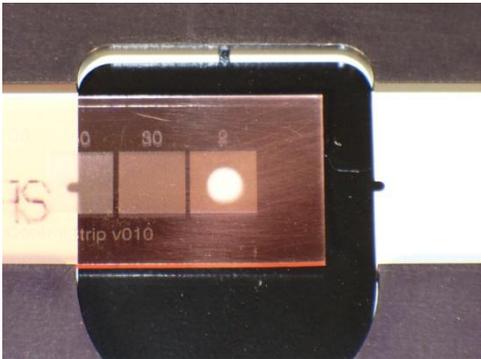
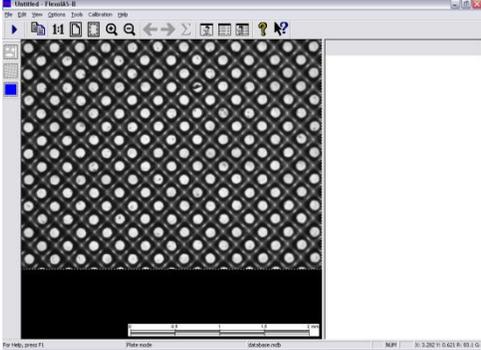
Steps	Actions	Results
<p>6) Load Settings</p>	<p>For automated Process Control Measurements, a previously defined measurement sequence must be loaded.</p> <p>See Appendix A above for a detailed explanation of how to create a sequence.</p> <p>Select Load Settings from the <i>Command Toolbar</i></p>  <p>Select a previously defined sequence and click Open.</p> 	<p>The FlexoIAS-IIPC software will load the sequence.</p> <p>The name of the loaded sequence is displayed on the <i>Status Bar</i> at the bottom of the window.</p> 

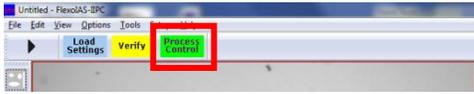
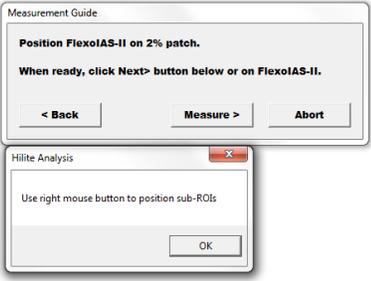
Appendix D: Operator's Standard Operating Procedure

Routine Use of the FlexoIAS-II for Process Control

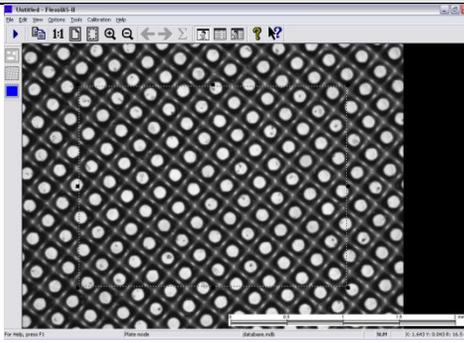
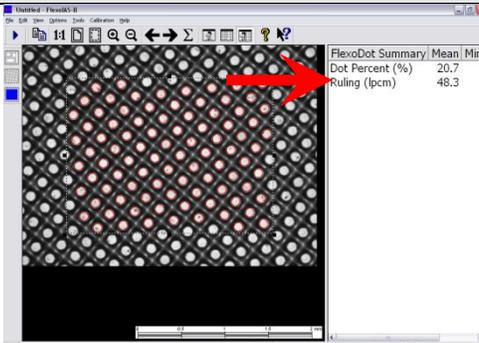
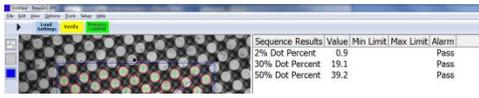
Steps	Actions	Results
<p>1) Turn on hardware</p>	 <p>Turn on light box.</p>	 <p>Light shines from the top; the green LED is on.</p>
<p>2) Launch software</p>	 <p>From the Start menu, select All Programs\FlexoIAS-II.exe</p>  <p>Click OK.</p>	 <p>FlexoIAS-II software loads; the user interface appears.</p>

Steps	Actions	Results
<p>3) Check instrument stability</p>	<p>Perform this operation at the beginning of each shift.</p> <p>Light box should be on for at least 5 minutes before performing this step.</p>  <p>Retrieve your <i>Transmission Reference Standard</i> from its storage location. Make sure it is clean; clean it with compressed air if needed.</p> <p>Click the Verify button.</p>   <p>Place the <i>Transmission Reference Standard</i> (label-side up) on the light box underneath the Measurement Unit.</p>  <p>Then click OK.</p>	<p>The software displays a PASS/FAIL indicator.</p>  <p>Enter your name in the <i>Operator</i> box. Click OK.</p>  <p>If the system returns a FAIL indicator, verify that:</p> <ol style="list-style-type: none"> 1) <i>Transmission Reference Standard</i>, Measurement Unit and light box aperture are clean 2) Light box is warmed up <p>If the verification fails repeatedly, have the Engineer perform a calibration.</p>

Steps	Actions	Results
<p>4) Position <i>Control Strip</i></p>	 <p>The flat side of the <i>FlexoIAS-II Control Strip</i> must rest against the top of the light box.</p>  <p>Use the <i>Control Strip Alignment Guide</i> to help position the <i>FlexoIAS-II Control Strip</i> over the light box opening.</p>	 <p>The control strip patch should be centered on the opening in the light box.</p>
<p>5) Position the FlexoIAS-II</p>	 <p>Place the FlexoIAS-II in the center of the <i>Control Strip Alignment Guide</i>, on top of the <i>FlexoIAS-II Control Strip</i>.</p>	 <p>The patch is clearly visible with no black areas around the edges.</p>

Steps	Actions	Results
<p>6) Start Measurement of FlexoIAS-II Control Strip</p>	<p>Click the Process Control button.</p> 	 <p>A message box appears prompting you to position the first patch over the opening in the light box.</p>

Steps	Actions	Results
<p>7) Measure a Highlight Patch</p>	<div data-bbox="456 226 922 569" data-label="Image"> </div> <p>Position the highlight patch over the light box aperture and place the FlexoIAS-II on top.</p> <p>Press the orange button on the left side of the Measurement Head to capture an image.</p> <div data-bbox="456 831 938 1192" data-label="Image"> </div> <p>Using the right mouse button, reposition the sub ROIs around two adjacent PRINTING dots as shown.</p> <p>Click OK to perform a highlight dot measurement.</p> <p>Verify that the correct dots have been found, and click OK.</p>	<div data-bbox="954 226 1437 569" data-label="Image"> </div> <p>Verify that the printing dots are circled in red.</p> <p>Make sure the line screen value is reasonable. If it is too high or too low, the wrong dots have probably been found.</p> <p>Also check Dot Percentage to make sure it is reasonable, e.g. <5%.</p> <p>The software will return to <i>Preview Mode</i> when you click OK.</p>

Steps	Actions	Results																				
<p>9) Measure a Midtone Patch</p>	 <p>Position a midtone patch under the FlexoIAS-II.</p> <p>Press the orange button on the left side of the measurement head to capture an image.</p> <p>Click the Measure button to perform a dot measurement.</p> <p>Verify that the correct dots have been found, and click OK.</p>	 <p>Verify that the printing dots are circled in red.</p> <p>Verify that the line screen value is reasonable. If it is too high, the wrong dots have probably been found.</p> <p>Also check Dot Percentage to make sure it is reasonable.</p> <p>The software will return to <i>Preview Mode</i> when OK is clicked.</p>																				
<p>10) Repeat Measurements</p>	<p>Following the example in step 9, repeat the dot measurements on the remaining patches.</p> <p>When prompted, click Finish to write the results to the measurement database.</p> <div data-bbox="456 1325 920 1507" style="border: 1px solid black; padding: 5px;"> <p>Measurement Guide</p> <p>Click Finish to record measurements in the database.</p> <p style="text-align: center;"> <input type="button" value="Finish"/> <input type="button" value="Next Sample"/> <input type="button" value="Abort"/> </p> </div>	<p>When the sequence is completed, the results will be displayed in the results pane of the FlexoIAS-II software.</p>  <table border="1" data-bbox="1203 1199 1432 1297"> <thead> <tr> <th>Sequence Results</th> <th>Value</th> <th>Min Limit</th> <th>Max Limit</th> <th>Alarm</th> </tr> </thead> <tbody> <tr> <td>2% Dot Percent</td> <td>0.9</td> <td></td> <td></td> <td>Pass</td> </tr> <tr> <td>30% Dot Percent</td> <td>19.1</td> <td></td> <td></td> <td>Pass</td> </tr> <tr> <td>50% Dot Percent</td> <td>39.2</td> <td></td> <td></td> <td>Pass</td> </tr> </tbody> </table> <p>Click Finish to write these results to the database.</p>	Sequence Results	Value	Min Limit	Max Limit	Alarm	2% Dot Percent	0.9			Pass	30% Dot Percent	19.1			Pass	50% Dot Percent	39.2			Pass
Sequence Results	Value	Min Limit	Max Limit	Alarm																		
2% Dot Percent	0.9			Pass																		
30% Dot Percent	19.1			Pass																		
50% Dot Percent	39.2			Pass																		