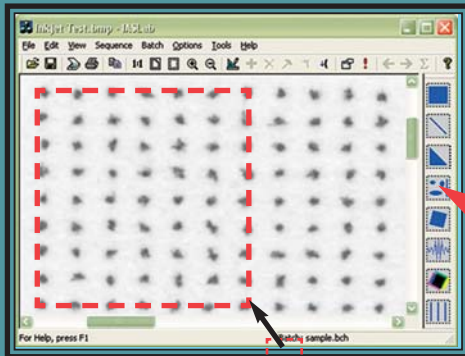


Image Analysis System Laboratory

IASLab is an advanced software product for objective, automated evaluation of image quality. Bundled with the PIAS®-II, Scanner IAS® and other QEA image quality analysis tools, IASLab is also available as a standalone software package. IASLab offers a comprehensive toolkit for measuring dots, lines, large areas, NPS, and many other salient image quality features. The software can be used in interactive mode to analyze a particular image element or in automated mode for sequential or repetitive analyses. Automated scan results are stored in an Access database for convenient analysis and reporting.

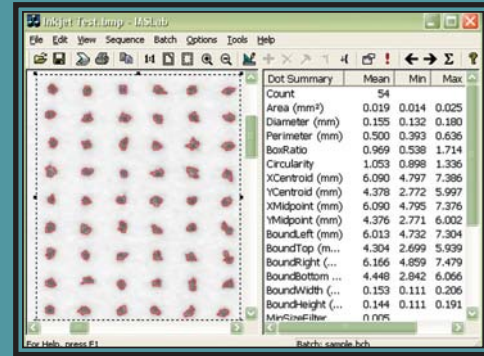
Easy PQ measurements from 1 to 1,000,000

1 Have a few quick measurements to make? Use **Interactive Mode**



1) Drag an ROI (region of interest)

2) Click on the desired analysis tool button

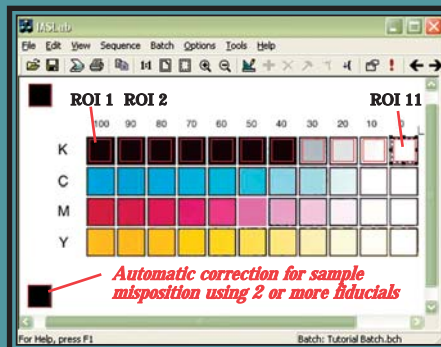


3) View instantaneous results on screen

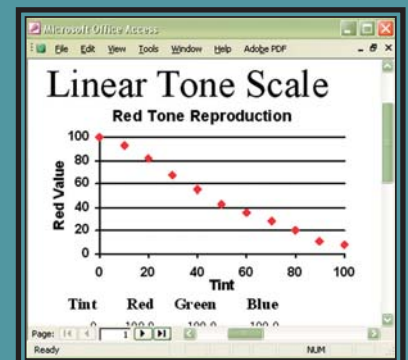
>1,000,000 Have a lot of measurements to make? Use **Automated Mode**



1) Load the documents into a scanner with ADF



2) Run an automated sequence that measures as many ROIs as you want



3) Report results from Access or export to Excel or other software



Quality Engineering Associates, Inc.

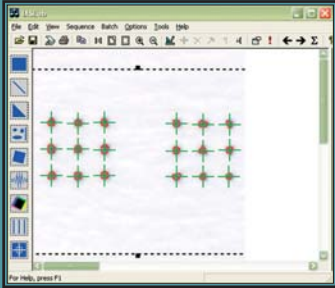
99 South Bedford Street #4, Burlington, Massachusetts 01803 USA

Tel: (781) 221-0080 Fax: (781) 221-7107

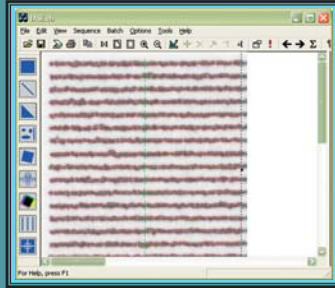
Email: info@qea.com URL: www.qea.com

THE TOOLS

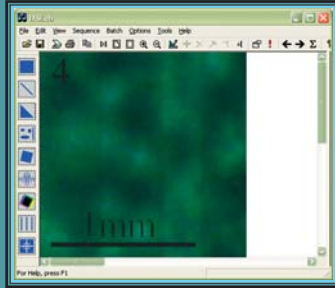
Basic



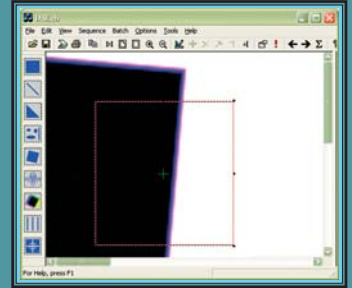
Dot Tool
Diameter, position, shape...



Line Tool
Width, raggedness, spacing...
ISO13660



Area Tool
Density, mottle, graininess...
ISO13660

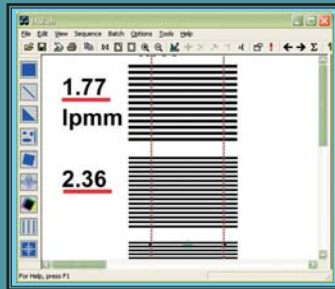


Color Registration
Alignment of colors...

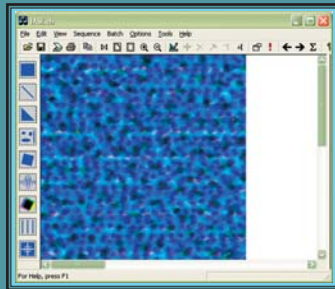
Advanced



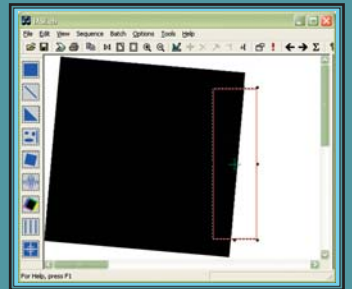
OCR Tool
Can be used for sample ID...



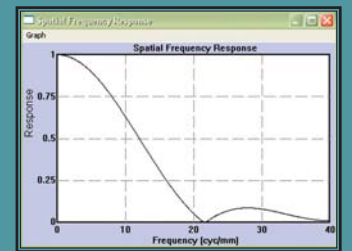
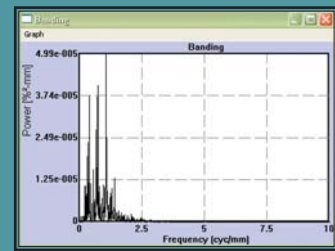
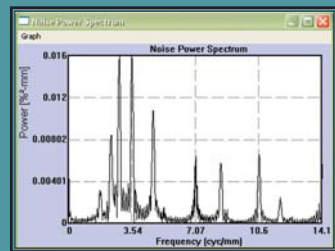
NPS Tool
Noise power spectrum...



Banding Tool
Including VTF analysis...



SFR Tool
Spatial frequency response...



WHY DO PQ MEASUREMENTS?

PQ measurements are essential during development, manufacturing, and marketing of printing systems. These measurements determine whether the printer and components are working as expected.

Examples

- 1) An inkjet head manufacturer measures a pattern of dots and lines to see if the print head is working properly.
- 2) An inkjet ink or media manufacturer measures blocks of colors and colored lines to check for mottle and bleed.
- 3) A laser printer manufacturer measures patterns of lines to check laser scanner and paper feeder performance.

We invite you to contact **QEA's** application engineers to discuss your **PQ** measurement needs.

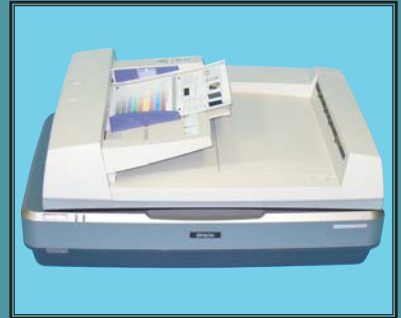
THE PROCESS



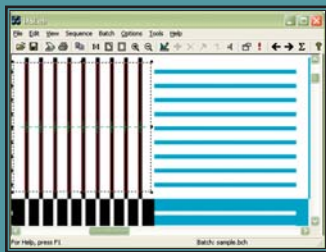
1) Select an appropriate test target for the problem of interest



2) Print the target using the printer, cartridge, ink, and / or media to be analyzed

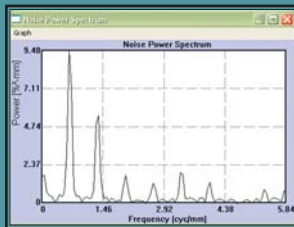


3) Digitize the printed sample using a scanner or digital microscope



4) Analyze automatically in IASLab

| Line Summary | Mean | Min | Max | Stdev |
|-----------------------|--------|--------|-------|-------|
| Count | 9 | | | |
| Lead Blur (mm) | 0.090 | 0.068 | 0.096 | 0.008 |
| Trail Blur (mm) | 0.118 | 0.096 | 0.133 | 0.010 |
| Lead Raggedness (mm) | 0.014 | 0.010 | 0.018 | 0.003 |
| Trail Raggedness (mm) | 0.014 | 0.011 | 0.016 | 0.002 |
| Width (mm) | 0.120 | 0.114 | 0.127 | 0.004 |
| Min Width (mm) | 0.075 | 0.040 | 0.091 | 0.014 |
| Max Width (mm) | 0.169 | 0.150 | 0.196 | 0.014 |
| Std Dev Width (mm) | 0.017 | 0.013 | 0.021 | 0.003 |
| Breaks | 0.000 | 0.000 | 0.000 | 0.000 |
| Lead Angle [deg] | -0.193 | -0.365 | 0.018 | 0.123 |
| Trail Angle [deg] | 0.302 | 0.450 | 0.450 | 0.050 |



5) Review results on screen and...

| Seq | SumC | Sampl | Count | Line Width | LE Rag | TE Rag | Distance |
|-----|------|-------|----------|------------|-----------|---------|----------|
| 1 | 1 | 4 | 1.604211 | 0.034041 | 0.0365771 | 4.18437 | |
| 2 | 2 | 4 | 1.59845 | 0.033556 | 0.0365771 | 4.18444 | |
| 3 | 3 | 4 | 1.604211 | 0.034041 | 0.0365771 | 4.18437 | |
| 4 | 4 | 4 | 1.597026 | 0.034073 | 0.0365771 | 4.18417 | |
| 5 | 5 | 4 | 1.604211 | 0.034041 | 0.0365771 | 4.18437 | |
| 6 | 6 | 4 | 1.59845 | 0.033556 | 0.0365771 | 4.18444 | |
| 7 | 7 | 4 | 1.604211 | 0.034041 | 0.0365771 | 4.18437 | |
| 8 | 8 | 4 | 1.597026 | 0.034073 | 0.0365771 | 4.18417 | |
| 9 | 9 | 4 | 1.604211 | 0.034041 | 0.0365771 | 4.18437 | |
| 10 | 10 | 4 | 1.59845 | 0.033556 | 0.0365771 | 4.18444 | |
| 11 | 11 | 4 | 1.604211 | 0.034041 | 0.0365771 | 4.18437 | |
| 12 | 12 | 4 | 1.597026 | 0.034073 | 0.0365771 | 4.18417 | |
| 13 | 13 | 4 | 1.604211 | 0.034041 | 0.0365771 | 4.18437 | |

6) in Access for further data analysis and report generation

QEA IAS Products for Print Quality Evaluation

- PIAS®-II portable image analysis system
- Scanner IAS® scanner-based image analysis system
- IAS®-1000 automated camera-based image analysis

