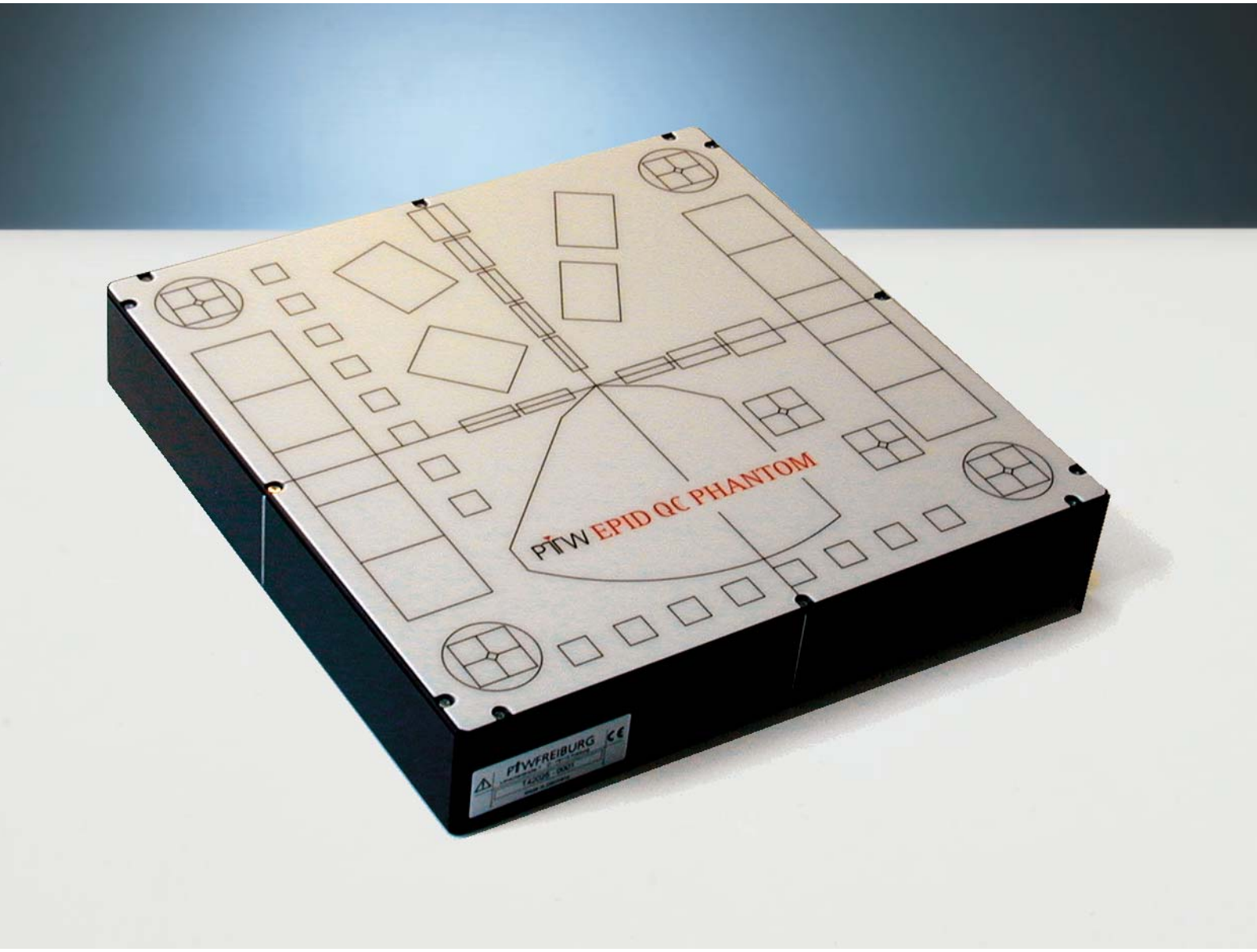


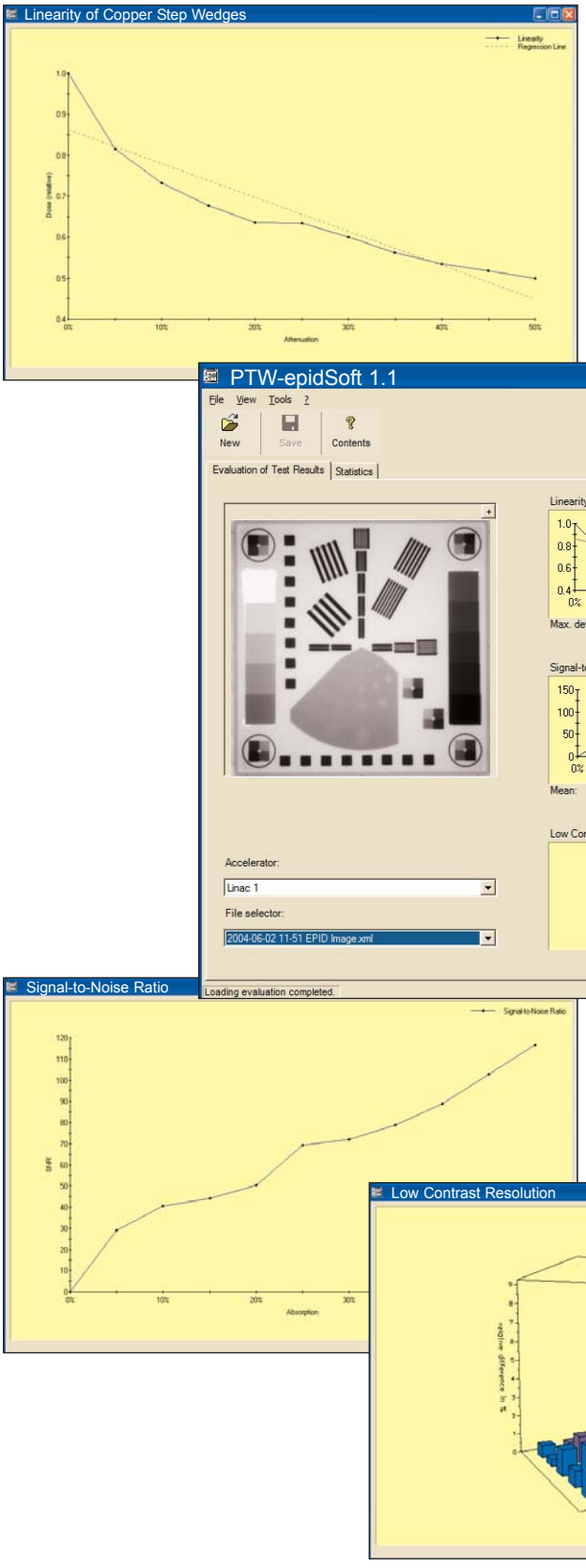
Quality Control of EPIDs

RADIATION THERAPY

PTW

Introduction

The EPID QC Phantom was designed together with EPID QC Software epidSoft to ensure an efficient and easy way of quality control of Electronic Portal Image Devices (EPID). With the focal spot geometry all important parameters for quality control can be evaluated in one image, acquired with a single beam. A high contrast resolution up to 3.3 lp/mm allows an accurate control of EPIDs. Besides that, the phantom features low contrast, signal linearity, local dependence of linearity as well as noise analysis. Evaluated results will be displayed immediately in an overview and can be printed and signed. Evaluation results together with the images can be stored in different folders for statistics.



Optimised Workflow for EPID QC

Quick Setup:

The EPID QC Phantom is quickly set up in isocenter using the lasers or accelerator crosshairs.

Efficient Evaluation:

To import the acquired image, epidSoft supports many image file formats. After position calibration, epidSoft displays the areas of the test elements and the evaluation will start immediatly. The result will be displayed after the evaluation without any user interaction. All parameters will be displayed in one screen in several charts. Each result window can be enlarged for a detailed view for following test patterns:

Linearity: Nine copper steps with 5 % absorption difference represent the range of anatomical relevance. A regression line is set over all copper steps.

Local dependance of linearity: Six blocks, each with four absorption steps show the signal linearity in different areas in the field of view of the EPID.

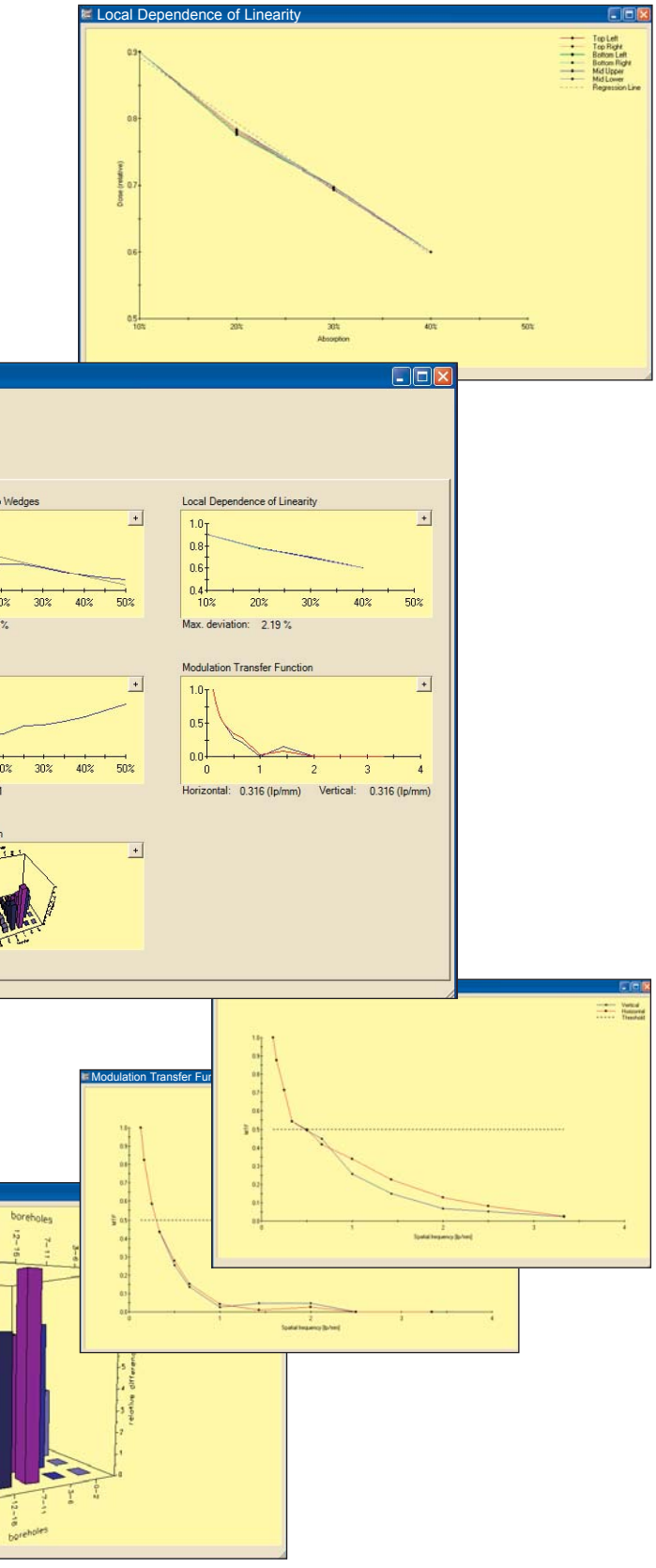
SNR: Signal to noise analysis is taken for all copper steps.

High contrast resolution: The MTF values are plotted for all 18 test patterns. 7 test patterns are displayed separated in a horizontal and vertical curve. Threshold for the MTF can be set in the option menue to get the resolution in lp/mm in horizontal and vertical direction.

Low contrast resolution: Low contrast resolution is shown in a bar diagramm. The contrast for each hole is represented with one bar. The smallest holes are located close to isocenter to reduce effects of beam divergency.

Increase QC efficency on your EPID

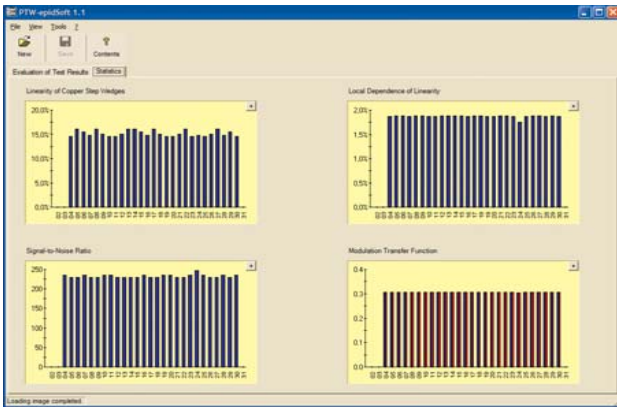
Using EPID QC Phantom with epidSoft



Multiple View Possibilities

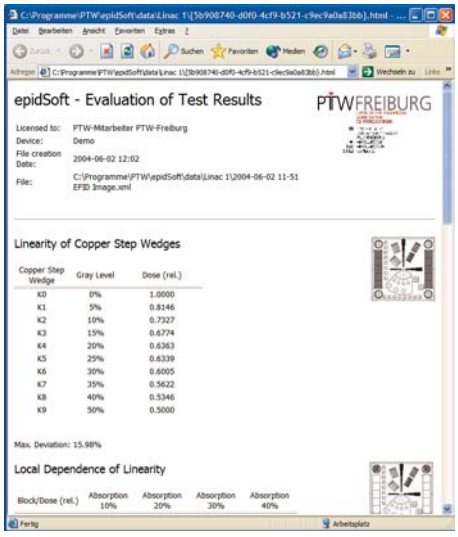
Follow up QC history:

Each evaluation result can be stored in a folder which can easily be created by the user.
Typically there will be one folder for each EPID. Stored evaluations can be reloaded for a detailed view. The statistic function allows to follow up the image quality from the reference image over the whole life time of the EPID. A degradation of the EPID quality can be seen easily in a selectable 10-100 day view. The displayed date of each evaluation indicates when significant changes have happened.



Printouts and Preview:

epidSoft features a print function in html format. The standard internet browser can be used to get a detailed view on the results in a print preview.



Do a complete QC in a single beam with following tests:

- low contrast
- high contrast
- signal to noise ratio
- signal linearity
- local dependence of signal linearity

PTW

FAQs

Does epidSoft supports the file format of my EPID?

epidSoft supports many file formats like DICOM RT image, bmp, jpq, tiff, raw, his .....
For raw data, epidSoft has a small user interface to select the pixel values for rows and columns, pixel depth 8 or 16 bit, little or big endian definition, header offset and black and white inversion.

Does the EPID QC Phantom support high resolution flat panels?

Yes. The phantom includes high contrast test patterns up to 3.3 lp/mm. This resolution is sufficient for state of the art flat panel EPIDs

Can the evaluation results be exported?

epidSoft saves the print preview as html file. Besides that a function is available to export the evaluations in a tab separated text file which can be used to do own statistics with *Microsoft® Excel* or other programms.

(*Microsoft* is a registered trademark of Microsoft Corporation in the United States and other countries.)

Specification

Type of product	QC test object
Application	EPID test with (4 ... 25) MV photons
Focus Distance	100 cm
Linearity and noise test	Copper steps (2/4.1/6.3/8.6) mm and (11.1/13.5/16.6/19.6/26.7)
High-contrast Spatial resolution	(0.5 - 3.33) lp/mm, bidirectional (0.15 - 0.33) lp/mm
Low contrast Recesses	Depths (0.5/1/2/3.2/4.8) mm Ø (1.1/2/4/7/10/15) mm
Outer dimensions (W x L x H)	250 mm x 250mm x 42mm 9.84 in x 9.84 in x 1.65 in
Weight	Approx. 3.8 kg, 8.4 lbs

Ordering Information

EPID QC Software epidSoft	S070010
EPID QC Phantom	T42025

The EPID QC Phantom was designed by Schmidt, Decker, Winkes, Rittler, Kretner and Herbig, Westpfalzklinikum Kaiserslautern, Germany

D712.139.0/0 Effective 2004-06
Previous specifications are void.

PTW FREIBURG
PHYSIKALISCH-TECHNISCHE WERKSTÄTTEN DR. PYCHLAU GMBH

PTW-FREIBURG
Lörracher Str. 7
79115 Freiburg · Germany
Phone +49 761 49055-0
Fax +49 761 49055-70
info@ptw.de
www.ptw.de

PTW NEW YORK

PTW-NEW YORK CORPORATION
201 Park Avenue
Hicksville · New York 11801
Phone (1-516) 827 3181
Fax (1-516) 827 3184
ptw@ptwny.com
www.ptwny.com

PTW FRANCE

PTW-FRANCE SARL
41 Chemin de la Cerisaie
91620 La Ville du Bois · France
Phone +33 1 64 49 98 58
Fax +33 1 69 01 59 32
info@ptw-france.com
www.ptw-france.com