ZEUTSCHEL

OS QM-Tool

Operator’s manual

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CE

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1 Introduction

Zeutschel supports the rollout of the Universal Test Target (UTT) off the UTT Community. The goal is to create a comparable quality standard for scanners of various categories using this consistent target.
With the QM-Tool Zeutschel offers a Software that is capable to evaluate the UTT fully automatic for various standards. The result is displayed directly on the screen. In „stand alone“ version of the QM-Tools this is possible with any UTT Scan.

2 Graphical user interface

Central element of the QM-Tool is the GUI. It's divided into the menu bar *(see 2.1)*, a tool bar *(see 2.1.4.2)*, a docking window for the settings *(see 2.3)*, a docking window for the results *(see 2.4)*, a docking window for navigation *(see 2.6)* and the main window.

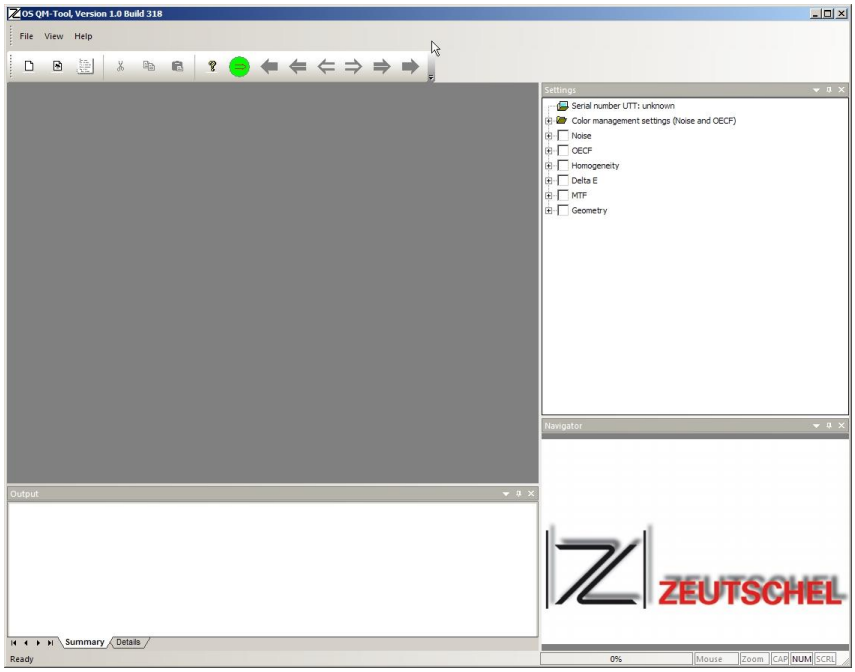


Image 1 Graphical user interface of the QM-Tools („stand alone")

The position of the docking windows is arbitrary. All these windows can be retracted from their original position and can be docked to another position.

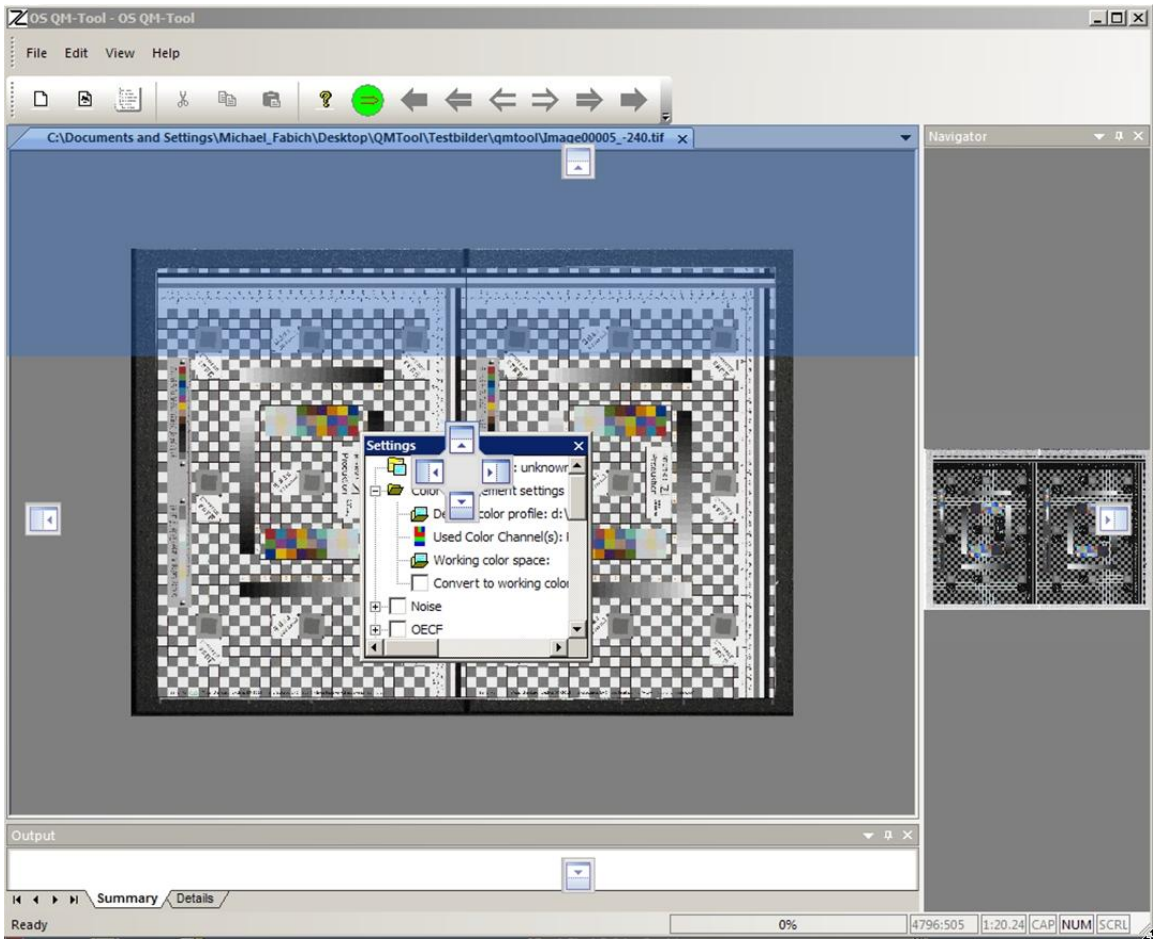


Image 2 Docking windows of the graphical user interace of the QM-Tools („stand alone“)

2.1 Menu bar

The QM-Tool („stand alone“) is operated with the menu bar. The amount of functions and the associated appearance is variable depending on the status.

Image 3 Menu bar of the QM-Tool („stand alone“) GUI if no UTT scan is loaded.

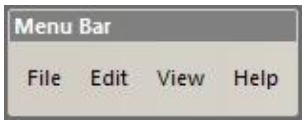


Image 4 Menu bar of the QM-Tool („stand alone“) GUI if a UTT scan is loaded.

2.1.1 File

Under the menu entry „File“ you will find the following functions:

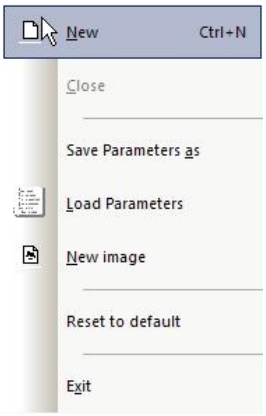


Image 5 Funktions under „File“ if no UTT scan is loaded.

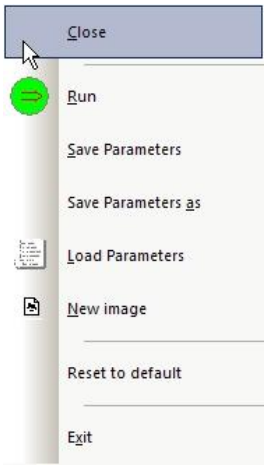


Image 6 Funktions under „File“ after a UTT scan is loaded.

2.1.1.1 New

With „New“ you can create a new job. If you select his function the „OS QM-Tool“ dialog will show up to enter further details for this job.

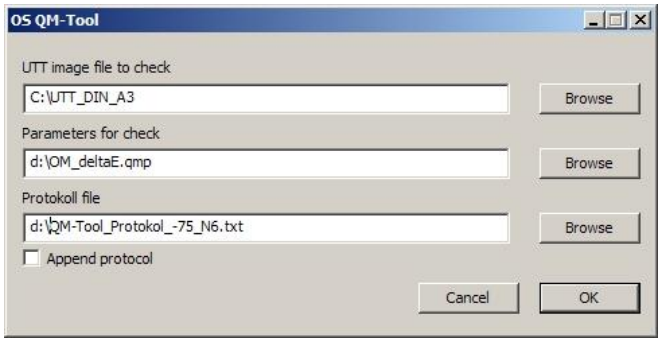


Image 7 Dialog "OS QM-Tool"

2.1.1.1.1 UTT image file to check

Here you can specify the name of the UTT scan to check. You can enter this directly or browse for the filename.

2.1.1.1.2 Parameters for check

This is the name of the file that contains or is used to save all the settings (options) of the checks to use. You can enter this directly or browse for the filename.

2.1.1.1.3 Protocol file

This is the name of the protocol file. This file will contain all results, hints, warnings and error messages of the check. You can enter this directly or browse for the filename.

2.1.1.1.4 Append protocol

This option allows to append the results, hints, warnings and error messages of the check to a existing protocol file (checkbox checked) or to overwrite the current

content of this file (checkbox unchecked).

2.1.1.1.5 Cancel

With „Cancel“ all entries are discarded.

2.1.1.1.6 Ok

With „Ok“ all entries are accepted and the selected UTT scan is shown in the main window. Is a UTT scan already loaded this scan is closed. The settings window *(see 2.3)* will eventually show new settings (check parameters) and the output window *(see 2.4)* is cleared.

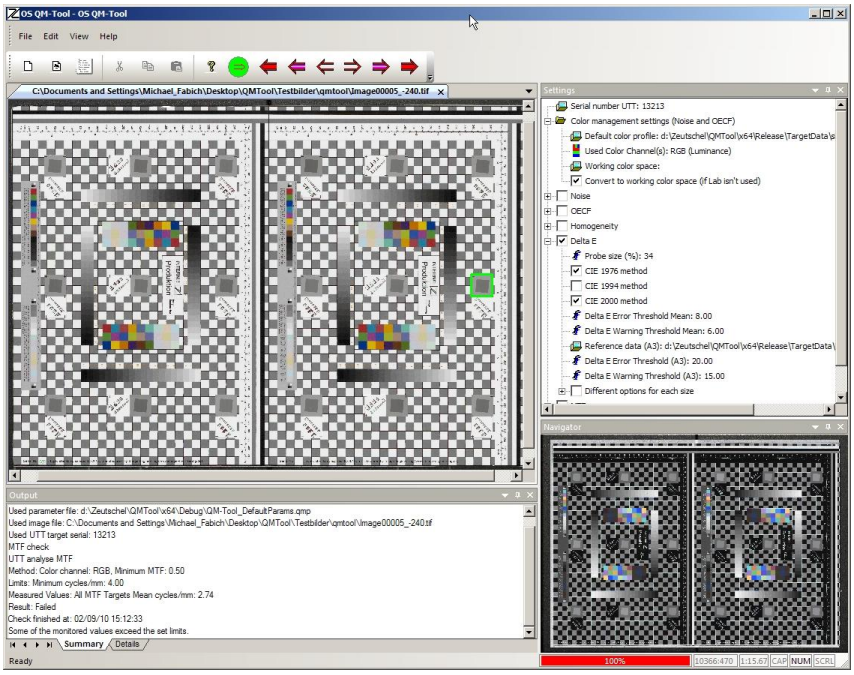


Image 8 Graphical user interface of the QM-Tools if a UTT scan is loaded.

2.1.1.2 Close

With „Close“ the scan shown in the main window will be closed. The contents of the settings window *(see 2.3)* and the contents of the output window *(see 2.4)* will remain unchanged.

2.1.1.3 Run

With „Run“ the UTT scan shown in the man window will be checked. The parameters for this check are the selected options in the settings window *(see 2.3)*. All results, hints, warnings and error messages of the check will show up in the output window *(see 2.4)* and will also be logged to the protocol file.

2.1.1.4 Save parameters

„Save parameters“ will write all the contents of the settings window *(see 2.3)* into the file selected earlier as filename for *Parameter for check*. You can use that for further UTT checks.

2.1.1.5 Save parameters as

„Save parameters as“ will write all the contents of the settings window *(see 2.3)* into a (new) selectable file. You can use that for further UTT checks.
After selection of this function a file dialog will be opened to select the directory and the filename. Is the option ‚*Always accept new parameter file name for further processing*’ in the program options not selected the program asks whether this filename shall be used in future.

2.1.1.6 Load parameters

„Load parameters“ replaces the current settings (check parameters) *(see 2.3)* with the parameters found in the selected file. That way a complete different setting can be installed or if you changed some settings the original state can be reinstated.

2.1.1.7 New image

With „New image“ a new UTT scan can be loaded into the main window. If you select this option a file dialog will show up so that you can select the filename of another UTT scan. The selected UTT Scan will be shown in the main window. The settings (check parameters) will not change and the output window *(see 2.4)* will be cleared.

2.1.1.8 Exit

„Exit“ closes the OS QM-Tool completely.

2.1.2 Edit

Under the menu entry „Edit“ presently no functions are available:

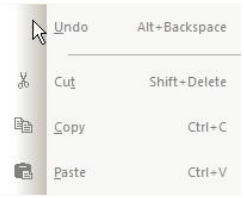


Image 9 Functions under „Edit“ after a image is loaded.

2.1.3 View

The menu entry „View“ contains the following functions:

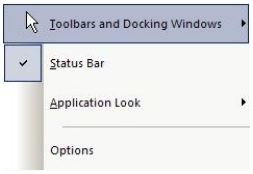


Image 10 Functions under „View“ if no UTT scan is loaded.

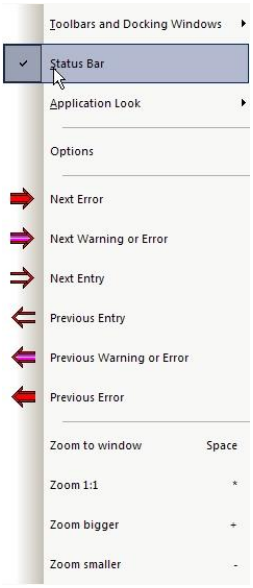


Image 11 Functions under „View“ if a UTT scan is loaded.

2.1.3.1 Toolbar and docking windows

Under „Tool bar and docking windows“ you can switch on or off the settings window *(see 2.3)*, output window *(see 2.4)* and the navigator *(see 2.6).* The same applies to the tool bar *(see 2.1.4.2)*.

2.1.3.2 Status Bar

With „Status Bar“ you switch on or off the status bar (amazing, isn’t it?).

2.1.3.3 Application look

This selects some standard settings for the look of the application.

2.1.3.4 Options

With „Options“ you can select various settings of the QM-Tool that are independent from the UTT checks. After selecting this the dialog „Program options“ will show up.

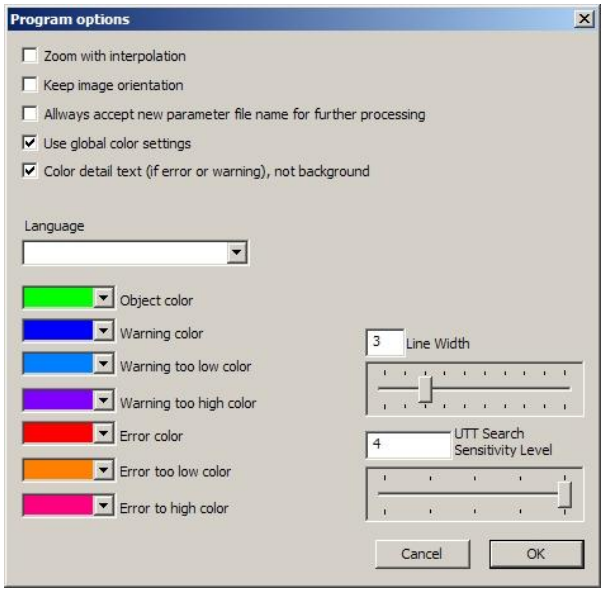


Image 12 Dialog "Program options"

2.1.3.4.1 Zoom with interpolation

This will lead to advanced image display if the pixels are not shown 1:1 anyway. This option could slow down the display on the monitor.

2.1.3.4.2 Slow redraw (only in debug version)

Allows a better view on the internals of the image processing while doing the evaluation. This will slow down the evaluation massively.

2.1.3.4.3 Keep image orientation

This will maintain the orientation of the image on the display while processing. Otherwise the orientation of the sub target is used to rotate the scan in a upright position (writing is readable). Using a scan of a A2 or A0 target may lead to a 90° rotation if scanned on a conventional wide format scanner.

2.1.3.4.4 Always accept new parameter file name for further processing

With Parameter *(2.1.1.1.2)* the name of a file with check parameters was selected. This file name can be replaced without further enquiry if the parameters are stored to a different file *(see 2.1.1.5* Save parameters as*)* and this checkbox is checked.

2.1.3.4.5 Use global color settings

For noise and OECF-check you can select *(see 2.3)* the settings for color management. Is this checkbox checked the settings will be used in common for all the checks (*see 2.3*) . Is the checkbox unchecked you can select different color management settings for the various checks (*see also 2.3.6 Settings for color management and noise).*

2.1.3.4.6 Color detail text (if error or warning), not background

The output of errors or warnings in the detail section of the output window *(see 2.4)* can be in color. Is this checkbox checked the text will be displayed in the

selected color *(see 2.1.3.4.8)*. Is this checkbox unchecked the background of the text will be display in the selected color.

2.1.3.4.7 Language

The QM-Tools can be switched to various languages if a appropriate language file is supplied. Under „Language“ you can select from the available languages.

2.1.3.4.8 Colors

The errors and warnings in the detail section of the output window *(see 2.4)* can be in different colors. These colors can be selected here. The same colors will be used e.g. to mark the corresponding area in the main window. A change will be visible in the output window *(see 2.4)* immediately, in the main window after a redraw

2.1.3.4.9 Line width

You can influence the width of the lines drawn in the main window here. A change will be visible instantaneously in the main window..

2.1.3.4.10 UTT Search sensitivity level

Changes the parameters for searching for the UTT.
A higher value increases the chance that the UTT is found. But the search can last longer and the chance of a false positive is increased too.

2.1.3.4.11 Cancel

This discards all changes done to the program settings.

2.1.3.4.12 OK

This accepts all changes done and saves them permanently.

2.1.3.5 Next Entry / Warning / Error

Most of the information in the details section of the output window *(see 2.4)* apply to a certain area of the UTT scan shown in the main window. If one of these lines is selected the corresponding area in the main window is marked. With „next error“ you can jump to the next position that is marked as error. With „next error or warning“ you jump also to a entry that is marked as warning. If you select a line that is marked as error or warning also the corresponding section of the settings window *(see 2.3)* is selected so that the corresponding check parameter can immediately be corrected if necessary.
This is applicable only for output that is connected to a element on the UTT scan (so, this does not apply e.g. to program errors).

2.1.3.6 Previous Entry / Warning / Error

The „previous“ version works just as described above *(next... see 2.1.3.5)* only the direction is inverted.

2.1.3.7 Zoom to window

„Zoom to window“ shows the UTT scan completely on the screen.

2.1.3.8 Zoom 1:1

With „Zoom 1:1“ the UTT scan shown in the main window will be scaled so that one pixel on the screen is one pixel in the image.
If the image is too big to fit into the window scrollbars will show up so that you can pan to the desired part of the image.

2.1.3.9 Zoom bigger

„Zoom bigger“ increases the size of the UTT scan shown in the main window step by step.
If the image is too big to fit into the window scrollbars will show up so that you can pan to the desired part of the image.

2.1.3.10 Zoom smaller

„Zoom smaller“ decreases the size of the UTT scan shown in the main window step by step.

2.1.4 Help

Under the menu entry „Help“ you will find the following functions:

Image 13 Functions under „Help“.

2.1.4.1 About QMTool

If you select this menu entry the dialog „About OS QM-Tool“ will show up telling about the manufactorer and the version of the software.

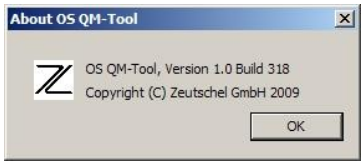


Image 14 Info window

2.1.4.2 Help

Opens the OS QM-Tool-manual (PDF-Format).
(Assuming that a Acrobat Reader is installed on the PC.)

2.2 Dongle Info

The corresponding dialog will show the dialog „Dongle Info“ where you can see which options are unlocked in the dongle and can be used.

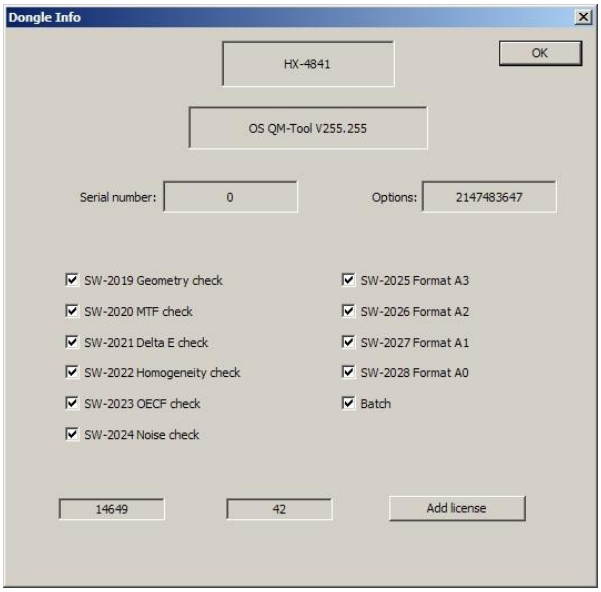


Image 15 Dialog „Dongle Info”

This dialog also offers the possibility to unlock additional options using a license file. This is done as follows:

1. A click on “Add license” opens the dialog „License input“.

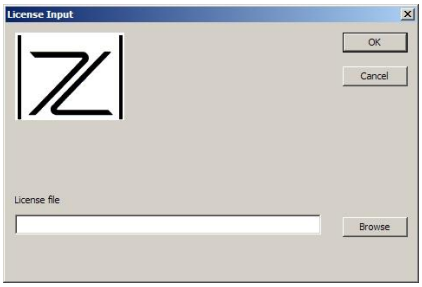


Image 16: Dialog „License input“

1. In this dialog the name of the license file (extension ".zlf") can be supplied. This license file has to be generated exactly for the used dongle by Zeutschel. You can either enter the name directly or use the browse button.
2. Confirm the dialog "License input" with "OK".
3. After a restart of the OS QM-Tool the new options will be available and will be shown in the „Dongle Info“.

2.2.1.1 Tool bar

The tool bar starts the most important functions of the QM-Tool („stand alone“) with a single click. The toolbar can be hidden or shown in the „View -> Toolbars and Docking Windows -> Standard“ menu.

Image 17 Tool bar of the QM-Tools („stand alone“) GUI


New *(see 2.1.1.1)*


New image *(see 2.1.1.7)*


Load Parameters *(see 2.1.1.6)*


Presently no function.


Presently no function.


Presently no function..


About OS QM-Tool *(see 2.1.4.1)*


Run *(see 2.1.1.3)*


Previous error *(see 2.1.3.6)*


Previous error or warning *(see 2.1.3.6)*


Previous entry *(see 2.1.3.6)*


Next entry *(see 2.1.3.5)*


Next error or warning *(see 2.1.3.5)*


Next error *(see 2.1.3.5)*

2.3 Docking window for settings

In this window you can define the check criteria that define which of the possible checks are done and what are the limits and demands for the error and warning level are. These settings can be saved and restored on disk for the various tests projected to do.
The docking window for the settings can be hidden or shown in the menu „View -> Toolbars and Docking windows -> Settings“.

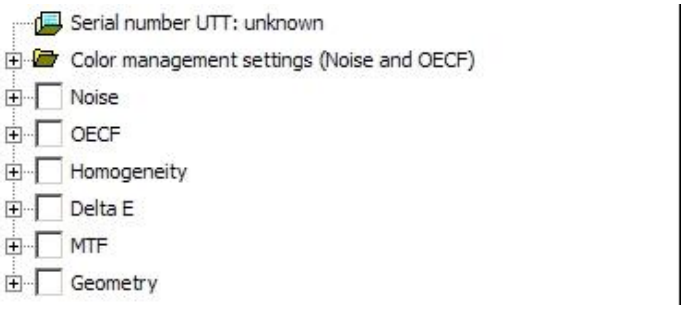


Image 18 Docking window to set up the check parameters

2.3.1 Special characteristics

The check parameters in the „Settings window“ are arranged as a tree. The branches can be displayed by activating the corresponding check. Inactive check parameters are not shown to keep the tree small and clearly arranged. From the same reason active branches can be collapsed. In this context you will always find („MTF“ in the following table is just an example.):

before	Description	after
	If you check „MTF“ directly or click on the + sign the branch is expanded and the corresponding parameters will be shown. These parameters will be used in a later run what is shown be the set checkmark.	
	If you uncheck „MTF“ directly the branch will collapse and the corresponding check becomes inactive. The parameters will not be used any more what is shown be the missing checkmark.	
	If you click on the – sign the corresponding branch collapses too, but the check is still active and the parameters are still in use. That the parameters are still in use is shown be the set checkmark.	
	If you uncheck „MTF“ directly the corresponding check becomes inactive and the parameters are not used any longer. The parameters will not be used any more what is shown be the missing checkmark.	
	If you click on the + sign the corresponding branch will expand and the hidden (but active) parameters will be shown. These still active parameters will be used in a later run what is shown be the set checkmark.	

2.3.2 Change or enter check parameters (Options)

Here we will describe how some of the check parameters (as an example) are entered or how these parameters are changed.

2.3.2.1 Error- or Warning threshold, etcetera

All check parameters marked with  (e.g. error threshold, warning threshold or

sizeof the measuring area) can be modified directly with a spinbutton if selected. You can also enter the new value directly on the keyboard.

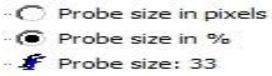


Image 19 Enter or modify a check parameter using the probe size as an example. Above before selecting the line, below after the line is selected.

2.3.2.2 File name

The name of a file can be entered directly after selecting the corresponding line or by using the ... button.

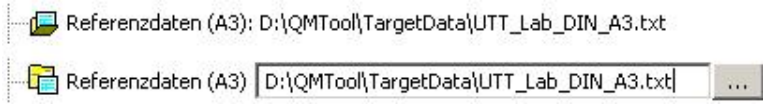


Image 20 Enter or change a file name using the reference data (A3) for the Delta E check. Above before selecting the line, below after selecting the line.

2.3.2.3 Color channel

The color channel can be selected by using the corresponding line with the pull down menu or using the dialog that can be opened with the ... button.

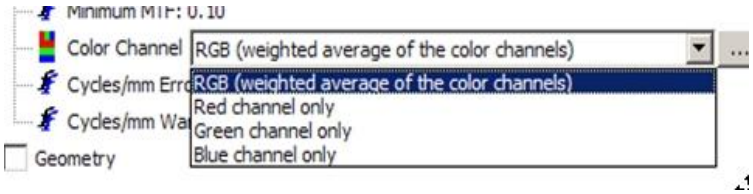


Image 21 Select the color channel using the MTF check as an example

Image 22 Dialog to select the color channel

2.3.3 Check parameters and target size

Starting point for all check parameters is the Universal Test Target (UTT) of DIN-A3 size (*see Image 23*). This will be called „Base-Target“, because bigger targets (DIN-A2, DIN-A1 und DIN-A0) are composed of multiple UTTs of DIN-A3.
The settings for the check parameters (Options) can e done for a „Base-Target“. These settings (check parameters) will be used for the checks of „Base-Target“ of

a UTT. It is also possible to specify individual (different) parameters for each „Base-Target“ of a UTT (*see 2.3.1 Special characteristics*). The check parameters that are used for all „Base-Targets“ of a UTT are marked with round parentheses „()“ (*see Image 24 and Image 26*). The other check parameters will be used only for the „Base-Target“, wich is mentioned in the parameter description (*see also Image 25, Image 27 Image 28*).

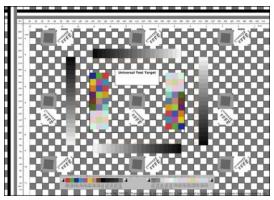


Image 23 UTT of the “Base-Target” size DIN-A3

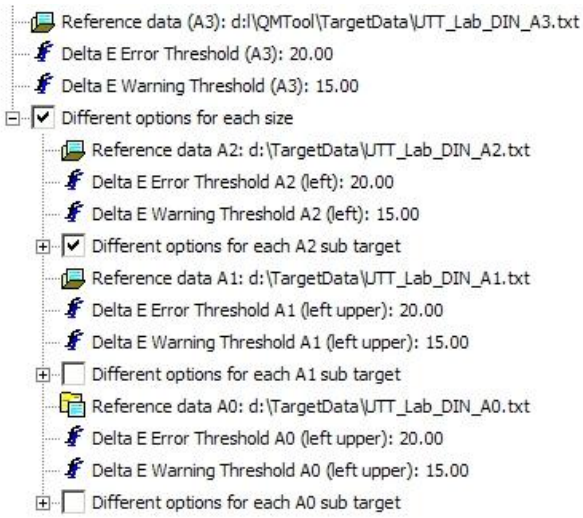


Image 24 Dockable window to select different check parameters for different UTT-Target sizes (A3, A2, A1, A0) for the ΔE-check.

These settings use names like „upper left“ or „second upper“. The meaning of these names is clarified with the images *Image 25*, *Image 27 Image 28*.

A UTT of target size DIN-A2 consists of two UTT Base-Target of size DIN-A3.

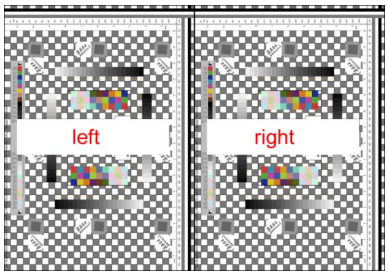


Image 25 UTT of Target-size DIN-A2

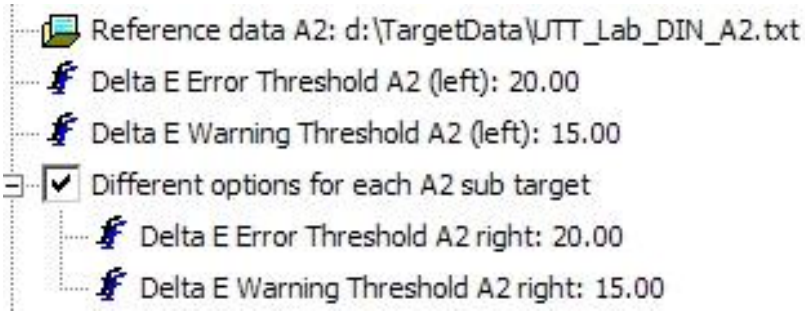


Image 26 Docking window to set up different check parameters for each sub target (Base-Target) of a UTT (here a UTT-Target of size DIN-A2 as example) for the ΔE-check.

A UTT of target size DIN-A1 consists of four UTT Base-Target of size DIN-A3.

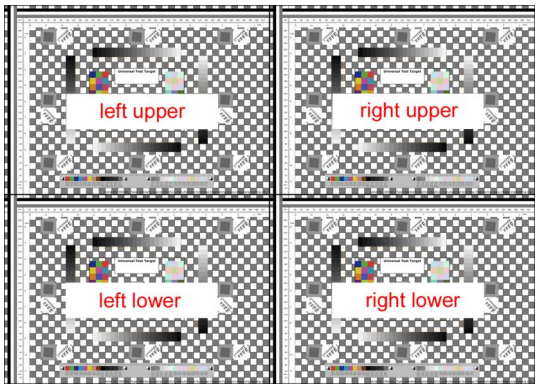


Image 27 UTT of Target-size DIN-A1

A UTT of target size DIN-A0 consists of eight UTT Base-Target of size DIN-A3.

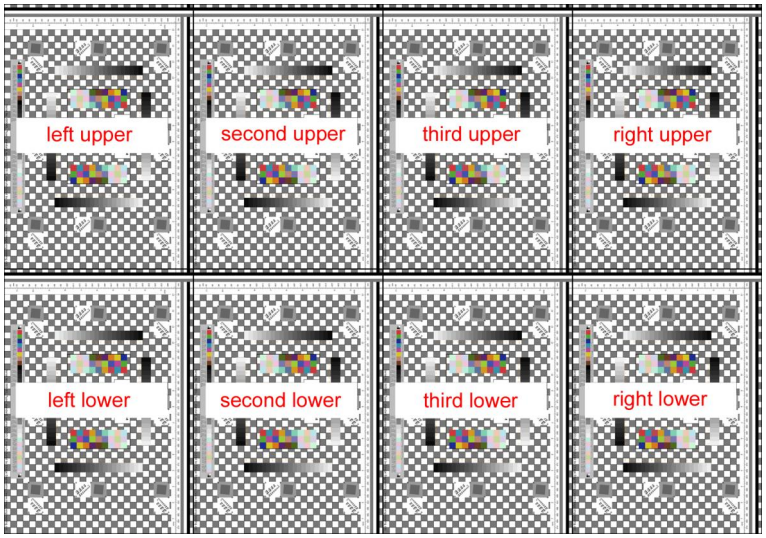


Image 28 UTT of Target-size DIN-A0

2.3.4 MTF

On a UTT of Base-Target-size DIN-A3 you will find nine „Slanted Edges“ targets (*see Image 29*). These „Slanted Edges“ will be used in the MTF-check.

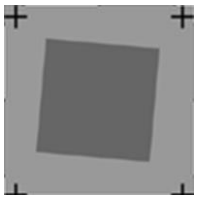


Image 29 „Slanted Edge“

The check of scanned UTT considering MTF is done, if the check box „MTF“ in the „settings window“ (*see Image 30*) is checked.

Image 30 Docking window to set up the check parameters showing the options for the MTF-check

Check parameters	Description
Minimum MTF	
Color channel	The MTF-check can be done for a special color channel or for all color channels together. The selection is done with this parameter.
Cycles/mm Error threshold	
Cycles/mm Warning threshold	

2.3.5 Delta E

The color distance Delta E (written also dE or ΔE) is the distance between a ideal value and a measured value in a color space.
On a UTT of Base-Target-size DIN-A3 you will find two color fields consisting of 27 color patches each (*see Image 31 and Image 32*). This color fields are used to do the ΔE-check.

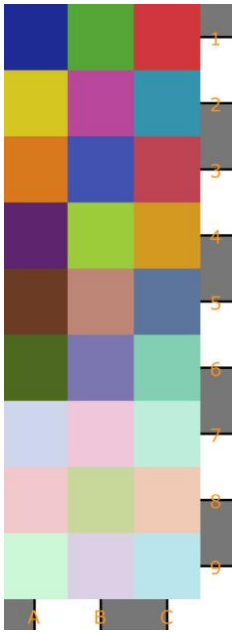


Image 31 Color field ABC

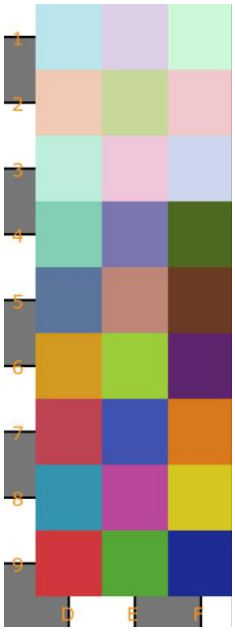


Image 32 Color field DEF

The check of a scanned UTT for ΔE is done if the checkbox „Delta E“ iin the settings window is checked. The ΔE-check can be done in various methods. Wich method is used is selected by checking the corresponding checkbox. You can select more than one method in one check at the same time. (*see Image 33*)

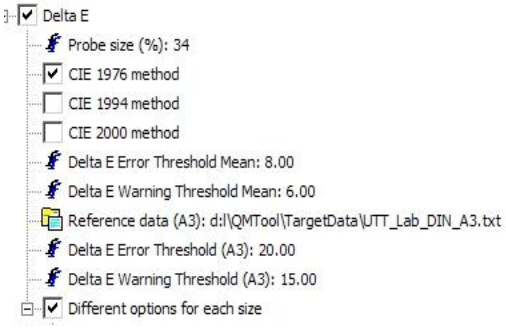
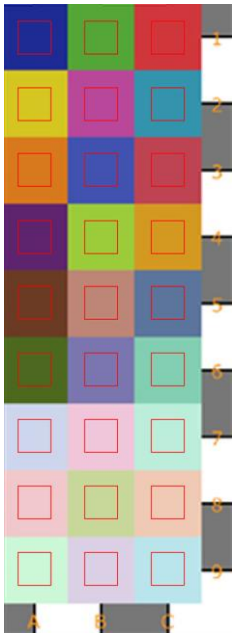


Image 33 Docking window to set up the ΔE-check and the corresponding options

Check parameter	Description
Probe size	The size of each color patch of a color field that is used in the ΔE-check, can be set up with the parameter „probe size“. This is used to compute the width and height of the color patch. Using for instance a probe size of 50% half the height and half the width of each color patch (this is a quarter of the surface). The resulting area will be centered into the color patch.

	 **Image 34 Color field ABC with the area marked that will be used with probe size 50%.**
CIE 1976 Methode	Is this checkbox checked the ΔE-check is done according to the formula developed by the CIE (Commission Internationale de l'Eclairage) 1976.
CIE 1994 Methode	Is this checkbox checked the ΔE-check is done according to the formula developed by the CIE (Commission Internationale de l'Eclairage) 1994.
CIE 2000 Methode	Is this checkbox checked the ΔE-check is done according to the formula developed by the CIE (Commission Internationale de l'Eclairage) 2000.
Reference data	The given values (or reference color values) used for the ΔE-check will be read froma file. Here you can supply the name of this file. The file contains the reference values for all color patches of a color field of all the color fields of a UTT.
Delta E error threshold	The Delta E error threshold tells from which vale the computed ΔE is in error. Independent from exceeding the error threshold all the color values of a color field a computed.
Delta E warning threshold	The Delta E warning threshold tells from which vale the computed ΔE is in warning condition. Independent from exceeding the error threshold all the color values of a color field a computed.

2.3.6 Color management setup (Noise and OECF)

Depending on *2.1.3.4.5 Use global color* settings the used global parameters for the color management can be set up here. This settings only influence the noise and OECF check.

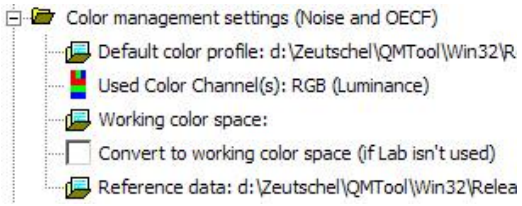


Image 35 Docking window to set up the checking parameters if global settings are used.

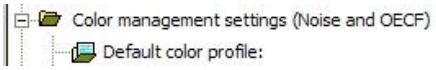


Image 36 Docking window to set up the checking parameters if no global settings are used.

Checking parameters	Description
Default color profile	Is the image that shall be checked here without attached color profile the color profile selected here will be used. This is needed if the image has to be converted to the working color space or the output of Lab-Value sis desired.
Used color channel(s)	Here you can select the color channels that are used for the checks. You can select from: - RGB (brightness) => weighted average of the color channels - RGB (all channels separately)) - Red channel only - Green channel only - Blue channel only - Lab
Working color space	If the RGB-Values have to be converted into a working color space, the color profile of this working color space has to be specified here.
Convert to working color space (if not Lab)	The RGB-values of the images will be converted into the working color space according to the selected color profiles if this is checked. If LAB is used the conversion takes place anyway.
Reference data	If a UTT target specific reference data file is available it should be selected here. It should be the file created for the UTT in use (same serial number) but it don´t have to be that very file. A data file for an A3 Target is used for any format. Other formats must fit to the format of the UTT.

2.3.7 Noise

On a UTT in Base-Target-size DIN-A3 you will find three horizontal and three vertical graybars (*see Image 37*) and four gray scales containing 20 fields each (*see Image 38*). The gray bars and gray scales will be used while doing the noise check.

Image 37 Gray bar

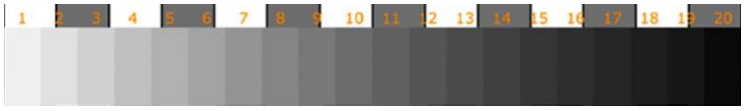


Image 38 Gray scale

The check of a scanned UTT for noise can be done on the gray scales and/or gray bars. The check is done if the according checkbox is checked in the „settings window“ (*see Image 39*).

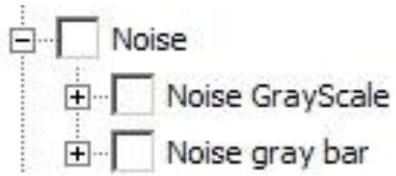


Image 39 Docking window to set up the parameters showing the noise check options

2.3.7.1 Noise gray scale

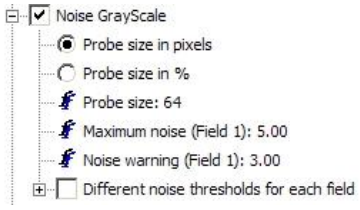


Image 40 Docking window to set up the check parameters showing the options for the noise check on the gray scale if global color management options are used.

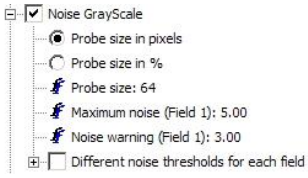


Image 41 Docking window to set up the check parameters showing the options for the noise check on the gray scale if global color management options are not used.

Check parameters	Description
Field fixed / Field relative	The probe size can be expressed as a absolute value in pixels or a percent value of the width and height of the used measurement area.
Probe size in pixels	If the probe size is expressed in pixels the supplied value is the width and height of the measurement area. In the example in image 40 this would lead to a probe of 33x33 pixels.
Probe size in %	The size of each field of the gray scale that is used while doing the noise check can also be expressed in percent. This value is used to compute the width and height of the field. If for example a probe size of 50% is used half of the width and half of the height (that is a quarter of the area) of each gray field is used. The resulting area is centered in each gray field.  **Image 42 Grau scale with the areas marked that are used if a probe size of 50% is used.**

Probe size	Specifies the probe size in percent or pixels depending on the version selected above.
Maximum noise (Field 1)	Here you can specify the maximum acceptable noise for all fields. If the „Different noise threshold for each field“ box is checked then this value is used only on field one.
Noise warning (Field 1)	Here you can specify the maximum noise that doesn't lead to a warning message for all fields. If the „Different noise threshold for each field“ box is checked then this value is used only on field one..
Used color channel(s)	*see 2.3.6 Color management setup (Noise and* OECF)
Working color space	*see 2.3.6 Color management setup (Noise and* OECF)
Convert to working color space (if not Lab)	*see 2.3.6 Color management setup (Noise and* OECF)

2.3.7.2 Noise gray bar

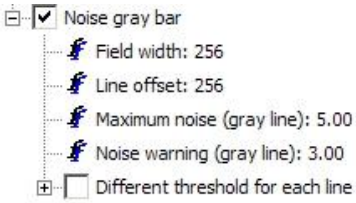


Image 43 Docking window to set up the check parameters showing the options for the noise check on the gray bar if global color management options are used.

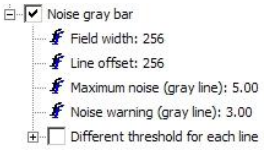


Image 44 Docking window to set up the check parameters showing the options for the noise check on the gray bar if global color management options are used.

Check parameters	**Description**
Field width	The lines of the gray bar are not one big measurement area, but a smaller field that is moved along the line. The field width specifies the width of this smaller field in pixels.
Line offset	In this field the distance of the move of the smaller field in the line can be specified. The smaller this is the more individual result values are generated.
Maximum noise (gray line)	Here the maximum acceptable noise for all lines of a gray bar can be set. If „Different threshold for each line“ is checked this value will be used only for the gray line.
Noise warning (gray line)	Here the maximum noise that doesn't lead to a warning message for all lines of a gray bar can be set. If „Different threshold for each line“ is checked this value will be used only for the gray line.
Used color channel(s)	*see 2.3.6 Color management setup (Noise and* OECF)

Working color space	*see 2.3.6 Color management setup (Noise and* OECF)
Convert to working color space (if not Lab)	*see 2.3.6 Color management setup (Noise and* OECF)

2.3.8 OECF

The check of a scanned UTT about OECF can be done on the gray bars and/or the gray scales. The check is done if the according checkbox is checked in the „settings window“ (*see Image 45*).

Image 45 Docking window to set up the check parameters showing the options for the OECF check

2.3.8.1 OECF Gray scale

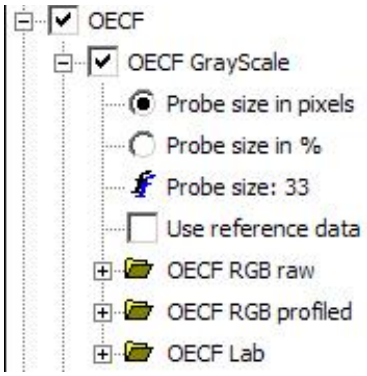


Image 46 Docking window to set up the check parameters showing the options for the OECF check on the gray scale if global color management options are used.

Check parameters	**Description**
Probe size in pixels	The probe size can be expressed as a absolute value in pixels or a percent value of the width and height of the used measurement area. If the probe size is expressed in pixels the supplied value is the width and height of the measurement area. In the example in image 40 this would lead to a probe of 33x33 pixels.
Probe size in %	The size of each field of the gray scale that is used while doing the noise check can also be expressed in percent. This value is used to compute the width and height of the field. If for example a probe size of 50% is used half of the width and half of the height (that is a quarter of the area) of each gray field is used. The resulting area is

	centered in each gray field.  **Image 47 Grau scale with the areas marked that are used if a probe size of 50% is used**
Probe size	Specifies the probe size in percent or pixels depending on the version selected above.
Use Reference Data	The UTT reference data file is used (see 2.3.6)
OECF RGB raw	Here you can select the RGB- reference values for a analysis of the raw RGB-values. This is used if the used color channel is not LAB and the “Convert to working color space” box is not checked in *2.3.6 Color management setup (Noise and* OECF).
OECF RGB profiled	Here you can select the RGB- reference values for a analysis of the raw RGB-values. This is used if the used color channel is not LAB and the “Convert to working color space” box is not checked in *2.3.6 Color management setup (Noise and* OECF).
OECF Lab	Here you can select the Lab-reference values for the distinct fields. This is used if the used color channel is LAB in *2.3.6 Color management setup (Noise and* OECF).
Used color channel(s)	*see 2.3.6 Color management setup (Noise and* OECF)
Working color space	*see 2.3.6 Color management setup (Noise and* OECF)
Convert to working color space (if not Lab)	*see 2.3.6 Color management setup (Noise and* OECF)

- Nominal Brightness field 1: 223
- Nominal Brightness field 2: 203
- Nominal Brightness field 3: 184
- Nominal Brightness field 4: 168
- Nominal Brightness field 5: 153
- Nominal Brightness field 6: 138
- Nominal Brightness field 7: 125
- Nominal Brightness field 8: 115
- Nominal Brightness field 9: 106
- Nominal Brightness field 10: 97
- Nominal Brightness field 11: 88
- Nominal Brightness field 12: 74
- Nominal Brightness field 13: 61
- Nominal Brightness field 14: 50
- Nominal Brightness field 15: 40
- Nominal Brightness field 16: 32
- Nominal Brightness field 17: 25
- Nominal Brightness field 18: 18
- Nominal Brightness field 19: 13
- Nominal Brightness field 20: 8
- Brightness tolerance (Field 1): 5
- Brightness tolerance warning (Field 1): 4

Image 48 Docking window to set up the check parameters for OECF gray scale if each filed is specified individually.

Nominal brightness	This is the nominal desired value for the specified field.
Brightness tolerance	This is the maximum difference allowed from the reference. If it is found that this limit is exceeded while analyzing this is treated as an error.
Brightness tolerance warning	This is the maximum difference tolerated from the reference. If it is found that this limit is exceeded while analyzing this is treated as an warning. This should be lower value than above (brightness tolerance).

2.3.8.2 OECF Gray bar

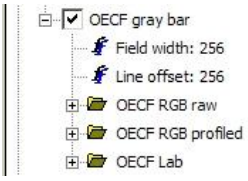


Image 49 Docking window to set up the check parameters showing the options for the OECF check on the gray bar if global color management options are used.

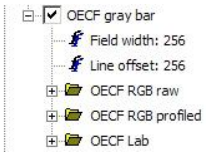


Image 50 Docking window to set up the check parameters showing the options for the OECF check on the gray bar if global color management options are not used.

Check parameters	**Description**
Field width	The lines of the gray bar are not one big measurement area, but a smaller field that is moved along the line. The field width specifies the width of this smaller field in pixels.
Line offset	In this field the distance of the move of the smaller field in the line can be specified. The smaller this is the more individual result values are generated.
OECF RGB raw	Here you can select the RGB- reference values for a analysis of the raw RGB-values. This is used if the used color channel is not LAB and the “Convert to working color space” box is not checked in *2.3.6 Color management setup (Noise and* OECF).
OECF RGB profiled	Here you can select the RGB- reference values for a analysis of the raw RGB-values. This is used if the used color channel is not LAB and the “Convert to working color space” box is not checked in 2.3.6 *Color management setup (Noise and* OECF).
OECF Lab	Here you can select the Lab-reference values for the distinct fields. This is used if the used color channel is LAB in *2.3.6 Color management setup (Noise and* OECF).

Used color channel(s)	*see 2.3.6 Color management setup (Noise and* OECF)
Working color space	*see 2.3.6 Color management setup (Noise and* OECF)
Convert to working color space (if not Lab)	*see 2.3.6 Color management setup (Noise and* OECF)

Image 51 Docking window to set up the check parameters for OECF gray bar if each filed is specified individually.

Nominal brightness	This is the nominal desired value for the specified field.
Brightness tolerance	This is the maximum difference allowed from the reference. If it is found that this limit is exceeded while analyzing this is treated as an error.
Brightness tolerance warning	This is the maximum difference tolerated from the reference. If it is found that this limit is exceeded while analyzing this is treated as an warning. This should be lower value than above (brightness tolerance).

2.3.9 Homogeneity

The homogeneity check of a scanned UTT is done if the box „Homogeneity“ in the „settings window“ is checked.

Image 52 Docking window to set up the check parameters showing the options for the homogeneity check.

Check parameters	**Description**
Used color channel(s)	*see 2.3.6 Color management setup (Noise and* OECF)
Homogeneity error threshold	
Homogeneity warning threshold	

Minimum average value	
Maximum average value	

2.3.10 Geometry

The geometry check of a scanned UTT is done if the checkbox „Geometry“ in the settings window is checked.

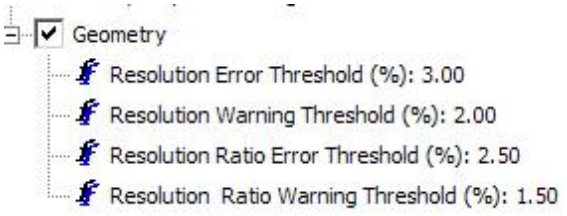


Image 53 Docking window to set up the check parameters showing the options for the geometry check.

Check parameters	**Description**
Resolution error threshold	Deviation from nominal value
Resolution warning threshold	Deviation from nominal value
Resolution ratio error threshold	Ratio vertical/horizontal
Resolution ratio error threshold	Ratio vertical/horizontal

2.4 Docking windows for result output

The result window is divided into two sections.
The “summary” section shows the most important results evaluated to the set up limits.
The „Detail” section shows results, hints, warnings and error messages of each check. Most of these entries correspond to a certain area of the UTT scan shown in the main window. Warnings and error messages corresponding to such an area will be printed in bold and colored like set up in *2.1.3.4.8*. If such a entry is selcted that corresponds to a certain area of the UTT scan this area will be marked also with the color defined in *2.1.3.4.8* and the area is zoomed so that it is fully visible and as big as possible. Additionally the corresponding check parameter in the settings window is high lighted *(see 2.3)*, so that a direct check and if indicated a correction of the check parameter is instantly possible *(see also 2.1.3.5* Next Entry / Warning / Error *and 2.1.3.6 Previous Entry* / Warning / Error *)*.

The docking window for result output can be hidden or shown in the „View -> Toolbars and docking windows -> Output“ menu entry.

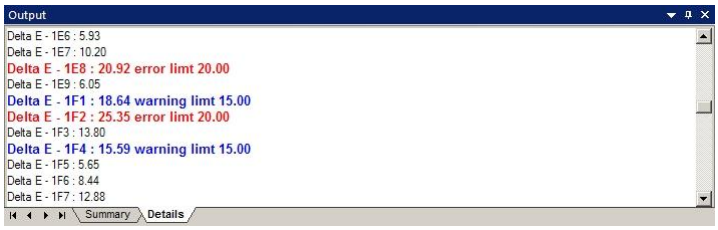


Image 54 Docking window for result output

In the output the Base-Targets of the UTTs will be numbered (e.g. „Target 1“) The meaning of this names is made more clear in Image 55, Image 56, Image 57 and Image 58.

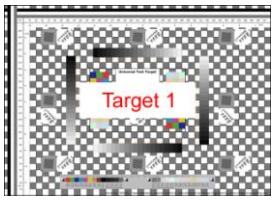


Image 55 UTT of the Base-Target-size DIN-A3

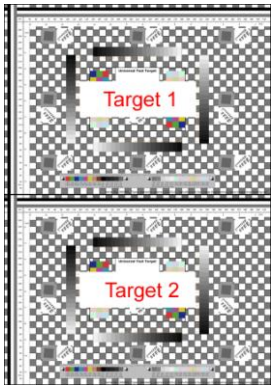


Image 56 UTT of the Target-size DIN-A2

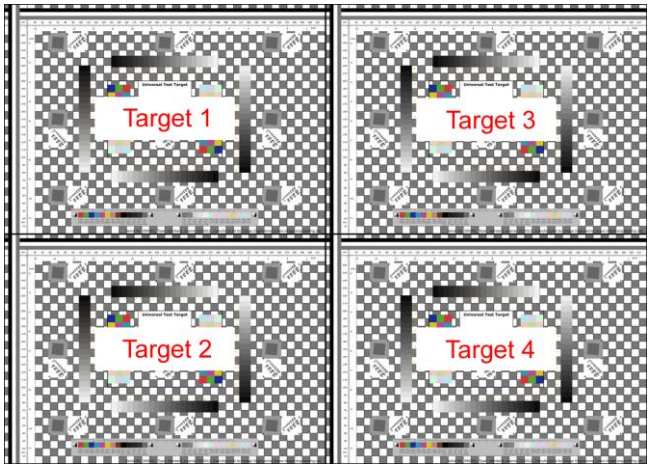


Image 57 UTT of the Target-size DIN-A1

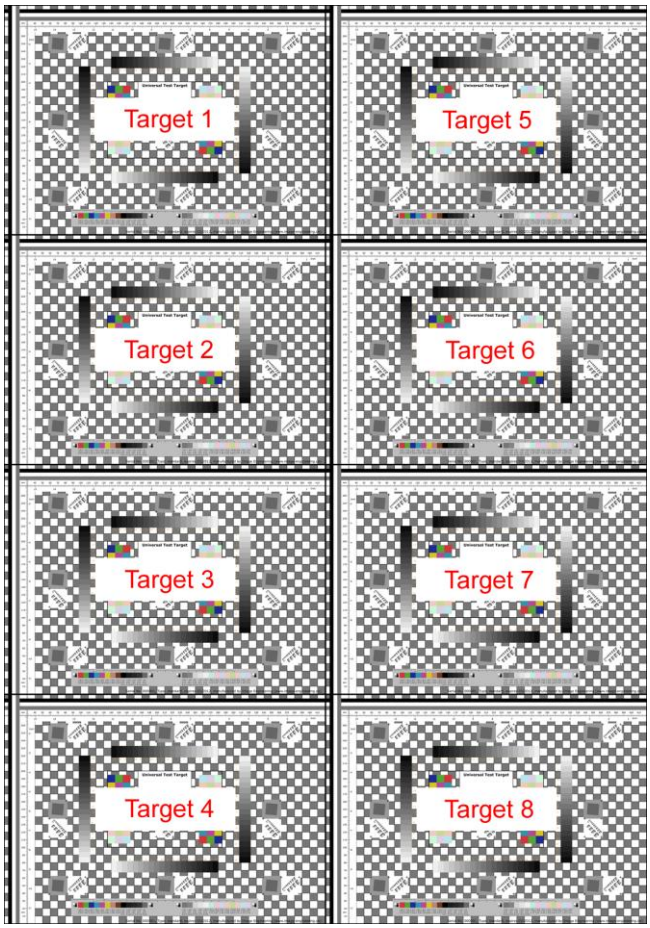


Image 58 UTT of the Target-size DIN-A0

2.5 Graphical display of results

The results of the tests are shown additionally in an extra window, so you can judge the image at first sight.

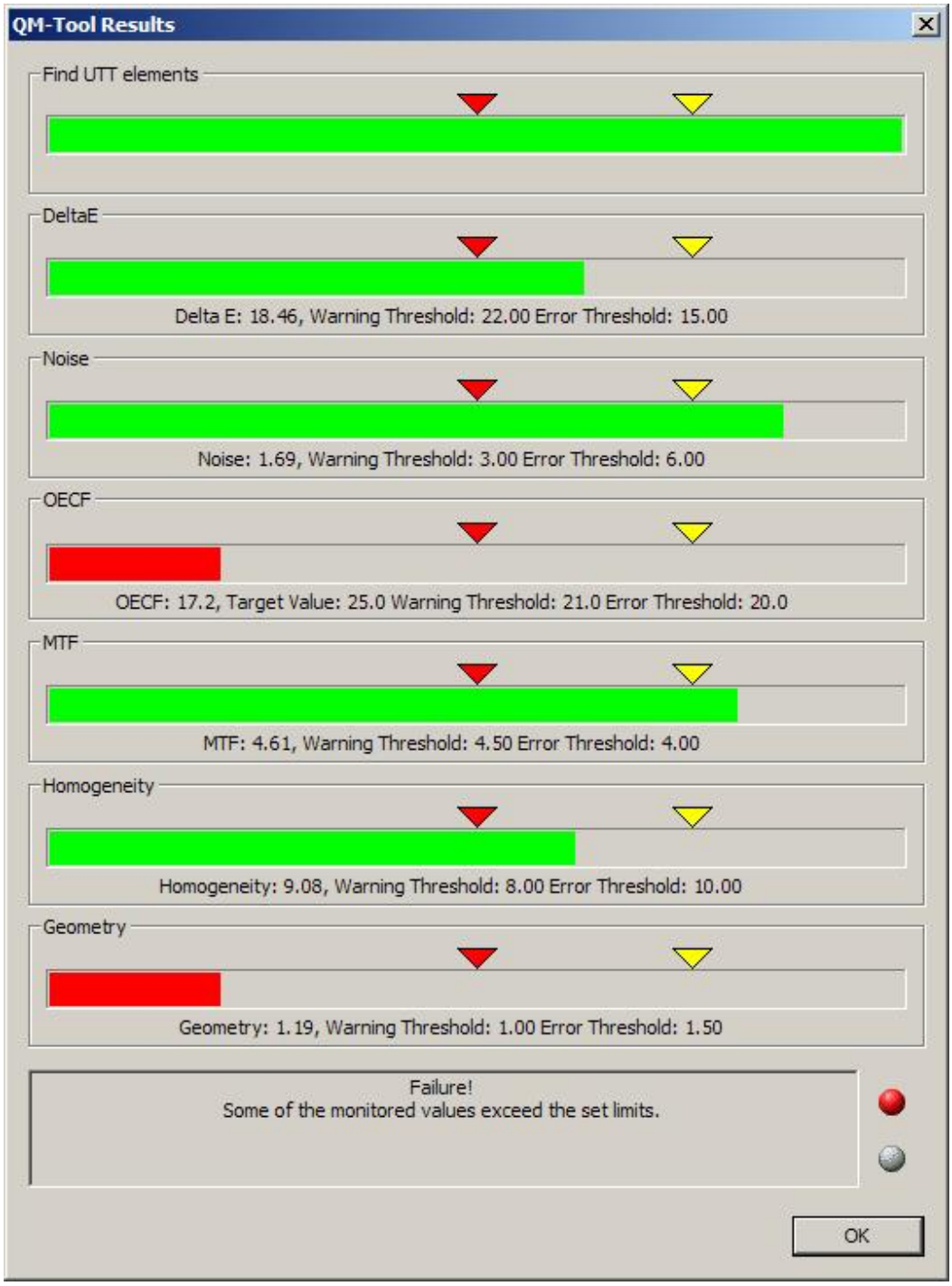


Bild 59 Graphical display with errors

The length of the bars complies with the quality of the image, the longer the better. Green bars mean the test was successfull, red bars signal a failure.
The yellow marks correspond with the warning thresholds.
Below the bars the worst measuring result and the corresponding thresholds are displayed

A completely successful test result can look like that:

Bild 60 Graphical display without errors

2.6 Docking window for navigation

In the navigation window the image shown in the main window is displayed completely (resized). The part of the image shown in the main window (normally just a part of the image) is shown inverted.

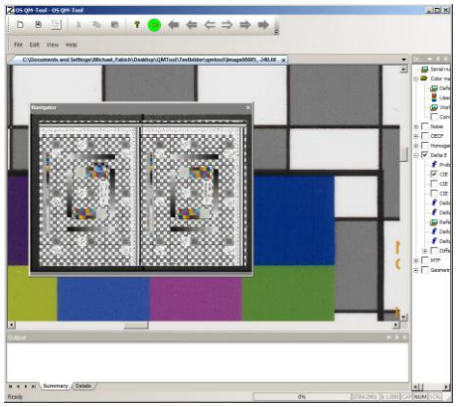


Image 61 Main window with the associated inverted area inside the navigation window

By clicking and holding the left mouse button inside the navigation window the inverted area can be moved around and the display in the main window follows.
The docking window for navigation can be hidden or shown in the „View -> Toolbars and docking windows -> Navigation“ menu entry.

3 Hints / Warnings / Error messages

3.1 UTT Orientation

The UTT will be found only if it is orientated in the following way:
One of the continuous horizontal grey bars has to be at the upper border.

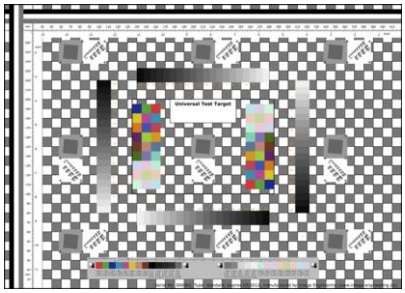


Image 62 Orientation DIN A3

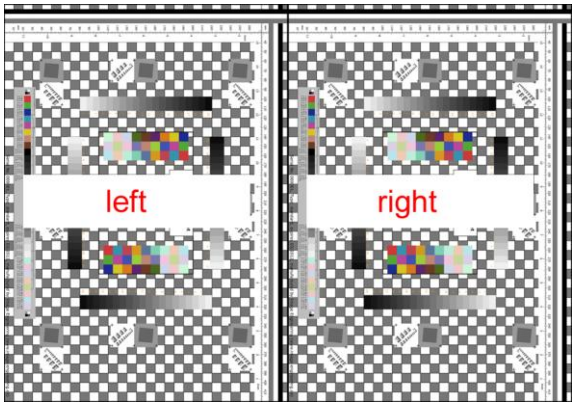


Image 63 Orientation DIN A2

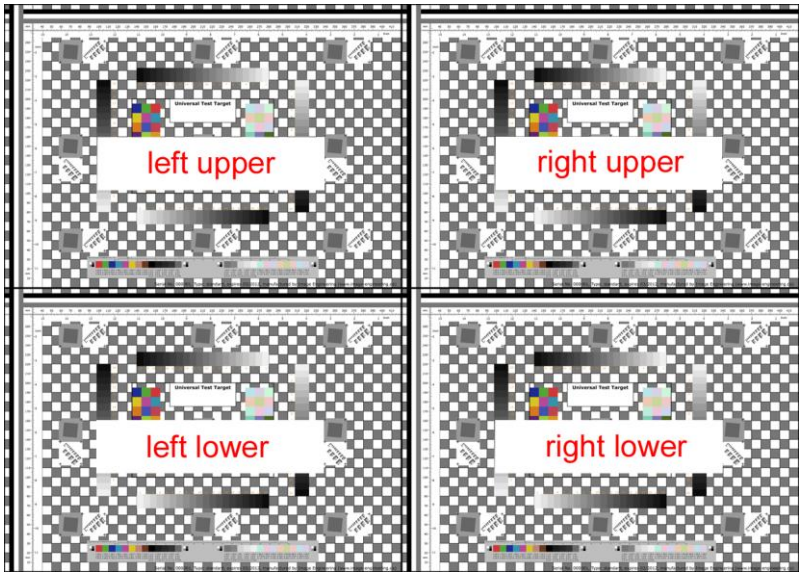


Image 64 Orientation DIN A1

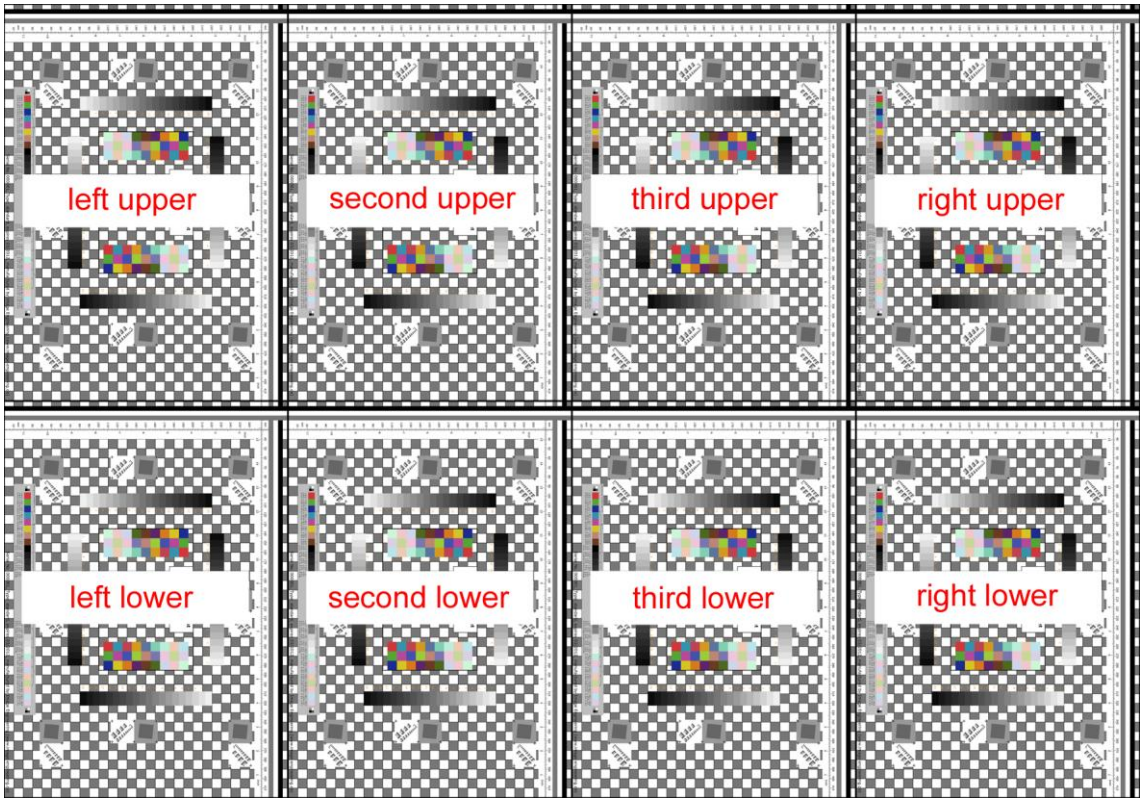


Image 65 Orientation DIN A0

3.2 Delta E – Reference file

Is the Delta E check active *(see 2.3)*, on starting the check *(see 2.1.1.3* Run*)* the specified file with the reference data is checked. If a error is found (e.g. the file can not be opened) a dialog will show up asking the operator which file should be used to continue the check.

Image 66 Dialog showing a problem with the reference data file

Cancel	The check of the UTT scan is canceled immediately.
Retry	If the file is corrected before this dialog is ended the UTT check can continue with right this file.
Continue	A dialog shows up that enables the operator to select an other reference file to be used for the check.

3.3 UTT reference data

Zeutschel delivers the UTT with a target specific reference data file. The required file can be selected in the general settings of the test parameters. (*see 2.3.6*)
For the Delta E test such a file is necessary, the OECF test can be done also without such a file (That is selected in the OECF setting, *see 2.3.8.1*). If the reference file is used it is strongly recommend to use Lab (Used color channel, (*see 2.3.6*)
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