How to Iterate Spot Colors

Spot Color Iteration is a process that involves printing of the spot colors converted from ZePrA on the printer, followed by measuring test charts and optimizing the color differences (deltaE2000) until the measured deltaE values are within the desired tolerances. Printing the spot colors two times using the *Iterate Spot Colors* feature results in an improved spot color rendering which is usually close to the optimum of this printer.

Why can spot color iteration be required?

First of all, be assured that ZePrA already calculates the best possible spot color conversion based on the target profile set under *Configuration/Target Color Space*. However, printers, inks and papers drift over time so that there are always some deviations from the state the printer was profiled. During spot color iteration we measure how converted spot colors are actually printed in the current state, and subsequently optimize the deltaE2000 values. The iteration report shows which colors are improved and where restrictions based on the spot color *Calculation Method* occur and can't be optimized further or if additional iteration steps are recommendable.

Procedure:

Open the *Iterate Spot Colors* dialog right from the *Spot Colors* tab of the *Configuration* you would like to optimize or the *Tools* menu and follow the steps from top to bottom. A Spot Color module license is required to use the tool.

 Step 1: First, select the Configuration you would like to use for printing. The option Convert Spot Colors must be enabled in this configuration.
 Note: The best approach for the iteration of spot colors is to set the Calculation Methods to Precise Match or Visual Match in the configuration.

Configuration Convert_SoFas_TC_SP4880	Document / Target	Images / Vectors	New	Rename Delete	Save
O Don't convert Spot Colors	 Convert Spot Co 	lors Convert with P	DF Alternate Color S	pace and Tint Transform	
Spot Color Libraries:	PANTONE+ Solid Coa	ted-V3-M0-SpectroEye	Lab Valu	Clip Output Values below (0-	20):
Undefined Spot Colors:	Keep Spot Color		©	Use Printing Sequence from	Document
Calculation Method:	Precise Match - Proo	fing	2	Don't convert Spot Color "All	•
Gamut Warning:	Display Warning and	continue	2	CIE Conversion ♦ D50, 2	Degrees
		dE2000 Limit	2.5		
Name	Conversion	Value	Apply to	Printing Sequence	Information

Note: The setting **Use the least Amount of Channels** may be insufficient for iterating spot colors. Importantly, spot color iteration will not work when the spot color conversion is set to **Convert using Alternate Color Space from PDF**.

- 2. *Step 2*: Select the source of the spot colors you would like to optimize. You can either choose a PDF file with spot colors or a complete spot color library. In the following example we will use a PDF file with spot colors.
- 3. Step 3: Here, a test chart file will be created from either a PDF File or a spot color Library. If you select a PDF file and click on the Save button, ZePrA will extract all spot colors (full tones) used in the file and convert them using the selected configuration. In this step select a setting for your measuring instrument. Therefore, a PDF file will be created, which contains the spot colors as a strip optimized for your measuring instrument and, in addition, the associated reference file for measuring will be created.

The newly created PDF file needs to be printed on the printer to be used for the print job.

Note: The test chart contains the converted spot colors as given in the *Configuration* using the conversion settings and *Calculation Method* defined in the tab *Spot Colors*.

- 4. **Step 4**: Print the test chart on your printer. Do not apply any color management when printing the test chart.
- 5. Step 5: Subsequently, measure the printed test chart using *ColorAnt/Measure Tool* or an appropriate software. The required reference file which is needed for measuring the spot colors will be shown in step 3. Click on *Measure* to open the *Measure Tool* in ColorAnt. The reference file will be selected automatically so that you can use the tool right away for measurements with your instrument. For information on

	Harata Crist Calara						
	Iterate Spot Colors						
Follow the St	eps to improve the Spot Color Conversion						
Step 1: Selec	t Configuration (Spot Color Conversion needs to be enabled)						
Configuratio	n: Convert_SoFas_TC_SP4880						
Step 2: Sele	ct Source of Spot Colors						
• File:	ColorLogic-SpotColors-Testfile_V2.pdf	Select					
O Library:	PANTONE+ Solid Coated-V3-M0-SpectroEye	\$					
Step 3: Select an Instrument Setting to create the Testchart with the converted Spot Colors							
Instrument S	Settings: X-Rite i1Pro/iO - A4/Letter	\$					
		Save					
Testchart-C	onvert_SoFas_TC_SP4880-2017-07-27T144113.txt						
Step 4: Print	Testchart						
Step 5: Mea	sure Testchart or Load Measurement Data Measure	Load					
Testchart3_1	TeccoAlt.txt (6 items)						
Step 6: Calc	ulate Report (optional Step)	Save Report					
Step 6: Apply Measurement Data to optimize the Spot Color Conversion							
✓ Iterate all Spot Colors Apply							
		Stop					

how to use the <u>Measure Tool</u> in combination with your instrument follow the instruction given in the online help. Alternatively you may use the provided reference file for measurements with other tools.

6. *Step 6*: This step is optional but highly recommended. If you click on *Save Report* a *Spot Color Iteration Report* will be generated.

Spot color iteration

Configuration: Target Profile:	Convert_SoFas_TC_SP4880 TC_SP4880_PPG250_2880_201778_reprofile.icc							
Average dE00: Maximum dE00: Median: dE00 < 1: dE00 < 2.5:	1.6 3.4 (PANTO 1.4 16.7% 83.3%	NE 5825 C)						
Name		Conversion:	Target Lab	RGB	Lab (measured)	dE00	dE76	Status
Lab Orange		Iterated	60.00 40.00 40.00	229.6 117.2 81.3	61.07 37.88 40.03	1.4	2.4	improved (7.0 dE00)
Lab Orange PANTONE 562 C		Iterated Iterated	60.00 40.00 40.00 40.39 -36.00 -3.00	229.6 117.2 81.3 94.3 173.9 107.7	61.07 37.88 40.03 41.41 -36.84 -4.58	1.4	2.4	<pre>improved (7.0 dE00) improved (6.6 dE00)</pre>
Lab Orange PANTONE 562 C PANTONE 5825 C		Iterated Iterated Iterated	60.00 40.00 40.00 40.39 -36.00 -3.00 53.73 -3.00 38.00	229.6 117.2 81.3 94.3 173.9 107.7 159.1 159.3 56.8	61.07 37.88 40.03 41.41 -36.84 -4.58 55.42 -5.43 45.85	1.4 1.4 3.4	2.4 2.1 8.4	<pre>improved (7.0 dE00) improved (6.6 dE00) improved (4.6 dE00)</pre>
Lab Orange PANTONE 562 C PANTONE 5825 C PANTONE 717 C		Iterated Iterated Iterated Iterated	60.00 40.00 40.00 40.39 -36.00 -3.00 53.73 -3.00 38.00 55.29 45.00 70.00	229.6 117.2 81.3 94.3 173.9 107.7 159.1 159.3 56.8 224.1 34.6 6.9	61.07 37.88 40.03 41.41 -36.84 -4.58 55.42 -5.43 45.85 55.43 49.12 69.86	1.4 1.4 3.4 2.0	2.4 2.1 8.4 4.1	improved (7.0 dE00) improved (6.6 dE00) improved (4.6 dE00) improved (13.8 dE00)
Lab Orange PANTONE 562 C PANTONE 5825 C PANTONE 717 C PANTONE 801 C		Iterated Iterated Iterated Iterated Iterated	60.00 40.00 40.00 40.39 -36.00 -3.00 53.73 -3.00 38.00 55.29 45.00 70.00 55.29 -38.00 -43.00	229.6 117.2 81.3 94.3 173.9 107.7 159.1 159.3 56.8 224.1 34.6 6.9 105.3 234.1 226.8	61.07 37.88 40.03 41.41 -36.84 -4.58 55.42 -5.43 45.85 55.43 49.12 69.86 55.25 -38.04 -43.05	1.4 1.4 3.4 2.0 0.0	2.4 2.1 8.4 4.1 0.1	improved (7.0 dE00) improved (6.6 dE00) improved (4.6 dE00) improved (13.8 dE00) good

Legend:	
good:	The measurement matches the target value (dE < 1)
improved:	The previous iteration has improved the result
recommended:	The result is not good but will be improved by the next iteration
critical:	The result is not good and probably won't be improved by the next iteration
conversion settings:	The spot color conversion settings are not ideal
profile quality:	The profile does not match the actual output system
out of gamut:	The spot color is probably out of gamut

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The report provides you with information about the archived and measured deltaE values. The last column of the report - *Status* - provides status information such as improvements, recommendations about further processing or warnings. If for example the deltaE00 value is already very low further optimization is not needed and the color is marked green, colors that are marked yellow are below 2 dE00 and colors marked orange are higher than 2 dE00.

If a spot color is out of gamut or optimization is not possible due to restraints from the selected configuration those colors are marked accordingly.

7. Step 7: When clicking the Apply button the optimized spot colors (based on the measurement data) will be calculated and applied in the Configuration. Tick the check box Iterate all Spot Colors if you would like to iterate all spot colors. If the check box is disabled only the recommended spot colors will be optimized. You will find the optimized device values (Output values) in the table of the tab Spot Colors under Configuration. They will be marked as Iterated in the column Information of the table.

	Document / Targ	et Images / Vectors	Spot Colors	Options	PDF	Gradations		
O Don't convert Spot Colors O Convert Spot Colors O Convert with PDF Alternate Color Space and Tint Transform								
Spot Color Libraries:	ab Values from PD	F Alternate Colors, PANT	ONE+ Soli		lip Outp	ut Values be	low (0-20):	
Undefined Spot Colors:	Keep Spot Color 😒 🗌 Use Printing Sequence fr						e from Docu	
Calculation Method:	/isual Match - Utilize more Channels				Don't convert Spot Color "All"			
Gamut Warning:	Display Warning an	visplay Warning and continue				sion 🔷	D50, 2 Degr	
	dE2000 Limit: 2.5							
Name	Conversion	Value	Apply to		Print	ting Sequence	Information	
Lab Orange	Output Values	229.6 117.2 81.3 RG	3 Images an	d Vectors	1		Iterated	
PANTONE 562 C	Output Values	94.3 173.9 107.7 RG	3 Images an	d Vectors	2		Iterated	
PANTONE 5825 C	Output Values	159.1 159.3 56.8 RG	3 Images an	d Vectors	3		Iterated	
PANTONE 717 C	Output Values	224.9 33.0 0.0 RGB	Images an	d Vectors	4		Iterated	
PANTONE 801 C	Output Values	105.3 234.1 226.8 R0	B Images an	d Vectors	5		Iterated	
PANTONE Cool Gray 7 C	Output Values	176.2 178.8 170.2 RC	B Images an	Images and Vectors			Iterated	
		Investigation of the second						
New Edit	Delete	Import Export						

Expert tips: It is a good idea to *Export* the optimized spot color table of the tab *Spot Colors*. This will give you the chance to revert to these values in case you do some further iterations or change some values manually. Another tip in case you would like to revert to the original values without iteration is to simply delete the colors from the table.

If you would like to find out about the improvements in terms of deltaE2000 after **Step 7** you have to print the optimized spot colors once more. To do so click on the **Save** button in **Step 3** of the **Iterate Spot Colors** dialog to create a new PDF file with the optimized device values and a new reference file. Make sure to use this second PDF file when printing and measuring! After measuring and saving a new **Report** you will see the

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improved deltaE00 values. You can continue to iterate by simply clicking the *Apply* button in *Step 7*. Or, in case the deltaEs are fine and further iteration is not recommended, simply close the dialog without applying the new measurements.