Halftoning Methods

Differences between the halftoning methods used in EFI Colorproof XF and EFI Designer Edition

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1 Used system configuration

This article relates to the following system configuration:

Software Version:

Best Colorproof 5.0 up to the current version of EFI Colorproof XF.

Miscellanious:

The halftoning methods super enhanced 1 and super enhanced 2 are not available for every printer.

2 Topics

This article provides information about the differences between different halftoning methods used in EFI Colorproof XF and EFI Designer Edition. The settings mentioned in chapter 2.4 are fixed assigned in the EFI Designer Edition. It is not possible to select them manually. In EFI Colorproof XF it is possible to select the different halftoning methods during the linearization process. There are three different halftoning methods:

- super enhanced 1
- super enhanced 2
- screening.

Halftoning in general defines the system which is used to print dots onto the paper. Depending on the algorithm behind this the resulting color or printed area might look smooth or unsmooth. The color impression can be different as well as the color density.

2.1 Super enhanced 1

2.1.1 General explanation

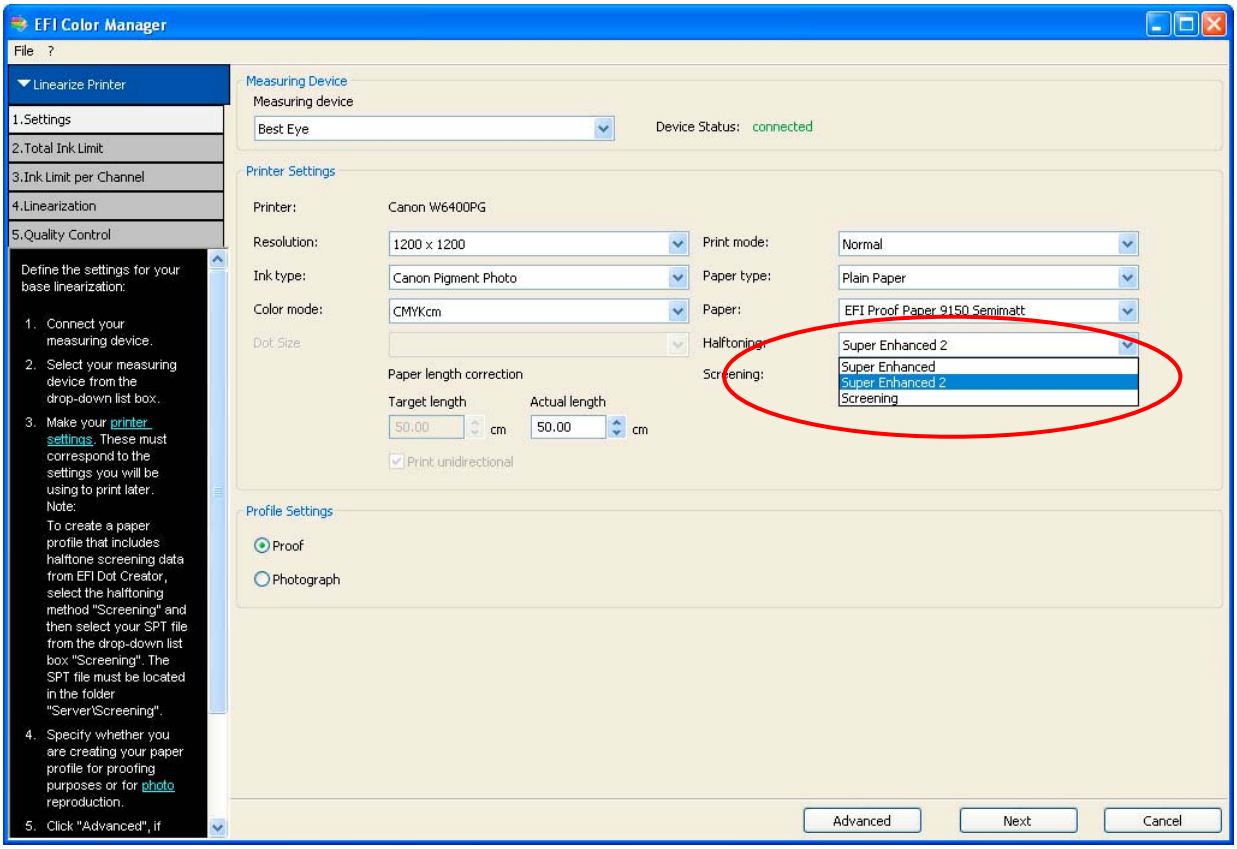
The super enhanced 1 screening is a so called error diffusion screening. If a dot gets printed or not depends on the surrounding dots. If the desired dot exceeds a specific threshold it does get printed. If this threshold does not get exceed the dot does not get printed. The super enhanced 1 screening is very calculation intensive.

2.1.2 Advantage

The advantages of the super enhanced 1 screening are smoother and more even printed areas. It might take a little bit longer to calculate this screening due to the consideration of the surrounding dots.

2.1.3 Appliance within Colorproof XF

Changing the halftoning method will affect the printing result and therefore the color impression. Therefore it is not possible to change the halftoning method in the application interface. It is only possible to switch between the three methods in the EFI Lintool/Color Manager during the linearization process. You can find the drop down menu in the first step “Settings”.



Please keep in mind that for every different halftoning method a new linearization file needs to be created.

2.2 Super enhanced 2

2.2.1 General explanation

The super enhanced 2 is a so called stochastic screening. It will be set regarding a predefined pattern. Homogeneous areas should be printed as smooth as possible. In comparison with

super enhanced 1 it might be possible, that due to the pattern some areas might look a little bit noisier.

2.2.2 Advantage

The super enhanced 2 screening is faster in calculation because it works depending on a predefined pattern. The back side is that it might look a little bit noisy.

2.3 Screening

2.3.1 General explanation

The halftoning method screening is only used in conjunction with the EFI Dot Creator. The EFI Dot Creator creates a screening file depending on some self defined parameters like screen angle or screen ruling. This screening is different than the two methods mentioned above because it does not create a contone output but instead a screened output. This screened output should simulate standard printing methods like flexo printing or silk screen printing.

The resulting screening file from the EFI Dot Creator needs to get selected in the “screening” pull down menu (see screenshot on page 5).

2.4 Recommended use

The following table gives an overview about the recommended settings used for contone proofing:

Printer	Halftoning
SPh R2400	SE 1
SPh 1290	SE 1
SP 4000 UC Photo	SE 2
SP 4800 UC Photo	SE 2
SP 7600 UC Photo	SE 2

SP 10600 UC Photo	SE 2
SP 10000 Dye	SE 1
SP 7000 Dye	SE 1
SP 10000CF	SE 1, for Onebit Option SE 2
SC 3000	SE 1
SP 5000	SE 1
Canon 2200	SE 2
Canon 7200/7250	SE 2
Canon 6400	SE 2
Canon 8200 Dye	SE 2
Canon 8200/6200 Pig	SE 2
Canon 8400	SE 2
HP Photo Smart B9180	SE 1
HP 30	SE 2
HP 130	SE 2
HP 500	Contone 32 bit, new in XF
HP 800	SE 1
HP 1055	SE 1
HP 4000	SE 2
HP 5500 Dye	SE 1
HP 5000 UV	SE 1
FJ 500	SE 1
FJ 540	SE 2

2.5 Recommended use for Screenproof

Experiences have shown that for all one bit print outs the error diffusion screening works the best. **Therefore it is recommended using the super enhanced 1 screening in connection with the EFI One Bit Option**.

3 Executive Summary

This article provides information about the different halftoning technologies EFI Colorproof and EFI Designer Edition uses in its printer driver.

There are three different halftoning methods:

- super enhanced 1
- super enhanced 2
- screening.

Super enhanced 1 is an error diffusion screening and creates smooth and even printed areas. The super enhanced 2 halftoning is a stochastic screening which works faster but might create more noisy looking printed areas. The screening halftoning creates in combination with an EFI Dot Creator screening file a real screened output which simulates silk screen or flexo printing.

The different halftoning methods are not selectable within the EFI Colorproof XF interface. Due to its different printing characteristic a new linearization file needs to get created. Therefore the different halftoning methods are selectable within the EFI Lintool/Color Manager interface.

Chapter 2.4 provides recommendation for the most common used printer which screening should be used.