Tutorial

Creating a New CPM from Scratch

Software version: Asanti 5.1
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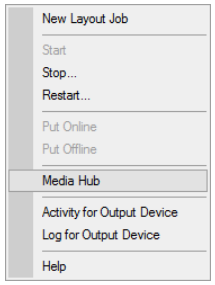
In this tutorial, you will learn how to generate a CPM from scratch. The CPM from Scratch wizard takes complete control of the color behavior where all aspects of the unique ink, media, and quality combination are considered natively.
The wizard is strongly automated and guides the operator through different steps from setup to a ready-for-use CPM.

The CPM from scratch wizard needs a profound knowledge of "the system". This includes the printer, ink, and substrate. It is possible to go beyond the limits of the system which can result in stability and quality issues during the print run. Results with 100% repeatable quality can be achieved with the derived CPM.

Measurement devices

A measurement device is essential to create a CPM from scratch. Make sure that the right driver is used. See the Annex for detailed info.

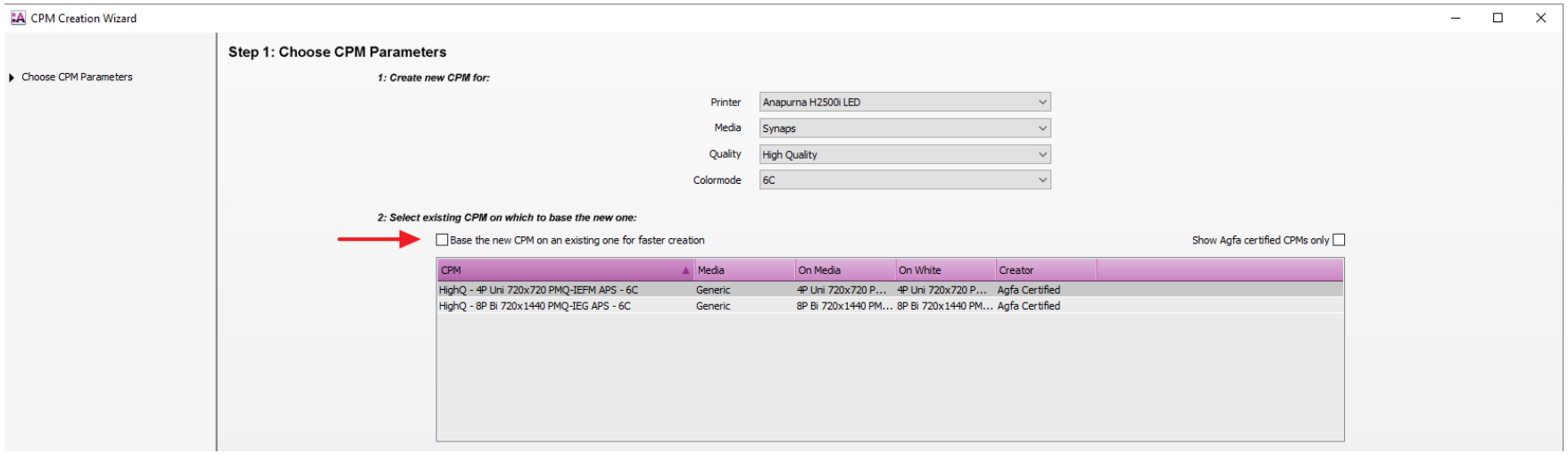
1. How to create a CPM from scratch



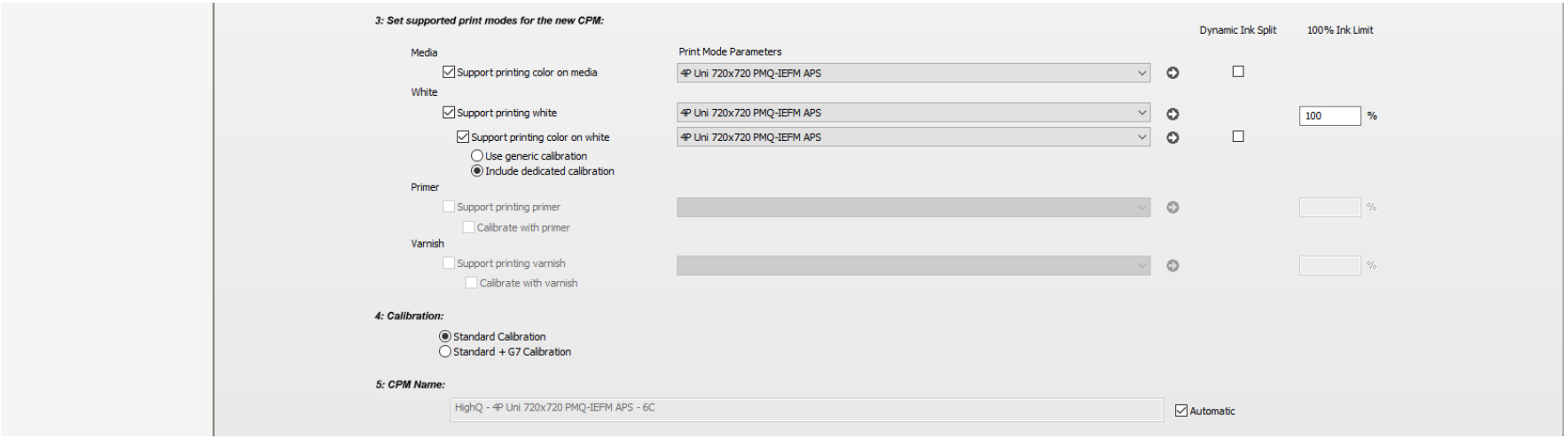
1. In the jobs overview, context-click on the digital press. Open the Media Hub.
2. Select File > New Media, give the new media a recognizable name (e. g. paper vendor, tutorial ...)
3. Select File > New Calibrated Printing Mode

Step 1 – Choose CPM parameter

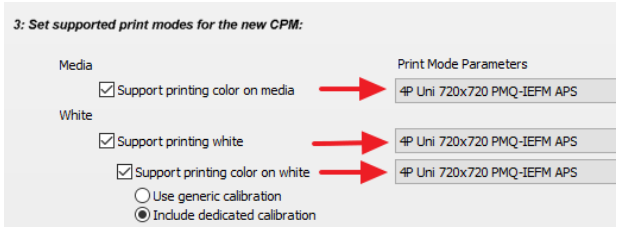
4. The first step is to link all elements (printer, media, quality ...) which make a CPM.
   - Select your printer
   - Select your media
   - Select a Quality
   - Select a Color mode (if available)
   - Disable "Base the new CPM on an existing one for faster creation"



5. Add the necessary print application(s). In this tutorial, we will make a CPM with an “on media” and “on white” calibration.



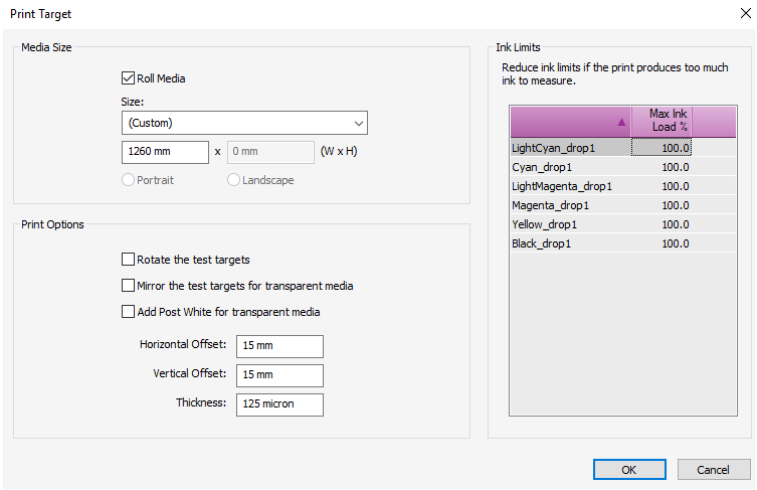
- Enable *Support printing color on media* and select a matching print mode.
- Enable Support printing color on white, activate Include dedicated calibration



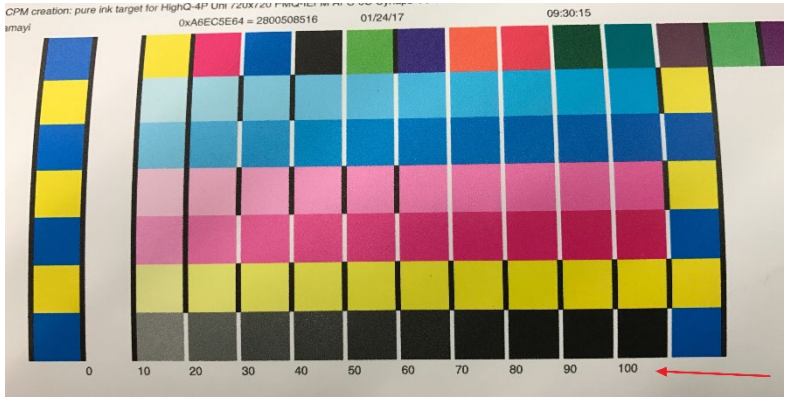
6. Click next to proceed.

Step 2 – Pure ink characterization

7. During the pure ink
   Select “Change Instrument” from the cogwheel when “NO INSTRUMENT SELECTED” is shown in the instrument pane.
   Select your measuring device e.g. i1 iO Pro 2 by clicking on the cogwheel. If available, select M1 as the measurement condition.
8. Click “Print”. The print target window will be displayed. The output size can be changed (this will rearrange the targets automatically). The print options with offset and media thickness are only useful for Jeti Tauro devices. The wedge (ID strip and Calibration target) is automatically processed by Asanti and dispatched to the press after clicking “OK”.



9. Notice the percentage at the bottom of the calibration wedge. This percentage allows limiting ink usage (step 8) before printing.



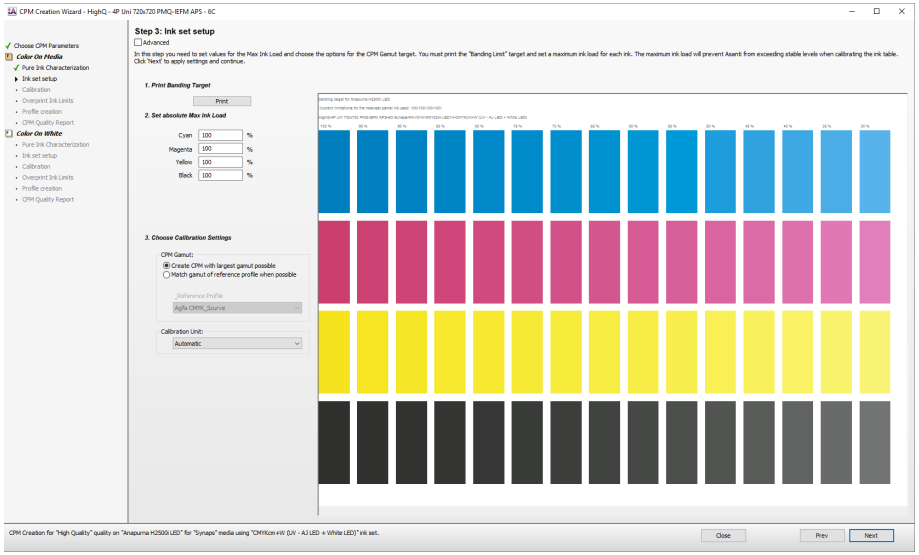
In this stage, the limitation should only be done when the wedge can’t be measured (sticky ink, drying issues, to vulnerable …). Print artifacts that can be measured shouldn’t be limited to allow the biggest possible gamut (print artifacts will be filtered out during the proceeding steps).

10. Click measure. Depending on the selected measurement device the wizard will act differently. Click next to proceed.
    - X-Rite eyeone, iSis, and eXact: the wizard will recognize the ID strip and proceed automatically to the pure ink characterization wedge.
    - X-Rite eyeone iO: ID strip and pure ink characterization wedges are measured automatically after positioning.
    - Barbieri Spectropad/Spectro LFP and Konica Minolta FD-9: select the measurement description file (double-check the Job ID which is printed in the header of the wedge).

A CPM calibration wedge can only be used once. When submitted multiple times, the wizard will only accept the last submitted one as valid (otherwise a warning will be posted).

Step 3 – Ink set setup

11. In this lesson, it is the intention to make a CPM with the biggest possible color gamut.
    - Click print to print the banding target.
    - Set absolute max ink load: the maximum ink load is the patch (%) which is not affected by any print artifact (banding, curing, durability against scratches …).
    - Calibration settings:
        - CPM gamut: select *Create CPM with the largest gamut possible*
        - Calibration Unit: automatic
    - Click next once all parameters are set.



In the automatic wizard Asanti will calculate the best ink usage based on measurements (step 2) and limitations set by the operator (step 3). This will allow combining both routines into an initial calibration step (step 4). Asanti will lower the ink usage when more ink does not make sense (no additional color gamut or Chroma) even when the maximum ink load may go way higher before running into print artifacts.

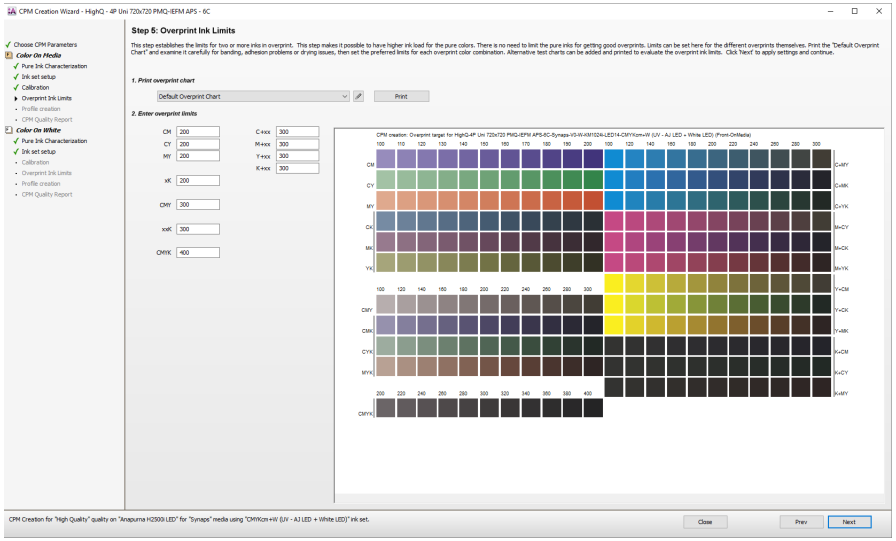
Step 4 – Calibration

12. During the calibration step, an initial calibration is done. Select your measurement device (if not available yet). Click print to submit the wedges. Once printed click Measure and proceed with the measurement as described in point 10.
    Once completed a graph will be generated displaying the tonal behavior in lightness (cyan, magenta, and black) of Chroma (yellow and eventual additional colors). A small step can be distinguished for multi-density inks where the light tint is

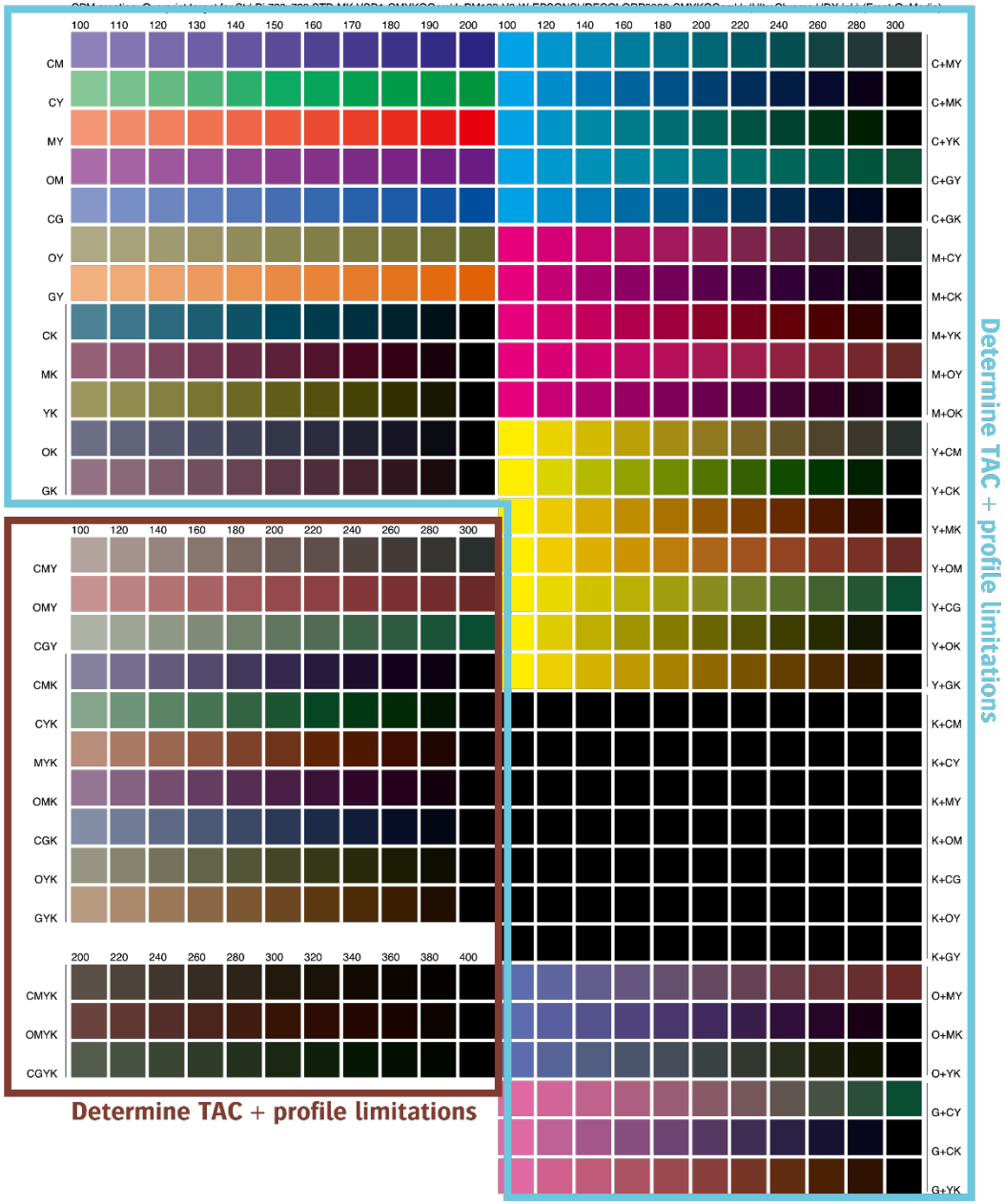
replaced by the heavy tint.
Click next to proceed.

Step 5 – Overprint Ink Limits

13. All previous steps were about limiting individual inks. Output by Asanti is (almost) never the pure ink individual. Colors are achieved by mixing 2 or more inks to reproduced 1000's of colors. In step 5 the ink behavior of 2 or more mixed inks is checked and if necessary limited.
    From the *Print overprint, chart* drop-down menu selects the Default Overprint Chart and click print. The target is dynamically created based on the used ink set (additional orange, green, blue …).



14. Overprint target: the overprint target contains a series of wedges

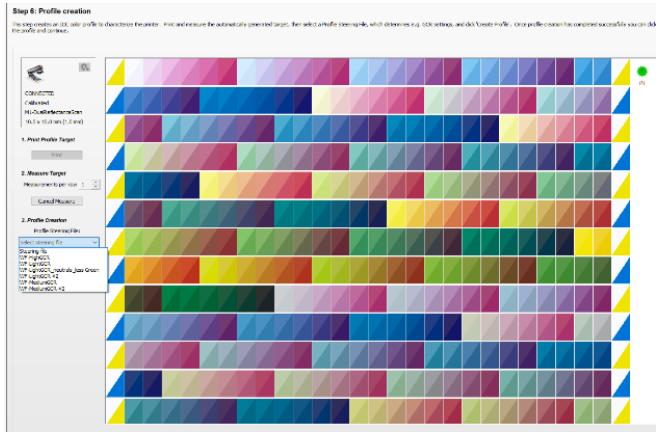


here gradually ink is increased. Judging this printed chart is a matter of finding the right limitation to avoid print problems. Eventually use a sclerometer or something else to test the durability against scratches. Choose for each wedge the best level (higher level = banding, drying issues, scratches …) and update the overprint limits. Click next once finished.

The limitations set on this target are "virtual" which means that they do not have any influence in the previous set limitations on the pure in. They are taken into account when creating the profile in the next step. A TAC is determined to select a good profiling target.

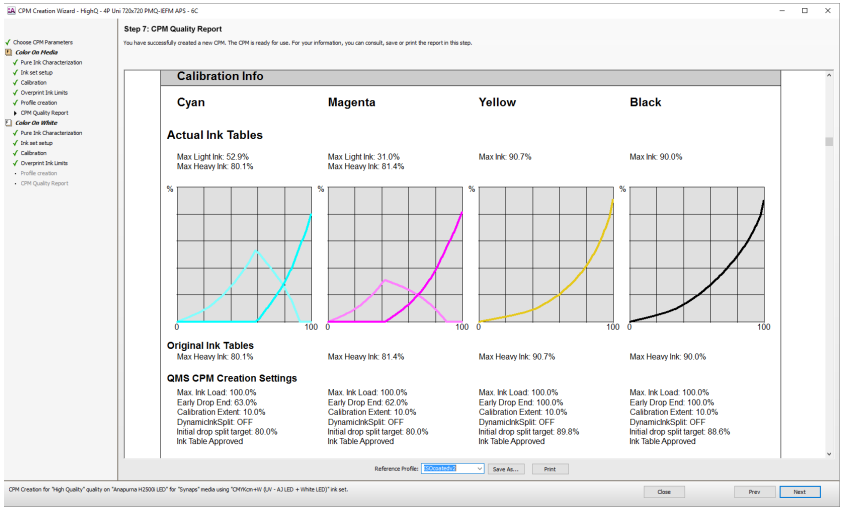
Step 6 – Profile creation.

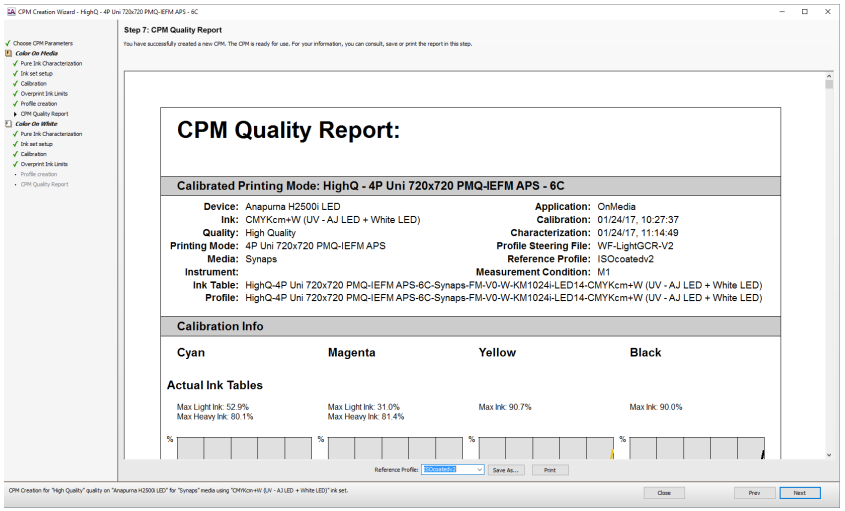
15. Again, select your measurement device (if not active yet). The layout of the profiling target is automatically adapted to the active profiling target. Click print to print the target.
16. Click measure to measure the target. Once complete, a Profile Steering file can be selected. Select WF-LightGCR-v2 and click create a profile. Click next.



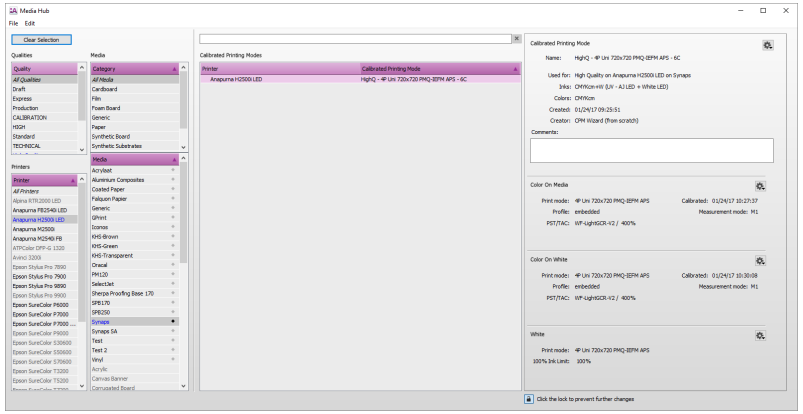
Step 7 – CPM quality report

17. The CPM quality report contains all details on how the CPM was made (ink table) but also how it scores against a reference profile. This allows judging whether a CPM might be used to simulate press conditions such as a Fogra or IDEAlliance standard.





18. Click next to proceed if a dedicated white calibration set needs to be added. Click finish if not the case.
19. The CPM is now available in the media hub.



2. Redoing a CPM

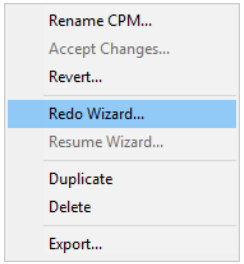
After completing a CPM, the quality will probably be validated by printing a series of test images. It can then happen that the result is not 100% satisfying: problems with adhesion, color gamut restrictions … Some "problems" can be fixed by modifying the CPM to change the print mode or replacing the steering file of the profile. But these parameters have little influence on the true ink behavior. Ink drying issues can partially be fixed by restricting the profile (needs to be done with external profiling tools such as ColorTune Output) but is off-topic when it comes to color-accurate Calibrated Printing Mode.

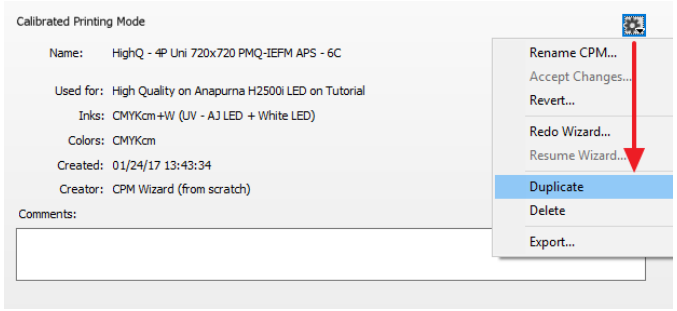
By redoing a CPM, the CPM can be opened. All steps of the wizard become available for tweaks and changes.

Only CPMs made with Asanti 3.0 or later can be redone.

In this lesson, we will change the DLC (overprint ink limits) from our previously made CPM. This will be done on a duplicated version of the CPM.

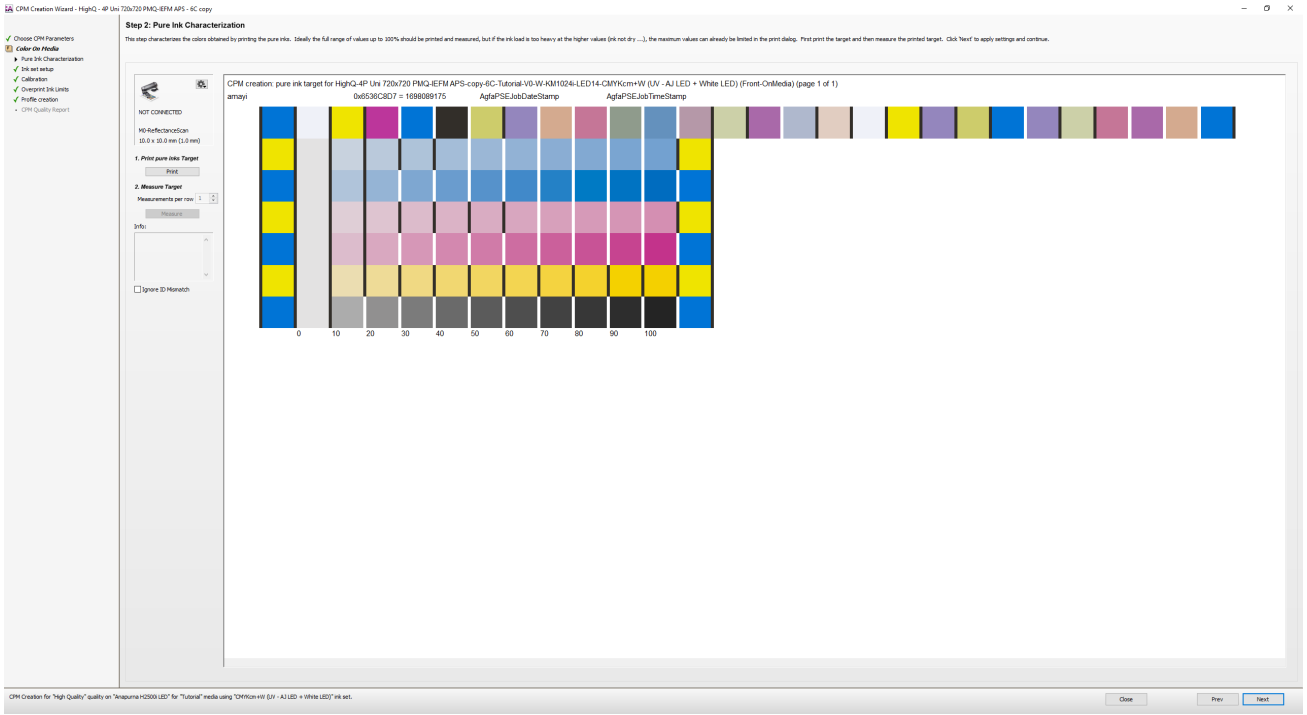
1. Look for the CPM in the Media Hub. Click on the CPM cogwheel and from the dropdown menu: click on "Duplicate…"
2. A new CPM will be generated with a copy suffix.
3. Select the new duplicated CPM. Again, click on the CPM cogwheel and now click on "Redo Wizard…"





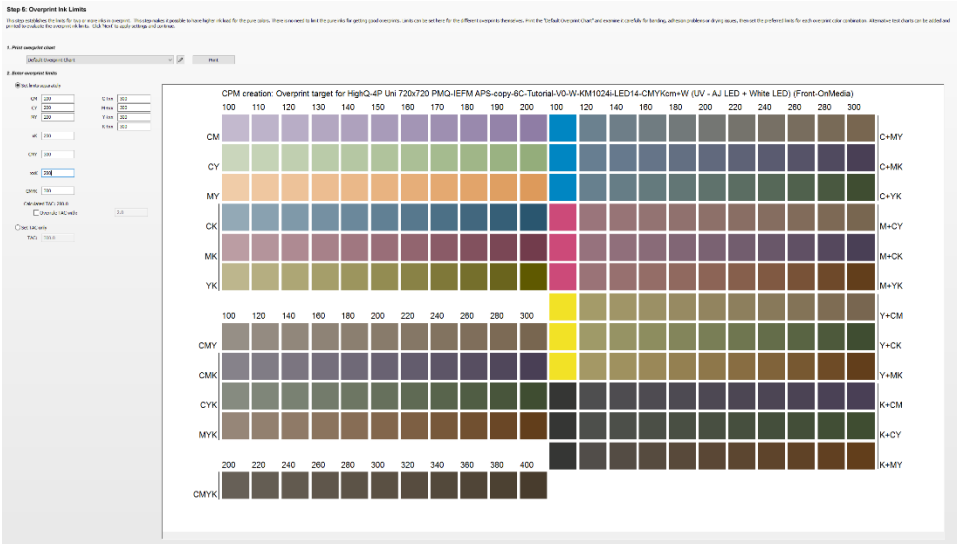
4. The CPM will open with on the left-hand side all (completed) steps. Completed steps can be recognized by their green

checkmark.



The first step (Choose CPM Parameters) cannot be changed since changes in here can will result in a total new CPM.

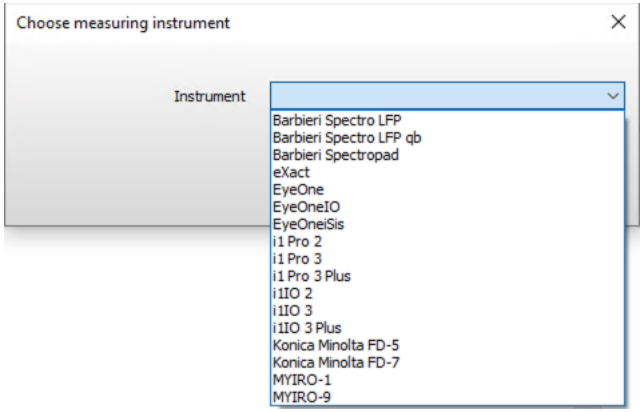
5. Click next until the step needs to be changed. In this lesson, we will go to step 5 – Overprint Ink Limits. Change for example the TAC and click next.
6. The CPM is now changed (again incomplete). Print again the profiling target, measure and create a new profile (see the previous lesson for detailed information).



Annex: Measurement devices

Measurement conditions

A measurement condition is a standardized method to cope with components in the substrate which can influence the tonal response (color) detected by the measurement device. Typically, paper manufacturers may add an optical brightener (OBA) to the formula. This component will reflect parts of the invisible UV light into the visible blight to make it look brighter.

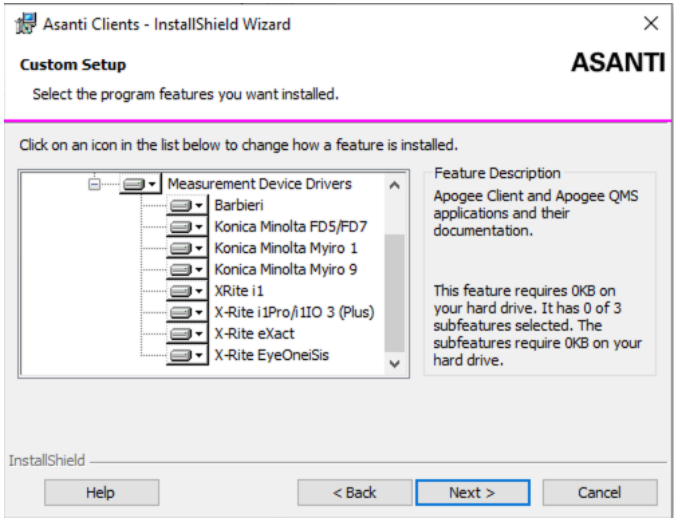


- M0: no compensation – the reflected light from the bulb inside the measurement device is considered.
- M1: compensation – the reflected light from the bulb inside the measurement device is compensated to match the human eye (a certain level of UV accepted).
- M2: UV cut filter – the light of the bulb is filtered (mathematically or by physical filter) before it is reflected by the substrate (no UV at all)

M1 is used for all Agfa-certified CPMs (Generic). M1 can be used in all circumstances even if there are no OBA in the substrate.

Hardware

	Measurement conditions
Barbieri Spectro LFP	M0
Barbieri Spectro LFP qb (NEW)	M0, M1, M2, M3
Barbieri SpectroPad	M0, M1, M2
X-Rite i1 (UV cut)	M0 (M2)
X-Rite i1 Pro II	M0, M1, M2
X-Rite i1 IO Pro (UV cut)	M0 (M2)
X-Rite i1 IO Pro II	M0, M1, M2
X-Rite i1 Pro III (NEW)	M0, M1, M2, M3
X-Rite i1 Pro III Plus (NEW)	M0, M1, M2, M3
X-Rite i1 IO Pro III (NEW)	M0, M1, M2, M3
X-Rite i1 IO Pro III Plus (NEW)	M0, M1, M2, M3
X-Rite i1 iSis Pro	M0, M2
X-Rite i1 iSis Pro II	M0, M1, M2



X-Rite eXact scan	M0, M1, M2
Konica Minolta FD-5	M0, M1, M2
Konica Minolta FD-7/FD-5BT*	M0, M1, M2
Konica Minolta FD-9 (old model of Myiro 9)	M0, M1, M2
Konica Minolta Myiro 1 (NEW)	M0, M1, M2
Konica Minolta Myiro 9 (NEW)	M0, M1, M2

Run the client installer (custom setup) again when your measurement device is not available in the list.

I1 Product family

There is a dedicated driver per generation (new since Asanti v5). It is key to match the right driver with your measurement device.

Device	Look	Driver Media Hub
I1 first generation (before 2010)	Grey hard plastic	EyeOne (iO)
I1 Pro II (2010)	Black rubberish plastic	I1 (iO) 2
I1 Pro III (2019 and later)	Black hard plastic	I1 (iO) 3
I1 Pro III Plus (2019 and later)	Black hard plastic with a large aperture	I1 (iO) 3 Plus