



This tutorial is based on basic knowledge of CPMs. For further information, please refer to the online tutorial "Calibrated Printing Modes" available on the Asanti Network.

A G7-enabled Calibrated Printing Mode is a printing mode that includes an additional calibration step to validate and compensate for neutral reproduction before profiling. G7 curves can be updated later to improve neutrality.

*As of July 2023, Asanti 6.x is officially certified by Idealliance.*

***Wizard based.***

The Calibrated Printing Mode mechanism in Asanti 6.x is fully wizard-based. The software provides all the necessary steps to print, calibrate, and calculate the resources.

***External tools***

It is still possible to measure P2P targets and import the G7 curves with third-party tools such as ECO3 PressTune or Curve4<sup>1</sup>.

In this case, the P2P target needs to be printed from the media hub (uploaded as a PDF file).

***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.

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<sup>1</sup> A measurement application like ColorTune Measure is needed to use Curve4 for G7 curve calculations since the application does not provide any measurement environment.

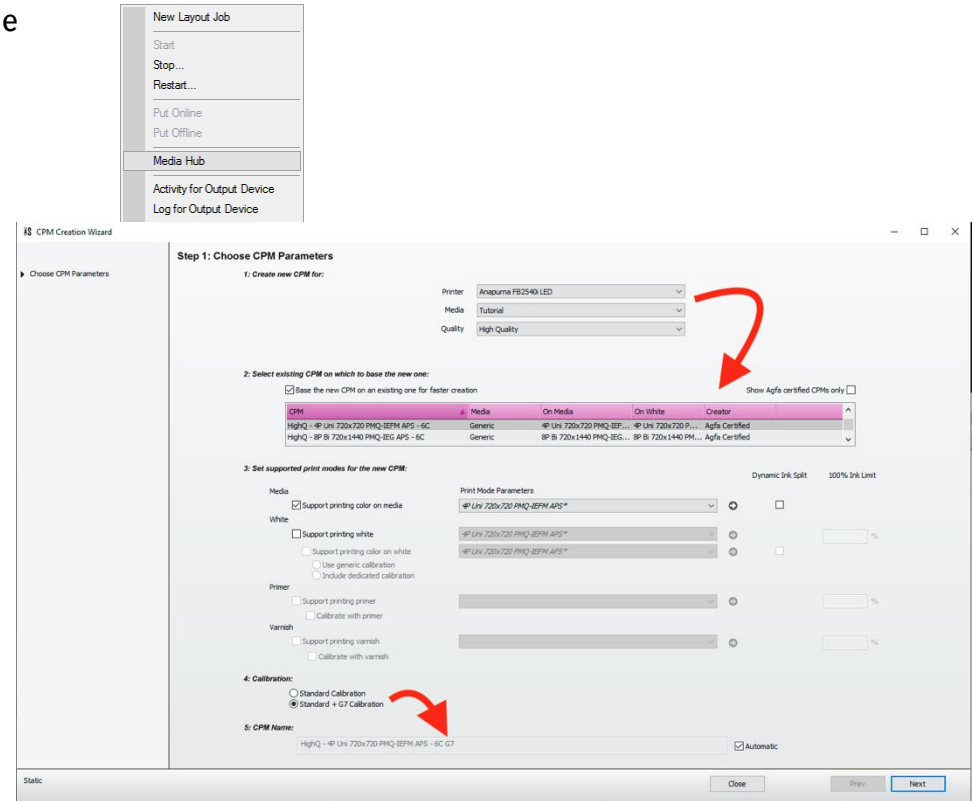
## 1. Deriving a CPM with G7

A G7-enabled CPM can be derived from any (generic) CPM. Depending on the type of base CPM a profile can be made on a mini target (base = G7) or a full target is needed (base = non-G7).

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

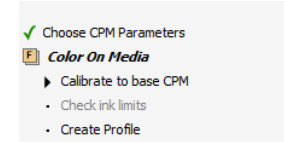
### Step 1 – Choose the CPM parameter.

4. The first step is to link all elements (printer, media, quality ...) that make a CPM.
  - Select your printer.
  - Select Media
  - Select Quality
  - Activate Base the CPM on an existing one for faster creation and select the base CPM (if needed: activate Show Agfa certified CPMs only).
5. Enable *Support printing color on media* to support direct printing of color on the substrate (without pre-white).
6. To add G7 to the CPM: activate *Standard + G7 calibration*. Notice that to the automatically generated CPM name a G7 suffix is added.
7. Click next to confirm.



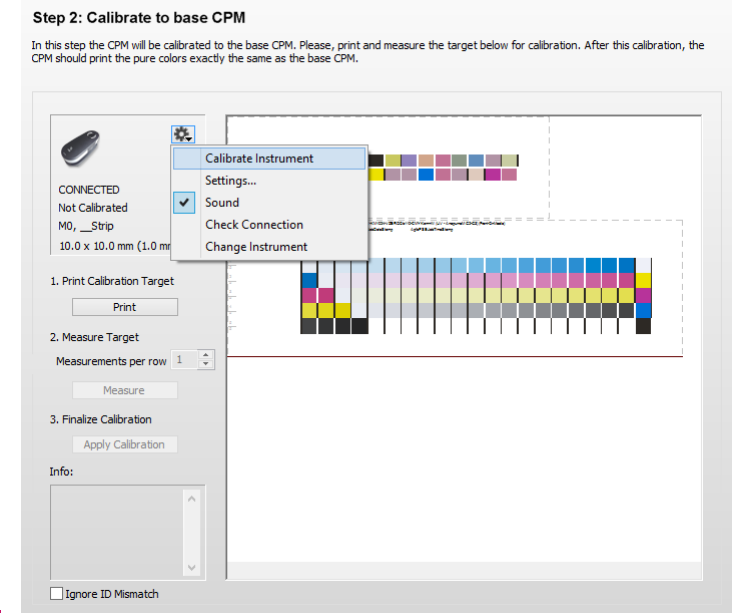
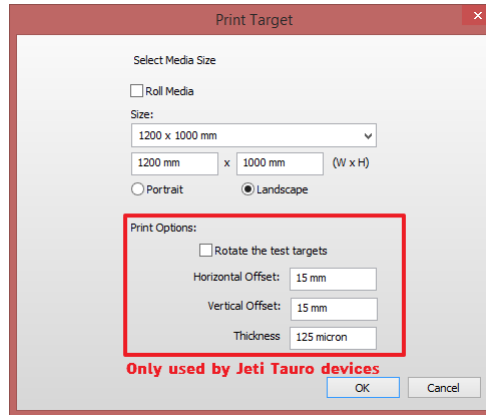
*The number of possibilities (media, white, primer, varnish ...) depends on the capabilities of the base CPM. It is for example not possible to derive an on-white CPM when there is no white information available in the base CPM.*

8. On the left pane, an overview is displayed of the different steps that need to be done to complete the CPM. A green P indicates that the step is finished.



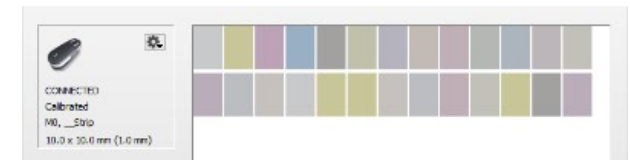
**Step 2 – Calibrate the base CPM.**

1. Select “Change Instrument” from the cogwheel when “NO INSTRUMENT SELECTED” is shown in the instrument pane. Select your measuring device e.g. i1 Pro 3.
2. Select Calibrate Instrument from the cogwheel.
3. 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 Titan devices. The wedge (ID strip and Calibration target) is automatically processed by Asanti and dispatched to the press after clicking “OK”.

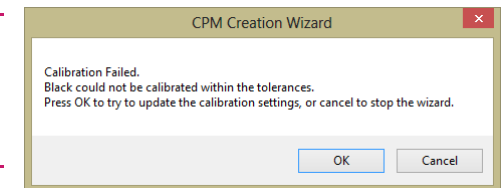


Check the supported [measurement device list](#) below.

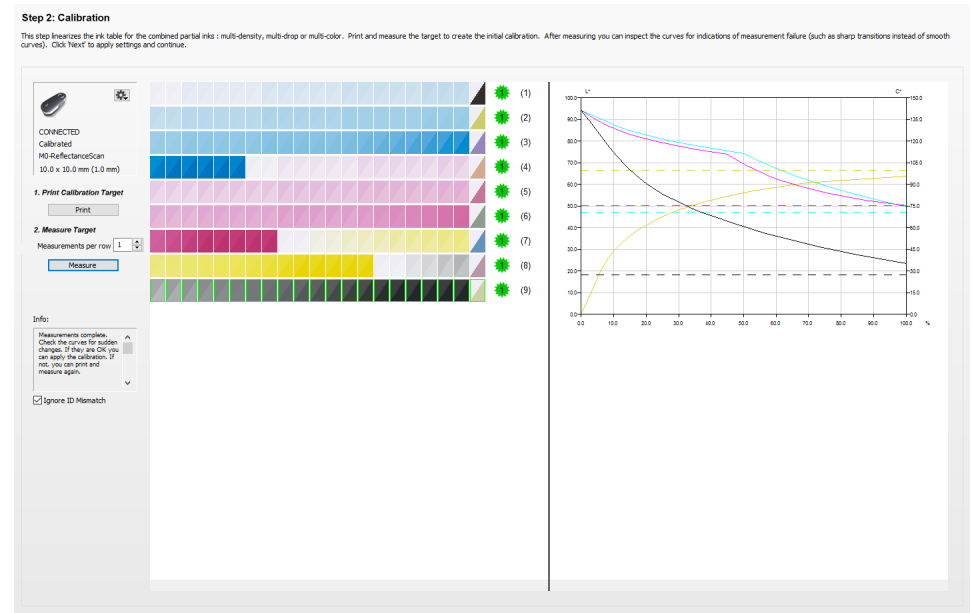
4. Change the number of measurements per row to 1.
5. Click “Measure” and measure the ID strip.
6. Afterward, measure the Calibration target. Each successfully measured row will receive a green state when completed (measure the row again when the red state stays visible) ... Measurements can be reset, deleted, or exported by context-clicking on the wedges.



It might happen that a warning “Calibration Failed” is posted. This means that the reference values for calibration from the base CPM cannot be reached with the new media type. Click “OK” to replace the reference calibration values with the actual measured values.

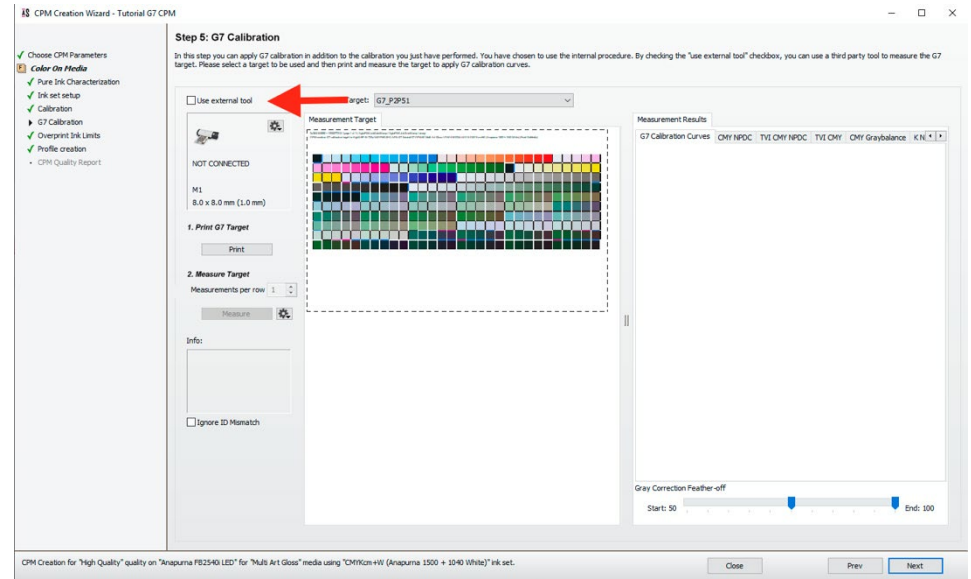


- Once all measurements are done a graph with the actual tonal behavior is generated (the dashed lines are the reference end values from the base CPM). Click "Next" to accept and proceed to the next step.



**Step 3 – G7 calibration**

- In the G7 calibration, step deselect *Use an external tool* and print the G2\_P2P51 target (no other targets can be used).
- Measure the wedge.



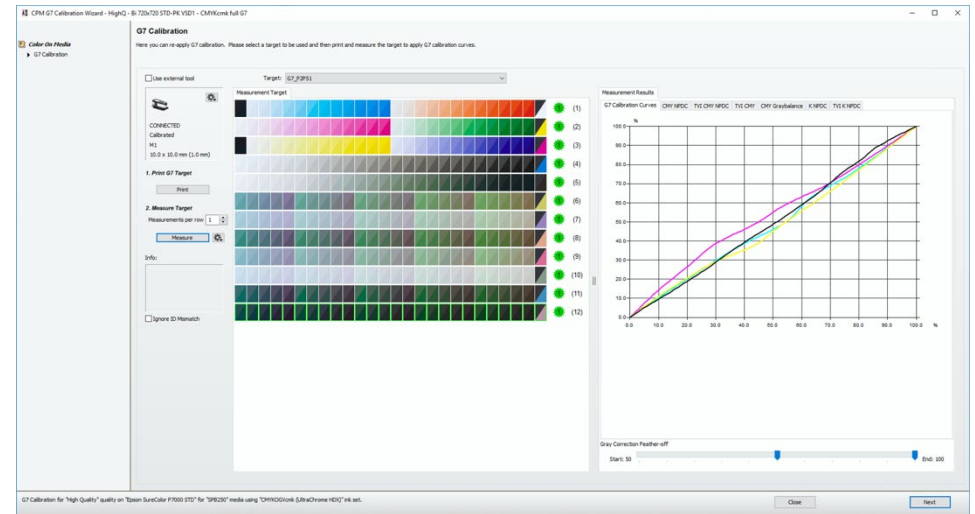
- Once the measurements are done 7 curves will be calculated (browse through the tabs). See the separate annex on these graphs.
- The G7 calibration curves indicate how the calibration is compensated to bring the calibration in G7 tolerance.
- By default, the G7 calibration routines will be used at their maximum between 0 and 50% (see the blue sliders). For wide-format printing, it is advised to set the Gray Correction feather-off to a minimal (move the middle indicator as much as possible to the right: 99% instead of 50%).



Click next to accept the curves.

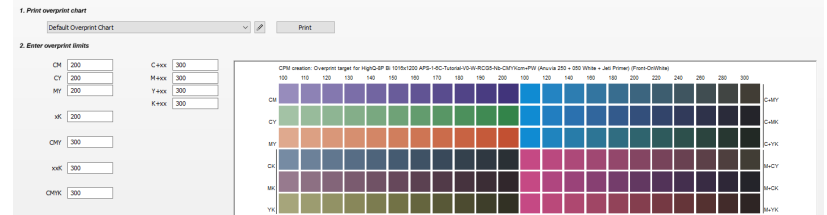
**Step 4 – Overprint Ink Limits.**

- From the Print overprint, the 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, and blue ...).



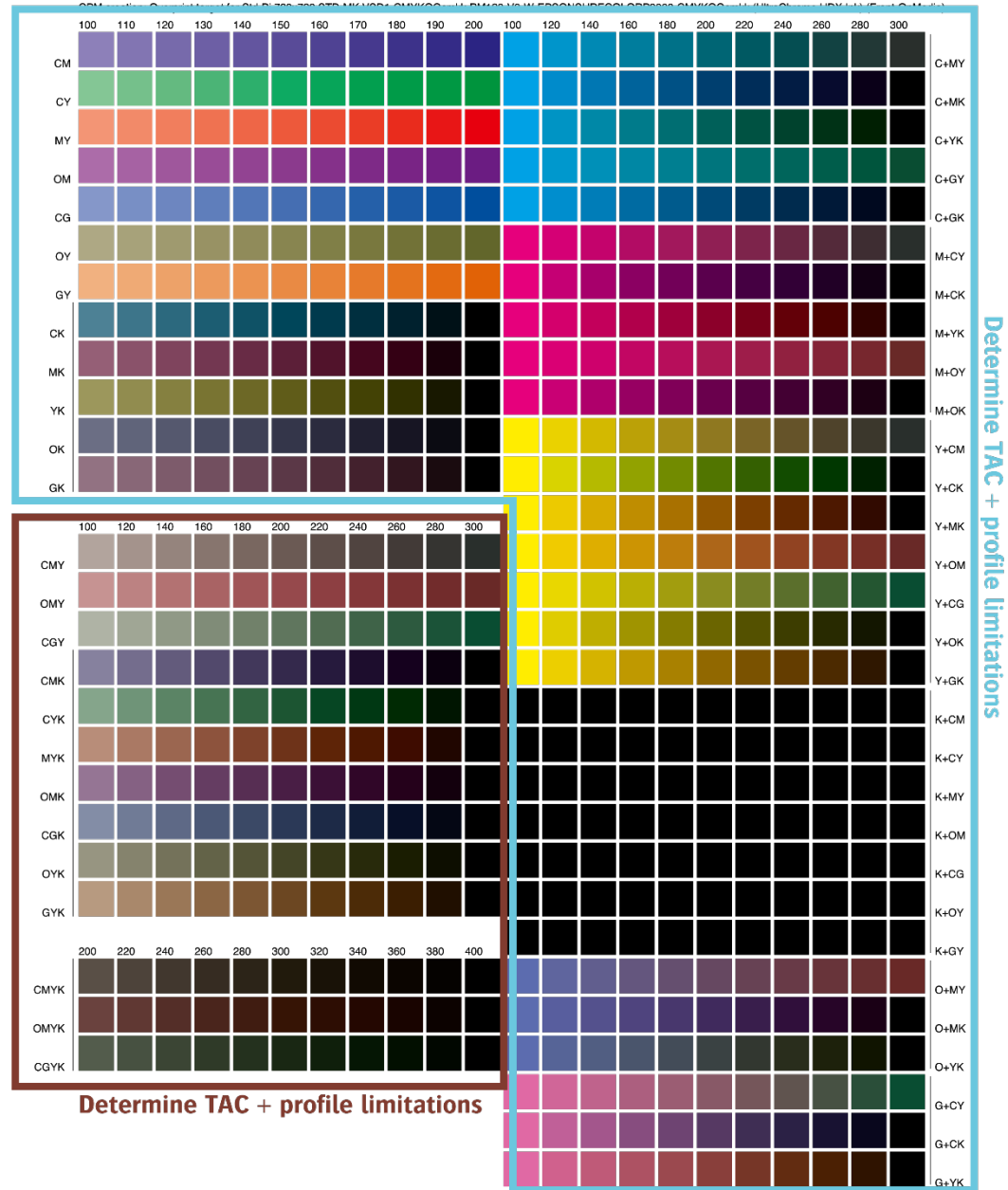
**Step 7: Overprint Ink Limits**

This step establishes the steps for how to manage ink in overprint. This step makes it possible to have higher ink load for the pure colors. There is no need to limit the pure ink for getting good overprints. Limits can be set here for the different overprints themselves. Print the 'Default Overprint Chart' and examine it carefully for banding, adhesion problems or drying issues, then set the preferred limits for each overprint color combination. Click 'Next' to apply settings and continue.



- 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 of limitations on the pure ink. They are taken into account when creating the profile in the next step. A TAC is determined to select a good profiling target.*



### Step 5 – Create Profile

1. A profile can be created based on a full target or a limited target. The full target will create a completely new profile for this CPM.

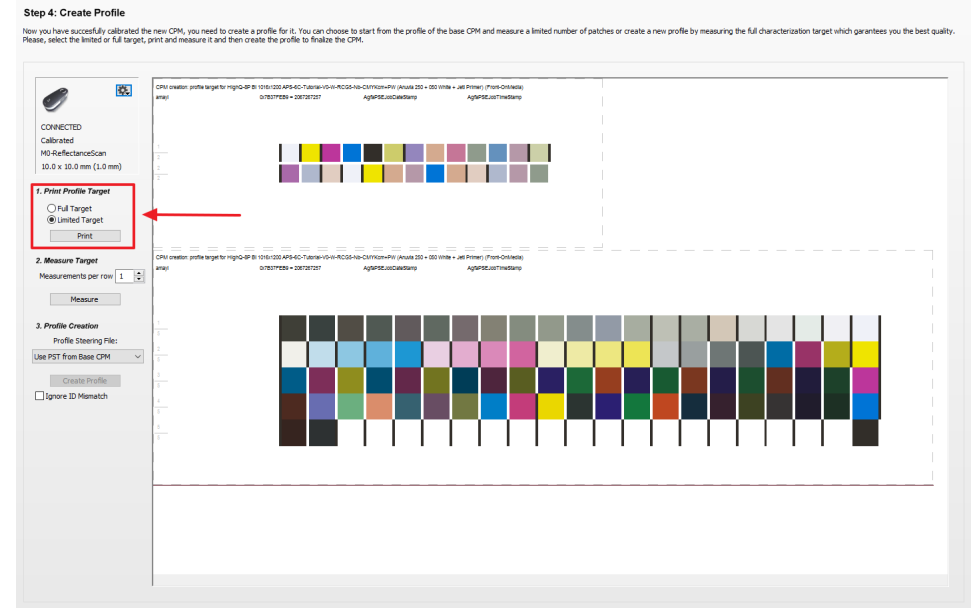
A limited target will intelligently combine the measured results of a small target with the profile of the base CPM. The new profile will then be created while combining these measurements with the base CPM profile.

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*It is only possible to use the full target when the base CPM doesn't have G7 calibration included.*

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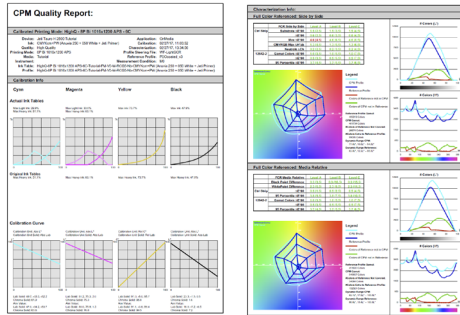
2. Select “Limited Target” and click Print. Do not make any changes in the Print Target dialog and click “OK”.
3. Print the target. Notice that the limited target uses a significant amount of neutral grey patches. The grey balance will be used to match the base profile with the new media.
4. Click “Measure” to start measuring the ID strip and the Profile target.
5. Click “Create Profile” when all rows have been successfully measured.
6. Click “Next” to proceed to the final step.



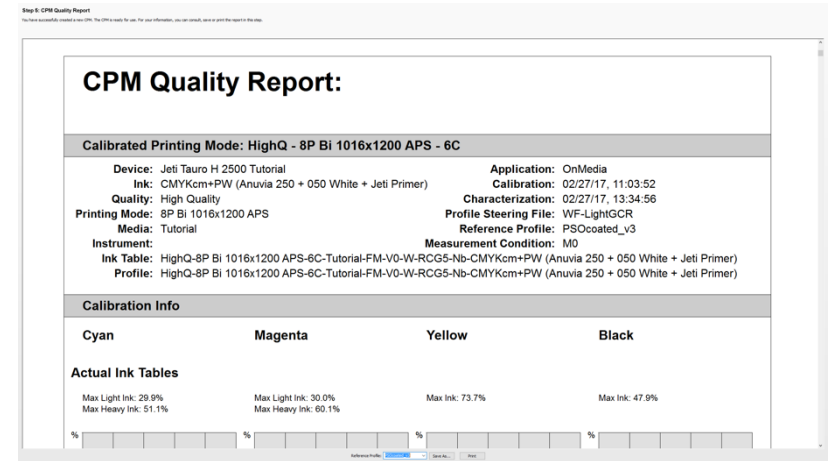


**Step 6 – CPM Quality Report.**

1. The CPM Quality report offers a detailed overview of how the newly made CPM will score. Page 1 is about calibration details such as the ink usage while page 2 focuses on how the colors score against a reference profile.

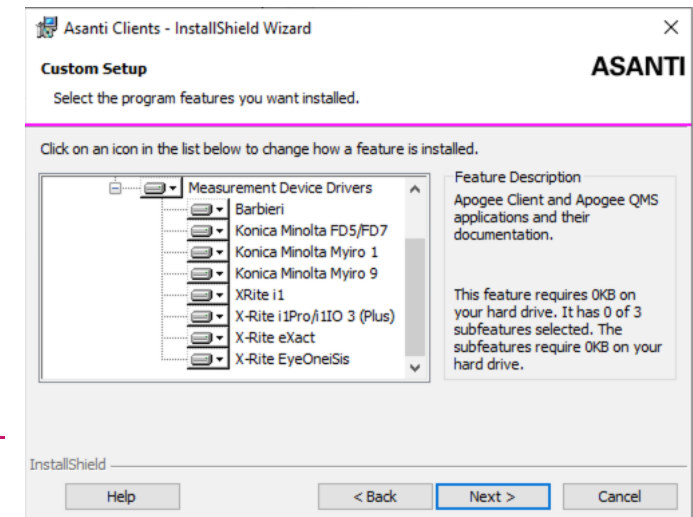
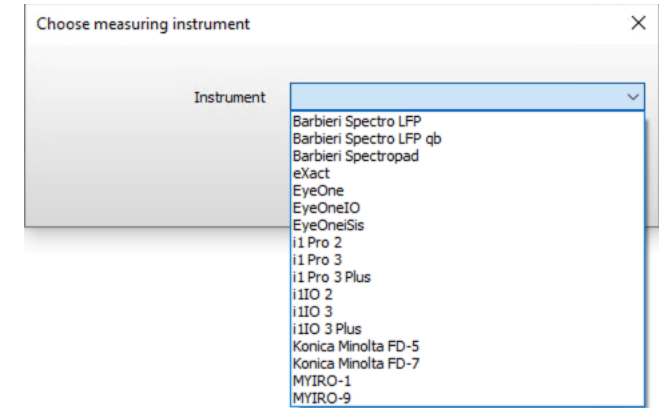


2. Click “Finish” to complete the CPM.



## 2. Annex A: Measurement devices

	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
X-Rite eXact scan II	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

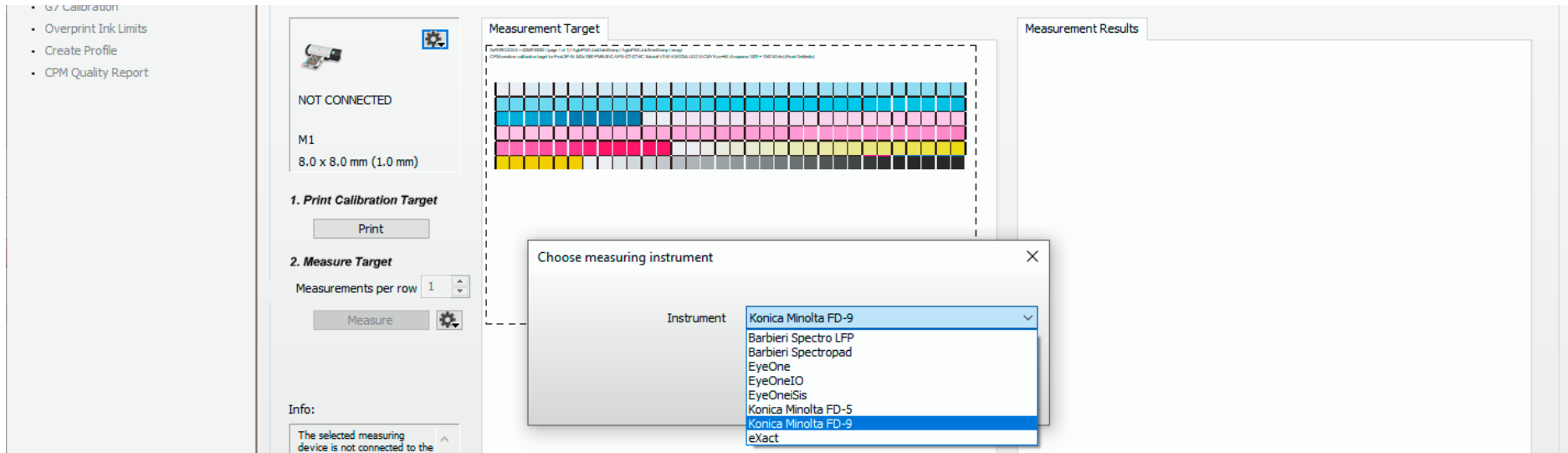


*Run the client installer (custom setup) again when your measurement device is not available in the list.*

***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 h large aperture	I1 (iO) 3 Plus

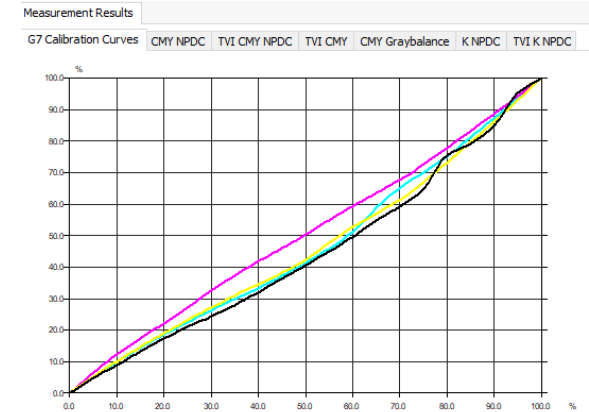


### 3. Annex B: Curves during G7 calibration

Quite a big collection of curves (7) is calculated during the G7 calibration step. Only 1 – the G7 Calibration Curves – are used to update the resources. The rest is extra validation of the effectiveness of G7 or to tweak the effectiveness of the G7 calibration curve (feathering).

#### G7 calibration curve

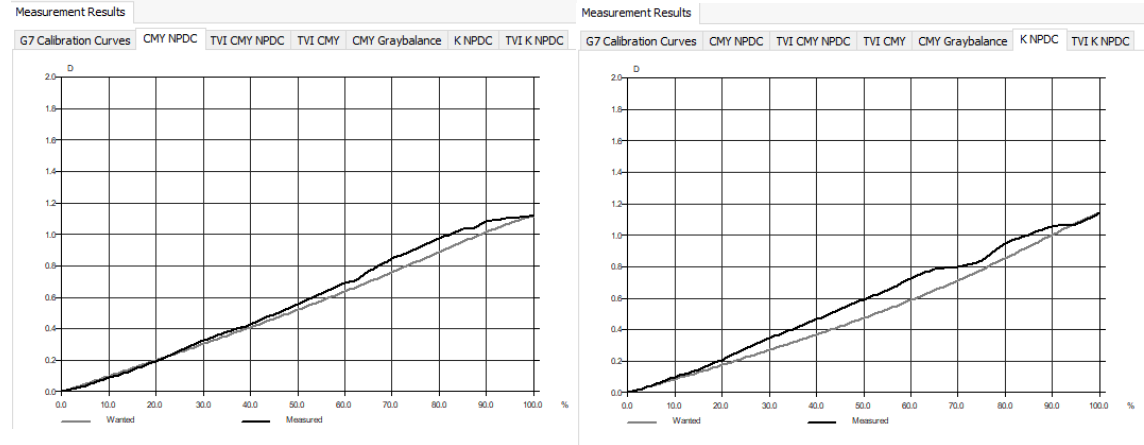
CMY compensations to reach tonal neutrality. This curve will be concatenated together with the calibration curve inside the CPM. The X ax represents the % (density) printed while the Y ax displays the compensation to achieve a neutral output. In a perfect neutral transition, all colors move along a straight line to 100%.



### CMY NPDC<sup>2</sup> curve and K NPCD curve

These 2 curves (tabs 2 and 6) display the measured neutral density. The more the curves (CMY or K) deviate from the wanted (grey curve) the more the G7 routines need to compensate in these areas.

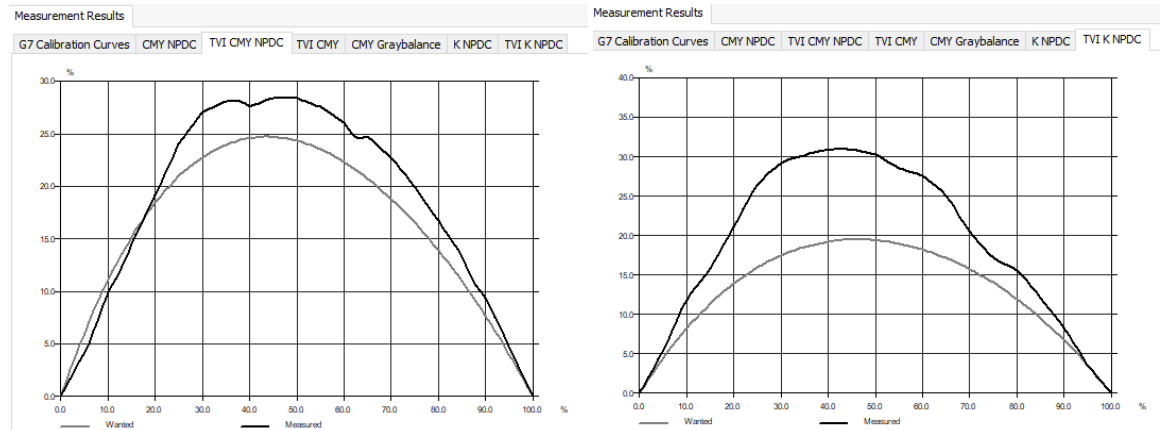
X-axis is the percentage that matches with a certain density (Y-axis).



### TVI<sup>3</sup> CMYK NPDC and TVI K NPDC

The TVI curve of CMY (tab 3) and K (tab 7)

The G7 calibration routines use a fixed wanted dot gain (grey curve). Small steps are smoothed out. They are an indication of another partial ink that comes up in those areas (e.g. light cyan is replaced by heavy cyan).



<sup>2</sup> NPDC: Neutral Print Density Curve

<sup>3</sup> TVI: tonal value increase

### TVI CMY (tab 4)

The measured dot gain (TVI) of the CMY separations isn't used for the G7 compensation curve calculation. Extreme results are an indication of a measurement error or something else that is wrong and should be fixed).

### CMY gray balance

CMY gray balance represents eventual color casts along with the neutral axis in CMY. The red line represents  $a^*$  (green–magenta) cast while the blue line represents  $b^*$  (cyan–yellow). In the screenshot, there is a significant color cast in the mid-tones of a positive  $a^*$  and negative  $b^*$  value which means that there is a blueish cast.

