

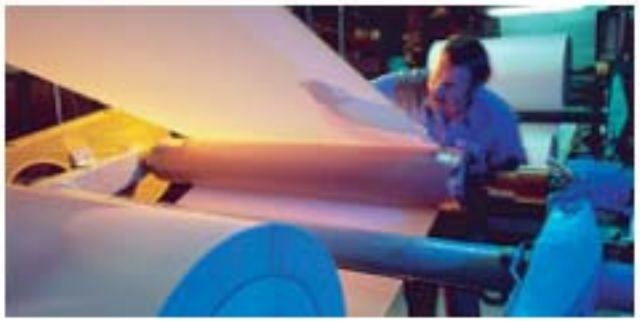


EFI Colorproof XF v3.1

Service Pack 2

Closer Look: *DIN ISO 12647-7 compliance*

June 27, 2007

essential to print

Content

1. Overview: **DIN ISO 12647-7** and **12647-2**
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5. Requirements for **DIN ISO 12647-2**
6. Implementation of **DIN ISO 12647-2** into Colorproof XF
7. How-to-use Guides for **DIN ISO 12647-7** / **DIN ISO 12647-2**

① Overview: DIN ISO 12647-7 and 12647-2

- Overview: DIN ISO 12647-7
  - Provides general proofing requirements for digital proofing
  - Is not limited to offset printing but meant as general proofing requirements for all printing technologies

- Overview: DIN ISO 12647-2 (Second Edition)
  - Offset printing standard
  - As a result of improved target values for ISO 12647-2, bvdm, ECI and Fogra recommended at the start of April 2007 the use of the new characterization data (DIN ISO 12647-2 second edition) and ECI reference profiles. The changes in the target values mainly concern adjustments to the primary and secondary colors.

Digital Proofing Requirements

DIN ISO 12647-7

Requirements for DIN ISO 12647-7 (Digital Proofing)

- Both job ticket and protocol need to provide the following information:
  - Proofing system designation *(= Name of software)*
  - Colorant
  - Substrate material type
  - Printing condition to be simulated
  - Colour management profile(s) used
  - Time and date

- New characterization target
  - The IT8.7/4 is the recommended characterization chart

- Delta E, Delta H, Delta T analysis criteria
  - New criteria are individually checked for the **Ugra/Fogra Media Wedge** and the **Profiling Chart** (IT8.7/4)

Digital Proofing Requirements

Fogra Proof Certification

DIN ISO 12647-7 (Digital Proofing) Analysis 1/2

- Contract Proof Media Wedge Analysis
  - General delta E limits
    - Max. average all patches
    - Max. peak all patches
    - Max. paper white
  - Primary color delta E limits
    - Max. average CMYK patches
    - Max. peak Cyan
    - Max. peak Magenta
    - Max. peak Yellow
    - Max. peak Black
  - Hue difference tolerance limits
    - Max. peak CMYK patches
    - Max. average Gray patches

DIN ISO 12647-7 (Digital Proofing) Analysis 2/2

- Contract Proof Chart Analysis (IT8.7/4 recommended)
  - General delta E limits
    - Max. average all patches
    - Max. average outer gamut patches
    - Max. peak 95% of patches (= the 95% best patches)
  - Tone value difference tolerance limits
    - Max. peak CMYK patches

Requirements for a successful Fogra Certification

- A successful **Fogra Proof Certification** will require **each** criteria (1., 2. **and** 3.) to meet the requirements:

1. The **job ticket** needs to contain the information defined on slide 6
2. Delta E and Delta H values of the **Ugra/Fogra Media Wedge** need to be within tolerance (see slide 8)
3. Delta E and Delta T values of the **IT8.7/4 Profiling Chart** need to be within tolerance (see slide 9)

Digital Proofing Requirements

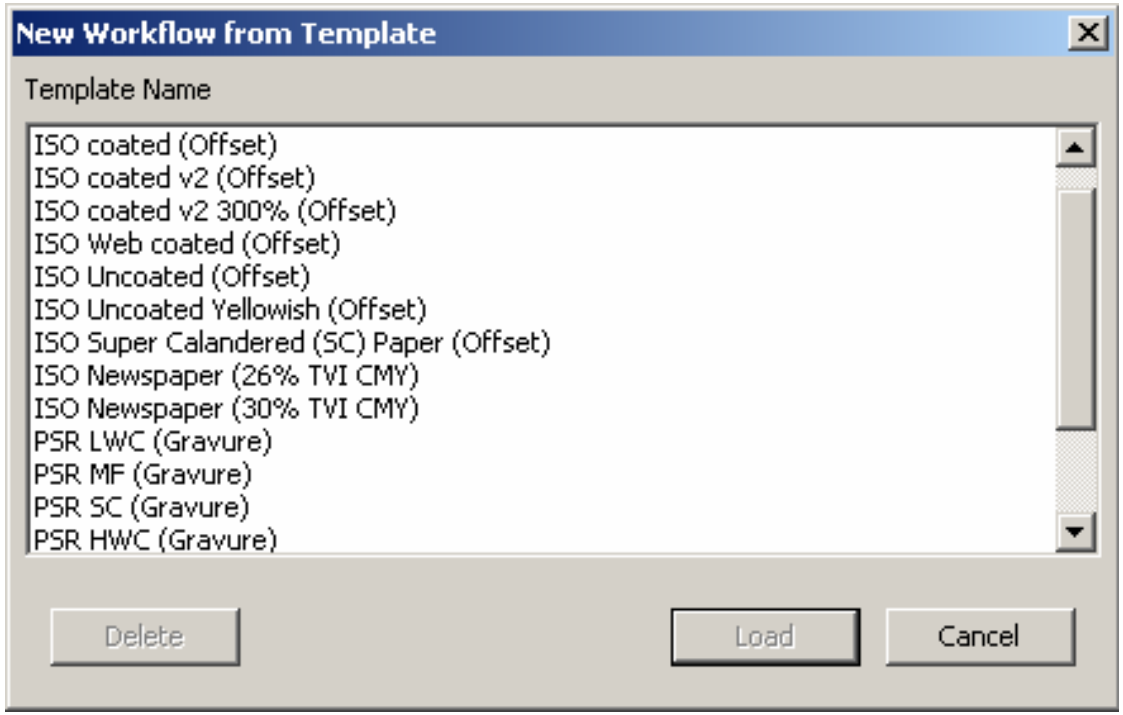
DIN ISO 12647-7 Compliant Proof

- Requirements for a successful **compliant proof**
  - A **DIN ISO 12647-7 compliant proof** requires to pass criteria number 1. and 2.:
  - The **job ticket** needs to contain the information defined on slide 6
  - Delta E and Delta H values of the **Ugra/Fogra Media Wedge** need to be within tolerance (see slide 8)

DIN ISO 12647-7

Implementation into SP2

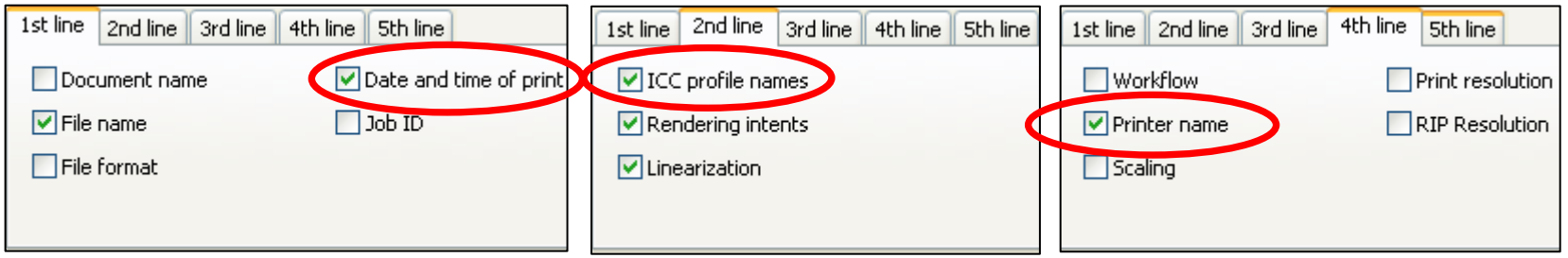
- Predefined workflow templates
  - Right-click in the system manager and select “New Workflow from Template” to quickly access DIN ISO 12647-7 compliant pre-defined workflow templates



④ Implementation of DIN ISO 12647-7 into Colorproof XF

- Job ticket and protocol requirements 1/2
  - Proofing system **designation, colorant, substrate material types, printing condition** color management **profile(s), time and date** and **date of last calibration** (the latter only for label/protocol).

- Where to find the implementation in Colorproof XF
  - **Colorproof XF Client:** Time, date, ICC profiles and printer name

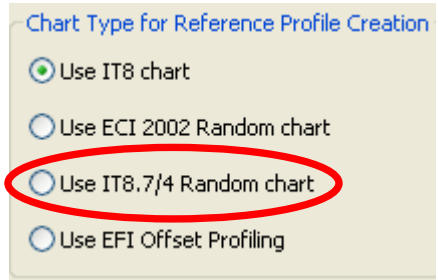


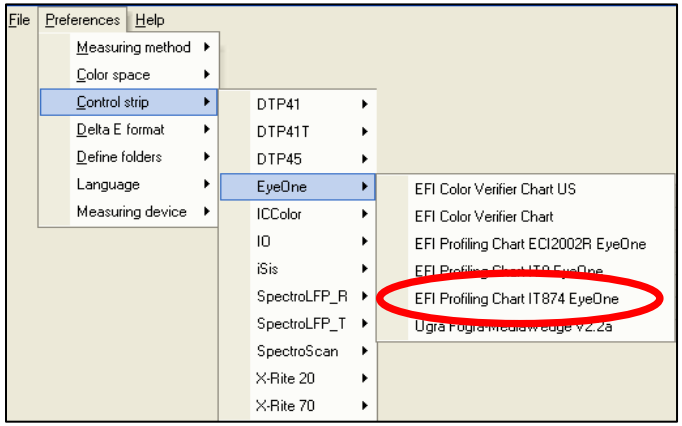
  - **Colorproof XF Client:** Colorant, substrate and system designation
    - Are <u>automatically</u> integrated into each job ticket

④ Implementation of DIN ISO 12647-7 into Colorproof XF

- **New characterization target**
  - Colorproof XF 3.1 SP1 supports the IT8.7/4 characterization target for profiling within the Color Manager application
  - The following devices are supported for use with the IT8.7/4 (**random layout**):
    - EFI ES-1000
    - HP Zx100
    - X-Rite DTP70/20/41
    - X-Rite Eye-One, iCColor, iO, iSis, SpectroScan
    - Barbieri Spectro LFP R

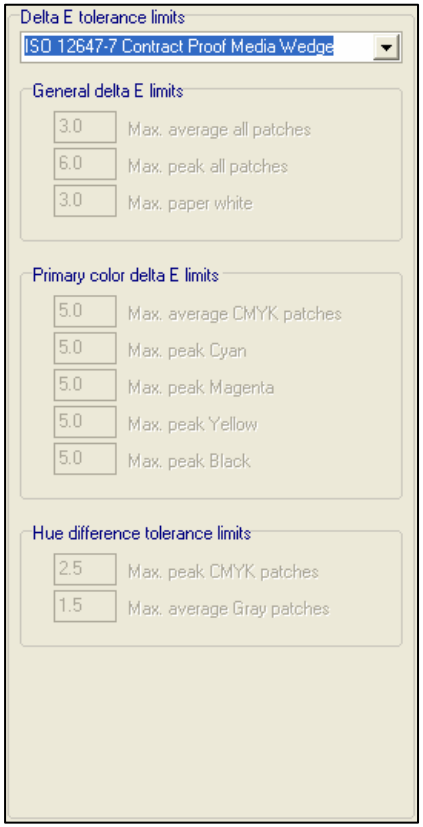
- Where to find the implementation in Colorproof XF
  - **Color Manager**
    - (IT8.7/4 random layout)

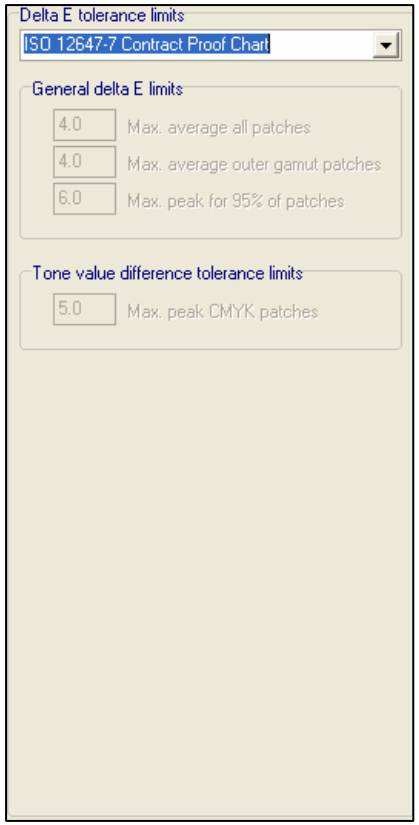


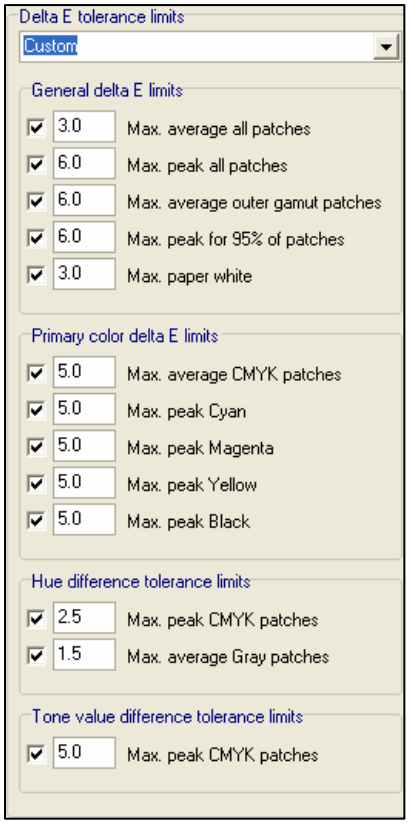


  - **Color Verifier**
    - IT8.7/4 random layout for all instruments, IT8.7/4 visual layout for SpectroScan and iSis only

- **Color Verifier Preferences**
  - Pre-settings define the **criteria** that is applied to the measurements data
  - Pre-settings do **not** define the type of chart or wedge that has to be used
  - "*Custom*" allows to completely modify tolerances and even to turn them on/off



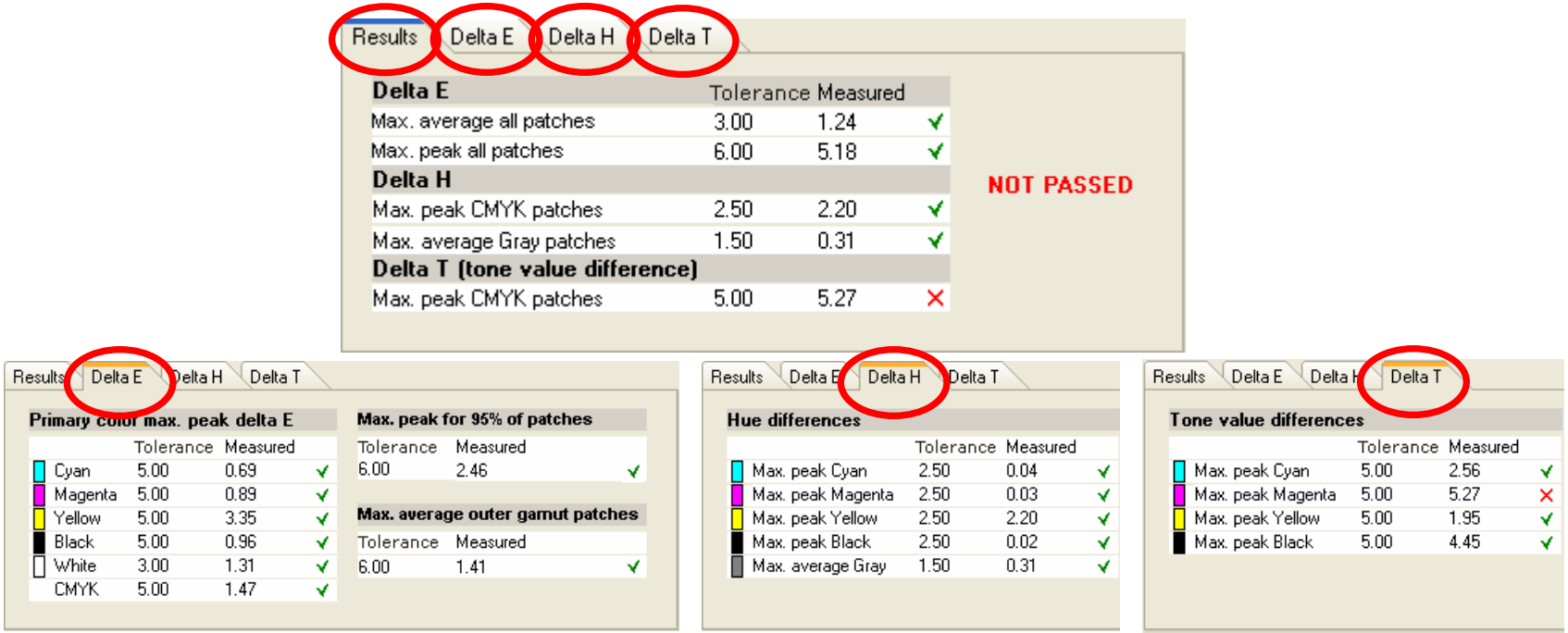




④ Implementation of DIN ISO 12647-7 into Colorproof XF

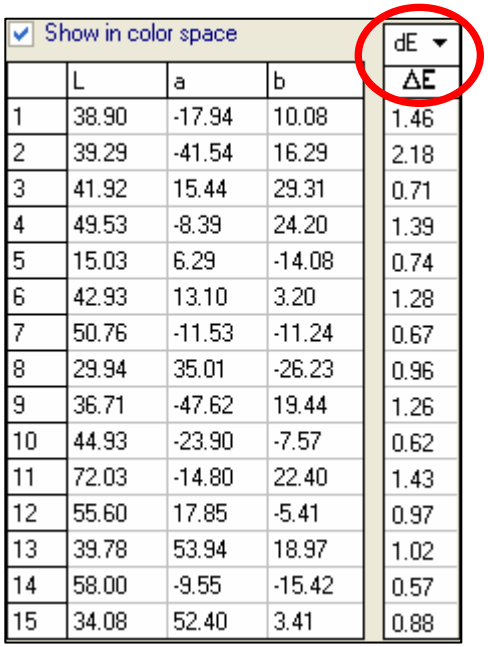
- **GUI: Delta E, Delta H and Delta T**
  - Complete evaluation possible via user interface
  - Communication of results targeted via label and protocol

- **Where to find the implementation in Colorproof XF**
  - **Color Verifier:**



- **GUI:** Delta E, Delta H and Delta T
  - Switch between Delta E, Delta H and Delta T also for the evaluation of individual patches within the measurement data

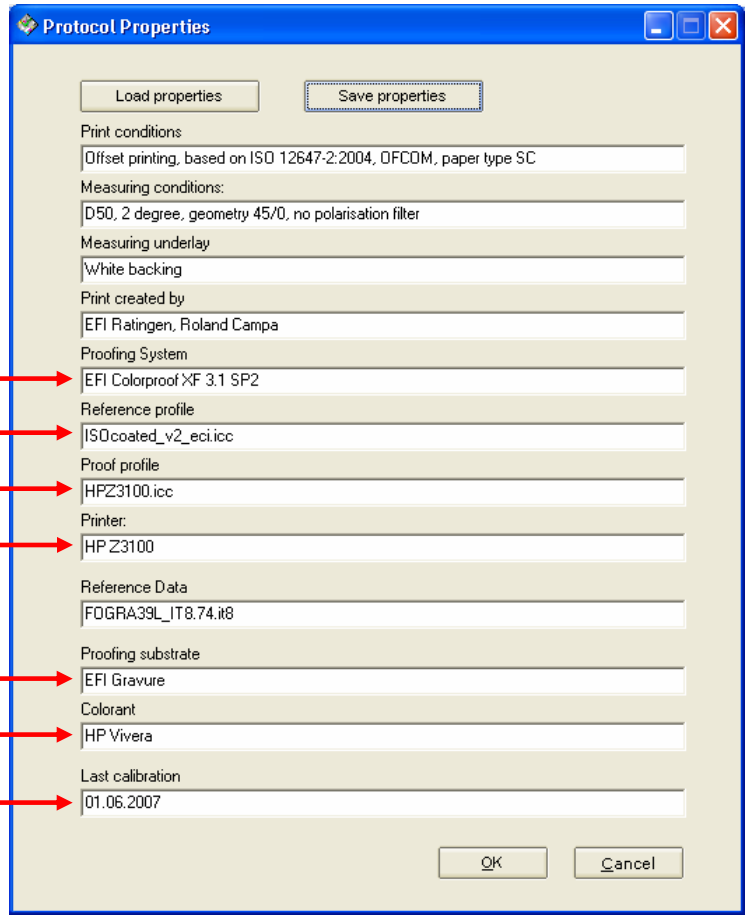
- Where to find the implementation in Colorproof XF
  - **Color Verifier:**



	L	a	b	ΔE
1	38.90	-17.94	10.08	1.46
2	39.29	-41.54	16.29	2.18
3	41.92	15.44	29.31	0.71
4	49.53	-8.39	24.20	1.39
5	15.03	6.29	-14.08	0.74
6	42.93	13.10	3.20	1.28
7	50.76	-11.53	-11.24	0.67
8	29.94	35.01	-26.23	0.96
9	36.71	-47.62	19.44	1.26
10	44.93	-23.90	-7.57	0.62
11	72.03	-14.80	22.40	1.43
12	55.60	17.85	-5.41	0.97
13	39.78	53.94	18.97	1.02
14	58.00	-9.55	-15.42	0.57
15	34.08	52.40	3.41	0.88

- **Job ticket and protocol requirements 2/2**
  - Proofing system designation
  - Colorant
  - Substrate material types
  - Printing condition
  - Color management profile(s)
  - Time and date and date of last calibration (the latter only for label/protocol)

- Where to find the implementation in Colorproof XF
  - **Color Verifier:** Label and protocol generation



④ Implementation of DIN ISO 12647-7 into Colorproof XF

- Protocol Generation, first page

Colorimetric summary according to DIN ISO 12647-7

efi

Created by:	EFI Ratingen, Roland Campa	**Measuring device:**	-
Last calibration:	01.06.2007	**Measurment condition:**	D50, 2 degree, geometry 45/0, no polarisation filter
Proofing system:	EFI Colorproof XF 3.1 SP2	**Measuring underlay:**	White backing
Control Strip:	EFI Color Verifier Chart	**Printer:**	HP Z3100
Delta E Format:	CIE L*a*b	**Proofer profile:**	HPZ3100.icc
Reference profile:	ISOcoated_v2_ecl.icc	**Proofing substrate:**	EFI Gravure
Reference Data:	FOGRA39L_IT8.74.it8	**Colorant:**	HP Vivera
Reference printing condition:	Offset printing, based on ISO 12647-2:2004, OFCOM, paper type		

Summary

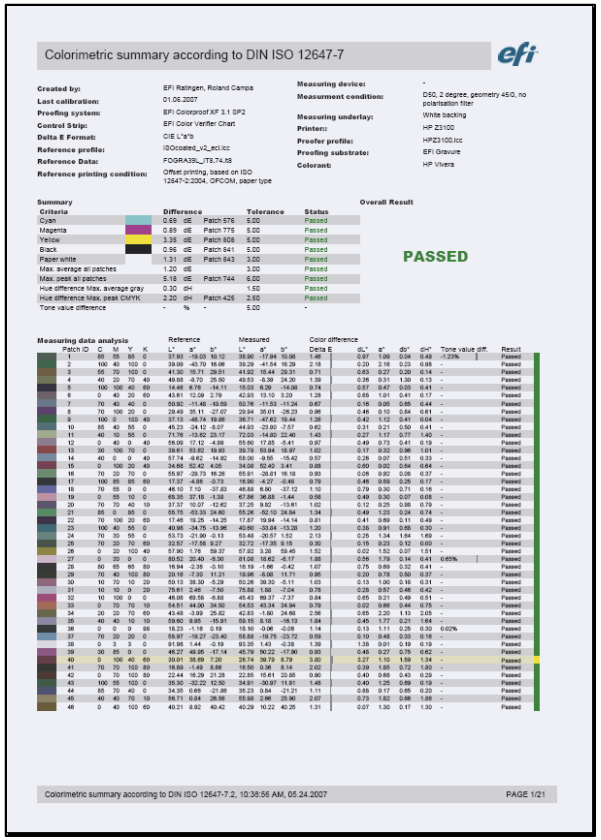
Criteria		Difference			Tolerance	Status
Cyan		0.69	dE	Patch 576	5.00	Passed
Magenta		0.89	dE	Patch 775	5.00	Passed
Yellow		3.35	dE	Patch 808	5.00	Passed
Black		0.96	dE	Patch 841	5.00	Passed
Paper white		1.31	dE	Patch 843	3.00	Passed
Max. average all patches		1.20	dE		3.00	Passed
Max. peak all patches		5.18	dE	Patch 744	6.00	Passed
Hue difference Max. average gray		0.30	dH		1.50	Passed
Hue difference Max. peak CMYK		2.20	dH	Patch 425	2.50	Passed
Tone value difference		-	%	-	5.00	-

Overall Result

PASSED

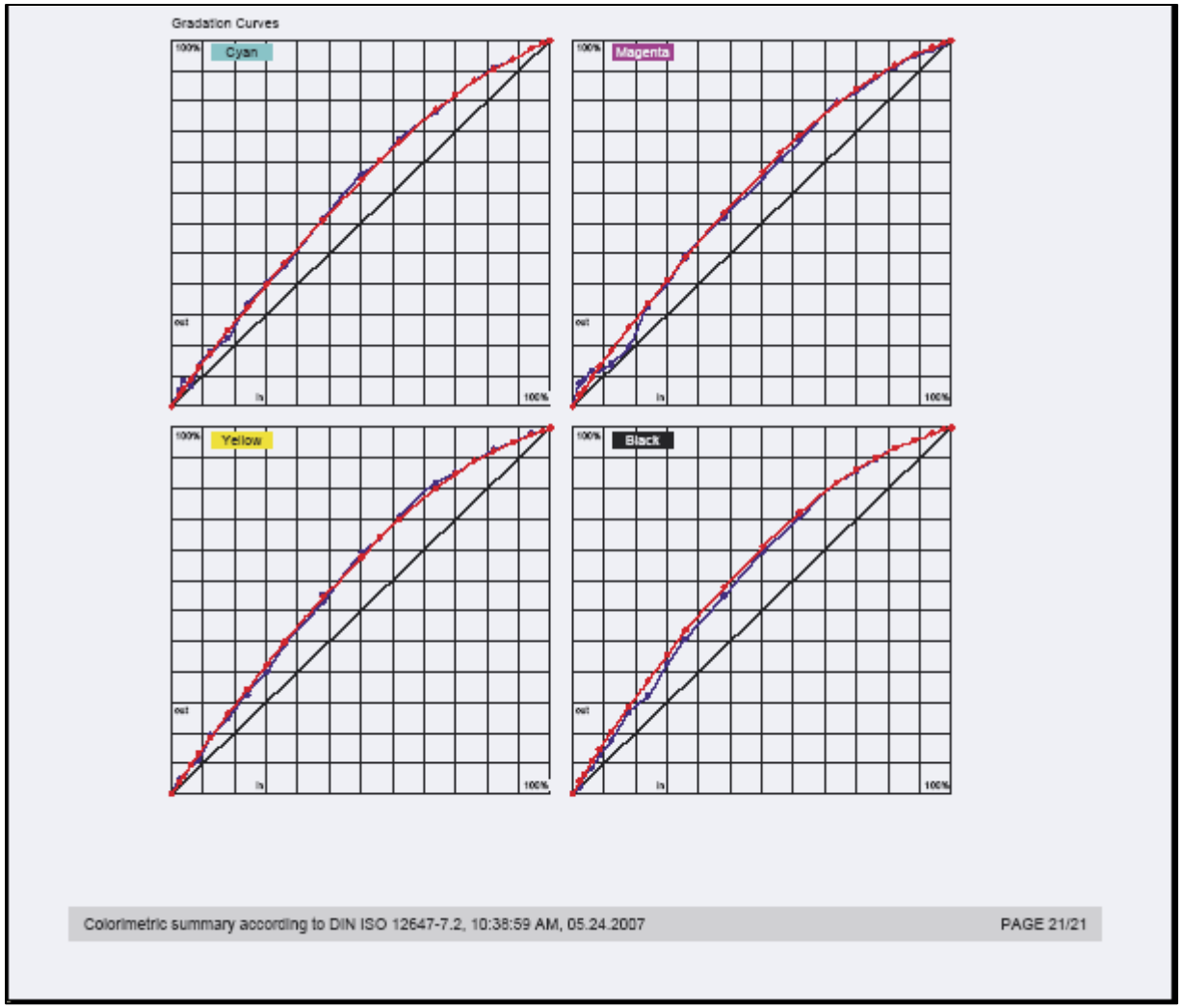
Measuring data analysis

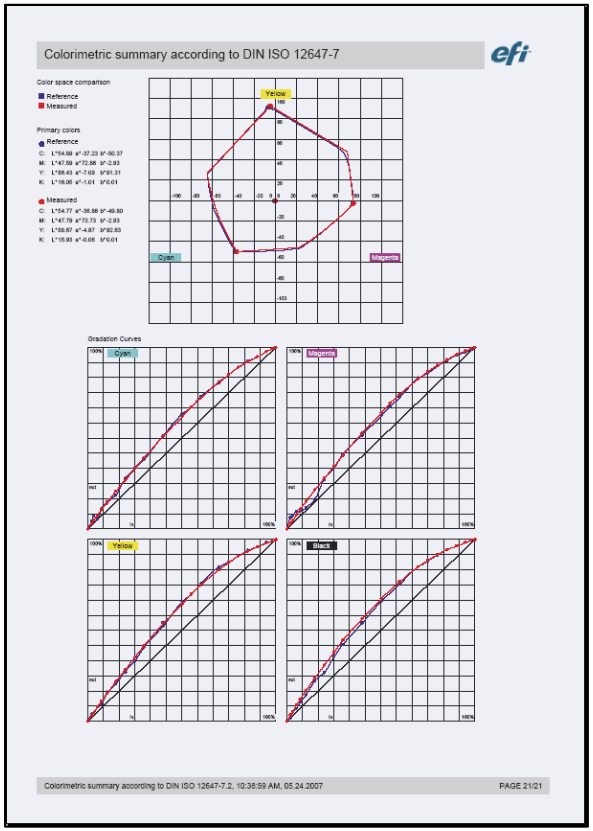
Patch ID	C	M	Y	K	Reference L*	Reference a*	Reference b*	Measured L*	Measured a*	Measured b*	Color difference Delta E	dL*	da*	db*	dH*	Tone value diff.	Result
1	85	55	85	0	37.93	-19.03	10.12	38.90	-17.94	10.08	1.46	0.97	1.09	0.04	0.49	-1.23%	Passed
2	100	40	100	0	39.09	-43.70	16.06	39.29	-41.54	16.29	2.18	0.20	2.16	0.23	0.98	-	Passed
3	55	70	100	0	41.30	15.71	29.51	41.92	15.44	29.31	0.71	0.63	0.27	0.20	0.14	-	Passed
4	40	20	70	40	49.58	-8.70	25.50	49.53	-8.39	24.20	1.39	0.38	0.31	1.30	0.13	-	Passed
5	100	100	40	60	14.46	6.76	-14.11	15.03	8.29	-14.08	0.74	0.57	0.47	0.03	0.41	-	Passed
6	0	40	20	60	43.61	12.09	2.79	42.93	13.10	3.20	1.28	0.68	1.01	0.41	0.17	-	Passed
7	70	40	40	0	50.92	-11.46	-10.59	50.76	-11.53	-11.24	0.67	0.16	0.05	0.65	0.44	-	Passed
8	70	100	20	0	29.49	35.11	-27.07	29.94	35.01	-28.23	0.96	0.46	0.10	0.84	0.61	-	Passed
9	100	0	100	40	37.13	-48.74	19.86	38.71	-47.62	19.44	1.26	0.42	1.12	0.41	0.04	-	Passed
10	85	40	55	0	45.23	-24.12	-8.07	44.93	-23.90	-7.57	0.62	0.31	0.21	0.50	0.41	-	Passed
11	40	10	55	0	71.76	-13.62	23.17	72.03	-14.80	22.40	1.43	0.27	1.17	0.77	1.40	-	Passed
12	0	40	0	40	56.09	17.12	-4.99	55.60	17.85	-5.41	0.97	0.49	0.73	0.41	0.19	-	Passed
13	30	100	70	0	39.61	53.62	19.93	39.78	53.94	18.97	1.02	0.17	0.32	0.96	1.01	-	Passed
14	40	0	0	40	57.74	-9.62	-14.92	58.00	-9.55	-15.42	0.57	0.26	0.07	0.51	0.33	-	Passed
15	0	100	20	40	34.68	52.42	4.06	34.08	52.40	3.41	0.88	0.60	0.02	0.64	0.64	-	Passed
16	70	20	70	0	55.97	-29.73	16.26	55.91	-28.81	16.18	0.93	0.06	0.92	0.06	0.37	-	Passed
17	100	85	85	60	17.37	-4.88	-0.73	16.90	-4.27	-0.48	0.79	0.46	0.59	0.25	0.17	-	Passed
18	70	55	0	0	48.10	7.10	-37.83	48.88	8.80	-37.12	1.10	0.79	0.30	0.71	0.16	-	Passed
19	0	55	10	0	68.35	37.18	-1.38	67.86	36.85	-1.44	0.58	0.49	0.30	0.07	0.05	-	Passed



④ Implementation of DIN ISO 12647-7 into Colorproof XF

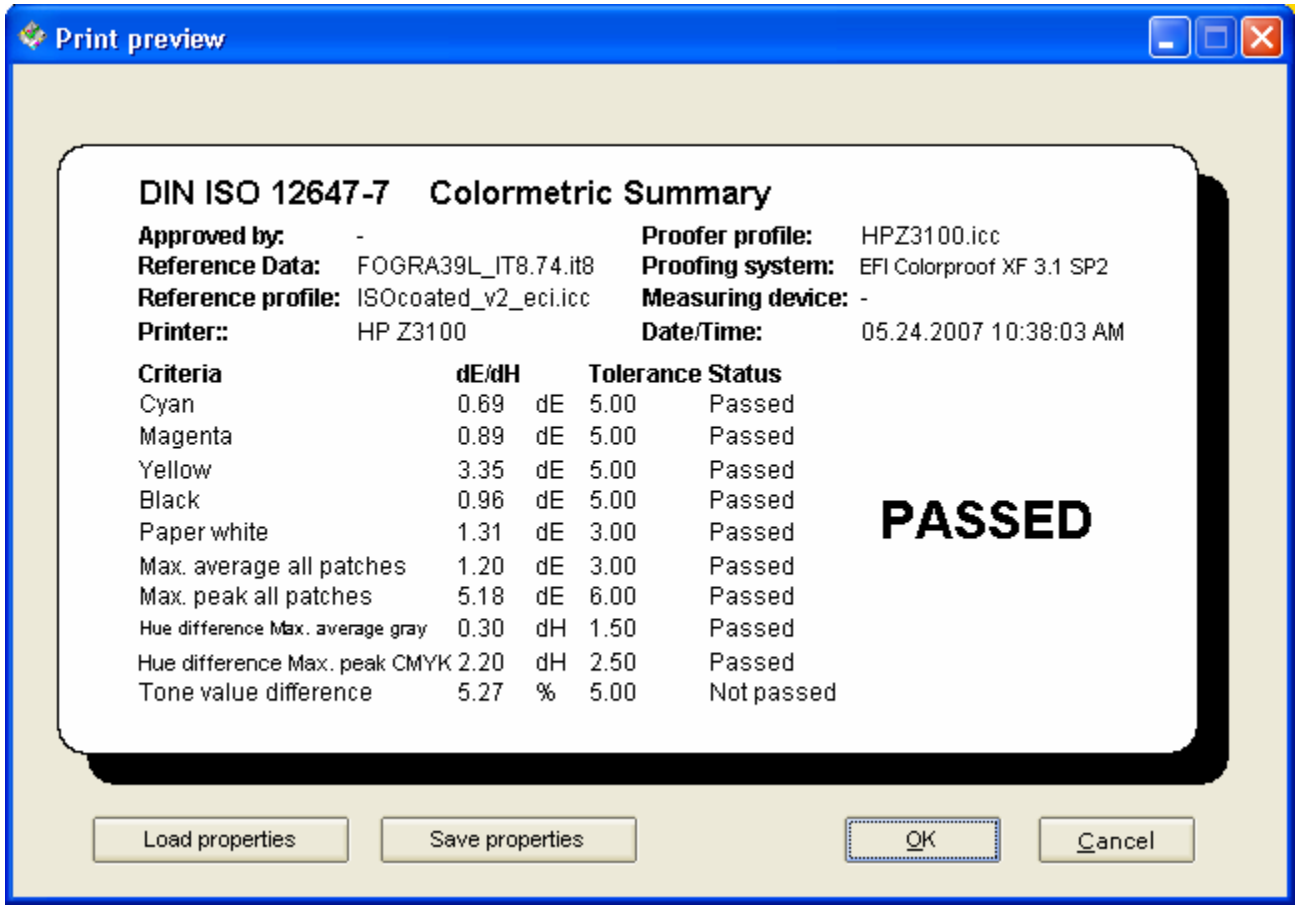
- Protocol generation, last page





④ Implementation of DIN ISO 12647-7 into Colorproof XF

- DIN ISO 12647-7 compliant label



The smaller label in the size of 89 x 36 mm has been removed as it was not possible to include all DIN ISO 12647-7 relevant information. The DIN ISO 12647-compliant label is based on a 101 x 54 mm size.

FograCert Proof Test form

- What is the functionality?
  - The latest **FograCert Proof Test Form** (Version 2b) from the Fogra is provided by Colorproof XF 3.1, SP2. It contains an IT8.7/4 in visual layout as well as special control elements.
- Where can I find it?
  - You can find the PDF in the **Tools / FograCert** folder of your Colorproof XF installation.
- What is the benefit?
  - The official FograCert Proof Test Form is supposed to be used for a Fogra Proofer Certification. You have to print the test form, verify it with Color Verifier and then send it in to the Fogra which then officially analyses the values. If all parameters are within the defined tolerances then you will be rewarded with an official **certification**.

DIN ISO 12647-2

Offset Printing Standard

- **Requirements** for DIN ISO 12647-2 **(Second Edition, Offset Printing)**
  - Improvements
    - Identical must values of primary colors in characterization data (Fogra39/40)
    - Practical adaptation of must values for secondary colors
    - Reduction of total ink amount from 350% to 330/300%
  - 3 new reference **ICC profiles** based on 2 new **characterization data** files
    - New Offset Reference **ICC Profiles**
      - **ISOcoated_v2_eci.icc**
      - **ISOcoated_v2_300_eci.icc**
      - **SC_paper_eci.icc**
    - New Offset Reference **Characterization Data**
      - Fogra 39
      - Fogra 40

DIN ISO 12647-2

Implementation into SP2

- **Implementation** of DIN ISO 12647-2 into Colorproof XF
  - New reference characterizations and ICC profiles
    - 3 New Offset Reference **ICC Profiles**
      - **ISOcoated_v2_eci.icc** (=Fogra39L, TIL 330%)
      - **ISOcoated_v2_300_eci.icc** (=Fogra39L, TIL 300%)
      - **SC_paper_eci.icc** (=Fogra40L, TIL 270%)
    - 2 New Offset Reference **Characterization Data** Sets
      - Ugra/Fogra media wedge **2.2** (Fogra39.it8 and Fogra40.it8)
      - IT8.7/4 (Fogra39L_IT8.74.it8 and Fogra40L_IT8.74.it8)
      - IT8.7/3 (Fogra39_IT8.73.it8 and Fogra40_IT8.73.it8)
      - ECI2002 (Fogra39_ECI2002.it8 and Fogra40_ECI2002.it8)
  - Where to find the implementation in Colorproof XF
    - **New ICC profiles**
      - Program folder: EFI Colorproof XF**Server**\Profiles\Reference
    - **New characterization data:**
      - Program folder: EFI Colorproof **Client**\IT8_CharacterizationData\
      - Program folder: EFI Colorproof **Client**\IT8_CharacterizationData\Fogra_MKCheck10

DIN ISO 12647-2 / 12647-7 and SP2

How-to-use Guides

⑦ How-to-use Guides - Overview

The following slides explain in detail how verifications with the Color Verifier according to DIN ISO 12647-7 can be achieved.

We recommend verifying both the **Ugra/Fogra media wedge** as well as the **profiling Chart (IT8.7/4)** before you send the sheet to the Fogra for certification. For further information please check **slide 10**.

- **Content:**
  - **Profiling Chart (IT8.7/4) Analysis**
    - Measurements on X-Rite iSis/SpectroScan only **(slide 31)**
    - Measurements based on any measurement device **(slide 32)**
    - Loaded measurement data **(slide 33)**
  - **Ugra/Fogra Media Wedge Analysis**
    - Measurements with any measurement instrument **(slide 34)**
    - Loaded measurement data **(slide 35)**
    - XF Client verification workflow **(slide 36)**

⑦ How-to-use Guides: Profiling Chart Analysis 1/3

- **Profiling Chart Analysis, Use Case 1:**
  - Measure FograCert Chart (visual IT8.7/4) with X-Rite iSis/SpectroScan and compare it to Fogra characterization data.
  - **Relevance:** Fogra Proof Certification

- **Workflow Steps:**
  - **Print the FograCert PDF through your Colorproof XF 3.1 DIN ISO compliant workflow setting**
  - **Select the Contract Proof Chart mode**
    - Preferences (button) → "ISO 12647-7 Contract Proof Chart" setting
  - **Select Profiling Chart:**
    - Preferences (Menu) → Control Strip → SpectroScan/iSis → FograCert_proofcreation_Testform_V2b
  - **Select Measuring Device:**
    - Connect Measuring Device
    - Preferences → Measuring Device → SpectroScan/iSis
  - **Follow on-screen advices and measure chart**
    - **Important:** Please note that even if the user interface asks you to move the head to different corners, you need to move the head to the following corners in exactly the following order: **1)** Upper left, **2)** Lower left, **3)** Lower Right.
  - **Compare measurement data to Fogra characterization data**
    - Open Fogra data set (e.g. **Fogra39L_IT8.74.it8** for **ISOcoated_v2_eci.icc** - see slide **26** to find out the appropriate data set) from the folder "EFI Colorproof **Client**\IT8_CharacterizationData". Double check that you've chosen the variant without "R" so that it matches the FograCert IT8.7/4 in visual layout.
    - Analyse results in the GUI and/or generate a label/protocol

⑦ How-to-use Guides: Profiling Chart Analysis 2/3

- **Profiling Chart Analysis, Use Case 2:**
  - Measure IT8.7/4 Random Chart with any measurement device and compare it to Fogra characterization data.
  - **Relevance:** Fogra Proof Certification

- **Workflow Steps:**
  - **Print the FograCert PDF through your Colorproof XF 3.1 DIN ISO compliant workflow setting**
  - **Print one of the IT8.7/4 profiling charts that are provided by Colorproof XF 3.1 in random layout**
  - **Select the Contract Proof Chart mode**
    - Preferences (button) → "ISO 12647-7 Contract Proof Chart" setting
  - **Select Profiling Chart:**
    - Preferences (Menu) → Control Strip → e.g. Eye-One → EFI Profiling Chart IT874 Eye-One Random
  - **Select Measuring Device:**
    - Connect Measuring Device
    - Preferences → Measuring Device → Eye-One
  - **Follow on-screen advices and measure chart**
  - **Compare measurement data to Fogra characterization data**
    - Open Fogra data set (e.g. **Fogra39L_IT8.74R.it8** for **ISOcoated_v2_eci.icc** - see slide **26** to find out the appropriate data set) from the folder "EFI Colorproof \Client\IT8_CharacterizationData". Double check that you've chosen the "R" variant so that it matches your random IT8.7/4 chart data.
    - Analyse results in the GUI and/or generate a label/protocol
  - **FograCert test form versus your own IT8.7/4 chart**
    - The FograCert test form has been developed by the Fogra in a way that it's only compatible with the SpectroScan and the iSis. Only these two measurement instruments can directly measure the visual IT8.7/4 as part of the FograCert PDF. That's the reason you have to analyse one of the various IT8.7/4 charts in random layout that are provided by Colorproof XF. Please print your random IT8.7/4 directly before or after the FograCert PDF so that you can make sure that the values on your IT8.7/4 random chart do represent the values on the FograCert PDF test form, as the Fogra will expect the official FograCert test form from you, not the IT8.7/4 in random layout.

⑦ How-to-use Guides: Profiling Chart Analysis 3/3

- **Profiling Chart Analysis, Use Case 3:**
  - Load IT8/CVS measurement data and compare to DIN ISO reference ICC profile.
  - **Relevance:** Fogra Proof Certification

- **Workflow Steps:**
  - **Select the Contract Proof Chart mode**
    - Preferences (button) → "ISO 12647-7 Contract Proof Chart" setting
  - **Select Measurement Data:**
    - Open (button) → Select your IT8/CVS File
  - **Compare measurement data to Fogra characterization data**
    - Open Fogra data set (e.g. **Fogra39L_IT8.74R.it8** for **ISOcoated_v2_eci.icc** - see slide **26** to find out the appropriate data set) from the folder "EFI Colorproof **Client**\IT8_CharacterizationData". Double check that you've chosen the "R" variant so that it matches your random IT8.7/4 chart data.
    - Analyse results in the GUI and/or generate a label/protocol

⑦ How-to-use Guides: Media Wedge Analysis 1/3

- **Media Wedge Analysis, Use Case 1:**
  - **Measure** Media Wedge with any measurement device and compare to Fogra MK10 reference data.
  - **Relevance:** Fogra Proof Certification and DIN ISO 12647-7 compliant proof

- **Workflow Steps:**
  - **Select the Contract Proof Media Wedge mode**
    - Preferences (button) → "ISO 12647-7 Contract Proof Media Wedge" setting
  - **Select Profiling Chart:**
    - Preferences (Menu) → Control Strip → e.g. Eye-One → Ugra Fogra-MediaWedge V2.2a
  - **Select Measuring Device:**
    - Connect Measuring Device
    - Preferences → Measuring Device → Eye-One
  - **Follow on-screen advices and measure chart**
  - **Compare measurement data to Fogra MK10 characterization data**
    - Open Fogra data set (e.g. **Fogra39.it8** for **ISOcoated_v2_eci.icc** - see slide 26 to find out the appropriate data set) from the folder "EFI Colorproof **Client**\IT8_CharacterizationData**Fogra_MKCheck10**"
    - Analyse results in the GUI and or generate a label/protocol

⑦ How-to-use Guides: Media Wedge Analysis 2/3

- **Media Wedge Analysis, Use Case 2:**
  - Load Media Wedge measurement data and compare to Fogra MK 10 reference data.
  - **Relevance:** Fogra Proof Certification and DIN ISO 12647-7 compliant proof

- **Workflow Steps:**
  - **Select the Contract Proof Media Wedge mode**
    - Preferences (button) → "ISO 12647-7 Contract Proof Media Wedge" setting
  - **Select Measurement Data:**
    - Open (button) → Select your IT8/CVS File
  - **Compare measurement data to Fogra MK 10 reference data**
    - Open reference data (e.g. **Fogra39.it8**) from the folder "EFI Colorproof \Client\IT8_CharacterizationData**Fogra_MKCheck10**"
    - Measurement files saved out of SP2 will contain both measurement data and reference data. Therefore Color Verifier will know how to calculate the appropriate data out of the reference profile that you are using to compare it to the measurement data. However, if you are working with older measurement data without reference data, you may have to choose the appropriate chart from Preferences (Menu) → Control Strip → e.g. Eye-One → Ugra Fogra-MediaWedge V2.2a
    - Analyse results in the GUI and or generate a label/protocol

7 How-to-use Guides: Media Wedge Analysis 3/3

- **Media Wedge Analysis, Use Case 3:**
  - Choose Media Wedge in XF **Client**, send job to Color Verifier, measure Media Wedge and compare measurement data to Fogra MK10 reference data.
  - **Relevance:** Fogra Proof Certification and DIN ISO 12647-7 compliant proof

- **Workflow Steps:**
  - **Select e.g. the Fogra Media Wedge in the client**
    - Client: Layout (tab) → Marks → Print Control Strip → e.g. Ugra Fogra-MediaWedge V2.2a
  - **Activate the Color Verifier in the client**
    - Color Verifier (tab) → Use Color Verifier → Measurement Workflow: Compare measurement with reference profile.
  - **Print Job along with the Media Wedge**
  - **Open Color Verifier**
    - Go to the Joblist/Preview tab
    - Again define the control strip you are going to measure via Preferences (menu) → Control Strip
    - Connect Measuring Device
    - Select the measurement instrument you are going to use via Preferences (menu) → Measuring Device
  - **Follow on-screen advices and measure chart**
  - **Compare measurement data to Fogra MK10 characterization data**
    - Open FOGRA data set (e.g. **Fogra39.it8** for **ISOcoated_v2_eci.icc** - see slide 25 to find out the appropriate data set) from the folder "EFI Colorproof **Client**\IT8_CharacterizationData**Fogra_MKCheck10**"
    - Analyse results in the GUI and or generate a label/protocol