Probe2 Profile Readme June 1, 2007

The 'probe profile' (Probev2_ICCv4.icc) is syntactically a v4 ICC output device ('prtr') profile. As such this profile can be used in a workflow wherever a v4 ICC output device can be used. The purpose of this profile is similar to the previous probe profile (Probev1_ICCv4.icc) with the addition of optional tags based on the MultiProcessingElement tag type (See ICC Revision 02-11-2006: Floating Point Device Encoding Range). The color space of this profile is CMYK, and its PCS is Lab.

Colors processed via this profile are deliberately distorted in a systematic way, to enable visual determination of the rendering intent and processing element type used when rendering ("BToA" / "BToD" or PCS to device transforms) and when proofing ("AToB" / "DToB" or device to PCS transforms). This is useful, in cases when color-management-aware software does not document the behavior.

The rendering intent transforms (BToA tags or BToD tags) of the probe profile ignore the a* and b* components of incoming PCS colors, and map the L* components directly to monotone tints of process colorants. (L* = 0 is rendered as maximum colorant coverage, and L* = 100 is rendered as unmarked media.) The B2A0 tag (perceptual rendering intent transform) renders the L* values as tints of pure cyan. The B2A1 tag (relative colorimetric intent transform) renders them as tints of pure magenta, and the B2A2 tag (saturation intent transform) renders them as tints of pure yellow. The B2D0 tag (MPE perceptual rendering intent transform) renders the L* values as tints of pure red (a combination of magenta plus yellow). The B2D1 tag (MPE relative colorimetric intent transform) renders them as tints of pure green (a combination of cyan and yellow), and the B2D2 tag (MPE saturation intent transform) renders them as tints of pure blue (a combination of cyan and magenta).As such, one can visually determine which traditional rendering transform used in a workflow by processing an image with the profile and observing the dominant hue of the rendered result.

The proofing (AToB tags or DToB tags) transforms of the probe profile modify a different perceptual dimension, i.e., lightness. These transforms are derived from color measurements of an actual device. For the perceptual (A2B0) tag, the output is set such that the measured L* values are scaled and offset into the range 70 to 100. For the relative colorimetric (A2B1) tag, the L* values are scaled and offset into the range 30 to 70. For the saturation (A2B2) tag, they are scaled to the range 0 to 30. For the MPE perceptual (D2B0) tag, the luminance output is inverted and set such that the measured L* values are scaled and offset into the range 70 to 100. For the relative colorimetric (A2B1) tag, the L* values are inverted and scaled and offset into the range 30 to 70. For the saturation (A2B2) tag, they are inverted and scaled to the range 0 to 30.

In a proofing scenario, the rendering transform of the device being proofed (e.g., a press) is followed first by the proofing transform of the same device, and then by the rendering transform of the proofing device (e.g., a desktop printer). If the probe profile is substituted for the press profile in this scenario, one can simultaneously determine which

AToB/DToB transform and which BToA/DToA transform are applied, according to the following table:

Rendering transform	Proofing transform	Color code
B2A0	A2B0	light cyan
B2A0	A2B1	mid-tone cyan
B2A0	A2B2	dark cyan
B2A0	D2B0	inverted light cyan
B2A0	D2B1	inverted mid-tone cyan
B2A0	D2B2	inverted dark cyan
B2A1	A2B0	light magenta
B2A1	A2B1	mid-tone magenta
B2A1	A2B2	dark magenta
B2A1	D2B0	inverted light magenta
B2A1	D2B1	inverted mid-tone magenta
B2A1	D2B2	inverted dark magenta
B2A2	A2B0	light yellow
B2A2	A2B1	mid-tone yellow
B2A2	A2B2	dark yellow
B2A2	A2B0	light yellow
B2A2	A2B1	mid-tone yellow
B2A2	A2B2	dark yellow
D2A0	A2B0	light red
D2A0	A2B1	mid-tone red
D2A0	A2B2	dark red
D2A0	D2B0	inverted light red
D2A0	D2B1	inverted mid-tone red
D2A0	D2B2	inverted dark red
D2A1	A2B0	light green
D2A1	A2B1	mid-tone green
D2A1	A2B2	dark green
D2A1	D2B0	inverted light green
D2A1	D2B1	inverted mid-tone green
D2A1	D2B2	inverted dark green
D2A2	A2B0	light blue
D2A2	A2B1	mid-tone blue
D2A2	A2B2	dark blue
D2A2	A2B0	light blue
D2A2	A2B1	mid-tone blue
D2A2	A2B2	dark blue

Technically, this is non-compliant with the v4 ICC specification, because (obviously) the media relative colorimetric intent tags are not based on real measurement data, as is

required for v4 profiles. However, many CMMs and applications may not complain about this, and the v4 probe may still be useful as a workflow analysis tool.

Of course, these profiles are provided 'as is' and without warranty of any kind.

Further details are available as "Exploiting Pseudocolor in ICC Workflow Analysis," Abhay Sharma and John Dalrymple, Proc. IS&T 12th Color Imaging Conference, Scottsdale, AZ, Nov 9-12, 2004.

The profile naming states that the Probe Profile is at version 2, while the ICC specification is v4.