colour television
multicolour printing
colour photography

colour reproductions film to other media:
film − television
film − printing
film − hardcopy

colour graphics

optimization *(expenses, quality)*

computer technic *(hardware, software)*

visual qualities *(colour metric, lighting technic)*

1−003030−L0 ME000−1N, B1_01

visual properties:

color and color vision:

color order
color attributes
color scaling
measurement

color reproduction

optimization with:
CIE-color measurement
CIE-color coordinates

technical properties:

color reproduction processes:

color television
color photography
multicolor printing

1−003030−L0 ME001−3N, B1_02

three aims:

testing

research and development

advice and information

BAM laboratory: color reproduction

specification and judgement of color rendering-quality

simulation of reproduction

color original −> color film
color film −> color printing
color original −> color printing

1−003030−L0 ME000−5N, B1_03

influence parameters on color reproduction
quality of the reproduction row:

color original −> color film

(test-)color original and illumination *(spectral reflection and radiation)*

camera, taking filters, exposure *(spectral reflection and radiation)*

film material and development *(spectral and absolute sensitivity)*

further treatment and projection *(framing, spectral radiation)*

1−003030−L0 ME000−7N, B1_04

influence parameters on color reproduction
quality of the reproduction row:

color original −> multicolor printing

color film original and illumination *(spectral transmission and radiation)*

production of color scan signal *(spectral and absolute sensitivity)*

processing of color scan signal *(calculation program for print preparation)*

reproduction of multicolor printing *(halftoning, orientation, printing inks)*

1−003030−L0 ME001−1N, B1_05

influence parameters on color reproduction
quality of the reproduction row:

color original −> color film −> multicolor printing

mode of taking light and exposure *(3200 / 6500 / 9000 K; −3 / 0 / +3 DIN)*

color film material *(Agfa, Fuji, Kodak, Konika, 3M)*

properties of color scan signal *(spectral and absolute sensitivity)*

reproduction model and printing inks *(signal processing, CIE colour scale)*

1−003030−L0 ME001−3N, B1_06

scanner for color slide material:
three photoelectric sensors
0,01mm image point diameter
4096 (12 bit) luminance range

measurement at each pixel:
3 color values *R, G and B*

development intent:
colorimetric device driver:
conversion of three color values ***R, G and B*** *in colorness* ***L*, a* and b**** *(CIELAB system)*

problems:
large pixel amount:
approximately 3000×2000 pixels within a color slide 36mm × 24mm
often original size larger than DIN-A2 with drum scanners

three procedures for optimization of colorimetric device driver:

adaptation of the spectral sensitivities at the three tristimulus value functions

optimization of 3 × 3- or 3 × 6-device matrices for conversion from ***RGB to L*a*b**** with 17 CIE-test colors

calculation of the spectral color reflection or transmission at each image position, for example with three densities of three known dyes (color pigments), only possible for homogeneous material (slide material, printing material)

1−003030−L0 ME001−7N, B1_07

colour television
multicolour printing
colour photography

colour reproductions film to other media:
film − television
film − printing
film − hardcopy

colour graphics

optimization *(expenses, quality)*

computer technic *(hardware, software)*

visual qualities *(colour metric, lighting technic)*

1−003130−L0 ME000−10, B1_01

influence parameters on color reproduction

quality of the reproduction row:

color original −> multicolor printing

color film original and illumination *(spectral transmission and radiation)*

production of color scan signal *(spectral and absolute sensitivity)*

processing of color scan signal *(calculation program for print preparation)*

reproduction of multicolor printing *(halftoning, orientation, printing inks)*

1−003130−L0 ME001−10, B1_05

visual properties:

color and color vision:

color order
color attributes
color scaling
measurement

color reproduction

optimization with:
CIE-color measurement
CIE-color coordinates

technical properties:

color reproduction processes:

color television
color photography
multicolor printing

1−003130−L0 ME001−30, B1_02

influence parameters on color reproduction

quality of the reproduction row:

color original −>
color film −>
multicolor printing

mode of taking light and exposure *(3200 / 6500 / 9000 K; −3 / 0 / +3 DIN)*

color film material *(Agfa, Fuji, Kodak, Konika, 3M)*

properties of color scan signal *(spectral and absolute sensitivity)*

reproduction model and printing inks *(signal processing, CIE colour scale)*

1−003130−L0 ME001−30, B1_06

three aims:

testing

research and development

advice and information

BAM laboratory: color reproduction

specification and judgement of color rendering-quality

simulation of reproduction

color original −> color film

color film −> color printing

color original −> color printing

1−003130−L0 ME000−50, B1_03

scanner for color slide material:
three photoelectric sensors
0,01mm image point diameter
4096 (12 bit) luminance range

measurement at each pixel:
3 color values *R, G and B*

development intent:
colorimetric device driver:
conversion of three color values ***R, G and B*** *in colorness* ***L*, a* and b**** *(CIELAB system)*

problems:
large pixel amount:
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calculation of the spectral color reflection or transmission at each image position, for example with three densities of three known dyes (color pigments), only possible for homogeneous material (slide material, printing material)

1−003130−L0 ME001−70, B1_07

influence parameters on color reproduction
quality of the reproduction row:

color original −>
color film

(test-)color original and illumination *(spectral reflection and radiation)*

camera, taking filters, exposure *(spectral reflection and radiation)*

film material and development *(spectral and absolute sensitivity)*

further treatment and projection *(framing, spectral radiation)*

1−003130−L0 ME000−70, B1_04

colour television
multicolour printing
colour photography

colour reproductions film to other media:
film − television
film − printing
film − hardcopy

colour graphics

optimization *(expenses, quality)*

computer technic *(hardware, software)*

visual qualities *(colour metric, lighting technic)*

1−013030−L0 ME000−1N, B1_01

visual properties:

color and color vision:

color order
color attributes
color scaling
measurement

color reproduction

optimization with:
CIE-color measurement
CIE-color coordinates

technical properties:

color reproduction processes:

color television
color photography
multicolor printing

1−013030−L0 ME001−3N, B1_02

three aims:

testing

research and development

advice and information

BAM laboratory: color reproduction

specification and judgement of color rendering-quality

simulation of reproduction

color original −> color film
color film −> color printing
color original −> color printing

1−013030−L0 ME000−5N, B1_03

influence parameters on color reproduction
quality of the reproduction row:

color original −> color film

(test-)color original and illumination *(spectral reflection and radiation)*
camera, taking filters, exposure *(spectral reflection and radiation)*
film material and development *(spectral and absolute sensitivity)*
further treatment and projection *(framing, spectral radiation)*

1−013030−L0 ME000−7N, B1_04

influence parameters on color reproduction
quality of the reproduction row:

color original −> multicolor printing

color film original and illumination *(spectral transmission and radiation)*
production of color scan signal *(spectral and absolute sensitivity)*
processing of color scan signal *(calculation program for print preparation)*
reproduction of multicolor printing *(halftoning, orientation, printing inks)*

1−013030−L0 ME001−1N, B1_05

influence parameters on color reproduction
quality of the reproduction row:

color original −> color film −> multicolor printing

mode of taking light and exposure *(3200 / 6500 / 9000 K; −3 / 0 / +3 DIN)*
color film material *(Agfa, Fuji, Kodak, Konika, 3M)*
properties of color scan signal *(spectral and absolute sensitivity)*
reproduction model and printing inks *(signal processing, CIE colour scale)*

1−013030−L0 ME001−3N, B1_06

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three photoelectric sensors
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4096 (12 bit) luminance range

measurement at each pixel:
3 color values *R, G and B*

development intent:
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1−013030−L0 ME001−7N, B1_07

colour television
multicolour printing
colour photography

colour reproductions film to other media:
film − television
film − printing
film − hardcopy

colour graphics

optimization *(expenses, quality)*

computer technic *(hardware, software)*

visual qualities *(colour metric, lighting technic)*

1−013130−L0 ME000−11, B1_01

visual properties:

color and color vision:

color order
color attributes
color scaling
measurement

color reproduction

optimization with:
CIE-color measurement
CIE-color coordinates

technical properties:

color reproduction processes:

color television
color photography
multicolor printing

1−013130−L0 ME001−31, B1_02

three aims:

testing

research and development

advice and information

BAM laboratory: color reproduction

specification and judgement of color rendering-quality

simulation of reproduction

color original −> color film
color film −> color printing
color original −> color printing

1−013130−L0 ME000−51, B1_03

influence parameters on color reproduction
quality of the reproduction row:

color original −> color film

(test-)color original and illumination *(spectral reflection and radiation)*

camera, taking filters, exposure *(spectral reflection and radiation)*

film material and development *(spectral and absolute sensitivity)*

further treatment and projection *(framing, spectral radiation)*

1−013130−L0 ME000−71, B1_04

influence parameters on color reproduction
quality of the reproduction row:

color original −> multicolor printing

color film original and illumination *(spectral transmission and radiation)*

production of color scan signal *(spectral and absolute sensitivity)*

processing of color scan signal *(calculation program for print preparation)*

reproduction of multicolor printing *(halftoning, orientation, printing inks)*

1−013130−L0 ME001−11, B1_05

influence parameters on color reproduction
quality of the reproduction row:

color original −> color film −> multicolor printing

mode of taking light and exposure *(3200 / 6500 / 9000 K; −3 / 0 / +3 DIN)*

color film material *(Agfa, Fuji, Kodak, Konika, 3M)*

properties of color scan signal *(spectral and absolute sensitivity)*

reproduction model and printing inks *(signal processing, CIE colour scale)*

1−013130−L0 ME001−31, B1_06

scanner for color slide material:
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1−013130−L0 ME001−71, B1_07