

# BAM registration: 20070901-Ae10/10L/L10E00NP.PS/.PDF

application for measurement of printer or monitor systems

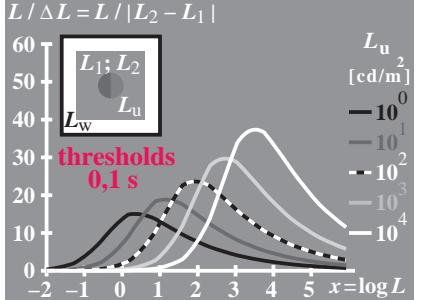
BAM material: code=rha4ta

www.ps.bam.de/Ae10/10L/L10E00NP.PS/.PDF; start output

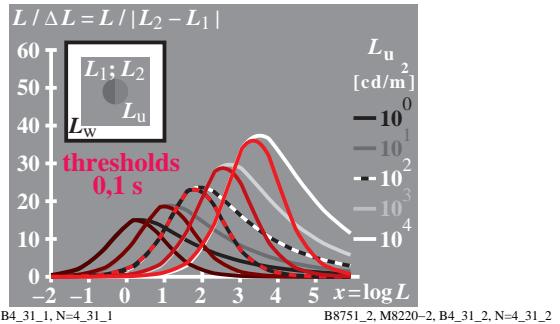
N: No Output Linearization (OL) data in File (F), Startup (S) or Device (D)



$$L / \Delta L = L / |L_2 - L_1|$$



$$L / \Delta L = L / |L_2 - L_1|$$



relative sensitivity

$$\ln V = [d/\lambda - d/555]^2$$

...experimental-CIE

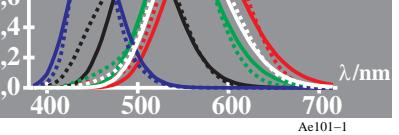
$$\ln P = [d/\lambda - d/570]^2$$

$$\ln D = [d/\lambda - d/545]^2$$

$$\ln T = [d/\lambda - d/450]^2$$

$P, D, T, V, V'$

model v



log (relative sensitivity)

$$\ln V = [d/\lambda - d/555]^2$$

...experimental-CIE

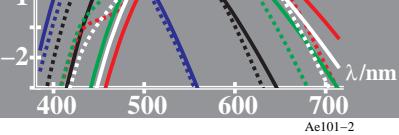
$$\ln P = [d/\lambda - d/570]^2$$

$$\ln D = [d/\lambda - d/545]^2$$

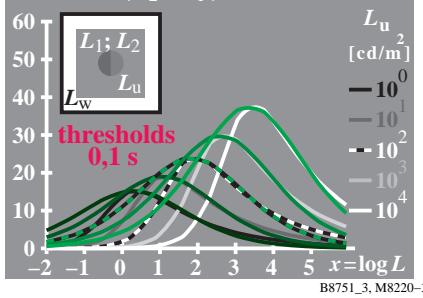
$$\ln T = [d/\lambda - d/450]^2$$

$P, D, T, V, V'$

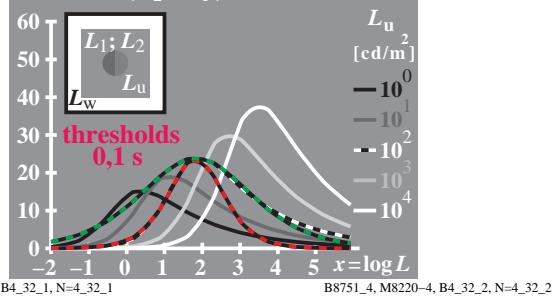
model v



$$L / \Delta L = L / |L_2 - L_1|$$



$$L / \Delta L = L / |L_2 - L_1|$$



log (relative and Y-sensitivity)

$$\ln V = [c \cdot \lambda - c \cdot 555]^2$$

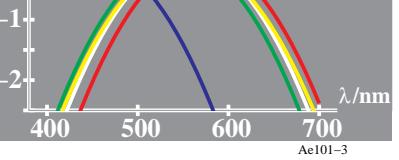
$$Y = 2/5P + 3/5D$$

$$\log [P, D, T, V, Y]$$

$$\ln T = [c \cdot \lambda - c \cdot 450]^2$$

$T, V, D, V, P$

model λ



log (relative and U-sensitivity)

$$\ln V = [c \cdot \lambda - c \cdot 555]^2$$

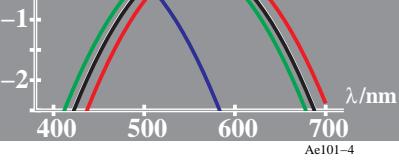
$$U = 2/5 \ln P + 3/5 \ln D$$

$$\log [P, D, T, V, U]$$

$$\ln T = [c \cdot \lambda - c \cdot 450]^2$$

$T, D, V, P$

model λ 2/5



relative sensitivity

$$\ln V = [c \cdot \lambda - c \cdot 555]^2$$

$$\ln P = [c \cdot \lambda - c \cdot 570]^2$$

...experimental-CIE

$$\ln D = [c \cdot \lambda - c \cdot 545]^2$$

$$\ln T = [c \cdot \lambda - c \cdot 450]^2$$

$P, D, T, V, V'$

model λ

log (relative sensitivity)

$$\ln V = [c \cdot \lambda - c \cdot 555]^2$$

$$\ln P = [c \cdot \lambda - c \cdot 570]^2$$

...experimental-CIE

$$\ln D = [c \cdot \lambda - c \cdot 545]^2$$

$$\ln T = [c \cdot \lambda - c \cdot 450]^2$$

$P, D, T, V, V'$

model λ

log (relative Y-saturation)

$$\ln V = [c \cdot \lambda - c \cdot 555]^2$$

$$Y = 2/5P + 3/5D$$

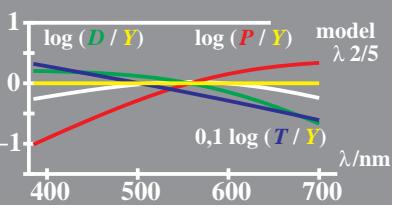
$$\log [P, D, T, V, Y]$$

$$\ln T = [c \cdot \lambda - c \cdot 450]^2$$

$T, V, D, V, P$

model λ

λ 2/5



log (relative U-saturation)

$$\ln V = [c \cdot \lambda - c \cdot 555]^2$$

$$U = 2/5 \ln P + 3/5 \ln D$$

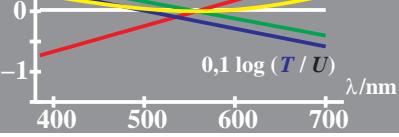
$$\log [P, D, T, V, U]$$

$$\ln T = [c \cdot \lambda - c \cdot 450]^2$$

$T, D, V, P$

model λ

λ 2/5



spectral sensitivities s  
of receptor systems  $P, D, T, V, V'$

$u = \lambda = \text{wavelength}$ ;  $u = v = \text{frequency}$

$$s(u) = e^{-u^2} \quad e = 2,7183 \quad v = 1/\lambda$$

$$\text{model } \lambda: u = \frac{1}{55,5}(\lambda - \lambda_0)$$

$$\text{model } v: u = 5550(v - v_0)$$

maxima  $\lambda_0$  of  $P, D, T, V, V'$  in

nanometer: 570, 545, 450, 555, 505

spectral saturations p (= purity)  
of receptor systems  $P, D, T, V, V'$

$u = \lambda = \text{wavelength}$ ;  $u = v = \text{frequency}$

$$s(u) = e^{-u^2} \quad i = 2/5; j = 3/5 \quad v = 1/\lambda$$

$$\text{model } Y: p = \frac{s(P, D, T,)}{i s(P) + j s(D)}$$

$$\text{model } V: p = \frac{s(P, D, T,)}{s(V)}$$

$$\text{model } U: p = \frac{s(P, D, T,)}{e^{[i \ln(P) + j \ln(D)]}}$$

logarithmic U-sensitivity

$$U = (P \times D)^{0,5}$$

$$\ln U = (\ln P + \ln D) / 2$$

$$\log [U, P, D]$$

adaptation:  $u = 0$

$$\ln P = [c \cdot \lambda - c \cdot 570]^2$$

$$\ln D = [c \cdot \lambda - c \cdot 545]^2$$

$u_P = 0,3$   
 $u_D = -0,3$



logarithmic U-saturation

$$U = (P \times D)^{0,5}$$

$$\ln U = (\ln P + \ln D) / 2$$

$$\log [U, P, D]$$

adaptation:  $u = 0$

$$\ln P = [c \cdot \lambda - c \cdot 570]^2$$

$$\ln D = [c \cdot \lambda - c \cdot 545]^2$$

$u_P = 0,3$   
 $u_D = -0,3$



BAM-test chart Ae10; Richter: Computer graphics, colorimetry

Colour book series: Colour scaling and colour thresholds no. 2

input: cmy0\* setcmykcolor

output: no change compared to input