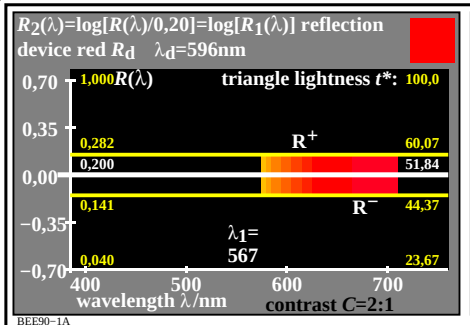
see similar files: http://farbe.li.tu-berlin.de/BEE9/BEE9.HTM
technical information: http://farbe.li.tu-berlin.de or http://color.li.tu-berlin.de

TUB registration: 20201101-BEE9/BEE9L0NA.TXT /.PS
application for evaluation and measurement of display or print output
TUB material: code=rha4ta



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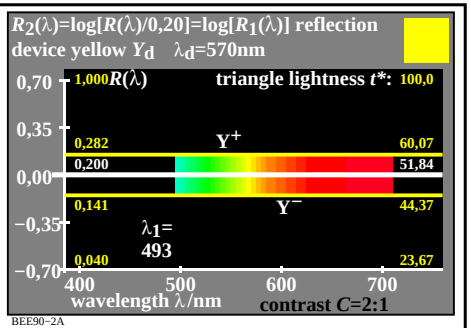

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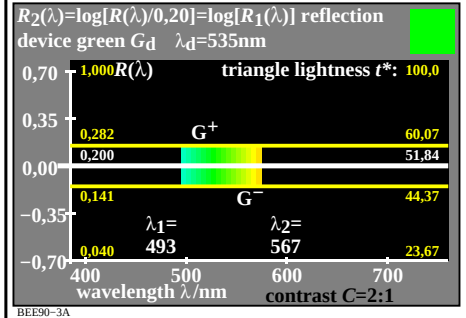

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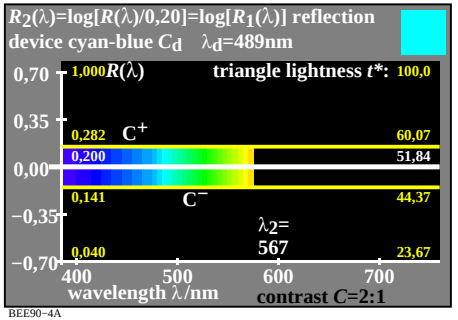

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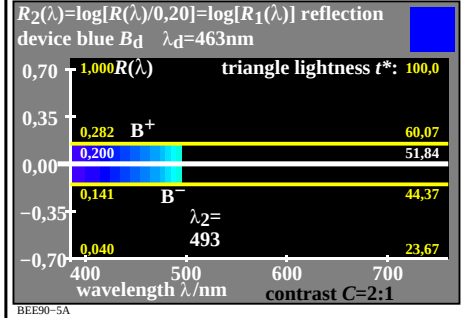

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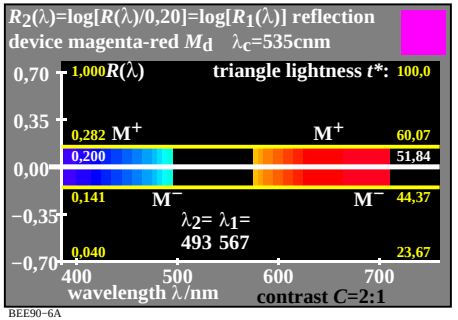

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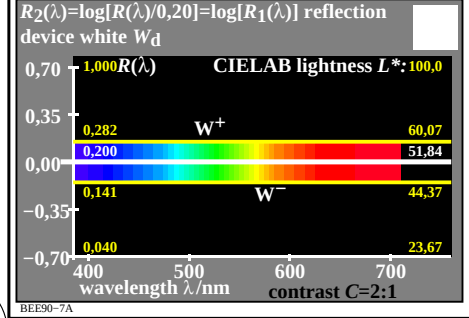


BEE90−7A

BEE90−7R

Reflection, log[reflection], and triangle lightness *t**

CIELAB lightness L^* is equal to triangle lightness t^* for grey colours. For surface colours all reflections are normalized to mean grey.

The normalized reflections of white, grey and black are:

$R_{1W}(\lambda) = 5$, $R_{1Z}(\lambda) = 1$, $R_{1N}(\lambda) = 1/5$. [1]

It is valid: $\log[R_{1W}(\lambda)] = 0{,}70$; $\log[R_{1N}(\lambda)] = -0{,}70$

therefore: $\log[R_{1N}(\lambda)] + \log[R_{1W}(\lambda)]=0=\log[R_{1Z}(\lambda)]$. [2]

For all reflections with $R_1(\lambda)=R(\lambda)/0{,}20$ it is valid:

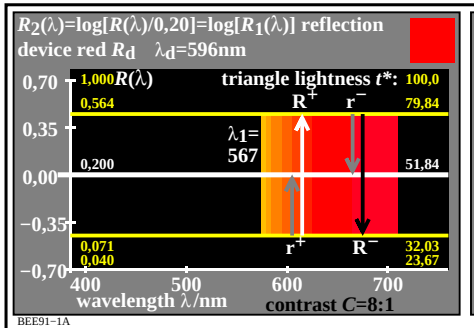
$R_N(\lambda) = 0{,}04$, $R_Z(\lambda) = 0{,}20$, $R_W(\lambda) = 1{,}00$. [3]

For the figure case it is: $R_N(\lambda)=0{,}141$; $R_W(\lambda)=0{,}282$.

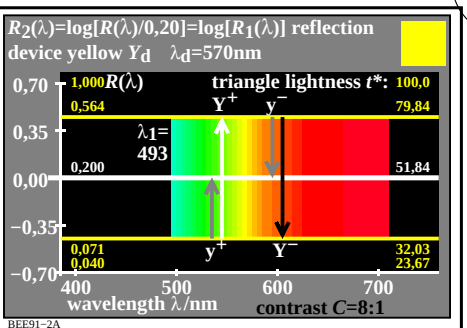
In this case is the **scene contrast: C = 0,282:0,141 = 2:1.**

Both CIELAB and triangle lightness are proportional to $\log[R_1(\lambda)]$ for $R_1(\lambda)$ near 1,00 or $R(\lambda)$ near 0,20, for example for the contrast 2:1.

BEE90−8A



BEE91−1A



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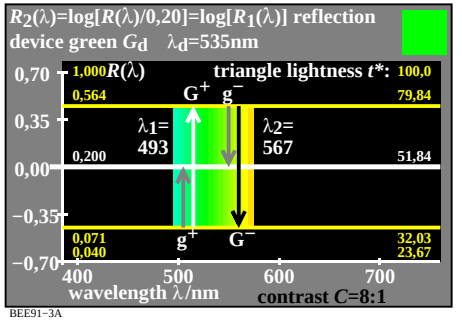

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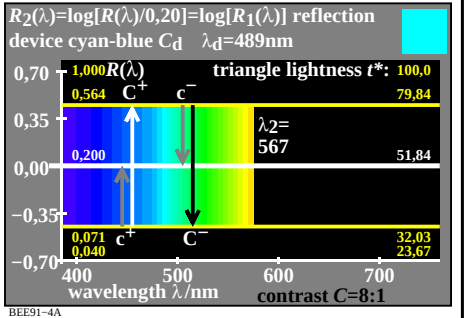
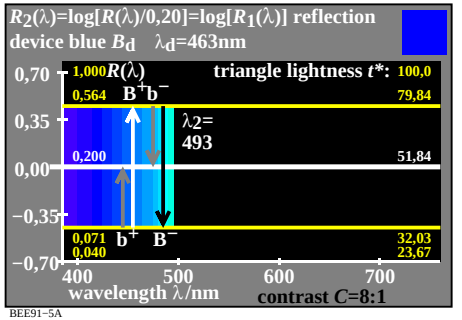


BEE91−4A



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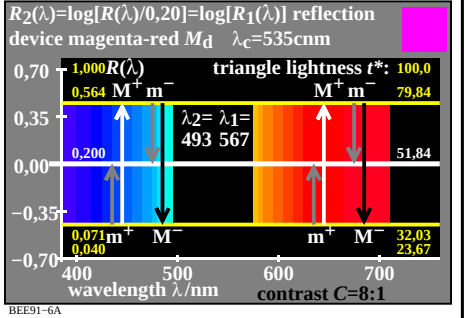

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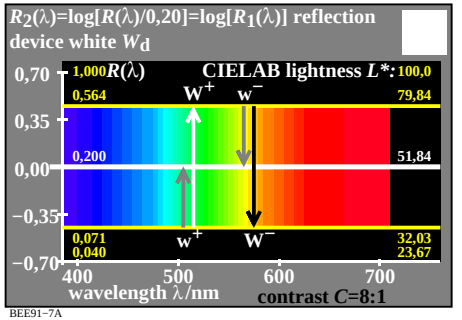

BEE91−7A

BEE90−7R

Reflection, log[reflection], and triangle lightness *t**

CIELAB lightness L^* is equal to triangle lightness t^* for grey colours. For surface colours all reflections are normalized to mean grey.

The normalized reflections of white, grey and black are:

$R_{1W}(\lambda) = 5$, $R_{1Z}(\lambda) = 1$, $R_{1N}(\lambda) = 1/5$. [1]

It is valid: $\log[R_{1W}(\lambda)] = 0{,}70$; $\log[R_{1N}(\lambda)] = -0{,}70$

therefore: $\log[R_{1N}(\lambda)] + \log[R_{1W}(\lambda)]=0=\log[R_{1Z}(\lambda)]$. [2]

For all reflections with $R_1(\lambda)=R(\lambda)/0{,}20$ it is valid:

$R_N(\lambda) = 0{,}04$, $R_Z(\lambda) = 0{,}20$, $R_W(\lambda) = 1{,}00$. [3]

For the figure case it is: $R_N(\lambda)=0{,}071$; $R_W(\lambda)=0{,}564$.

In this case is the **scene contrast: C = 0,564:0,071 = 8:1.**

Both CIELAB and triangle lightness are proportional to $\log[R_1(\lambda)]$ for $R_1(\lambda)$ near 1,00 or $R(\lambda)$ near 0,20, for example for the contrast 2:1.

BEE91−8A

TUB-test chart BEE9; Wavelength ranges of 6 *Ostwald* colours + W, C=2:1 and 8:1 input: *rgb/n*
Normalized reflection $\log[R(\lambda)/0{,}2]$ and model relation to lightness of the antagonistic signals