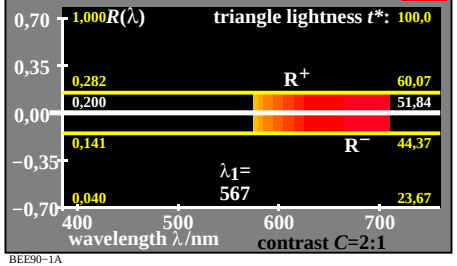
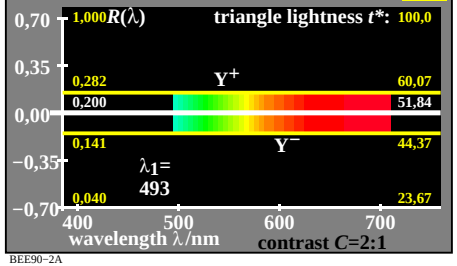
$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device red R_d λ_d=596nm



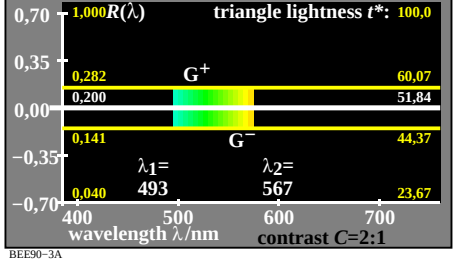
BEE90−1A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device yellow Y_d λ_d=570nm



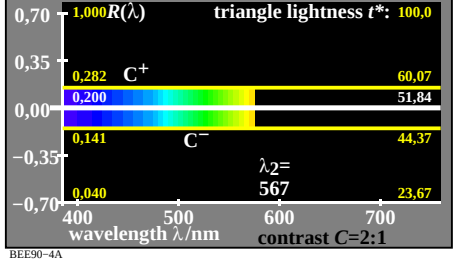
BEE90−2A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device green G_d λ_d=535nm



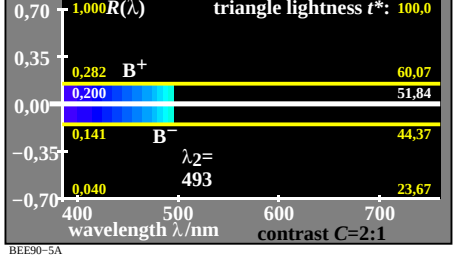
BEE90−3A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device cyan-blue C_d λ_d=489nm



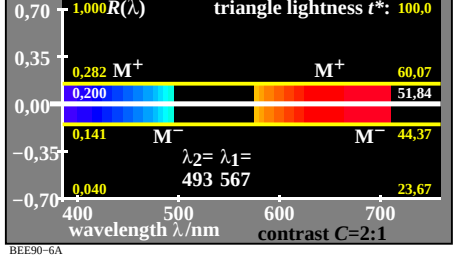
BEE90−4A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device blue B_d λ_d=463nm



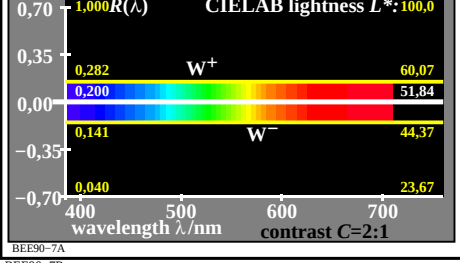
BEE90−5A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device magenta-red M_d λ_c=535cnm



BEE90−6A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device white W_d



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]

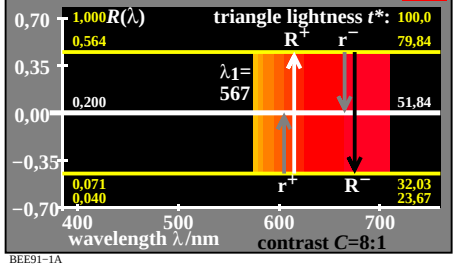
For the figure case it is: $R_N(\lambda)=0{,}141$; $R_W(\lambda)=0{,}282$.

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.

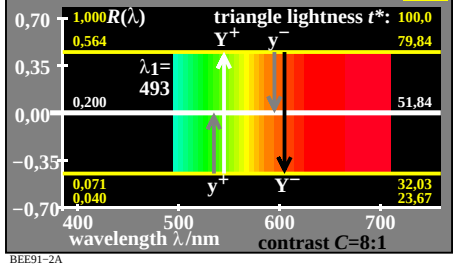
BEE90−8A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device red R_d λ_d=596nm



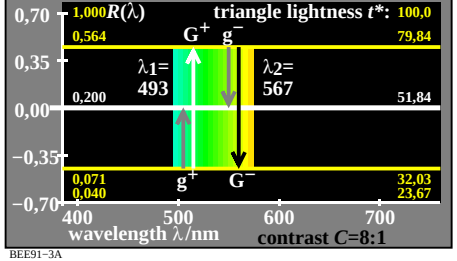
BEE91−1A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device yellow Y_d λ_d=570nm



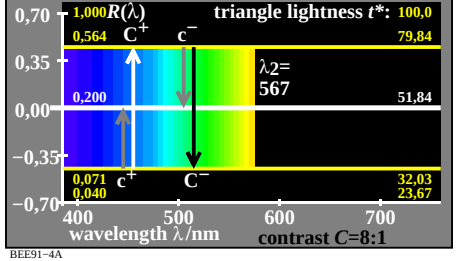
BEE91−2A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device green G_d λ_d=535nm



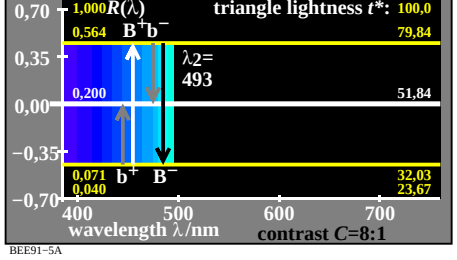
BEE91−3A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device cyan-blue C_d λ_d=489nm



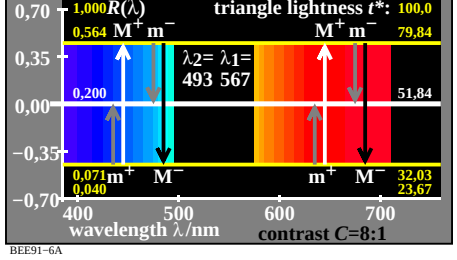
BEE91−4A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device blue B_d λ_d=463nm



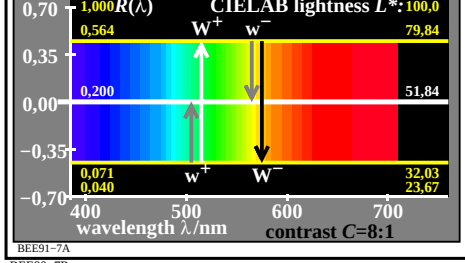
BEE91−5A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device magenta-red M_d λ_c=535cnm



BEE91−6A

$R_2(\lambda)$=log[$R(\lambda)$/0,20]=log[$R_1(\lambda)$] reflection
device white W_d



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