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:

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

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:

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

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.