

# Equal 9 step grey scaling between $L^*_{0aN}=23.6$ and $L^*_{0aW}=95.5$ , $Y_{0ref}=90.0$ , normalisation grey $U$

$L^*_{0aN}=23.6$ ,  $L^*_{0aU}=59.6$ ,  $L^*_{0aW}=95.5$ ,  $Y_{0aN}=3.6$ ,  $Y_{0aU}=30.3$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$

$L^*_{taN}=53.4$ ,  $L^*_{taU}=59.6$ ,  $L^*_{taW}=70.9$ ,  $Y_{taN}=23.6$ ,  $Y_{taU}=30.3$ ,  $Y_{taW}=45.4$ ,  $C_{taY}=Y_{taW}:Y_{taN}=1.9$

**Regularity index according to ISO/IEC 15775:2022, annex G for 5 and 9 steps**

$g^* = 100 [\Delta L^*_{min}] / [\Delta L^*_{max}]$ ,  $L^*_{TUBsRGB,W} = 100 [Y/Y_n]^{[1/\ln(10)]}$  with  $Y \geq 0,3$ ,  $Y_n=100$

$g^*_5 = 99$ ,  $g^*_9 = 99$

$g^*_5 = 37$ ,  $g^*_9 = 30$

$g^*_5 = 83$ ,  $g^*_9 = 71$

100 75 50 25 0	n0. i	intended output				real output					linearized output	
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.6}$	$L^*_{la}$	$\Delta L^*_{la}$
	9	95.5	1.0	90.0	1.0	70.9		1.0	45.4	1.0	70.9	
	8	86.5	0.875	71.7	0.788	67.7	3.2	0.816	40.7	0.881	68.8	2.1
	7	77.5	0.75	55.7	0.603	64.7	3.0	0.645	36.7	0.76	66.7	2.1
	6	68.5	0.625	41.9	0.443	62.0	2.7	0.489	33.2	0.64	64.6	2.1
	5	59.6	0.5	30.3	0.309	59.6	2.4	0.351	30.3	0.52	62.5	2.1
	4	50.6	0.375	20.8	0.199	57.5	2.1	0.232	27.9	0.401	60.4	2.1
	3	41.6	0.25	13.3	0.112	55.7	1.7	0.133	26.0	0.283	58.4	2.1
	2	32.6	0.125	7.6	0.046	54.4	1.3	0.055	24.6	0.164	56.3	2.1
	1	23.6	0.0	3.6	0.0	53.4	1.0	0.0	23.6	0.0	53.4	2.9

$\Delta L^*_{0a}=9.0$

(i=1,2,...,8)

normalisation:  $Y_{taiU}=Y_{0aU} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aU}+Y_{0ref}}$