

### Equal 9 step grey scaling between $L^*_{0aN}=18$ & $L^*_{0aW}=135.1$ , $Y_{0ref}=2$ , normalisation white W

$L^*_{0aN}=18.3$ ,  $L^*_{0aU}=76.7$ ,  $L^*_{0aW}=135.1$ ,  $Y_{0aN}=2.0$ ,  $Y_{0aU}=54.3$ ,  $Y_{0aW}=200.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=100.0$   
 $L^*_{taN}=24.6$ ,  $L^*_{taU}=77.6$ ,  $L^*_{taW}=135.1$ ,  $Y_{taN}=4.0$ ,  $Y_{taU}=55.7$ ,  $Y_{taW}=200.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=50.5$

### 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  $Y \geq 0.39 = 100/255$ ,  $Y_n=100$   
 $g^*_5=99$ ,  $g^*_9=99$                        $g^*_5=86$ ,  $g^*_9=80$                        $g^*_5=77$ ,  $g^*_9=72$

n0. i	$L^*_{TUBsRGB,W}$ intended output				real output					linearized output	
	$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.2}$	$L^*_{la}$	$\Delta L^*_{la}$
9	135.1	1.0	200.0	1.0	135.1		1.0	200.0	1.0	135.1	
8	120.5	0.875	153.7	0.766	120.7	14.4	0.869	154.1	0.89	122.9	12.2
7	105.9	0.75	114.1	0.566	106.2	14.4	0.739	115.0	0.777	110.5	12.5
6	91.3	0.625	81.1	0.399	91.9	14.4	0.609	82.3	0.661	97.6	12.8
5	76.7	0.5	54.3	0.264	77.6	14.3	0.479	55.7	0.541	84.4	13.2
4	62.1	0.375	33.4	0.158	63.4	14.2	0.351	35.0	0.418	70.8	13.7
3	47.5	0.25	18.0	0.081	49.5	13.9	0.225	19.8	0.288	56.5	14.3
2	32.9	0.125	7.7	0.029	36.2	13.3	0.105	9.6	0.152	41.4	15.0
1	18.3	0.0	2.0	0.0	24.6	11.6	0.0	4.0	0.0	24.6	16.8

$\Delta L^*_{0a}=14.6$  (i=1,2,...,8)

normalisation:  $Y_{taiW}=Y_{0aW} \frac{Y_{0ai}+Y_{0ref}}{Y_{0aW}+Y_{0ref}}$