

**Equal 9 step grey scaling between  $L^*_{0aN}=-50$  &  $L^*_{0aW}=50.0$ ,  $Y_{0ref}=1$ , normalisation white W**

$L^*_{0aN}=-49.9$ ,  $L^*_{0aU}=0.0$ ,  $L^*_{0aW}=50.0$ ,  $Y_{0aN}=4.0$ ,  $Y_{0aU}=20.0$ ,  $Y_{0aW}=100.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$   
 $L^*_{taN}=-43.3$ ,  $L^*_{taU}=1.2$ ,  $L^*_{taW}=50.0$ ,  $Y_{taN}=4.9$ ,  $Y_{taU}=20.8$ ,  $Y_{taW}=100.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=20.2$

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

$g^* = 100 [\Delta L^*_{min}] / [\Delta L^*_{max}]$ ,  $L^*_{TUBLOG,Ua} = 50 / \log(5) [\log(Y/Y_u)]$  with  $Y_u=20$

$g^*_5 = 100$ ,  $g^*_9 = 100$

$g^*_5 = 86$ ,  $g^*_9 = 83$

$g^*_5 = 99$ ,  $g^*_9 = 97$

L* <sub>TUBLOG,Ua</sub>	intended output					real output					linearized output	
	n0. i	L* <sub>0a</sub>	L* <sub>0r</sub>	Y <sub>0a</sub>	Y <sub>0r</sub>	L* <sub>ta</sub>	$\Delta L^*_{ta}$	L* <sub>tr</sub>	Y <sub>ta</sub>	(L* <sub>tr</sub> ) <sup>1/1.06</sup>	L* <sub>la</sub>	$\Delta L^*_{la}$
50	9	50.0	1.0	100.0	1.0	50.0		1.0	100.0	1.0	50.0	
	8	37.5	0.875	66.9	0.655	37.6	12.3	0.868	67.2	0.875	38.3	11.6
25	7	25.0	0.75	44.7	0.424	25.4	12.3	0.736	45.3	0.75	26.6	11.7
	6	12.5	0.625	29.9	0.27	13.2	12.2	0.606	30.6	0.624	14.9	11.7
0	5	0.0	0.5	20.0	0.167	1.2	12.0	0.477	20.8	0.499	3.2	11.7
	4	-12.4	0.375	13.4	0.098	-10.5	11.8	0.351	14.2	0.374	-8.4	11.7
	3	-24.9	0.25	8.9	0.051	-21.9	11.4	0.229	9.8	0.25	-20.0	11.6
-25	2	-37.4	0.125	6.0	0.021	-32.9	11.0	0.111	6.9	0.127	-31.5	11.5
	1	-49.9	0.0	4.0	0.0	-43.3	10.4	0.0	4.9	0.0	-43.3	11.8

$\Delta L^*_{0a}=12.5$  (i=1,2,...,8)

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