

# Equal 9 step grey scaling between $L^*_{0aN}=-50.0$ and $L^*_{0aW}=50.0$ , $Y_{0ref}=3.6$ , normalisation grey U

$L^*_{0aN}=-49.9$ ,  $L^*_{0aU}=0.0$ ,  $L^*_{0aW}=50.0$ ,  $Y_{0aN}=3.6$ ,  $Y_{0aU}=18.0$ ,  $Y_{0aW}=90.0$ ,  $C_{0aY}=Y_{0aW}:Y_{0aN}=25.0$

$L^*_{taN}=-34.0$ ,  $L^*_{taU}=0.0$ ,  $L^*_{taW}=45.5$ ,  $Y_{taN}=6.0$ ,  $Y_{taU}=18.0$ ,  $Y_{taW}=78.0$ ,  $C_{taY}=Y_{taW}:Y_{taN}=13.0$

**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  $Y_u=18$

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

$g^*_5 = 63$ ,  $g^*_9 = 57$

$g^*_5 = 97$ ,  $g^*_9 = 89$

$L^*_{TUBLOG,Ua}$  **intended output** **real output** **linearized output**

50 25 0 -25 -50	n0. i	intended output				real output					linearized output	
		$L^*_{0a}$	$L^*_{0r}$	$Y_{0a}$	$Y_{0r}$	$L^*_{ta}$	$\Delta L^*_{ta}$	$L^*_{tr}$	$Y_{ta}$	$(L^*_{tr})^{1/1.21}$	$L^*_{la}$	$\Delta L^*_{la}$
	9	50.0	1.0	90.0	1.0	45.5		1.0	78.0	1.0	45.5	
	8	37.5	0.875	60.2	0.655	33.6	11.9	0.85	53.1	0.875	35.6	10.0
	7	25.0	0.75	40.2	0.424	22.0	11.6	0.704	36.5	0.749	25.5	10.0
	6	12.5	0.625	26.9	0.27	10.7	11.3	0.563	25.4	0.622	15.5	10.1
	5	0.0	0.5	18.0	0.167	0.0	10.7	0.428	18.0	0.497	5.4	10.0
	4	-12.4	0.375	12.0	0.098	-9.9	10.0	0.302	13.0	0.373	-4.3	9.9
	3	-24.9	0.25	8.0	0.051	-19.1	9.1	0.188	9.7	0.251	-14.0	9.7
	2	-37.4	0.125	5.4	0.021	-27.2	8.1	0.086	7.5	0.132	-23.5	9.5
	1	-49.9	0.0	3.6	0.0	-34.0	6.9	0.0	6.0	0.0	-34.0	10.5

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

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