TUB registration: 20220301-CED6/CED6L0NA.TXT /.PS
application for measurement of display output

TUB material: code=rha4ta

LABJNDu6 triangle lightness
$Y_{nc}=Y_{WRGBnc}=100, 21, 72, 7$

$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}x)/(A_{2n}A_{0n})$ $(x=Y/Y_u)$
$t^*_N(3,6)=219, t^*_u(18)=498, t^*_W(90)=776$

$t^*_{90}=775,82, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$t^*_{18}=498,34, A_{1n}=0,017, A_{2n}=0,0058$
$t^*_{3,6}=219,17, t^*_u=498,34, Y_u=18$

application range

CED60–1A

LABJNDu6 relative triangle lightness t^*/t^*_u
$Y_{nc}=Y_{WRGBnc}=100, 21, 72, 7$

t^*/t^*_u

$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}x)/(A_{2n}A_{0n})$ $(x=Y/Y_u)$
$t^*_N(3,6)=219, t^*_u(18)=498, t^*_W(90)=776$

$t^*_{90}/t^*_u=1,55, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$t^*_{18}/t^*_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$t^*_{3,6}/t^*_u=0,43, t^*_u=498,34, Y_u=18$

$t^*/t^*_u=1, m_u=0,79$

$L^*=49, t^*_u=498$

application range

CED60–2A

LABJNDu6 triangle lightness
$Y_{nc}=L^*_{WRGBnc}=100, 52, 87, 31$

$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}x)/(A_{2n}A_{0n})$ $(x=Y/Y_u)$
$T^*_N(3,6)=219, T^*_u(18)=498, T^*_W(90)=776$

$T^*_{90}/T^*_u=1,55, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$T^*_{18}/T^*_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$T^*_{3,6}/T^*_u=0,43, T^*_u=498,34, Y_u=18$

$T^*_{90}=775,82, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$T^*_{18}=498,34, A_{1n}=0,017, A_{2n}=0,0058$
$T^*_{3,6}=219,17, T^*_u=498,34, Y_u=18$

application range

CED61–1A

LABJNDu6 relative triangle lightness T^*/T^*_u
$Y_{nc}=L^*_{WRGBnc}=100, 52, 87, 31$

T^*/T^*_u

$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}x)/(A_{2n}A_{0n})$ $(x=Y/Y_u)$
$T^*_N(3,6)=219, T^*_u(18)=498, T^*_W(90)=776$

$T^*_{90}/T^*_u=1,55, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$T^*_{18}/T^*_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$T^*_{3,6}/T^*_u=0,43, T^*_u=498,34, Y_u=18$

$T^*/T^*_u=1, m_u=0,79$

$L^*=49, T^*=498$

application range

CED61–2A

LABJNDu6 tristimulus value difference
$Y_{nc}=Y_{WRGBnc}=100, 21, 72, 7$

ΔY

$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$dY=A_{0n}(A_{1n}+A_{2n}Y)=A_{0n}(A_{1n}+A_{2u}x)$ $x=Y/Y_u$

$A_{0n,D65}=1,5, A_{0n,A}=1,0$, see CIE 230:2019

$dY_{90}/dY_u=4,43, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$dY_{18}/dY_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$dY_{3,6}/dY_u=0,31, Y_u=18, dY_u=0,12$

$t^*_u=498, dY_u=0,12, dY_u/Y_u=0,0067$

$\log(dY)=0,12, m_u=1,05$
$dY_{90}=0,53, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$dY_{18}=0,12, A_{1n}=0,017, A_{2n}=0,0058$
$dY_{3,6}=0,05, Y_u=18, dY_u=0,12$

application range

CED60–3A

LABJNDu6 relative tristimulus value difference
$Y_{nc}=Y_{WRGBnc}=100, 21, 72, 7$

$\Delta Y/\Delta Y_u$

$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$dY/dY_u=(A_{1n}+A_{2u}x)/(A_{1n}+A_{2u})$

$dY_{90}/dY_u=4,43, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$dY_{18}/dY_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$dY_{3,6}/dY_u=0,31, Y_u=18, dY_u=0,12$

$t^*_u=498, dY_u=0,12, dY_u/Y_u=0,0067$

$\log[(dY)/(dY)_u]=0, m_u=0,86$

application range

CED60–4A

LABJNDu6 tristimulus value difference
$Y_{nc}=L^*_{WRGBnc}=100, 52, 87, 31$

ΔY

$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$dY=A_{0n}(A_{1n}+A_{2n}Y)=A_{0n}(A_{1n}+A_{2u}x)$ $x=Y/Y_u$

$A_{0n,D65}=1,5, A_{0n,A}=1,0$, see CIE 230:2019

$dY_{90}/dY_u=4,43, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$dY_{18}/dY_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$dY_{3,6}/dY_u=0,31, Y_u=18, dY_u=0,12$

$T^*_u=498, dY_u=0,12, dY_u/Y_u=0,0067$

$\log(dY)=0,12, m_u=0,85$
$dY_{90}=0,53, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$dY_{18}=0,12, A_{1n}=0,017, A_{2n}=0,0058$
$dY_{3,6}=0,03, Y_u=18, dY_u=0,12$

application range

CED61–3A

LABJNDu6 relative tristimulus value difference
$Y_{nc}=L^*_{WRGBnc}=100, 52, 87, 31$

$\Delta Y/\Delta Y_u$

$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$dY/dY_u=(A_{1n}+A_{2u}x)/(A_{1n}+A_{2u})$

$dY_{90}/dY_u=4,43, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$dY_{18}/dY_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$dY_{3,6}/dY_u=0,31, Y_u=18, dY_u=0,12$

$T^*_u=498, dY_u=0,12, dY_u/Y_u=0,0067$

$\log[(dY)/(dY)_u]=0, m_u=0,8$

application range

CED61–4A

LABJNDu6 tristimulus value sensitivity
$Y_{nc}=Y_{WRGBnc}=100, 21, 72, 7$

$S_r=(\Delta Y/Y)$

$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$dY/Y=A_{0n}(A_{1n}+A_{2n}Y)/Y=A_{0n}(A_{1n}+A_{2u}x)/Y$

$(dY/Y)_{90}=0,0059, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$(dY/Y)_{18}=0,0067, A_{1n}=0,017, A_{2n}=0,0058$
$(dY/Y)_{3,6}=0,0105, Y_u=18, dY_u=0,12$

$\log(dY/Y)=−2,17, m_u=−0,13$

$t^*_u=498, dY_u=0,12, dY_u/Y_u=0,0067$

application range

CED60–5A

LABJNDu6 relative tristimulus value sensitivity
$Y_{nc}=Y_{WRGBnc}=100, 21, 72, 7$

$S_r/S_{ru}=(\Delta Y/Y)/(\Delta Y/Y)_u$

$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$(dY/Y)/(dY/Y)_u=[(A_{1n}+A_{2u}x)/x_u]/(A_{1n}+A_{2u})$

$(dY/Y)_{90}/(dY/Y)_u=0,88, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$(dY/Y)_{18}/(dY/Y)_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$(dY/Y)_{3,6}/(dY/Y)_u=1,55, Y_u=18, dY_u=0,12$

$\log[(dY/Y)/(dY/Y)_u]=0, m_u=−0,13$

$t^*_u=498, dY_u=0,12, dY_u/Y_u=0,0067$

application range

CED60–6A

LABJNDu6 tristimulus value sensitivity
$Y_{nc}=L^*_{WRGBnc}=100, 52, 87, 31$

$S_r=(\Delta Y/Y)$

$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$dY/Y=A_{0n}(A_{1n}+A_{2n}Y)/Y=A_{0n}(A_{1n}+A_{2u}x)/Y$

$(dY/Y)_{90}=0,0059, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$(dY/Y)_{18}=0,0067, A_{1n}=0,017, A_{2n}=0,0058$
$(dY/Y)_{3,6}=0,0105, Y_u=18, dY_u=0,12$

$\log(dY/Y)=−2,17, m_u=−0,13$

$T^*_u=498, dY_u=0,12, dY_u/Y_u=0,0067$

application range

CED61–5A

LABJNDu6 relative tristimulus value sensitivity
$Y_{nc}=L^*_{WRGBnc}=100, 52, 87, 31$

$S_r/S_{ru}=(\Delta Y/Y)/(\Delta Y/Y)_u$

$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$(dY/Y)/(dY/Y)_u=[(A_{1n}+A_{2u}x)/x_u]/(A_{1n}+A_{2u})$

$(dY/Y)_{90}/(dY/Y)_u=0,88, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$(dY/Y)_{18}/(dY/Y)_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$(dY/Y)_{3,6}/(dY/Y)_u=1,55, Y_u=18, dY_u=0,12$

$\log[(dY/Y)/(dY/Y)_u]=0, m_u=−0,13$

$T^*_u=498, dY_u=0,12, dY_u/Y_u=0,0067$

application range

CED61–6A

LABJNDu6 tristimulus value contrast
$Y_{nc}=Y_{WRGBnc}=100, 21, 72, 7$

$C_r=(Y/\Delta Y)$

$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$Y/dY=Y/[A_{0n}(A_{1n}+A_{2n}Y)]=x Y_u/[A_{0n}(A_{1n}+A_{2u}x)]$

$(Y/dY)_{90}=166,97, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$(Y/dY)_{18}=148,27, A_{1n}=0,017, A_{2n}=0,0058$
$(Y/dY)_{3,6}=95,03, Y_u=18, dY_u=0,12$

$t^*_u=498, dY_u=0,12, Y_u/dY_u=148$

$\log(Y/dY)=2,17, m_u=0,13$

application range

CED60–7A
CED60–7N

LABJNDu6 relative tristimulus value contrast
$Y_{nc}=Y_{WRGBnc}=100, 21, 72, 7$

$C_r/C_{ru}=(Y/\Delta Y)/(Y/\Delta Y)_u$

$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$t^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$(Y/dY)/(Y/dY)_u=[x/(A_{1n}+A_{2u}x)]/(A_{1n}+A_{2u})$

$(Y/dY)_{90}/(Y/dY)_u=1,12, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$(Y/dY)_{18}/(Y/dY)_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$(Y/dY)_{3,6}/(Y/dY)_u=0,64, Y_u=18, dY_u=0,12$

$\log[(Y/dY)/(Y/dY)_u]=0, m_u=0,13$

$t^*_u=498, dY_u=0,12, Y_u/dY_u=148$

application range

CED60–8A

LABJNDu6 tristimulus value contrast
$Y_{nc}=L^*_{WRGBnc}=100, 52, 87, 31$

$C_r=(Y/\Delta Y)$

$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$Y/dY=Y/[A_{0n}(A_{1n}+A_{2n}Y)]=x Y_u/[A_{0n}(A_{1n}+A_{2u}x)]$

$(Y/dY)_{90}=166,97, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$(Y/dY)_{18}=148,27, A_{1n}=0,017, A_{2n}=0,0058$
$(Y/dY)_{3,6}=95,03, Y_u=18, dY_u=0,12$

$T^*_u=498, dY_u=0,12, Y_u/dY_u=148$

$\log(Y/dY)=2,17, m_u=0,13$

application range

CED61–7A
CED61–7N

LABJNDu6 relative tristimulus value contrast
$Y_{nc}=L^*_{WRGBnc}=100, 52, 87, 31$

$C_r/C_{ru}=(Y/\Delta Y)/(Y/\Delta Y)_u$

$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2n}Y)/(A_{2n}A_{0n})$ $(Y_{nc}/100<Y<=Y_{nc})$
$T^*_{LABJNDu6}=\ln(A_{1n}+A_{2u}x)/(A_{2u}A_{0n})$ $(x=Y/Y_u)$
$(Y/dY)/(Y/dY)_u=[x/(A_{1n}+A_{2u}x)]/(A_{1n}+A_{2u})$

$(Y/dY)_{90}/(Y/dY)_u=1,12, A_{0n}=1,0, A_{2u}=0,1044, c_x=1,00$
$(Y/dY)_{18}/(Y/dY)_u=1,00, A_{1n}=0,017, A_{2n}=0,0058$
$(Y/dY)_{3,6}/(Y/dY)_u=0,64, Y_u=18, dY_u=0,12$

$\log[(Y/dY)/(Y/dY)_u]=0, m_u=0,13$

$T^*_u=498, dY_u=0,12, Y_u/dY_u=148$

application range

CED61–8A

TUB-test chart CED6; LABJNDu6, $t^*(Y)$ & $T^*(Y)$, $Y_{nc}=(Y\&L^*)_{WRGBnc}$, $c_x=1,00$, with more data
Absolute and relative lightness, sensitivity and contrast, $A_{0n}=1,5, A_{1n}=0,017, A_{2n}=0,0058, A_{2u}=0,104$