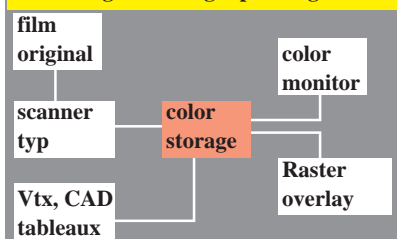


diagram for interfaces in the area image handling – printing



Ae250-1

sensation scaling functions lightness L^* and luminous value Y

adaptation on surround white:

$$L^* = 100 (Y / 100)^{1/2,0}$$

adaptation on surround gray:

$$L^* = 100 (Y / 100)^{1/2,4}$$

description with CIELAB 1976:

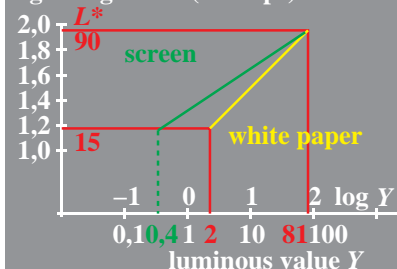
$$L^* = 116 (Y / 100)^{1/3,0} - 16$$

adaptation on surround black:

$$L^* = 100 (Y / 100)^{1/3,0}$$

Ae250-2

log L^* lightness (75 steps)



Ae250-3

colorness luminous value N^* L^* $Y = (L^*/10)^2 Y = (L^*/10)^3 / 9$

N^*	L^*	Y	Y_{\max}	$Y_{\text{normalized}}$
0	90	81	81,0	81,0
2	80	64	56,9	(= Y_{paper})
4	70	49	38,1	
6	60	36	24,0	
8	50	25	13,9	
10	40	16	7,1	
12	30	9	3,0	
14	20	4	0,9	
15	15	2,25	Y_{\min}	0,4

Ae250-4

linear scan area	lightness- area Y	lightness- area L^*	color L^* h^* no. d
76,6 ... 85,5	87,5 ... 92,4	90	FFF 4095
60,1 ... 68,1	77,5 ... 82,4	80	DDD 3549
45,6 ... 52,5	67,5 ... 72,4	70	BBB 3003
33,1 ... 39,0	57,5 ... 62,4	60	999 2457
22,6 ... 27,5	47,5 ... 52,4	50	777 1911
14,1 ... 18,0	37,5 ... 42,4	40	555 1365
7,6 ... 10,5	27,5 ... 32,4	30	333 819
3,1 ... 5,0	17,5 ... 22,4	20	111 273
1,6 ... 3,0	12,5 ... 17,4	15	000 0

Ae250-5

colorness O^* L^* V^*	black- ness N^*	luminous value Y	cover- age b
15,15,15	0	81 Y_{\max}	0,00
13,13,13	2	64	0,22
11,11,11	4	49	0,41
9, 9, 9	6	36	0,57
7, 7, 7	8	25	0,71
5, 5, 5	10	16	0,83
3, 3, 3	12	9	0,91
1, 1, 1	14	4	0,98
0, 0, 0	15	2,25 Y_{\min}	1,00

Ae250-6

colorness O^* L^* V^*	yellow- ness Y^*	luminous value Y	cover- age b
15,15,15	0	81 Y_{\max}	0,00
15,15,13	2		0,22
15,15,11	4		0,41
15,15, 9	6		0,57
15,15, 7	8		0,71
15,15, 5	10		0,83
15,15, 3	12		0,91
15,15, 1	14		0,98
15,15, 0	15	76 Y_{\min}	1,00

Ae250-7

interfaces in area of: color film original – color scanner – color storage – raster area coverage

1. color scanner with color measurement sensitivities = spectral values
2. minimum 12-Bit color image storage generates cubic screen and quadratic raster area function
3. minimum 8-bit resolution for linear photoelectric sensors

Ae250-8

point amount:
 $n = 16^2 - 15^2$
 $= 31$



blackness
 $N^* = 1$

Ae251-1

point amount:
 $n = 16^2 - 8^2$
 $= 192$



blackness
 $N^* = 8$

Ae251-2

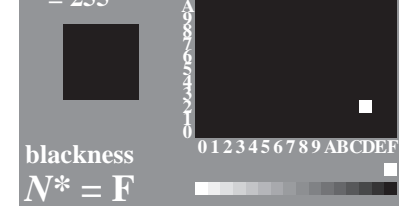
point amount:
 $n = 16^2 - 2^2$
 $= 252$



blackness
 $N^* = E$

Ae251-3

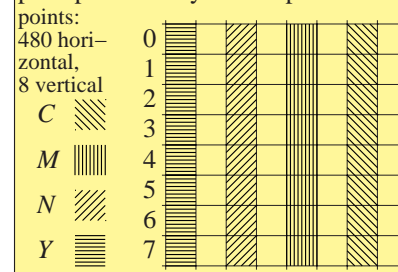
point amount:
 $n = 16^2 - 1^2$
 $= 255$



blackness
 $N^* = F$

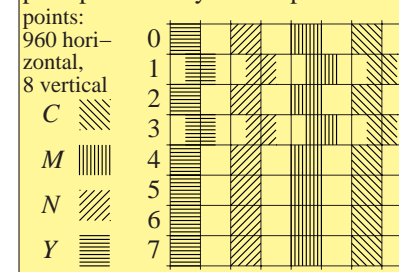
Ae251-4

print positions by matrix printer



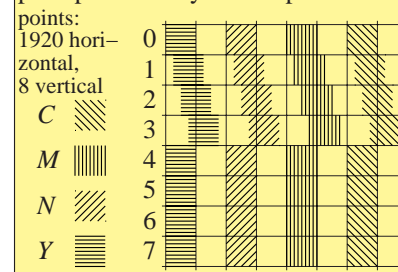
Ae251-5

print positions by matrix printer



Ae251-6

print positions by matrix printer



Ae251-7

colorness O^* L^* V^*	black- ness N^*	luminous value Y	cover- age b
15,15,15	0	81 Y_{\max}	0,00
13,13,13	2	64	0,22
11,11,11	4	49	0,41
9, 9, 9	6	36	0,57
7, 7, 7	8	25	0,71
5, 5, 5	10	16	0,83
3, 3, 3	12	9	0,91
1, 1, 1	14	4	0,98
0, 0, 0	15	2,25 Y_{\min}	1,00

Ae251-8