

Light efficiency:



Light quality:



Color temperature:



Output: 505 lm

Peak: 1097 cd

Power: 8,4 W

PF: 0,76



Tracking number: [VT240729-005455](#)

Product name:

**271838**

Item number:

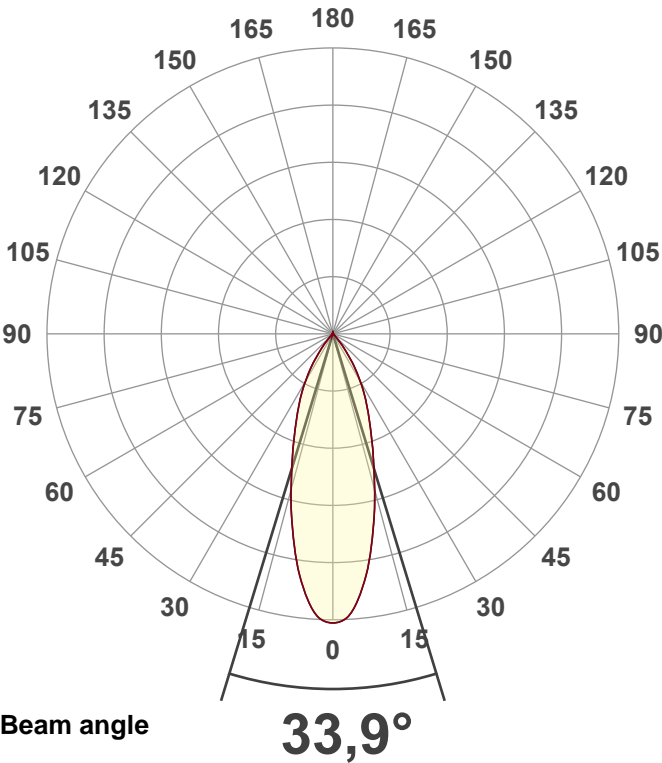
**271838**

Date and time:

**29-7-2024 12:35:08**

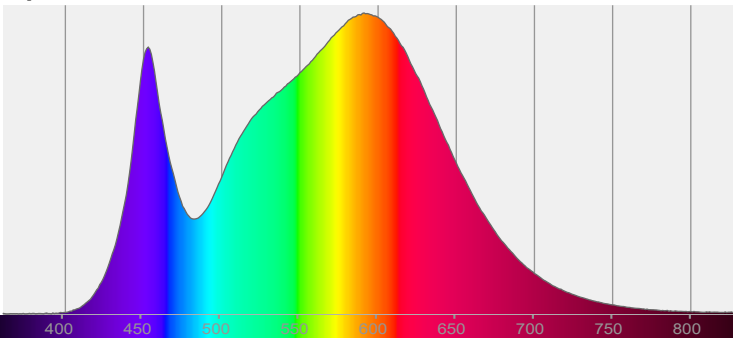
Description:

**MR16 MODULE TITANIA 9W DIMBAAR**

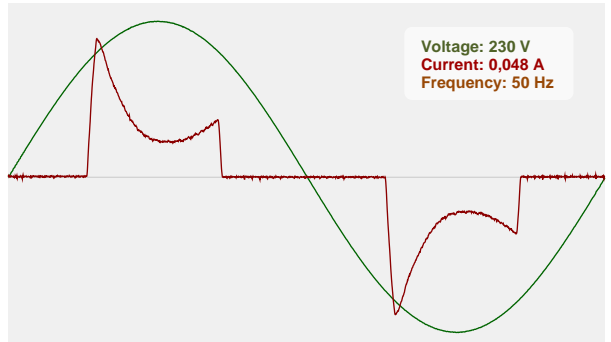


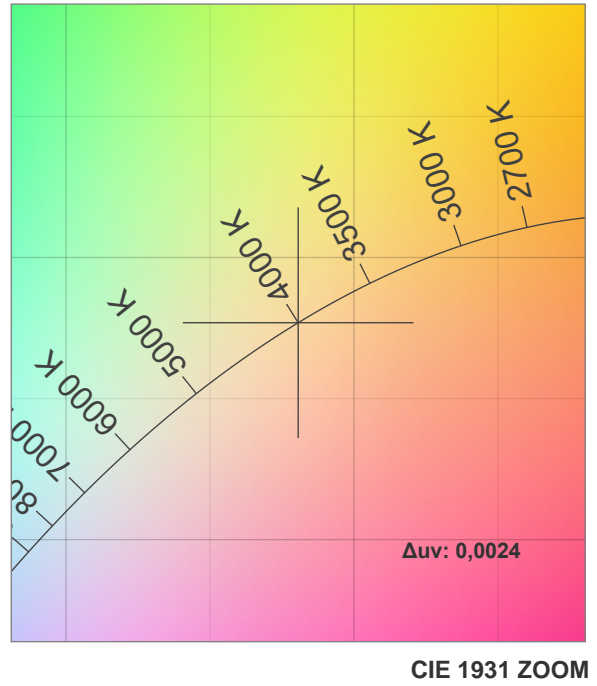
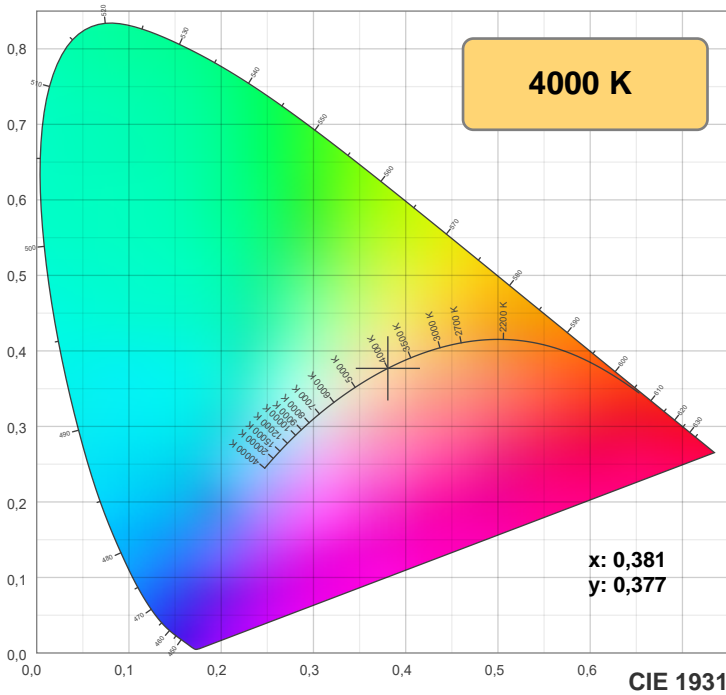
CIE 1931  
x: 0,381  
y: 0,377

Spectra

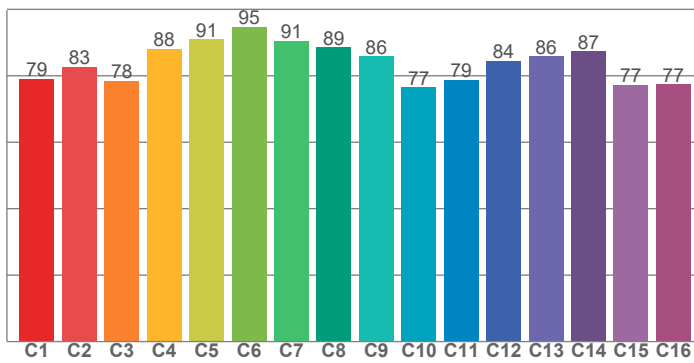


Power

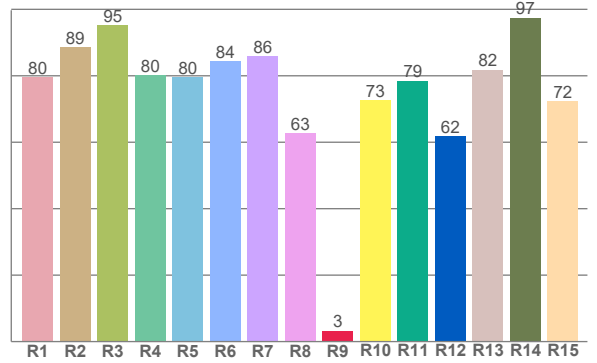




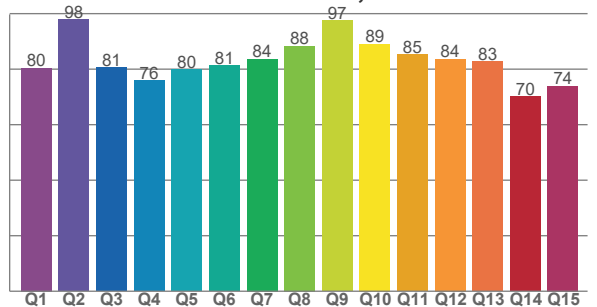
**TM-30: 84,0**



**CRI: 82,0 (R1-R8)**



**CQS: 81,8**



CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
79,6	88,5	95,3	80,3	79,5	84,3	85,8	62,7	3,3	72,8	78,5	61,8	81,9	97,5	72,3

TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
79,0	82,7	78,4	88,2	91,0	94,7	90,6	88,5	85,9	76,6	78,8	84,5	85,8	87,4	77,2	77,5

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
80,3	97,8	80,5	75,9	79,9	81,4	83,6	88,3	97,4	89,1	85,3	83,6	82,7	70,2	74,0

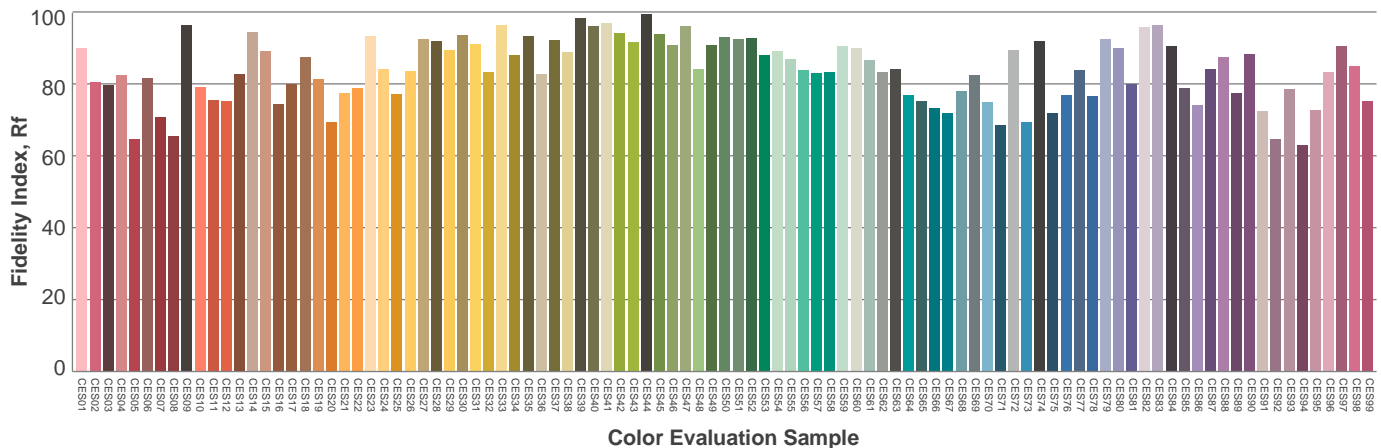
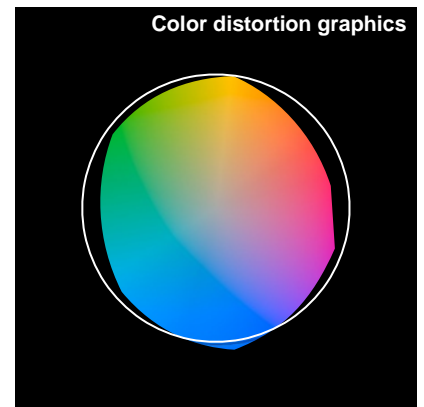
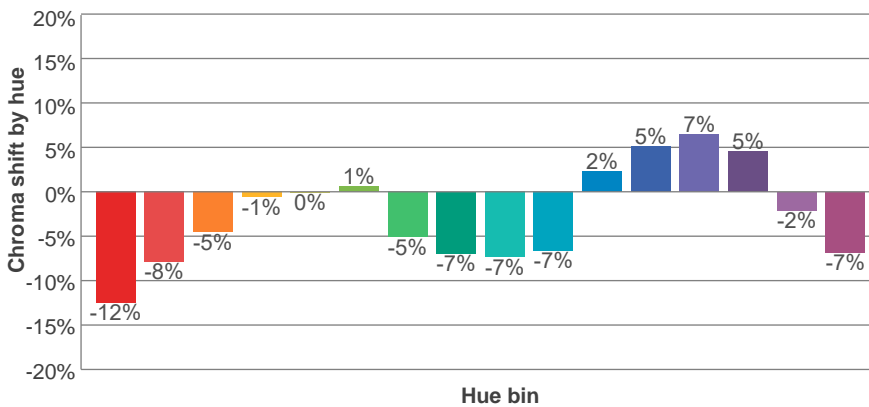
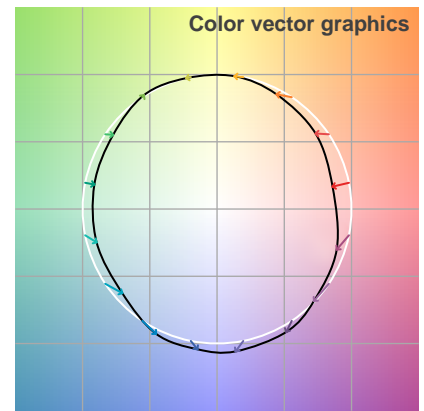
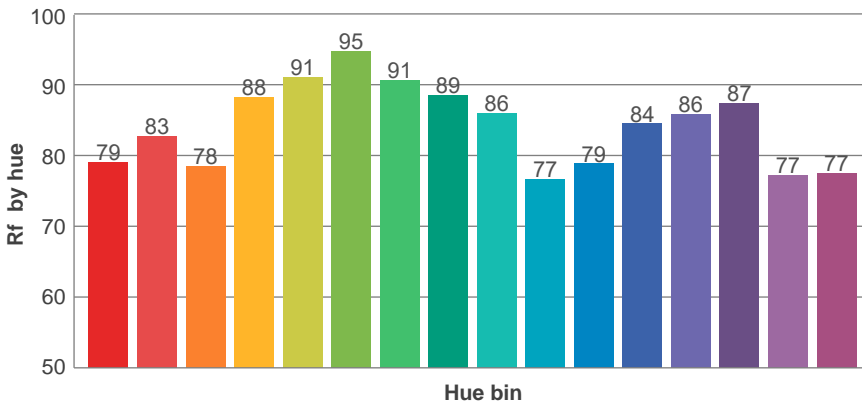
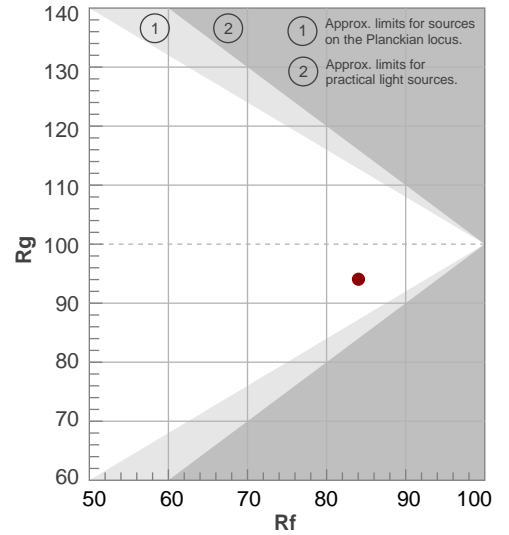
**Color parameters**

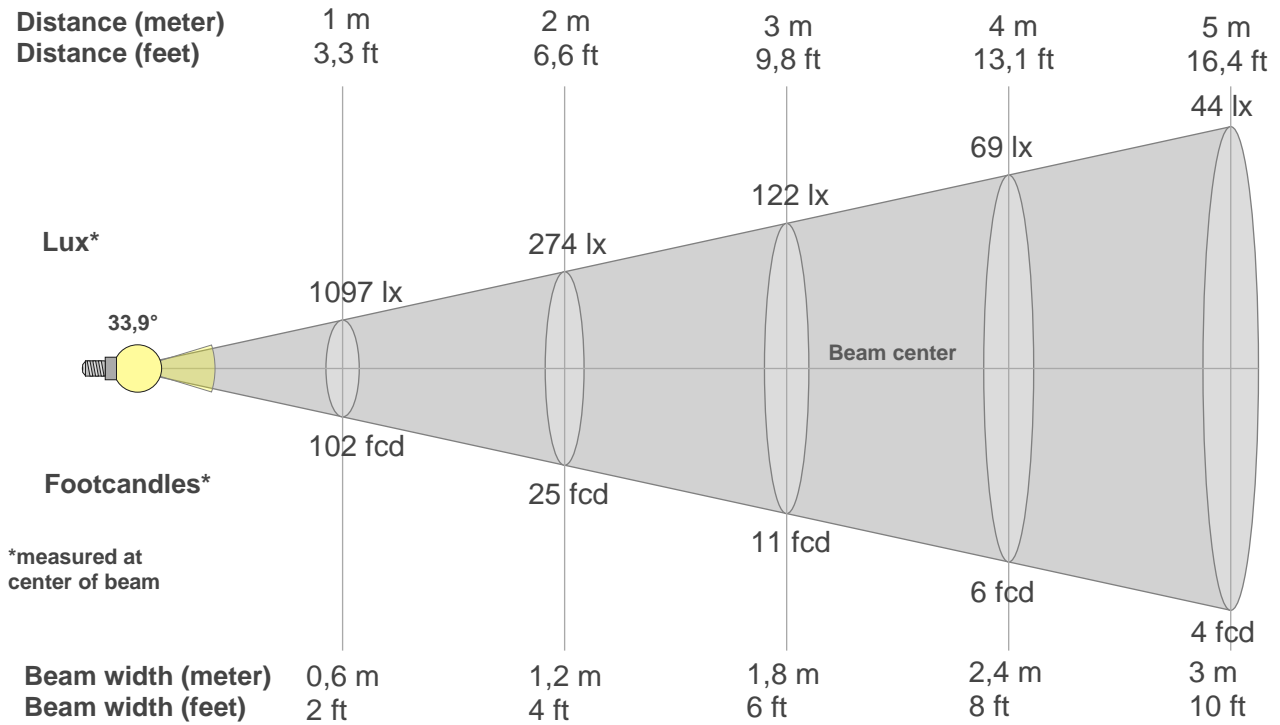
Color temperature	Color rendering index	Red component	Color fidelity	Color gamut	Color quality scale	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate	Color deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
4000 K	82,0	3,3	84,0	94,1	81,8	0,381	0,377	0,225	0,334	0,0024

**Rf 84,0**  
Fidelity index Rf

**Rg 94,1**  
Gamut index Rg

Hue Bin	R <sub>f</sub>	Shifts (%)	
		Chroma	Hue
1	79	-12%	0%
2	83	-8%	6%
3	78	-5%	11%
4	88	-1%	7%
5	91	0%	4%
6	95	1%	-2%
7	91	-5%	-3%
8	89	-7%	0%
9	86	-7%	7%
10	77	-7%	13%
11	79	2%	14%
12	84	5%	6%
13	86	7%	-7%
14	87	5%	-8%
15	77	-2%	-17%
16	77	-7%	-12%





**Beam intensities from 1-20m**

1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
3,3ft	6,6ft	9,8ft	13,1ft	16,4ft	19,7ft	23ft	26,2ft	29,5ft	32,8ft	36,1ft	39,4ft	42,7ft	45,9ft	49,2ft	52,5ft	55,8ft	59,1ft	62,3ft	65,6ft
1097lx	274lx	122lx	69lx	44lx	30lx	22lx	17lx	14lx	11lx	9lx	8lx	6lx	6lx	5lx	4lx	4lx	3lx	3lx	3lx
102fcd	25,5fcd	11,3fcd	6,4fcd	4,1fcd	2,8fcd	2,1fcd	1,6fcd	1,3fcd	1fcd	0,8fcd	0,7fcd	0,6fcd	0,5fcd	0,5fcd	0,4fcd	0,4fcd	0,3fcd	0,3fcd	0,3fcd

**Intensities in 0° c-plane**

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
1097	1097	1061	999	934	845	756	670	588	507	448	388	338	295	253	213	174	137	103	70
100%	100%	97%	91%	85%	77%	69%	61%	54%	46%	41%	35%	31%	27%	23%	19%	16%	12%	9%	6%

**Intensities in 90° c-plane**

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
1097	1097	1061	999	934	845	756	670	588	507	448	388	338	295	253	213	174	137	103	70
100%	100%	97%	91%	85%	77%	69%	61%	54%	46%	41%	35%	31%	27%	23%	19%	16%	12%	9%	6%

**Intensities in 180° c-plane**

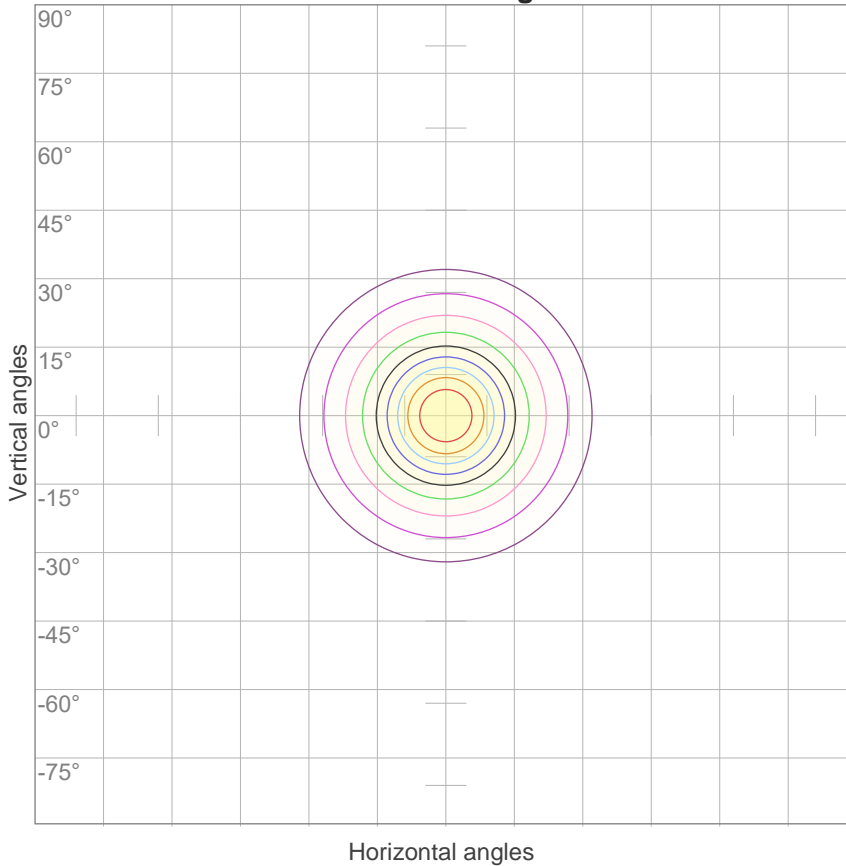
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
1097	1097	1061	999	934	845	756	670	588	507	448	388	338	295	253	213	174	137	103	70
100%	100%	97%	91%	85%	77%	69%	61%	54%	46%	41%	35%	31%	27%	23%	19%	16%	12%	9%	6%

**Intensities in 270° c-plane**

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
1097	1097	1061	999	934	845	756	670	588	507	448	388	338	295	253	213	174	137	103	70
100%	100%	97%	91%	85%	77%	69%	61%	54%	46%	41%	35%	31%	27%	23%	19%	16%	12%	9%	6%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
<b>33,9°</b>	<b>71,2°</b>	<b>85,6°</b>	<b>99,4%</b>	<b>98,1%</b>

**iso-candela diagram**



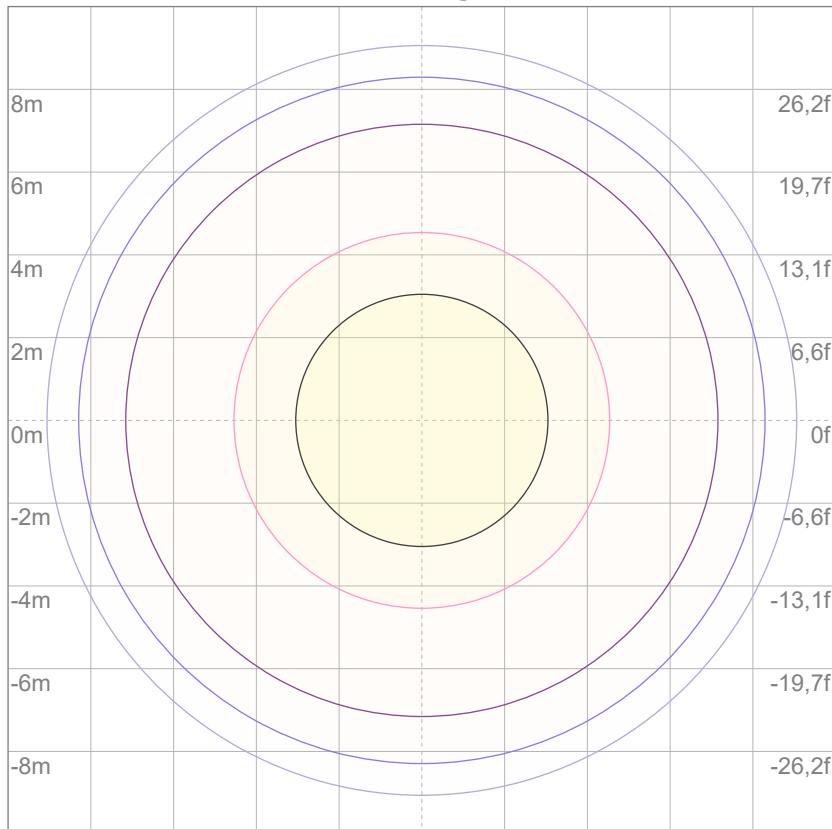
10%	110 cd
20%	219 cd
30%	329 cd
40%	439 cd
50%	549 cd
60%	658 cd
70%	768 cd
80%	878 cd
90%	988 cd

Conditions:

Number of c-planes: 12

Candela at center: 1097 cd

**iso-lux diagram**



3%	0,329 lx
5%	0,549 lx
10%	1,10 lx
30%	3,29 lx
50%	5,49 lx

Conditions:

Number of c-planes: 12

Lux at center: 11,0 lx

*Lux distribution on a surface when lamp is mounted at 10 meters from the surface.*

Glare evaluation according to UGR

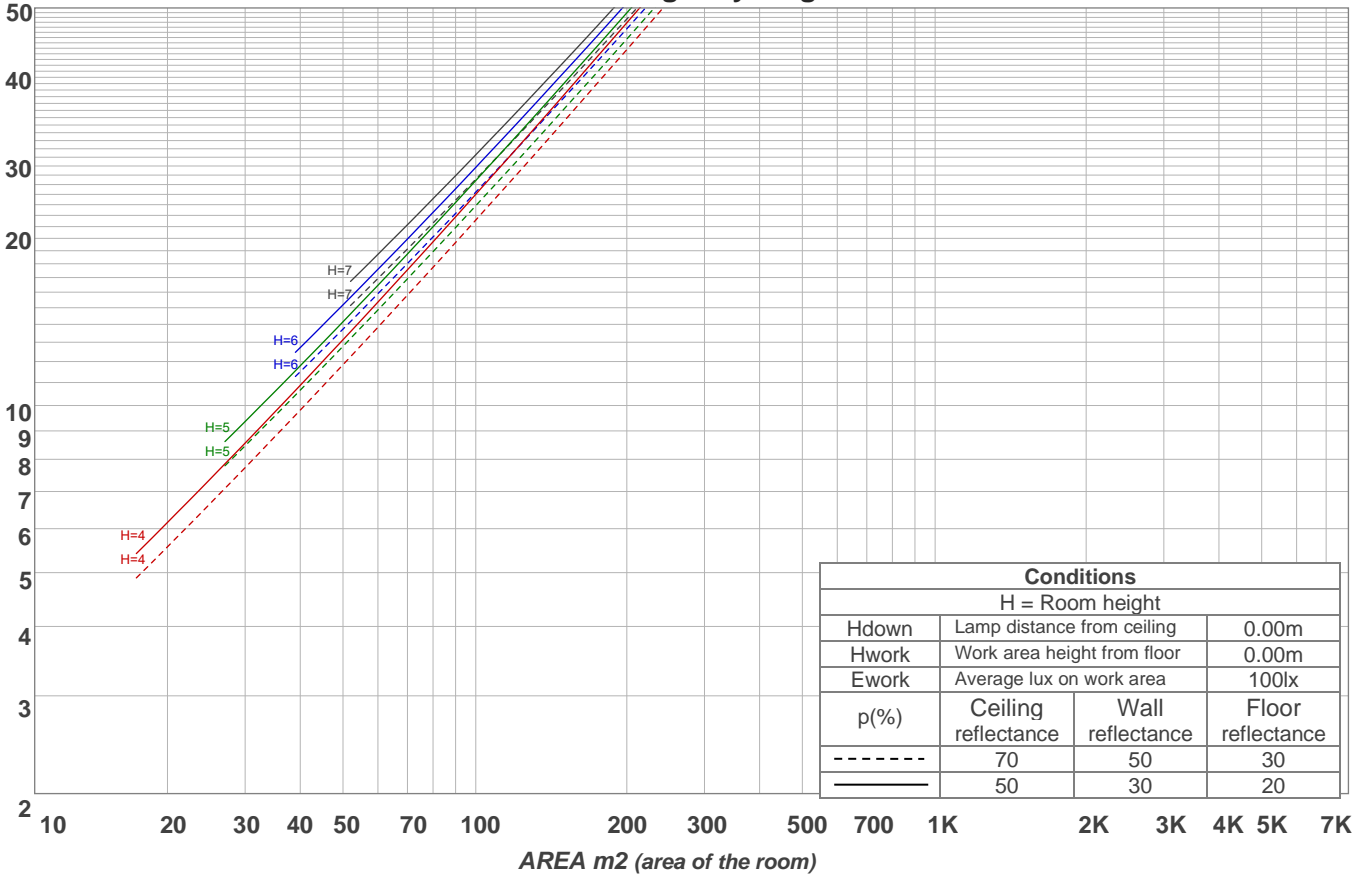
p Ceiling	70	70	50	50	30	70	70	50	50	30	
p Walls	50	30	50	30	30	50	30	50	30	30	
p Floor	20	20	20	20	20	20	20	20	20	20	
Room size X Y	Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	16,7	17,2	16,7	17,4	17,6	16,7	17,2	16,7	17,4	17,6
	3H	16,4	17,1	16,7	17,3	17,4	16,4	17,1	16,7	17,3	17,4
	4H	16,3	17,0	16,7	17,2	17,4	16,3	17,0	16,7	17,2	17,4
	6H	16,3	16,8	16,6	17,1	17,5	16,3	16,8	16,6	17,1	17,5
	8H	16,2	16,8	16,6	17,1	17,5	16,2	16,8	16,6	17,1	17,5
12H	16,2	16,7	16,5	17,1	17,5	16,2	16,7	16,5	17,1	17,5	
4H	2H	16,3	17,0	16,7	17,2	17,4	16,3	17,0	16,7	17,2	17,4
	3H	16,2	16,7	16,6	17,1	17,5	16,2	16,7	16,6	17,1	17,5
	4H	16,1	16,5	16,5	17,0	17,5	16,1	16,5	16,5	17,0	17,5
	6H	16,0	16,5	16,5	16,8	17,2	16,0	16,5	16,5	16,8	17,2
	8H	15,9	16,4	16,5	16,8	17,1	15,9	16,4	16,5	16,8	17,1
12H	15,9	16,2	16,4	16,7	17,1	15,9	16,2	16,4	16,7	17,1	
8H	4H	15,9	16,4	16,4	16,8	17,1	15,9	16,4	16,4	16,8	17,1
	6H	15,9	16,2	16,4	16,6	17,2	15,9	16,2	16,4	16,6	17,2
	8H	15,9	16,1	16,4	16,6	17,3	15,9	16,1	16,4	16,6	17,3
	12H	15,8	16,0	16,4	16,5	17,1	15,8	16,0	16,4	16,5	17,1
12H	4H	15,9	16,2	16,4	16,6	17,1	15,9	16,2	16,4	16,6	17,1
	6H	15,9	16,1	16,4	16,6	17,3	15,9	16,1	16,4	16,6	17,3
	8H	15,8	16,0	16,4	16,5	17,1	15,8	16,0	16,4	16,5	17,1
Variation of the observer position for the luminaire distance S											
S = 1.0H	5,3 / -11,2					5,3 / -11,2					
S = 1.5H	8,0 / -11,8					8,0 / -11,8					
S = 2.0H	10,0 / -12,8					10,0 / -12,8					
CIE 117-1995. Corrected glare indices referring to 505 lm total luminous flux											

**Coefficients of Utilization**

Ceiling reflectance	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Wall reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Floor reflectance	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0
RCR	(RCR: Room Cavity Ratio) Room Values are expressed as percentage of Lumens delivered to the task surface																	
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	114	112	109	107	112	109	107	106	105	104	102	102	100	99	98	97	96	95
2	109	105	101	98	107	103	100	97	100	97	95	97	95	93	94	92	91	89
3	104	99	94	91	103	97	93	90	95	91	89	92	90	87	90	88	86	84
4	100	93	88	85	98	92	88	84	90	86	83	88	85	82	86	84	81	80
5	96	88	83	79	94	87	83	79	86	81	78	84	80	78	83	79	77	76
6	92	84	79	75	90	83	78	75	82	77	74	80	76	74	79	76	73	72
7	88	80	74	71	87	79	74	71	78	73	70	77	73	70	76	72	69	68
8	84	76	71	67	83	75	70	67	74	70	67	73	69	66	73	69	66	65
9	81	73	67	64	80	72	67	64	71	67	64	70	66	63	70	66	63	62
10	78	69	64	61	77	69	64	61	68	64	61	68	63	60	67	63	60	59

LAMPS (number of lamps)

**Luminaire budgetary diagram**



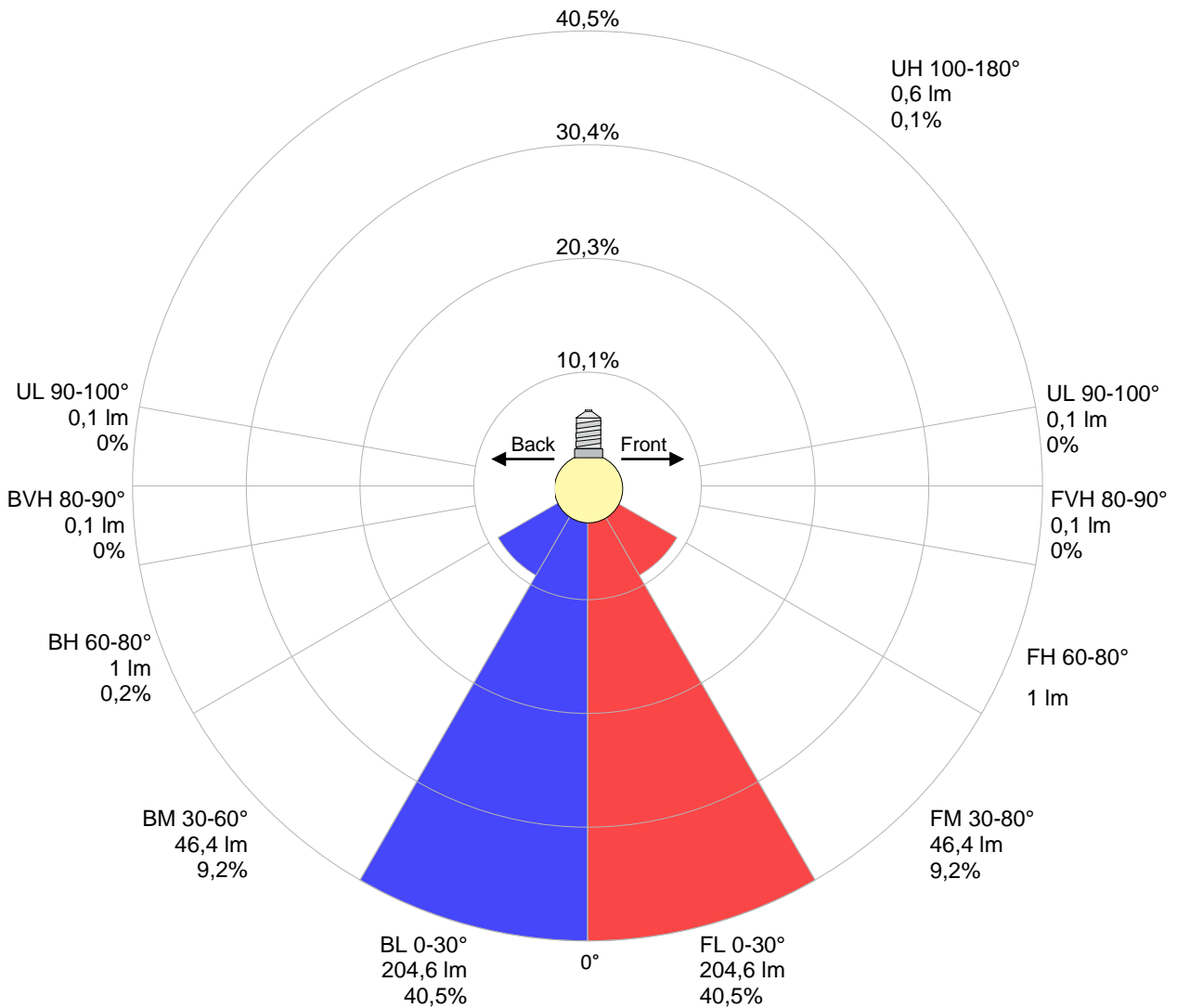
**Zonal Lumen Summary**

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	173 lm	145 lm	73,6 lm	13,8 lm	2,75 lm	1,59 lm	0,436 lm	0,153 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,105 lm	0,092 lm	0,092 lm	0,086 lm	0,073 lm	0,082 lm	0,087 lm	0,061 lm	0,018 lm

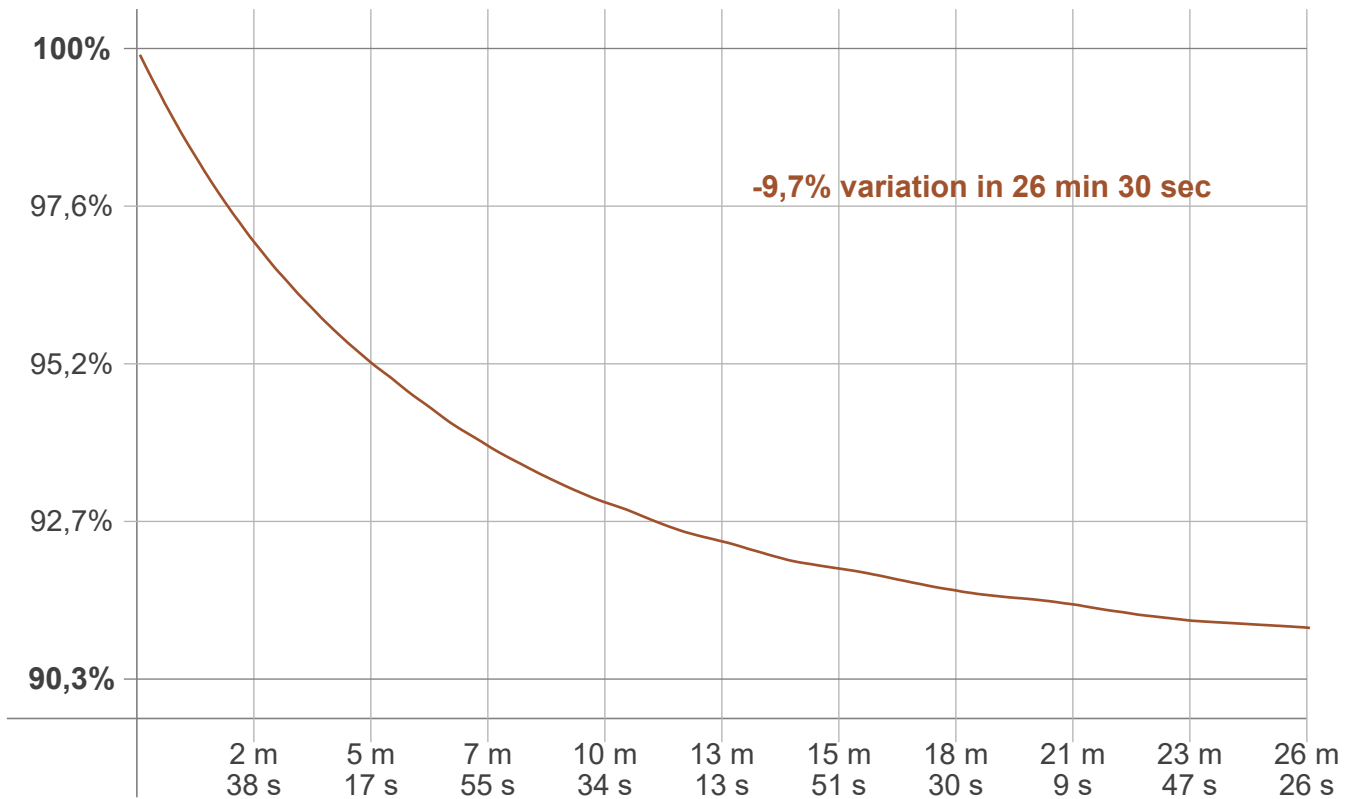
LCS table

BUG rating:	B1 U1 G0	
<b>Forward light</b>	Lumens	Lumens %
Low(0-30):	204,6	40,5%
Medium(30-60):	46,4	9,2%
High(60-80):	1	0,2%
Very high(80-90):	0,1	0%
<b>Back light</b>		
Low(0-30):	204,6	40,5%
Medium(30-60):	46,4	9,2%
High(60-80):	1	0,2%
Very high(80-90):	0,1	0%
<b>Uplight</b>		
Low(90-100):	0,1	0%
High(100-180):	0,6	0,1%

LCS graph



**Warmup curve**



**Warmup result**

<b>Warmup time:</b>	<b>Lamp stabilized in 26 min 30 sec</b>
<b>Warmup variation</b>	<b>-9,7%</b>

**Warmup conditions**

<b>Stable period:</b>	<b>15 min</b>
<b>Stable change max:</b>	<b>2,0%</b>
<b>Minimum time:</b>	<b>15 min</b>

**Color temperature change**

CCT start	CCT change	CCT end
3926 K	+74 K	4000 K

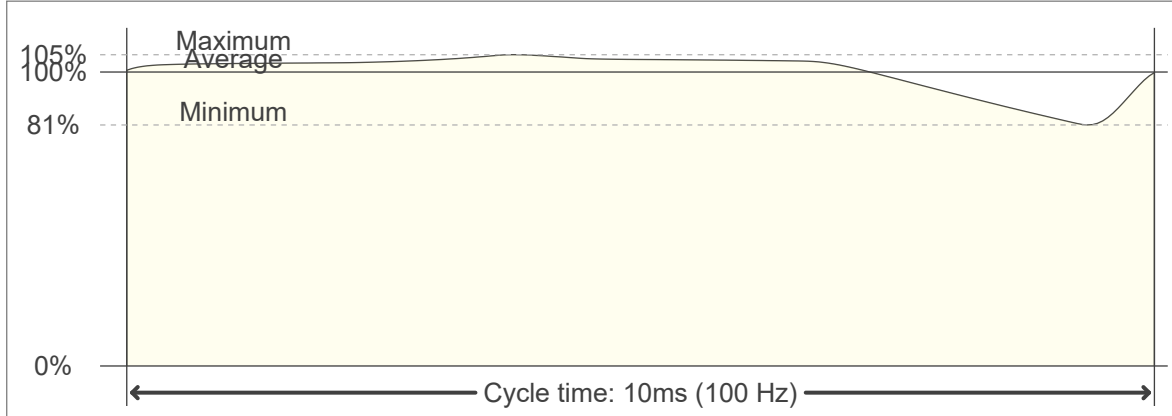
**Output change**

Output start	Output change	Output end
558 lm	-53 lm	505 lm

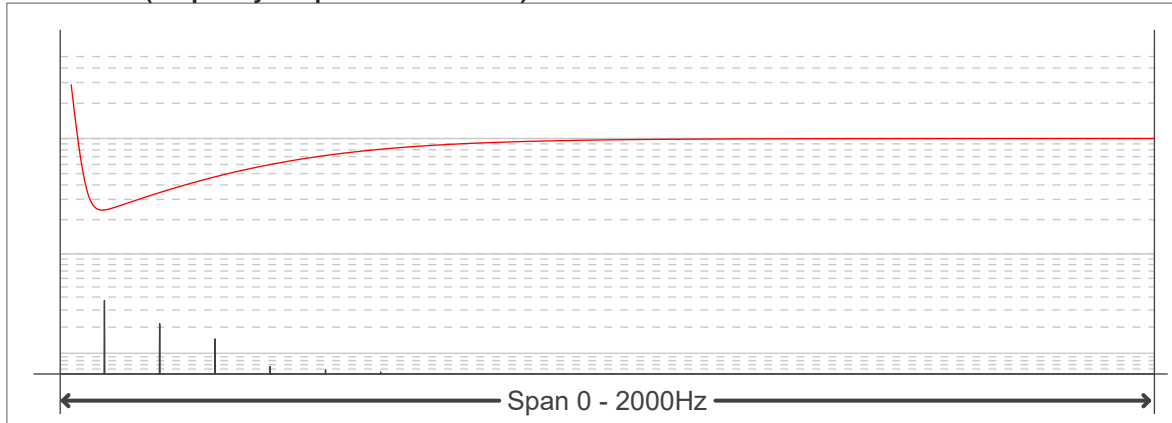
**Flicker curve (complete sampled flicker signal)**



**Flicker frame (frame of one flicker period)**



**Flicker FFT (frequency scope of flicker curve)**



**Flicker results:**

Flicker frequency:		100 Hz	
Flicker index:	0,03	JA8/10 40Hz	0,06 %
Flicker percentage:	12,8 %	JA8/10 90Hz	0,09 %
SVM: (Visual flicker)	0,29	JA8/10 200Hz	7,88 %
PstLM	0,09	JA8/10 400Hz	11,11 %
Mp	0,02	JA8/10 1000Hz	12,77 %

**Flicker conditions:**

Sample rate:	20000 samples/second
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