

Light efficiency:



Light quality:



Color temperature:

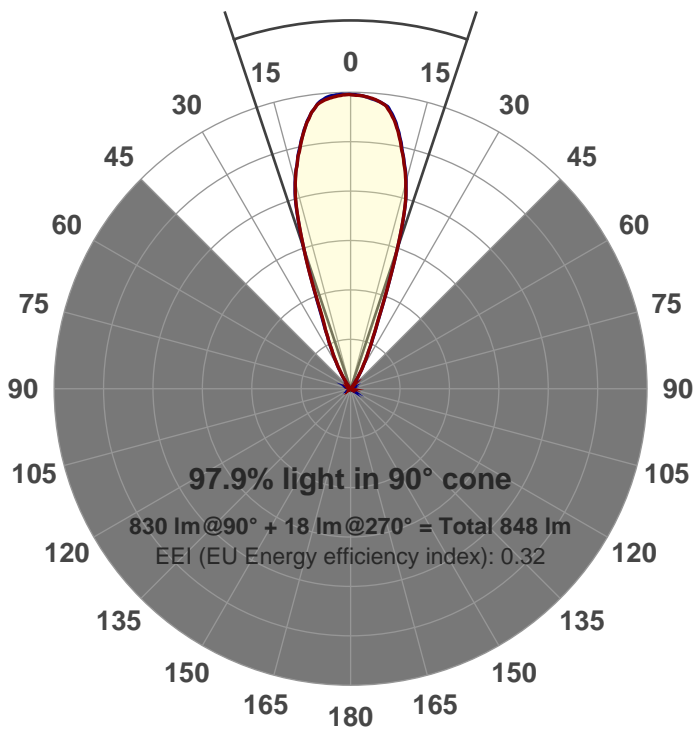


Output: 830 lm  
Peak: 2197 cd  
Power: 21.1 W  
PF: 0.99



Beam angle

36.9°



Product name:  
**GRF-CZ20-WF-RD**  
Item number:  
**GRF-CZ20-WF-RD**  
Date and time:  
**6/14/2017 3:42:26 PM**  
Description:  
**V6**

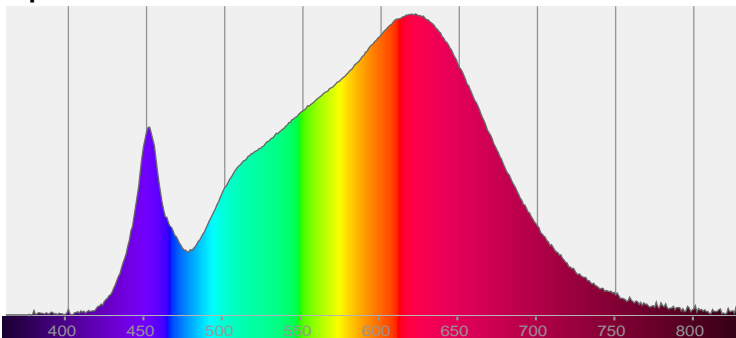
LUM: 830

PPF: 14.0

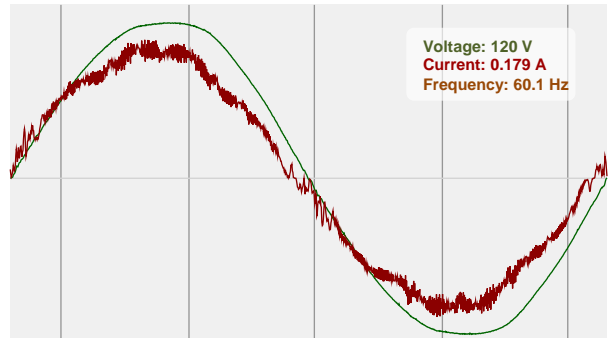


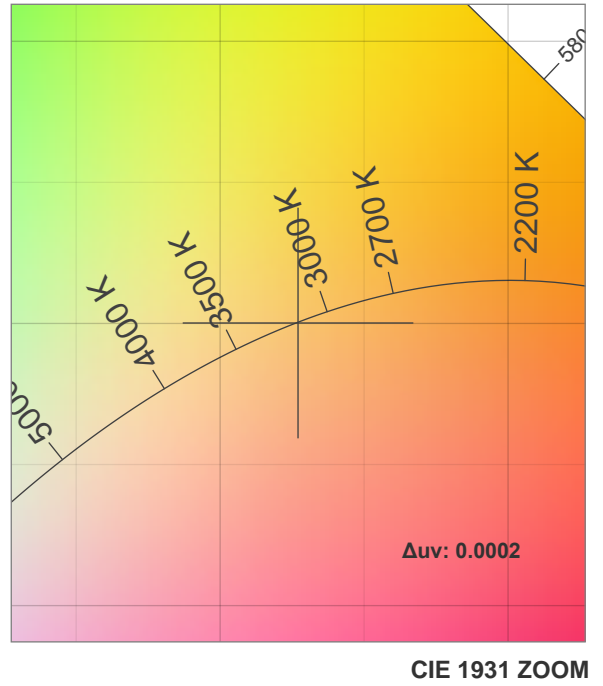
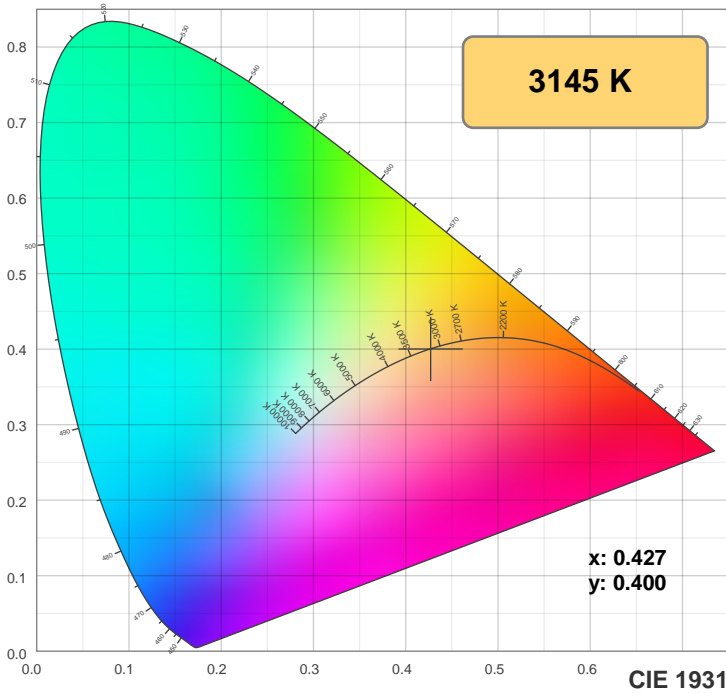
CIE 1931  
x: 0.427  
y: 0.400

Spectra

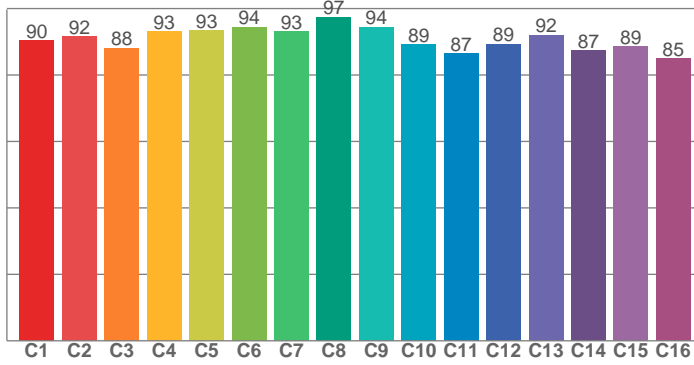


Power

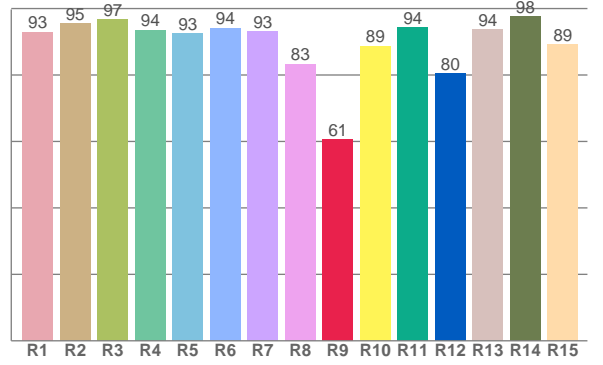




**TM30: 90.9**



**CRI: 92.8 (R1-R8)**



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
93.0	95.5	96.7	93.6	92.6	94.2	93.0	83.4	60.7	88.8	94.4	80.4	93.6	97.6	89.2

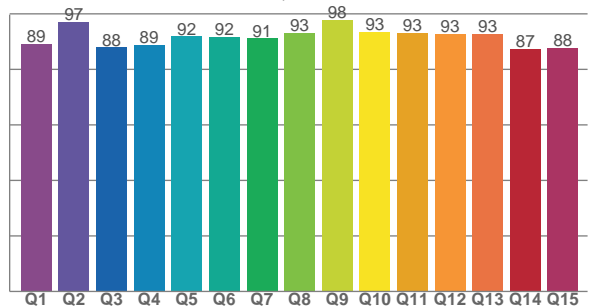
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90.3	91.6	88.2	93.2	93.4	94.5	93.2	97.5	94.4	89.2	86.6	89.4	92.0	87.4	88.5	85.0

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
89.2	97.0	87.9	88.7	91.8	91.7	91.2	93.1	97.7	93.5	93.0	92.7	92.6	87.3	87.8

**CQS: 91.0**



## Color parameters

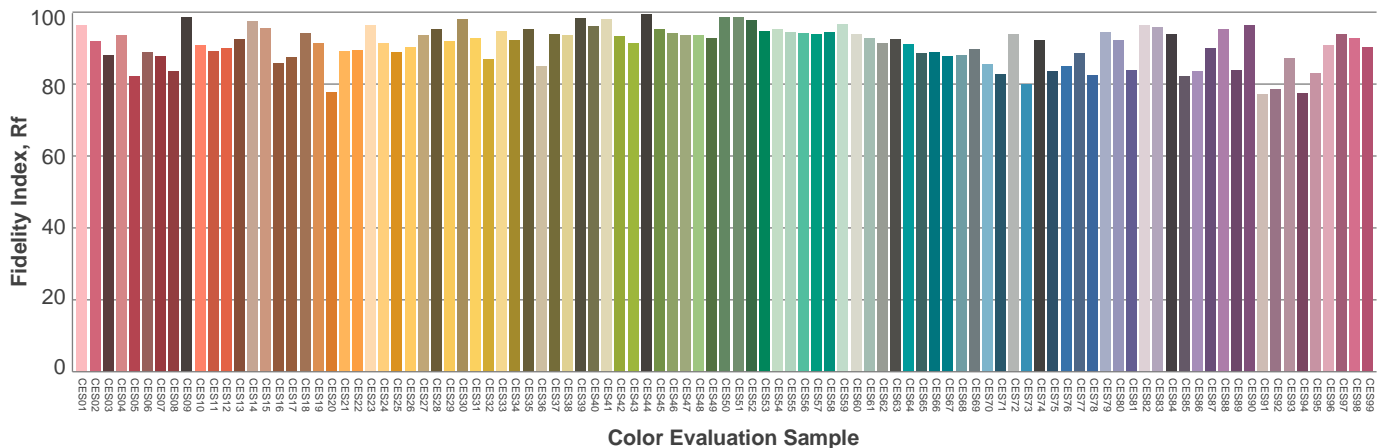
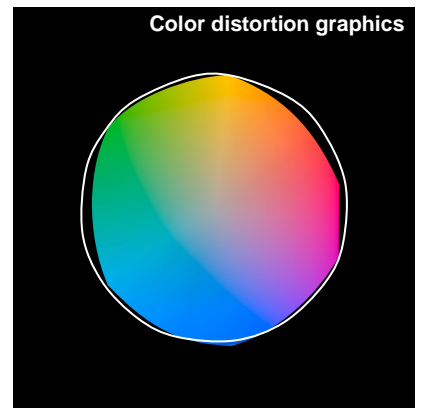
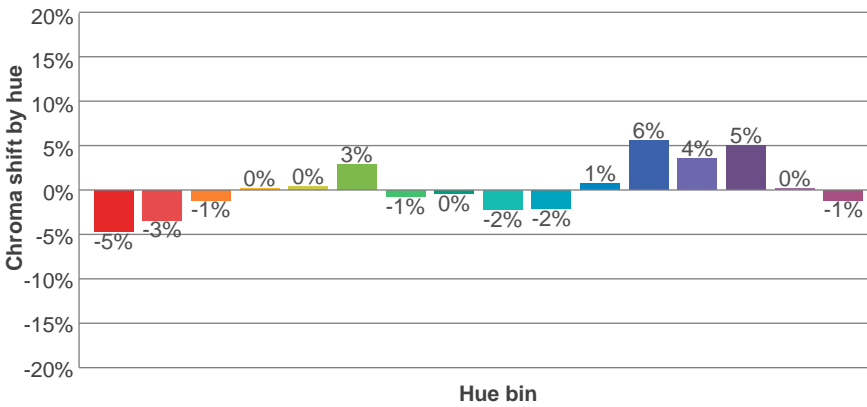
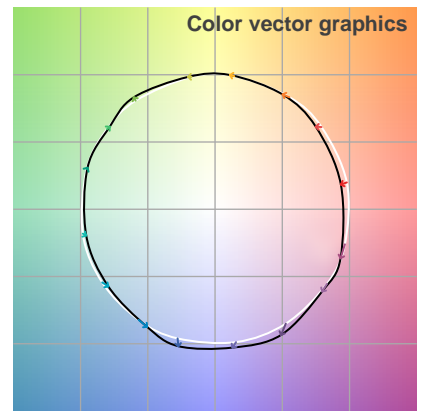
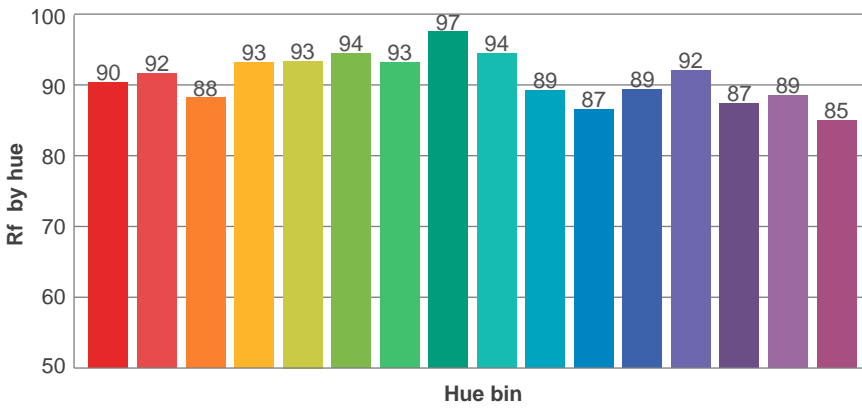
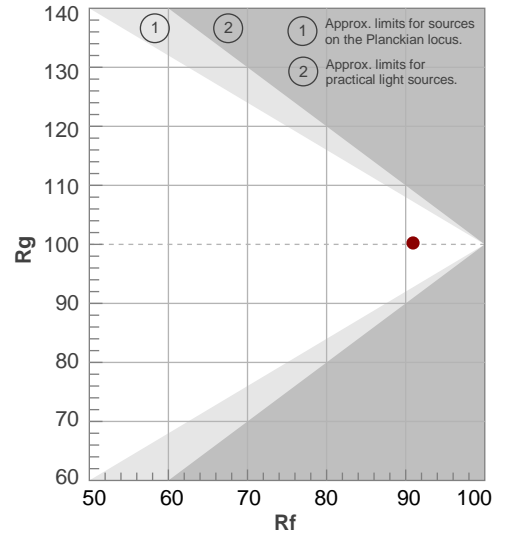
Color temperature	Color rendering index	Red component	Color fidelity	Color gamut	Color quality scale	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate	Color diviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3145 K	92.8	60.7	90.9	100.2	91.0	0.427	0.400	0.246	0.346	0.0002

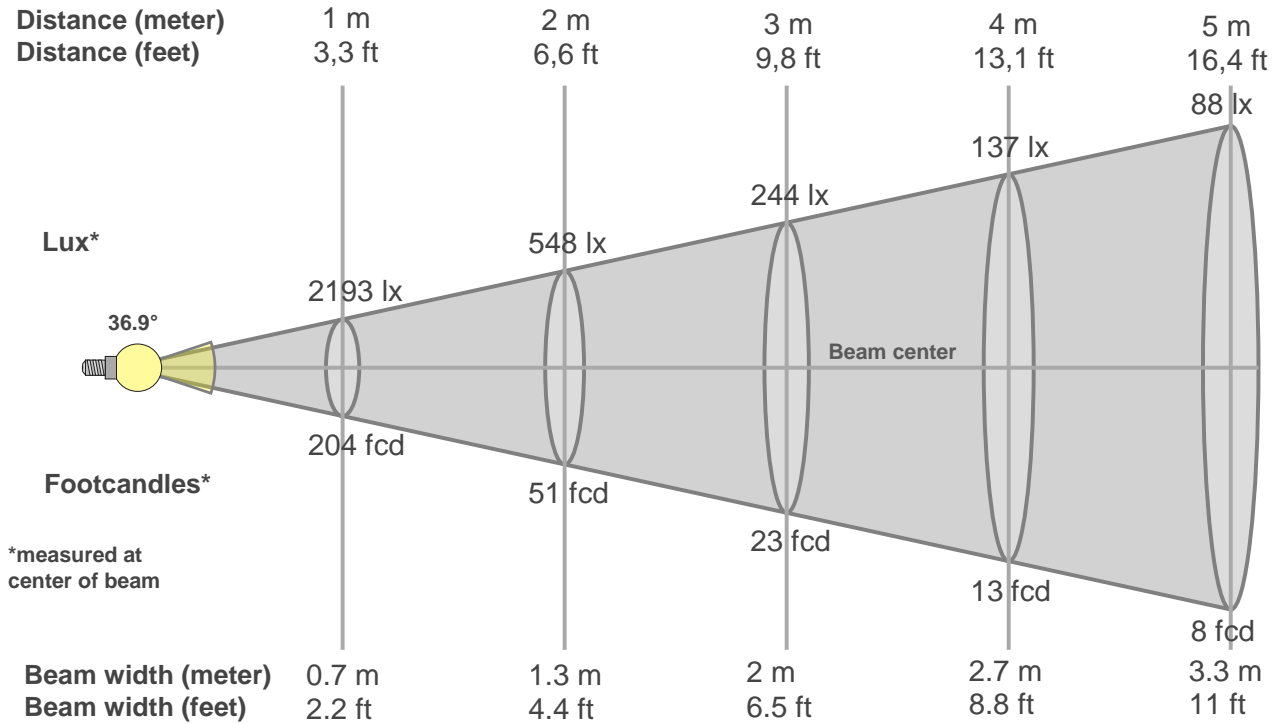
# TM30 details

**Rf 90.9**  
Fidelity index Rf

**Rg 100.2**  
Gammut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	90	-5%	-1%
2	92	-3%	3%
3	88	-1%	5%
4	93	0%	3%
5	93	0%	3%
6	94	3%	0%
7	93	-1%	-3%
8	97	0%	-1%
9	94	-2%	2%
10	89	-2%	5%
11	87	1%	8%
12	89	6%	2%
13	92	4%	-3%
14	87	5%	-8%
15	89	0%	-7%
16	85	-1%	-11%





### 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
2193lx	548lx	244lx	137lx	88lx	61lx	45lx	34lx	27lx	22lx	18lx	15lx	13lx	11lx	10lx	9lx	8lx	7lx	6lx	5lx
203.8fcd	50.9fcd	22.6fcd	12.7fcd	8.2fcd	5.7fcd	4.2fcd	3.2fcd	2.5fcd	2fcd	1.7fcd	1.4fcd	1.2fcd	1fcd	0.9fcd	0.8fcd	0.7fcd	0.6fcd	0.6fcd	0.5fcd

### 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°
2193	2187	2173	2147	2082	1967	1824	1679	1492	1180	821	537	415	315	240	175	122	71	39	22
100%	100%	99%	98%	95%	90%	83%	77%	68%	54%	37%	24%	19%	14%	11%	8%	6%	3%	2%	1%

### 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°
2193	2196	2187	2155	2081	1971	1830	1680	1499	1186	824	561	417	317	240	182	122	74	47	22
100%	100%	100%	98%	95%	90%	83%	77%	68%	54%	38%	26%	19%	14%	11%	8%	6%	3%	2%	1%

### 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°
2193	2187	2173	2147	2088	1978	1826	1678	1492	1184	815	538	393	296	219	164	108	59	36	19
100%	100%	99%	98%	95%	90%	83%	77%	68%	54%	37%	25%	18%	14%	10%	7%	5%	3%	2%	1%

### 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°
2193	2187	2168	2147	2098	1988	1836	1683	1496	1189	817	546	398	295	221	162	103	58	36	18
100%	100%	99%	98%	96%	91%	84%	77%	68%	54%	37%	25%	18%	13%	10%	7%	5%	3%	2%	1%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
36.9°	56.5°	69.5°	1.0%	1.0%



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