

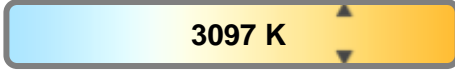
Light efficiency:



Light quality:



Color temperature:

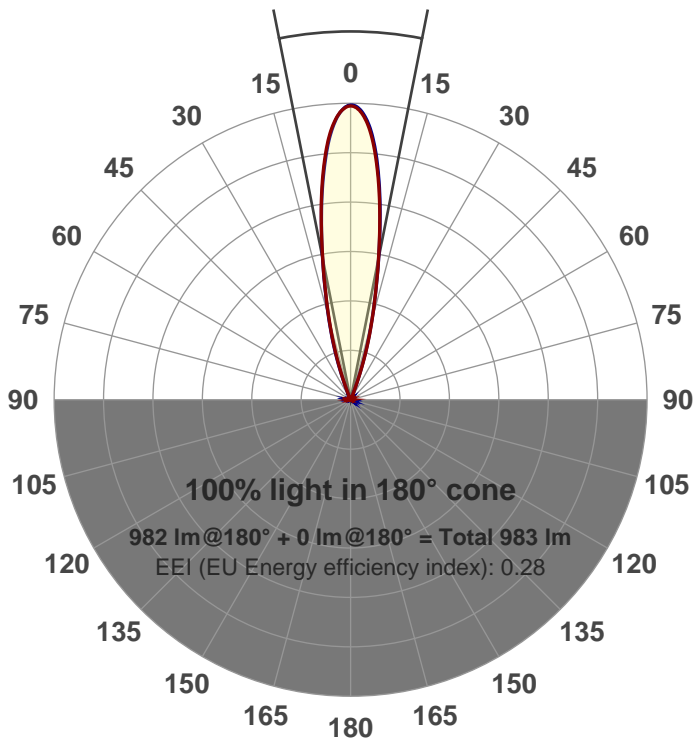


Output: 982 lm  
Peak: 5548 cd  
Power: 21.1 W  
PF: 0.99



Beam angle

22.4°



Product name:  
**GRF-CZ20-NF-SQ**  
Item number:  
**GRF-CZ20-NF-SQ**  
Date and time:  
**4/3/2017 1:08:31 PM**  
Description:

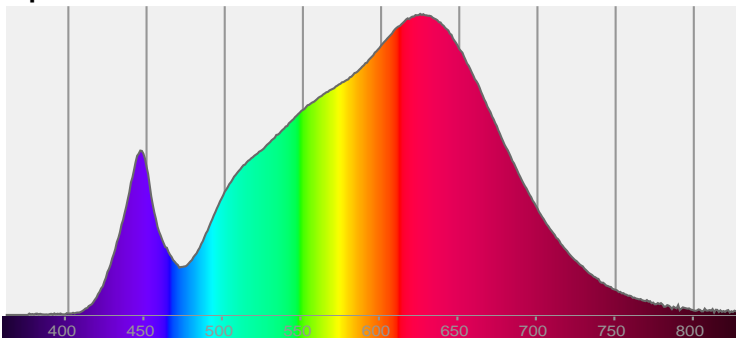
**LUM: 982**

**PPF: 15.9**

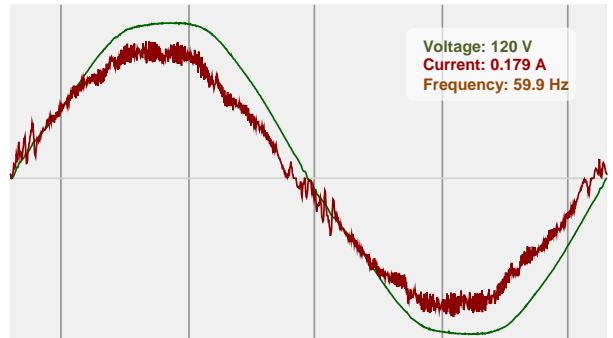


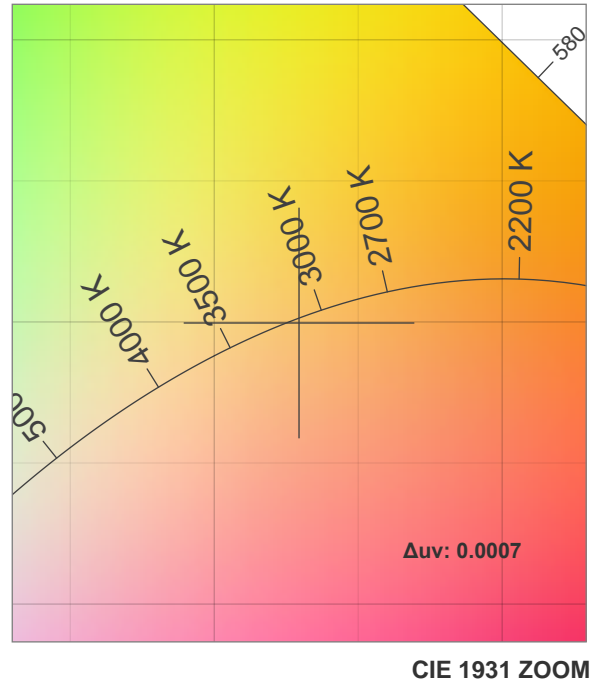
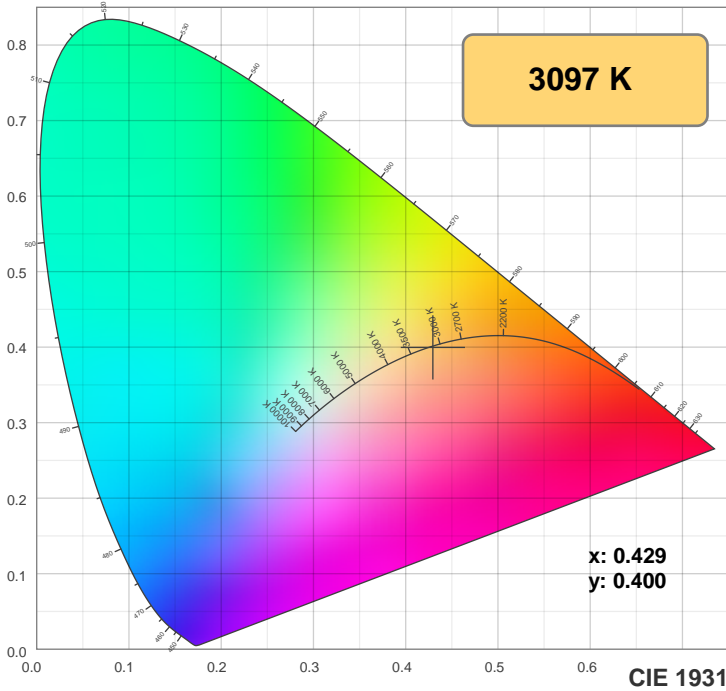
CIE 1931  
x: 0.429  
y: 0.400

Spectra



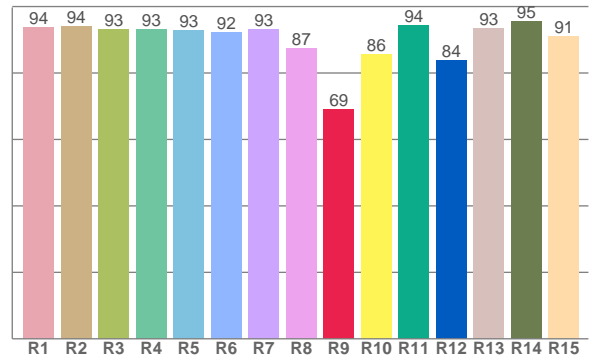
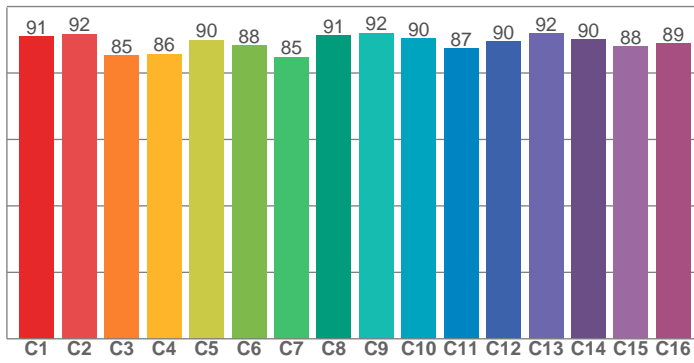
Power



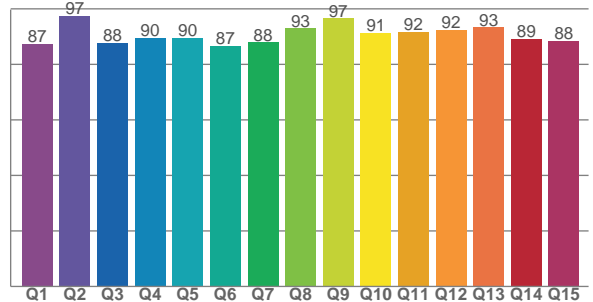


**TM30: 89.2**

**CRI: 92.5 (R1-R8)**



**CQS: 90.2**



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
93.6	94.1	93.2	93.2	92.9	92.3	93.2	87.3	69.1	85.5	94.3	83.9	93.4	95.5	91.0

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
90.9	91.7	85.2	85.8	89.9	88.2	84.8	91.2	92.0	90.4	87.3	89.5	91.8	90.1	88.0	89.0

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
87.4	97.3	87.8	89.6	89.6	86.5	87.9	92.9	96.5	91.4	91.8	92.4	93.3	89.2	88.3

## Color parameters

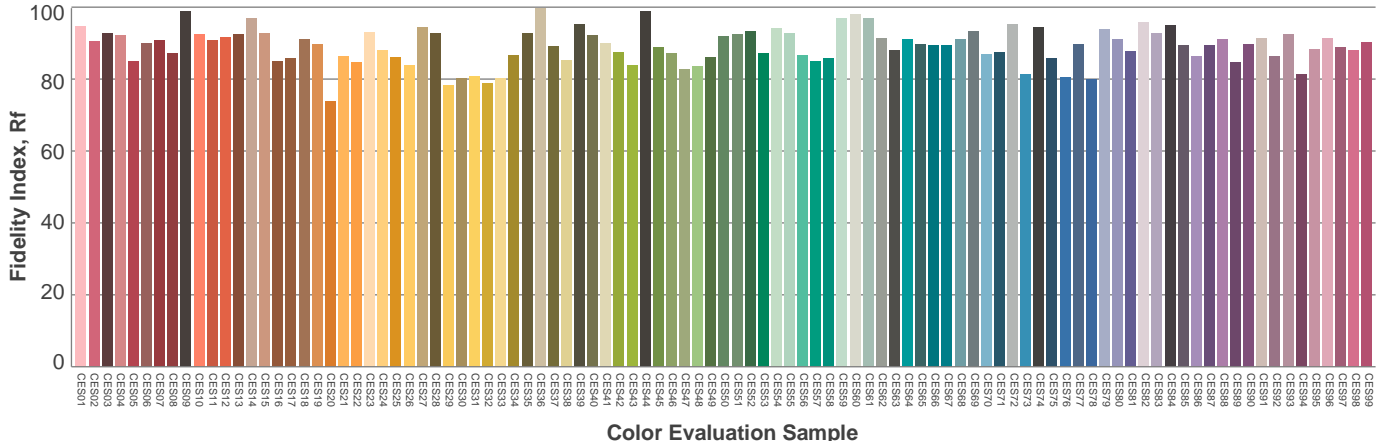
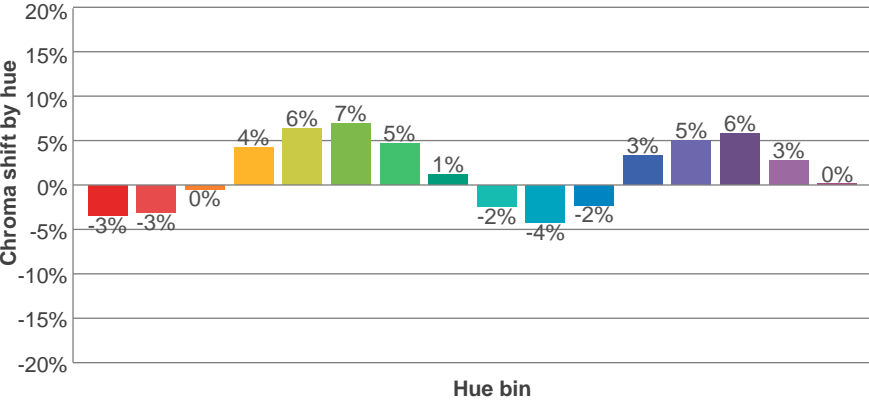
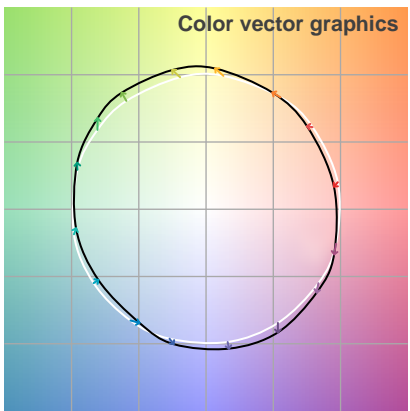
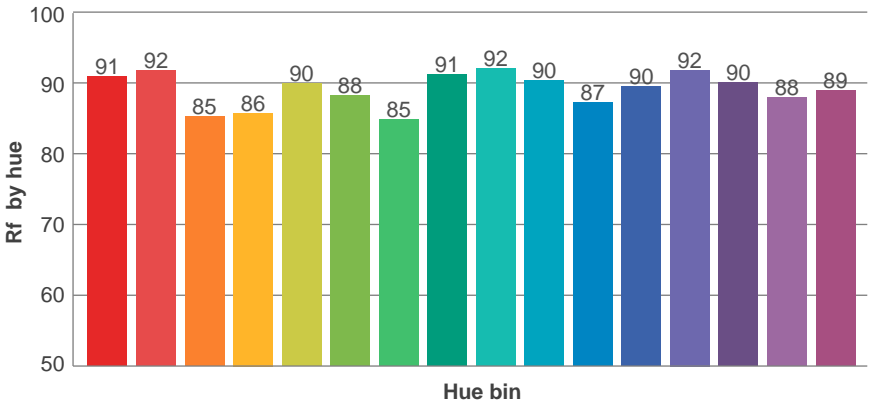
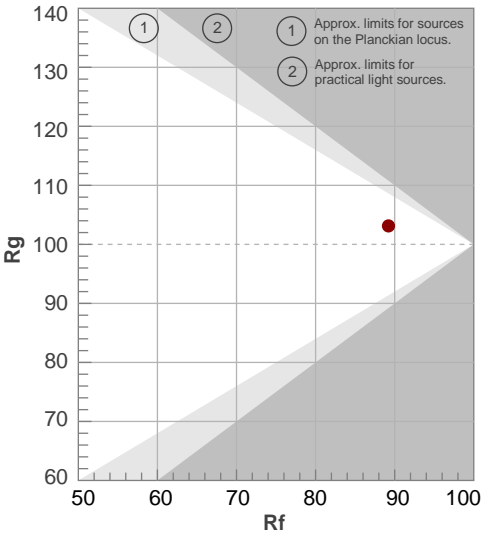
Color temperature	Color rendering index	Red component	Color fidelity	Color gamut	Color quality scale	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate	Color deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
3097 K	92.5	69.1	89.2	103.1	90.2	0.429	0.400	0.248	0.346	0.0007

# TM30 details

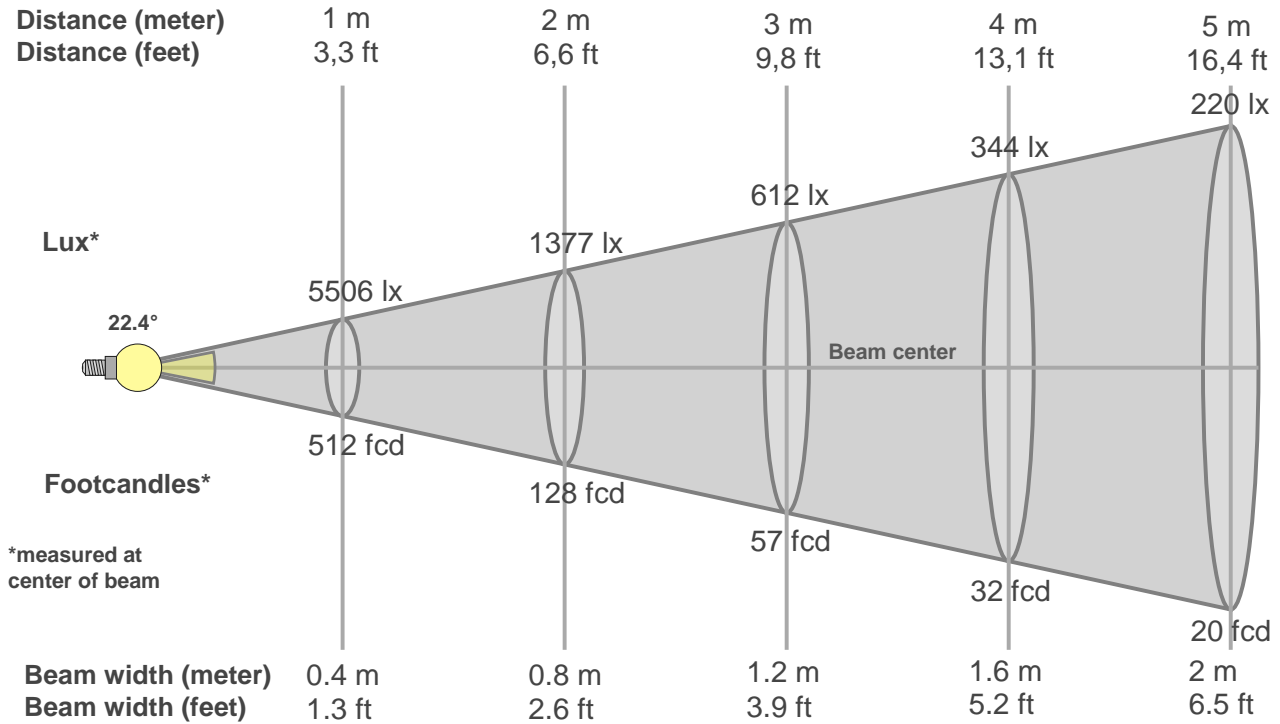
**Rf 89.2**  
Fidelity index Rf

**Rg 103.1**  
Gammut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	91	-3%	-3%
2	92	-3%	3%
3	85	0%	7%
4	86	4%	7%
5	90	6%	5%
6	88	7%	0%
7	85	5%	-7%
8	91	1%	-5%
9	92	-2%	-4%
10	90	-4%	0%
11	87	-2%	7%
12	90	3%	4%
13	92	5%	0%
14	90	6%	-4%
15	88	3%	-6%
16	89	0%	-8%



# Beam details



## 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
5506lx	1377lx	612lx	344lx	220lx	153lx	112lx	86lx	68lx	55lx	46lx	38lx	33lx	28lx	24lx	22lx	19lx	17lx	15lx	14lx
511.5fcd	127.9fcd	56.8fcd	32fcd	20.5fcd	14.2fcd	10.4fcd	8fcd	6.3fcd	5.1fcd	4.2fcd	3.6fcd	3fcd	2.6fcd	2.3fcd	2fcd	1.8fcd	1.6fcd	1.4fcd	1.3fcd

## 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°
5506	5385	5080	4562	3889	3127	2421	1809	1305	842	433	146	66	49	40	33	27	22	17	13
100%	98%	92%	83%	71%	57%	44%	33%	24%	15%	8%	3%	1%	1%	1%	1%	0%	0%	0%	0%

## 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°
5506	5380	5047	4507	3848	3117	2429	1831	1334	907	490	183	73	52	42	34	28	21	17	12
100%	98%	92%	82%	70%	57%	44%	33%	24%	16%	9%	3%	1%	1%	1%	1%	1%	0%	0%	0%

## 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°
5506	5382	5064	4527	3853	3114	2417	1814	1317	856	437	146	63	48	40	33	27	21	17	12
100%	98%	92%	82%	70%	57%	44%	33%	24%	16%	8%	3%	1%	1%	1%	1%	0%	0%	0%	0%

## 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°
5506	5413	5110	4588	3902	3133	2417	1795	1282	807	393	125	64	49	40	34	27	22	17	13
100%	98%	93%	83%	71%	57%	44%	33%	23%	15%	7%	2%	1%	1%	1%	1%	0%	0%	0%	0%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
22.4°	42.3°	48.9°	1.0%	1.0%



