

Royal Exclusiv

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Since 1986

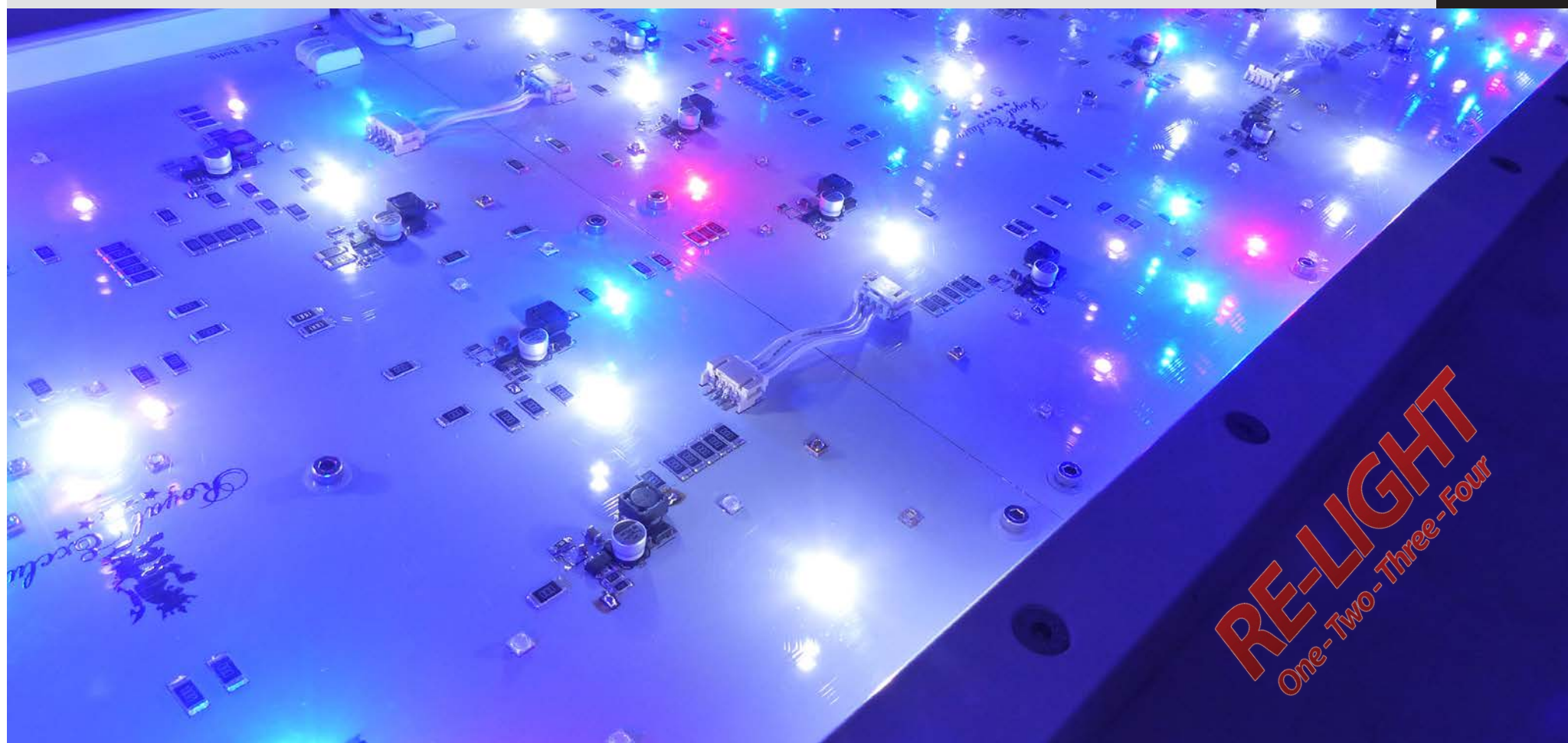


Data sheet II Royal Exclusiv® LED Lamp - RE-LIGHT - Results of Measurements

LED-Panel luminaire especially for seawater aquariums - modular -

v1.0

ENG



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LED-Panel luminaire especially for seawater aquariums - modular -

Royal Exclusiv® has had the LED lamp „measured“ in cooperation with the University of Giessen. Below you will find the results of the lamp in direct comparison to daylight and HQI.

Test 1

Sunrise RE LIGHT

Test 2

Midday sun RE LIGHT

Test 3

Direct sun in Gießen (center of Germany)

Test 4

HQI

Test 5

direct comparison of daylight / RE LIGHT

The black reference - Graph
shows the photoactive area in the diagrams.

Your Royal Exclusiv Team

The test results of our LED lamp RE LIGHT were measured by UNI Giessen. The University of Giessen specializes in photosynthesis of corals and agricultural and crop plants.

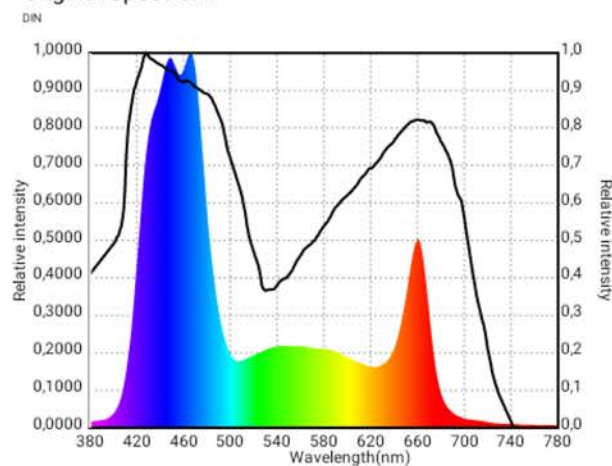


Sunrise of RE LIGHT

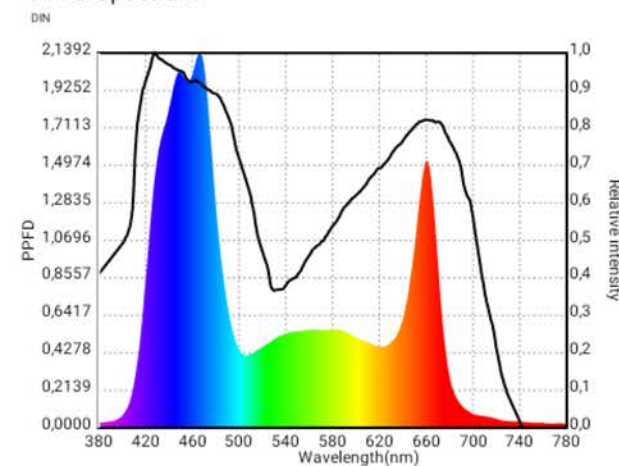
LED-Panel luminaire especially for seawater aquariums - modular -

Parameters	Value
PPFD (400 - 700 nm)	242,65 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD FR (701 - 780 nm)	3,2223 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD R (600 - 700 nm)	62,806 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD G (500 - 599 nm)	51,773 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD B (400 - 499 nm)	128,09 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD UV (380 - 399 nm)	0,7900 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD (400 - 700 nm)	184,80 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD (380 - 780 nm)	192,96 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD FR (701 - 780 nm)	0,5911 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD R (600 - 700 nm)	48,207 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD G (500 - 599 nm)	25,581 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD B (400 - 499 nm)	118,23 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD UV (380 - 399 nm)	0,3590 $\mu\text{mol}/\text{m}^2\text{s}$
R/B	0,49
R/FR	19,49
DLI	20,96 mol/m^2
Illuminance	9141 lux
λ_p	466 nm
λ_D	459 nm
CCT	0 K
CRI(Ra)	0

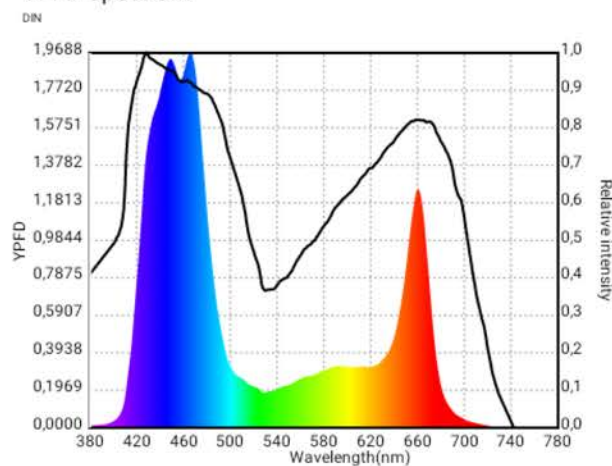
Original Spectrum



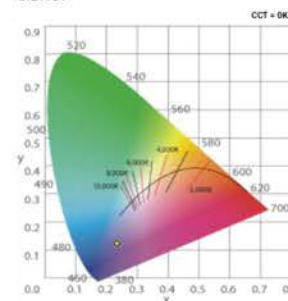
PPFD Spectrum



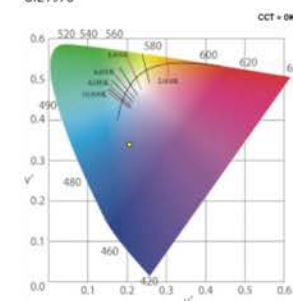
YPFD Spectrum



CIE1931



CIE1976



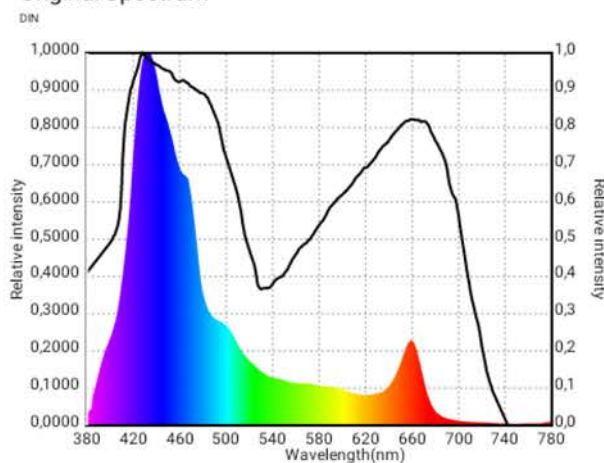


Midday sun of RE LIGHT

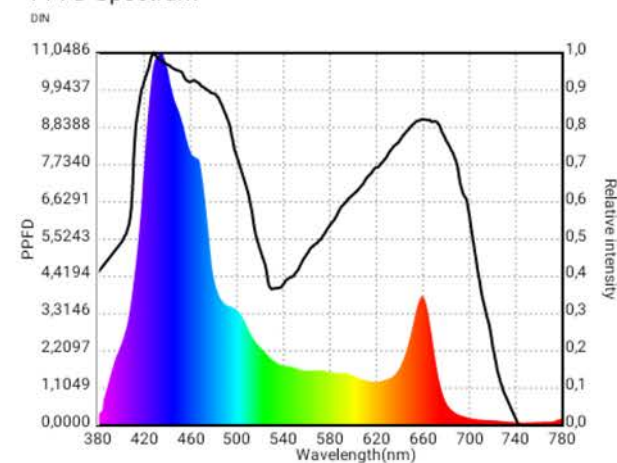
LED-Panel luminaire especially for seawater aquariums - modular -

Parameters	Value
PPFD (400 - 700 nm)	1045,8 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD FR (701 - 780 nm)	10,413 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD R (600 - 700 nm)	162,83 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD G (500 - 599 nm)	194,03 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD B (400 - 499 nm)	688,96 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD UV (380 - 399 nm)	26,341 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD (400 - 700 nm)	790,46 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD (380 - 780 nm)	864,11 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD FR (701 - 780 nm)	1,6240 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD R (600 - 700 nm)	124,48 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD G (500 - 599 nm)	98,720 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD B (400 - 499 nm)	627,12 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD UV (380 - 399 nm)	12,138 $\mu\text{mol}/\text{m}^2\text{s}$
R/B	0,24
R/FR	15,64
DLI	90,36 mol/m^2
Illuminance	32639 lux
λ_p	433 nm
λ_D	464 nm
CCT	0 K
CRI(Ra)	0

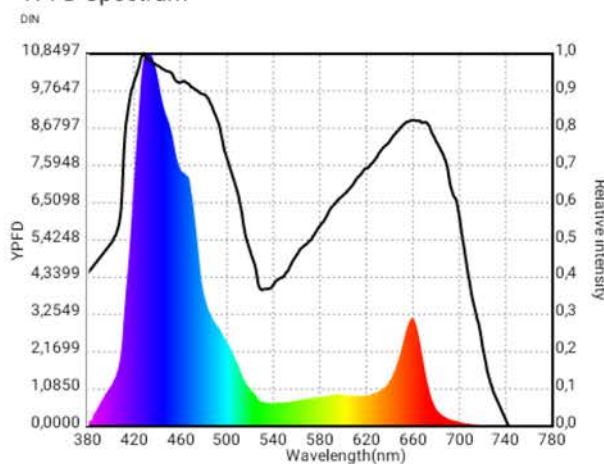
Original Spectrum



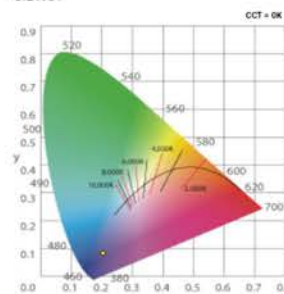
PPFD Spectrum



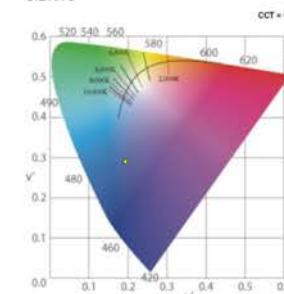
YPFD Spectrum



CIE1931



CIE1976

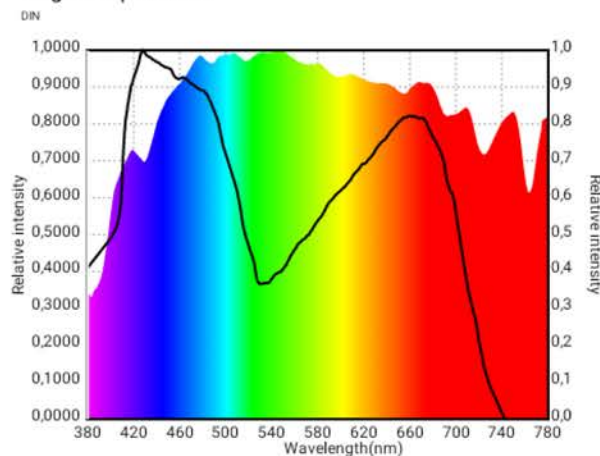




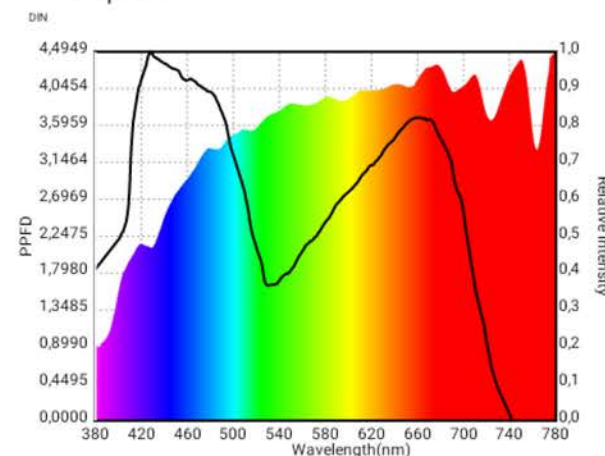
Dirrect sun in Gießen (2022/06/15 09:40:39) LED-Panel luminaire especially for seawater aquariums - modular -

Parameters	Value
PPFD (400 - 700 nm)	1055,8 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD FR (701 - 780 nm)	319,96 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD R (600 - 700 nm)	410,44 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD G (500 - 599 nm)	377,14 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD B (400 - 499 nm)	268,17 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD UV (380 - 399 nm)	21,618 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD (400 - 700 nm)	720,52 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD (380 - 780 nm)	772,31 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD FR (701 - 780 nm)	38,256 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD R (600 - 700 nm)	301,95 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD G (500 - 599 nm)	187,46 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD B (400 - 499 nm)	234,82 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD UV (380 - 399 nm)	9,7945 $\mu\text{mol}/\text{m}^2\text{s}$
R/B	1,53
R/FR	1,28
DLI	91,22 mol/m^2
Illuminance	59240 lux
λ_p	548 nm
λ_D	561 nm
CCT	5336 K
CRI(Ra)	100

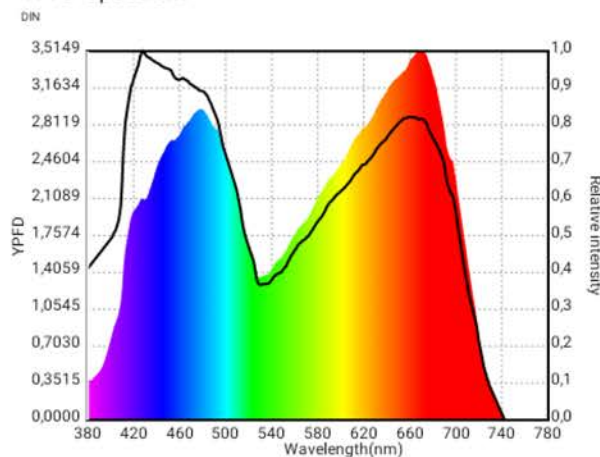
Original Spectrum



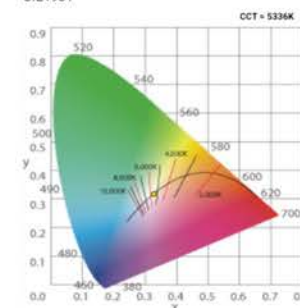
PPFD Spectrum



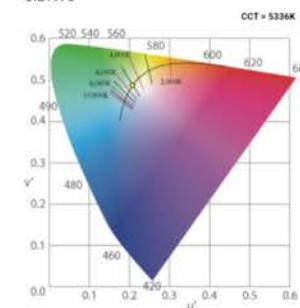
YPFD Spectrum



CIE1931



CIE1976



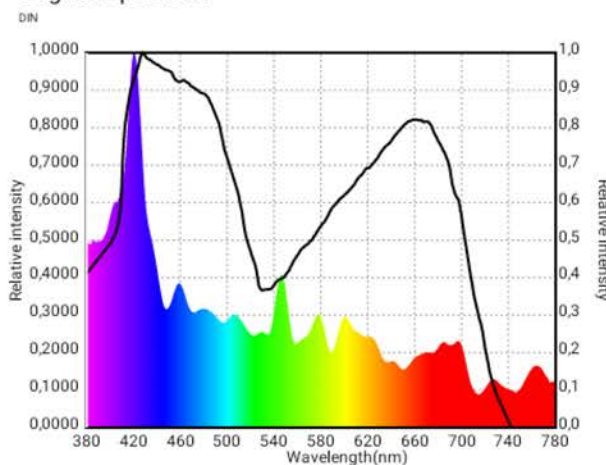


HQI (150 W / 10.000 K)

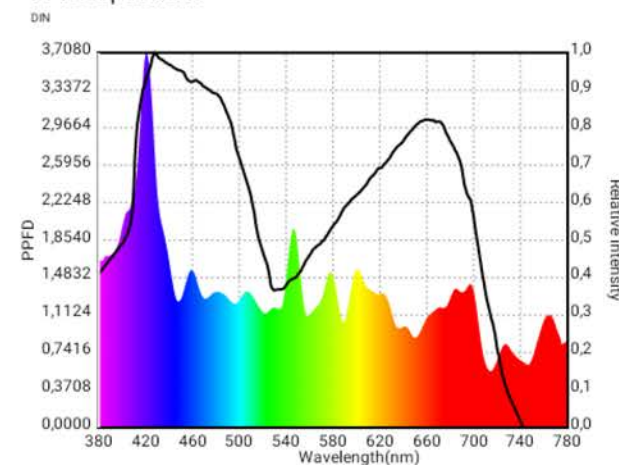
LED-Panel luminaire especially for seawater aquariums - modular -

Parameters	Value
PPFD (400 - 700 nm)	436,97 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD FR (701 - 780 nm)	65,520 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD R (600 - 700 nm)	121,11 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD G (500 - 599 nm)	132,32 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD B (400 - 499 nm)	183,52 $\mu\text{mol}/\text{m}^2\text{s}$
PPFD UV (380 - 399 nm)	34,605 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD (400 - 700 nm)	290,28 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD (380 - 780 nm)	336,10 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD FR (701 - 780 nm)	7,8229 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD R (600 - 700 nm)	87,949 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD G (500 - 599 nm)	65,569 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD B (400 - 499 nm)	159,11 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD UV (380 - 399 nm)	15,588 $\mu\text{mol}/\text{m}^2\text{s}$
R/B	0,66
R/FR	1,85
DLI	37,75 mol/m^2
Illuminance	20801 lux
λ_p	421 nm
λ_D	471 nm
CCT	10009 K
CRI(Ra)	89

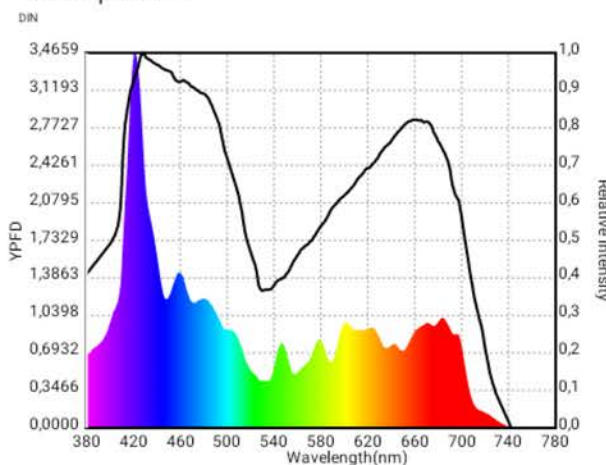
Original Spectrum



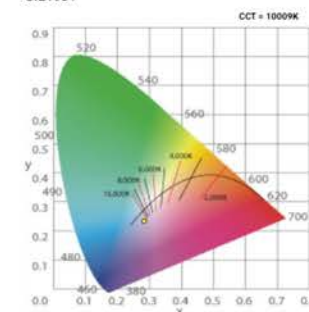
PPFD Spectrum



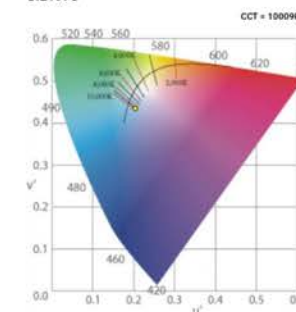
YPFD Spectrum



CIE1931



CIE1976



Daylight ./ RE LIGHT

LED-Panel luminaire especially for seawater aquariums - modular -

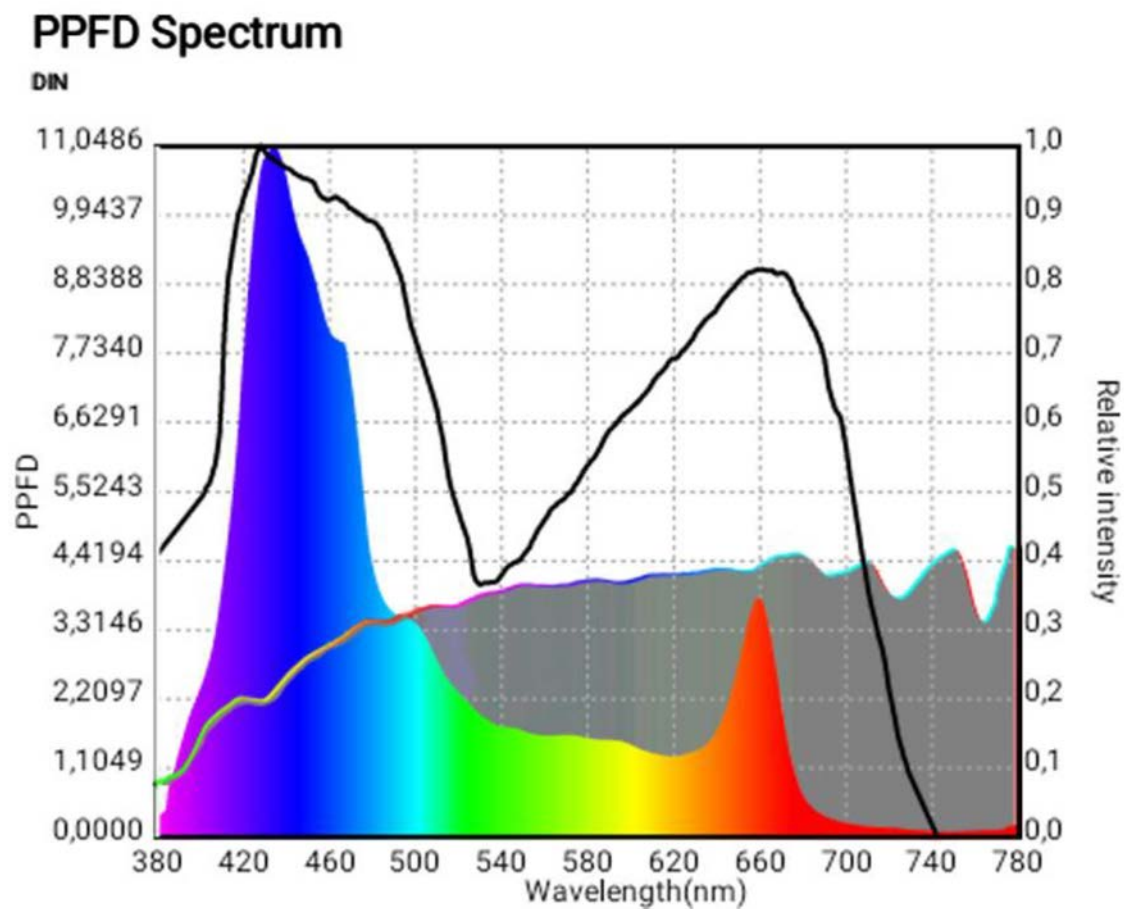


Image PPFD Spectrum

Daylight is grayed out here in comparison.
It is easy to see the much stronger weighting of the lamp in the blue spectral range, which fits very well into the photosynthetic absorption range.

Direct comparison of daylight RE LIGHT ./ Daylight

LED-Panel luminaire especially for seawater aquariums - modular -

LED Midday sun

Comparison / Evaluation

Daylight

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YPFD B (400 - 499 nm)	627,12 $\mu\text{mol}/\text{m}^2\text{s}$
YPFD UV (380 - 399 nm)	12,138 $\mu\text{mol}/\text{m}^2\text{s}$
R/B	0,24
R/FR	15,64
DLI	90,36 mol/m^2
Illuminance	32639 lux
λ_p	433 nm
λ_D	464 nm
CCT	0 K
CRI(Ra)	0

Comparable photosynthetically active radiation on the surface

Significantly higher proportion of blue

Slightly increased blue content

The photosynthetically active radiation weighted according to
YPFD exceeds sunlight in this comparison!

Since the human eye does not see as efficiently in the blue area,
the lamp appears to us darker than comparable sunlight.

For a meaningful color temperature, this is too blue...
Of course, the color reproduction is also not good due
to the blue weighting.

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