

ABOUT ZUMTOBEL

**SALES OFFICES IN 23 COUNTRIES &
COMMERCIAL AGENCIES IN MORE
THAN 50 COUNTRIES**

**VISIT [ZUMTOBEL.COM](https://www.zumtobel.com)
OR [WWW.Z.LIGHTING](https://www.z.lighting)**

STANDARDIZED and BESPOKE PRODUCTS
for **professional lighting** applications with
a high number of variants
completed by

- emergency lighting
- connectivity and systems
- digital and lighting services

Zumtobel Lighting Headquarter, Dornbirn, AT

OFFICE

26 products

RETAIL

23 products

INDUSTRY

13 products

ART AND CULTURE

10 products

EDUCATION

17 products

HEALTHCARE

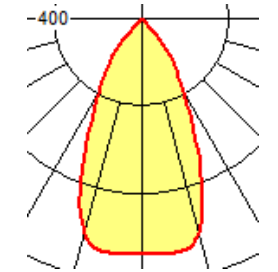
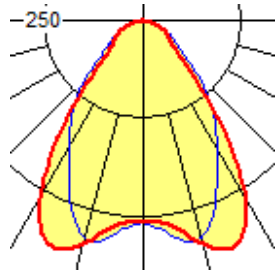
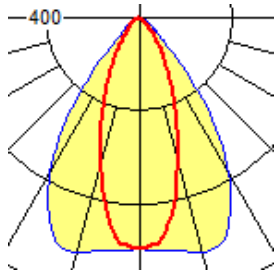
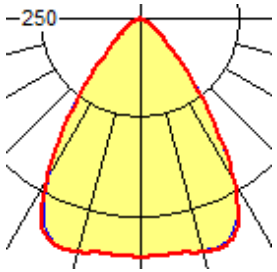
16 products

HOSPITALITY

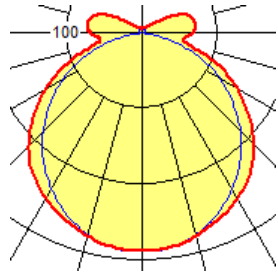
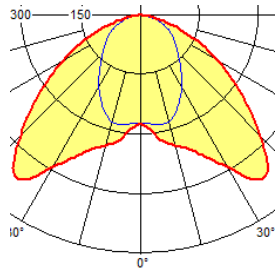
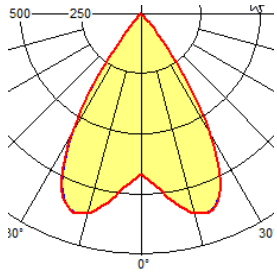
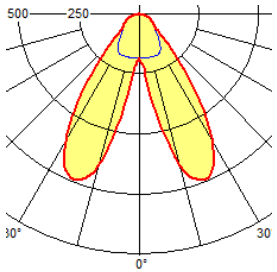
18 products

ONE OF OUR PHOTONIC CORE COMPETENCIES: OUR LIGHTING FIXTURES' OPTICAL SYSTEMS

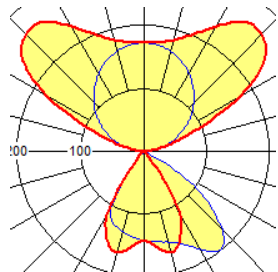
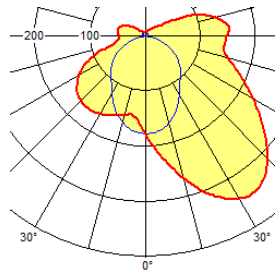
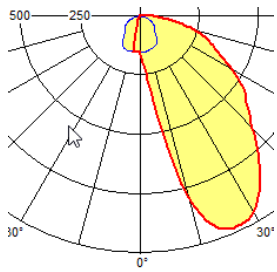
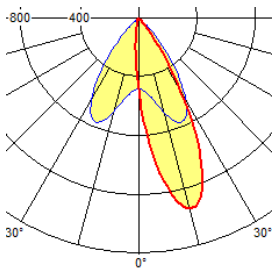
**OPTIMIZED
DISTRIBUTIONS**



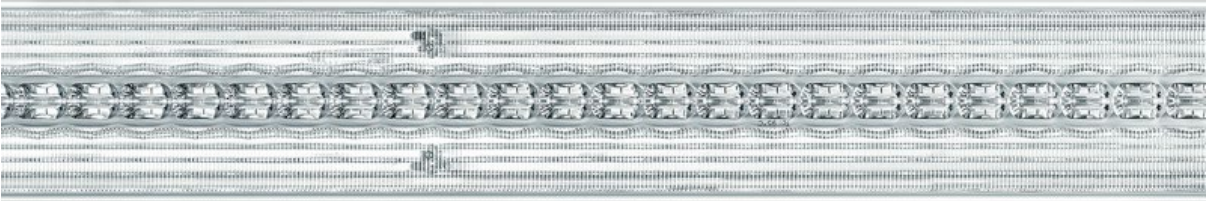
**WIDE
DISTRIBUTIONS**



**ASYMMETRIC
DISTRIBUTIONS**



OPTICAL SYSTEMS AND LED MODULE PLATFORMS DEVELOPED IN PARALLEL



ARTIFICIAL LIGHTING FOR ARTIFICIAL SPACES

**A NEW APPROACH TO HCL BY ZUMTOBEL:
BIONIC OPTIMIZED ARTIFICIAL LIGHT –
ADAPTED TO THE ENVIRONMENTAL REFL.**

The hypothesis: we are optimized on light from nature
in which we evolved for thousands of years.

Even **living in an artificial, built environment**
(with lighting energy efficient white surfaces)

we humans shall get the right light
so our brain and body can work optimal!

The light most of our photoreceptors receive inside our eyes,
so **the reflected light from our artificial environment**
should be more like being in the nature (=>bionic lighting)
especially on the non-visual effectiveness!

From:

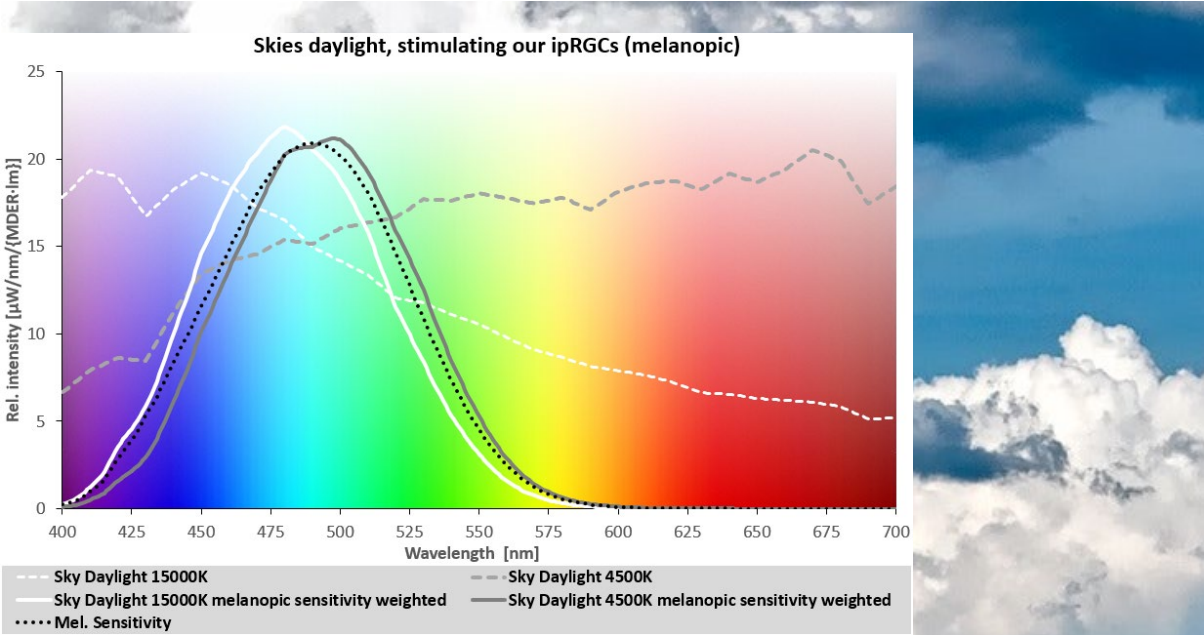
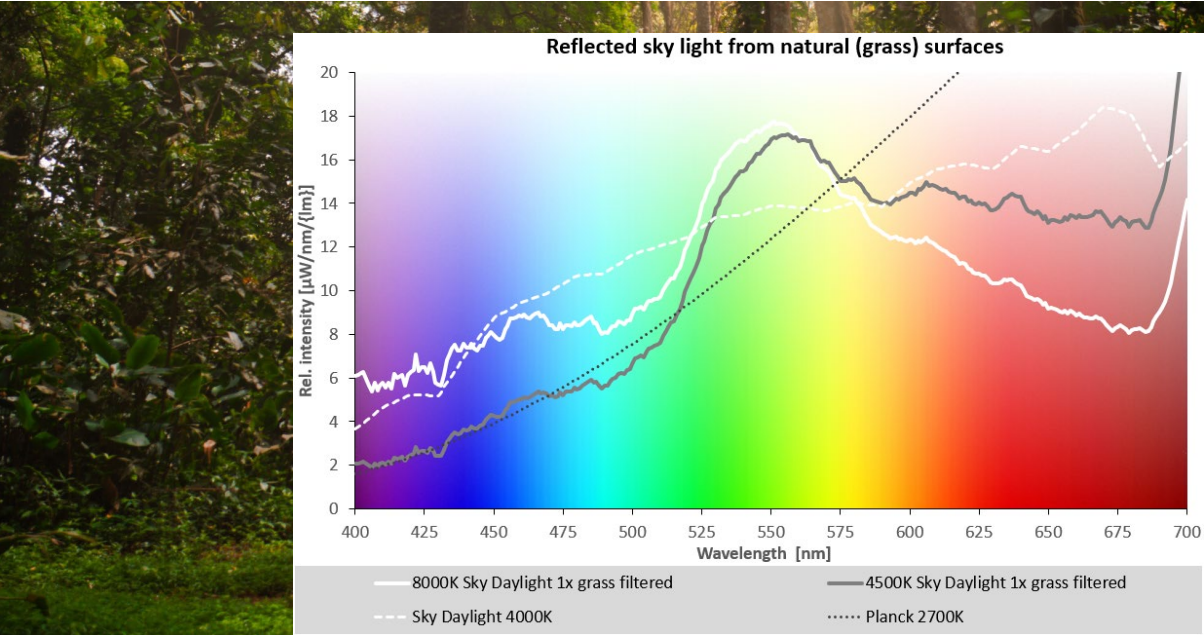
Max. color rendering „sunlight“ LED spectra

To:

BIONIC OPTIMIZED ARTIFICIAL LIGHT,
adapted to the environmental reflections



TO BE COMBINED BIONIC FEATURES OF NATURAL LIGHT FOR OUR RETINAL PHOTORECEPTORS



VISUALLY EFFECTIVE BALANCED CONTENTS

The reflected (green-yellowish) light from the vegetation

- covers smoothly the full visible range
- has a small but significant violet content
- has similarities to neutral white or warm white light

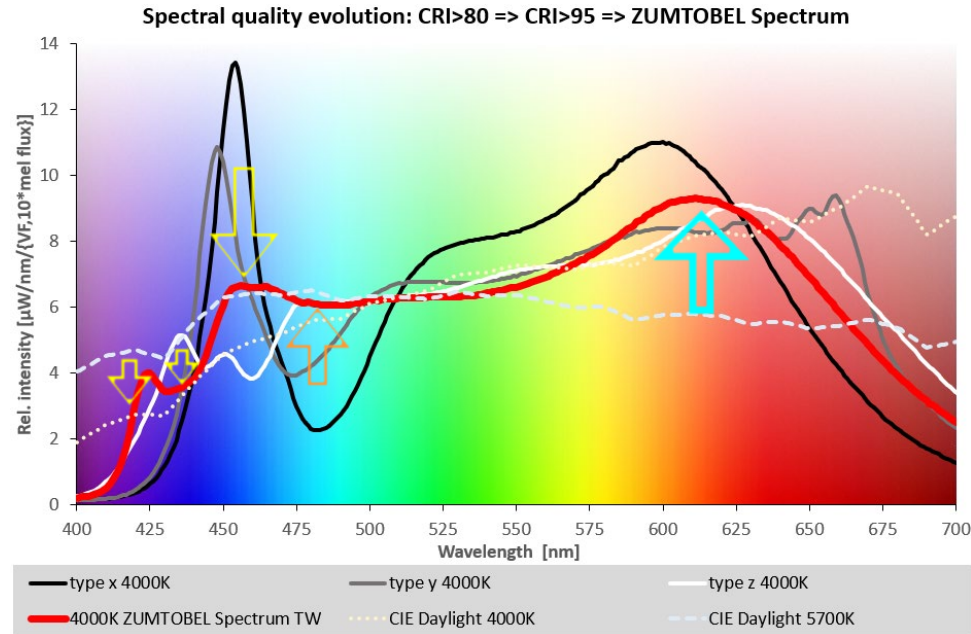


MELANOPsin STIMULATION FROM SKY VIEWS

Short views up to the sky or small parts of the sky within our field of view stimulate our melanopsin containing ipRGCs

The **very intense light from the sky** leads to persistant signaling from the mostly **azure wavelength contents** sensitive melanopsin

ARTIFICIAL SPECTRA HEADING TOWARDS BIONIC FEATURES

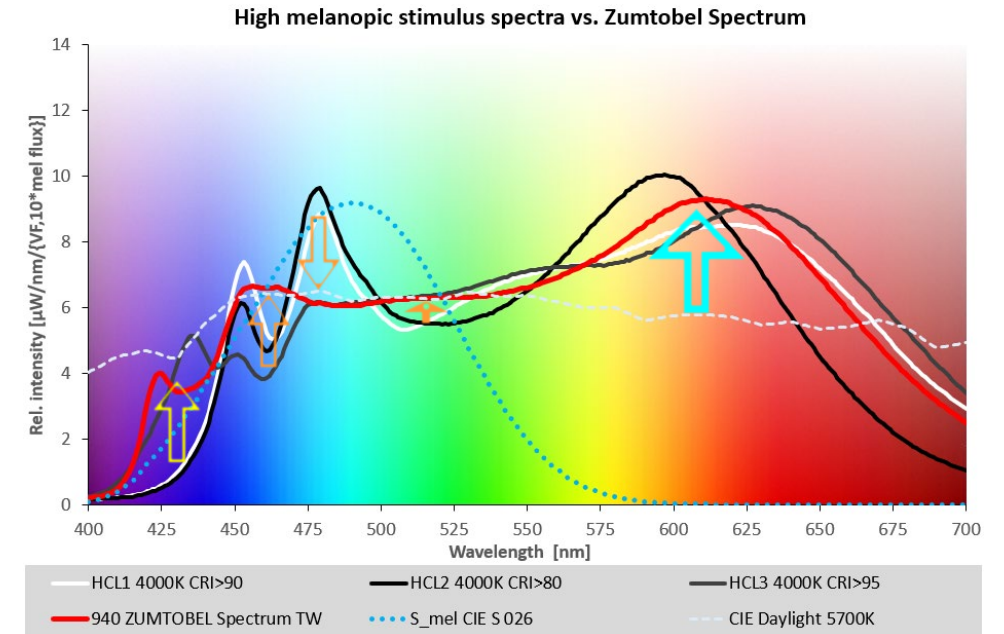


ZUMTOBEL SPECTRUM EVOLVED BEYOND CRI

LED spectra with high luminous efficacy do have a CRI>80 with less red, azure and no violet content.

With higher CRI, the spectra get closer to the sky or planckian spectrum of the same CCT (as defined by the CIE to be the visual reference).

By the new ZUMTOBEL Spectrum, the visual low CCT (e.g. 4000K) is within the non-visually effective range **more similar to higher CCT** daylight spectra - with high azure and low short blue/violet contents.



NEW GENERATION HIGH MELANOPIC SPECTRA

These new generation high melanopic spectra using **add. cyan chips** are also closer to cooler daylight than visually appearing but are lacking a potential but still hidden **non-visual effectiveness of violet contents** (which might be useful stimulating **neuropsin OPN5** and are absorbed strongly by our red blood cells)

AN EPIC LIGHT SOURCE

**THE ZUMTOBEL SPECTRUM
INVENTED BY ZUMTOBEL
CO-DEVELOPED WITH NICHIA**

EPIC question – what we are looking for:

Big scale injection-mouldable polymer materials and silicone types with similar thermal properties as polycarbonate but with optical features near to those of PMMA and methyl silicones

- High refractive index
- Less absorbtion & longer transmission rate lifetime down to at least 400nm
- Suitable for upcoming high radiant power appl.

