

Energizing Lighting Solution

Light for the Energetic Moments

SAMSUNG



Bright Light Affects Alertness

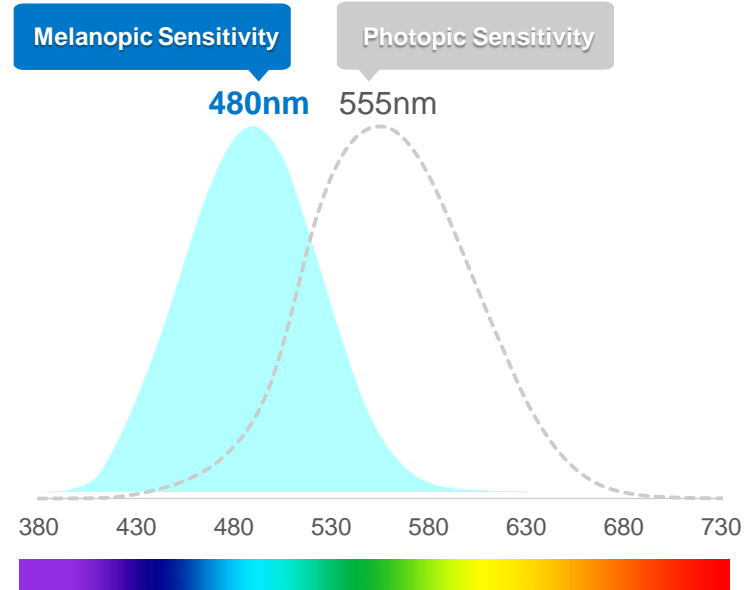
“Bright light affects alertness and performance rhythms during a 24-hour constant routine”



Daurat, A. (1993). Bright light affects alertness and performance rhythms during a 24-h constant routine. *Physiology & Behavior*. Volume 53, Issue 5

Short Wavelength Affects Alertness

“When exposed to short wavelength, we had significantly lower subjective sleepiness ratings and fewer attentional failures”



Key Considerations for Energizing Lighting

Stimulus

Energizing spectrum that effectively suppresses melatonin

Balance

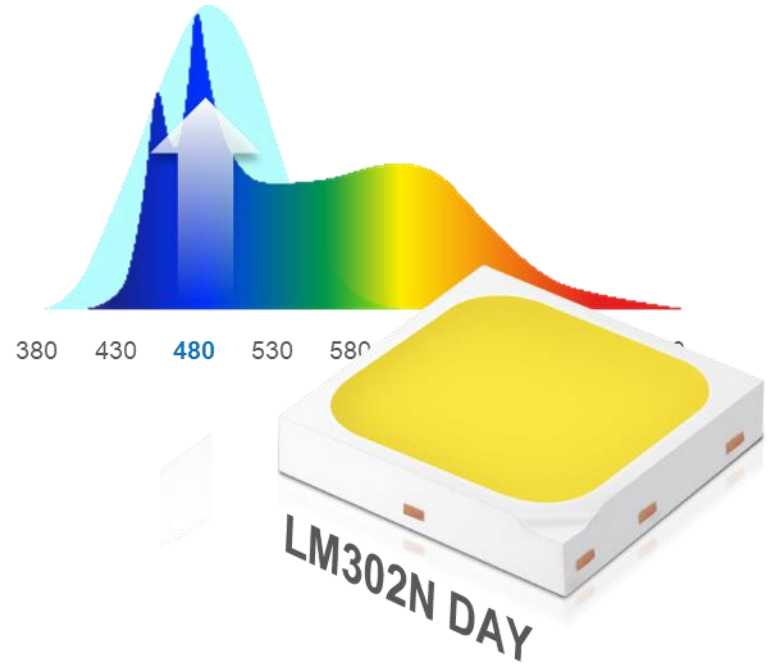
Minimizing loss of light efficacy while realizing energizing effect

Choice

Providing various CCT options from warm to cool white

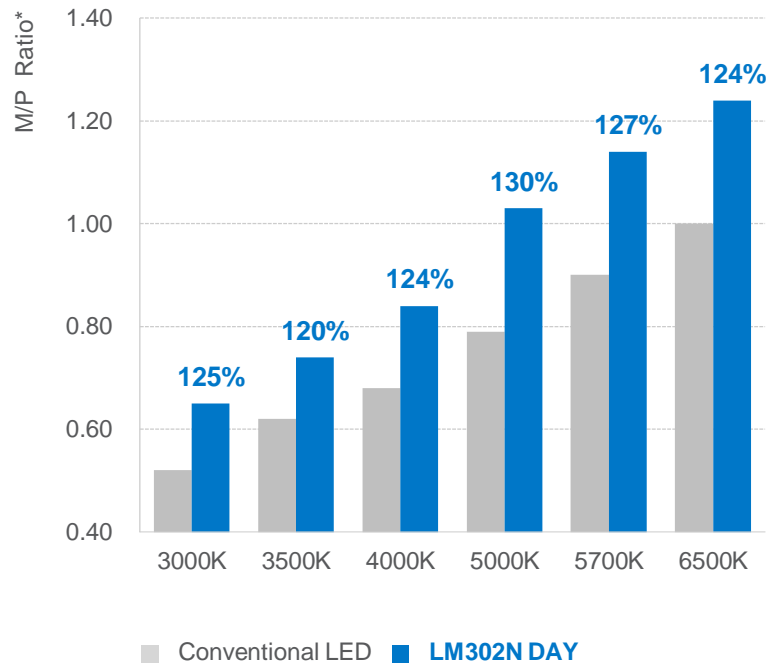
Fine-Tuned Spectrum for More Energetic Moments

Maximizing melatonin suppression with an increased intensity of 480nm wavelength by directly controlling cyan, enables users to be more energetic and improves concentration levels



LM302N DAY with High M/P Ratio

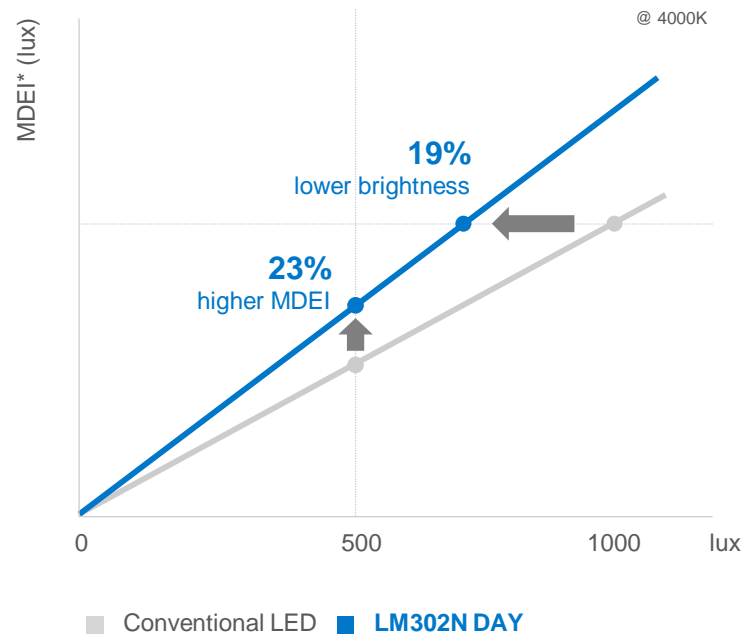
Samsung LM302N DAY
with higher M/P ratio enhances
melatonin suppression levels
compared to conventional LED lighting



* M/P Ratio: Melanopic/Photopic Ratio

LM302N DAY with High MDEI

The higher M/P ratio, the higher MDEI and more energizing effects even under the lower brightness



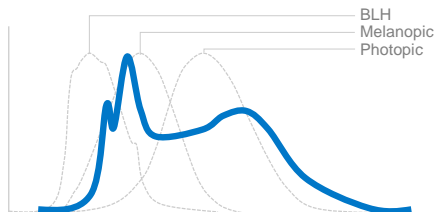
* MDEI: Melanopic Daylight Equivalent Illuminance

LM302N DAY

Controlling direct-cyan realizes well balanced energizing lighting solution

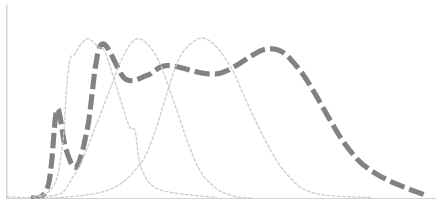
LM302N DAY

Blue Chip + Cyan Chip



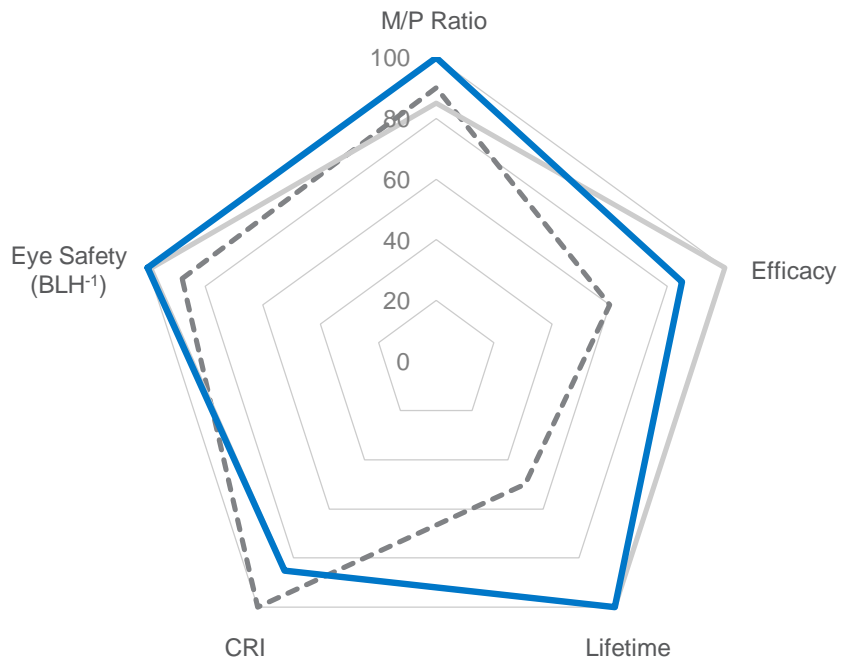
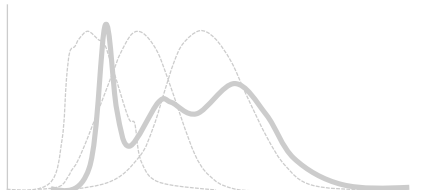
Company A

nUV Chip + Blue Phosphor



Company B

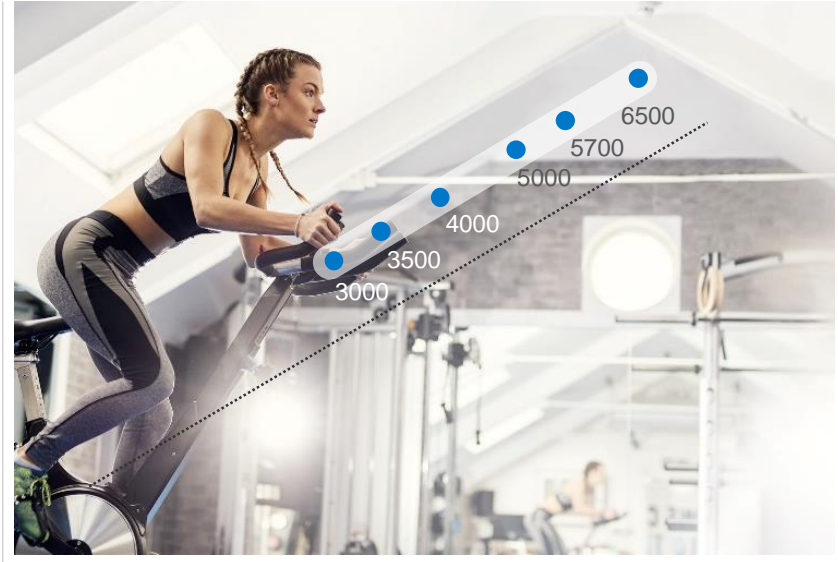
Blue Chip + Short Green Phosphor



The Right Light for the Right Place

Various CCT options from 3000K to 6500K helps to create the perfect atmosphere while providing an energizing effect

MDEI



CCT

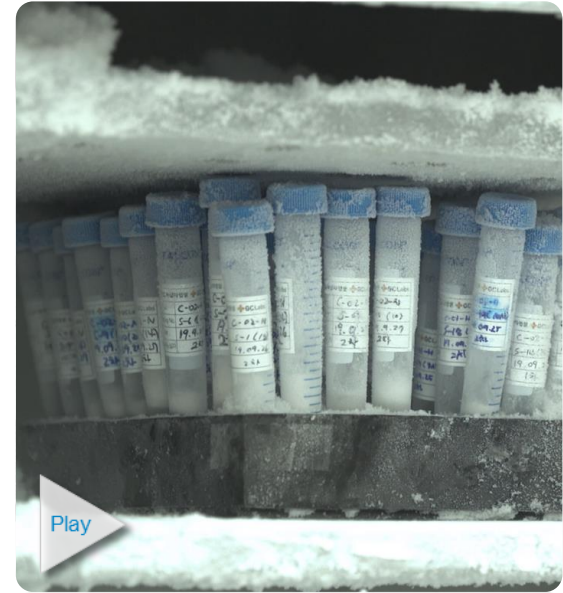
Clinical Test

Approved by IRB*

Melatonin level measured under LM302N DAY

- Subjects: 30 people aged from 20s to 50s
- Test Period: April 2019 – February 2020
- Conditions: 3 days and 2 nights under each lighting*
Daytime (5000K, 500 lux)

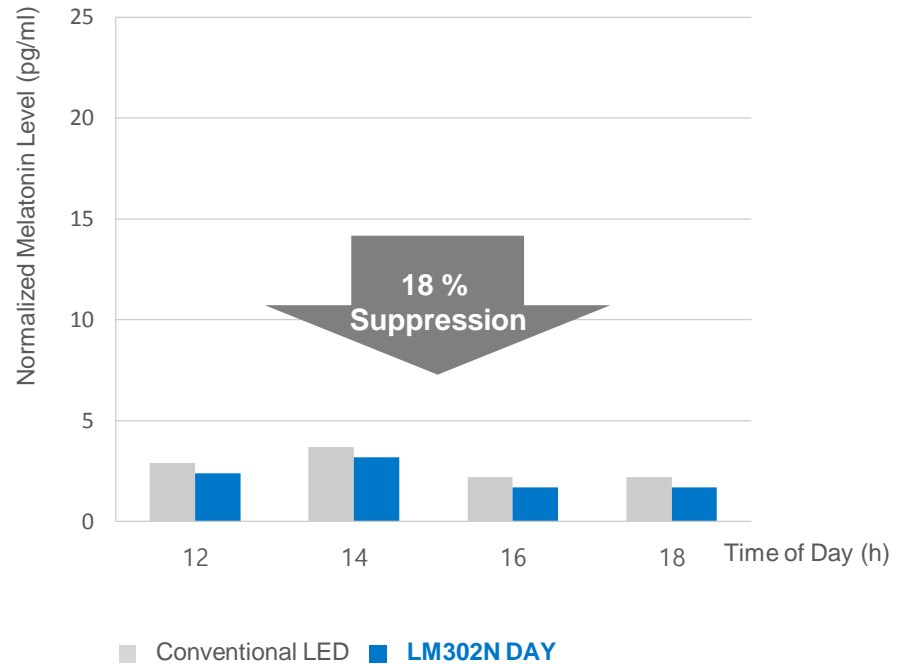
※ Performed under human-centric lighting and conventional lighting in random order



* IRB: Institutional Review Board

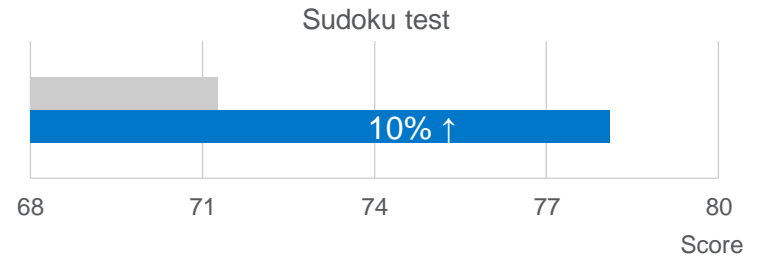
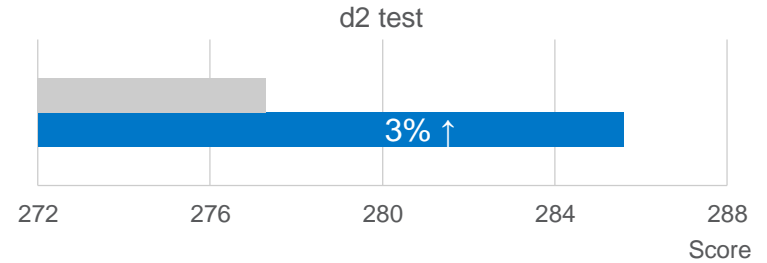
Clinical Test: Melatonin Level

By increasing intensity of 480nm wavelength, LM302N DAY enables **18% higher melatonin suppression** compared to conventional LED lighting



Clinical Test: Concentration Level

Higher melatonin suppression leads to higher concentration level



■ Conventional LED ■ LM302N DAY

The Right Light for the Energetic Moments

LM302N DAY

CCT (K)	Flux Bin	Flux Range (lm)	M/P Ratio
3000	S0	110 – 125	0.65
3500	S0	110 – 125	0.74
4000	S0	115 – 125	0.84
5000	S0	115 – 130	1.03
5700	S0	115 – 130	1.14
6500	S0	115 – 130	1.24



Thank you