Relaxing Lighting Solution

SAMSUNG

Light for the Relaxing Moments

Bright Light Disrupts Sleep

“After bright light exposure, sleepiness levels were reduced at 20:30 and 22:00 h.
Controlled exposure to light during evening hours increased alertness”

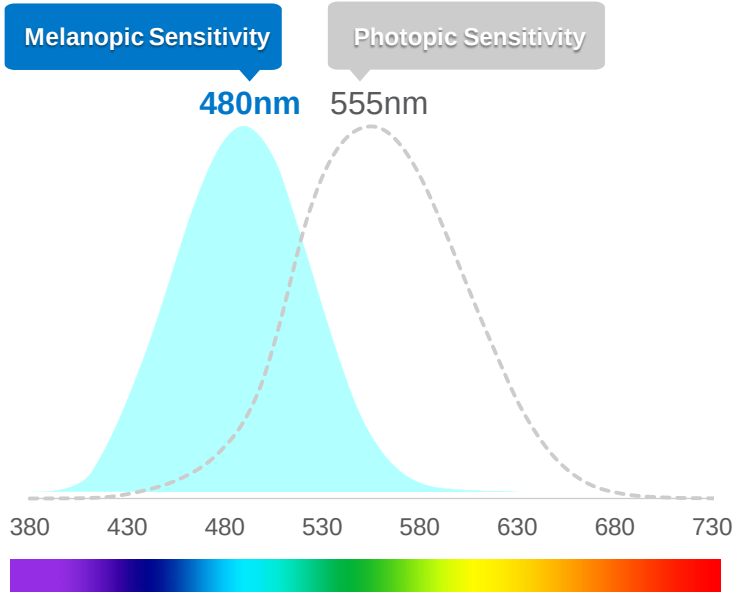
Teixeira, L. (2013). Exposure to bright light during evening class hours increases alertness among working college students. Sleep Medicine. Volume 14, Issue 1.

Need to be Comfortable Even Under Bright Light

There are cases that people want to relax while doing activities that need proper illumination level, like reading.

Short Wavelength Affects Alertness

“When exposed to short wavelength, we had significantly lower subjective sleepiness ratings”



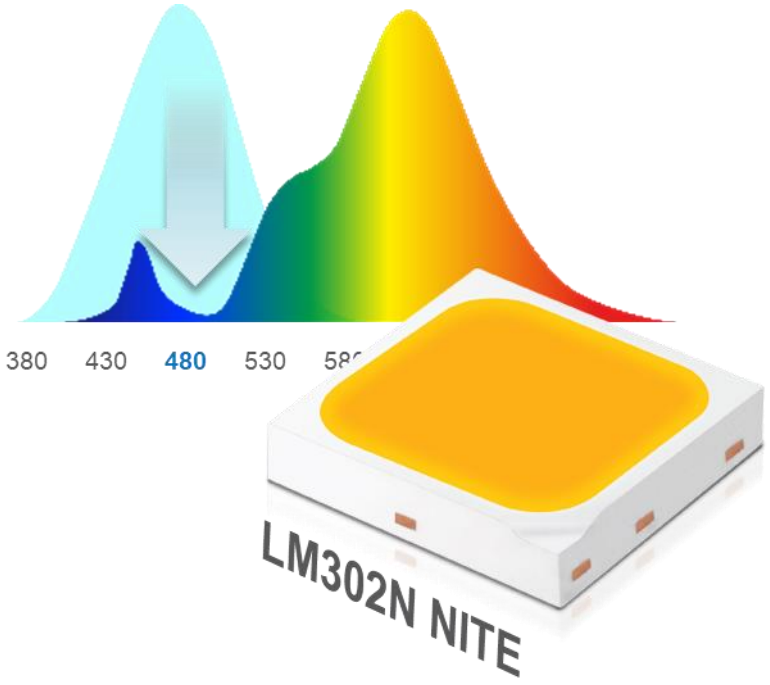
Lockely, S.W. (2006). Short-Wavelength Sensitivity for the Direct Effects of Light on Alertness, Vigilance, and the Waking Electroencephalogram in Humans. Sleep (American Academy of Sleep Medicine). 29(2):161-8

Key Considerations for Relaxing Lighting

Stimulus	Balance	Choice
Relaxing spectrum that effectively accelerates melatonin secretion	Minimizing loss of light efficacy while realizing relaxing effect	Providing various CCT options from warm to cool white

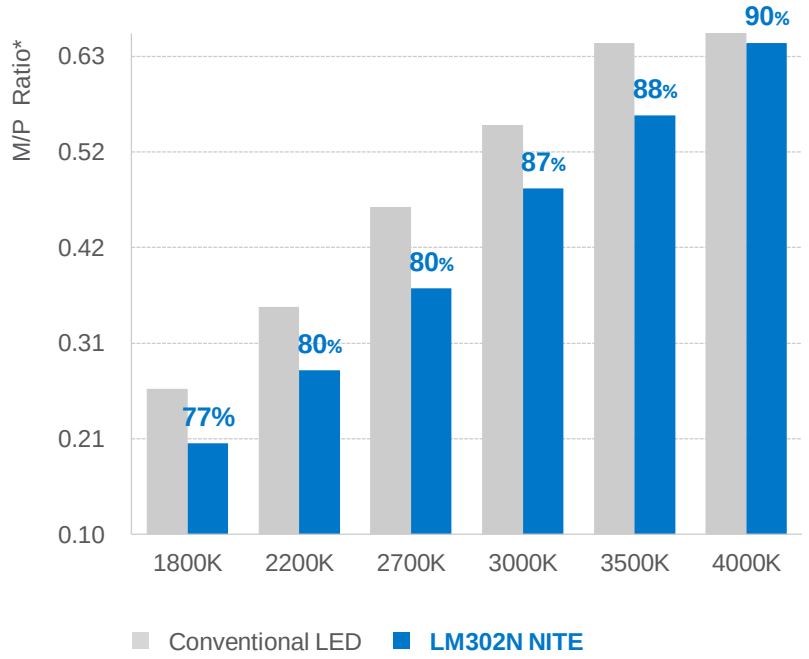
Fine-Tuned Spectrum for More Relaxing Moments

Maximizing melatonin secretion with a decreased intensity of 480nm wavelength by directly controlling cyan, enables users to be more relaxed and sleep better



LM302N NITE with Low M/P Ratio

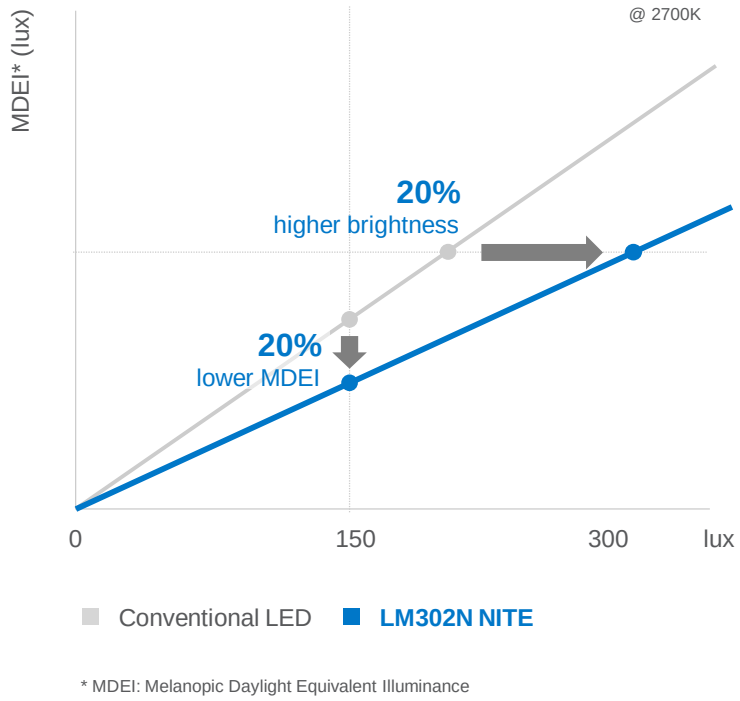
Samsung LM302N NITE
with low M/P ratio enhances
melatonin secretion levels compared
to conventional LED lighting



* M/P Ratio: Melanopic/Photopic Ratio

LM302N NITE with Low MDEI

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



* MDEI: Melanopic Daylight Equivalent Illuminance

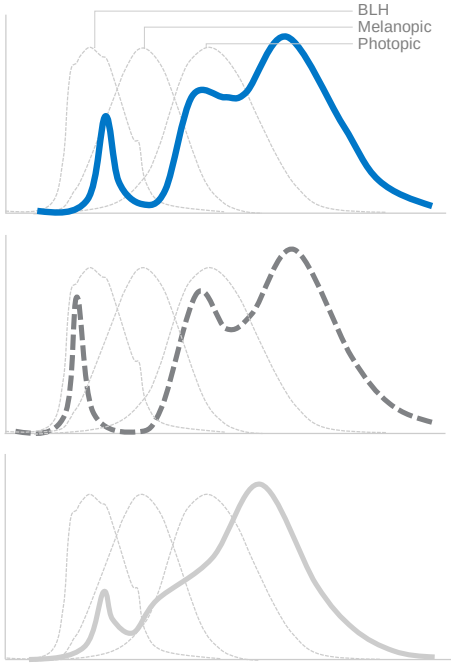
LM302N NITE

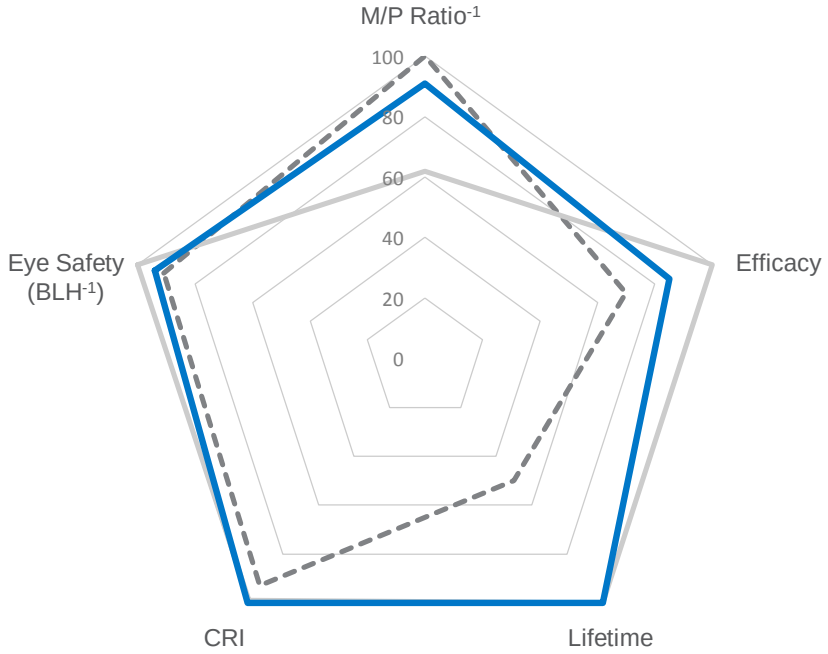
Controlling direct-cyan realizes well balanced relaxing lighting solution

LM302N NITE
Blue Chip + Narrow Green Phosphor
(Cyan gap)

Company C
nUV Chip + Narrow Green Phosphor
(Cyan gap)

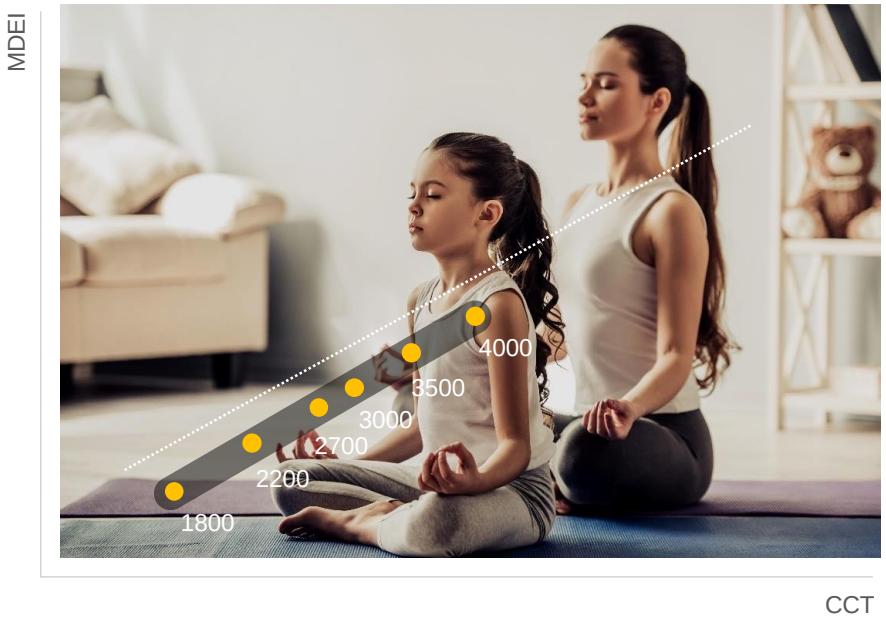
Conventional LED
Conventional Warm White





The Right Light for the Right Place

Various CCT options
from 1800K to 4000K helps
to create the perfect atmosphere
while providing a relaxing effect



Clinical Test

Approved by IRB*

Melatonin level measured under LM302N NITE

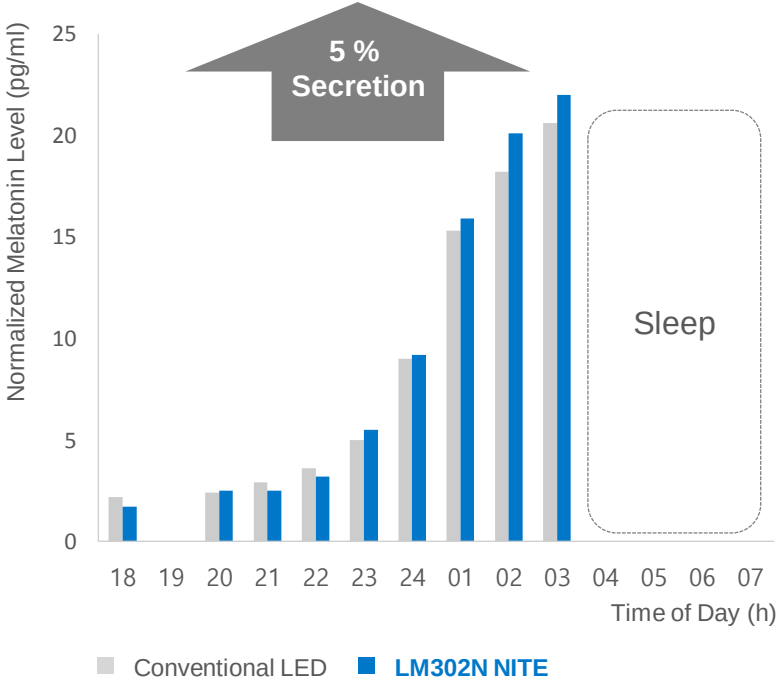
- Subjects: 30 people aged from 20s to 50s
- Test Period: April 2019 – February 2020
- Conditions: 3 days and 2 nights under each lighting*
  Nighttime (2200K, 190 lux)

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

* IRB: Institutional Review Board

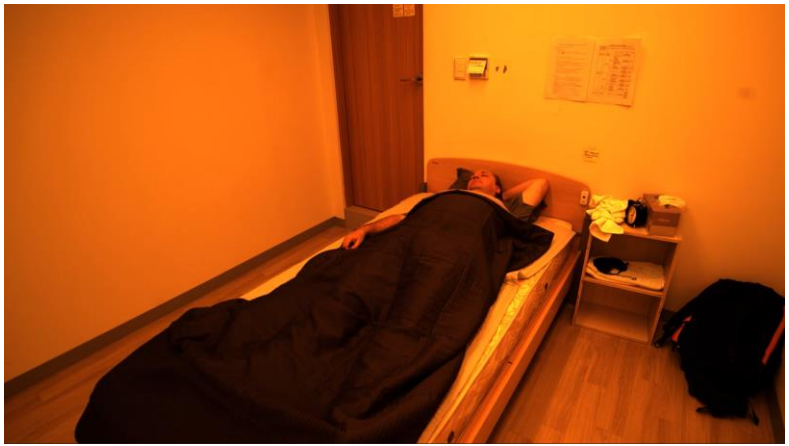
Clinical Test: Melatonin Level

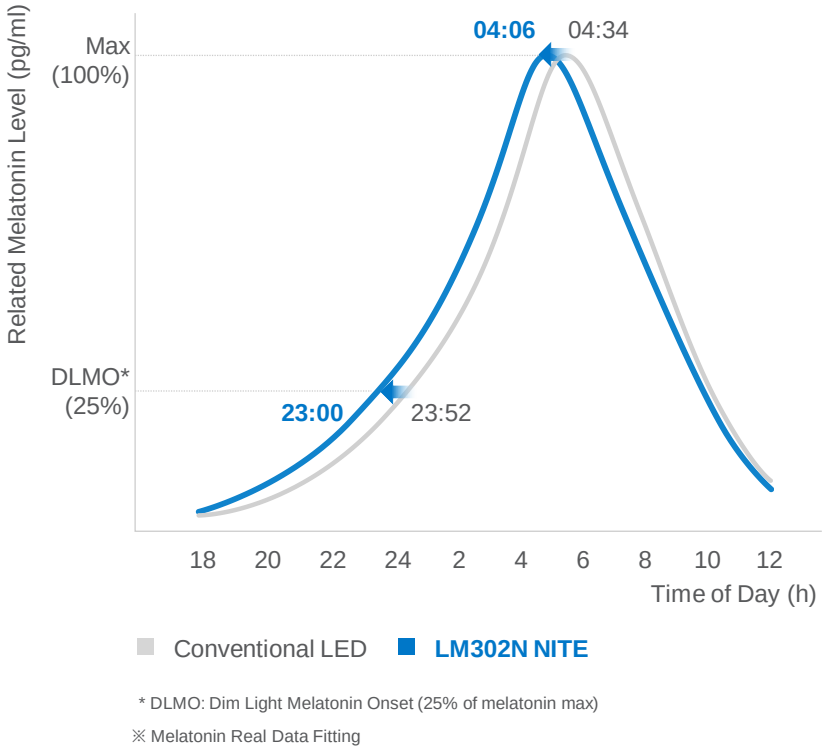
By lowering intensity of 480nm wavelength, LM302N NITE brings **5% higher melatonin secretion** compared to conventional LED lighting



Clinical Test: Sleep Level

Higher melatonin secretion leads to 52-min faster time to deep sleep





* DLMO: Dim Light Melatonin Onset (25% of melatonin max)

※ Melatonin Real Data Fitting

The Right Light for the Relaxing Moments

LM302N NITE

CCT (K)	Flux Bin	Flux Range (lm)	M/P Ratio
1800	S0	80 – 95	0.20
2200	S0	90 – 105	0.28
2700	S0	95 – 110	0.37
3000	S0	105 – 120	0.48
3500	S0	110 – 125	0.56
4000	S0	110 - 125	0.64

@ CRI80+, 150mA, 0.9W, 25℃

Dimensions: 3.0 x 3.0 x 0.65mm^3

SAMSUNG

Thank you