

PHILIPS

LED Modules

Fortimo LED Strip NA LV4

2ft 2200lm



Philips Fortimo LED strip module NA LV4 comes with a multitude of performance and product advancements that include higher efficacy, higher lumen output, increased lumen maintenance, additional mechanical designs and additional CCT and CRI options when compared to the previous generation (LV3).

With these advancements, the Fortimo LED strip module is the ideal choice for high-performance high-quality luminaires for direct and indirect lighting in offices, banks, schools, public buildings, supermarkets and other applications to replace high energy efficiency T5 fluorescent lighting.

Commercial Product Name	12NC
Fortimo LED Strip 2ft 2200lm 830 NA LV4	929000777013
Fortimo LED Strip 2ft 2200lm 835 NA LV4	929000777113
Fortimo LED Strip 2ft 2200lm 840 NA LV4	929000777213
Fortimo LED Strip 2ft 2200lm 850 NA LV4	929000777313
Fortimo LED Strip 2ft 2200lm 927 NA LV4	929000777413
Fortimo LED Strip 2ft 2200lm 930 NA LV4	929000777513
Fortimo LED Strip 2ft 2200lm 935 NA LV4	929000777613
Fortimo LED Strip 2ft 2200lm 940 NA LV4	929000777713

Fortimo LED strip 2ft 2200lm NA LV4

Features

- High flux density of up to 1500 lm per foot
- Narrow width of only 20mm
- High energy efficacy of up to 181 lm/W
- High lumen maintenance (TM21) of L90 36,000 hours
- CRI 80 and CRI90 color options and 3 SDCM color consistency

Benefits

- High energy efficacy and long lifetime¹ provide optimized total cost of ownership
- Slim width and 4ft length provide excellent design-in options and assembly
- High quality and warm color temperatures of light enables new application areas like hospitality
- 5-year limited system warranty with Philips Advance Xitanium LED drivers²
- Specifications enable DLC Premium category³

Applications

- Retail
- Hospitality
- Office

Optical Characteristics – Table per CCT

Fortimo LED Strip 2ft 2200lm 830 NA LV4

Parameter	Min	Typ	Unit
Luminous Flux		2070	Lm
Lumen Efficiency		170	Lm/W
Forward Current		360	mA
Correlated Color Temperature (CCT) Target		3000	K
CRI	80		-
Radiation Angle		120	deg

Parameter at I_{life}	Typ	Unit
Luminous Flux	2821	Lm
Lumen Efficiency	149	Lm/W
Forward Current	540	mA

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$.

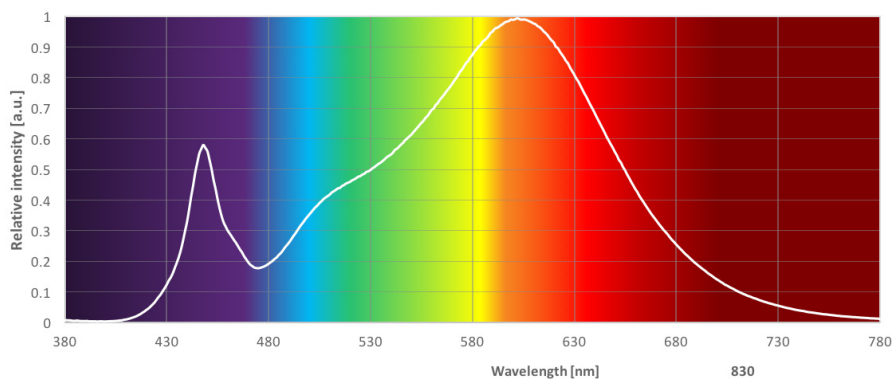
Max performance values at I_{life} .

Color consistency of 3 SDCM, averaged over the module.

Tolerance for flux data is $\pm 7.5\%$.

Tolerance for efficacy data is $\pm 10\%$.

Philips maintains a tester tolerance of $\pm 5\%$ on flux, ± 0.005 on color, ± 1.5 on CRI, $\pm 3\%$ on Vf, $\pm 3.3\%$ on power, $\pm 6\%$ on efficiency.



1. Average rated life is based on engineering data testing and probability analysis. The hours are at the B50, L70 point – 50,000 hours life with 70% lumen maintenance at T_c point.
2. View limited warranty at <http://www.usa.lighting.philips.com/support/support/warranty> for details and restrictions.
3. Fortimo LED strip NA LV4 is not a DesignLights Consortium™ (DLC) qualified product. It is an OEM component that meets certain performance specifications that are geared toward meeting DLC Standard Tier (v4.0) in a fully assembled fixture. The customer is liable for proper design, manufacturing, testing and qualification according to DLC requirements.

Fortimo LED strip 2ft 2200lm NA LV4

Optical Characteristics – Table per CCT

Fortimo LED Strip 2ft 2200lm 835 NA LV4

Parameter	Min	Typ	Unit
Luminous Flux		2130	Lm
Lumen Efficiency		175	Lm/W
Forward Current		360	mA
Correlated Color Temperature (CCT) Target		3500	K
CRI	80		-
Radiation Angle		120	deg

Parameter at I_{life}	Typ	Unit
Luminous Flux	2911	Lm
Lumen Efficiency	153	Lm/W
Forward Current	540	mA

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$.

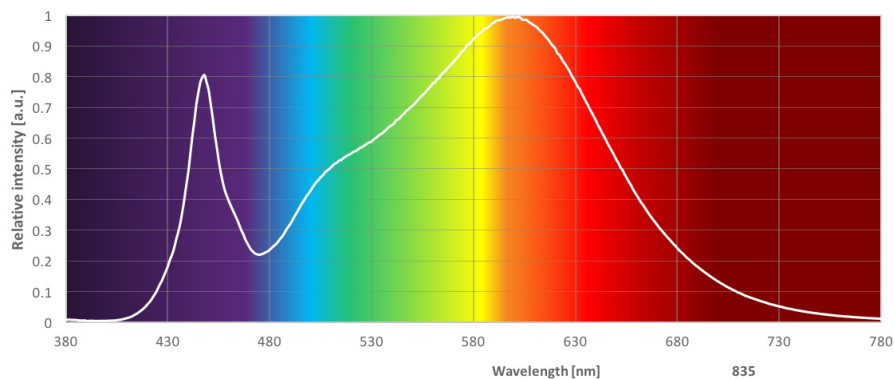
Max performance values at I_{life} .

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Fortimo LED strip 2ft 2200lm NA LV4

Optical Characteristics – Table per CCT

Fortimo LED Strip 2ft 2200lm 840 NA LV4

Parameter	Min	Typ	Unit
Luminous Flux		2170	Lm
Lumen Efficiency		179	Lm/W
Forward Current		360	mA
Correlated Color Temperature (CCT) Target		4000	K
CRI	80		-
Radiation Angle		120	deg

Parameter at I_{life}	Typ	Unit
Luminous Flux	1484	Lm
Lumen Efficiency	156	Lm/W
Forward Current	270	mA

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$.

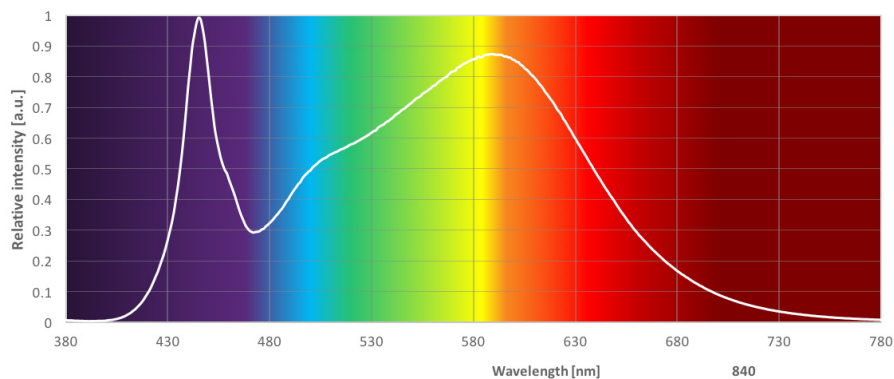
Max performance values at I_{life} .

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Fortimo LED strip 2ft 2200lm NA LV4

Optical Characteristics – Table per CCT

Fortimo LED Strip 2ft 2200lm 850 NA LV4

Parameter	Min	Typ	Unit
Luminous Flux		2200	Lm
Lumen Efficiency		181	Lm/W
Forward Current		360	mA
Correlated Color Temperature (CCT) Target		5000	K
CRI	80		-
Radiation Angle		120	deg

Parameter at I_{life}	Typ	Unit
Luminous Flux	3000	Lm
Lumen Efficiency	158	Lm/W
Forward Current	540	mA

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$.

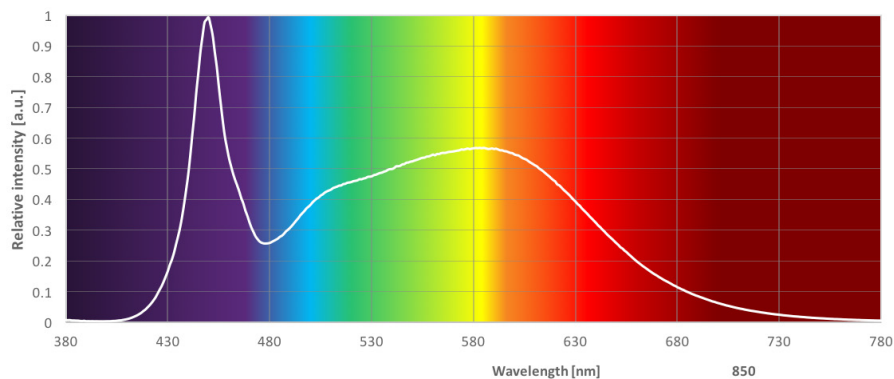
Max performance values at I_{life} .

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Fortimo LED strip 2ft 2200lm NA LV4

Optical Characteristics – Table per CCT

Fortimo LED Strip 2ft 2200lm 927 NA LV4

Parameter	Min	Typ	Unit
Luminous Flux		1620	Lm
Lumen Efficiency		133	Lm/W
Forward Current		360	mA
Correlated Color Temperature (CCT) Target		2700	K
CRI	90		-
Radiation Angle		120	deg

Parameter at I_{life}	Typ	Unit
Luminous Flux	2217	Lm
Lumen Efficiency	117	Lm/W
Forward Current	540	mA

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$.

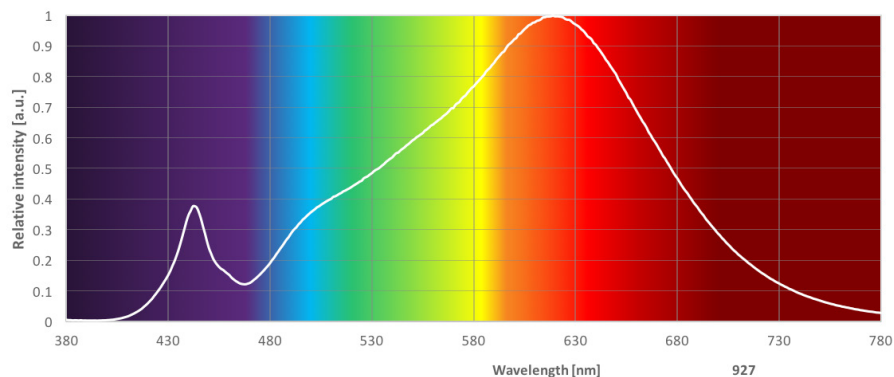
Max performance values at I_{life} .

Color consistency of 3 SDCM, averaged over the module.

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Fortimo LED strip 2ft 2200lm NA LV4

Optical Characteristics – Table per CCT

Fortimo LED Strip 2ft 2200lm 930 NA LV4

Parameter	Min	Typ	Unit
Luminous Flux		1720	Lm
Lumen Efficiency		141	Lm/W
Forward Current		360	mA
Correlated Color Temperature (CCT) Target		3000	K
CRI	90		-
Radiation Angle		120	deg

Parameter at I_{life}	Typ	Unit
Luminous Flux	2343	Lm
Lumen Efficiency	123	Lm/W
Forward Current	540	mA

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$.

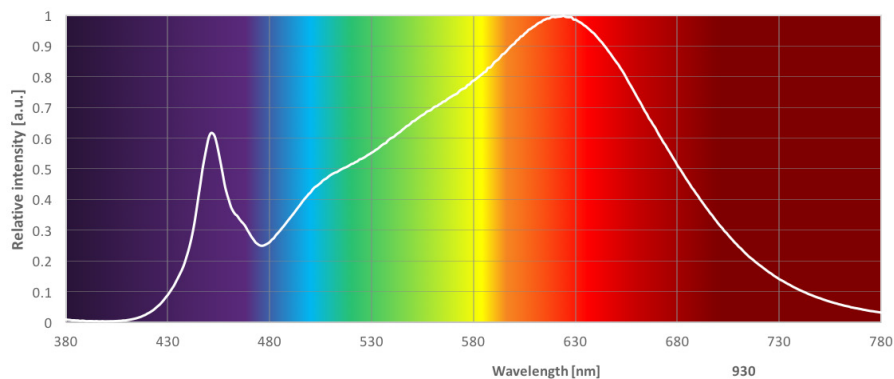
Max performance values at I_{life} .

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Fortimo LED strip 2ft 2200lm NA LV4

Optical Characteristics – Table per CCT

Fortimo LED Strip 2ft 2200lm 935 NA LV4

Parameter	Min	Typ	Unit
Luminous Flux		1770	Lm
Lumen Efficiency		145	Lm/W
Forward Current		360	mA
Correlated Color Temperature (CCT) Target		3500	K
CRI	90		-
Radiation Angle		120	deg

Parameter at I_{life}	Typ	Unit
Luminous Flux	2414	Lm
Lumen Efficiency	127	Lm/W
Forward Current	540	mA

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$.

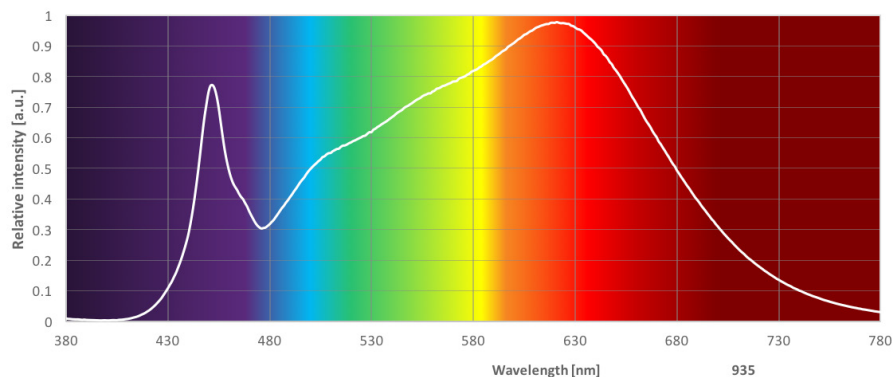
Max performance values at I_{life} .

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Fortimo LED strip 2ft 2200lm NA LV4

Optical Characteristics – Table per CCT

Fortimo LED Strip 2ft 2200lm 940 NA LV4

Parameter	Min	Typ	Unit
Luminous Flux		1800	Lm
Lumen Efficiency		148	Lm/W
Forward Current		360	mA
Correlated Color Temperature (CCT) Target		4000	K
CRI	90		-
Radiation Angle		120	deg

Parameter at I_{life}	Typ	Unit
Luminous Flux	2464	Lm
Lumen Efficiency	130	Lm/W
Forward Current	540	mA

Nominal temperature for performance specification: $T_c = 45^\circ\text{C}$.

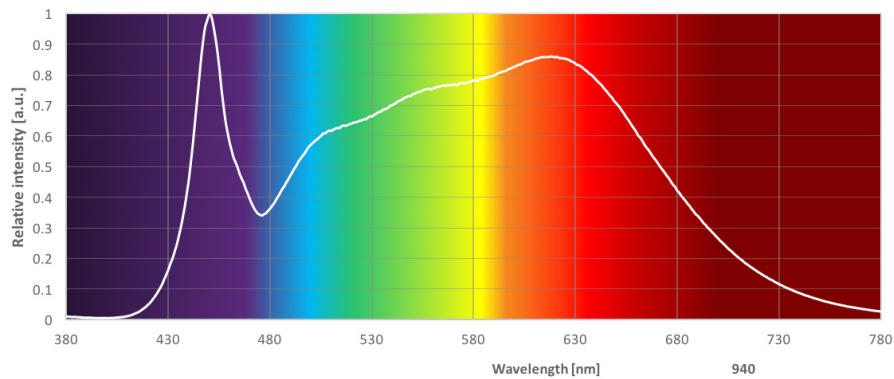
Max performance values at I_{life} .

Color consistency of 3 SDCM, averaged over the module.

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Tolerance for efficacy data is $\pm 10\%$.

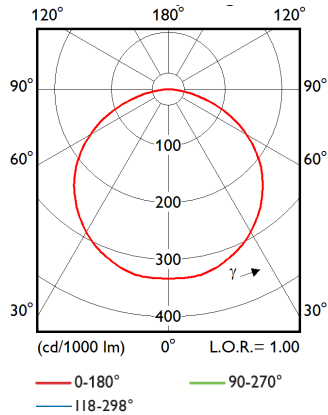
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Fortimo LED strip 2ft 2200lm NA LV4

Beam Shape

The Philips Fortimo LED strip generates a Lambertian beam shape, which is a pragmatic starting point for OEMs wishing to design secondary optics.



Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Nominal Current		360	560	mA
Forward Voltage	32.2	33.8	34.7	V
Power Consumption		12.2		W

Forward Voltage Range

@ I _{nom} and 45°C	Min.	Max.
Bin A [V]	32.2	33.5
Bin B [V]	33.4	34.7

Lifetime

Parameter	Nominal *	Life**	Max***
T _c [°C]	45	80	95
Current [mA]	360	540	560

* Nominal value at which performance is specified

** Value at which lifetime is specified (max current for warranty)

*** Maximum value for safety

Parameter	Min	Typ	Max
Δu'v' at 6000 Hours			0.007

Note: Specifications stated while T_c < 80°C and I < 540 mA.

Abs Max Ratings

Parameter	Min	Typ	Max	Unit
Current I _{max}			560	mA
Case Temperature T _c Max			95	°C
ESD (Direct Contact)			8	kV
ESD (Air)			15	kV
Isolation Breakdown Voltage	500			Vdc
Ambient Temperature	-20 ⁴			°C
Number of Modules per Chain			2	

4. There cannot be any ice/fog/mist on any part of the L2 surface during the application at -20°C.

Fortimo LED strip 2ft 2200lm NA LV4

Wiring

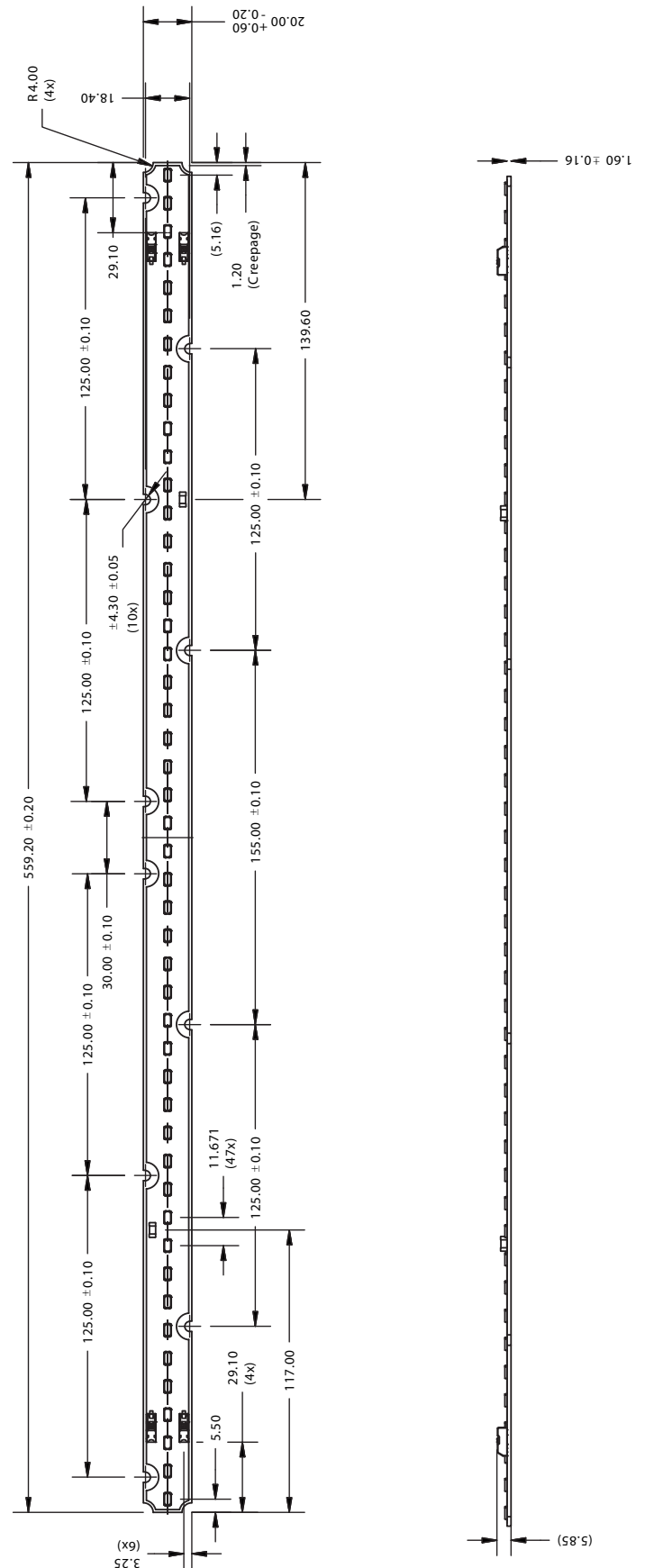
Specification Item	Value	Unit	Condition
Input Wire Cross-Section	0.2...0.8	mm ²	Solid
	18...24	AWG	
	0.45...0.7	mm ²	Stranded
	20...22	AWG	
Input Wire Strip Length	7.5...8.5	mm	

Note: Connector suited for robot wiring.

Mechanical Characteristics

Specification Item	Min	Typ	Max	Unit
Length	559.0	559.2	559.4	mm
Width	19.8	20.0	20.6	mm
Height Excl. Connector		1.60		mm
Height Incl. Connector		5.85		mm
Warpage			≤ 0.75	%

Mechanical Characteristics



Fortimo LED strip 2ft 2200lm NA LV4

Application Information

Compliance and Approval

UL & cUL - UL8750

Environmental

RoHS / REACH

IP Rating	No IP rating
Overheating Protection	No protection
Luminaire Class	UL Class 2

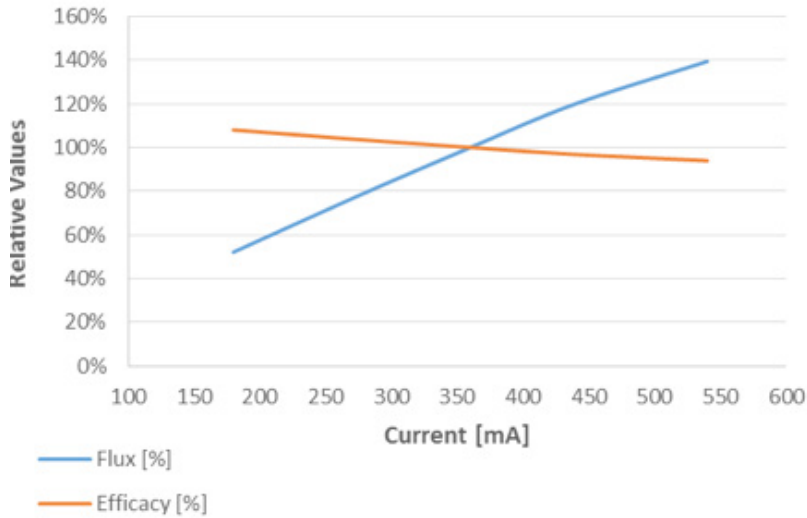
Warranted Number of Full Thermal Product Cycles @ 25°C Ambient Temperature

Case Temperature Tc [°C]	Amount of Cycles
35	
40	
45	100,000
50	
55	100,000
60	
65	58,100
70	
75	27,600
80	14,200
85	
90	
95	

Fortimo LED strip 2ft 2200lm NA LV4

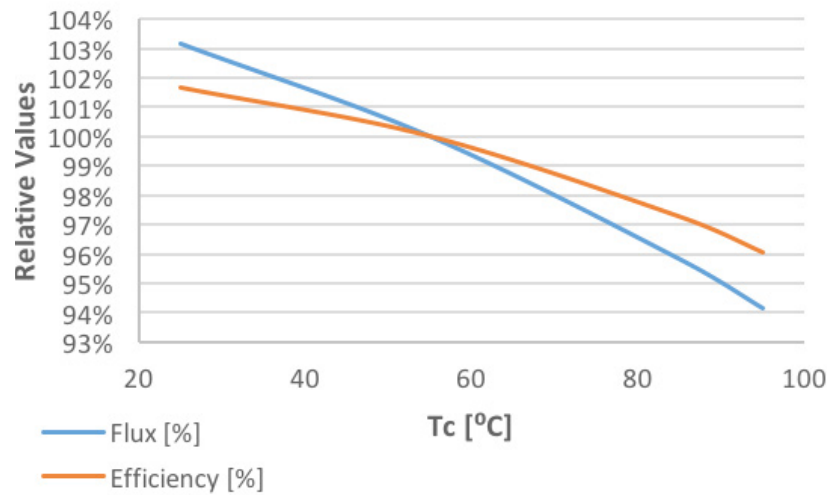
Tuning Information

Flux and Efficacy Vs. Current (at Nominal Temperature)



I [mA]	Flux [%]	Efficacy [%]
180	52%	108%
270	77%	104%
360	100%	100%
440	120%	97%
540	139%	94%

Flux and Efficacy Vs. Tc



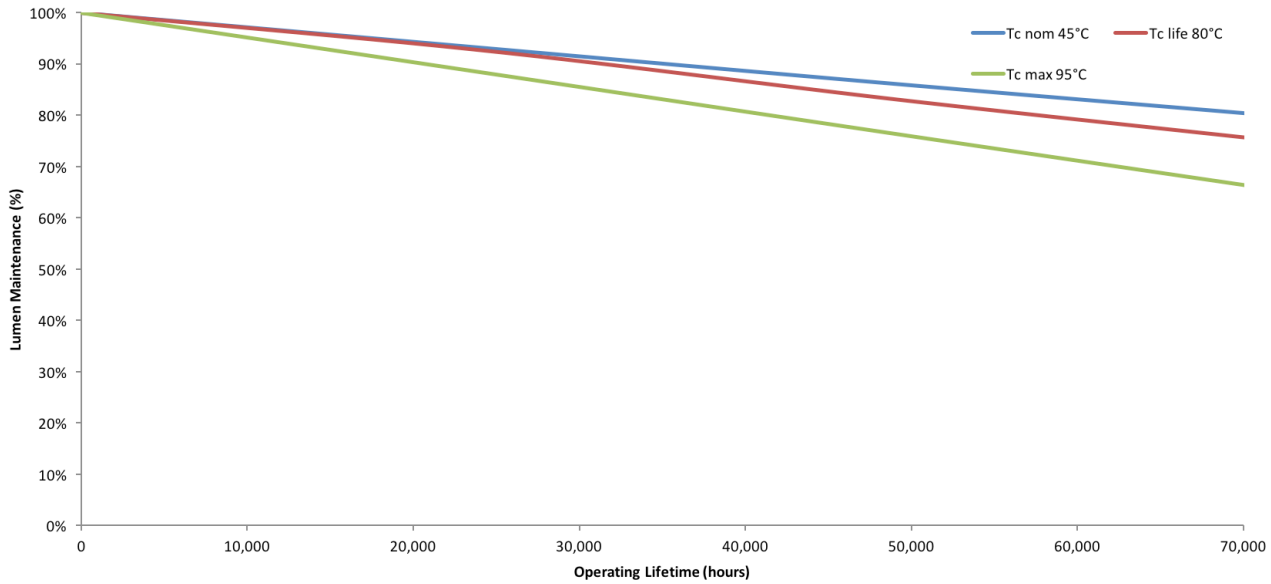
Tc [°C]	Flux [%]	Efficacy [%]
95	94%	96%
85	96%	97%
55	100%	100%
25	103%	102%

Fortimo LED strip 2ft 2200lm NA LV4

Lumen Maintenance

Lumen Maintenance: at I Life and Tc Life Conditions

Fortimo LED strip 2ft 2200lm NA LV4



Lumen depreciation as a function of operating hours for I-life and Tc.
50,000 hours proven by certified laboratory.

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