

## Photometric Measurement Report

Generated by Radiant Vision Systems Light Measurement Platform

Luminaire Model	L AN4153031				
Led & Driver Type	BRIDGELUX	VERO 10	&	TCI	UNIVERSAL 20
Luminaire Type	ANKASTRE				
Luminaire Family	CRAFT				
Holder	-				
Reflector / Lens Degree	18				
Brand	LAMP 83				
Date of issue	02.04.2018				

## Test Standards

EN 13032-1:2012 and EN 13032-4:2013 Light and Lighting. Measurement and presentation of photometric data of lamps and luminaires

IESNA LM-79-08 Approved Method: Electrical and Photometric Measurements of SSL Products(Type-C)

## Test and Test Method

The photometric measurements listed in this report are performed by a Radiant Vision Systems PM-NFMS™ near field goniometer system. The NFMS system performs brightness and color measurements as a function of viewing angle. It provides accurate near-field luminance distribution data and generates far field distribution data.

## Test Equipment

Name	Serial / Version
The PM-NFMS™ system consists of a PM-Series™ Imaging Colorimeter IC-PMI2	SN# 79046501
NFMS 800 two-axis goniometer	SN# 641502001
SP-1000 spectrometer	SN# 3017942276
PM-NFMS™ software	Version 4.9.9
ProSource™ Software	Version 10.2.2

The measurement data is preserved as a set of images Radiant Source Model™(RSMX). The ProSource™ Software (Version 10.2.2) was been used to convert the RSMX to a ray set(LTD file)

## Laboratory Environment and Conditions

The measurement was done in the photometric laboratory of Lamp83 (Istanbul). It is a climate controlled dark room.Also a AC/DC power stabilisation unit is used(Pyramid Plus PPS310,8KW,10kVA,SN# 073010T0066).

Temperature:	25°C	(± 1 °C)
Moisture:	60%	(± 10 %)

The luminaire was thermally stabilized for **at least 45 minutes** on the goniometer. The end of the stabilization period has been reached if in the last 10 minutes the luminance output has not changed by more than ± 0.5%.

## Equipment Specifications

Precision: 0.25° (NFMS Goniometer)

Luminance (Y): ± 3% (Imaging Colotimeter IC-PMI2)

Color Accuracy: ± 0.002 Illuminant A type sourc (Spectrometer SP-1000)

## Tested By:

Gökhan AKSEL  
Test Technician

## Reviewed By:

Anıl TOKER  
Physics Engineer

## Approved By:

Erdoğan EMREM  
R&D Manager

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### Luminaire Spectroradiometric Results

Luminous Flux (lm)	745
CCT (K)	3,131
Illuminance	645
Cx	0.4276
Cy	0.4001
CRI	84
Luminous Efficacy (lm/W)	61.0
Angle (°)	26

### Luminaire Electric Specifications

Voltage (VAC)	221.4
Current (A)	0.06
Power (W)	12.22128
Power Factor	0.92
LED Voltage(VDC)	25.8
LED Current(mA)	360
LED Power(W)	9.288

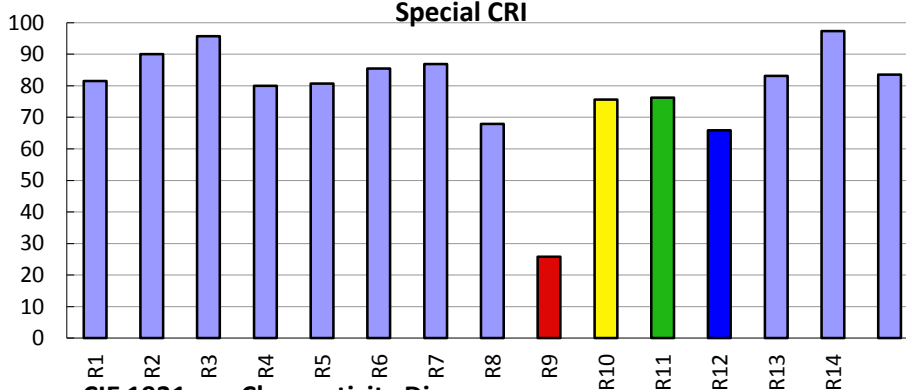
### Measurement Preset Specifications

External ND Filter	YES
ND Filter	ND1
F-Number	8
Exposure Time (ms)	154.2
Distance(mm)	2060

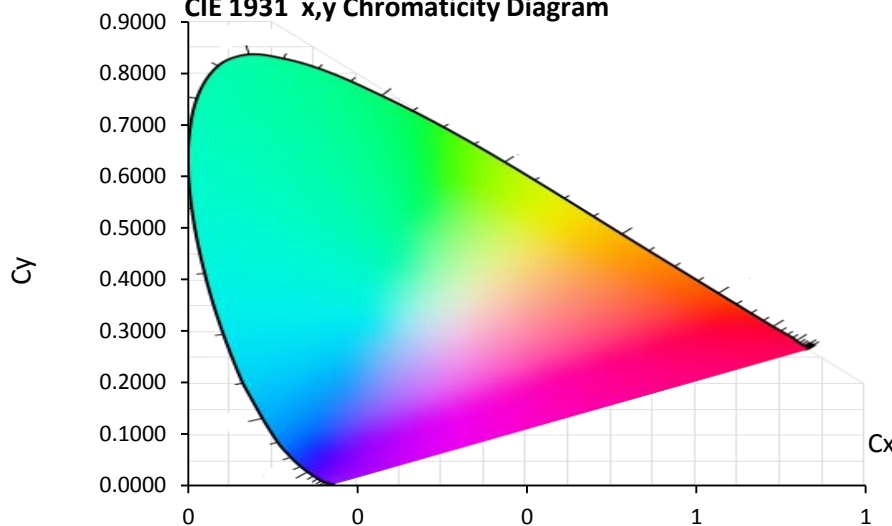
### Rendering Index

CRI	
R1	81.5
R2	90.0
R3	95.7
R4	80.0
R5	80.7
R6	85.5
R7	86.9
R8	67.9
R9	25.8
R10	75.6
R11	76.3
R12	65.9
R13	83.2
R14	97.4
CRI Ra	83.5

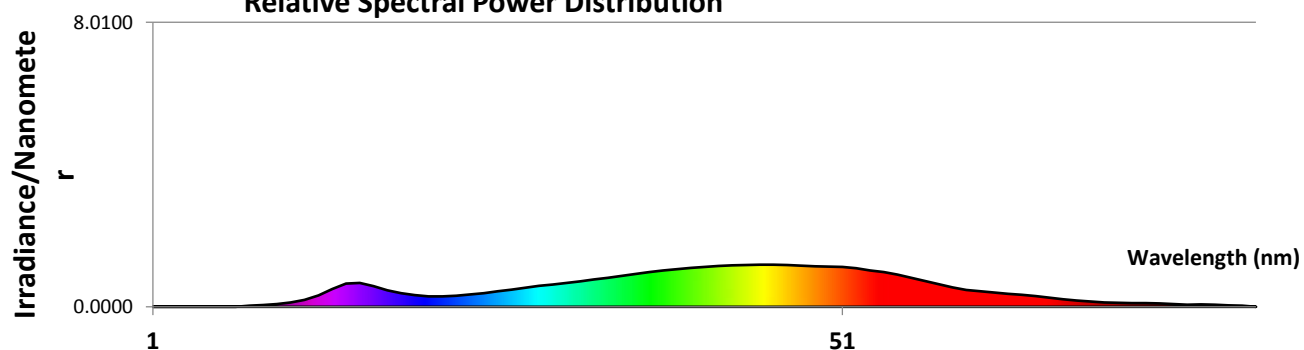
Special CRI



CIE 1931 x,y Chromaticity Diagram



Relative Spectral Power Distribution



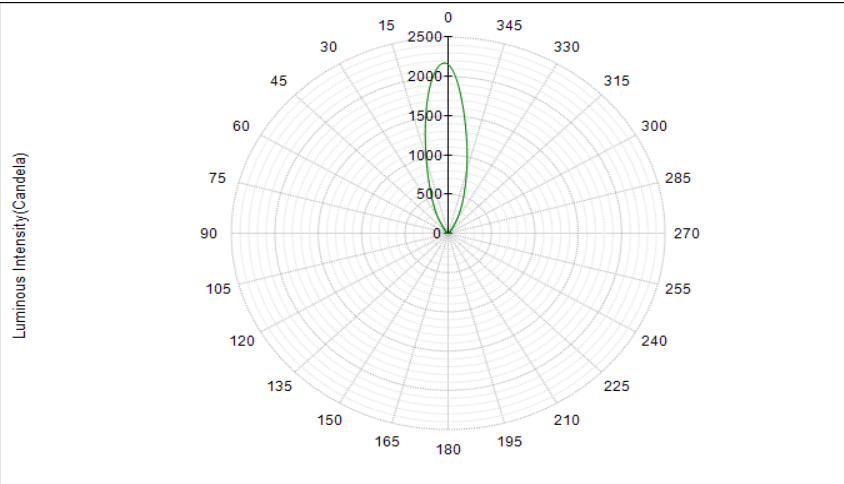
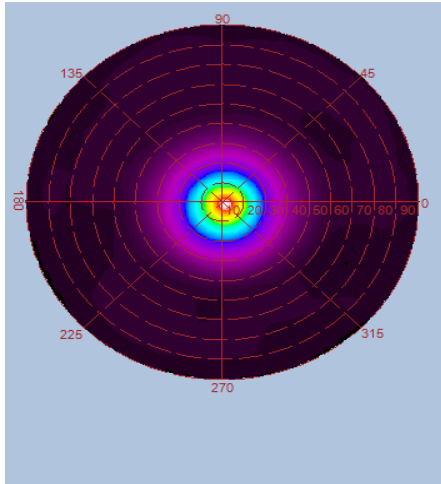
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## Intensity Distribution - Polar Curve

Intensity Radar Plot (ray trace to infinity)

Luminous Intensity Distribution



## Cone Diagram

0.5	0.21 0.26	E(0°) E(C90) E(C0)	8594 4043 3922
1.0	0.41 0.52	E(0°) E(C90) E(C0)	2148 1011 980
1.5	0.62 0.78	E(0°) E(C90) E(C0)	955 449 436
2.0	0.83 1.04	E(0°) E(C90) E(C0)	537 253 245
2.5	1.04 1.30	E(0°) E(C90) E(C0)	344 162 157
3.0	1.24 1.56	E(0°) E(C90) E(C0)	239 112 109

Distance [m]      Cone Diameter [m]      Illuminance [lx]

— C0 - C180 (Half value angle: 29.2°)  
— C90 - C270 (Half value angle: 23.4°)

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**UGR Table****Glare Evaluation According to UGR**

$\rho$ Ceiling		70	70	50	50	30	70	70	50	50	30
$\rho$ Walls		50	30	50	30	30	50	30	50	30	30
$\rho$ Floor		20	20	20	20	20	20	20	20	20	20
Room size X      Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	16.5	17.3	16.7	17.5	17.7	15.5	16.3	15.8	16.5	16.7
	3H	18.0	18.7	18.3	18.9	19.2	16.6	17.4	16.9	17.6	17.8
	4H	19.0	19.6	19.3	19.9	20.2	17.5	18.2	17.8	18.5	18.7
	6H	20.0	20.7	20.4	21.0	21.2	18.7	19.4	19.1	19.6	19.9
	8H	20.5	21.1	20.8	21.4	21.7	19.4	20.0	19.7	20.3	20.6
	12H	20.8	21.4	21.2	21.7	22.0	20.0	20.5	20.3	20.8	21.2
4H	2H	17.0	17.7	17.3	17.9	18.2	16.2	16.9	16.5	17.1	17.4
	3H	18.9	19.5	19.3	19.8	20.1	17.6	18.2	18.0	18.5	18.8
	4H	20.1	20.7	20.5	21.0	21.3	18.7	19.2	19.0	19.5	19.8
	6H	21.4	21.9	21.8	22.2	22.6	19.9	20.3	20.3	20.7	21.1
	8H	21.9	22.3	22.4	22.7	23.1	20.6	21.0	21.0	21.3	21.7
	12H	22.4	22.7	22.8	23.1	23.5	21.2	21.5	21.6	21.9	22.4
8H	4H	20.6	21.0	21.1	21.4	21.8	19.4	19.8	19.8	20.2	20.6
	6H	22.2	22.5	22.6	22.9	23.4	20.8	21.1	21.3	21.5	22.0
	8H	22.9	23.1	23.3	23.6	24.0	21.5	21.8	22.0	22.2	22.7
	12H	23.4	23.6	23.9	24.1	24.6	22.2	22.4	22.7	22.9	23.4
12H	4H	20.7	21.0	21.1	21.4	21.9	19.6	19.9	20.0	20.3	20.8
	6H	22.3	22.6	22.8	23.0	23.5	21.1	21.3	21.5	21.8	22.2
	8H	23.1	23.3	23.6	23.8	24.2	21.8	22.0	22.3	22.5	23.0
Variation of the observer position for the luminaire distance S											
S = 1.0H		+0.8 / -0.3					+0.7 / -0.3				
S = 1.5H		+1.8 / -0.4					+1.6 / -0.4				
S = 2.0H		+2.9 / -0.5					+2.6 / -0.7				
Standard table		BK08					BK08				
Correction summand		5.5					4.5				
Corrected glare indices referring to 745lm total luminous flux											

**Sample Pictures**