Photometric Report

EXTERIOR WASH PRO M QUAD 6500K – Asymmetric

LM-79-08 Compliant

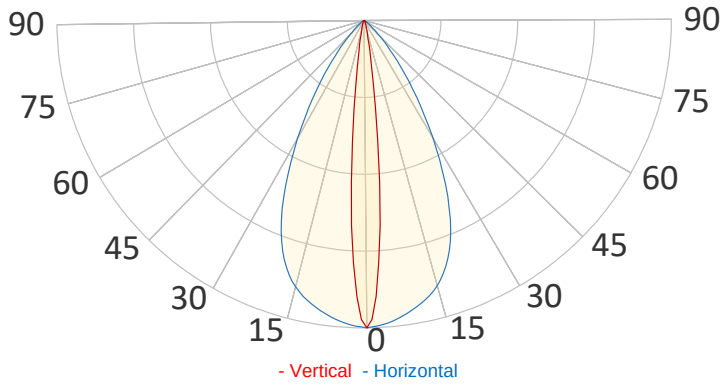
GENERAL SPECIFICATIONS

Total Fixture Output:	3496 lm
Light Engine Output:	4900 lm
Efficacy:	46.1 lm/W
Lens Option:	Asymmetric
Beam Angle H (50%):	60˚
Beam Angle V (50%):	8˚
CRI:	70+
CQS:	71.8
TM-30 Rf:	71.2
TM-30 Rg:	97.6
TLCI:	55
Color Temperature:	6500 K



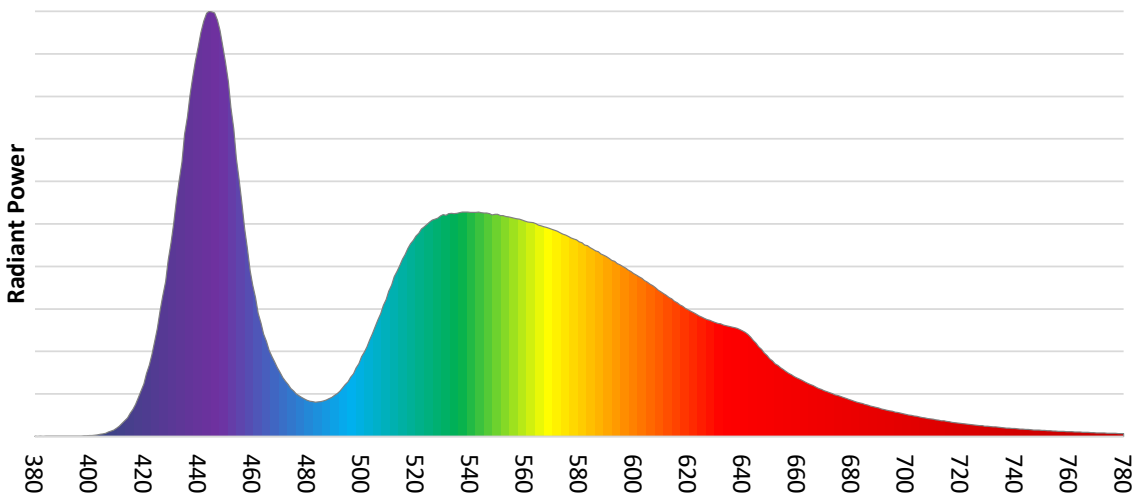
SAMPLE MEASUREMENT

POLAR PLOT



Catalog Number:	MAR-90590002
Measured Output:	3496 lm
Measured Peak:	18876 cd
Consumed Power:	75 W
Efficacy:	46.1 lm/W
Beam Angle H (50%):	56.7˚
Beam Angle V (50%):	8.8˚
Measurement Condition:	
Ambient Temperature:	25˚ +/- 5˚ C
AC Supply:	230V/50Hz
Fan Mode:	No Fan
Fixture Warm-up Time:	30 minutes

SPECTRAL DISTRIBUTION



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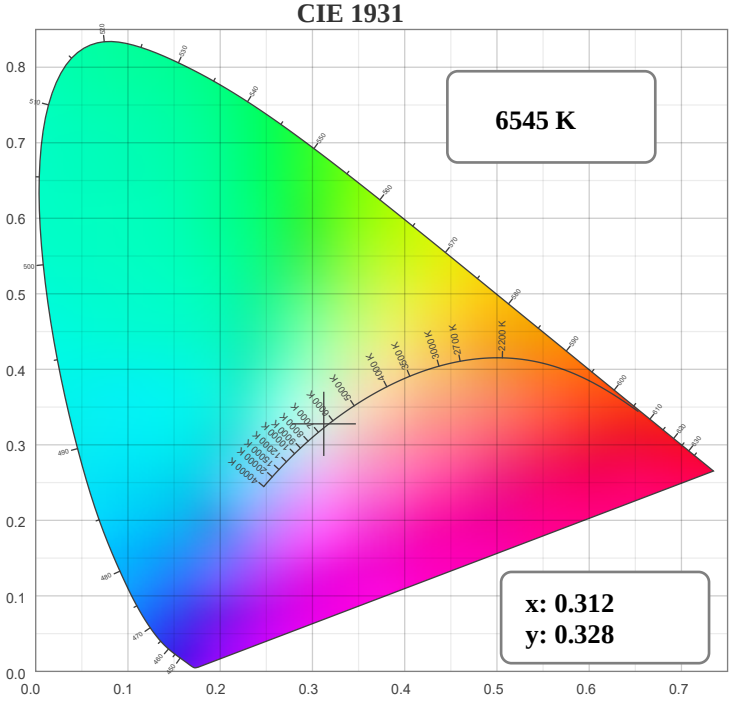
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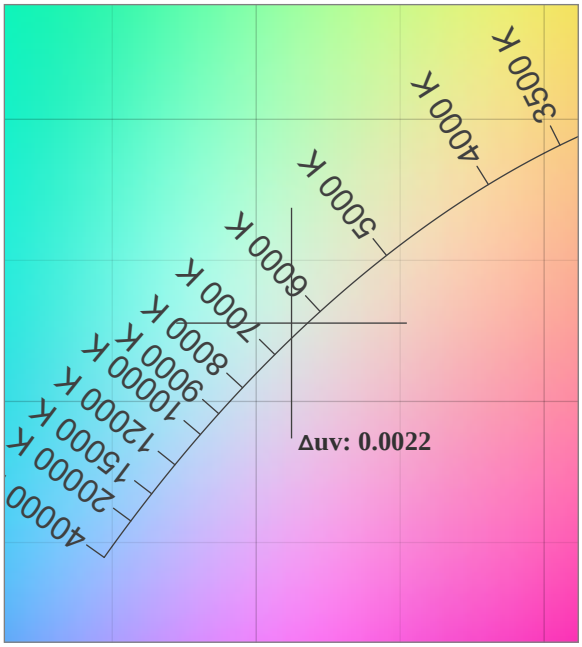
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CHROMATICITY

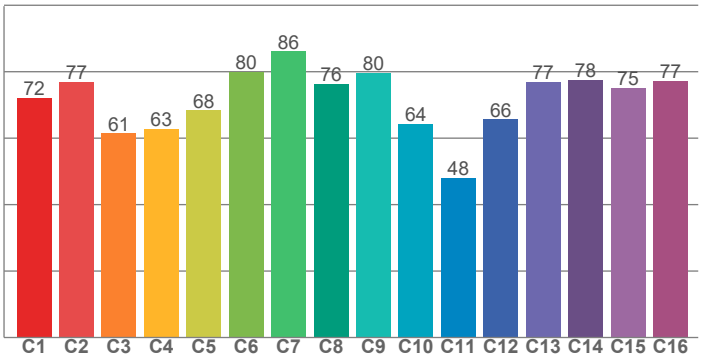
CIE 1931



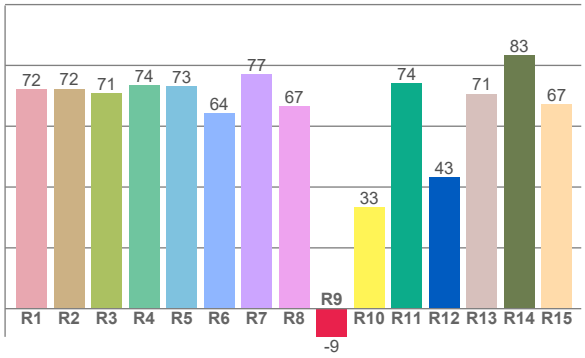
CIE 1931 ZOOM



TM30: 71.2



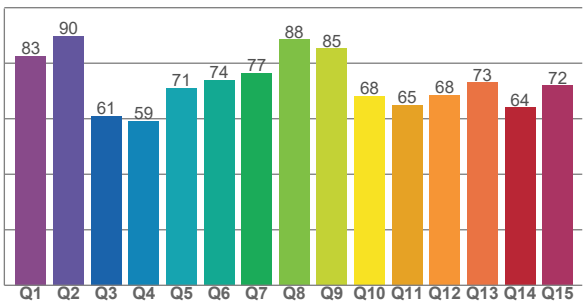
CRI: 71.2 (R1-R8)



COLOR PARAMETERS

Color Temperature	Color Rendering Index	Red Component	Color Fidelity	Color Gamut
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg
6545 K	71.2	-9.3	71.2	96.9

CQS: 71.6



Television Lighting Consistency Index	Color Quality Scale	Color Coordinate CIE 1931	Color Coordinate CIE 1931	Color Coordinate CIE 1964	Color Coordinate CIE 1964	Color Deviation from Black Body
TLCI	CQS	x	y	u	v	Δuv
55	71.6	0.312	0.328	0.198	0.312	0.0022

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TM30

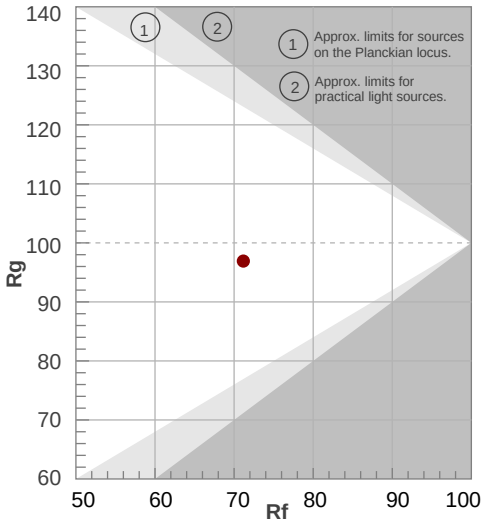
Rf 71.2

Fidelity index Rf

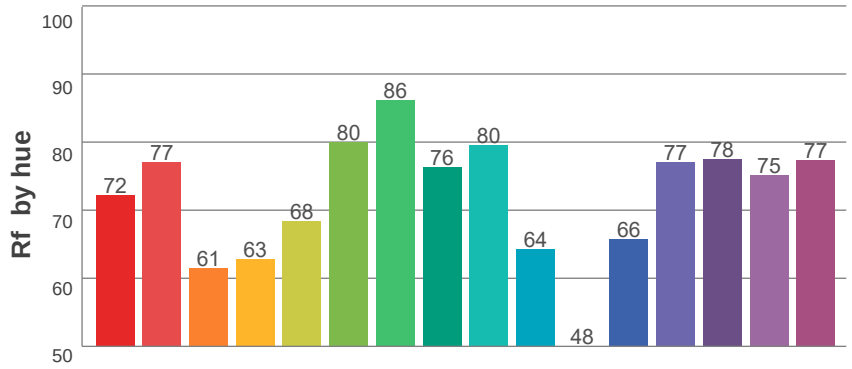
Rg 96.9

Gamut index Rg

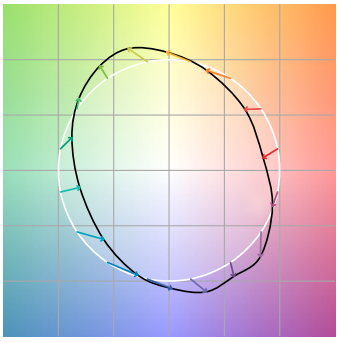
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	72	-14%	-5%
2	77	-12%	8%
3	61	-6%	22%
4	63	4%	23%
5	68	15%	15%
6	80	13%	0%
7	86	4%	-9%
8	76	-8%	-12%
9	80	-18%	-1%
10	64	-16%	19%
11	48	-6%	29%
12	66	4%	23%
13	77	14%	12%
14	78	12%	-4%
15	75	12%	-19%
16	77	-2%	-13%



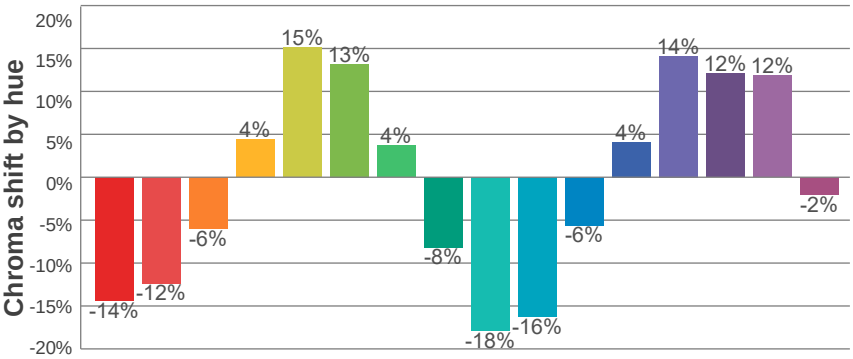
HUE BIN



COLOR VECTOR GRAPHICS



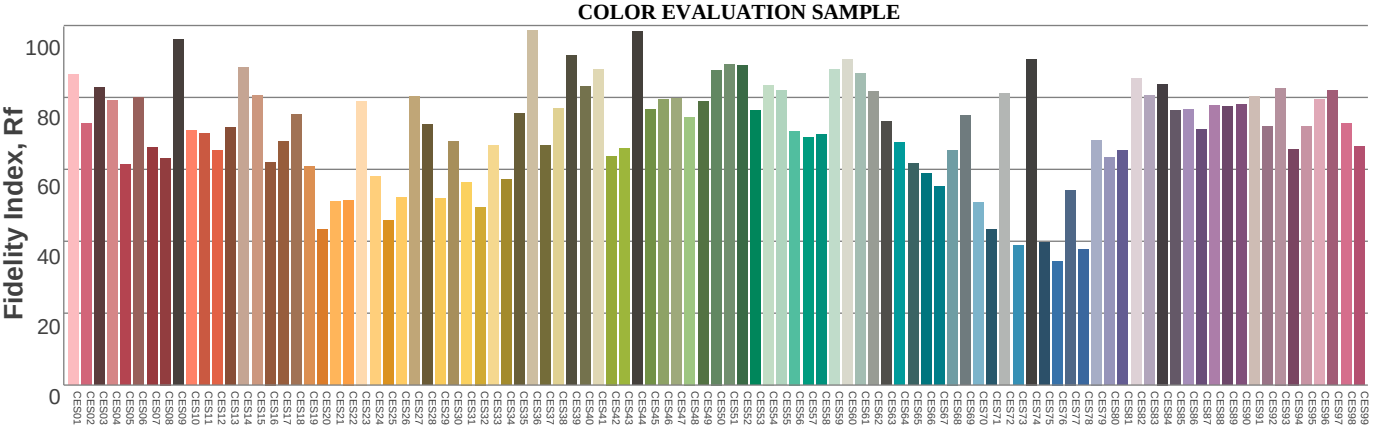
HUE BIN



COLOR DISTORTION GRAPHICS



COLOR EVALUATION SAMPLE



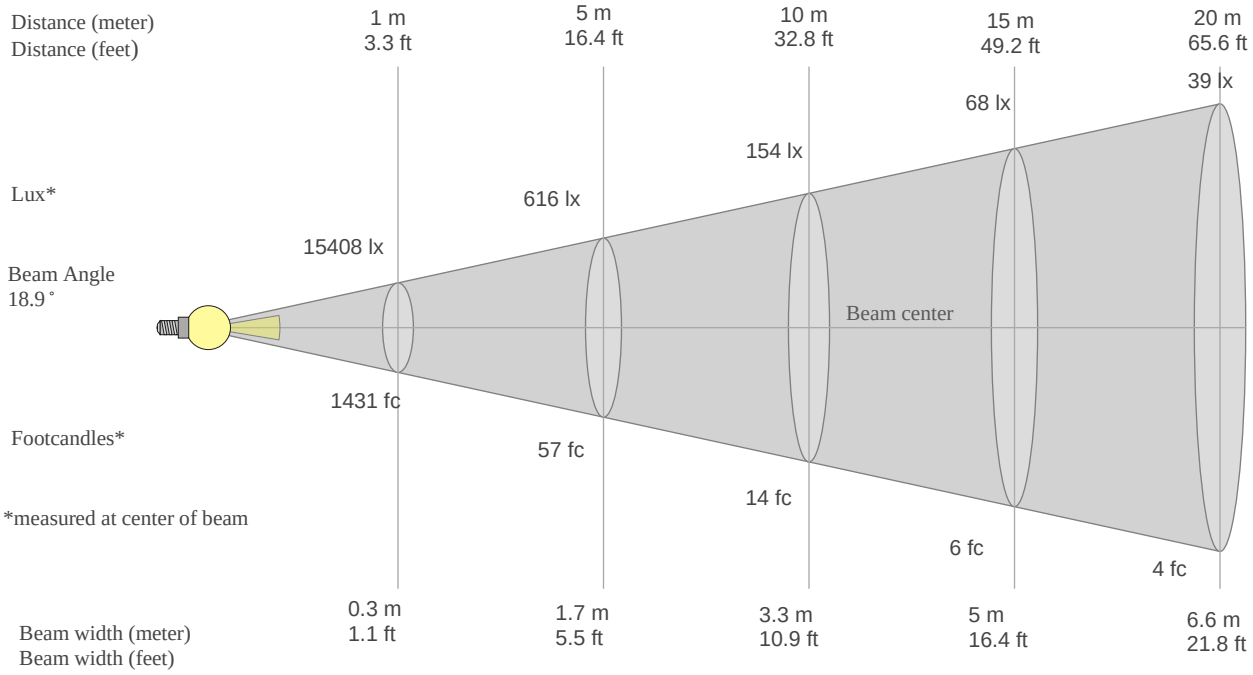
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BEAM DETAILS



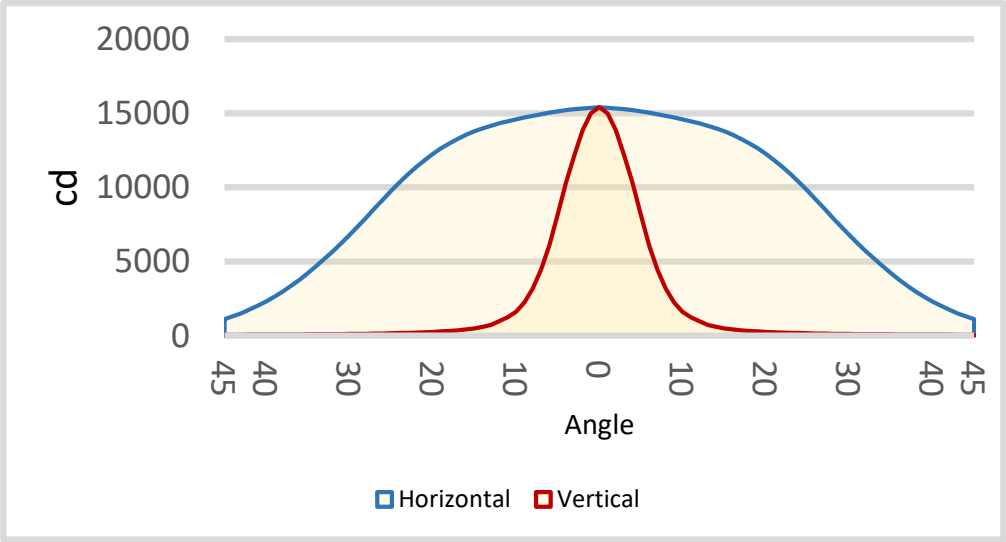
Beam width: = 0.3 * distance

Illuminance: = 15408 / (distance^2)

distance in [m] for illuminance in [lux] distance in [ft] for illuminance in [fc]

BEAM ILLUMINANCE FROM 1-20M

1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
3.3ft	6.6ft	9.8ft	13.1ft	16.4ft	19.7ft	23ft	26.2ft	29.5ft	32.8ft	36.1ft	39.4ft	42.7ft	45.9ft	49.2ft	52.5ft	55.8ft	59.1ft	62.3ft	65.6ft
15408lx	3852lx	1712lx	963lx	616lx	428lx	314lx	241lx	190lx	154lx	127lx	107lx	91lx	79lx	68lx	60lx	53lx	48lx	43lx	39lx
1431.4fc	357.9fc	159fc	89.5fc	57.3fc	39.8fc	29.2fc	22.4fc	17.7fc	14.3fc	11.8fc	9.9fc	8.5fc	7.3fc	6.4fc	5.6fc	5fc	4.4fc	4fc	3.6fc



BEAM ANGLE H 50%	BEAM ANGLE V 50%
56.7˚	8.8˚

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TEST INFORMATION

Test date:	From February 13, 2024, to February 21, 2024
Date of receipt samples:	February 21, 2024
Quantity of receipt samples:	1 unit per model

EQUIPMENT LIST

ID	Instrument	Model	Cal. date	Next cal. Date
AC Power Meter	EF-I-0287	PF9811	2024.02.08	2024.03.07
AC Power Meter	EF-I-1002	PF2010	2024.02.08	2024.03.07
Photometric colorimetric electric system (2-meter sphere)	EF-I-900	HASS 2000	Before used	Before used
21V/3.9289A standard lamp	EF-I-963	D204	2023.04.11	2024.04.10
Goniophotometer	EF-I-902	GO-R5000	2024.02.08	2024.03.07
Wireless temperature transmitter	EF-I-958	DWRP-B (0)	2024.02.08	2024.03.07

REFERENCE STANDARDS OR METHODS

ANSI/NEMA/ ANSLG C78.377-2017	Specifications for the Chromaticity of Solid-State Lighting Products
ANSI C82.77-2002	Harmonic Emission Limits Related Power Quality Requirements for Lighting Equipment
CIE Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. No. 15:2004	Colorimetry
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products

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TEST CONDUCTED AND METHOD

Ambient Condition

The ambient temperature in which measurements are being taken was maintained at 25± 2 ℃, the air flow around the sample(s) being tested did not affect the performance.

Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within 0.2 percent under load.

Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

Electrical Instrumentation

The calibration uncertainties of the instruments for AC voltage and current were less than 0.2 percent, and the calibration uncertainty of the AC power meter was less than 0.5 percent (9% confidence interval, k=2).

Color Measurement Method

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the color characteristics (Color rendering index, correlated color temperature, chromaticity coordinate) were calculated from these by software automatically.

10 samples were measured as customer required.

Total Luminous Flux Measurement Method

Total luminous flux was measured by both sphere-spectroradiometer system and goniophotometer.

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the total luminous flux was calculated from these by software automatically.

Light intensity distribution was measured by a type C goniophotometer (with mirror) which can keep the sample in burn position when the tests conduct, and the total luminous flux was calculated from the intensity data by software automatically.

1 sample was measured by sphere method, and 1 sample was measured by goniophotometer method.

Correction factor (self-absorption) has been considered when doing measurement.

Luminous Intensity Distribution Measurement Method

Light intensity distribution was measured by a type C goniophotometer (with mirror) which can keep the sample in burn position when the tests conduct, and the kinds of graph were generated by software automatically.

1 sample was measured as customer required.

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