Certificate#4703.02

Ningbo TengLi Testing Co., Ltd

2nd floor, Block B, Ningbo Testing and Certification Base, No. 66
Qingyi Road, Ningbo National Hi-Tech Zone, Ningbo, Zhejiang
Tel: 86574-8783 6802
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LM-79-08 Test Report

For

LEDVANCE LLC

(Brand Name: N/A)

200 Ballardvale St. Wilmington MA 01887, USA

Model name(s): LED13.5A213WAYO927F13YTL

Report Type:	Testing and Report According to IES LM-79-2008
Type of Luminaire:	Lamps
Report Date:	2020-06-04
Prepared By:	Ningbo TengLi Testing Co., Ltd 2nd floor, Block B, Ningbo Testing and Certification Base, No. 66 Qingyi Road, Ningbo National Hi-Tech Zone, Ningbo, Zhejiang

Test & Report By:

Xeon Ren

Engineer: Xeon Ren

Review By:

Johnson Sun

Manager: Johnson Sun

Note: 1. The results contained in this report pertain only to the tested samples

2. This report does not imply product certification, approval, or endorsement by A2LA, or any agency of the Federal Government.

1.1 Product Information:		
Model Number	LED13.5A213WAYO927F13YTL	
Remark	This is a multiple listed report, the Project Number of the original report is STD200465NB-AD	
Representative (Tested) Model	LED13.5A213WAYO927F13YTL	
Model Difference	N/A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Lamps	
LED Manufacturer	N/A	
LED Model	N/A	
Dimming	N/A	
Sample Number	STD200465NB-AD1(2700K)	
Date of Receipt	May.19, 2020	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage / Frequency	120Vac,60 Hz
Nominal Power	13.5W
Rated Initial Lamp Lumen	--
Declared CCT	2700K

1.3 Test Specifications:

Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.4 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 ℃ ±1 ℃, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1 °vertical intervals and 22.5 °horizontal intervals.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 ºC ±1 ºC. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25 ºC ±1 ºC. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

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2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2020-05-20	**Test Ambient:**	25.2 ºC
Test Orientation	As intended	**Stabilization Time (min)**	45
Model Number	LED13.5A213WAYO927F13YTL	**Total Operating Time(min)**	60

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD200465 NB-AD1	120.1	60	0.1110	13.13	0.9857

Chromaticity Measurement - Sphere-Spectroradiometer Method(Self-ACsorption:1.0026):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2736
Duv	0.0013
Chromaticity (x, y)	x=0.4591 y=0.4139
Chromaticity (u', v')	u'=0.2605 v'=0.5285
Color Rendering Index (CRI)	92.5
R9	54

Special Color Rendering Indices			
R1	93	R9	54
R2	99	R10	97
R3	96	R11	94
R4	92	R12	94
R5	94	R13	95
R6	98	R14	99
R7	90	R15	88
R8	78	--	--

Photometric Measurement – Goniophotometer Method(Test distance: 1.877m):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1481.0
Luminous Efficacy (lm/W)	112.76
Beam Angle ( )	334.3
Center Beam Candle Power (cd)	81.0

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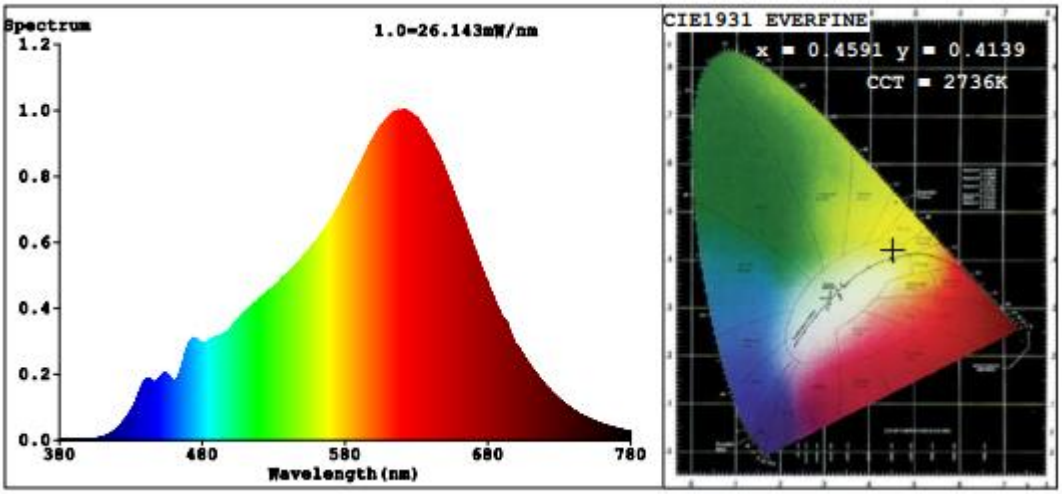
Spectral Power Distribution & Chromaticity Diagram

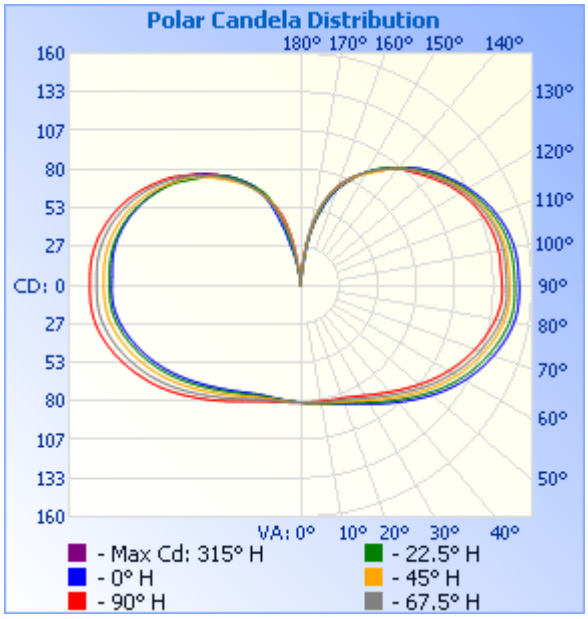


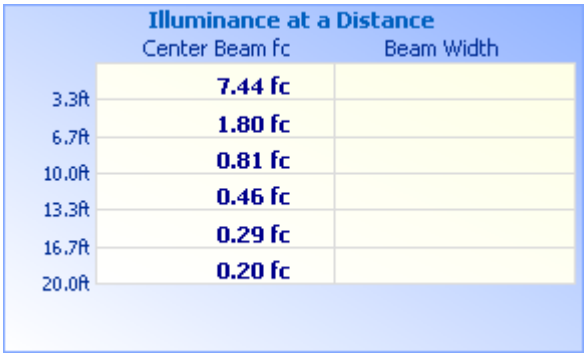
Zonal Lumen Tabulation

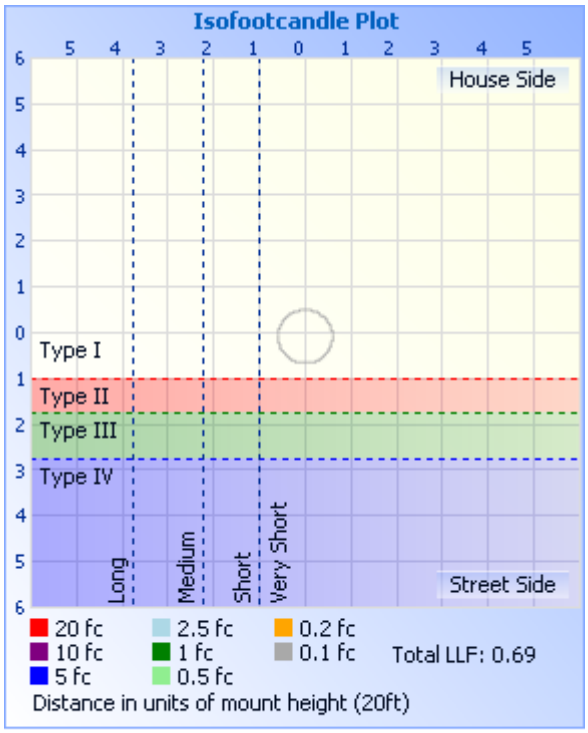
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	71.5	4.8%
0-40	130.8	8.8%
0-60	316.3	21.4%
60-90	425.2	28.7%
70-100	453.2	30.6%
90-120	433.9	29.3%
0-90	741.4	50.1%
90-180	739.6	49.9%
0-180	1,481.0	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	% Total
0-10	7.8	0.5%	90-100	154.6	10.4%
10-20	23.5	1.6%	100-110	147.6	10%
20-30	40.2	2.7%	110-120	131.7	8.9%
30-40	59.4	4.0%	120-130	109.8	7.4%
40-50	81.1	5.5%	130-140	85.0	5.7%
50-60	104.4	7.0%	140-150	59.4	4%
60-70	126.5	8.5%	150-160	35.9	2.4%
70-80	144.4	9.8%	160-170	14.3	1%
80-90	154.3	10.4%	170-180	1.4	0.1%

Photometric Data







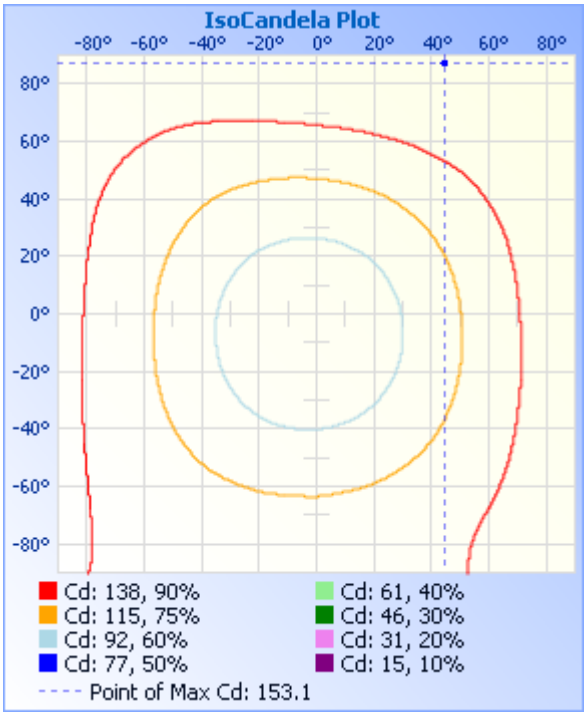


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Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	
0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	
5	81.4	81.7	81.9	82.1	82.1	81.9	81.7	81.3	81.0	80.7	80.5	80.4	80.3	80.4	80.8	81.0	
10	82.1	82.7	83.1	83.4	83.4	83.1	82.6	82.0	81.3	80.7	80.3	80.0	80.0	80.2	80.8	81.4	
15	83.2	84.1	84.8	85.1	85.0	84.6	84.0	83.0	82.0	81.1	80.4	80.0	80.0	80.4	81.2	82.1	
20	85.3	86.5	87.2	87.4	87.2	86.5	85.6	84.4	83.0	81.9	80.9	80.5	80.5	81.3	82.5	83.9	
25	88.4	89.9	90.7	90.9	90.4	89.5	88.2	86.6	85.0	83.5	82.4	82.0	82.3	83.2	84.8	86.7	
30	92.6	94.3	95.3	95.4	94.7	93.5	91.9	90.0	87.9	86.2	85.0	84.5	84.9	86.1	88.1	90.4	
35	97.3	99.4	101	101	99.8	98.2	96.2	94.0	91.7	89.8	88.3	87.7	88.2	89.6	92.0	94.7	
40	103	105	107	106	105	103	101	98.7	96.2	94.0	92.3	91.5	92.0	93.7	96.4	99.6	
45	109	111	113	113	112	109	107	104	101	98.7	96.8	95.9	96.5	98.4	101	105	
50	115	118	120	120	118	116	113	110	107	104	102	101	101	104	107	111	
55	121	125	126	126	125	122	119	116	113	110	107	106	107	109	113	117	
60	127	131	133	133	131	128	125	122	118	115	113	111	112	114	118	123	
65	132	136	139	138	137	134	130	127	124	120	118	117	117	119	123	128	
70	137	141	144	144	142	139	135	132	129	125	123	121	121	123	128	133	
75	142	146	148	148	146	143	139	137	133	130	127	125	125	128	132	137	
80	144	149	152	151	150	147	143	140	137	133	131	129	129	131	135	140	
85	146	150	153	152	151	148	145	143	139	136	133	131	130	132	136	141	
90	146	150	153	152	151	148	144	142	139	136	133	131	131	132	136	141	
95	146	150	153	152	151	148	144	142	139	136	133	131	131	133	136	141	
100	145	149	152	151	150	147	144	142	139	136	134	132	131	133	136	141	
105	143	146	149	149	148	145	142	141	138	135	133	131	130	131	135	139	
110	139	143	145	145	144	142	139	138	135	133	131	129	128	129	132	136	
115	135	138	140	140	139	137	135	134	132	130	128	126	125	126	128	132	
120	129	132	134	134	134	132	130	129	127	125	124	122	121	121	123	127	
125	123	125	128	129	127	126	125	124	122	120	119	117	117	116	118	121	
130	116	118	122	121	121	120	118	118	116	115	115	112	112	110	112	114	
135	108	112	113	114	114	113	112	112	110	109	108	106	107	104	106	107	
140	100	102	106	106	106	106	105	105	105	102	101	99.7	99.6	98.1	97.0	98.9	
145	91.9	93.1	97.3	95.4	97.8	98.7	96.4	97.8	96.9	93.7	94.8	92.5	92.1	91.8	88.6	90.5	
150	83.3	84.9	86.6	85.8	89.9	89.7	88.6	89.9	89.3	86.2	88.2	85.8	84.0	83.7	80.8	81.8	
155	73.9	75.2	76.9	77.1	79.5	80.5	80.3	81.8	81.3	79.5	80.3	78.4	75.1	74.6	72.5	72.0	
160	62.7	63.3	64.8	65.8	67.9	69.5	70.3	71.7	71.9	69.8	65.9	61.1	57.5	64.1	62.0	59.7	
165	50.4	50.4	50.4	51.0	52.4	54.5	56.7	58.9	56.6	54.6	44.2	37.3	33.0	41.1	46.9	45.2	
170	30.7	30.6	30.8	31.8	34.0	35.4	37.3	39.8	36.9	36.5	28.0	18.7	15.4	18.0	26.3	25.9	
175	2.44	1.74	1.74	2.36	4.32	3.40	5.42	8.00	11.0	11.8	9.45	5.88	2.77	0.17	3.72	2.51	
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-705	Standard Lamp	2020-02-06	2021-02-05
ST-R-704	Power Meter for Integrating Sphere	2020-01-05	2021-01-04
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp	2020-02-11	2021-02-10
ST-R-711	Power Meter for Goniophotometer	2020-01-05	2021-01-04
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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4. Product Photo

******** END OF REPORT ********