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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Certificate#4703.02

LM-79-08 Test Report

For

LEDVANCE LLC

(Brand Name: N/A)

200 Ballardvale St. Wilmington MA 01887, USA

Model name(s): LED13.5A213WAYO950F13YTL

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	LED13.5A213WAYO950F13YTL	
Remark	This is a multiple listed report, the Project Number of the original report is STD200465NB-AE	
Representative (Tested) Model	LED13.5A213WAYO950F13YTL	
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-AE1(5000K)	
Date of Receipt	May.25, 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	5000K

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.

2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2020-05-26	**Test Ambient:**	25.2 ℃
Test Orientation	As intended	**Stabilization Time (min)**	45
Model Number	LED13.5A213WAYO950F13YTL	**Total Operating Time(min)**	60

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD200465 NB-AE1	119.9	60	0.1092	12.90	0.9854

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

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5089
Duv	0.0034
Chromaticity (x, y)	x=0.3432 y=0.3568
Chromaticity (u', v')	u'=0.2081 v'=0.4869
Color Rendering Index (CRI)	90.7
R9	48

Special Color Rendering Indices			
R1	89	R9	48
R2	94	R10	84
R3	96	R11	89
R4	90	R12	85
R5	90	R13	91
R6	92	R14	98
R7	92	R15	86
R8	81	--	--

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

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1686.8
Luminous Efficacy (lm/W)	130.73
Beam Angle (°)	333.1
Center Beam Candle Power (cd)	101

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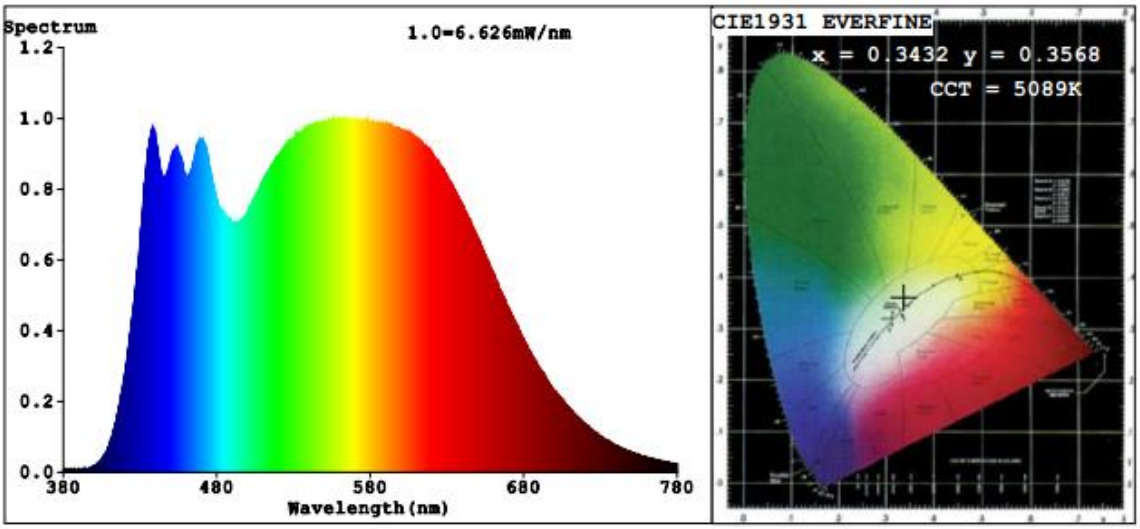
Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	88.1	5.2%
0-40	159.8	9.5%
0-60	377.7	22.4%
60-90	484.1	28.7%
70-100	512.0	30.4%
90-120	485.3	28.8%
0-90	861.8	51.1%
90-180	825.1	48.9%
0-180	1,686.8	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	% Total
0-10	9.7	0.6%	90-100	173.5	10.3%
10-20	29.1	1.7%	100-110	164.9	9.8%
20-30	49.4	2.9%	110-120	146.9	8.7%
30-40	71.7	4.3%	120-130	122.2	7.2%
40-50	96.1	5.7%	130-140	94.4	5.6%
50-60	121.7	7.2%	140-150	66.0	3.9%
60-70	145.5	8.6%	150-160	39.3	2.3%
70-80	164.4	9.7%	160-170	16.0	1%
80-90	174.1	10.3%	170-180	1.7	0.1%

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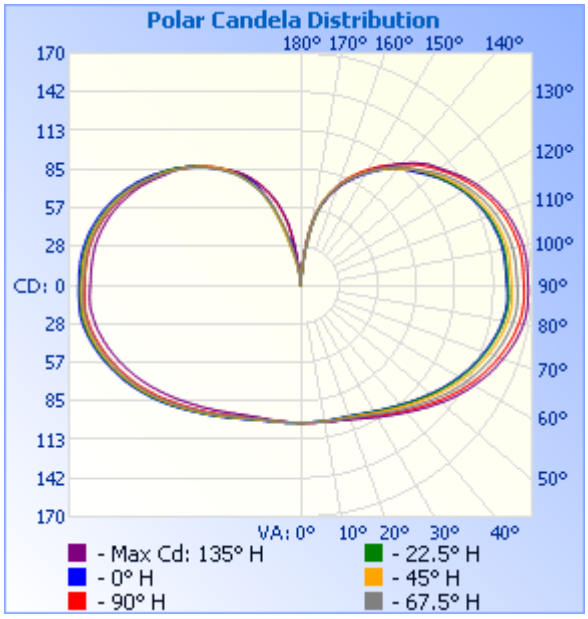
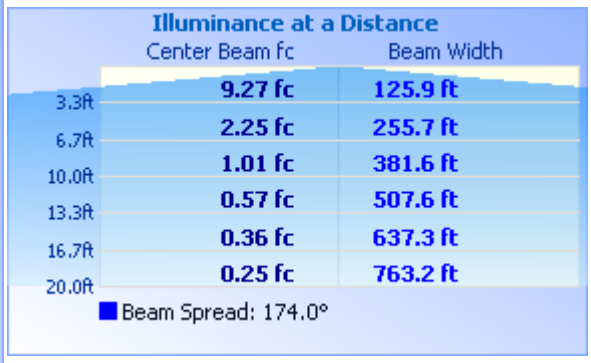
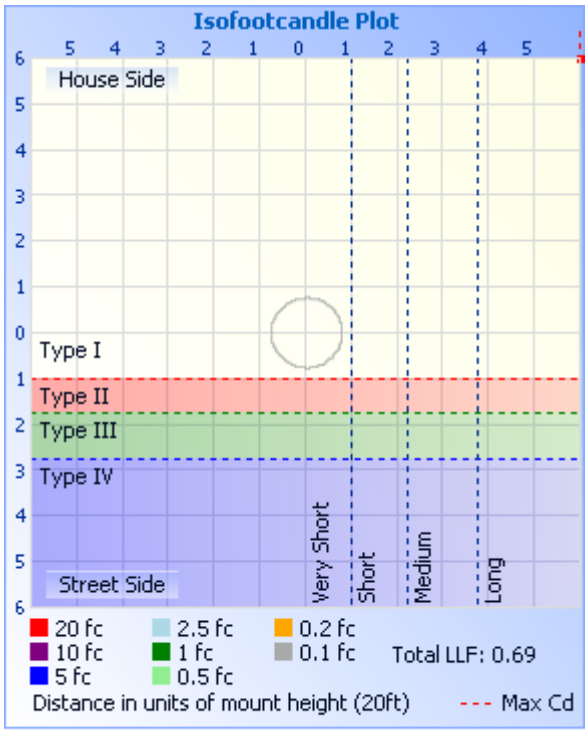
Photometric Data







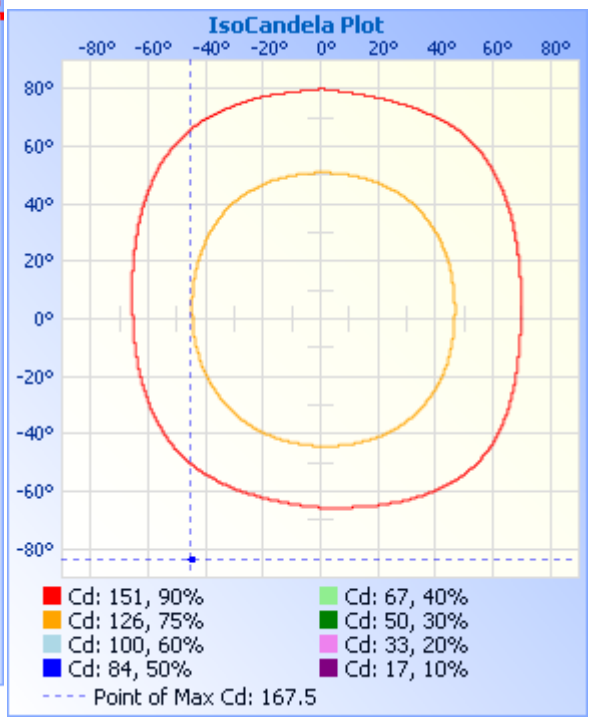


Table--1 UNIT: cd

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	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
5	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
10	101	101	101	101	101	101	101	102	102	102	102	102	102	102	102	101
15	102	102	101	101	101	102	102	102	103	103	103	103	103	103	102	102
20	104	103	102	102	102	103	103	104	104	105	105	105	105	105	104	104
25	106	105	105	104	104	104	105	106	107	108	108	108	108	108	107	107
30	110	109	108	107	107	107	108	109	111	111	112	112	112	111	111	110
35	114	113	112	111	110	111	112	114	115	116	116	116	116	116	115	115
40	119	117	116	115	114	115	116	118	120	121	122	122	121	121	120	120
45	124	122	121	119	119	120	121	124	126	127	128	127	127	127	126	125
50	130	128	126	125	124	125	126	129	132	134	134	134	133	133	132	131
55	136	134	132	130	129	130	132	135	138	140	141	140	139	139	138	137
60	141	139	137	135	134	135	138	141	144	146	147	147	145	144	144	143
65	147	145	142	140	139	140	143	146	150	152	153	152	151	150	149	148
70	151	149	147	145	144	145	147	151	155	158	158	157	156	155	154	152
75	155	153	151	149	148	149	151	155	159	162	163	162	160	159	158	156
80	158	156	154	152	151	152	154	158	163	165	166	165	163	162	160	159
85	159	158	155	154	152	153	156	160	164	167	167	166	163	162	161	160
90	159	157	155	153	151	153	155	159	164	167	167	165	163	162	161	159
95	158	157	154	152	151	152	155	159	164	166	167	165	163	161	160	159
100	157	156	154	152	151	152	154	158	163	166	166	164	162	160	159	158
105	155	154	152	150	149	150	152	156	160	163	163	162	159	158	157	156
110	151	151	149	147	146	147	149	152	157	159	160	158	156	154	153	152
115	147	146	145	143	142	143	145	148	152	154	155	153	151	149	148	147
120	142	141	140	138	138	138	140	142	146	148	149	147	145	143	143	142
125	135	135	134	133	132	132	134	136	139	141	141	141	138	137	136	135
130	129	127	127	128	125	126	127	129	132	134	133	134	130	130	129	128
135	121	121	122	121	118	119	120	120	125	125	126	125	122	122	121	121
140	114	114	113	112	111	112	112	113	116	117	117	116	114	113	114	113
145	105	105	104	105	103	104	104	105	107	108	106	107	104	104	105	103
150	95.9	94.0	96.4	96.3	94.1	95.3	95.3	94.8	97.6	97.5	95.2	95.7	94.7	94.1	94.2	93.1
155	85.9	85.1	86.7	86.3	84.7	86.1	86.3	85.9	87.8	87.1	85.4	83.7	84.0	81.0	80.3	79.5
160	73.4	73.7	74.9	75.2	74.7	75.4	76.1	75.9	76.8	76.2	73.9	68.5	64.4	61.0	61.4	63.6
165	58.6	59.5	60.3	61.1	61.9	62.7	63.5	63.2	63.8	63.4	61.6	54.5	38.3	33.8	33.6	41.3
170	36.1	37.3	39.2	38.9	40.5	40.9	42.1	43.6	44.5	44.6	44.8	39.4	28.5	18.0	14.1	19.0
175	5.25	5.55	3.33	4.68	5.79	6.57	6.91	7.64	9.97	10.7	10.3	8.60	3.85	1.99	3.06	2.61
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

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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%			

4. Product Photo

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