TEST REPORT

No. ETA23030002P-007 for

Reno LED Lighting Inc

7-615 Denison St, Markham L3R 1B8 Canada

Service	Performance Tests according to IESNA LM-79 standard
Product Name	Outdoor – Parking Garage Luminaires
Model Number	RENO-CP-40W-MW-DV-MCCT-R1
Trade Mark	RENO
Date of Issue	March 10, 2023
Date of Tests	April 6, 2022 through April 12, 2022
Test Laboratory	ETA Testing Technology Co., Ltd.
Address	Floor 8, Building A, The Western Science Park, Yuhang District, Hangzhou 311121, China
Test Location	ETA Testing Technology Co., Ltd.
Prepared By	Kavi Ding
Reviewer	Sean Wan

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REMARKS

Accreditation Scope*	Operating Frequency, Dimming and Audible Noise test are not in NVLAP accreditation scope.
General Disclaimer	The test results presented in this report relate only to the object tested.
TBD	To Be Determined, test case will be conducted.
N/A	Test case does not apply to the test object.
Pass	Test item does meet the requirement.

REFERENCE STANDARD

Designation	**Description**
ANSI C82.77-10-2014	American National Standard for Lighting Equipment -Harmonic Emission Limits—Related Power Quality Requirements
CIE Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products (Goniophotometer)
ANSI C78.377-2015	Specifications for the Chromaticity of Solid State Lighting Products

The above standards or test methods were used in part or totally to test.

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EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Calibration data	Due date
Everfine – Goniophotometer	GO-R5000	ETA1013	---	---
AC power source for Goniophotometer System	DPS1010	ETA1006	2021/12/6	2022/12/6
Power Analyzer for Goniophotometer	WT310	ETA1005	2021/12/6	2022/12/6
Two meter integrating sphere unit	Everfine – 2M	ETA1014	---	---
AC power source for Integrating Sphere System	DPS1010	ETA1002	2021/12/6	2022/12/6
Power Analyzer for Integrating Sphere System	WT310	ETA1001	2021/12/6	2022/12/6
Spectroradiometer	HAAS 2000	ETA1003	---	---
DC Linear Power Source	WY12010	ETA1004	2021/12/6	2022/12/6
AC power source for Integrating Sphere System	DPS1010	ETA1006	2021/12/6	2022/12/6
Power Analyzer for Integrating Sphere System	WT310	ETA1001	2021/12/6	2022/12/6
Illumination Photometer	Z-10	ETA1007	2021/12/6	2022/12/6
Luminous intensity Standard lamp For Goniophotometer	---	ETA1008	2021/3/21	2022/3/21
Standard lamp	D204	ETA1009	2021/3/21	2022/3/21
Digital thermometer	TES-1311A	ETA1141	2021/12/6	2022/12/6
Tektronix Oscilloscope	DPO2012B	ETA1187	2021/4/30	2022/4/30

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TEST METHOD

Photometric, Chromaticity and Electrical Measurements

No seasoning was performed in accordance with IESNA LM-79

Photometric and chromaticity were measured using a 2 meters integrating sphere spectral lamp measurement system. Maintain the ambient temperature at 25 °C ± 1 °C. Temperature was measured at a position inside the sphere shielded from direct light. Relative humidity of 65% was measured at a position in the testing laboratory.

Spectral radiant flux measurements were made using spectroradiometer (bandwidth: 5nm) attached to the detector port of the integrating sphere. Each fixture was allowed to stabilise before measurements were made. The calibration of the integrating sphere spectroradiometer system is by the reference/standard lamps which are traceable to NIST. Lamp efficacy (lumens per watt) for each fixture model was then computed based on the luminous flux result.

Prior to measurement, stabilize the fixture as specified in section 5.0 of IES LM-79-08 Calculate the stabilization variation as [(maximum—minimum)/minimum] of at least three readings of the input power and lumen output over a period of 30 minutes, taken 15 minutes apart.

Electrical measurements including voltage, power and power factor were measured using YOKOGAWA - Digital Power Meter, model WT310.

A goniophotometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniophotometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the power analyzer YOKOGAWA - Digital Power Meter, model WT310.

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PRODUCT INFORMATION

Manufacturer	N/A
Address	N/A
Trade Mark	N/A
Sample Quantity	1 pcs
Sample Number	1220406-01-001
Model Number	RENO-CP-40W-MW-DV-MCCT-R1
Nominal Operate Voltage (V; Hz)	AC 120-347V, 50/60Hz
Nominal Power	25W-30W-35W-40W
Nominal Lumen Output	3375lm-4050lm-4725lm-5400lm
Nominal CCT	3000K-4000K-5000K
Nominal CRI(Ra)	⩾70
Nominal Life	50000hours
Lighting Source Model Number	LUXEON 3030 2D
Lighting Source Manufacturer	Lumileds

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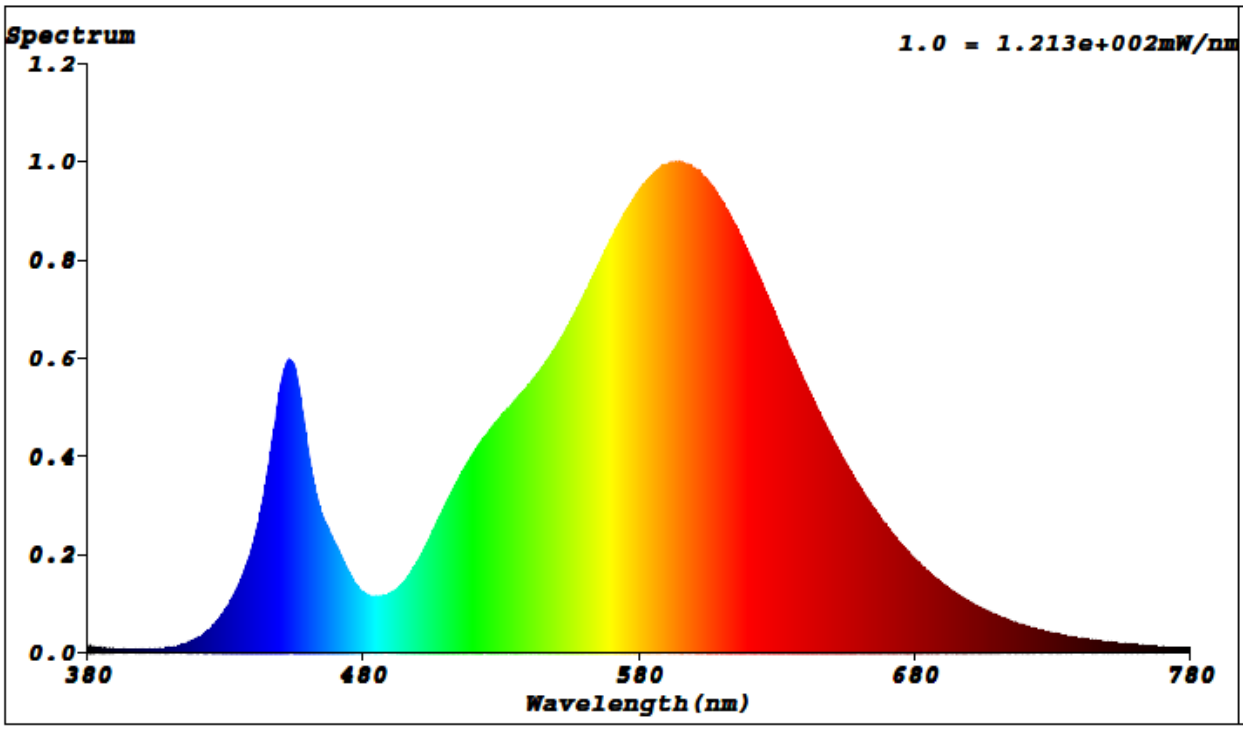
TEST SUMMARY

Test Model No: RENO-CP-40W-MW-DV-MCCT-R1 at 3000K

Photometric and Electrical Test Data

Input Voltage (V)	Frequency (Hz)	ITHD	Input Current (A)	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	18.3%	0.357	42.55	0.993	5823.12	136.85
CCT (K)	**CRI Ra**	**R9**	**x CIE1931**	**y CIE1931**	**u' CIE1976**	**v' CIE1976**	**Duv**
3052	71.7	-36	0.4343	0.4048	0.2485	0.5213	0.0007

Spectrul Plots



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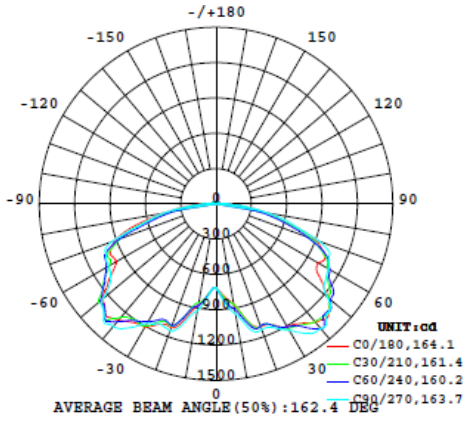
Luminous Intensity Distribution Test Plots

Angle	0	22.5	45	67.5	90
0	714.5	714.5	714.5	714.5	714.5
5	787.2	799.1	813.1	829.0	840.5
10	866.1	862.7	886.3	917.8	949.6
15	1031.5	1027.5	1047.2	1065.9	1100.5
20	1111.7	1106.7	1109.7	1115.2	1135.2
25	1133.7	1143.8	1136.7	1147.4	1161.0
30	1208.2	1229.0	1220.6	1218.5	1239.7
35	1242.8	1230.8	1257.3	1285.7	1344.2
40	1309.5	1294.0	1355.8	1385.3	1381.3
45	1348.7	1349.7	1343.4	1304.9	1323.3
50	1253.2	1258.1	1260.6	1255.5	1229.1
55	1066.4	1131.6	1151.8	1148.5	1133.2
60	1004.9	1068.2	1102.6	1083.2	1103.4
65	1012.4	1003.4	1016.5	1048.4	1059.0
70	903.4	871.8	836.6	928.5	929.7
75	624.3	641.3	574.5	622.7	674.3
80	432.8	390.2	381.0	392.5	444.1
85	214.6	203.0	203.0	203.1	222.9
90	83.3	76.3	75.0	78.2	88.1
95	57.3	51.1	54.5	49.1	58.6
100	42.5	36.8	40.7	34.5	35.7
105	34.1	30.2	33.5	30.5	31.7
110	30.9	27.1	30.2	27.3	27.1
115	26.9	24.6	25.1	23.1	24.0
120	29.2	26.4	25.6	21.6	27.2
125	29.5	28.5	26.2	22.1	27.0
130	19.6	19.3	17.9	17.8	18.6
135	13.8	13.6	12.4	12.4	12.9
140	9.7	9.2	8.6	8.6	8.6
145	6.4	6.5	6.3	6.3	6.3
150	3.2	3.3	3.5	3.5	3.8
155	1.8	1.8	1.8	1.9	2.1
160	0.8	0.9	0.9	0.9	1.0
165	0.3	0.4	0.4	0.4	0.4
170	0.3	0.3	0.3	0.3	0.3
175	0.2	0.2	0.2	0.2	0.2
180	0.2	0.2	0.2	0.2	0.2



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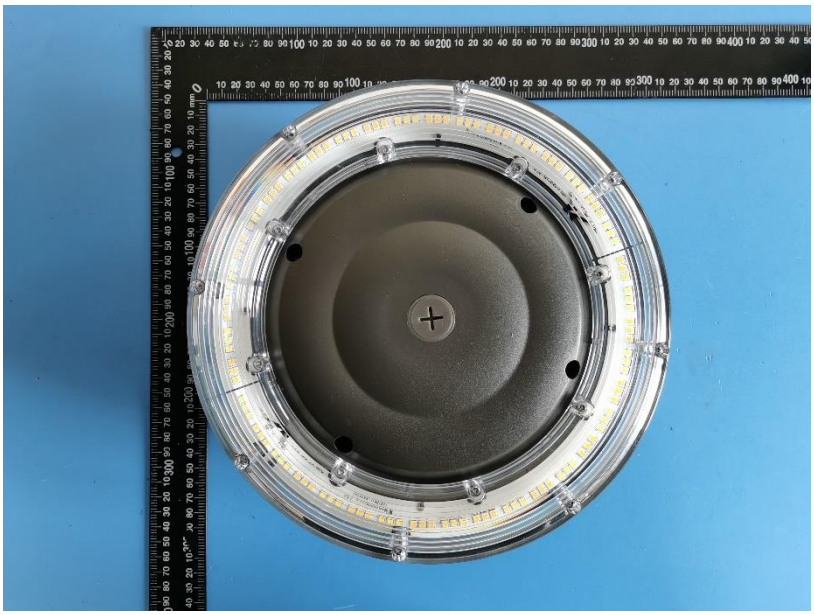
PRODUCT PICTURES



RENO-CP-40W-MW-DV-MCCT-R1

None Attachment

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