Photometric Test Report

Relevant Standards

☑IES LM-79-2008
☑ANSI C82.77:2014

Prepared For

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Prepared By	**Approved By**
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1.0 Test Summary

DLC Technical Requirements v4.3

Indoor / Linear Ambient Direct Linear Ambient Luminaire				
Requirement Category	**Test Method**	**Requirements**	**Test value**	**Results (Fail/Pass)**
Lamp Output (lm)	IES LM-79-2008	≥750	1345	P
Zonal Lumen Requirement (0°-60°)	IES LM-79-2008	≥40%	57.1%	P
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	≥130	133.1	P
Alowable CCTs* (K)	IES LM-79-2008	≤5000	3434	P
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	≥80	84	P
Power Factor	ANSI C82.77:2014	≥0.873	0.975	P
			0.998	P
Total Harmonic Distortion (A%)	ANSI C82.77:2014	≤25%	7.74%	P
			4.78%	P

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2018/9/29	STRP210-835U	G1
2	Goniophotometer Test	2018/9/29	STRP210-835U	G1
3	THD and PF Test	2018/9/29	STRP210-835U	G1

Remark(If any)
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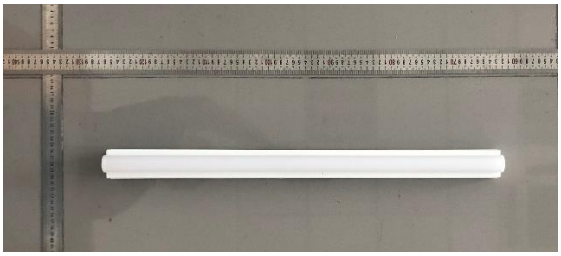
2、The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.

3.0 Production Description

Luminaire Description: STRP210-835U

Electrical Specification: 120V-277V,50/60HZ, 10W

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	STRP210-835U	Sample ID.	G1
Opreate time (Min.)	90	Stabilization time (Min.)	45

Test Method
The samples were tested according to the IES LM-79-2008. Photometric paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º C. 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 voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load. The sample was measured using 4π geometry and operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
25.2	120.02	60	0.084	10.1	0.998

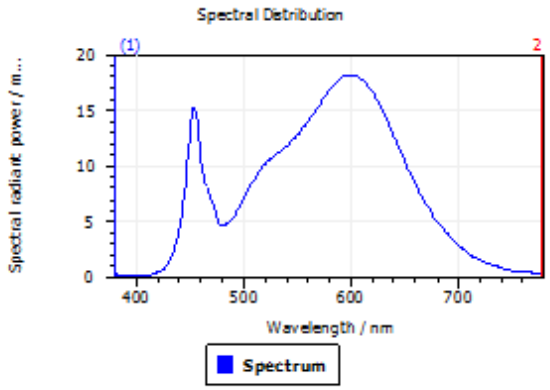
Test Result

CCT (K)	CRI (Ra)	Duv
3434	84	1.1E-04

4.1 Integrating Sphere Test

Spectroradiometric Parameters

Results



Spectral values

DominantWavelength	581.08 nm
Purity	0.407
PeakWavelength	599.84 nm
Radiant Power	2.988 W
Width50%:	145.16 nm

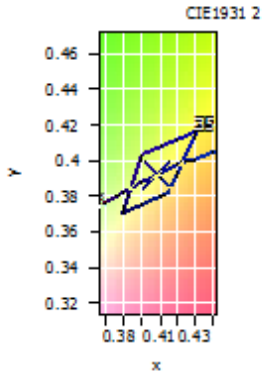
Color Coordinates

Correlated Color Temperatu 3434 K

x:	0.4092	u:	0.2373	u':	0.2373
y:	0.3929	v:	0.3418	v':	0.5127

ResultsCRICRI01	82.6	ResultsCRICRI09	14.4
ResultsCRICRI02	91.3	ResultsCRICRI10	79.3
ResultsCRICRI03	96.6	ResultsCRICRI11	81.1
ResultsCRICRI04	82.1	ResultsCRICRI12	65.5
ResultsCRICRI05	82.7	ResultsCRICRI13	84.8
ResultsCRICRI06	88.3	ResultsCRICRI14	98.6
ResultsCRICRI07	85.2	ResultsCRICRI15	76.3
ResultsCRICRI08	64.1	ResultsCRICRI16	73.7

ResultsCRI 84.1



PlanckDistance 1.1E-004

4.0 LM-79 Measurement and Test Results

4.3 Goniophotometer Test

Model No.	STRP210-835U	Sample ID.	G1
Opreate time (Min.)	90	Stabilization time (Min.)	45

Test Method
The samples were tested according to the IES LM-79-2008.
Photometric paramters were measured using a type C goniophotometer and software.
The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample.
The voltage of an AC power supply (RMS voltage)or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load.
The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 0.5^{o} vertical intervals and 10^{o} horizontal intervals.

Test Conditions

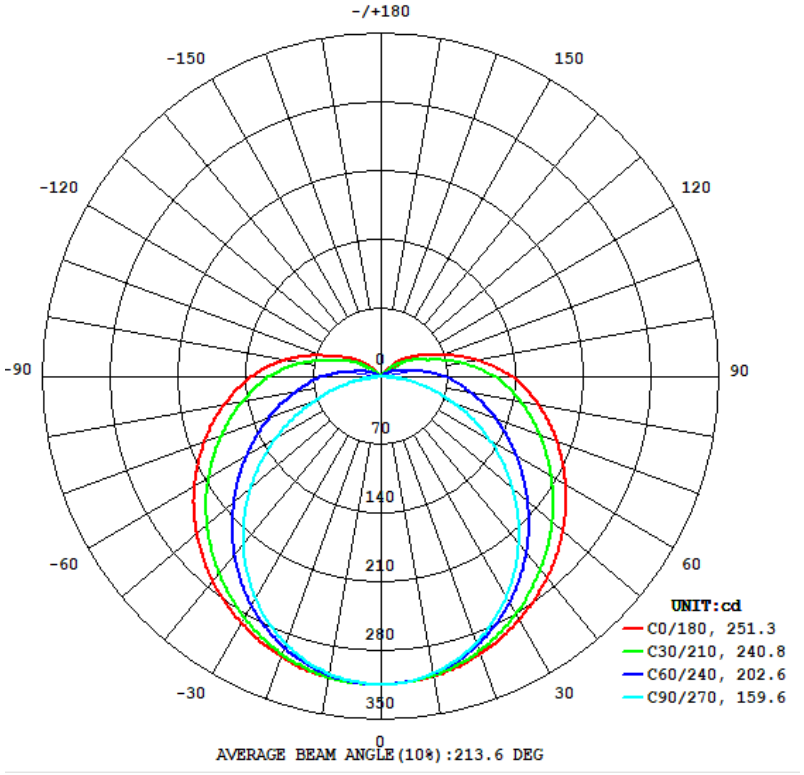
Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.3	120.02	60	0.084	10.1	0.998	Light Down

Test Result

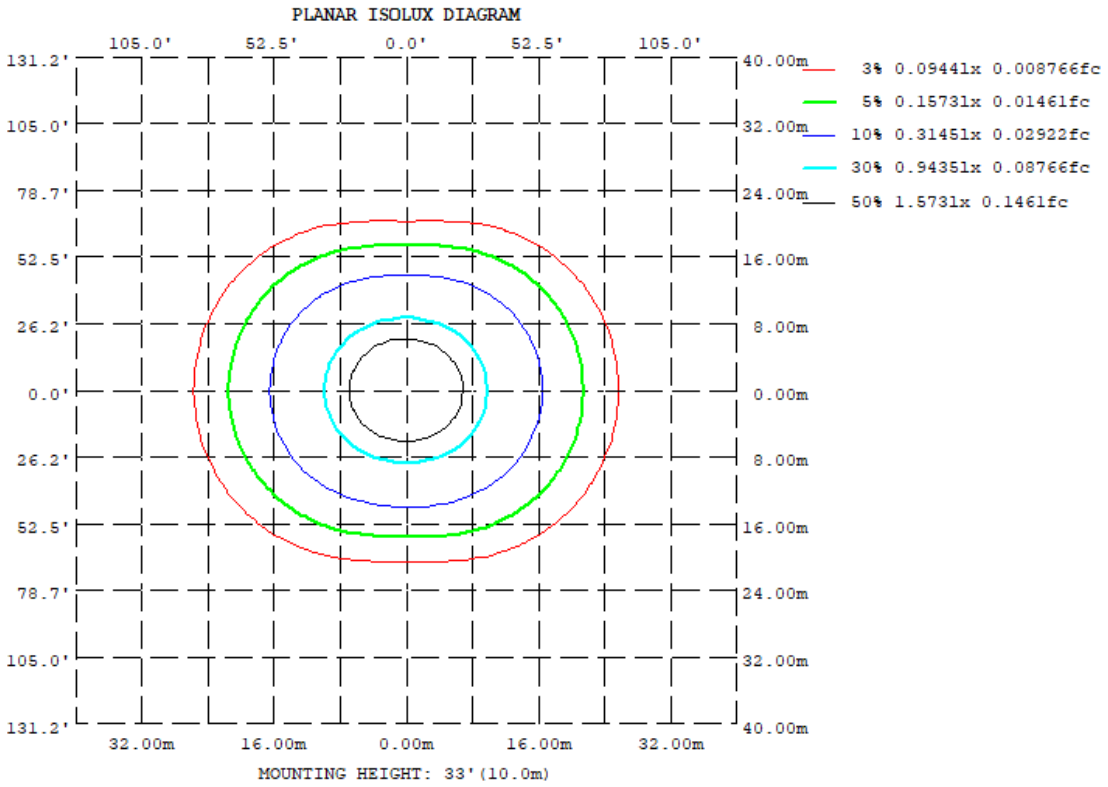
Flux(lm)	Zonal Lumen Requirement(0°-60°)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		0-180	90-270	0-180	90-270	
1345	57.1%	162.6	160.7	165.7	108.6	133.1

4.3 Goniophotometer Test

Light Distrubtion Curve



Isolux Plot



4.3 Goniophotometer Test

Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	310.7	309.0	307.7	310.0	312.4	310.8	308.4	309.4
20	301.0	294.8	288.9	296.7	304.1	297.8	290.2	295.7
30	286.4	273.3	259.9	275.4	290.1	276.9	260.7	274.2
40	268.0	246.1	222.5	247.9	271.7	249.3	222.1	246.9
50	246.1	216.5	178.8	217.3	249.0	218.6	176.5	217.0
60	221.1	185.2	131.3	184.9	223.1	186.1	126.5	185.6
70	194.2	154.2	81.79	152.4	194.8	153.4	74.29	154.5
80	165.6	124.2	34.95	121.6	164.9	121.7	25.52	123.1
90	136.5	96.37	4.611	93.36	135.4	93.43	3.354	94.63
100	101.4	64.74	3.281	63.43	102.1	61.61	3.308	61.81
110	64.91	37.76	3.044	34.26	64.07	34.66	3.068	37.49
120	43.73	23.10	2.672	19.15	39.58	19.11	2.683	22.16
130	26.27	6.748	2.221	6.163	21.90	5.718	2.249	7.439
140	9.894	1.149	1.747	1.137	6.619	1.194	1.814	1.196
150	0.3388	0.8133	1.279	0.8499	0.5222	0.9501	1.397	0.9927
160	0.3684	0.5835	0.8419	0.6047	0.5721	0.7105	0.9916	0.8240
170	0.4170	0.4452	0.5311	0.4565	0.5629	0.5822	0.6307	0.5916
180	0.4989	0.5209	0.5331	0.5167	0.4963	0.5117	0.5310	0.5227
DEG	LUMINOUS INTENSITY:cd							

4.3 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	29.79	0 - 10	29.79	2.22%
10-20	85.88	0 - 20	115.67	8.60%
20-30	132.07	0 - 30	247.74	18.43%
30-40	163.72	0 - 40	411.46	30.60%
40-50	178.77	0 - 50	590.23	43.90%
50-60	177.34	0 - 60	767.57	57.09%
60-70	161.83	0 - 70	929.40	69.13%
70-80	136.36	0 - 80	1065.76	79.27%
80-90	106.62	0 - 90	1172.38	87.20%
90-100	77.12	0 - 100	1249.50	92.93%
100-110	47.58	0 - 110	1297.08	96.47%
110-120	26.86	0 - 120	1323.94	98.47%
120-130	13.84	0 - 130	1337.78	99.50%
130-140	5.08	0 - 140	1342.86	99.88%
140-150	1.08	0 - 150	1343.94	99.96%
150-160	0.36	0 - 160	1344.30	99.98%
160-170	0.17	0 - 170	1344.47	100.00%
170-180	0.05	0 - 180	1344.52	100.00%

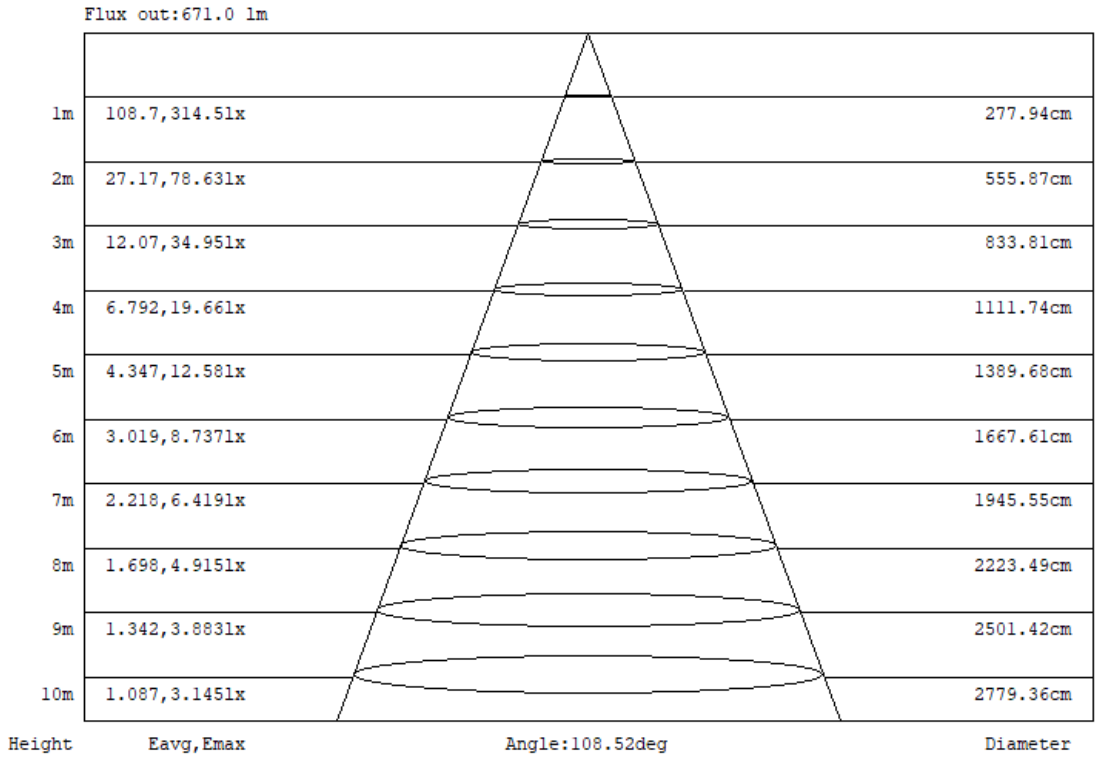
4.3 Goniophotometer Test

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Coefficients Of Utilization - Zonal Cavity Method
Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	117	117	117	117	113	113	113	113	105	105	105	98	98	98	91	91	91	88
1	104	97	92	87	99	94	89	84	87	83	79	81	78	74	75	72	70	67
2	93	83	75	68	89	80	73	67	74	68	63	69	64	60	64	60	56	53
3	84	72	63	56	80	70	61	54	65	57	52	60	54	49	56	51	47	44
4	77	63	54	46	73	61	52	45	57	49	43	53	46	41	49	44	39	36
5	70	56	46	39	67	54	45	38	51	43	37	47	41	35	44	38	34	31
6	65	50	41	34	62	49	40	33	46	38	32	43	36	31	40	34	29	27
7	60	45	36	30	57	44	35	29	41	34	28	39	32	27	36	30	26	24
8	56	41	32	26	53	40	32	26	38	30	25	35	29	24	33	27	23	21
9	52	38	29	23	50	37	29	23	35	27	22	33	26	21	31	25	21	19
10	49	35	27	21	47	34	26	21	32	25	20	30	24	19	28	23	19	17

CONE OF LIGHT DIAGRAM



5.0 THD and PF Test

Model No.	STRP210-835U	Sample ID.	G1

Test Method
The samples were tested according to the ANSI C82.77:2002. The total harmonic distortion shall be measured to the 40th order. The ambient temperature condition was maintained at 25º C ± 1º C. The sample measurements were made using a digital power meter and power supply. The sample was operated at rated voltage and was stabilized before measurement. The total harmonic distortion were calculated.

Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
25.3	277.05	60	0.037	10.1	0.975	7.74%
25.3	120.02	60	0.084	10.1	0.998	4.78%

6.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration	Calibration Due Date
DLF107	Integrating Sphere System	2017/12/28	2018/12/27
DLF108	Auxiliary Lamp	2017/12/28	2018/12/27
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2017/12/28	2018/12/27
DLF116	AC Power Source	2017/12/28	2018/12/27
DLF113	Power Meter	2017/12/28	2018/12/27
DLF112	Temperature Recorder	2017/12/28	2018/12/27
DLF114	Temperature & Humidity Datalogger	2017/12/28	2018/12/27
DLF101	Goniophotometer	2017/12/28	2018/12/27
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-derectional	2017/12/28	2018/12/27
DLF104	AC Power Source	2017/12/28	2018/12/27
DLF507	DC Power Source	2017/12/28	2018/12/27
DLF102	Power Meter	2017/12/28	2018/12/27
DLF111	Temperature & Humidity Datalogger	2017/12/28	2018/12/27
DLF119	Power Meter	2017/12/28	2018/12/27
DLF031	Temperature data logger	2017/12/28	2018/12/27
DLF022	Digital power meter	2017/12/28	2018/12/27
DLF003	Temperature & Humidity Datalogger	2017/12/28	2018/12/27

********** End of Test Report**********