





Test Report

Applicant Company & Address:			
SHENZHEN SNOWBALL LIGHTING LIMITED ADD: NO.82 CENTER VILLAGE, MISSION HILLS SONGYUANXIA, GUANLAN TOWN, LONGHUA DISTRICT, SHENZHEN, GUANGDONG PROVINCE, CHINA 518110			
Contact Person:	Judy Briggs (judy@snowball-co.com)		
Telephone:	86-755-29078625	Fax:	--

Manufacturer Name:	SHENZHEN SNOWBALL LIGHTING LIMITED		
Country of Origin:	China		
Country of Export:	USA, Canada		
Product Description:	Lamp Type: High-Bay Luminaires for Commercial and Industrial Buildings Total amount of light source: 30 pcs Manufacturer Of Light Source: Cree Inc. Model Number Of Light Source: MHB		
Model Number:	SB-HB/H/100W/3D/NW		
Electrical Specification:	120-277V AC, 50/60Hz, 100W (4000K)		

Test Laboratory & Address:			
UL Verification Services (Guangzhou) Co., Ltd. ADD: Building A1, 1F & 2F, Nansha Science and Technology Innovation Center, No. 25, South Huanshi Avenue, Nansha District, Guangzhou 511458, China			
Telephone:	+86 20 28667188	Fax:	+86 20 83486605

Receipt of Test Samples:	2015-09-24	Test Period:	2015-09-26~2015-10-13
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Tested By	Approved By
 / Fabio Fu	 / Sam Tse
Tester Signature / Print Name	Approver Signature / Print Name

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.



Test Report

Statement of Results

Test Flow	Test Method	Sample ID (Lab)	Sample Serial No.	Pass/Fail/NA
1. Integrating Sphere Test	LM-79-08	2177642-S001	N/A	Evaluate by customer
2. Goniophotometer Test	LM-79-08	2177642 -S001	N/A	Evaluate by customer
3. Total Harmonic Distortion Test	ANSI C82.77-2002	2177642 -S001	N/A	Evaluate by customer

Deviation from Test Method *(if any)*

N/A

Remark *(if any)*

1. This report shall not be used by the client to claim product endorsement by NVLAP, NIST or any agency of the US government.



Test Report

Test No.1: Integrating Sphere Test

Environmental Conditions

Temperature:	25.1°C
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Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
LCA-00066-000	Integrating Sphere	Before Use	Before Use
SCL-600	Measurement Standard Lamp	2015-08-24	2016-08-24

Test Sample

2177642-S001

Test Method

<p>1. The sample was tested according to the IES LM-79-2008.</p> <p>2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25°C ± 1°C.</p> <p>3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.</p> <p>4. The sample was 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.</p>

Test Result

Test Type	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation	Operate time (Min.)	Stabilization time (Min.)
Input	120.14	60	0.8743	104.47	0.9946	Face Down	58	50

Test Type	CCT (K)	Luminous Flux (lm)	Color Rendering Index Ra	Luminous Efficacy (lm/W)
Output	4047	11160.36	73.26	106.83



NVLAP Lab Code: 200952-0

Verification Services

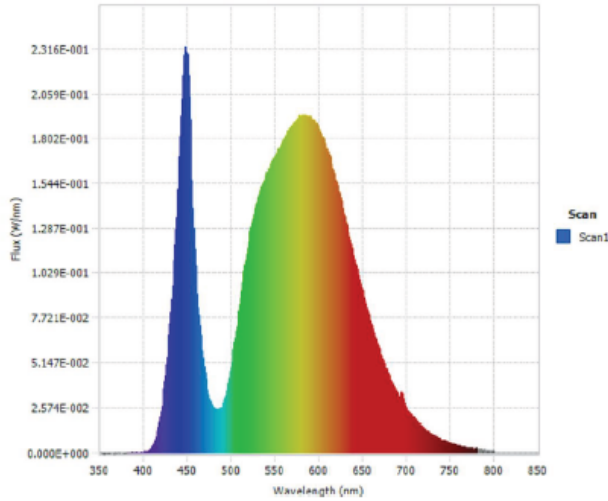
Project No: 4787016661-45

Report No: 4787016661-45a

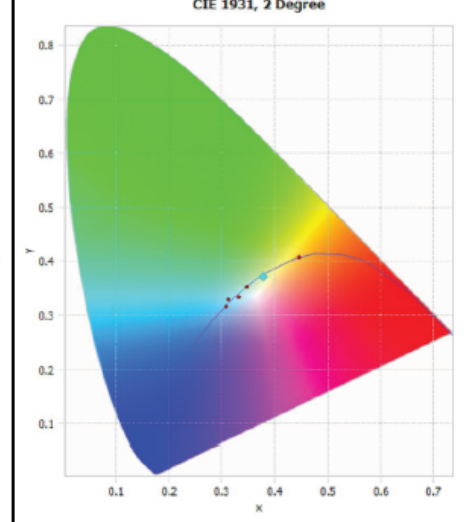
Report Issued Date: 2015-11-02

Test Report

Spectral Flux Graph



Chromaticity Diagram



Spectral Result

Name	Value	Unit	Name	Value	Unit
Φ	33.19	Watts	$\Phi(v)$	11160.36	lumens
Chrom x	0.3776		Chrom y	0.3728	
Duv	-0.001		Chrom u'	0.2248	
Chrom v'	0.4994		λ (peak)	447.4	nm
λ (dom)	579.5	nm	FWHM	22.4	nm
Purity	25.2	%	CCT	4047.0	K
η	106.83	lm/W	SDCM	48.1 F 6500	
RA	73.26		R1	71.7	
R2	78.4		R3	82.6	
R4	73.6		R5	70.9	
R6	69.1		R7	81.4	
R8	58.3		R9	-14.9	
R10	47.9		R11	69.7	
R12	43.8		R13	72.3	
R14	89.8		R15	67.1	



Test Report

Test No.2: Goniophotometer Test

Environmental Conditions

Temperature:	25.1°C
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Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
GVS-LE-GS002	Goniophotometer	Before Use	Before Use
GVS-LE-CA015	Digital Caliper	2014-12-18	2015-12-17
GVS-LE-FS009	Measurement Standard Lamp	2015-08-20	2016-08-19

Test Sample

2177642-S001

Test Method

1. The sample was tested according to the IES LM-79-2008.
2. Photometric parameters were measured using a type C goniophotometer and software.
3. 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.
4. The samples were operated at rated voltage and were stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 0.5° vertical intervals and 22.5° horizontal intervals.

Test Result

Test Type	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation	Operate time (Min.)	Stabilization time (Min.)
Input	120.07	60	0.8738	104.45	0.9955	Face Down	70	30

Test Type	Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Zonal Lumen Result	Luminous Efficacy (lm/W)
		Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread		
Output	11309.4	103.7	97.1	85.6	76.9	20°~50° 73%	108.27



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Verification Services

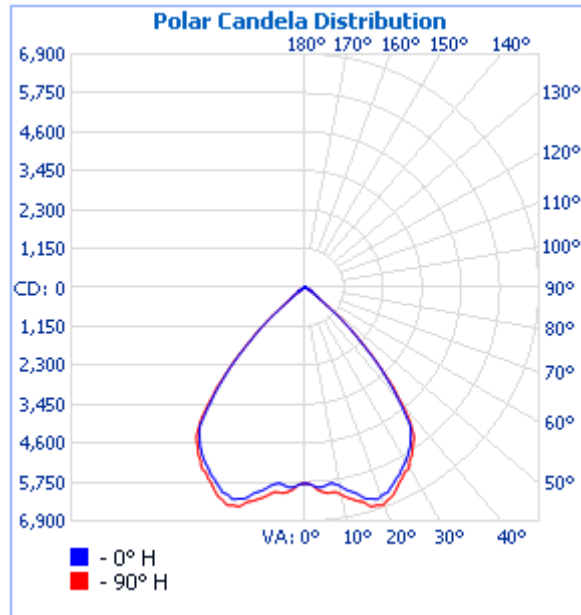
Project No: 4787016661-45

Report No: 4787016661-45a

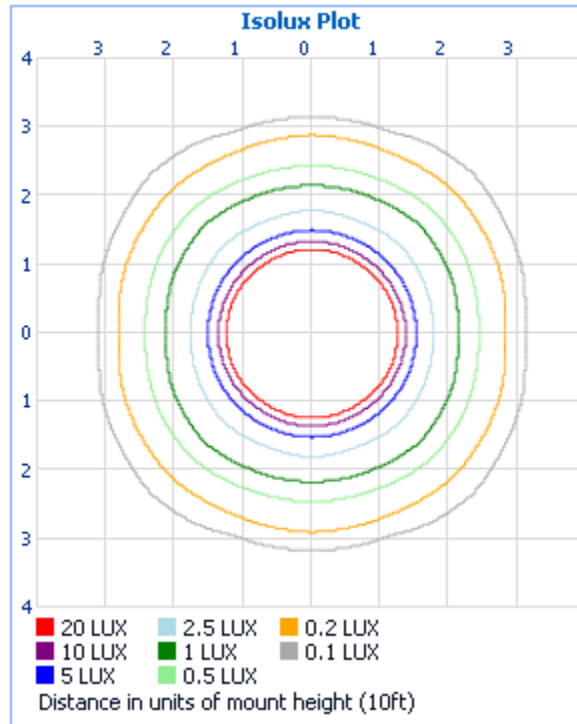
Report Issued Date: 2015-11-02

Test Report

Light Distribution Curve



Isolux Plot





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Test Report

Zonal Lumen Tabulation

Zonal Lumens Summary

Zone	Lumens	% Luminaire
0-30	5,353.1	47.3%
0-40	8,697.7	76.9%
0-60	11,031.8	97.5%
60-90	185.0	1.6%
70-100	66.5	0.6%
90-120	45.0	0.4%
0-90	11,216.8	99.2%
90-180	95.3	0.8%
0-180	11,312.1	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	573.6	5.1%	90-100	15.5	0.1%
10-20	1,841.9	16.3%	100-110	15.3	0.1%
20-30	2,937.6	26.0%	110-120	14.2	0.1%
30-40	3,344.6	29.6%	120-130	14.0	0.1%
40-50	1,965.1	17.4%	130-140	12.0	0.1%
50-60	369.0	3.3%	140-150	10.2	0.1%
60-70	134.0	1.2%	150-160	7.6	0.1%
70-80	33.6	0.3%	160-170	4.9	0%
80-90	17.4	0.2%	170-180	1.6	0%



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Intensity Data(cd)

Candela Table - Type C																	
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	5784	5784	5784	5784	5784	5784	5784	5784	5784	5784	5784	5784	5784	5784	5784	5784	5784
1	5804	5791	5787	5787	5797	5787	5787	5791	5804	5791	5787	5787	5797	5787	5787	5791	5804
2	5837	5831	5837	5841	5837	5841	5837	5831	5837	5831	5837	5841	5837	5841	5837	5831	5837
3	5891	5887	5911	5924	5937	5924	5911	5887	5891	5887	5911	5924	5937	5924	5911	5887	5891
4	5924	5931	5964	5994	6017	5994	5964	5931	5924	5931	5964	5994	6017	5994	5964	5931	5924
5	5911	5937	5994	6044	6064	6044	5994	5937	5911	5937	5994	6044	6064	6044	5994	5937	5911
6	5877	5934	6007	6077	6104	6077	6007	5934	5877	5934	6007	6077	6104	6077	6007	5934	5877
7	5837	5917	6021	6104	6104	6104	6021	5917	5837	5917	6021	6104	6104	6104	6021	5917	5837
8	5844	5931	6054	6134	6104	6134	6054	5931	5844	5931	6054	6134	6104	6134	6054	5931	5844
9	5891	6130	6170	6063	6151	6211	6038	5957	5891	5810	6197	6262	6151	6211	6038	5957	5891
10	5957	6017	6184	6264	6224	6264	6184	6017	5957	6017	6184	6264	6224	6264	6184	6017	5957
11	6051	6084	6261	6337	6298	6337	6261	6084	6051	6084	6261	6337	6298	6337	6261	6084	6051
12	6138	6164	6321	6394	6364	6394	6321	6164	6138	6164	6321	6394	6364	6394	6321	6164	6138
13	6198	6227	6391	6454	6438	6454	6391	6227	6198	6227	6391	6454	6438	6454	6391	6227	6198
14	6265	6307	6448	6470	6504	6470	6448	6307	6265	6307	6448	6470	6504	6470	6448	6307	6265
15	6378	6418	6521	6504	6551	6504	6521	6418	6378	6418	6521	6504	6551	6504	6521	6418	6378
16	6485	6498	6621	6604	6671	6604	6621	6498	6485	6498	6621	6604	6671	6604	6621	6498	6485
17	6525	6531	6661	6667	6758	6667	6661	6531	6525	6531	6661	6667	6758	6667	6661	6531	6525
18	6572	6571	6681	6683	6764	6683	6681	6571	6572	6571	6681	6683	6764	6683	6681	6571	6572
19	6612	6604	6714	6700	6811	6700	6714	6604	6612	6604	6714	6700	6811	6700	6714	6604	6612
20	6552	6568	6691	6673	6811	6673	6691	6568	6552	6568	6691	6673	6811	6673	6691	6568	6552
25	6285	6301	6428	6400	6471	6400	6428	6301	6285	6301	6428	6400	6471	6400	6428	6301	6285
30	5931	5961	6054	6030	6124	6030	6054	5961	5931	5961	6054	6030	6124	6030	6054	5961	5931
35	5423	5420	5470	5454	5563	5454	5470	5420	5423	5420	5470	5454	5563	5454	5470	5420	5423
40	4234	4206	4199	4258	4396	4258	4199	4206	4234	4206	4199	4258	4396	4258	4199	4206	4234
50	968	967	947	996	1040	996	947	967	968	967	947	996	1040	996	947	967	968
55	354	360	364	370	380	370	364	360	354	360	364	370	380	370	364	360	354
60	207	207	217	210	200	210	217	207	207	207	217	210	200	210	217	207	207
65	127	133	150	133	120	133	150	133	127	133	150	133	120	133	150	133	127
70	60	60	73	63	60	63	73	60	60	60	73	63	60	63	73	60	60
75	20	27	27	23	27	23	27	27	20	27	27	23	27	23	27	27	20
80	20	17	20	17	20	17	20	17	20	17	20	17	20	17	20	17	20
85	13	13	17	13	20	13	17	13	13	13	17	13	20	13	17	13	13
90	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
95	13	17	20	13	13	13	20	17	13	17	20	13	13	13	20	17	13
100	20	17	17	13	13	13	17	17	20	17	17	13	13	13	17	17	20
105	20	17	17	17	13	17	17	17	20	17	17	17	13	17	17	17	20
110	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
115	13	13	13	17	13	17	13	13	13	13	13	17	13	17	13	13	13
120	13	17	17	13	20	13	17	13	17	13	17	13	20	13	17	17	13
125	20	13	17	13	20	13	17	13	20	13	17	13	20	13	17	13	20
130	20	13	17	13	13	13	17	13	20	13	17	13	13	13	17	13	20
135	13	17	13	17	13	17	13	17	13	17	13	17	13	17	13	17	13
140	13	13	17	17	13	17	17	13	13	13	17	17	13	17	17	13	13
145	13	17	13	23	20	23	13	17	13	17	13	23	20	23	13	17	13
150	13	17	13	17	13	17	13	17	13	17	13	17	13	17	13	17	13
155	13	13	17	13	20	13	17	13	13	13	17	13	20	13	17	13	13
160	13	20	23	13	13	13	23	20	13	20	23	13	13	13	23	20	13
165	20	17	20	17	13	17	20	17	20	17	20	17	13	17	20	17	20
170	13	17	17	17	20	17	17	17	13	17	17	17	20	17	17	17	13
175	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
180	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20



Test Report

Test No.3: Total Harmonic Distortion Test

Environmental Conditions

Temperature:	25.1°C
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Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
GVS-LE-PM012	Digital Power Meter	2015-04-28	2016-04-27
GVS-LE-FS047	Power Supply	Before Use	Before Use

Test Sample

2177642-S001

Test Method

<ol style="list-style-type: none"> The sample was tested according to the ANSI C82.77-2002. The ambient temperature condition was maintained at 25°C ± 1°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 was calculated from the digital power meter.

Test Result

Test Type	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD (%)	Operate time (Min.)	Stabilization time (Min.)
Input	277	60	0.3984	104.03	0.9424	11.74	60	50



Test Report

Photos of sample



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