Test Report

Client Name	:	Shenzhen Qinhan Lighting Co.,Limited
Address	:	A building, Chuangze Industrial City, Dalang Town, Dongguan, Guangdong, China.
Product Name	:	UFO Series LED high bay light 200W
Date	:	2019-09-12

Shenzhen Anbotek Pengcheng Compliance Laboratory Limited

Report No.:	PCANL190910003-01
Product Description:	UFO Series LED high bay light 200W
Electrical Rating:	100-277VAC ,60Hz
Model No.:	QH-HBUFO-200W
Model Difference:	N/A
Test Date:	2019-09-11
Test Standard:	LM-79-08
Test Laboratory:	Shenzhen Anbotek Pengcheng Compliance Laboratory Limited
Testing location:	Zone B, 1/F., Building 2, Hengchangrong High Tech Industrial Park, Huangtian, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.

Tested by **Reviewed by**

Ocean Deng Ocean Deng Flora Zhang Flora zhang

Anbotek (PC) Compliance Laboratory Limited * Approved *

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Anbotek Pengcheng Compliance Laboratory Limited.

General Information

Applicant:	Shenzhen Qinhan Lighting Co.,Limited
Applicant Address:	A building, Chuangze Industrial City, Dalang Town, Dongguan, Guangdong, China.
Manufacturer:	Shenzhen Qinhan Lighting Co.,Limited
Manufacturer Address:	A building, Chuangze Industrial City, Dalang Town, Dongguan, Guangdong, China.
Brand Name:	N/A
Tested Model:	QH-HBUFO-200W
Nominal CCT	6500K

Summary of Result

Test Item	**Test Result**	
	Luminous Flux (lm)	**Luminous Efficacy (lm/W)**
Integrating Sphere Test	27695	142.83
Goniophotometer Test	27749	142.67

1 Test Condition

1.1 Air Temperature

The ambient temperature in which measurements are being taken shall be maintained at 25°C±1°C, measured at a point not more than 1 m from the SSL product and at the same height as the SSL product. The temperature sensor shall be shielded from direct optical radiation from the SSL product and optical radiation from any other source. If measurements are performed at other than this recommended temperature, this is a non-standard condition and shall be noted in the test report.

1.2 Thermal Conditions for Mounting SSL Products

The method of mounting can be the primary path for heat flow away from the device and can affect measurement results significantly. The SSL product under test shall be mounted to the measuring instrument so that heat conduction through supporting objects causes negligible cooling effects. If the SSL product under test is provided with a support structure that is designated to be used as a component of the luminaire thermal management system, the product shall be tested with the support structure attached. Any such support structure included in the measurement shall be reported.

1.3 Air Movement

The incidence of air movements on the surface of a SSL product under test may substantially after electrical and photometric values. Air flow around the SSL product being tested should be such that normal convective air flow induced by device under test is not affected.

1.4 Waveshape of AC Power Supply

The AC power supply, while operating the SSL product, shall have a sinusoidal voltage waveshapeat the prescribed frequency typically 50/60 Hz or 50 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

1.5 Voltage Regulation

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.

1.6 Seasoning

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning.

1.7 Stabilization

Before measurements are taken, the SSL product under test shall be operated long enough to reach stabilization and temperature equilibrium. The time required for stabilization depends on the type of SSL products under test. The stabilization time typically ranges from 30 min to 2 or more hours for large SSL products.

1.8 Operating Orientation

The SSL product under test shall be evaluated in the operating orientation recommended by the manufacturer for an intended use of the SSL product. Stabilization and photometric measurements of SSL products shall be done in such operating orientation.

2 Test Method

2.1 Integrating Sphere Measurement

The integrating sphere system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The system is calibrated by standard lamp before measurement weekly. The standard lamp has been calibrated regularly and traced to the National Primary Standard.

The 4π geometry was used to measure total luminous, luminous efficacy, chromaticity coordinates, correlated color temperature, and color rendering index, the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm. The product was operated in its intended orientation and was recorded in the report.

2.2 Goniophotometer Measurement

The goniophotometer system is calibrated by standard lamp before measurement weekly. The standard lamp has been calibrated regularly and traced to National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous efficacy, luminous intensity distribution, and color angular uniformity, which were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. The product was operated in its intended orientation and was recorded in the report.

2.3 Electrical Measurement

According to ANSI C82.77-2002, the measurement was made using a digital power meter and power supply, the SSL product under test was operated at rated voltage and stabilized enough before measurement. The total harmonic distortion of current and power factor can be calculated from the digital power meter. The digital power meter was calibrated regularly and traced to National Primary Standards.

3 Test Result

3.1 Integrating Sphere

Temperature (°C)	Test Humidity	Orientation	Stabilization Time(min)	Test Time(min)	Number of hours operated prior to measurement
25.1	52%RH	Face Down	30min	1min	0

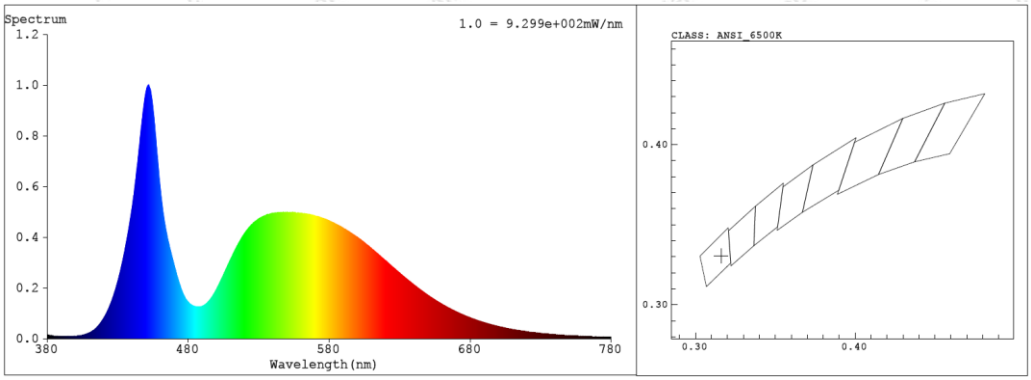
Input Voltage (V)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
230.00	60	0.8664	0.9732	193.9

Luminous Flux (lm)	Radiant Flux (W)	CCT (K)	Duv	Luminous Efficacy (lm/W)
27695	88.8	6320	0.0023	142.83

Ra	X	y	u'	v'
75.5	0.3160	0.3305	0.1995	0.4696

R1	R2	R3	R4	R5
74	79	80	76	74
R6	R7	R8	R9	R10
71	84	65	-13	47
R11	R12	R13	R14	R15
73	44	75	89	70

Spectral Distribution & Chromaticity Diagram



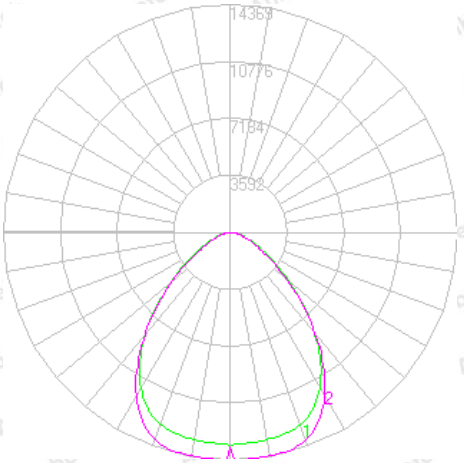
3.2.Goniophotometer

Temperature (°C)	Test Humidity	Orientation	Stabilization Time(min)	Test Time(min)	Number of hours operated prior to measurement
25.3	57%	Face down	30	45	0

Input Voltage (V)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
230.02	60	0.8690	0.9726	194.5

Luminous Flux (lm)	CBCP (cd)	Field Angle (10%)	Beam Angle (50%)	Luminous Efficacy (lm/W)
27749	13513	131.3	88.4	142.67

Luminous Intensity Distribution



Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	5079.78	18.30	18.30
0-30	10801.52	38.90	38.90
0-40	17038.26	61.40	61.40
0-60	25255.49	91.00	91.00
0-80	27527.25	99.20	99.20
0-90	27677.48	99.70	99.70
10-90	26384.19	95.10	95.10
20-40	11958.47	43.10	43.10
20-50	17032.55	61.40	61.40
40-70	9803.73	35.30	35.30
60-80	2271.8	8.20	8.20
70-80	685.30	2.50	2.50
80-90	150.19	0.50	0.50
90-110	7.50	0.00	0.00
90-120	13.81	0.00	0.00
90-130	23.40	0.10	0.10
90-150	49.26	0.20	0.20
90-180	71.88	0.30	0.30
110-180	64.38	0.20	0.20
0-180	27749.36	100.00	100.00

Total Luminaire Efficiency = 100.00%

Zone	Lumens
0-10	1293.26
10-20	3786.52
20-30	5721.74
30-40	6236.74
40-50	5074.09
50-60	3143.14
60-70	1586.5
70-80	685.30
80-90	150.19
90-100	3.83
100-110	3.67
110-120	6.31
120-130	9.60
130-140	12.43
140-150	13.43
150-160	11.89
160-170	7.95
170-180	2.78

Luminous Intensity (cd) Distribution Data

	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	13513	13513	13513	13513	13513	13513	13513	13513	13513	13513	13513	13513	13513	13513	13513	13513	13513
1	13377	13407	13462	13586	14367	13586	13462	13407	13377	13407	13462	13586	14367	13586	13462	13407	13377
2	13376	13404	13459	13585	14369	13585	13459	13404	13376	13404	13459	13585	14369	13585	13459	13404	13376
3	13366	13404	13457	13578	14362	13578	13457	13404	13366	13404	13457	13578	14362	13578	13457	13404	13366
4	13366	13396	13448	13575	14367	13575	13448	13396	13366	13396	13448	13575	14367	13575	13448	13396	13366
5	13358	13390	13445	13564	14359	13564	13445	13390	13358	13390	13445	13564	14359	13564	13445	13390	13358
10	13288	13342	13396	13520	14345	13520	13396	13342	13288	13342	13396	13520	14345	13520	13396	13342	13288
15	13229	13229	13271	13390	14280	13390	13271	13229	13229	13229	13271	13390	14280	13390	13271	13229	13229
20	12932	12928	12972	13097	13958	13097	12972	12928	12932	12928	12972	13097	13958	13097	12972	12928	12932
25	12323	12338	12380	12461	13172	12461	12380	12338	12323	12338	12380	12461	13172	12461	12380	12338	12323
30	11337	11370	11376	11444	11943	11444	11376	11370	11337	11370	11376	11444	11943	11444	11376	11370	11337
35	9963	9980	10007	10020	10237	10020	10007	9980	9963	9980	10007	10020	10237	10020	10007	9980	9963
40	8332	8389	8375	8371	8338	8371	8375	8389	8332	8389	8375	8371	8338	8371	8375	8389	8332
45	6628	6594	6594	6558	6473	6558	6594	6594	6628	6594	6594	6558	6473	6558	6594	6594	6628
50	4946	4873	4929	4875	4748	4875	4929	4873	4946	4873	4929	4875	4748	4875	4929	4873	4946
55	3549	3539	3524	3451	3267	3451	3524	3539	3549	3539	3524	3451	3267	3451	3524	3539	3549
60	2420	2438	2407	2325	2181	2325	2407	2438	2420	2438	2407	2325	2181	2325	2407	2438	2420
65	1627	1624	1586	1537	1433	1537	1586	1624	1627	1624	1586	1537	1433	1537	1586	1624	1627
70	1062	1037	1032	997	946	997	1032	1037	1062	1037	1032	997	946	997	1032	1037	1062
75	693	649	636	632	612	632	636	649	693	649	636	632	612	632	636	649	693
80	333	332	333	342	348	342	333	332	333	332	333	342	348	342	333	332	333
85	117	115	114	121	122	121	114	115	117	115	114	121	122	121	114	115	117
90	16	15	15	15	13	15	15	15	16	15	15	15	13	15	15	15	16
95	3	3	3	2	2	2	3	3	3	3	3	2	2	2	3	3	3
100	3	3	3	2	2	2	3	3	3	3	3	2	2	2	3	3	3
105	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
110	5	5	5	5	4	5	5	5	5	5	5	5	4	5	5	5	5
115	7	6	6	6	6	6	6	6	7	6	6	6	6	6	6	6	7
120	9	8	8	8	8	8	8	8	9	8	8	8	8	8	8	8	9
125	11	11	11	10	10	10	11	11	11	11	11	10	10	10	11	11	11
130	14	13	13	13	13	13	13	13	14	13	13	13	13	13	13	13	14
135	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
140	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
145	22	22	21	21	22	21	21	22	22	22	21	21	22	21	21	22	22
150	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
155	26	26	26	25	26	25	26	26	26	26	26	25	26	25	26	26	26
160	28	27	27	27	28	27	27	27	28	27	27	27	28	27	27	27	28
165	28	28	28	28	29	28	28	28	28	28	28	28	29	28	28	28	28
170	29	28	28	28	30	28	28	28	29	28	28	28	30	28	28	28	29
175	29	29	29	29	31	29	29	29	29	29	29	29	31	29	29	29	29
180	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

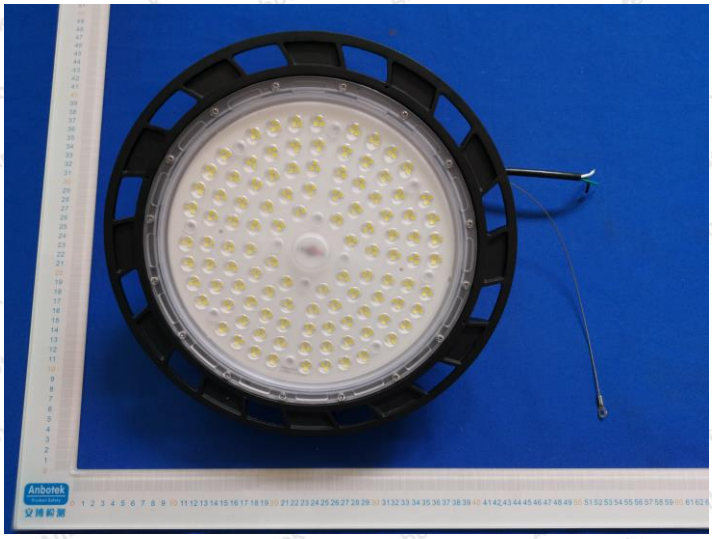
1 Test Equipment

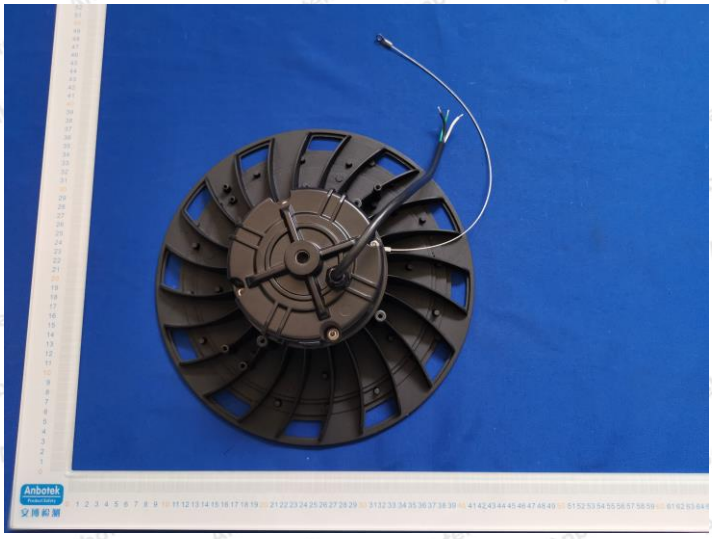
Equipment Name	Manufacturer	Model No	Reference No	Calibration Due Date
Integrating Sphere (2.0m)	EVERFINE	YF-1000	SE-599	Before use
Standard Lamp	SENSING	DC24V100W	SE-2091	2020-05-06
Digital Power Meter	YOKOGAWA	WT210	SE-074	2020-05-06
Goniophotometer System	SENSING	GMS-3000	SE-450	Before use
Digital Power Meter	YOKOGAWA	WT310	SE-381	2020-05-06
AC Power Source	HUAYANG	HY9010	SE-114	2020-05-06
DC Power Source	EVERFINE	WY605	SE-605	2020-05-06
Temperature Sensor	WALVICO	HG126D	SE-616	2020-05-06

Measurement Uncertainty Statement:

Φ :Urel=2.78% (k=2)
$U_p(u')$: Urel=0.04%
$U_p(v')$:Urel=0.02%

Attachment B – Product Photo





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