DesignLights Consortium Test Report

Reference Standards

UL1598-2008
ANSI C82.77-10-2014
IES LM-79-2008

Prepared For

P.Q.L., Inc.
2285 Ward Avenue / Simi Valley, CA 93065

Test Laboratory:
UL-CCIC Company Limited
Test Laboratory Address:
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Catalog Number
HLT1CP1352CUW

Project Number
4791245206
Report Number
4791245206_1

Test Date
2023-11-17~2023-11-22
Issue Date
2024-03-28
Revision Date
N/A

Prepared By	**Approved By**
Zhao, Elaine	Chris Yi

Test Summary

DLC Technical Requirements V5.1- issued 2020-02-14

Requirement Category	Test Method	Requirements	Tolerance	Test Result
Minimum Light Output (lm)-Luminaires	**IES LM-79-2008**	≥10000	-10%	15290.9
Zonal Lumen Requirement 1(20°-50°)	**IES LM-79-2008**	≥30%	-10%	58.40%
Minimum Luminaire Efficacy (lm/W)-Luminaires	**IES LM-79-2008**	≥135	-3%	146.56
Allowable CCT (4000K)	**IES LM-79-2008/ANSI C78.377-2015**	3985±275	N/A	4160
Allowable CCT (5000K)	**IES LM-79-2008/ANSI C78.377-2015**	5029±283	N/A	5084
Allowable CCT (5000K)	**IES LM-79-2008/ANSI C78.377-2015**	5029±283	N/A	5068
Allowable CCT (5000K)	**IES LM-79-2008/ANSI C78.377-2015**	5029±283	N/A	5052
Minimum CRI	**IES LM-79-2008/CIE 13.3-1995**	≥70	-1	80
Minimum R9	**IES LM-79-2008**	≥-40	-1	-12.0
Minimum Rg	**IES LM-79-2008**	≥89	-1	93
Minimum Rf	**IES LM-79-2008**	≥70	-1	82
Rcs,h1	**IES LM-79-2008**	-18%-23%	-1%	-15%
Unified Glare Rating (UGR)	**IES LM-79-2008**	≤28	N/A	27.3
Power Factor	**ANSI C82.77-10-2014**	≥0.9	-0.03	0.9413
Total Harmonic Distortion (A%)	**ANSI C82.77-10-2014**	≤20%	5%	8.77%
In-Situ Temperature Measurement Test for LED 1 (°C)	**UL1598-2008**	≤105	N/A	76.5
In-Situ Temperature Measurement Test for Driver 1 (°C)	**UL1598-2008**	≤90	N/A	60.9
Max Chromaticity Shift (1000-6000h)	**N/A**	≤0.007	0.0004	0.0032
Minimum Luminaire Warranty (Years)	**N/A**	≥5	N/A	≥5

Test List

Sample Received Date: 2023-11-10

Test Item	Test Date	Model Number	Tests Conducted By
Integrating Sphere Test	2023-11-21	HLT1CP1352CUW 135W 4000K	Li, Coulson
Integrating Sphere Test	2023-11-21	HLT1CP1352CUW 135W 5000K	Li, Coulson
Integrating Sphere Test	2023-11-21	HLT1CP1352CUW 115W 5000K	Li, Coulson
Integrating Sphere Test	2023-11-21	HLT1CP1352CUW 100W 5000K	Li, Coulson
Goniophotometer Test	2023-11-17	HLT1CP1352CUW 135W 4000K	Li, Coulson
Goniophotometer Test	2023-11-17	HLT1CP1352CUW 135W 5000K	Li, Coulson
Goniophotometer Test	2023-11-17	HLT1CP1352CUW 115W 4000K	Li, Coulson
Goniophotometer Test	2023-11-17	HLT1CP1352CUW 115W 5000K	Li, Coulson
Goniophotometer Test	2023-11-20	HLT1CP1352CUW 100W 4000K	Li, Coulson
Goniophotometer Test	2023-11-20	HLT1CP1352CUW 100W 5000K	Li, Coulson
THD and PF Test	2023-11-22	HLT1CP1352CUW 135W 4000K	Li, Coulson
THD and PF Test	2023-11-22	HLT1CP1352CUW 135W 5000K	Li, Coulson
THD and PF Test	2023-11-22	HLT1CP1352CUW 115W 5000K	Li, Coulson
THD and PF Test	2023-11-22	HLT1CP1352CUW 100W 5000K	Li, Coulson
In-Situ Temperature Measurement Test	2023-11-22	HLT1CP1352CUW 135W 5000K	Li, Coulson

Remark (if any)

1. UL test equipment information is recorded on Meter Use in UL's Aurora database.
2. The accuracy method decision rule is applied when the compliance or verdict is made to the results of this report.
3. This Report is a copy report of Test report number 4791059336_4 issued on 2023-11-28.

Product Description

Lamp/Luminaire Description: High-bay Luminaires for Commercial and Industrial Buildings
Model Number: HLT1CP1352CUW
Electrical Parameter: 120-277V, 50/60Hz
LED Package: STW8A32E
Dimming Information: Continuous dimming capability

Products Scaled Value

Model Number	CCT	Luminous Flux	Power	Luminous Efficacy
HLT1CP1352CUW	4000K	20250	135	150
HLT1CP1352CUW	5000K	20385	135	151
HLT1CP1352CUW	4000K	17250	115	150
HLT1CP1352CUW	5000K	17365	115	151
HLT1CP1352CUW	4000K	15000	100	150
HLT1CP1352CUW	5000K	15100	100	151

Photos of Products Characteristics

Integrating Sphere Test

Model No.	HLT1CP1352CUW 135W 4000K		Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)		45

Test Method

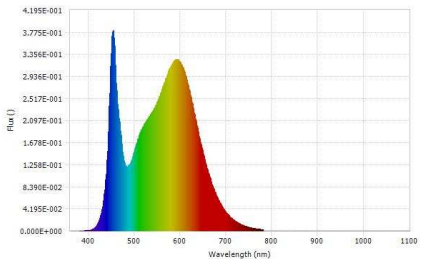
1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
2.Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °C. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
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. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. 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.

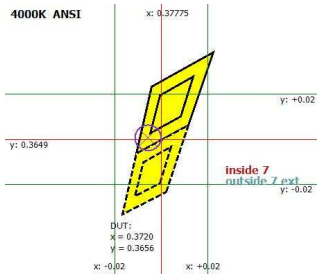
Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	120.07	60	1.0929	130.91	0.9976	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
4160	83	3.0	-0.0027	19455.6	148.62	NA





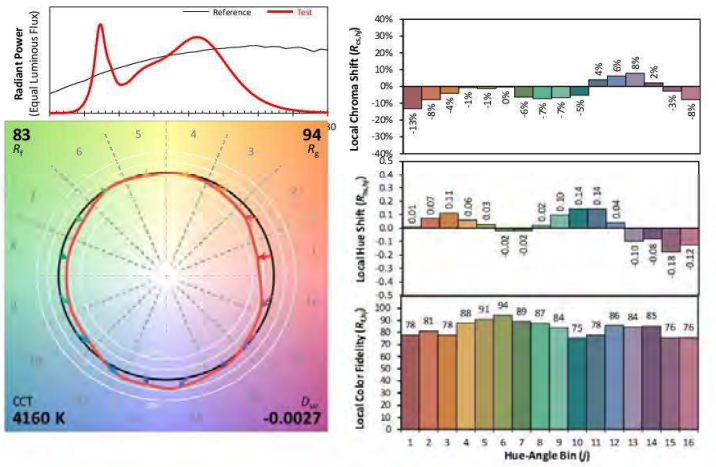
Luminous Flux (lm)	19455.6	Chrom x	0.3720
Chrom y	0.3656	Chrom u	0.2240
Chrom v	0.3302	Duv	-0.0027
Chrom u'	0.2240	Chrom v'	0.4953
CCT (K)	4160	Luminous Efficacy (lm/W)	148.62
Ra	83	R1	82.0
R2	92.0	R3	95.0
R4	79.0	R5	82.0
R6	87.0	R7	83.0
R8	61.0	R9	3.0
R10	80.0	R11	78.0
R12	64.0	R13	85.0
R14	98.0	R15	75.0
Rf	83	Rg	94
Rcs,h1	-13%		

Integrating Sphere Test (Cont'd)

TM-30 Report

ANSI/IES TM-30-18 Color Rendition Report

Source:	STW8A32E	**Manufacturer:**	P.Q.L., Inc.
Date:	11/21/2023	**Model:**	HLT1CP1352CUW 135W 4000K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3720
y	0.3656
u'	0.2240
v'	0.4953

CIE 13.3-1995 (CRI)

R_a	83
R_9	3

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Integrating Sphere Test

Model No.	HLT1CP1352CUW 135W 5000K	Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

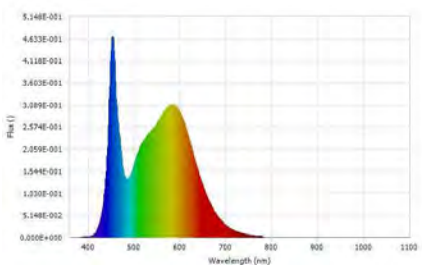
1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
2.Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °C. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
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. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. 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.

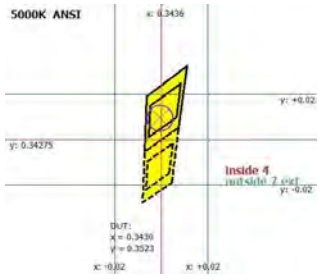
Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	120.07	60	1.1142	133.47	0.9977	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
5084	81	-11.0	0.0012	19658.3	147.29	NA

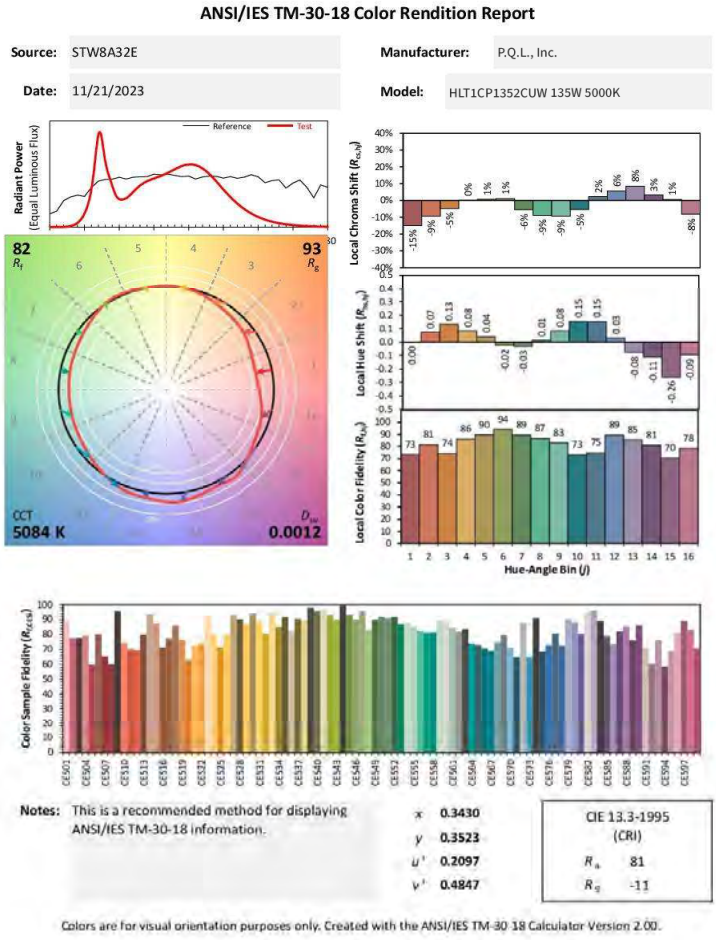




Luminous Flux (lm)	19658.3	Chrom x	0.3430
Chrom y	0.3523	Chrom u	0.2097
Chrom v	0.3231	Duv	0.0012
Chrom u'	0.2097	Chrom v'	0.4847
CCT (K)	5084	Luminous Efficacy (lm/W)	147.29
Ra	81	R1	78.0
R2	88.0	R3	94.0
R4	78.0	R5	79.0
R6	83.0	R7	84.0
R8	60.0	R9	-11.0
R10	72.0	R11	77.0
R12	62.0	R13	81.0
R14	97.0	R15	72.0
Rf	82	Rg	93
Rcs,h1	-15%		

Integrating Sphere Test (Cont'd)

TM-30 Report



Integrating Sphere Test

Model No.	HLT1CP1352CUW 115W 5000K		Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)		45

Test Method

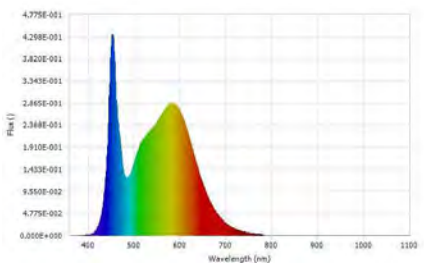
1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
2.Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °C. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
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. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. 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.

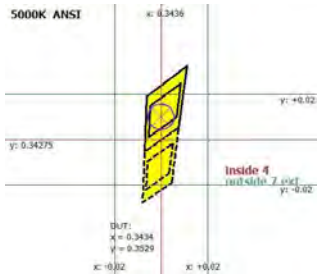
Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	120.14	60	1.0026	120.13	0.9972	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
5068	81	-11.0	0.0014	17865.2	148.72	NA





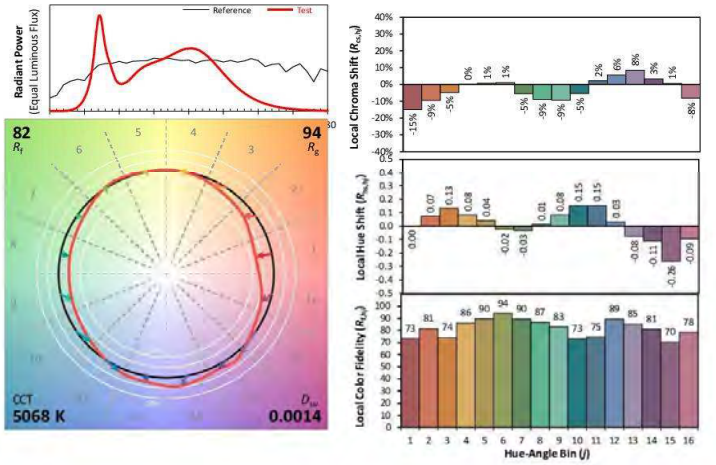
Luminous Flux (lm)	17865.2	Chrom x	0.3434
Chrom y	0.3529	Chrom u	0.2098
Chrom v	0.3234	Duv	0.0014
Chrom u’	0.2098	Chrom v’	0.4851
CCT (K)	5068	Luminous Efficacy (lm/W)	148.72
Ra	81	R1	78.0
R2	88.0	R3	94.0
R4	78.0	R5	79.0
R6	83.0	R7	84.0
R8	60.0	R9	-11.0
R10	72.0	R11	77.0
R12	61.0	R13	81.0
R14	97.0	R15	71.0
Rf	82	Rg	94
Rcs,h1	-15%		

Integrating Sphere Test (Cont'd)

TM-30 Report

ANSI/IES TM-30-18 Color Rendition Report

Source:	STW8A32E	**Manufacturer:**	P.Q.L., Inc.
Date:	11/21/2023	**Model:**	HLT1CP1352CUW 115W 5000K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3434
y	0.3529
u'	0.2098
v'	0.4851

CIE 13.3-1995 (CRI)

R_a	81
R_9	-11

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Integrating Sphere Test

Model No.	HLT1CP1352CUW 100W 5000K	Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

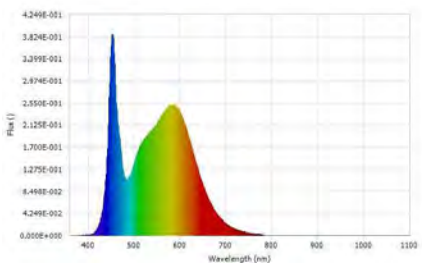
1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
2.Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °C. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
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. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. 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.

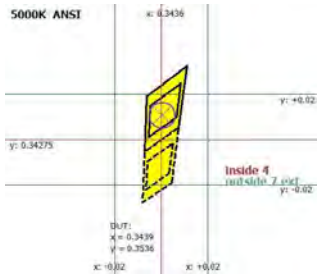
Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	120.01	60	0.8597	102.82	0.9966	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
5052	80	-12.0	0.0015	15626.7	151.98	NA

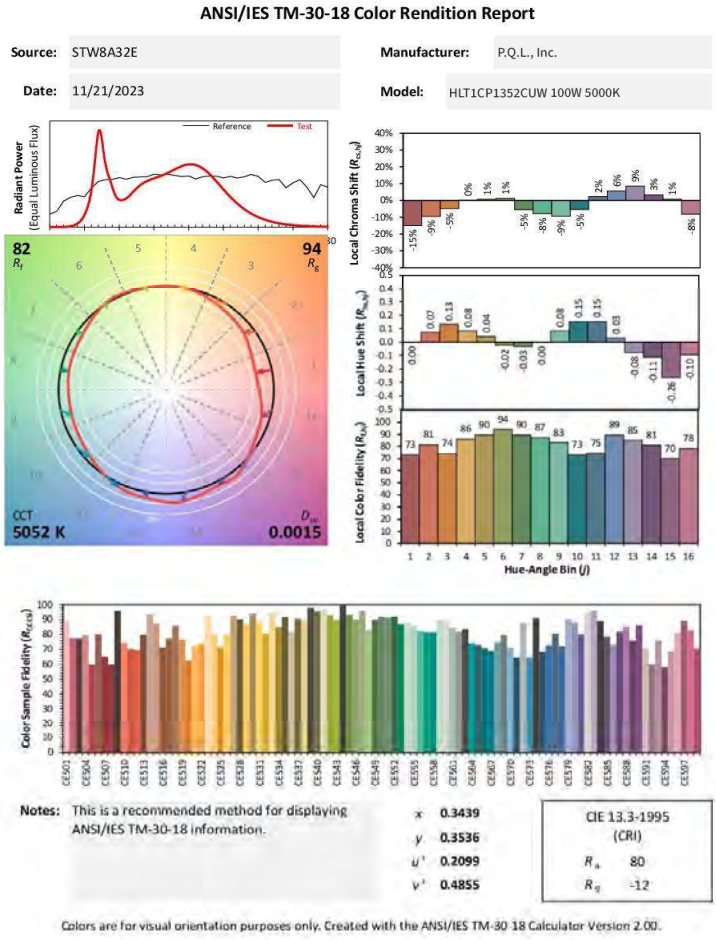




Luminous Flux (lm)	15626.7	Chrom x	0.3439
Chrom y	0.3536	Chrom u	0.2099
Chrom v	0.3236	Duv	0.0015
Chrom u’	0.2099	Chrom v’	0.4855
CCT (K)	5052	Luminous Efficacy (lm/W)	151.98
Ra	80	R1	78.0
R2	88.0	R3	94.0
R4	78.0	R5	79.0
R6	83.0	R7	84.0
R8	60.0	R9	-12.0
R10	72.0	R11	77.0
R12	61.0	R13	81.0
R14	97.0	R15	71.0
Rf	82	Rg	94
Rcs,h1	-15%		

Integrating Sphere Test (Cont'd)

TM-2 Report



Goniophotometer Test

Model No.	HLT1CP1352CUW 135W 4000K	Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
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. The reference standard lamp is rated current 3.8606A, 3.8742A, 3.8840A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.3	120.10	60	1.1008	131.860	0.9973	3.98%	Horizontal

Test Results

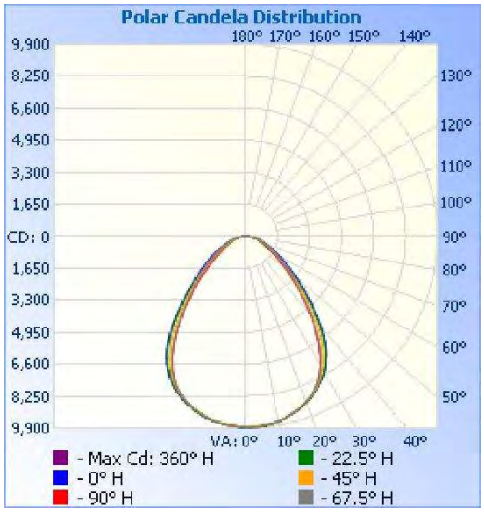
Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	20°-50°	N/A	Horizontal Spread	Vertical Spread	
19445.0	58.40%	N/A	80.8	87.2	147.47

Backlight	Uplight	Glare
NA	NA	NA

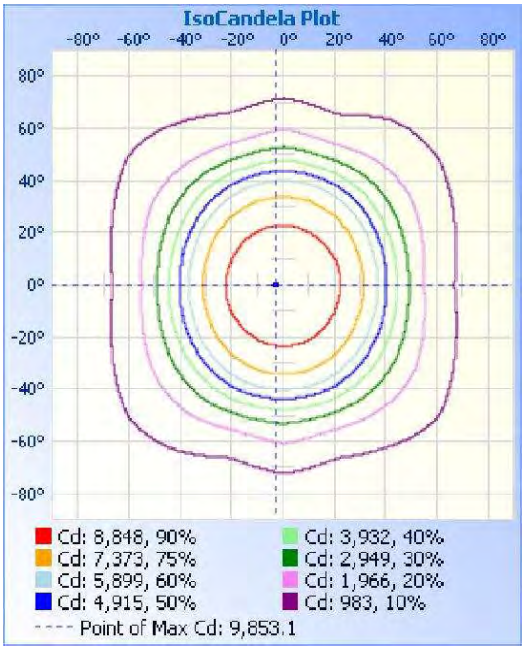
UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
27.2	27.2	NA	NA

Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot



Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	7527.2	38.70%
0-40	11728.5	60.30%
0-60	17037.7	87.60%
60-90	2351.5	12.10%
70-100	1081.2	5.60%
90-120	12.3	0.10%
0-90	19389.2	99.70%
90-180	55.8	0.30%
0-180	19445.0	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	234.5	1.20%	90-95	2.9	0.00%
5-10	696.0	3.60%	95-100	2.2	0.00%
10-15	1132.3	5.80%	100-105	1.8	0.00%
15-20	1525.1	7.80%	105-110	1.8	0.00%
20-25	1855.1	9.50%	110-115	1.8	0.00%
25-30	2084.2	10.70%	115-120	1.9	0.00%
30-35	2161.3	11.10%	120-125	2.1	0.00%
35-40	2040.1	10.50%	125-130	2.6	0.00%
40-45	1767.7	9.10%	130-135	3.4	0.00%
45-50	1461.1	7.50%	135-140	4.2	0.00%
50-55	1167.4	6.00%	140-145	4.8	0.00%
55-60	913.0	4.70%	145-150	5.1	0.00%
60-65	713.7	3.70%	150-155	5.1	0.00%
65-70	561.6	2.90%	155-160	4.8	0.00%
70-75	444.3	2.30%	160-165	4.3	0.00%
75-80	336.6	1.70%	165-170	3.6	0.00%
80-85	218.8	1.10%	170-175	2.5	0.00%
85-90	76.6	0.40%	175-180	0.9	0.00%

Goniophotometer Test (Cont'd)

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	9821	9821	9821	9821	9821	9821	9821	9821	9821	9821	9821	9821	9821	9821	9821	9821	9821
1	9818	9848	9791	9832	9802	9814	9814	9822	9819	9846	9784	9830	9841	9820	9807	9779	9820
2	9816	9843	9788	9830	9833	9839	9789	9814	9828	9824	9807	9803	9828	9828	9803	9806	9853
3	9814	9832	9795	9834	9828	9830	9803	9798	9798	9825	9789	9801	9796	9812	9786	9794	9793
4	9824	9830	9790	9836	9848	9796	9779	9804	9787	9796	9789	9810	9796	9796	9790	9784	9814
5	9794	9834	9792	9781	9828	9808	9778	9789	9771	9778	9791	9802	9800	9768	9769	9803	9806
6	9772	9843	9770	9789	9801	9790	9776	9758	9756	9759	9747	9773	9776	9754	9740	9764	9780
7	9785	9773	9752	9758	9786	9772	9747	9729	9746	9746	9703	9757	9725	9733	9736	9746	9769
8	9727	9780	9747	9732	9731	9734	9704	9710	9723	9714	9672	9710	9701	9714	9713	9739	9739
9	9714	9750	9702	9724	9750	9698	9685	9686	9711	9708	9687	9689	9679	9673	9670	9683	9741
10	9686	9693	9667	9679	9712	9679	9648	9647	9672	9660	9608	9666	9642	9654	9647	9670	9718
11	9660	9670	9640	9656	9655	9642	9622	9635	9632	9630	9582	9614	9621	9620	9618	9625	9653
12	9613	9588	9581	9600	9606	9582	9580	9582	9608	9571	9552	9559	9558	9574	9552	9572	9603
13	9536	9575	9556	9542	9531	9572	9519	9544	9568	9538	9502	9520	9500	9522	9495	9525	9517
14	9496	9491	9482	9510	9480	9490	9478	9465	9506	9497	9441	9436	9448	9445	9427	9474	9480
15	9439	9475	9432	9425	9417	9454	9418	9416	9437	9442	9392	9388	9371	9418	9384	9414	9426
16	9409	9409	9383	9383	9364	9407	9357	9362	9394	9404	9333	9310	9337	9333	9348	9357	9403
17	9357	9329	9307	9317	9305	9330	9296	9312	9329	9328	9265	9257	9275	9287	9283	9275	9353
18	9279	9286	9213	9240	9267	9251	9244	9233	9243	9234	9193	9187	9193	9180	9205	9252	9290
19	9197	9194	9147	9178	9186	9164	9148	9154	9181	9173	9104	9104	9099	9117	9146	9183	9201
20	9133	9145	9087	9068	9085	9076	9078	9069	9119	9099	9034	9021	9032	9035	9040	9079	9128
25	8706	8666	8640	8559	8574	8570	8587	8662	8669	8657	8557	8517	8507	8560	8588	8637	8695
30	8115	8070	7907	7738	7718	7730	7869	8007	8025	7989	7796	7604	7554	7656	7851	8028	8078
35	7229	7155	6908	6580	6509	6532	6808	7064	7121	7001	6692	6374	6318	6449	6778	7107	7234
40	6017	5920	5527	5213	5108	5193	5414	5748	5796	5682	5301	5007	4931	5045	5406	5819	5998
45	4690	4519	4240	3967	3851	3958	4185	4419	4460	4359	4066	3843	3675	3824	4116	4438	4696
50	3570	3328	3163	3022	2804	3015	3203	3290	3420	3232	3092	2961	2659	2889	3070	3215	3565
55	2672	2313	2286	2302	2002	2296	2407	2342	2625	2314	2294	2276	1893	2200	2265	2247	2671
60	1983	1607	1672	1779	1446	1790	1795	1623	2012	1616	1686	1776	1380	1697	1694	1557	1989
65	1493	1151	1258	1382	1073	1397	1334	1138	1521	1139	1232	1379	1043	1320	1307	1115	1491
70	1105	882	968	1074	837	1079	992	850	1114	862	919	1064	838	1030	1019	860	1107
75	817	689	744	808	662	812	746	669	789	682	702	796	658	773	781	676	817
80	557	500	533	565	476	568	524	482	524	493	502	546	460	546	542	484	552
85	306	290	296	319	249	306	288	266	282	268	274	281	221	289	278	271	304
90	15	19	16	14	13	10	8	8	6	5	5	5	5	6	6	9	15
95	5	4	4	5	5	5	5	5	5	4	4	4	4	4	4	4	5
100	3	3	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3
105	3	4	4	4	4	4	4	4	3	3	3	3	3	3	4	3	3
110	4	3	4	4	4	4	3	4	4	3	3	3	3	3	3	3	4
115	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	4	4
120	4	4	4	4	5	4	4	4	5	4	4	4	4	4	4	4	5
125	6	6	5	6	7	5	6	5	6	5	5	5	4	5	5	4	5
130	7	8	8	8	8	8	7	7	7	7	7	7	7	7	7	6	7
135	10	10	10	10	12	10	9	9	10	10	10	10	9	9	9	9	10
140	13	13	13	14	14	14	12	13	13	13	13	13	13	13	12	13	13
145	16	16	16	16	18	16	16	16	16	16	16	16	16	16	15	16	16
150	19	19	19	19	20	18	18	18	19	19	19	19	19	18	18	18	19
155	22	22	22	22	23	21	21	21	21	22	22	21	21	21	21	21	21
160	25	25	25	25	26	24	24	24	25	25	25	24	24	24	24	24	25
165	28	28	28	28	29	27	28	28	28	28	28	28	28	28	28	28	28
170	33	33	33	33	33	32	32	33	32	32	33	33	33	32	32	32	33
175	36	36	36	36	37	36	36	36	36	36	36	36	36	37	36	36	36
180	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37

Goniophotometer Test

Model No.	HLT1CP1352CUW 135W 5000K		Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)		45

Test Method

1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
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. The reference standard lamp is rated current 3.8606A, 3.8742A, 3.8840A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.3	120.04	60	1.1185	133.920	0.9973	4.18%	Horizontal

Test Results

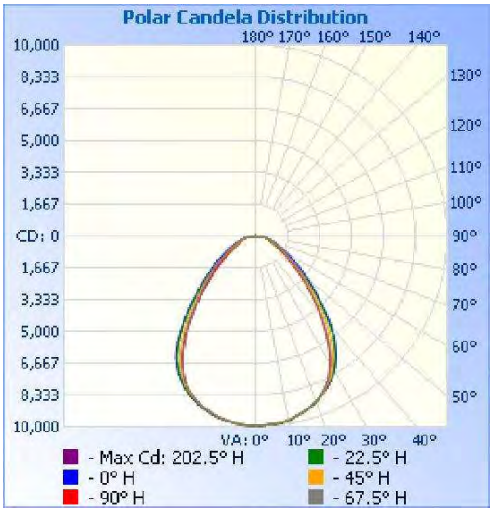
Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	20°-50°	N/A	Horizontal Spread	Vertical Spread	
19627.0	58.50%	N/A	80.7	87.1	146.56

Backlight	Uplight	Glare
NA	NA	NA

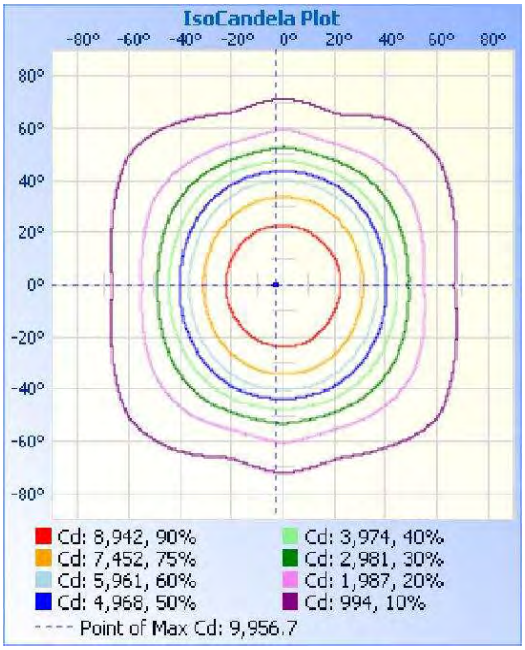
UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
27.3	27.3	NA	NA

Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot



Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	7609.7	38.80%
0-40	11845.6	60.40%
0-60	17197.6	87.60%
60-90	2373.3	12.10%
70-100	1090.6	5.60%
90-120	12.4	0.10%
0-90	19570.8	99.70%
90-180	56.2	0.30%
0-180	19627.0	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	236.9	1.20%	90-95	2.9	0.00%
5-10	703.2	3.60%	95-100	2.2	0.00%
10-15	1144.1	5.80%	100-105	1.8	0.00%
15-20	1542.4	7.90%	105-110	1.8	0.00%
20-25	1876.4	9.60%	110-115	1.8	0.00%
25-30	2106.8	10.70%	115-120	1.9	0.00%
30-35	2179.7	11.10%	120-125	2.2	0.00%
35-40	2056.2	10.50%	125-130	2.6	0.00%
40-45	1783.3	9.10%	130-135	3.4	0.00%
45-50	1471.0	7.50%	135-140	4.2	0.00%
50-55	1177.8	6.00%	140-145	4.9	0.00%
55-60	919.9	4.70%	145-150	5.2	0.00%
60-65	719.4	3.70%	150-155	5.1	0.00%
65-70	568.2	2.90%	155-160	4.8	0.00%
70-75	449.0	2.30%	160-165	4.3	0.00%
75-80	339.2	1.70%	165-170	3.6	0.00%
80-85	220.2	1.10%	170-175	2.5	0.00%
85-90	77.1	0.40%	175-180	0.9	0.00%

Goniophotometer Test (Cont'd)

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	9923	9923	9923	9923	9923	9923	9923	9923	9923	9923	9923	9923	9923	9923	9923	9923	9923
1	9933	9954	9907	9928	9940	9930	9927	9925	9925	9943	9922	9929	9944	9939	9933	9903	9914
2	9918	9944	9910	9919	9943	9946	9895	9886	9909	9957	9915	9920	9942	9922	9896	9912	9922
3	9903	9931	9889	9918	9928	9940	9914	9926	9924	9946	9916	9918	9926	9915	9891	9884	9913
4	9890	9914	9881	9878	9907	9936	9896	9899	9925	9934	9869	9901	9904	9897	9896	9893	9912
5	9876	9915	9910	9903	9934	9907	9874	9892	9903	9892	9871	9887	9898	9909	9874	9904	9894
6	9891	9886	9853	9877	9902	9882	9871	9840	9876	9886	9857	9892	9863	9839	9865	9867	9893
7	9880	9915	9844	9857	9874	9863	9833	9808	9842	9835	9844	9836	9834	9839	9834	9856	9869
8	9867	9884	9825	9847	9858	9852	9799	9819	9795	9824	9787	9802	9812	9797	9814	9844	9848
9	9837	9840	9813	9829	9823	9793	9779	9767	9772	9807	9767	9786	9798	9763	9763	9809	9837
10	9793	9823	9751	9792	9799	9796	9751	9750	9772	9769	9755	9758	9758	9723	9730	9743	9790
11	9738	9800	9734	9746	9759	9736	9716	9699	9735	9720	9666	9698	9718	9705	9709	9774	9751
12	9677	9714	9680	9676	9696	9704	9682	9664	9689	9697	9638	9640	9657	9655	9646	9654	9691
13	9634	9664	9625	9649	9626	9654	9638	9605	9638	9620	9560	9621	9616	9614	9619	9644	9652
14	9602	9593	9594	9581	9567	9589	9567	9584	9607	9622	9548	9548	9540	9574	9537	9601	9602
15	9554	9571	9541	9529	9525	9552	9535	9506	9535	9546	9510	9503	9494	9500	9498	9562	9554
16	9513	9519	9461	9476	9478	9520	9490	9444	9482	9495	9425	9425	9434	9452	9430	9477	9527
17	9451	9463	9416	9426	9406	9429	9416	9405	9421	9446	9356	9354	9353	9385	9387	9418	9456
18	9397	9381	9335	9334	9352	9308	9334	9358	9349	9338	9319	9284	9311	9281	9315	9341	9376
19	9306	9321	9246	9256	9259	9258	9269	9272	9308	9276	9235	9199	9215	9210	9246	9281	9312
20	9235	9248	9164	9220	9201	9184	9167	9198	9223	9203	9152	9111	9137	9147	9156	9178	9220
25	8797	8758	8707	8663	8655	8667	8692	8738	8769	8778	8644	8575	8561	8598	8654	8708	8807
30	8184	8167	8016	7840	7760	7813	7941	8093	8144	8091	7905	7702	7619	7722	7957	8115	8168
35	7278	7250	6936	6572	6469	6544	6818	7134	7197	7102	6751	6389	6341	6459	6818	7208	7300
40	6111	5994	5587	5236	5156	5199	5471	5811	5855	5751	5345	5023	4972	5090	5481	5903	6080
45	4720	4582	4283	4019	3886	3994	4212	4442	4518	4327	4093	3870	3691	3844	4129	4456	4740
50	3599	3344	3183	3036	2820	3034	3232	3314	3458	3261	3116	2984	2677	2916	3098	3246	3600
55	2692	2341	2310	2322	2019	2312	2435	2369	2652	2332	2315	2291	1911	2214	2285	2267	2698
60	1996	1621	1687	1791	1454	1799	1808	1636	2023	1624	1699	1786	1385	1710	1706	1565	2000
65	1507	1168	1268	1395	1078	1409	1346	1149	1539	1152	1246	1393	1052	1333	1321	1128	1505
70	1121	891	984	1087	848	1092	1006	861	1128	874	932	1075	846	1042	1032	873	1123
75	822	696	756	813	669	817	752	674	799	687	708	805	666	780	789	681	822
80	559	505	537	567	478	573	529	486	532	499	504	548	466	551	544	489	557
85	309	292	296	318	250	307	289	269	284	270	276	282	223	292	280	273	308
90	14	18	16	16	12	10	9	8	6	6	5	5	5	6	6	8	15
95	5	4	5	5	5	5	5	4	5	4	4	4	4	4	4	4	5
100	3	4	4	4	5	4	4	4	3	3	4	3	3	3	3	3	3
105	3	3	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
110	3	4	3	4	4	4	4	4	4	3	3	3	3	3	3	3	4
115	4	4	4	4	5	4	4	4	4	4	3	3	3	4	3	4	4
120	4	4	4	4	5	5	4	4	5	4	4	4	4	4	4	4	5
125	6	5	6	5	6	6	6	5	6	5	5	5	4	5	5	4	5
130	7	8	8	7	8	7	7	7	7	7	7	7	6	7	7	6	7
135	10	10	10	10	11	10	10	10	10	10	10	10	9	9	9	9	10
140	13	14	14	14	14	13	13	13	13	13	13	13	13	13	12	13	13
145	16	17	16	16	18	16	16	16	16	16	16	16	16	16	16	16	16
150	19	19	19	20	21	19	18	19	19	19	19	19	19	18	18	18	19
155	21	21	22	22	23	21	21	21	21	22	22	21	22	22	21	21	22
160	25	25	26	25	26	24	24	24	25	25	25	24	24	24	24	24	25
165	29	28	29	29	30	28	27	28	28	29	29	28	28	28	28	28	29
170	33	33	33	33	34	32	32	33	33	33	33	33	33	33	32	32	33
175	36	36	37	37	37	36	36	36	36	37	37	37	37	37	36	36	36
180	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37

Goniophotometer Test

Model No.	HLT1CP1352CUW 115W 4000K	Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
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. The reference standard lamp is rated current 3.8606A, 3.8742A, 3.8840A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.5	120.12	60	0.9890	118.540	0.9969	4.25%	Horizontal

Test Results

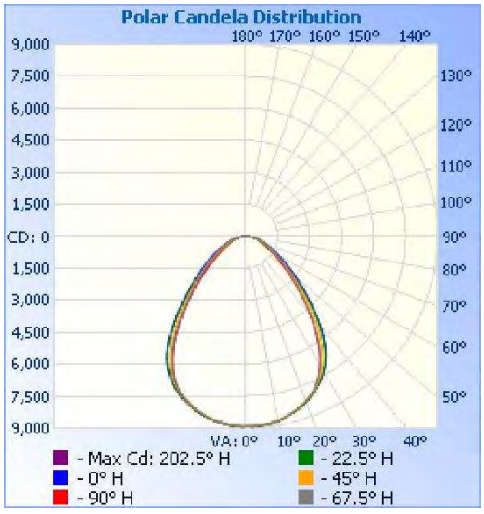
Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	20°-50°	N/A	Horizontal Spread	Vertical Spread	
17583.5	58.50%	N/A	80.6	86.9	148.33

Backlight	Uplight	Glare
NA	NA	NA

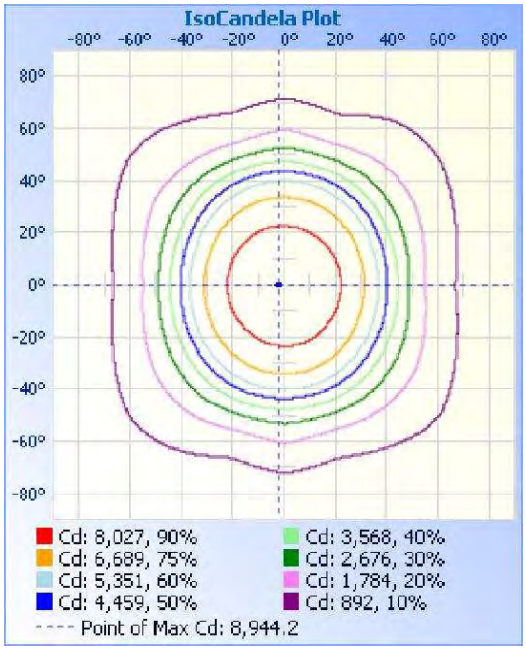
UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
26.9	26.9	NA	NA

Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot



Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	6820.6	38.80%
0-40	10620.5	60.40%
0-60	15412.2	87.70%
60-90	2120.7	12.10%
70-100	973.1	5.50%
90-120	11.1	0.10%
0-90	17532.9	99.70%
90-180	50.6	0.30%
0-180	17583.5	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	212.6	1.20%	90-95	2.5	0.00%
5-10	631.2	3.60%	95-100	2.0	0.00%
10-15	1026.4	5.80%	100-105	1.6	0.00%
15-20	1382.3	7.90%	105-110	1.6	0.00%
20-25	1680.5	9.60%	110-115	1.6	0.00%
25-30	1887.5	10.70%	115-120	1.7	0.00%
30-35	1956.8	11.10%	120-125	1.9	0.00%
35-40	1843.2	10.50%	125-130	2.4	0.00%
40-45	1597.0	9.10%	130-135	3.1	0.00%
45-50	1317.7	7.50%	135-140	3.8	0.00%
50-55	1053.8	6.00%	140-145	4.4	0.00%
55-60	823.3	4.70%	145-150	4.7	0.00%
60-65	644.0	3.70%	150-155	4.6	0.00%
65-70	508.0	2.90%	155-160	4.4	0.00%
70-75	401.5	2.30%	160-165	3.9	0.00%
75-80	303.6	1.70%	165-170	3.2	0.00%
80-85	196.6	1.10%	170-175	2.2	0.00%
85-90	67.0	0.40%	175-180	0.8	0.00%

Goniophotometer Test (Cont'd)

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	8903	8903	8903	8903	8903	8903	8903	8903	8903	8903	8903	8903	8903	8903	8903	8903	8903
1	8904	8924	8886	8895	8906	8916	8899	8901	8906	8944	8900	8891	8917	8917	8918	8884	8923
2	8881	8917	8884	8912	8943	8916	8892	8902	8904	8910	8883	8899	8898	8920	8891	8900	8910
3	8903	8895	8880	8903	8895	8922	8906	8897	8896	8923	8889	8889	8893	8899	8876	8888	8903
4	8899	8886	8867	8879	8911	8920	8892	8876	8889	8914	8861	8892	8901	8868	8882	8875	8900
5	8871	8903	8876	8889	8889	8896	8879	8873	8884	8886	8876	8878	8881	8867	8874	8880	8923
6	8869	8874	8865	8869	8882	8878	8865	8820	8834	8870	8843	8849	8863	8874	8831	8896	8888
7	8861	8872	8843	8865	8842	8836	8824	8806	8833	8852	8828	8825	8823	8829	8828	8850	8853
8	8815	8871	8805	8830	8829	8824	8798	8810	8797	8828	8795	8811	8805	8794	8792	8824	8847
9	8801	8835	8794	8818	8788	8824	8778	8784	8773	8810	8771	8813	8769	8811	8790	8798	8826
10	8781	8792	8756	8800	8789	8786	8738	8769	8765	8761	8742	8770	8753	8751	8752	8784	8790
11	8738	8754	8730	8756	8766	8753	8723	8719	8742	8720	8686	8713	8712	8731	8711	8729	8749
12	8709	8694	8674	8693	8701	8706	8679	8679	8688	8688	8636	8675	8668	8677	8660	8708	8702
13	8641	8681	8637	8645	8641	8656	8636	8654	8656	8645	8592	8620	8618	8636	8623	8664	8649
14	8599	8609	8592	8595	8605	8618	8573	8588	8606	8599	8556	8547	8559	8583	8564	8598	8611
15	8564	8581	8528	8551	8560	8562	8566	8540	8546	8553	8507	8498	8515	8534	8508	8537	8556
16	8528	8523	8482	8475	8506	8517	8477	8466	8501	8527	8466	8468	8441	8455	8458	8512	8507
17	8454	8481	8428	8435	8416	8434	8462	8429	8432	8455	8396	8387	8424	8404	8404	8455	8470
18	8401	8408	8328	8406	8362	8375	8370	8377	8378	8401	8356	8313	8316	8335	8364	8367	8426
19	8338	8350	8274	8304	8333	8321	8296	8312	8324	8297	8299	8253	8251	8260	8304	8315	8354
20	8284	8257	8219	8250	8209	8216	8199	8241	8267	8236	8198	8160	8179	8185	8208	8234	8285
25	7871	7822	7820	7753	7756	7763	7780	7832	7868	7846	7754	7707	7667	7748	7782	7827	7900
30	7328	7288	7161	7012	6962	7014	7141	7260	7272	7238	7099	6875	6842	6926	7115	7276	7318
35	6530	6479	6242	5962	5850	5906	6124	6390	6425	6369	6044	5760	5712	5803	6126	6436	6531
40	5438	5342	5000	4706	4619	4666	4915	5209	5224	5124	4792	4520	4439	4547	4900	5258	5439
45	4212	4089	3838	3581	3480	3576	3779	3988	4032	3911	3663	3469	3308	3441	3710	3987	4250
50	3215	2991	2850	2722	2530	2723	2888	2965	3088	2912	2787	2673	2392	2606	2771	2905	3219
55	2408	2092	2066	2079	1810	2074	2173	2118	2369	2083	2071	2050	1714	1984	2041	2025	2412
60	1786	1446	1510	1604	1304	1614	1623	1464	1810	1452	1519	1600	1242	1532	1529	1400	1792
65	1345	1042	1138	1250	968	1266	1206	1028	1376	1030	1114	1248	942	1192	1183	1010	1350
70	1000	793	879	971	758	974	898	770	1006	780	832	962	759	929	921	778	1002
75	731	625	674	726	598	737	674	602	714	616	633	717	596	697	705	608	735
80	499	447	481	507	430	518	472	437	475	444	452	490	416	492	487	437	500
85	272	258	264	284	223	273	258	238	251	240	245	251	197	258	248	243	272
90	10	11	11	11	8	9	6	5	5	4	5	5	4	5	5	6	11
95	4	4	4	4	5	4	4	4	4	4	4	4	4	4	4	3	4
100	3	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3
105	3	3	3	4	4	3	3	4	3	3	3	3	3	3	3	3	3
110	4	3	3	3	4	3	4	3	4	3	2	3	2	3	3	3	3
115	4	4	3	3	4	4	4	4	4	3	3	3	3	3	3	3	4
120	4	4	4	4	5	4	4	4	5	4	4	3	3	3	4	3	4
125	5	5	5	5	6	5	5	4	5	5	4	4	4	4	4	4	5
130	6	6	7	7	8	6	7	6	7	6	6	6	6	7	6	6	6
135	9	9	9	9	10	9	9	8	9	9	9	9	8	9	8	9	9
140	12	12	12	12	13	12	11	12	12	12	12	12	11	11	12	11	12
145	14	15	15	15	16	15	14	14	14	15	15	14	14	14	14	14	15
150	17	18	17	18	19	16	17	17	17	17	17	17	17	17	17	16	17
155	19	20	20	20	21	19	19	19	19	20	19	19	19	19	19	19	20
160	22	23	23	22	24	22	22	22	22	22	22	22	22	22	22	22	22
165	25	26	26	26	27	25	25	25	26	26	26	26	26	25	25	25	26
170	30	30	30	30	30	29	29	30	29	30	29	30	30	30	29	29	30
175	33	33	33	33	33	32	32	33	33	32	33	33	33	33	32	33	32
180	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33

Goniophotometer Test

Model No.	HLT1CP1352CUW 115W 5000K	Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
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. The reference standard lamp is rated current 3.8606A, 3.8742A, 3.8840A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.4	120.14	60	1.0066	120.560	0.9970	4.25%	Horizontal

Test Results

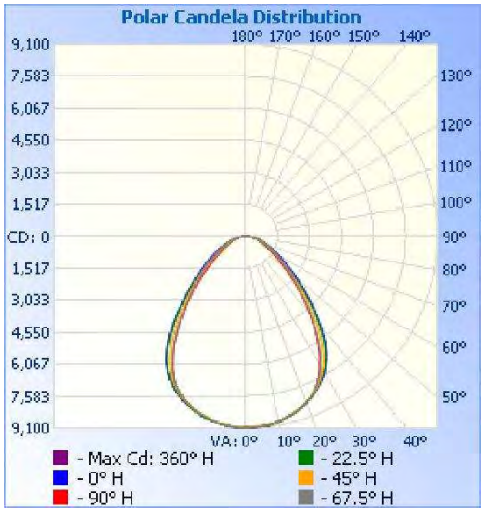
Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	20°-50°	N/A	Horizontal Spread	Vertical Spread	
17862.2	58.50%	N/A	80.4	87.1	148.16

Backlight	Uplight	Glare
NA	NA	NA

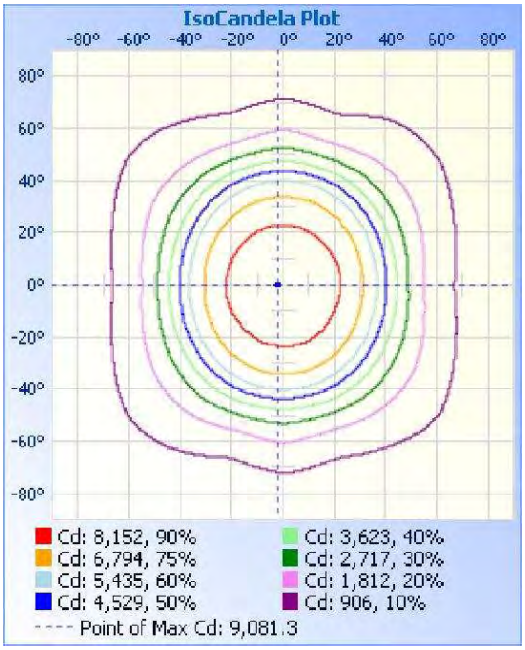
UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
26.9	26.9	NA	NA

Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot



Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	6935.5	38.80%
0-40	10789.7	60.40%
0-60	15657.2	87.70%
60-90	2153.7	12.10%
70-100	988.8	5.50%
90-120	11.3	0.10%
0-90	17810.9	99.70%
90-180	51.3	0.30%
0-180	17862.2	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	216.1	1.20%	90-95	2.6	0.00%
5-10	641.4	3.60%	95-100	2.0	0.00%
10-15	1043.2	5.80%	100-105	1.7	0.00%
15-20	1405.6	7.90%	105-110	1.6	0.00%
20-25	1709.7	9.60%	110-115	1.6	0.00%
25-30	1919.6	10.70%	115-120	1.7	0.00%
30-35	1985.1	11.10%	120-125	2.0	0.00%
35-40	1869.1	10.50%	125-130	2.4	0.00%
40-45	1621.9	9.10%	130-135	3.1	0.00%
45-50	1339.0	7.50%	135-140	3.9	0.00%
50-55	1070.0	6.00%	140-145	4.5	0.00%
55-60	836.7	4.70%	145-150	4.7	0.00%
60-65	653.5	3.70%	150-155	4.7	0.00%
65-70	515.9	2.90%	155-160	4.4	0.00%
70-75	408.0	2.30%	160-165	4.0	0.00%
75-80	307.9	1.70%	165-170	3.3	0.00%
80-85	199.5	1.10%	170-175	2.3	0.00%
85-90	68.9	0.40%	175-180	0.8	0.00%

Goniophotometer Test (Cont'd)

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	9048	9048	9048	9048	9048	9048	9048	9048	9048	9048	9048	9048	9048	9048	9048	9048	9048
1	9026	9069	9025	9063	9056	9057	9049	9041	9070	9071	9034	9076	9071	9048	9055	9057	9081
2	9050	9035	9027	9044	9070	9079	9062	9058	9045	9067	9027	9070	9064	9064	9034	9049	9046
3	9042	9040	9001	9045	9046	9066	9027	9040	9056	9054	9035	9036	9042	9048	9042	9030	9024
4	9027	9024	9009	9036	9060	9035	9027	9035	9037	9054	9028	9037	9044	9040	9032	9032	9061
5	9023	9042	9011	9024	9013	9051	9024	9018	9020	9049	9017	9016	9026	9014	8980	9005	9031
6	9018	9041	9008	9019	9024	9029	8994	8991	9003	9020	8972	9019	8996	9002	8991	9006	9041
7	9024	9044	8972	8986	9000	8994	8969	8946	8956	8980	8942	8981	8987	8964	8977	9010	9022
8	8966	8998	8984	8980	8984	8980	8982	8924	8942	8975	8935	8960	8960	8941	8925	8995	8994
9	8959	8980	8932	8931	8938	8945	8929	8910	8931	8918	8899	8916	8923	8920	8935	8957	8986
10	8898	8948	8921	8922	8925	8935	8882	8882	8905	8888	8889	8894	8910	8899	8889	8913	8957
11	8878	8918	8864	8884	8869	8886	8844	8851	8881	8863	8833	8857	8869	8846	8849	8856	8902
12	8824	8849	8830	8842	8831	8837	8846	8824	8819	8841	8763	8793	8831	8816	8785	8840	8857
13	8787	8806	8786	8783	8783	8795	8780	8773	8791	8797	8714	8774	8764	8763	8755	8786	8778
14	8764	8764	8741	8742	8756	8744	8721	8720	8780	8773	8702	8701	8709	8732	8718	8744	8737
15	8715	8719	8675	8692	8677	8716	8712	8657	8678	8698	8653	8674	8654	8670	8654	8708	8704
16	8638	8682	8637	8634	8633	8649	8631	8600	8627	8670	8600	8586	8602	8634	8606	8633	8678
17	8604	8624	8564	8579	8579	8600	8585	8592	8596	8610	8559	8540	8520	8542	8560	8573	8645
18	8551	8551	8503	8510	8529	8525	8499	8490	8520	8550	8485	8436	8471	8475	8502	8506	8556
19	8476	8490	8438	8423	8440	8433	8436	8467	8462	8449	8407	8364	8370	8424	8436	8439	8529
20	8397	8418	8349	8370	8369	8361	8362	8378	8404	8372	8330	8300	8328	8340	8329	8393	8422
25	8014	7983	7968	7884	7895	7909	7934	7982	8011	7983	7879	7824	7827	7854	7910	7962	8017
30	7479	7411	7294	7101	7012	7077	7243	7377	7434	7384	7180	6999	6924	7014	7218	7392	7447
35	6659	6579	6340	6007	5910	5967	6225	6491	6559	6462	6137	5815	5744	5870	6207	6564	6655
40	5533	5421	5071	4778	4674	4754	4971	5268	5344	5232	4863	4560	4481	4621	4945	5339	5535
45	4320	4139	3895	3636	3526	3636	3843	4044	4107	3985	3726	3524	3366	3502	3774	4056	4310
50	3269	3034	2889	2756	2562	2760	2939	3012	3146	2962	2834	2712	2430	2648	2815	2950	3272
55	2446	2120	2096	2110	1837	2104	2212	2153	2408	2119	2108	2083	1730	2018	2079	2064	2452
60	1816	1470	1534	1629	1321	1638	1646	1483	1840	1478	1545	1622	1260	1558	1554	1426	1822
65	1366	1056	1155	1262	981	1278	1223	1040	1394	1042	1129	1264	958	1209	1202	1025	1365
70	1013	809	894	986	772	992	914	783	1024	791	845	976	769	947	937	793	1018
75	745	632	680	739	607	746	684	615	725	624	642	730	606	709	716	619	744
80	506	458	489	513	432	521	481	445	480	452	456	497	418	499	496	442	507
85	278	264	268	289	226	278	262	243	257	244	249	254	201	262	253	247	279
90	10	14	13	11	11	9	8	6	5	5	5	5	4	5	6	6	11
95	4	4	4	4	4	4	4	4	4	4	4	3	3	4	4	4	4
100	3	3	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
105	3	3	3	4	4	3	4	3	3	3	3	3	2	3	3	3	3
110	3	3	3	3	4	4	3	3	4	3	3	2	3	3	3	3	3
115	4	3	3	4	4	4	4	4	4	3	3	3	3	3	3	3	4
120	4	4	4	4	5	4	4	4	4	4	3	4	3	4	3	3	4
125	4	5	5	5	6	5	5	4	5	5	4	4	4	4	5	4	5
130	7	7	7	7	8	7	6	6	7	6	6	6	6	6	6	6	6
135	9	9	9	10	10	10	9	9	9	9	9	9	9	9	8	8	9
140	12	13	12	12	14	12	11	12	12	12	12	12	12	12	12	12	12
145	15	15	15	15	16	15	14	15	15	15	15	15	15	14	14	15	15
150	18	17	18	18	19	17	17	17	17	17	17	17	17	17	17	17	18
155	20	20	20	20	21	19	20	20	20	20	20	20	20	20	20	19	20
160	23	23	23	23	24	22	22	22	23	23	23	22	23	22	22	22	23
165	26	26	26	26	27	25	25	26	26	26	26	26	26	25	26	26	26
170	30	30	30	30	31	30	29	30	30	30	30	30	30	30	30	30	30
175	33	33	34	33	34	33	33	34	33	33	33	33	34	34	34	33	33
180	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34

Goniophotometer Test

Model No.	HLT1CP1352CUW 100W 4000K		Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)		45

Test Method

1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
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. The reference standard lamp is rated current 3.8606A, 3.8742A, 3.8840A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.1	120.03	60	0.8512	101.770	0.9961	4.45%	Horizontal

Test Results

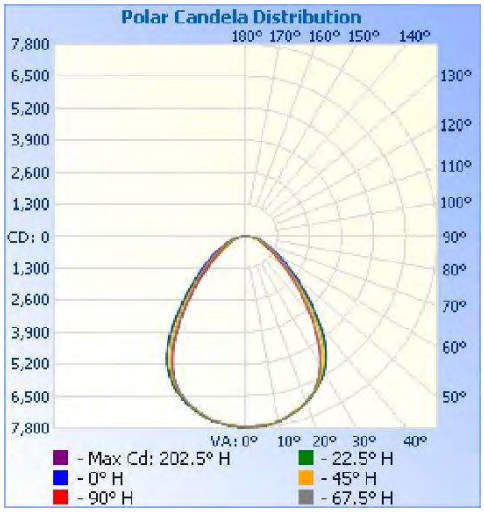
Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	20°-50°	N/A	Horizontal Spread	Vertical Spread	
15290.9	58.40%	N/A	80.6	87.0	150.25

Backlight	Uplight	Glare
NA	NA	NA

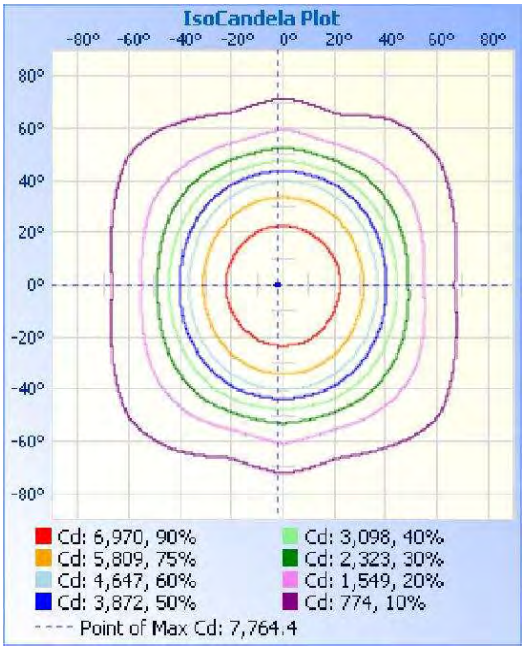
UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
26.4	26.4	NA	NA

Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot



Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5927.2	38.80%
0-40	9228.5	60.40%
0-60	13397.4	87.60%
60-90	1849.9	12.10%
70-100	849.9	5.60%
90-120	9.6	0.10%
0-90	15247.3	99.70%
90-180	43.6	0.30%
0-180	15290.9	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	184.8	1.20%	90-95	2.2	0.00%
5-10	548.5	3.60%	95-100	1.7	0.00%
10-15	892.0	5.80%	100-105	1.4	0.00%
15-20	1201.4	7.90%	105-110	1.4	0.00%
20-25	1460.2	9.50%	110-115	1.4	0.00%
25-30	1640.4	10.70%	115-120	1.5	0.00%
30-35	1700.2	11.10%	120-125	1.7	0.00%
35-40	1601.1	10.50%	125-130	2.0	0.00%
40-45	1387.7	9.10%	130-135	2.6	0.00%
45-50	1146.7	7.50%	135-140	3.3	0.00%
50-55	916.4	6.00%	140-145	3.8	0.00%
55-60	718.1	4.70%	145-150	4.0	0.00%
60-65	561.7	3.70%	150-155	4.0	0.00%
65-70	442.3	2.90%	155-160	3.8	0.00%
70-75	350.2	2.30%	160-165	3.4	0.00%
75-80	264.8	1.70%	165-170	2.8	0.00%
80-85	171.5	1.10%	170-175	1.9	0.00%
85-90	59.5	0.40%	175-180	0.7	0.00%

Goniophotometer Test (Cont'd)

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	7743	7743	7743	7743	7743	7743	7743	7743	7743	7743	7743	7743	7743	7743	7743	7743	7743
1	7725	7757	7729	7741	7746	7750	7720	7740	7749	7764	7724	7731	7749	7750	7721	7733	7743
2	7728	7744	7721	7741	7742	7753	7733	7726	7744	7757	7722	7744	7736	7746	7720	7727	7731
3	7722	7749	7732	7734	7747	7737	7729	7718	7740	7743	7711	7720	7721	7734	7723	7720	7738
4	7721	7738	7712	7724	7752	7742	7716	7725	7720	7734	7710	7730	7719	7728	7717	7715	7742
5	7722	7743	7705	7717	7732	7738	7717	7708	7707	7729	7688	7713	7712	7718	7698	7707	7731
6	7721	7724	7701	7710	7731	7717	7692	7684	7699	7702	7682	7690	7693	7686	7703	7695	7718
7	7698	7717	7674	7710	7700	7700	7670	7659	7675	7677	7656	7675	7656	7671	7665	7705	7711
8	7668	7686	7664	7680	7683	7682	7643	7653	7666	7654	7635	7656	7646	7647	7629	7677	7692
9	7677	7692	7646	7665	7672	7667	7618	7629	7644	7642	7604	7623	7629	7642	7634	7645	7671
10	7629	7641	7619	7631	7641	7632	7609	7608	7628	7618	7603	7605	7609	7606	7594	7607	7641
11	7598	7610	7590	7612	7612	7592	7578	7583	7602	7595	7561	7583	7570	7569	7563	7576	7601
12	7544	7573	7549	7550	7560	7558	7536	7552	7556	7555	7502	7533	7534	7542	7540	7550	7565
13	7522	7526	7500	7520	7510	7519	7514	7513	7511	7521	7468	7490	7489	7504	7474	7510	7510
14	7477	7503	7462	7480	7468	7473	7459	7467	7473	7491	7438	7437	7438	7463	7439	7483	7487
15	7431	7451	7424	7430	7416	7438	7413	7426	7434	7446	7403	7398	7401	7396	7404	7411	7437
16	7401	7413	7377	7396	7390	7402	7379	7379	7390	7400	7347	7347	7339	7354	7342	7380	7415
17	7360	7368	7337	7346	7332	7340	7326	7328	7330	7353	7289	7304	7282	7316	7323	7330	7369
18	7308	7340	7274	7296	7277	7281	7266	7285	7283	7297	7250	7228	7231	7250	7248	7284	7318
19	7257	7245	7207	7223	7227	7224	7211	7214	7236	7226	7165	7160	7169	7189	7183	7217	7246
20	7194	7191	7158	7155	7147	7146	7140	7169	7194	7162	7119	7098	7094	7128	7114	7146	7194
25	6832	6839	6796	6754	6741	6781	6755	6814	6818	6809	6728	6689	6677	6716	6766	6798	6852
30	6363	6345	6247	6096	6052	6101	6192	6285	6317	6280	6150	5996	5937	6018	6157	6320	6361
35	5664	5624	5426	5185	5100	5143	5328	5574	5581	5527	5260	5010	4956	5044	5350	5583	5682
40	4727	4642	4354	4085	4011	4050	4280	4511	4547	4457	4167	3921	3853	3952	4256	4571	4718
45	3684	3559	3336	3120	3021	3111	3290	3468	3506	3402	3185	3015	2880	2992	3228	3483	3697
50	2798	2604	2485	2369	2203	2372	2514	2583	2686	2535	2420	2322	2081	2267	2406	2523	2795
55	2094	1816	1797	1810	1575	1806	1894	1845	2062	1813	1803	1786	1489	1727	1778	1765	2099
60	1560	1267	1320	1400	1137	1409	1416	1278	1580	1270	1327	1394	1081	1334	1335	1223	1562
65	1171	907	990	1090	845	1102	1049	895	1197	896	969	1086	821	1038	1027	878	1173
70	870	693	766	845	662	850	782	671	878	676	724	838	661	810	803	681	875
75	642	544	588	637	522	640	588	525	622	538	551	626	521	608	614	530	642
80	437	392	420	443	374	450	412	380	414	388	393	425	360	428	423	380	436
85	238	228	232	250	196	239	226	209	221	209	215	218	172	225	216	213	239
90	11	14	12	12	9	8	7	5	4	4	4	4	4	5	5	5	9
95	4	3	3	4	4	4	4	3	4	3	3	3	3	3	3	3	4
100	3	3	3	3	3	3	3	3	3	3	3	2	2	2	3	2	3
105	2	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2
110	3	3	3	3	3	3	3	3	3	2	2	2	2	2	3	3	3
115	3	3	3	3	4	3	3	3	3	3	3	2	2	3	2	2	3
120	3	4	4	4	4	4	3	3	4	3	3	3	3	3	3	3	4
125	4	4	4	4	5	4	4	4	4	4	4	4	3	4	4	4	4
130	5	6	6	6	6	6	6	5	6	6	5	5	5	5	5	5	5
135	8	8	8	8	9	8	7	7	8	8	8	7	8	8	7	7	8
140	10	10	10	11	11	10	10	10	10	11	10	10	10	10	10	10	10
145	13	13	13	13	14	13	12	12	13	13	12	13	13	12	12	12	13
150	15	15	15	15	16	14	14	15	15	15	15	15	15	14	14	14	15
155	17	17	18	17	18	16	16	16	17	17	17	17	17	16	17	16	17
160	19	20	20	19	20	19	19	19	19	19	19	19	19	19	19	19	20
165	22	22	22	22	23	21	21	22	22	22	22	22	22	22	22	22	22
170	26	26	26	26	26	25	25	25	26	26	25	26	26	26	25	26	25
175	28	28	29	29	29	28	28	28	28	28	28	28	29	29	28	28	28
180	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29

Goniophotometer Test

Model No.	HLT1CP1352CUW 100W 5000K		Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)		45

Test Method

1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
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. The reference standard lamp is rated current 3.8606A, 3.8742A, 3.8840A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.0	120.03	60	0.8642	103.330	0.9962	4.40%	Horizontal

Test Results

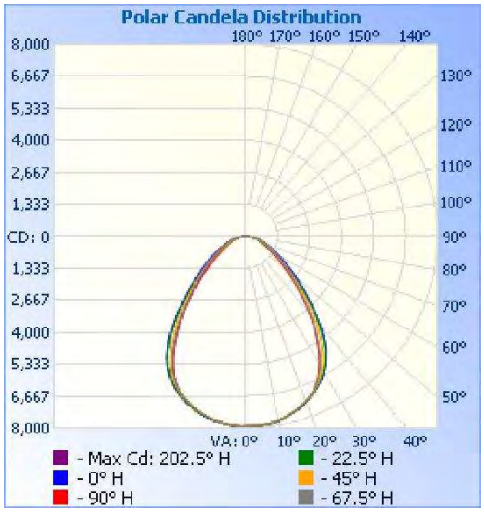
Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	20°-50°	N/A	Horizontal Spread	Vertical Spread	
15619.4	58.50%	N/A	80.6	86.9	151.16

Backlight	Uplight	Glare
NA	NA	NA

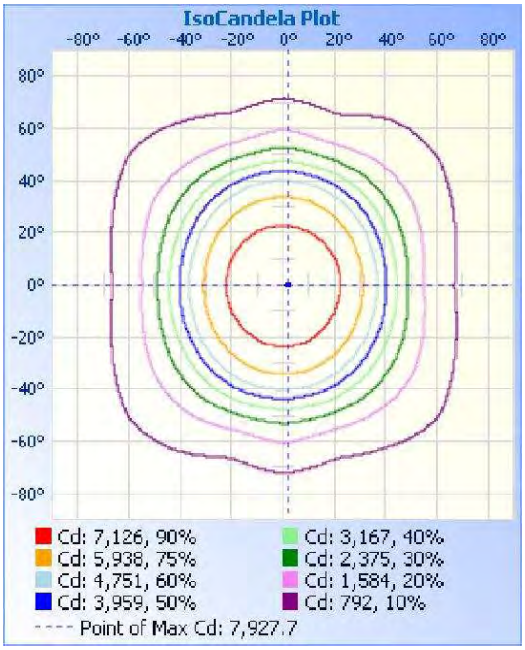
UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
26.5	26.5	NA	NA

Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot



Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	6062.1	38.80%
0-40	9432.1	60.40%
0-60	13686.2	87.60%
60-90	1888.8	12.10%
70-100	867.9	5.60%
90-120	9.7	0.10%
0-90	15574.9	99.70%
90-180	44.5	0.30%
0-180	15619.4	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	188.9	1.20%	90-95	2.2	0.00%
5-10	560.6	3.60%	95-100	1.7	0.00%
10-15	911.9	5.80%	100-105	1.4	0.00%
15-20	1228.5	7.90%	105-110	1.4	0.00%
20-25	1494.2	9.60%	110-115	1.4	0.00%
25-30	1678.0	10.70%	115-120	1.5	0.00%
30-35	1733.8	11.10%	120-125	1.7	0.00%
35-40	1636.2	10.50%	125-130	2.1	0.00%
40-45	1416.7	9.10%	130-135	2.7	0.00%
45-50	1168.4	7.50%	135-140	3.4	0.00%
50-55	937.1	6.00%	140-145	3.9	0.00%
55-60	731.8	4.70%	145-150	4.1	0.00%
60-65	572.1	3.70%	150-155	4.1	0.00%
65-70	452.7	2.90%	155-160	3.8	0.00%
70-75	358.1	2.30%	160-165	3.5	0.00%
75-80	270.2	1.70%	165-170	2.9	0.00%
80-85	175.1	1.10%	170-175	2.0	0.00%
85-90	60.5	0.40%	175-180	0.7	0.00%

Goniophotometer Test (Cont'd)

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	7913	7913	7913	7913	7913	7913	7913	7913	7913	7913	7913	7913	7913	7913	7913	7913	7913
1	7912	7919	7894	7897	7911	7913	7900	7908	7915	7928	7905	7916	7921	7925	7903	7897	7903
2	7903	7920	7883	7903	7915	7910	7900	7897	7920	7920	7899	7912	7922	7909	7883	7901	7920
3	7900	7921	7886	7899	7909	7919	7906	7896	7914	7913	7892	7904	7914	7902	7886	7889	7901
4	7887	7897	7884	7897	7903	7907	7897	7883	7900	7910	7894	7898	7904	7914	7866	7889	7907
5	7882	7907	7884	7896	7914	7894	7898	7880	7888	7890	7871	7893	7882	7879	7873	7882	7898
6	7888	7879	7868	7873	7876	7892	7859	7852	7869	7864	7860	7873	7875	7868	7860	7873	7873
7	7867	7906	7866	7868	7868	7871	7841	7823	7833	7864	7841	7861	7850	7847	7846	7862	7866
8	7845	7881	7836	7834	7844	7853	7823	7816	7819	7828	7803	7811	7819	7822	7828	7846	7861
9	7844	7855	7820	7819	7832	7825	7812	7789	7796	7796	7776	7805	7800	7791	7782	7823	7838
10	7807	7813	7779	7807	7800	7802	7783	7763	7792	7769	7747	7772	7776	7765	7767	7797	7815
11	7770	7793	7762	7755	7771	7785	7738	7739	7778	7746	7708	7727	7731	7738	7739	7747	7767
12	7731	7740	7730	7733	7724	7715	7717	7722	7721	7715	7686	7691	7702	7708	7695	7704	7738
13	7687	7708	7671	7689	7672	7689	7668	7681	7704	7684	7642	7649	7647	7667	7650	7686	7695
14	7653	7655	7625	7638	7634	7653	7650	7615	7649	7638	7605	7602	7611	7640	7612	7643	7652
15	7611	7616	7591	7610	7589	7620	7593	7578	7618	7613	7568	7556	7556	7588	7564	7610	7624
16	7574	7580	7558	7550	7545	7576	7562	7552	7537	7570	7511	7496	7514	7522	7522	7562	7586
17	7532	7544	7487	7498	7485	7507	7489	7498	7511	7508	7458	7450	7451	7482	7489	7493	7535
18	7500	7462	7421	7444	7437	7441	7424	7435	7448	7459	7424	7404	7400	7408	7425	7442	7486
19	7429	7424	7369	7377	7394	7360	7359	7395	7409	7386	7335	7316	7328	7334	7363	7399	7431
20	7349	7347	7298	7308	7342	7310	7308	7348	7360	7315	7258	7260	7279	7281	7294	7319	7340
25	7004	6980	6944	6916	6874	6886	6928	6959	6988	6969	6864	6829	6821	6848	6892	6945	6994
30	6520	6493	6403	6227	6168	6212	6351	6444	6478	6445	6289	6105	6063	6136	6318	6461	6518
35	5835	5770	5532	5236	5165	5212	5442	5665	5709	5631	5351	5091	5027	5117	5427	5724	5822
40	4843	4748	4448	4164	4105	4152	4354	4641	4652	4546	4244	4006	3938	4035	4335	4670	4834
45	3757	3631	3397	3170	3077	3169	3348	3532	3578	3467	3242	3068	2926	3048	3285	3541	3771
50	2856	2658	2533	2416	2242	2414	2568	2634	2745	2590	2480	2374	2128	2316	2460	2578	2860
55	2144	1860	1837	1849	1608	1845	1936	1884	2108	1853	1844	1824	1520	1762	1818	1803	2144
60	1588	1285	1343	1426	1157	1431	1438	1300	1606	1289	1351	1419	1103	1360	1359	1246	1588
65	1195	926	1014	1110	862	1124	1074	915	1223	915	994	1108	840	1060	1051	898	1198
70	892	711	785	866	676	869	803	688	898	697	743	855	675	829	823	697	894
75	654	556	603	648	533	652	600	537	636	548	564	641	528	621	629	543	656
80	443	401	425	451	380	459	421	388	422	396	402	436	368	438	434	388	446
85	243	232	236	254	198	244	230	213	225	214	219	223	176	230	222	217	244
90	10	13	12	11	10	7	6	6	5	4	4	4	4	5	5	5	9
95	4	4	4	4	4	4	4	3	4	3	3	3	3	3	3	3	4
100	3	3	3	3	4	3	3	3	3	2	3	3	2	3	3	2	2
105	2	3	3	3	4	3	3	3	3	2	2	2	2	3	2	2	2
110	3	3	3	3	3	3	3	3	3	2	2	2	2	3	3	2	3
115	4	3	3	3	4	3	3	3	4	3	2	2	2	2	3	2	3
120	4	4	3	4	4	3	4	3	4	4	3	3	3	3	3	3	4
125	4	4	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4
130	6	6	6	6	6	6	6	5	6	6	6	5	5	6	6	5	6
135	8	8	8	8	9	8	8	8	8	8	8	8	8	8	7	8	8
140	10	11	10	10	11	11	10	10	10	10	10	10	10	10	10	10	10
145	13	13	13	13	14	13	13	13	13	13	12	13	13	13	12	13	13
150	15	15	16	15	16	15	15	15	15	15	15	15	15	15	14	15	15
155	17	17	18	18	19	16	17	17	17	17	17	17	17	17	17	17	17
160	20	20	20	20	21	19	19	19	20	20	20	19	20	19	19	20	20
165	23	23	23	23	24	22	22	22	22	23	23	23	23	22	22	23	23
170	26	26	26	26	27	26	26	26	26	26	26	26	26	26	26	26	26
175	29	29	29	29	29	29	28	29	29	29	29	29	30	30	29	29	29
180	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

THD and PF Test

Model No.	HLT1CP1352CUW 135W 4000K		Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)		45

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
2. The ambient temperature condition was maintained at 25 °C ± 1 °C. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.3	120.06	60	1.0981	131.51	0.9973	4.02%	Horizontal
24.3	277.00	60	0.4835	128.30	0.9581	7.72%	Horizontal

THD and PF Test

Model No.	HLT1CP1352CUW 135W 5000K	Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
2. The ambient temperature condition was maintained at 25 °C ± 1 °C. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.3	120..03	60	1.1200	134.16	0.9973	4.08%	Horizontal
24.3	277.01	60	0.4920	130.70	0.9591	7.67%	Horizontal

THD and PF Test

Model No.	HLT1CP1352CUW 115W 5000K		Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)		45

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
2. The ambient temperature condition was maintained at 25 °C ± 1 °C. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.3	120.08	60	1.0079	120.75	0.9971	4.14%	Horizontal
24.3	277.02	60	0.4472	118.09	0.9531	7.88%	Horizontal

THD and PF Test

Model No.	HLT1CP1352CUW 100W 5000K		Sample ID.	6628582
Operate time (Min.)	90	Stabilization time (Min.)		45

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
2. The ambient temperature condition was maintained at 25 °C ± 1 °C. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.3	120.04	60	0.8601	102.84	0.9962	4.52%	Horizontal
24.3	277.00	60	0.3884	101.27	0.9413	8.77%	Horizontal

In-Situ Temperature Measurement Test

Model No.	HLT1CP1352CUW 135W 5000K	Sample ID.	6628582

Test Method

1. In-Situ Temperature Measurement Test is conducted according to the UL 1598-2008, Section 14.
2. The testing was conducted in a room with ambient temperature of 25 °C ± 5 °C. The apparatus construction followed those described in UL1598-2008 for normal temperature testing. Thermocouples were placed on the LED package in the locations indicated by LM-80 report. Thermocouples were placed on the LED driver case in the locations specified by the manufacture if necessary. The temperature was recorded after the lamp was operated by 7.5 hours.
3.The data and photos in LM-80 test report is provided by the customer/ The data and photos in driver specification is provided by the

In-Situ Temperature Measurement Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
23.3	120.10	60	1.1008	131.860	0.9973	3.98%	Horizontal

Test Results (LEDs)

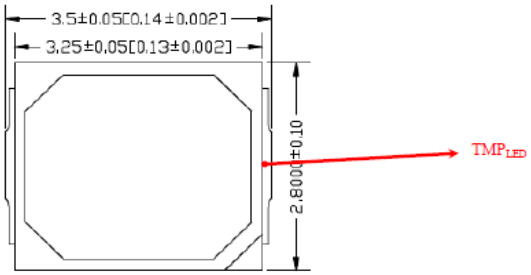
Thermocouple Location	Declared Light Source Current (mA)	Temperature for Light Source (°C)		Max Chromaticity Shift (1000-6000h)	LED Model Number	LM-80 Limit Current (mA)	LM-80 Limit Temp (°C)
		Test Result	Test Result (Correct to 25 °C)				
Ambient TEMP	N/A	23.3	25.0				
TMP of Location 1	45	74.8	76.5	0.0032	STW8A32E	100	105

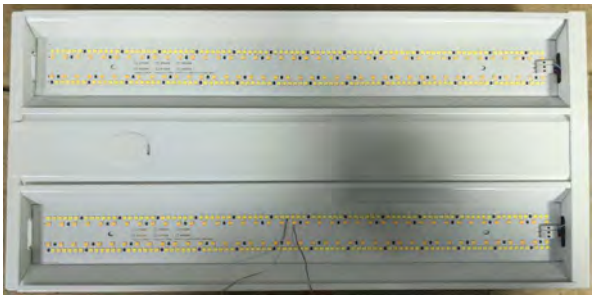
Test Results (Drivers)

Thermocouple Location	Temperature for Driver (°C)		Driver Model Number	Driver Limit Temp (°C)
	Test Result	Test Result (Correct to 25 °C)		
Ambient TEMP	23.3	25.0		
TMP of Location 1	59.2	60.9	SIG120-I0530 120-277 W D1S	90

In-Situ Temperature Measurement Test (Cont'd)

Test Photos for Ts Point of Light Sources & Tc Point of Drivers





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