Photometric Test Report

Relevant Standards

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

Prepared For

GREEN CREATIVE LTD

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Catalog Number

EXCYL3/WM/S/8CCT3S/DIM010UNV/%/%/#/CC**

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N/A

Prepared By	Approved By
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1.0 Test List

Sample Received Date: 2024-08-26

Test No.	Test Item	Sample ID	Model Number	Test Conducted By
1	Integrating Sphere Test	7537300-4	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/ SP/SP/BK/CC	James Tan
2	Goniophotometer Test	7537300-1	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/ MD/MD/BK/CC	James Tan
3	Goniophotometer Test	7537300-2	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/ NR/NR/BK/CC	James Tan
4	Goniophotometer Test	7537300-3	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/ VN/VN/BK/CC	James Tan
5	Goniophotometer Test	7537300-4	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/ SP/SP/BK/CC	James Tan

Remark (if any)

[X] 1. UL test equipment information is recorded on Meter Use in UL's Aurora database.

2.0 Product Description

Luminaire Description: Wall-Mounted Area Luminaires

Model Number: EXCYL3/WMDI/S/8CCT3S/DIM010UNV/NR/NR/BK/CC

Electrical Ratings and CCT: 120-277Vac, 50/60 Hz, 10W, 3000K/3500K/4000K

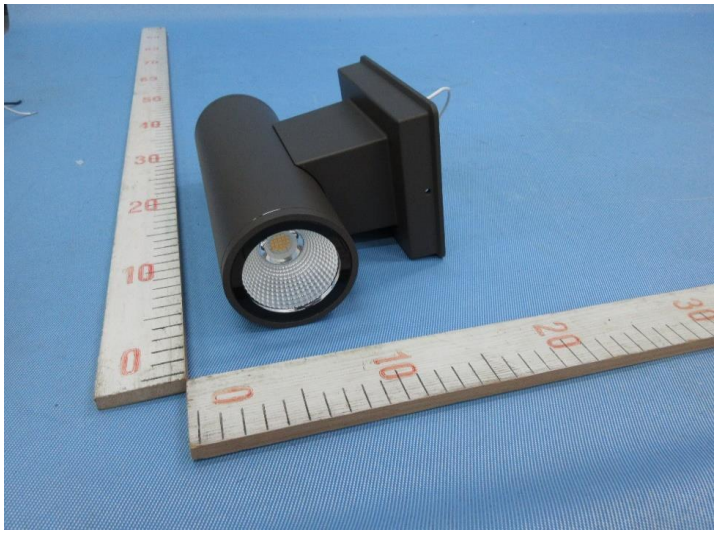
Driver Model Number: BW-998-CSP-10W

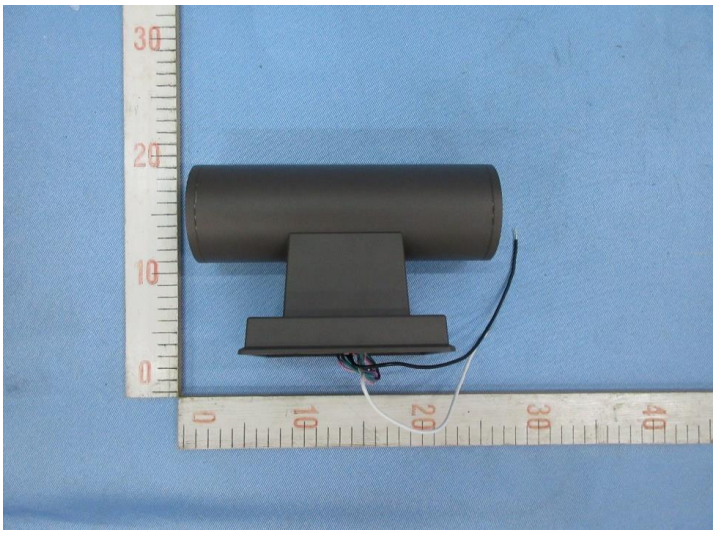
LED Package: BXCP-30E-11M-J19-3-A1 and BXCP-40E-11M-J19-3-A1, Bridgelux Inc.

Family Model and Variation: EXCYL3/WM**/S/8CCT3S/DIM010UNV/%/%/#/CC

% means Optic: SP(15°), VN(25°), NR(40°), MD(60°) or blank;
# means finish color: BZ, BK, SV, WH, RALxxxx;
* means ligting direction : D (direct), I (indirect), DI (direct and indirect);

Photos of Luminaire Characteristics





3.0 LM-79 Measurement and Test Results

3.1 Integrating Sphere Test 3000K

Model No.	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/SP/SP/BK/CC	Sample ID.	7537300-4
Operate time (Min.)	55	Stabilization time (Min.)	50

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 paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1.0º C.The reference standard lamp is power 100W omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, 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.

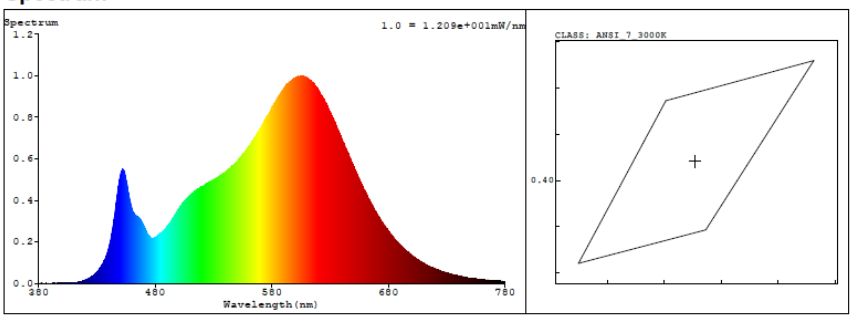
Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.8	120	60	0.083	9.925	0.9960	Vertical

Test Results

CCT (K)	CRI (Ra)	R9	Rf	Rg	Luminous Flux (lm)	Luminous Efficacy (lm/W)
3027	84.2	11	86	95	1146.7	115.5

Spectrum



Colorimetric Parameters

Chromaticity Coordinate: x = 0.4354 y = 0.4042 / u' = 0.2495 v' = 0.5212 (duv=2.47e-04)
CCT= 3027K Prcp WL: Ld=582.6nm Purity=52.0%
Peak WL: Lp=607nm FWHM: =125.1nm Ratio:R=23.1% G=74.0% B=2.9%
Render Index: Ra = 84.2 TM30:Rf=86 Rg=95

R1 =83	R2 =93	R3 =95	R4 =83	R5 =84	R6 =93	R7 =82	
R8 =60	R9 =11	R10=85	R11=83	R12=76	R13=86	R14=98	R15=75

3.0 LM-79 Measurement and Test Results

3.1 Integrating Sphere Test 3500K

Model No.	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/SP/SP/BK/CC	Sample ID.	7537300-4
Operate time (Min.)	55	Stabilization time (Min.)	50

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 paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1.0º C.The reference standard lamp is power 100W omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, 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.

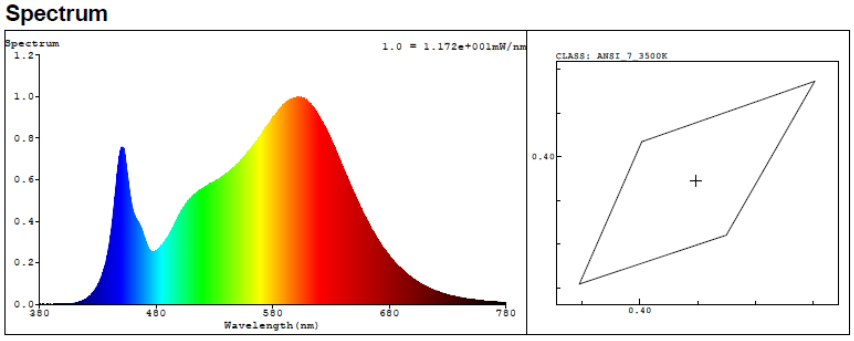
Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.8	120	60	0.082	9.778	0.9961	Vertical

Test Results

CCT (K)	CRI (Ra)	R9	Rf	Rg	Luminous Flux (lm)	Luminous Efficacy (lm/W)
3437	84.5	11	86	95	1179.6	120.6

Spectrum



Colorimetric Parameters

Chromaticity Coordinate: x = 0.4097 y = 0.3945 / u' = 0.2370 v' = 0.5135 (duv=7.03e-04)
CCT= 3437K Prcp WL: Ld=580.8nm Purity=41.4%
Peak WL: Lp=601nm FWHM: =144.9nm Ratio:R=20.8% G=76.0% B=3.3%
Render Index: Ra = 84.5 TM30:Rf=86 Rg=95

R1 =83	R2 =92	R3 =97	R4 =83	R5 =84	R6 =90	R7 =85	
R8 =63	R9 =11	R10=82	R11=84	R12=71	R13=85	R14=99	R15=76

3.0 LM-79 Measurement and Test Results

3.1 Integrating Sphere Test 4000K

Model No.	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/SP/SP/BK/CC	Sample ID.	7537300-4
Operate time (Min.)	55	Stabilization time (Min.)	50

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 paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1.0º C.The reference standard lamp is power 100W omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, 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.

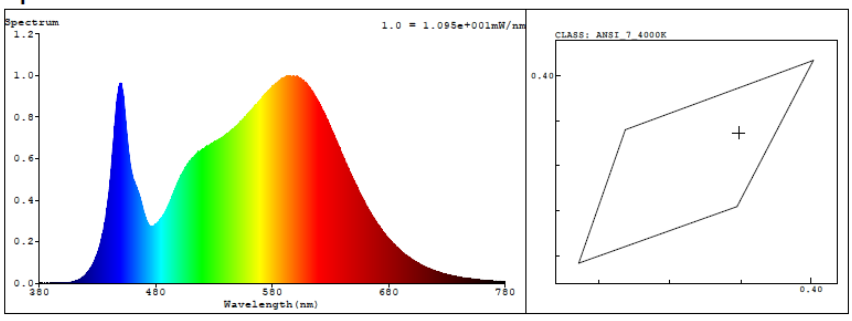
Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.9	120	60	0.082	9.85	0.9961	Vertical

Test Results

CCT (K)	CRI (Ra)	R9	Rf	Rg	Luminous Flux (lm)	Luminous Efficacy (lm/W)
3838	83.3	5	85	95	1168.2	118.6

Spectrum



Colorimetric Parameters

Chromaticity Coordinate: x = 0.3897 y = 0.3873 / u' = 0.2270 v' = 0.5075 (duv=2.26e-03)
CCT= 3838K Prcp WL: Ld=578.6nm Purity=33.2%
Peak WL: Lp=595nm FWHM: =149.7nm Ratio:R=18.8% G=77.7% B=3.5%
Render Index: Ra = 83.3 TM30:Rf=85 Rg=95
R1 =81 R2 =90 R3 =96 R4 =83 R5 =82 R6 =87 R7 =86
R8 =63 R9 =5 R10=76 R11=82 R12=66 R13=83 R14=98 R15=74

3.0 LM-79 Measurement and Test Results

3.2 Goniophotometer Test 3000K

Model No.	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/MD/MD/BK/CC	Sample ID.	7537300-1
Operate time (Min.)	60	Stabilization time (Min.)	50

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 paramters were measured using a type C goniophotometer and software.
3.The ambient temperature shall be maintained at 25° C ± 1.0° 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 power 400W omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, China.
4.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 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

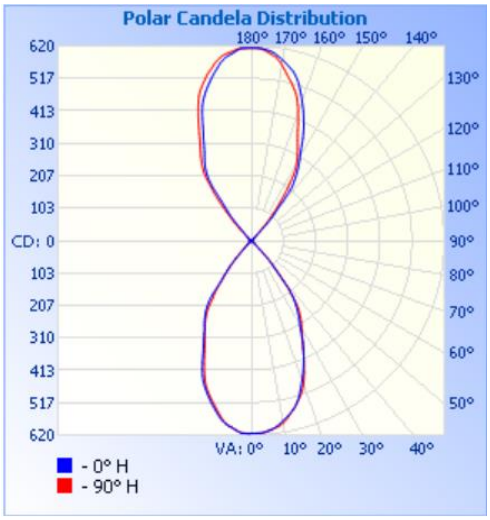
Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.9	120	60	0.083	9.86	0.9956	Face down and up

Test Result

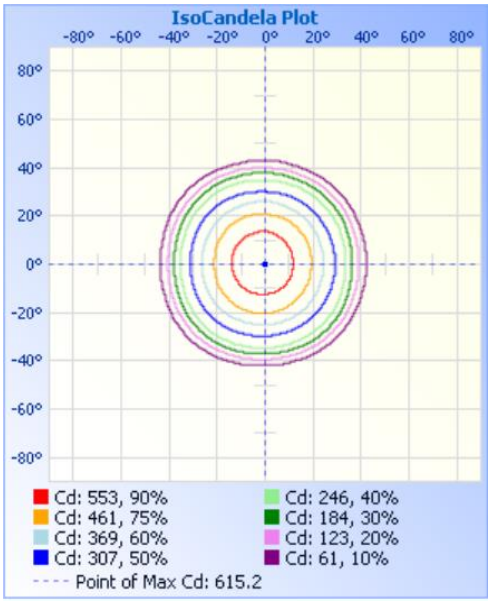
Field Angle (10%)		Beam Angle (50%)		Flux (lm)	Luminous Efficacy (lm/W)
Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread		
86	n/a	60.4	n/a	1112	112.8

3.2 Goniophotometer Test (Cont'd)

Light Distribution Curve



IsoCandela Plot



3.2 Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	379.0	34.1%
0-40	520.0	46.8%
0-60	553.1	49.7%
60-90	2.9	0.3%
70-100	1.2	0.1%
90-120	2.9	0.3%
0-90	556.0	50%
90-180	556.0	50%
0-180	1,112.0	100%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	57.1	5.1%	90-100	0.3	0%
10-20	148.0	13.3%	100-110	0.7	0.1%
20-30	173.9	15.6%	110-120	1.9	0.2%
30-40	140.9	12.7%	120-130	4.1	0.4%
40-50	29.1	2.6%	130-140	29.2	2.6%
50-60	4.1	0.4%	140-150	140.9	12.7%
60-70	1.9	0.2%	150-160	173.9	15.6%
70-80	0.7	0.1%	160-170	148.0	13.3%
80-90	0.3	0.0%	170-180	57.0	5.1%

3.2 Goniophotometer Test (Cont'd)

Intensity Data(cd)

	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	614	614	614	614	614	614	614	614	614	614	614	614	614	614	614	614	614
1	614	613	614	613	614	615	615	614	615	615	614	614	614	613	614	614	614
2	614	614	613	614	613	614	614	614	614	614	615	614	613	613	613	613	614
3	613	613	614	614	615	615	615	614	614	613	613	613	613	613	613	613	613
4	612	612	612	614	613	613	611	611	610	609	609	609	608	609	609	611	611
5	609	608	610	610	609	610	608	606	604	603	602	602	604	605	605	606	607
6	606	605	606	606	605	605	604	602	598	597	595	595	598	599	600	603	604
7	603	602	604	604	603	603	600	597	595	593	590	590	594	594	597	600	600
8	597	599	600	601	600	599	597	593	590	588	586	586	587	590	593	595	597
9	591	595	596	597	596	595	591	587	582	582	579	579	579	583	587	590	592
10	584	589	589	592	590	588	583	577	574	572	569	569	568	572	579	582	585
11	577	581	582	584	583	579	574	569	563	559	558	556	556	562	567	574	578
12	570	573	575	575	574	570	564	559	553	548	545	543	544	548	556	564	570
13	563	564	566	567	564	561	555	549	542	536	533	531	533	538	545	554	560
14	556	555	558	559	556	551	547	539	532	526	521	519	523	525	533	543	550
15	546	547	550	550	547	542	536	529	520	514	509	508	512	513	522	532	540
16	535	537	541	540	536	532	526	518	509	503	497	496	501	502	511	522	530
17	522	526	531	530	526	520	514	507	498	491	486	483	490	491	499	510	519
18	506	516	521	521	515	511	504	495	486	480	473	473	476	479	489	500	509
19	492	504	509	508	504	498	492	483	474	466	461	460	458	468	477	488	497
20	476	492	495	496	490	485	477	467	458	450	446	443	441	452	462	472	482
25	398	399	405	404	397	393	381	370	363	354	351	349	353	355	366	377	390
30	313	321	328	327	325	322	315	307	300	295	292	291	294	295	299	309	313
35	249	262	267	266	265	259	256	244	238	219	215	208	204	217	230	246	253
40	130	138	149	153	144	136	128	108	107	86	78	83	95	96	105	113	123
45	26	26	41	43	48	37	27	19	16	15	15	15	18	17	19	20	24
50	9	9	10	11	10	10	9	7	6	6	6	6	6	6	7	8	9
55	5	5	5	5	4	5	5	4	4	4	4	4	4	4	4	5	4
60	3	3	4	3	3	3	3	3	3	3	2	3	3	3	3	3	3
65	2	2	2	2	3	2	2	2	2	1	2	2	2	2	2	2	2
70	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
75	1	1	0	1	1	1	1	1	0	1	0	0	0	1	0	1	0
80	1	1	0	1	0	0	1	0	1	1	0	1	0	1	0	0	0
85	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0
100	1	0	0	1	0	1	0	1	1	0	1	0	0	1	0	1	1
105	1	1	0	1	0	0	0	1	0	1	1	1	1	1	0	1	1
110	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1
115	2	2	2	2	2	2	2	1	2	2	2	2	3	2	2	2	2
120	3	3	3	3	3	3	2	3	3	3	3	3	3	3	4	3	3
125	5	5	4	4	4	4	4	4	4	4	5	5	4	5	5	5	5
130	9	8	7	6	6	6	6	6	6	7	9	10	10	11	10	9	9
135	26	20	19	17	18	15	15	15	16	19	27	37	48	43	41	26	26
140	130	113	105	96	95	83	78	86	107	108	128	136	144	153	149	138	130
145	249	246	230	217	204	208	215	219	238	244	256	259	265	266	267	262	249
150	313	309	299	295	294	291	292	295	300	307	315	322	325	327	328	321	313
155	398	377	366	355	353	349	351	354	363	370	381	393	397	404	405	399	398
160	476	472	462	452	441	443	446	450	458	467	477	485	490	496	495	492	476
165	546	532	522	513	512	508	509	514	520	529	536	542	547	550	550	547	546
170	584	582	579	572	568	569	569	572	574	577	583	588	590	592	589	589	584
175	609	606	605	605	604	602	602	603	604	606	608	610	609	610	610	608	609
180	614	614	614	614	614	614	614	614	614	614	614	614	614	614	614	614	614

3.0 LM-79 Measurement and Test Results

3.3 Goniophotometer Test 3000K

Model No.	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/NR/NR/BK/CC	Sample ID.	7537300-2
Operate time (Min.)	60	Stabilization time (Min.)	50

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 paramters were measured using a type C goniophotometer and software.
3.The ambient temperature shall be maintained at 25° C ± 1.0° 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 power 400W omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, China.
4.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 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

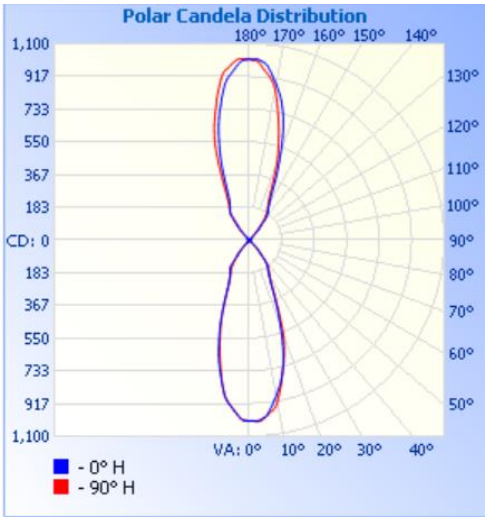
Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.9	120	60	0.083	9.86	0.9956	Face down and up

Test Result

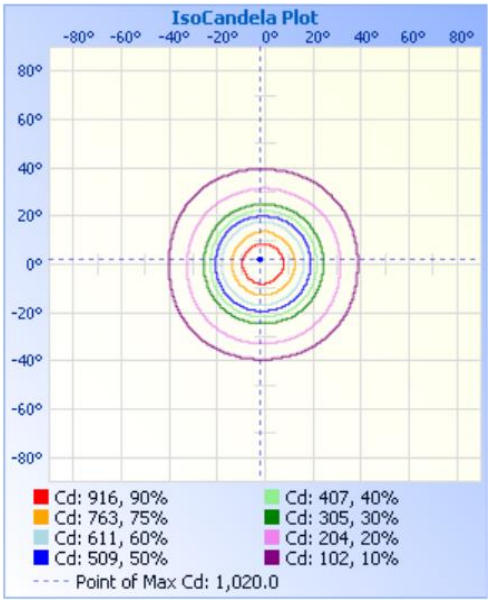
Field Angle (10%)		Beam Angle (50%)		Flux (lm)	Luminous Efficacy (lm/W)
Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread		
78.7	78.7	39.4	39.2	1115.9	113.2

3.3 Goniophotometer Test (Cont'd)

Light Distribution Curve



IsoCandela Plot



3.3 Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	424.3	38%
0-40	528.2	47.3%
0-60	555.5	49.8%
60-90	2.5	0.2%
70-100	1.1	0.1%
90-120	2.5	0.2%
0-90	558.0	50%
90-180	557.9	50%
0-180	1,115.9	100%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	90.2	8.1%	90-100	0.2	0%
10-20	189.1	16.9%	100-110	0.6	0.1%
20-30	145.1	13.0%	110-120	1.7	0.1%
30-40	103.9	9.3%	120-130	3.9	0.3%
40-50	23.4	2.1%	130-140	23.5	2.1%
50-60	3.9	0.3%	140-150	103.9	9.3%
60-70	1.7	0.1%	150-160	145.1	13%
70-80	0.6	0.1%	160-170	189.0	16.9%
80-90	0.2	0.0%	170-180	90.1	8.1%

3.3 Goniophotometer Test (Cont'd)

Intensity Data(cd)

	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	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015
1	1012	1014	1015	1018	1015	1016	1012	1013	1012	1012	1012	1010	1011	1012	1013	1015	1013
2	1016	1015	1015	1018	1015	1014	1014	1014	1010	1009	1011	1010	1010	1007	1011	1013	1017
3	1013	1020	1020	1017	1018	1016	1009	1004	998	996	997	998	998	1000	1005	1009	1014
4	1005	1010	1016	1014	1013	1003	999	988	980	976	975	976	979	982	985	997	1003
5	996	997	1001	1001	1000	991	980	971	962	955	952	956	959	961	969	977	985
6	983	980	983	989	988	975	960	953	944	936	930	934	941	945	951	956	968
7	957	964	969	973	973	964	947	935	927	918	909	913	925	932	932	942	954
8	934	945	959	964	963	948	936	924	910	900	892	894	905	916	919	927	938
9	906	932	941	946	948	932	915	900	884	874	870	874	884	889	897	907	922
10	884	906	914	916	918	904	882	861	847	838	832	835	848	856	864	874	891
11	856	869	878	887	883	865	841	821	814	794	786	793	807	816	819	831	852
12	832	829	842	851	848	830	801	785	773	759	748	754	765	773	779	793	820
13	803	795	801	815	813	793	764	755	742	722	706	709	723	735	747	762	784
14	769	766	767	775	773	760	732	721	705	683	666	665	683	694	706	725	754
15	735	733	733	744	742	723	696	684	668	644	626	626	644	654	668	688	719
16	697	697	699	706	707	686	659	649	627	602	587	588	603	617	630	651	686
17	656	662	664	667	674	651	625	611	584	562	551	552	564	579	594	615	647
18	610	625	630	633	639	616	591	572	543	523	518	518	528	543	560	579	608
19	563	585	595	601	604	583	557	533	503	486	484	483	492	510	527	545	568
20	517	545	559	564	562	543	521	489	460	448	445	445	452	469	487	507	524
25	319	325	335	340	337	325	309	292	279	272	269	270	273	279	287	297	310
30	222	220	225	227	230	227	224	221	217	214	213	210	209	211	213	212	217
35	181	186	187	189	190	189	188	187	186	175	167	161	156	161	169	179	183
40	94	102	114	117	110	108	103	86	90	73	63	69	72	76	82	86	92
45	20	18	30	32	38	29	22	18	14	14	14	15	13	15	16	16	16
50	10	8	10	11	9	9	8	8	7	6	6	6	6	6	7	7	8
55	4	4	4	4	5	4	5	4	4	4	4	3	4	4	4	4	4
60	2	3	2	3	3	3	3	3	2	3	2	2	3	3	2	2	2
65	2	2	2	2	1	2	1	2	1	2	1	1	1	1	1	1	1
70	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75	1	0	0	0	1	1	1	1	1	0	1	1	1	0	1	1	0
80	0	0	0	1	1	0	0	0	1	0	1	0	1	1	0	0	0
85	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
100	0	0	0	1	1	0	1	0	1	0	0	0	1	1	0	0	0
105	1	1	1	0	1	1	1	0	1	1	1	1	1	0	0	0	1
110	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
115	2	1	1	1	1	1	1	2	1	2	1	2	1	2	2	2	2
120	2	2	2	3	3	2	2	3	2	3	3	3	3	3	2	3	2
125	4	4	4	4	4	3	4	4	4	4	5	4	5	4	4	4	4
130	10	7	7	6	6	6	6	6	7	8	8	9	9	11	10	8	10
135	20	16	16	15	13	15	14	14	14	18	22	29	38	32	30	18	20
140	94	86	82	76	72	69	63	73	90	86	103	108	110	117	114	102	94
145	181	179	169	161	156	161	167	175	186	187	188	189	190	189	187	186	181
150	222	212	213	211	209	210	213	214	217	221	224	227	230	227	225	220	222
155	319	297	287	279	273	270	269	272	279	292	309	325	337	340	335	325	319
160	517	507	487	469	452	445	445	448	460	489	521	543	562	564	559	545	517
165	735	688	668	654	644	626	626	644	668	684	696	723	742	744	733	733	735
170	884	874	864	856	848	835	832	838	847	861	882	904	918	916	914	906	884
175	996	977	969	961	959	956	952	955	962	971	980	991	1000	1001	1001	997	996
180	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015

3.0 LM-79 Measurement and Test Results

3.4 Goniophotometer Test 3000K

Model No.	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/VN/VN/BK/CC	Sample ID.	7537300-3
Operate time (Min.)	60	Stabilization time (Min.)	50

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 paramters were measured using a type C goniophotometer and software.
3.The ambient temperature shall be maintained at 25° C ± 1.0° 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 power 400W omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, China.
4.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 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

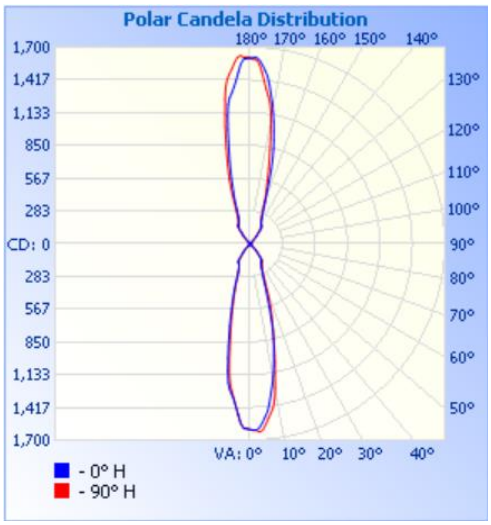
Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.9	120	60	0.083	9.86	0.9956	Face down and up

Test Result

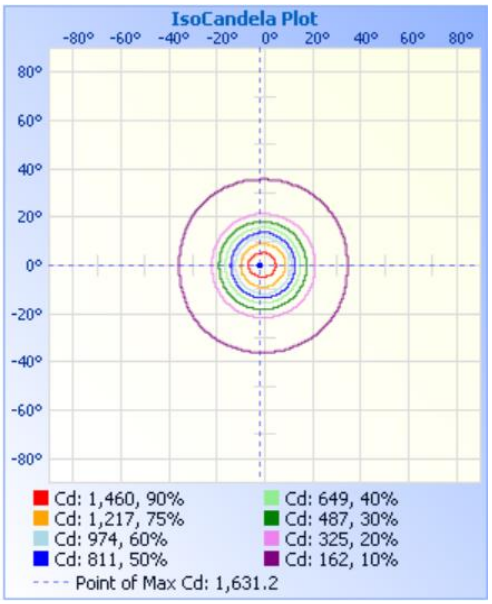
Field Angle (10%)		Beam Angle (50%)		Flux (lm)	Luminous Efficacy (lm/W)
Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread		
70.3	71.6	26.9	27.1	1132.5	114.9

3.4 Goniophotometer Test (Cont'd)

Light Distribution Curve



IsoCandela Plot



3.4 Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	437.4	38.6%
0-40	535.0	47.2%
0-60	564.1	49.8%
60-90	2.2	0.2%
70-100	1.0	0.1%
90-120	2.2	0.2%
0-90	566.3	50%
90-180	566.2	50%
0-180	1,132.5	100%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	130.7	11.5%	90-100	0.2	0%
10-20	191.1	16.9%	100-110	0.5	0%
20-30	115.6	10.2%	110-120	1.5	0.1%
30-40	97.6	8.6%	120-130	4.7	0.4%
40-50	24.4	2.2%	130-140	24.4	2.2%
50-60	4.7	0.4%	140-150	97.6	8.6%
60-70	1.5	0.1%	150-160	115.5	10.2%
70-80	0.5	0.0%	160-170	191.1	16.9%
80-90	0.2	0.0%	170-180	130.6	11.5%

3.4 Goniophotometer Test (Cont'd)

Intensity Data(cd)

	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	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607
1	1610	1614	1616	1615	1616	1614	1613	1611	1602	1601	1599	1596	1596	1599	1603	1610	1609
2	1613	1615	1616	1619	1615	1613	1609	1608	1599	1597	1592	1591	1595	1600	1602	1607	1610
3	1591	1613	1622	1631	1630	1615	1594	1577	1558	1545	1542	1546	1555	1567	1577	1584	1595
4	1550	1579	1599	1614	1614	1583	1549	1508	1484	1477	1476	1479	1486	1496	1511	1527	1546
5	1504	1515	1552	1574	1570	1543	1496	1440	1414	1399	1395	1402	1414	1424	1448	1458	1474
6	1458	1452	1501	1535	1522	1497	1435	1383	1359	1334	1322	1328	1347	1364	1383	1393	1414
7	1387	1393	1452	1492	1479	1442	1379	1337	1313	1283	1261	1268	1292	1310	1319	1339	1363
8	1307	1352	1400	1440	1436	1393	1334	1299	1277	1242	1208	1216	1237	1253	1268	1285	1321
9	1239	1305	1326	1363	1366	1322	1266	1247	1221	1174	1132	1140	1154	1178	1194	1223	1270
10	1159	1226	1226	1256	1264	1224	1172	1148	1119	1069	1039	1032	1043	1065	1088	1122	1182
11	1076	1119	1123	1147	1141	1117	1073	1035	1009	962	932	918	932	955	978	1018	1076
12	994	1016	1028	1044	1044	1010	974	937	906	861	837	819	830	848	874	916	972
13	922	913	940	945	945	911	880	844	809	773	755	740	747	762	784	827	876
14	844	819	849	855	857	826	796	764	732	697	673	662	667	682	708	747	789
15	763	746	769	776	776	752	721	689	655	623	603	596	601	611	635	672	718
16	668	672	701	711	706	685	650	618	586	557	542	537	538	547	572	602	644
17	575	602	634	647	640	621	589	553	523	499	491	485	486	492	517	538	576
18	498	540	572	585	582	562	533	499	471	451	444	438	439	446	466	485	517
19	432	481	510	523	517	502	478	445	420	403	397	394	395	400	417	433	460
20	379	422	442	454	453	439	421	390	368	356	351	349	348	357	368	381	399
25	242	240	246	252	254	249	242	235	229	228	226	227	228	228	227	230	235
30	193	194	199	201	203	202	199	198	197	197	197	196	194	194	193	192	192
35	173	176	178	179	180	177	177	177	177	164	158	153	150	155	162	171	173
40	92	96	108	109	109	102	97	85	88	72	63	67	72	76	80	81	91
45	19	21	33	34	38	31	23	19	14	20	18	18	14	18	20	22	18
50	9	10	11	13	12	13	10	8	7	7	7	7	6	7	7	7	9
55	5	6	5	6	6	6	5	5	5	4	4	4	5	4	4	5	5
60	3	4	3	4	4	4	3	4	3	3	3	2	3	2	3	3	4
65	2	1	2	2	2	1	2	1	1	1	1	1	1	1	2	2	2
70	1	0	0	1	1	1	1	0	0	1	0	1	1	1	1	1	0
75	0	0	0	0	0	1	1	1	1	1	0	1	1	1	0	0	0
80	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	1
85	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0
100	1	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1
105	0	0	0	1	1	1	0	1	1	1	1	1	0	0	0	0	0
110	1	1	1	1	1	1	0	1	0	0	1	1	1	1	0	0	1
115	2	2	2	1	1	1	1	1	1	1	2	1	2	2	2	1	2
120	3	3	3	2	3	2	3	3	3	4	3	4	4	4	3	4	3
125	5	5	4	4	5	4	4	4	5	5	5	6	6	6	5	6	5
130	9	7	7	7	6	7	7	7	7	8	10	13	12	13	11	10	9
135	19	22	20	18	14	18	18	20	14	19	23	31	38	34	33	21	19
140	92	81	80	76	72	67	63	72	88	85	97	102	109	109	108	96	92
145	173	171	162	155	150	153	158	164	177	177	177	177	180	179	178	176	173
150	193	192	193	194	194	196	197	197	197	198	199	202	203	201	199	194	193
155	242	230	227	228	228	227	226	228	229	235	242	249	254	252	246	240	242
160	379	381	368	357	348	349	351	356	368	390	421	439	453	454	442	422	379
165	763	672	635	611	601	596	603	623	655	689	721	752	776	776	769	746	763
170	1159	1122	1088	1065	1043	1032	1039	1069	1119	1148	1172	1224	1264	1256	1226	1226	1159
175	1504	1458	1448	1424	1414	1402	1395	1399	1414	1440	1496	1543	1570	1574	1552	1515	1504
180	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607	1607

3.0 LM-79 Measurement and Test Results

3.5 Goniophotometer Test 3000K

Model No.	EXCYL3/WMDI/S/8CCT3S/DIM010UNV/SP/SP/BK/CC	Sample ID.	7537300-4
Operate time (Min.)	60	Stabilization time (Min.)	50

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 paramters were measured using a type C goniophotometer and software.
3.The ambient temperature shall be maintained at 25° C ± 1.0° 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 power 400W omni-directional Incandescent lamp and was calibrated by National Institute of Metrology, China.
4.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 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

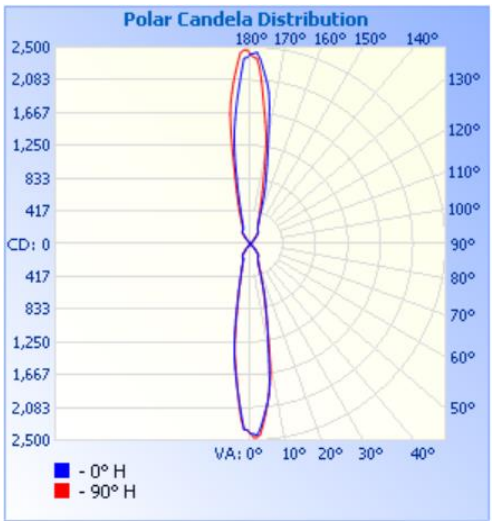
Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.9	120	60	0.083	9.86	0.9956	Face down and up

Test Result

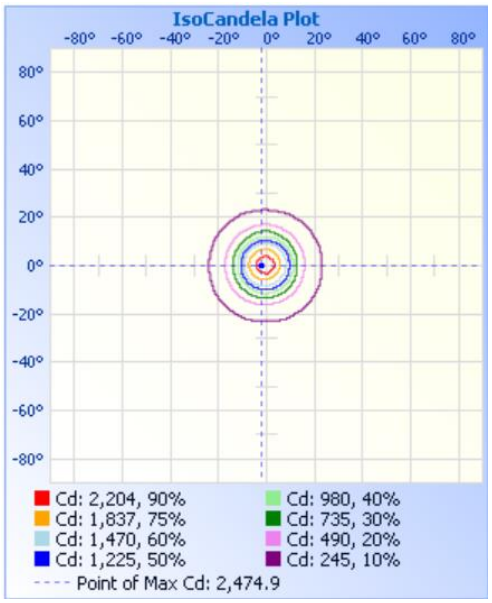
Field Angle (10%)		Beam Angle (50%)		Flux (lm)	Luminous Efficacy (lm/W)
Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread		
47.2	46.3	20.2	20.2	1156.6	117.3

3.5 Goniophotometer Test (Cont'd)

Light Distribution Curve



IsoCandela Plot



3.5 Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	450.8	39%
0-40	548.2	47.4%
0-60	576.7	49.9%
60-90	1.6	0.1%
70-100	0.8	0.1%
90-120	1.6	0.1%
0-90	578.3	50%
90-180	578.3	50%
0-180	1,156.6	100%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	169.5	14.7%	90-100	0.2	0%
10-20	173.8	15.0%	100-110	0.4	0%
20-30	107.6	9.3%	110-120	1.0	0.1%
30-40	97.4	8.4%	120-130	4.7	0.4%
40-50	23.8	2.1%	130-140	23.9	2.1%
50-60	4.7	0.4%	140-150	97.3	8.4%
60-70	1.0	0.1%	150-160	107.5	9.3%
70-80	0.4	0.0%	160-170	173.8	15%
80-90	0.2	0.0%	170-180	169.4	14.6%

3.5 Goniophotometer Test (Cont'd)

Intensity Data(cd)

	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	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411
1	2422	2454	2466	2466	2467	2439	2416	2390	2371	2364	2359	2364	2371	2385	2396	2414	2435
2	2437	2455	2473	2475	2464	2439	2408	2379	2360	2354	2346	2353	2363	2376	2390	2409	2432
3	2362	2408	2450	2456	2434	2367	2280	2219	2188	2173	2184	2202	2242	2286	2307	2340	2377
4	2258	2289	2322	2344	2311	2234	2132	2065	2021	1989	1982	2009	2060	2122	2156	2207	2248
5	2152	2152	2201	2220	2188	2108	2001	1937	1883	1832	1802	1814	1867	1940	1990	2052	2108
6	2054	2025	2070	2094	2066	1968	1875	1819	1740	1676	1644	1653	1702	1776	1838	1910	1977
7	1939	1922	1947	1967	1936	1838	1744	1686	1598	1543	1518	1517	1562	1635	1704	1782	1871
8	1757	1818	1836	1844	1810	1726	1639	1554	1471	1424	1412	1403	1435	1506	1586	1667	1765
9	1511	1676	1700	1698	1658	1582	1482	1397	1326	1285	1264	1265	1288	1336	1432	1517	1602
10	1318	1448	1480	1481	1423	1355	1270	1199	1150	1111	1073	1072	1086	1128	1218	1306	1377
11	1161	1237	1259	1255	1206	1142	1075	1025	988	944	909	897	915	947	1022	1108	1182
12	1031	1067	1073	1055	1018	968	920	878	837	800	770	763	781	812	868	949	1022
13	917	918	919	903	880	835	796	756	721	686	664	657	677	710	751	814	882
14	812	791	796	785	770	735	694	654	618	585	570	570	589	619	652	708	762
15	725	687	694	689	678	647	603	566	532	505	498	496	514	542	568	614	660
16	628	595	603	605	597	567	531	495	466	443	441	438	453	479	499	534	572
17	527	518	529	532	527	502	472	439	414	396	396	393	405	427	442	471	500
18	440	458	470	475	469	449	424	395	372	357	361	357	367	384	396	420	443
19	374	407	420	425	418	401	381	356	339	328	329	327	336	346	359	375	393
20	327	361	375	379	370	357	341	321	307	301	298	301	305	310	323	334	347
25	225	226	232	235	234	232	226	221	218	217	218	219	219	219	220	221	222
30	192	191	194	196	197	196	195	194	193	195	196	194	193	194	191	190	190
35	172	175	178	177	178	175	171	173	176	165	158	158	152	159	167	173	174
40	93	100	108	107	105	98	88	80	87	70	61	72	75	80	86	88	92
45	22	21	30	33	28	25	19	18	14	19	17	16	16	19	20	21	19
50	12	11	12	13	11	11	10	8	8	8	9	8	8	9	9	9	10
55	7	5	6	6	5	7	6	6	5	4	4	4	5	6	6	6	6
60	3	2	2	2	2	3	3	2	2	1	1	2	2	2	2	2	3
65	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1
70	0	0	0	1	1	0	0	1	0	1	1	1	0	0	1	1	1
75	0	1	1	1	0	1	1	1	0	0	0	0	0	1	1	1	0
80	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1
105	0	1	1	1	0	0	0	0	0	1	1	1	0	1	1	1	0
110	0	1	1	0	0	1	1	1	0	1	0	0	1	1	0	0	0
115	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1
120	3	2	2	2	2	2	1	1	2	2	3	3	2	2	2	2	3
125	7	6	6	6	5	4	4	4	5	6	6	7	5	6	6	5	7
130	12	9	9	9	8	8	9	8	8	8	10	11	11	13	12	11	12
135	22	21	20	19	16	16	17	19	14	18	19	25	28	33	30	21	22
140	93	88	86	80	75	72	61	70	87	80	88	98	105	107	108	100	93
145	172	173	167	159	152	158	158	165	176	173	171	175	178	177	178	175	172
150	192	190	191	194	193	194	196	195	193	194	195	196	197	196	194	191	192
155	225	221	220	219	219	219	218	217	218	221	226	232	234	235	232	226	225
160	327	334	323	310	305	301	298	301	307	321	341	357	370	379	375	361	327
165	725	614	568	542	514	496	498	505	532	566	603	647	678	689	694	687	725
170	1318	1306	1218	1128	1086	1072	1073	1111	1150	1199	1270	1355	1423	1481	1480	1448	1318
175	2152	2052	1990	1940	1867	1814	1802	1832	1883	1937	2001	2108	2188	2220	2201	2152	2152
180	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411	2411

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