



毅豐光電股份有限公司
Taiwan Photometric Solution Inc

70953台南市海中心街288號 Tel : (06)2568831 Fax : (06)2563437

E-mail : light.lab@msa.hinet.net Web : www.lightlab.com.tw



Testing Laboratory

2262

Test Report for Luminous Intensity Distributions

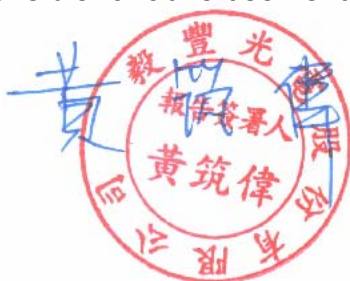
Test Standard : CIE70

Date of Receipt : 2012 / 09 / 14

Test Date : 2012 / 09 / 17 ~ 2012 / 09 / 21

1. Issue Date for test report : 2012/09/21
2. Report No. : 12091439
3. Total pages : 20
4. Test report without steel stamp is not valid, and shall not be reproduced except in full.
5. Test sample is not sampling by laboratory, test result relate only to the items tested.
6. Test report is not responsible for advertisement or promotion for products.

Approved Signatory:





Information for test items

Information for luminous intensity distribution

Applicant : Optoma Corporation

Applicant address : 12F.,No.215,Sec. 3,Beixin Rd.,Xindian Dist.,New Taipei
City 231,Taiwan

Trademark : 

Product : LED Lighting

Model : FP3012W040-Y / LP43WY / OPFP-045-010Y(W3)

Rated voltage (V) : AC240

Rated frequency (Hz) : 50

Rated power (W) : 40

Color Temperature (K) : 3000

External drive label : PCS045-120-1

Dimension for test item WxLxH (mm) : 295 X 1195 X 8.8

* Model lamps are exactly the same structure as the only market segment.



Test Content

Test Condition

Temperature (°C)	25.4
Humidity (% RH)	62.1
γ Axis measurement of angles	5
C Axis measurement of angles	5

Electrical Test

Test item	Test Result
Voltage (V)	240.0
Frequency (Hz)	50
Current (A)	0.170
Watt (W)	37.106
Power factor (PF)	0.908

Luminous Intensity Distribution

Test item	Test Result
Total luminous flux of luminaire (lm)	2881.74
Initial luminaire efficiency (lm/W)	77.66
Central intensity (cd)	1028.284
Max intensity (cd)	1032.043
Angle for max intensity (°)	C : 180.0 Y : 5.0
Beam angle (°)	111.34

Diagram for luminous intensity distribution I

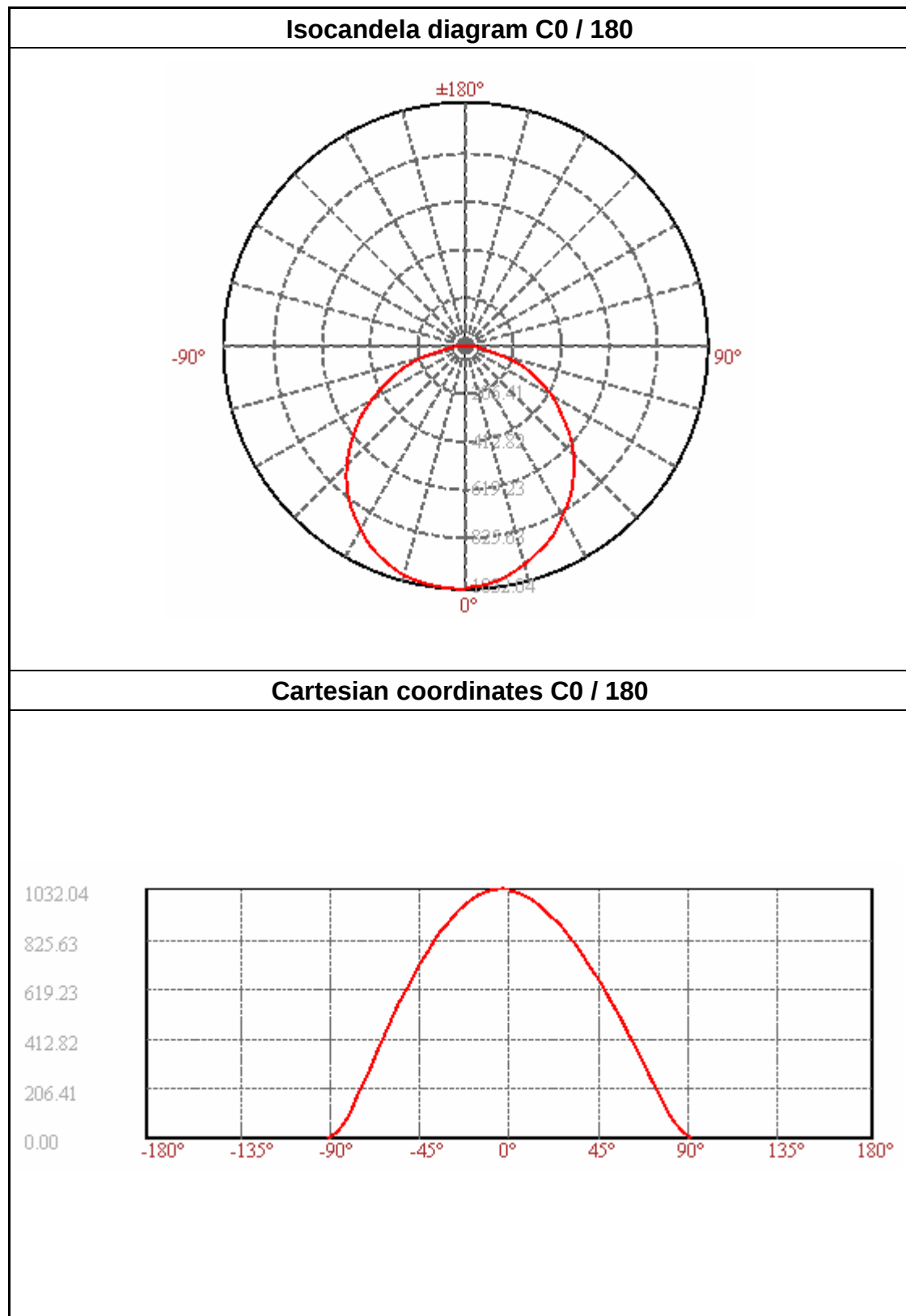
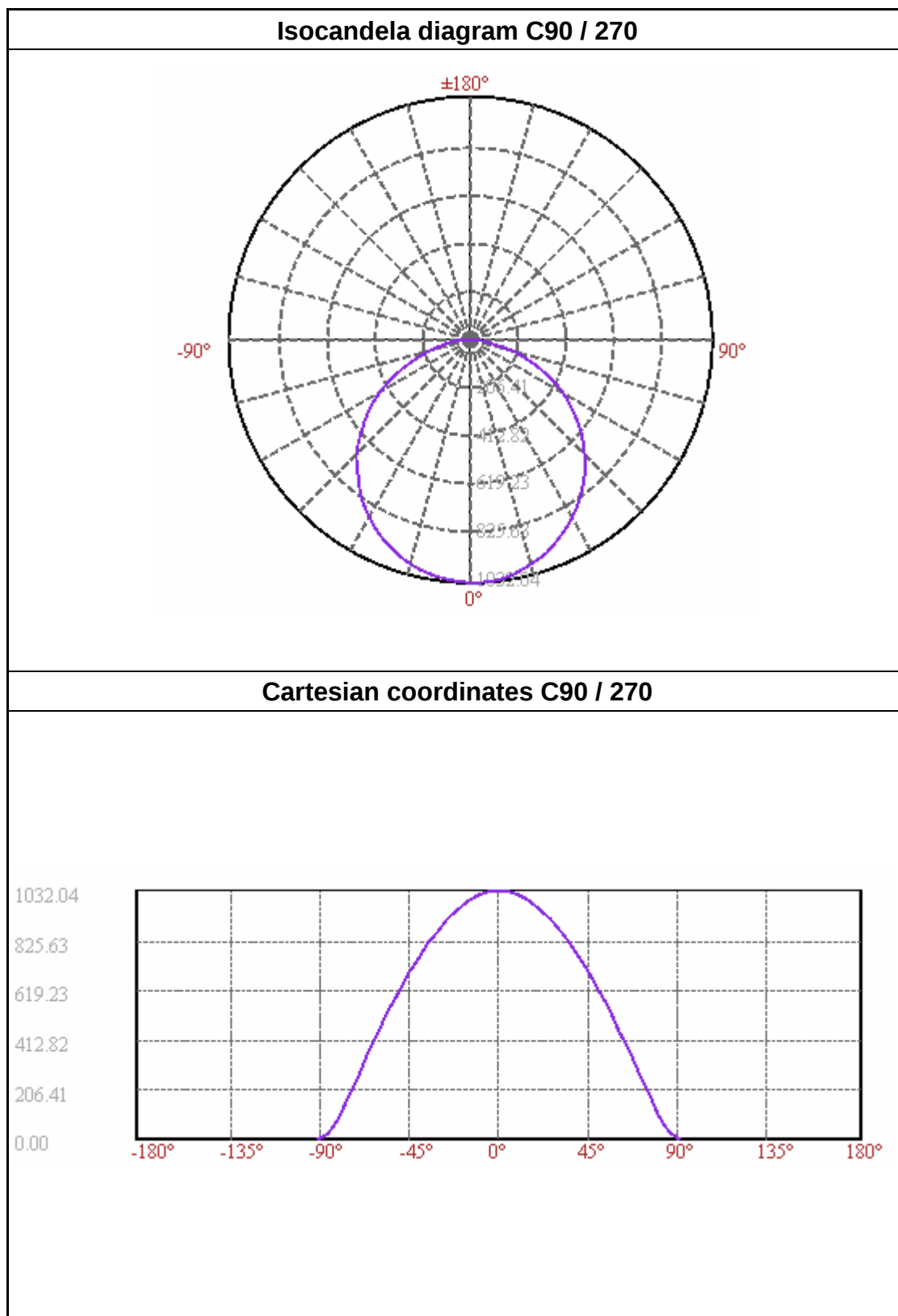
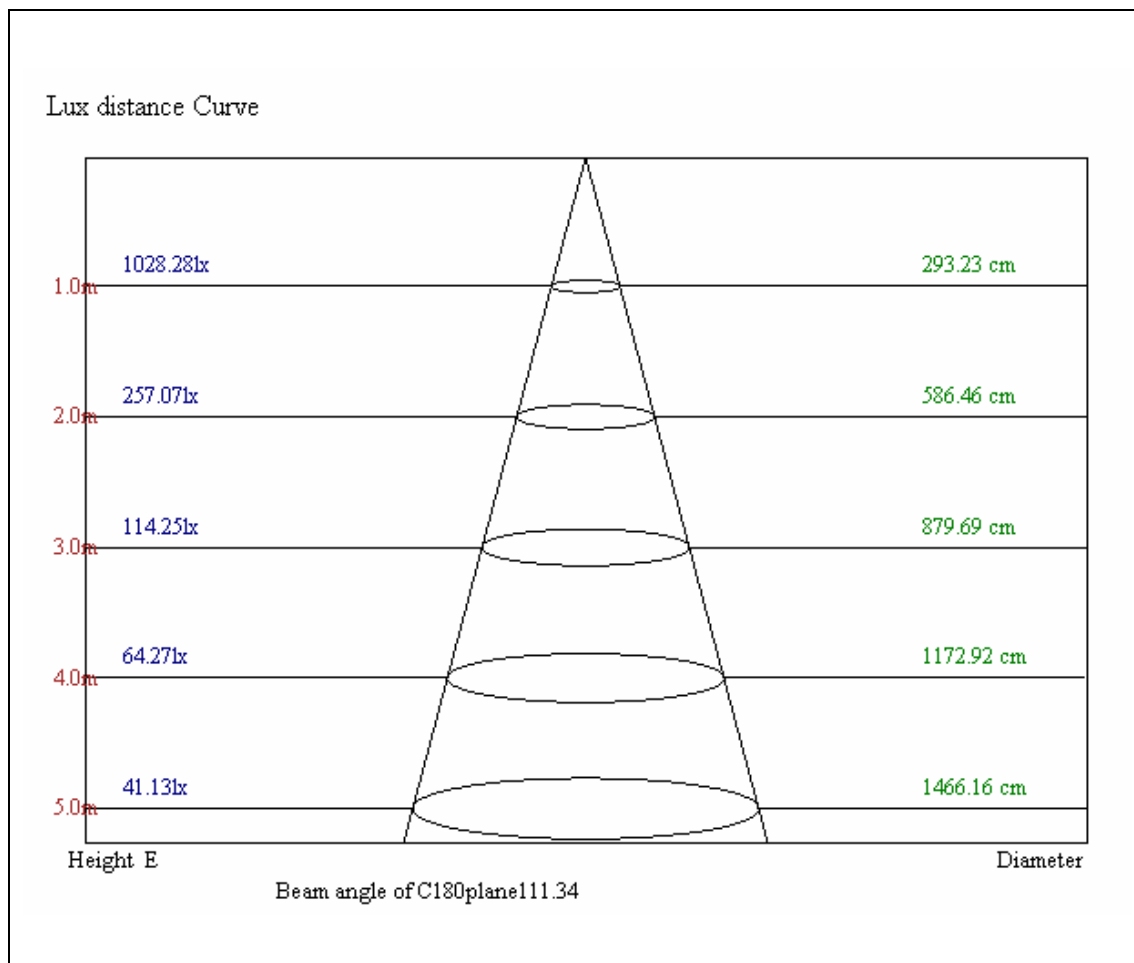


Diagram for luminous intensity distribution II



LUX distance Curve





UGR-Table

Glare Evaluation According to UGR											
ρ Ceiling		70	70	50	50	30	70	70	50	50	30
ρ Walls		50	30	50	30	30	50	30	50	30	30
ρ Floor		20	20	20	20	20	20	20	20	20	20
Room Size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	16.3	17.6	16.6	17.8	18.1	16.5	17.9	16.8	18.1	18.3
	3H	17.8	19.0	18.1	19.2	19.5	18.1	19.3	18.4	19.5	19.8
	4H	18.4	19.5	18.7	19.8	20.0	18.7	19.8	19.0	20.1	20.4
	6H	18.7	19.8	19.1	20.1	20.4	19.0	20.1	19.4	20.4	20.7
	8H	18.8	19.8	19.2	20.1	20.5	19.1	20.1	19.5	20.4	20.8
	12H	18.9	19.8	19.3	20.2	20.5	19.2	20.1	19.5	20.4	20.8
4H	2H	17.0	18.1	17.3	18.4	18.7	17.2	18.3	17.5	18.6	18.9
	3H	18.7	19.6	19.0	19.9	20.3	18.9	19.9	19.3	20.2	20.5
	4H	19.4	20.2	19.7	20.5	20.9	19.6	20.4	20.0	20.8	21.2
	6H	19.8	20.6	20.3	20.9	21.3	20.1	20.8	20.5	21.2	21.6
	8H	20.0	20.7	20.4	21.1	21.5	20.2	20.9	20.6	21.3	21.7
	12H	20.1	20.7	20.5	21.1	21.5	20.3	20.9	20.7	21.3	21.7
8H	4H	19.6	20.3	20.1	20.7	21.1	19.9	20.5	20.3	20.9	21.3
	6H	20.2	20.8	20.7	21.2	21.7	20.4	21.0	20.9	21.4	21.9
	8H	20.4	20.9	20.9	21.4	21.9	20.6	21.1	21.1	21.6	22.0
	12H	20.6	21.0	21.1	21.5	22.0	20.7	21.2	21.2	21.6	22.1
12H	4H	19.6	20.3	20.1	20.7	21.1	19.9	20.5	20.3	20.9	21.3
	6H	20.3	20.8	20.8	21.2	21.7	20.5	21.0	21.0	21.4	21.9
	8H	20.5	20.9	21.0	21.4	21.9	20.7	21.1	21.2	21.6	22.1
Variation of the observer position for the luminaire distances S											
S = 1.0H		+0.1 / -0.1					+0.1 / -0.1				
S = 1.5H		+0.2 / -0.4					+0.2 / -0.3				
S = 2.0H		+0.4 / -0.7					+0.4 / -0.7				
Standard table		BK05					BK05				
Correction Summand		2.9					3.1				
Corrected Glare Indices referring to 2815lm Total Luminous Flux											

Photo for test items

Test sample



Direction for luminaire position in goniophotometer

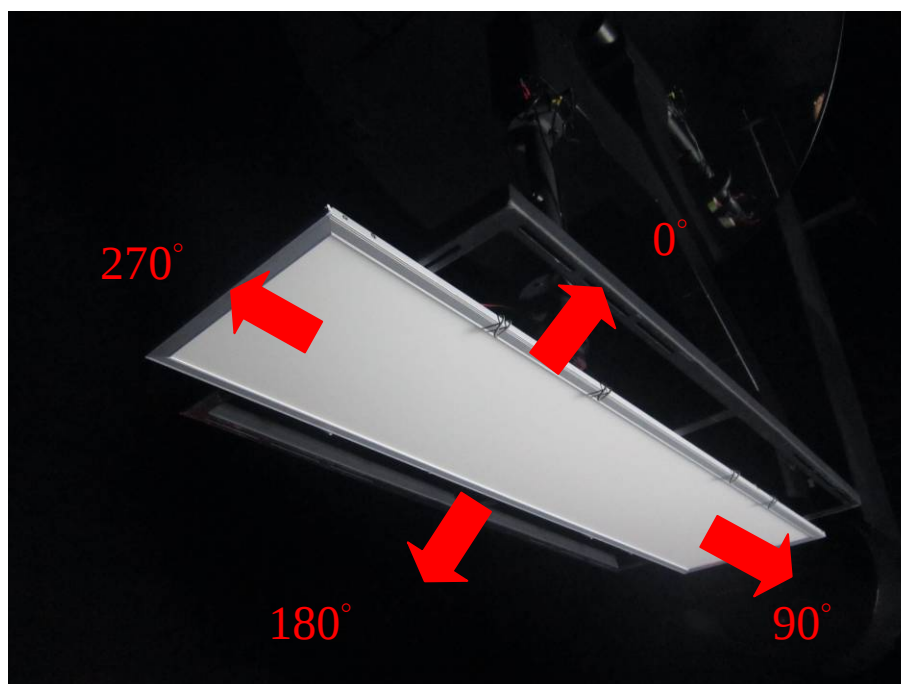


Photo for test items

with ballast





Data for luminous intensity 1

Intensity data(cd)

$\gamma/^\circ(\text{C}^\circ)$	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0
0	1028.284	1029.036	1029.036	1028.66	1029.036	1028.284	1027.908	1027.532
5	1014.749	1015.501	1015.501	1015.877	1014.749	1015.125	1014.749	1015.877
10	993.3182	992.1903	994.0702	993.3182	992.9423	992.9423	993.3182	994.0702
15	962.1125	963.6164	963.6164	963.6164	963.6164	963.9924	964.3684	965.4963
20	926.0192	926.3952	926.3952	926.7711	927.5231	927.5231	927.899	929.027
25	882.0305	882.7825	882.7825	883.5344	883.1584	883.1584	883.9104	885.4142
30	830.8983	831.2742	832.4022	833.1542	833.5301	833.9061	835.0339	835.7859
35	774.8785	775.6304	775.6304	776.3824	777.1343	777.8862	778.6382	779.7661
40	712.8431	713.595	713.971	715.0989	715.4749	715.8508	717.3547	718.1066
45	647.4239	647.7999	648.1758	649.3038	649.3038	650.4317	650.8076	651.9355
50	575.9892	576.7411	576.7411	578.2451	579.373	579.749	580.5009	581.2528
55	500.4188	501.1707	501.9227	503.0507	503.4266	503.8026	504.5545	505.6825
60	421.4647	421.8407	422.5926	423.3446	424.4724	424.4724	425.6004	426.3523
65	339.5028	340.2547	340.6307	341.3826	341.7586	342.5106	342.8865	343.6385
70	256.037	256.037	256.413	257.1649	257.5409	257.9168	258.6688	259.4207
75	172.5712	173.3231	173.6991	174.0751	174.0751	174.451	174.827	175.203
80	95.49691	95.87288	96.24886	96.24886	96.62482	96.62482	96.62482	97.00079
85	35.71735	35.34137	35.34137	35.34137	35.34137	34.9654	34.9654	34.58943
90	0.3759721	0	0.3759721	0.3759721	0.3759721	0	0	0.3759721



Data for luminous intensity 2

Intensity data(cd)

Page: 2 Total:10

$\gamma/C(^{\circ})$	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0
0	1027.908	1027.156	1027.532	1027.532	1027.908	1028.66	1029.036	1030.539
5	1015.877	1016.253	1015.877	1017.004	1017.004	1018.508	1020.012	1022.268
10	995.574	995.574	997.454	998.5818	999.7097	1001.59	1003.469	1006.477
15	966.2482	967.0002	968.88	970.384	972.2638	974.8956	977.9034	981.2871
20	930.1549	931.2828	933.1627	935.4185	937.6743	940.6822	943.314	947.0737
25	886.5422	888.422	891.4298	892.9337	896.3174	898.9492	902.709	906.4687
30	837.6658	839.5457	841.4255	843.6813	847.441	850.0728	854.2086	858.7202
35	781.27	783.5259	785.7816	788.7894	791.7972	794.805	798.5647	803.8283
40	719.6106	721.8664	724.1222	727.5059	731.2657	733.8975	738.4092	742.9208
45	653.8154	655.6953	657.5751	660.9589	663.9667	667.7264	671.1102	675.2458
50	582.0048	584.6365	586.1405	589.1483	591.78	595.5398	598.9235	602.6832
55	506.4344	508.3142	510.1941	512.45	514.7057	518.4655	521.4733	525.233
60	427.4802	428.6082	430.488	432.3679	434.9997	436.8795	440.2633	443.2711
65	344.3904	345.5183	347.0222	348.5261	350.406	352.6618	354.9176	357.5494
70	259.4207	260.5486	261.6765	262.8045	263.9324	265.0603	266.9402	268.4441
75	175.579	175.9549	176.3309	176.7069	177.4588	178.5867	179.3387	180.0906
80	96.62482	97.00079	97.00079	96.62482	97.00079	97.37677	97.37677	97.75274
85	34.21346	33.83749	33.46151	33.08554	32.70957	32.3336	32.3336	31.95763
90	0.3759721	0.3759721	0.3759721	0.3759721	0.7519442	0.3759721	0.3759721	0.3759721



Data for luminous intensity 3

Intensity data(cd) Page: 3 Total: 10

$\gamma/C(^{\circ})$	80.0	85.0	90.0	95.0	100.0	105.0	110.0	115.0
0	1030.916	1030.916	1031.291	1030.539	1029.411	1028.66	1027.908	1026.404
5	1023.396	1024.9	1027.156	1026.404	1026.404	1026.028	1025.652	1025.276
10	1007.981	1009.861	1011.365	1011.741	1013.245	1012.493	1012.869	1013.997
15	983.5429	985.4229	987.6786	989.1826	990.3105	991.4384	992.1903	993.6942
20	951.2094	953.0892	956.097	958.3528	960.2327	961.7366	963.6164	964.7443
25	910.6044	912.8602	916.9958	918.8757	921.8835	923.3875	925.6432	927.1472
30	862.856	866.2396	869.9993	873.0071	876.3909	877.8948	880.1506	881.2786
35	808.34	812.8516	815.8594	819.6191	822.6269	824.8828	826.3866	827.8905
40	747.4325	751.5682	755.3279	759.0876	760.9675	763.2233	764.7272	766.6071
45	680.1335	684.2692	687.653	691.0367	693.2925	695.5483	697.4282	698.5562
50	606.8189	611.3306	614.3384	617.7221	619.978	621.8578	623.7377	624.1136
55	528.9927	532.3765	535.3842	538.392	540.6478	541.7758	543.2797	543.6556
60	445.9029	448.9107	451.9185	454.5502	456.0541	457.558	458.31	457.934
65	359.8053	361.6852	364.3169	365.8208	367.3247	368.0767	368.4526	368.8286
70	270.6999	271.8278	273.3317	274.4596	274.8356	275.9635	275.9635	275.9635
75	181.2185	182.3465	183.0984	183.4744	183.8503	183.8503	183.8503	183.8503
80	98.12872	98.50468	98.50468	98.88066	98.50468	98.50468	98.50468	98.12872
85	31.58165	31.58165	31.58165	31.20568	31.20568	30.82971	30.82971	30.82971
90	0.3759721	0.7519442	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721	0



Data for luminous intensity 4

Intensity data(cd) Page: 4 Total:10

$\gamma/(\text{C}^\circ)$	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0
0	1026.404	1025.652	1025.276	1025.276	1023.772	1022.268	1022.268	1023.396
5	1025.652	1024.9	1024.524	1024.9	1023.772	1022.644	1023.02	1024.148
10	1014.373	1015.501	1015.877	1015.501	1014.373	1013.997	1014.749	1017.38
15	995.1981	996.702	997.0779	997.0779	996.326	996.702	996.702	998.5818
20	965.8723	967.0002	967.3762	968.1281	968.1281	967.7521	968.88	971.1359
25	929.027	930.1549	930.9069	932.0348	932.0348	932.7867	933.9146	936.1705
30	882.4064	884.2863	885.7902	886.1662	886.9181	888.046	889.5499	891.0538
35	829.3944	830.1463	831.6502	832.0262	832.7781	833.9061	835.7859	838.7937
40	767.735	769.2389	769.9908	770.7427	771.4947	772.6226	775.2545	777.8862
45	699.684	700.812	701.1879	702.3159	703.8197	704.9476	707.2035	709.4593
50	625.2416	625.6176	625.9935	626.7455	627.8734	630.1292	632.009	633.5129
55	544.0316	544.4075	544.4075	545.9114	546.6634	548.1672	550.0472	551.927
60	458.31	458.6859	459.0619	459.8139	460.5658	462.0697	463.1976	463.9495
65	368.8286	369.2046	368.8286	369.5805	370.3325	371.0844	371.4604	372.2124
70	275.9635	276.3395	275.9635	276.7155	277.0914	277.4674	277.8434	278.2193
75	183.8503	183.8503	183.8503	183.8503	184.2263	184.2263	184.2263	184.6023
80	98.12872	98.12872	97.75274	98.12872	98.12872	98.12872	98.12872	98.12872
85	31.20568	31.20568	31.20568	31.58165	31.95763	32.3336	32.3336	32.70957
90	0.3759721	0.3759721	0	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721



Data for luminous intensity 5

Intensity data(cd) Page: 5 Total:10

$\gamma/C(^{\circ})$	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0
0	1024.524	1026.028	1026.78	1028.284	1029.411	1029.788	1029.788	1029.788
5	1026.028	1027.532	1029.411	1030.539	1032.043	1032.043	1031.667	1032.043
10	1018.132	1020.012	1021.516	1023.772	1023.772	1023.772	1023.772	1023.02
15	1000.462	1002.341	1004.221	1005.725	1006.853	1007.229	1007.229	1006.477
20	973.0157	975.6475	978.2794	979.0313	979.4073	980.5352	979.4073	979.0313
25	939.1782	942.186	943.314	944.8178	945.1938	945.5698	944.0659	944.4419
30	893.3096	895.5655	897.0693	898.1973	898.9492	899.3252	898.5733	897.8214
35	840.2975	842.9294	844.0573	844.8093	845.5612	845.5612	845.1852	844.0573
40	779.3901	781.27	783.1498	783.9018	783.9018	783.9018	783.5259	782.7739
45	710.5872	713.219	713.595	713.971	714.7229	713.971	713.595	713.219
50	635.0168	636.1448	637.2727	637.2727	637.2727	638.0246	636.8967	636.5207
55	553.0549	553.8069	553.8069	553.8069	554.5588	554.5588	553.8069	553.0549
60	465.0775	465.8294	465.8294	465.8294	465.8294	465.0775	465.0775	464.7015
65	372.9643	373.3403	373.3403	373.3403	372.9643	372.5883	372.2124	371.8364
70	278.2193	278.5953	278.2193	278.5953	278.2193	277.8434	277.0914	276.7155
75	184.2263	184.2263	184.2263	183.4744	183.4744	183.4744	183.0984	182.7224
80	98.12872	97.75274	97.75274	97.37677	97.37677	97.00079	96.62482	96.24886
85	32.70957	32.70957	32.70957	32.70957	32.3336	32.3336	31.95763	31.58165
90	0.3759721	0.3759721	0.3759721	0	0.3759721	0.3759721	0.3759721	0.3759721



Data for luminous intensity 6

Intensity data(cd) Page: 6 Total:10

$\gamma/C(^{\circ})$	200.0	205.0	210.0	215.0	220.0	225.0	230.0	235.0
0	1029.411	1028.66	1029.411	1029.036	1028.284	1027.908	1028.66	1028.284
5	1030.916	1030.163	1029.411	1029.036	1027.908	1027.532	1027.156	1026.78
10	1022.268	1020.764	1020.012	1018.884	1017.756	1017.756	1015.877	1015.501
15	1004.973	1003.845	1001.966	1000.462	999.3338	996.702	995.95	994.8221
20	977.9034	975.6475	974.8956	973.3917	971.5119	969.256	968.1281	964.7443
25	941.8101	939.5543	938.0503	935.7946	933.9146	932.0348	930.1549	928.6511
30	896.3174	894.4376	892.1817	889.5499	887.6701	885.0383	883.1584	881.6545
35	842.5534	840.2975	838.0418	835.4099	833.5301	830.5223	828.2665	826.3866
40	781.27	778.2621	776.7583	773.3745	771.1188	768.8629	766.6071	764.7272
45	711.3392	709.8353	707.2035	704.9476	702.3159	700.436	697.8041	695.5483
50	635.0168	633.8889	631.2571	629.3773	626.3695	624.4896	622.6097	619.978
55	552.303	550.4231	548.5433	546.6634	544.7836	542.1517	540.6478	538.7679
60	463.1976	462.4456	460.1898	459.4379	457.934	456.4301	454.5502	453.0464
65	371.0844	369.9565	368.8286	367.7007	365.8208	364.6929	363.565	362.0611
70	275.5875	274.8356	274.0836	272.9557	271.8278	270.6999	269.572	269.196
75	181.9705	181.2185	180.0906	179.7146	178.9627	177.8348	177.0828	176.7069
80	95.49691	95.12093	94.36899	93.99302	93.24107	92.8651	92.11316	91.36121
85	31.20568	30.82971	30.45374	30.07776	29.32582	28.94985	28.57388	28.19791
90	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721



Data for luminous intensity 7

Intensity data(cd)								
Page: 7 Total:10								
$\gamma/C(^{\circ})$	240.0	245.0	250.0	255.0	260.0	265.0	270.0	275.0
0	1028.284	1029.036	1029.788	1031.291	1031.667	1031.667	1031.291	1030.916
5	1025.652	1025.652	1026.028	1026.78	1026.028	1026.028	1026.028	1024.9
10	1014.749	1013.621	1013.621	1013.997	1012.493	1010.989	1010.237	1007.981
15	993.6942	991.4384	991.8143	991.0624	989.9344	988.0546	986.5508	984.2949
20	964.3684	962.1125	961.3606	960.2327	959.1048	956.8489	954.5931	952.3373
25	926.7711	924.5154	923.0114	921.8835	920.3796	918.1238	915.492	912.1083
30	879.0228	877.1428	875.639	874.1351	872.2552	869.2474	866.9916	863.9839
35	823.7548	821.499	819.6191	818.4912	816.6113	815.4834	812.8516	809.8439
40	762.4714	760.5915	757.9597	756.4559	755.3279	753.0721	750.8162	747.8085
45	694.4204	691.7886	690.2847	688.4048	687.653	685.3971	683.5172	680.5095
50	618.85	616.5942	615.4662	613.9624	613.5864	611.3306	609.8267	606.8189
55	537.2641	536.1362	535.3842	533.5044	532.7524	531.2485	529.7447	527.4888
60	451.5424	450.0386	449.6626	449.2867	447.7827	447.0308	445.5269	443.647
65	361.3092	360.5572	360.1812	359.4293	358.6774	357.9254	357.1735	355.2936
70	268.4441	268.0681	267.3162	266.9402	266.5642	265.8123	265.4363	264.6843
75	175.9549	175.9549	175.579	175.203	175.203	175.203	174.827	174.0751
80	90.98524	91.36121	90.98524	90.98524	90.98524	90.98524	90.98524	90.98524
85	27.82193	27.44596	27.06999	27.06999	27.06999	27.06999	27.06999	27.06999
90	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721	0	0.3759721	0.3759721



Data for luminous intensity 8

Intensity data(cd) Page: 8 Total:10

$\gamma/^\circ(\text{C}^\circ)$	280.0	285.0	290.0	295.0	300.0	305.0	310.0	315.0
0	1029.036	1027.908	1026.78	1026.404	1025.652	1024.9	1024.148	1023.772
5	1022.644	1020.388	1019.26	1017.756	1017.004	1015.125	1013.245	1012.117
10	1005.349	1003.469	1001.59	999.3338	998.2059	996.702	994.0702	991.8143
15	980.9111	978.6553	976.3994	973.7676	971.8878	969.256	966.2482	963.6164
20	950.0814	946.3217	944.0659	940.6822	938.4263	935.0425	930.9069	928.6511
25	909.1005	905.3408	902.333	898.5733	895.9414	892.5577	889.174	885.4142
30	860.6001	856.8404	853.8326	850.0728	847.0651	842.9294	839.5457	836.5378
35	806.4601	802.3245	798.1887	794.429	790.2933	786.1577	782.7739	779.3901
40	744.4247	741.041	737.2813	732.7696	729.0099	725.2501	721.1144	717.7307
45	677.1257	673.366	669.9822	665.8466	662.0869	658.3271	654.1914	651.1837
50	604.1871	600.4274	597.4196	592.908	589.1483	585.3885	582.0048	579.373
55	525.233	522.6012	518.8415	515.0817	511.698	508.6902	505.6825	503.4266
60	441.3912	438.7594	436.5036	433.1198	430.1121	427.4802	425.2244	423.7205
65	354.1657	351.9099	350.03	347.3982	345.8943	343.2625	341.3826	340.2547
70	263.5564	262.0526	260.5486	259.0448	257.5409	256.7889	255.661	255.285
75	173.3231	172.9472	172.1952	171.4433	170.6913	170.3154	169.9394	170.3154
80	90.60927	90.60927	90.60927	90.60927	90.60927	90.98524	90.98524	91.36121
85	27.44596	27.82193	28.19791	28.57388	28.94985	29.7018	30.07776	31.20568
90	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721	0	0.3759721



Data for luminous intensity 9

Intensity data(cd) Page: 9 Total: 10

$\gamma/C(^{\circ})$	320.0	325.0	330.0	335.0	340.0	345.0	350.0	355.0
0	1022.268	1020.764	1020.388	1021.14	1023.02	1024.524	1026.404	1027.532
5	1009.861	1007.981	1007.605	1007.981	1008.733	1010.237	1012.869	1013.997
10	989.5585	987.3027	986.9267	986.5508	987.6786	989.1826	991.0624	992.5663
15	960.9846	958.3528	957.2249	957.6008	957.9769	959.4808	960.6087	961.7366
20	924.8913	922.6355	921.1316	921.1316	921.1316	922.6355	923.7634	925.2673
25	882.4064	879.7746	878.2708	879.0228	878.2708	880.1506	880.9025	881.6545
30	832.7781	829.7704	829.0184	828.2665	828.6425	829.3944	830.1463	830.8983
35	776.0063	774.1265	772.9986	772.9986	773.3745	773.7505	774.1265	774.8785
40	714.7229	713.219	712.0911	712.0911	712.0911	712.4671	713.219	713.595
45	648.5518	646.672	646.296	645.92	645.92	645.92	646.296	646.672
50	577.8691	576.3652	575.6133	575.6133	574.8613	575.2372	575.6133	575.6133
55	501.9227	500.7948	500.4188	500.0429	500.0429	500.0429	500.0429	500.4188
60	422.2166	421.8407	421.0887	421.0887	421.0887	421.0887	421.4647	421.0887
65	339.1268	338.7509	338.3748	338.7509	338.7509	338.7509	339.1268	339.1268
70	254.5331	254.5331	254.1571	254.1571	254.5331	254.9091	254.9091	255.661
75	170.3154	170.3154	170.6913	171.0673	171.0673	171.0673	171.8192	172.1952
80	92.11316	92.48914	93.24107	93.61704	93.99302	94.36899	95.12093	95.12093
85	31.58165	32.3336	32.70957	33.46151	33.83749	34.21346	34.9654	35.34137
90	0	0.3759721	0.3759721	0.3759721	0.3759721	0.3759721	0	0



Data for luminous intensity 10

Intensity data(cd)

Page: 10 Total:10

$\gamma/C(^{\circ})$	360.0
0	1028.284
5	1014.749
10	993.3182
15	962.1125
20	926.0192
25	882.0305
30	830.8983
35	774.8785
40	712.8431
45	647.4239
50	575.9892
55	500.4188
60	421.4647
65	339.5028
70	256.037
75	172.5712
80	95.49691
85	35.71735
90	0.3759721



Equipment list for test

Item	Equipment No	Equipment	manufacturer / type / series No
1	99A-01	Magnetic angle locator	Johnson
2	99E-05	Digital power meter	YOKOGAWA WT210 (91K116100)
3	99E-16	AC Power Source	APC AFC-5KW
4	99O-01	Goniophotometer System	Sensing GMS-2000
5	99T-06	Temperature and humidity records	YOKOGAWA - SR16000 (S5K910111)
6	99W-03	Digital electronic platform scales	Jun Feng 40kg*1g
Testing engineers : Yi-Bian Song			