Moving Detector Goniospectroradiometer (LSG-3000CCD)

Brochure

Global Office of Lisun Electronics Inc.

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Leader in Lighting & Electrical Test Instruments

Rev. 7/27/2020

1.System Configuration

A. LSG-3000CCD Goniospectroradiometer System:

A.1. Goniometric Rotating Console: Famous brand Motor and Angle encoder System to keep the test accuracy. Both Far Field and Near Field Test.

A.2. High Reflective Moving Mirror: Special design and produced to keep high reflective value.

A.3. Class A Constant Temperature Photo Detector

A.4. Cross-beam Laser System for Calibrating

A.5. English Measuring Software

A.6. Two sets of luminaries Clamps: multi-functions

A.7. Oversea Delivery and Packing: all of the instruments and accessories will be packed with Fumigation free three plywood, include the delivery cost to Shanghai sea port

B. SLS-150W DC Standard Light Intensity Lamp

C. LS2012 Digital Power Meter: High Accuracy to measure AC and DC voltage, current, power and power factor.

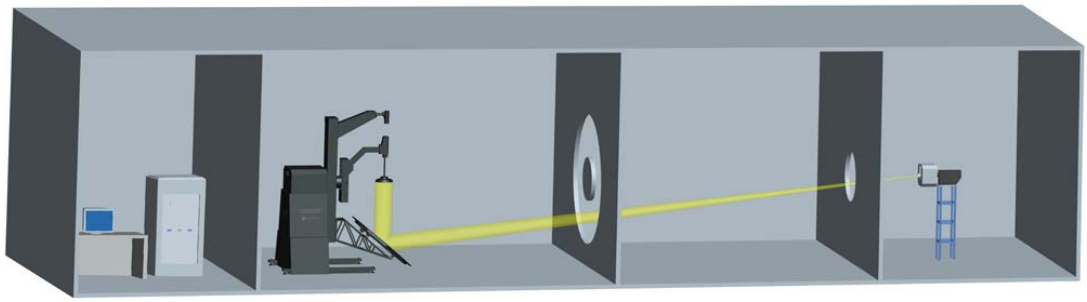
D. DC3010 CC & CV DC Power Source: DC3010 output is 30V/10A, Option can be DC6010 (output is 60V/10A) and DC12010 (output is 120V/10A)

E. LSP-500VAS AC Power Source: 500VA AC Power Source

F. CASE-19IN 19inch Standard Instruments Cabinet.

G. High Precision CCD Spectraidomeeter

H. Accessories and Adjustable Tripod for Spectraidomeeter



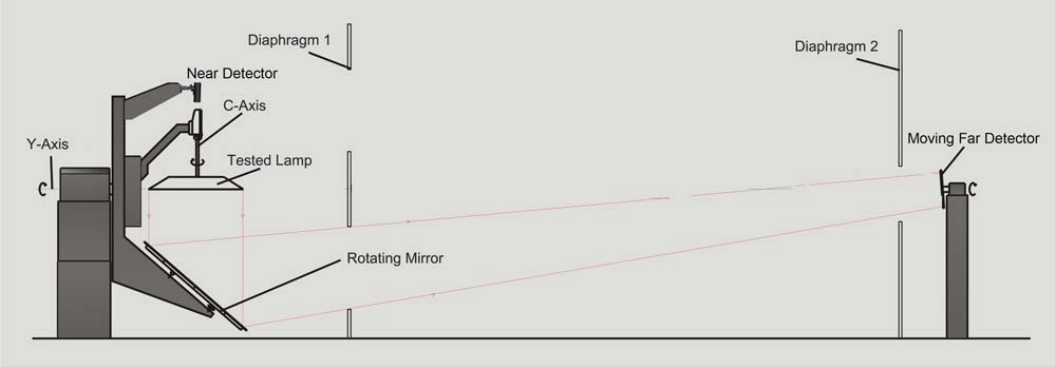
Full View for LSG-3000CCD Moving Detector Goniospectroradiometer

Note: PC and Printer prepared by the customer (request at least three USB ports)

2. Measurement Principle

LSG-3000CCD Moving Detector Goniospectroradiometer is full meet LM-79-19. The tested lamp will keep burning position and be fixed, near field detector move together with the big mirror in a line, and the far field detector will move with the big mirror synchronously. The detector will always sense the light directly from the luminaries.

The rotation priority is determined by the software. If mirror axle is took precedence of rotation, the Goniospectroradiometer will continuously measure the luminous intensity at each γ angle on a vertical plane determined by the C angle, the measuring trace is equivalent to the longitude. Similarly, while the luminaries axle is priority, the system will continuously measure the luminous intensity at each C angle on a conical surface determined by the γ angle, the trace can be looked upon the woof. See the following figure.



Measurement Principle

3. System Functions

LSG-3000CCD Moving Detector Goniospectroradiometer

The LSG-3000CCD full meet LM-79-19, CIE and GB standards for Goniophotometric of luminaries, this system is used to measure spatial luminous intensity distribution of luminaries for floodlight, street lighting and interior lighting, and other photometric parameters such as spatial iso-intensity curve, intensity distribution curve of each section (shown in rectangular coordinate system or polar coordinate system), iso-illuminance distribution curve, luminance limitation curve, luminaries efficiency, glare grade, effective beam angles, upward luminous flux ratio, downward luminous flux ratio, total luminous flux, effective luminous flux, utilization factor and electric parameters (wattage, power factor, voltage and current) of luminaries etc. The measured data may be saved in formats IES, LDT (Eulumdat), CIB, TM4, CIE, CEN and CSV for application software of lighting calculation and reflector design.






LSG-3000CCD Can test all of the above luminaires

4. Specifications

1) The mirror rotates around the tested luminaire with an angle of (γ)±180° and the tested luminaire rotates around itself with an angle of (C)±180°
2) The accuracy of angle: 0.1° Resolution of angle: 0.01°
3) Luminosity Testing Range: Illuminance 0.001lx~99,999lx; Light Intensity 1.0cd～10^7cd(detector)
4) Accuracy of photometry: CIE Class A or Class L (option)
5) Testing Accuracy: 2%(Under Standard lamp); Stray Light: less than 0.1%
6) Work with high accuracy and quick CCD Spectroradiometer to measure spatial color parameters.
7) Accuracy of chromaticity coordinate: ±0.0015 or ±0.0005(under standard A lamp)
8) Spectral Range Wavelength: 380nm ~780nm; Accuracy of wavelength: ±0.5nm
9) English version software can run in Win7, Win8 or Win10

Model Number	LSG-3000ACCD	LSG-3000BCCD
Measure Size (mm)	Diameter=600	Diameter=1000
Measure Weight (Kg)	20	30
Measure Power(W)	600V/10A, AC/DC	600V/10A, AC/DC

5. Laboratory Requirements

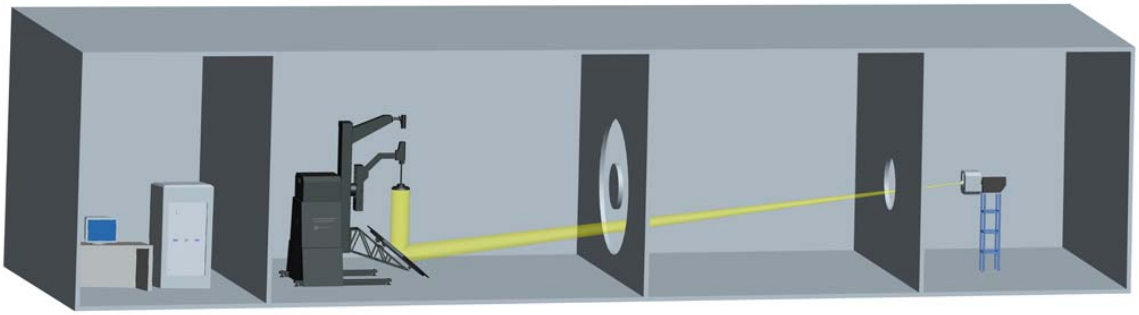
1) Room Requirements according to CIE

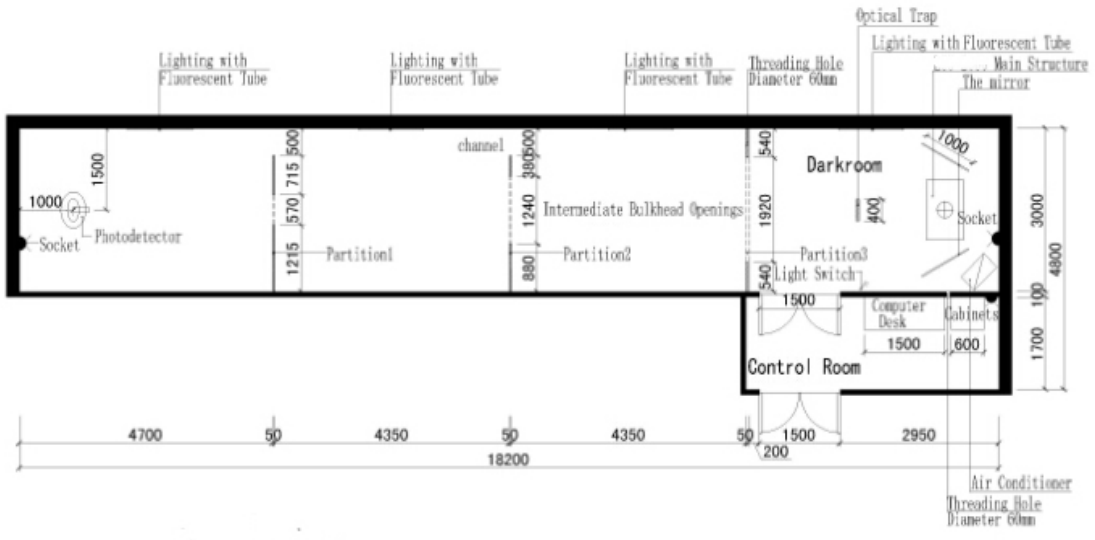
A. Dark Room: 3*3*8~30m (W*H*L)

B. Operating Room: 3*3m (W*L)

- The dark room wall, ceiling and floor should be all coated with dull black paint or be covered by black cloth and black carpet.
- Air-conditioner: be set in the dark room to control the temperature around lamps to the standard value upon the CIE requirements.

Note: LISUN GROUP engineer dept will submit the Lab Design support documents according to the customer's real lab size after the formal purchase order was confirmed





2) Requirements of Eliminating the stray Light

Luminaires must be where the photo detector can only receive the light reflected by the two moving mirror in the LSG-3000CCD system. The light given off directly by the luminaries and reflected by the wall and floor is warded off by the light fence. Internal surface of the dark room and dark path together with the surface of the light fence should be painted unpolished black or be covered by black cloth and black carpet.

3) Temperature of the Environment

Temperature around the lamp or luminaries must be 25℃±1℃ during the test. Exceptions can be given according to relative lamps as following.

a. Tungsten Incandescent Lamp: 25℃±5℃
b. Double-caps Fluorescent Lamp: 25℃±1℃
c. High Pressure Mercury Lamp: 25℃±2℃
d. Metal Halogen Lamp: 25℃±2℃
e. High Pressure Sodium Lamp: 25℃±2℃
f. Low Pressure Sodium Lamp: 25℃±2

4) Airflow

Airflow may be induced by natural aeration, air conditioner or movement of the luminaries in the goniophotometer, but the speed of the airflow couldn't exceed 0.2m/s.

5) Vibration and shock

When the lamp is in lighting, the vibration couldn't exceed 10m/s2(4～3000Hz), or the moving scope of the lamp couldn't exceed 30mm (at most 4Hz)

6) Smoke, Dust and Moisture

The test environment must free from smoke, dust or moisture. At the same time, even not during the measurement, smoke, dust or moisture will also influence the reflectance of the reflecting mirror and induce more stray light. So, the test room must be kept clean, no smoke and dry. The humidity should be less than 60% RH.

6. Service

1) Installation and Training

LISUN GROUP engineers will take responsibility for installation and Training of the system at the customer's

2) Period of Guarantee: 24 months

The service is for free except technician's travel payment if the service provided by LISUN GROUP implement at the customer's.

3) Upgrading the applications software for free

7. Design Standard of Device

The construction, technical parameter, test & operate steps as well as data processing software of LSG-3000CCD Moving Detector Goniospectroradiometer meet the following requirements:

3.1 CIE Pub. NO.70,"The Measurement of Absolute Luminous Intensity Distributions"

3.2 CIE DIV.Ⅱ-TC10,"Photometry of Luminaires"

3.3 IES LM-35-1989,"IES Approved Method for Photometric Testing of Floodlights"

3.4 IES LM-31,"IES Approved Method for Photometric Testing of Roadway Luminaires"

3.5 IES-LM-79-19, "Electrical & Photometric Measurements of Solid-State Lighting Products"

3.6 GB/T 7002-1986,"Luminosity Test of Flood Luminaires"

3.7 GB/T 9467-1988, "Luminosity Test of Indoor Luminaires"

3.8 GB/T 9468-1988, "Luminosity Test of Street Luminaires"

3.9 IES 61341 "Method of Measurement of Center Beam Intensity and Beam Angle(s) of Reflector Lamp"

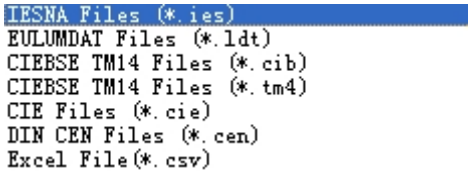
3.10 CIE Pub.NO.76, "Photometry-the CIE System of Physical Photometry"

8. Typical oversea market customers:

There are many world famous company and lab institute choose LISUN Goniospectroradiometer, Please get the reference customers' information from Lisun Group Oversea Sales Dept.

9. Application Software

This system can export data files as following formats:



This kind of format files can be transferred by other illumination and luminaire design software such as DiaLux

Application software can also implement essential calculation for lighting design as iso-illuminance distribution curve on a working plane, luminance limitation curve, luminaire efficiency, effective beam angle, upward luminous flux ratio, downward luminous flux ratio, effective luminous flux, utilization factor curve etc.

The Next Page is the Test Report by the software:

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Luminaire Property

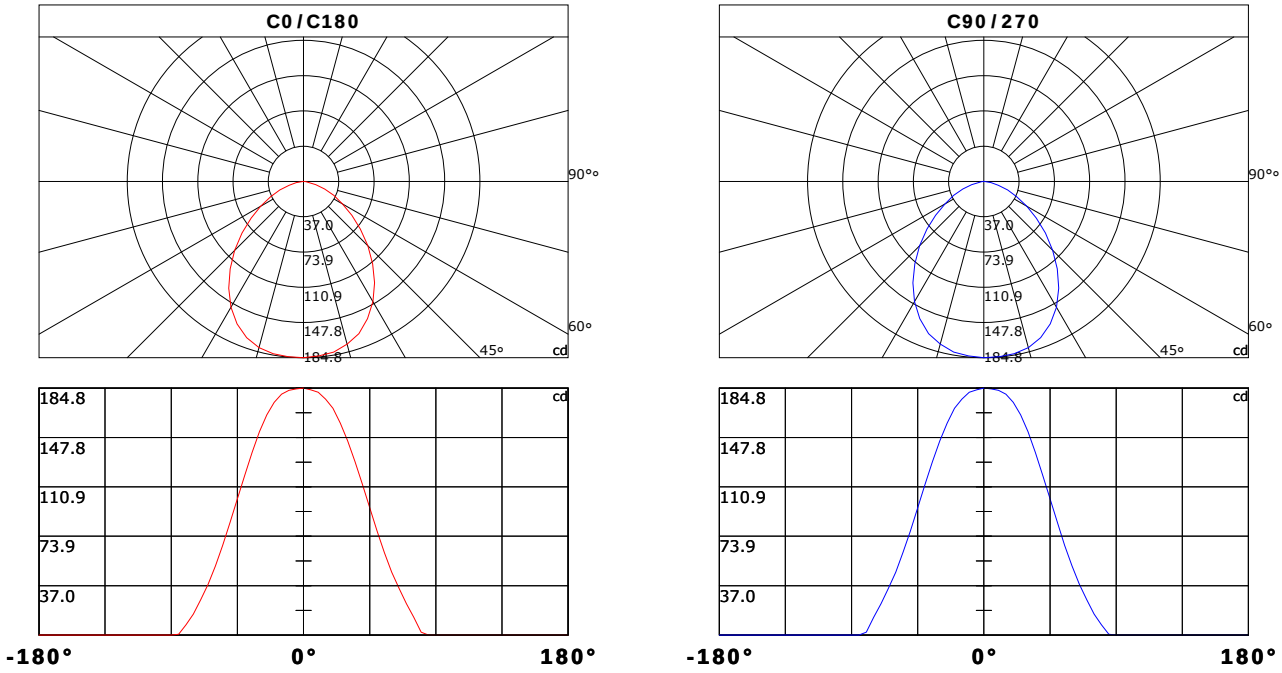
Luminaire Description: LED Down Light
Luminaire Categorie:
Lamp Categorie:
Lamp Description:
Number of Lamp: 6
Lamp Lumens(lm): 100
Luminous Length(m): 100
Luminous Width(m): 100
Luminous Height(m): 50

Voltage: 220V
Current: 0.029A
Power: 5.8W
Power Factor: 0.907
Test Lab: Lisun Electronics Inc
Photometric Type: Type C

Photometric Results

CIE Class: Direct
Measurement Flux: 412.55 lm
Efficiency: 68.76%
Central Intensity: 184.785cd
Max. Intensity: 184.785cd
Field Angle(10%Imax): Left: -73.7 Right:72.5

Max.Intensity Angle: C:0.0 G:0.0
Beam Angle(50%Imax): L: -47.7 R:45.8
Luminaire Efficacy Rating(LER) : 71.13 lm/W
Upward Ratio: 0.0%
Downward Ratio: 100.0%



Equipment:LSG-3000
Temperature:25
Date:2018-05-31
Humidity:65%
Operator:zhang
Test Report:
Test Distance:0.941m

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Light intensity data Unit[cd]

C\G	G0.0	G5.0	G10.0	G15.0	G20.0	G25.0	G30.0	G35.0	G40.0	G45.0
C0.0	184.8	183.4	181.6	176.5	169.7	158.6	145.2	129.7	112.7	95.2
C90.0	184.8	184.3	183.2	180.3	174.2	164.7	152.2	136.6	119.6	101.9
C180.0	184.8	184.3	183.2	180.3	174.2	164.7	152.2	136.6	119.6	101.9
C270.0	184.8	183.4	181.6	176.5	169.7	158.6	145.2	129.7	112.7	95.2
C360.0	184.8	183.4	181.6	176.5	169.7	158.6	145.2	129.7	112.7	95.2
C\G	G50.0	G55.0	G60.0	G65.0	G70.0	G75.0	G80.0	G85.0	G90.0	G95.0
C0.0	77.8	61.8	47.0	35.0	23.5	13.3	2.2	0.0	0.0	0.0
C90.0	84.1	67.0	51.7	37.9	26.4	15.7	7.7	0.6	0.0	0.0
C180.0	84.1	67.0	51.7	37.9	26.4	15.7	7.7	0.6	0.0	0.0
C270.0	77.8	61.8	47.0	35.0	23.5	13.3	2.2	0.0	0.0	0.0
C360.0	77.8	61.8	47.0	35.0	23.5	13.3	2.2	0.0	0.0	0.0
C\G	G100.0	G105.0	G110.0	G115.0	G120.0	G125.0	G130.0	G135.0	G140.0	G145.0
C0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C360.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C\G	G150.0	G155.0	G160.0	G165.0	G170.0	G175.0	G180.0			
C0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
C90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
C180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
C270.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
C360.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

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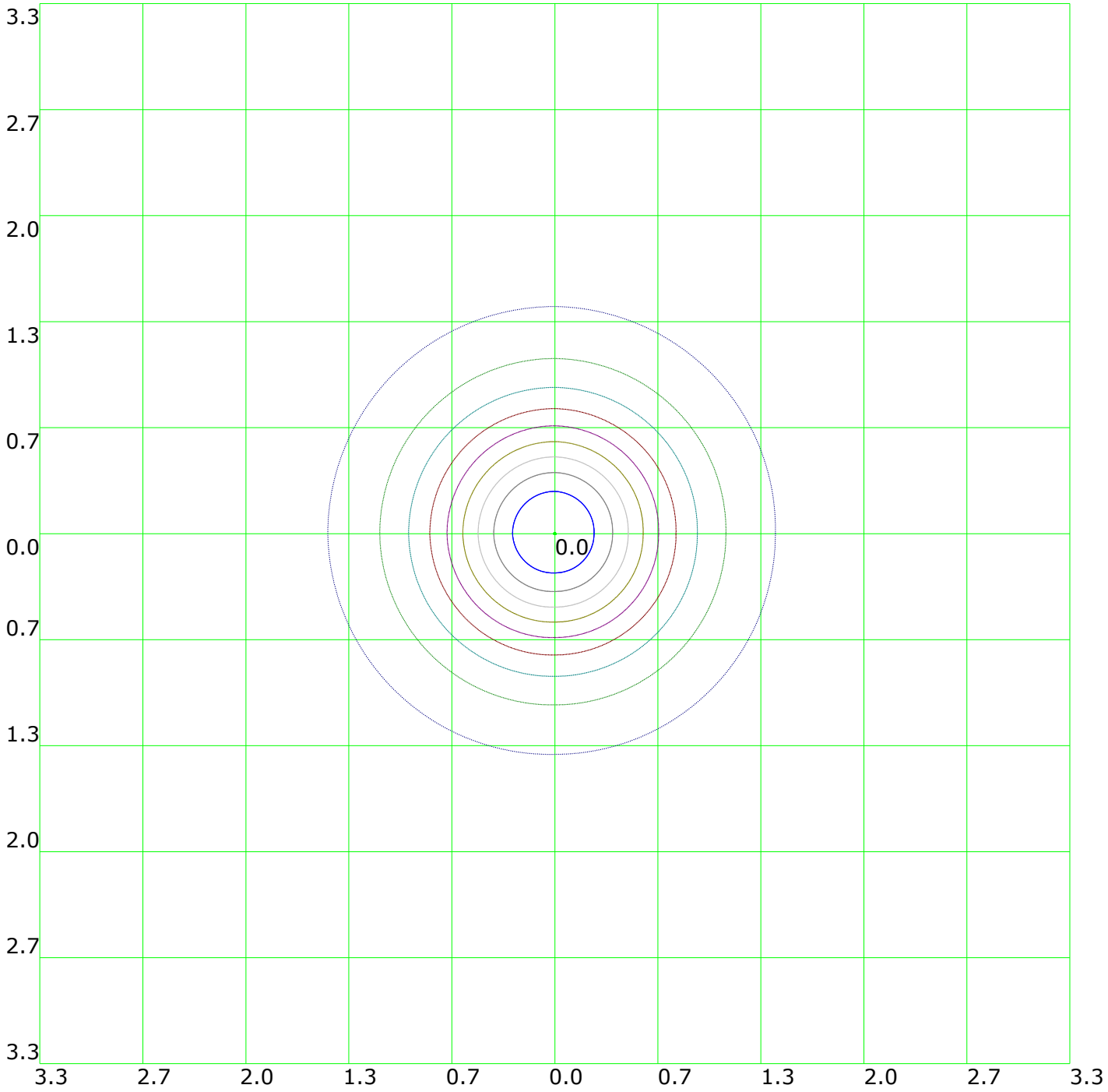
Isolx curve



Height: 1 m

(10%): 18.5lx (20%): 37.lx (30%): 55.4lx (40%): 73.9lx
(50%): 92.4lx (60%): 110.9lx (70%): 129.4lx (80%): 147.8lx
(90%): 166.3lx (100%): 184.6lx

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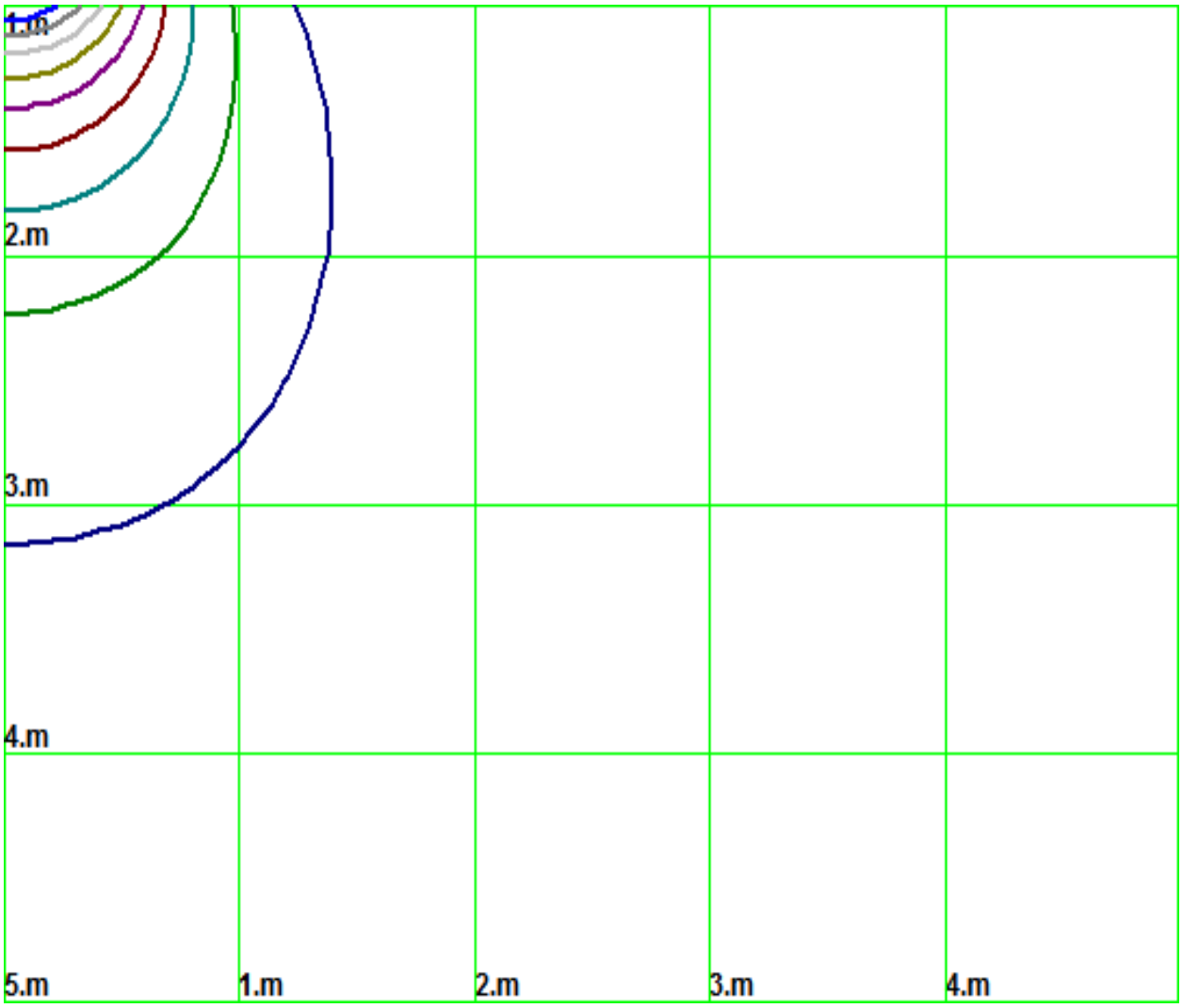
Space Isolx Curve



(10%): 18.5lx (20%): 37.lx (30%): 55.4lx (40%): 73.9lx
(50%): 92.4lx (60%): 110.9lx (70%): 129.4lx (80%): 147.8lx
(90%): 166.3lx (100%): 184.6lx

Equipment:LSG-3000 Date:2018-05-31 Operator:zhang Test Distance:0.941m
Temperature:25 Humidity:65% Test Report:

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Luminance Limitting Curve

Diameter: 0mm

Length: 0mm

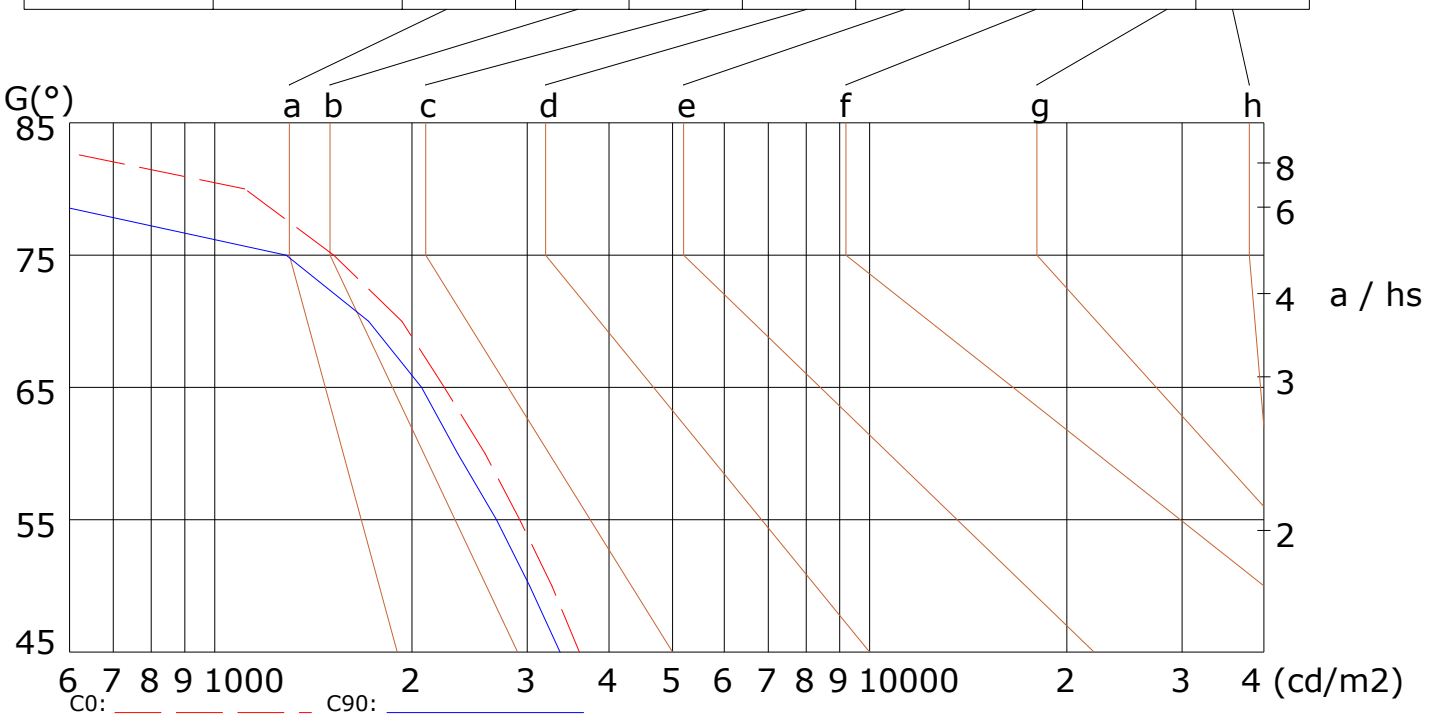
Width: 888mm

Height: 0mm

(cd/m2)

γ	45°	50°	55°	60°	65°	70°	75°	80°	85°
C0	3604	3271	2922	2587	2241	1931	1519	1112	
C90	3367	3024	2693	2350	2069	1718	1286	322	

Glare	Quality	Service Values Illuminance (lx)							
1.15	A	2000	1000	500	≤300				
1.5	B		2000	1000	500	≤300			
1.85	C			2000	1000	500	≤300		
2.2	D				2000	1000	500	≤300	
2.55	E					2000	1000	500	≤300



Lum. Limitting Curve (C0/C90)

Cofficiencts of Utilization

RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFCIENTS OF UTILIZATION FOR RHOFC=20															
0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1	1.08	1.06	1.05	1.06	1.05	1.03	1.02	1.01	0.99	0.97	0.95	0.94	0.91	0.89	0.87	0.82
2	0.94	0.92	0.90	0.93	0.90	0.88	0.90	0.87	0.85	0.87	0.83	0.80	0.82	0.78	0.75	0.70
3	0.82	0.79	0.78	0.82	0.78	0.76	0.80	0.76	0.73	0.77	0.73	0.69	0.74	0.69	0.65	0.61
4	0.72	0.69	0.68	0.72	0.69	0.66	0.71	0.67	0.63	0.69	0.64	0.60	0.67	0.61	0.57	0.53
5	0.64	0.61	0.59	0.64	0.61	0.58	0.64	0.59	0.56	0.63	0.57	0.53	0.61	0.55	0.50	0.46
6	0.57	0.54	0.53	0.57	0.54	0.52	0.57	0.53	0.49	0.57	0.51	0.47	0.56	0.50	0.45	0.41
7	0.51	0.49	0.47	0.52	0.48	0.46	0.52	0.48	0.44	0.52	0.46	0.42	0.51	0.45	0.40	0.37
8	0.46	0.44	0.42	0.47	0.44	0.42	0.48	0.43	0.40	0.48	0.42	0.38	0.47	0.41	0.36	0.33
9	0.42	0.40	0.39	0.43	0.40	0.38	0.44	0.39	0.36	0.44	0.39	0.35	0.44	0.38	0.33	0.30
10	0.39	0.36	0.35	0.39	0.36	0.34	0.40	0.36	0.33	0.41	0.35	0.32	0.41	0.35	0.30	0.27

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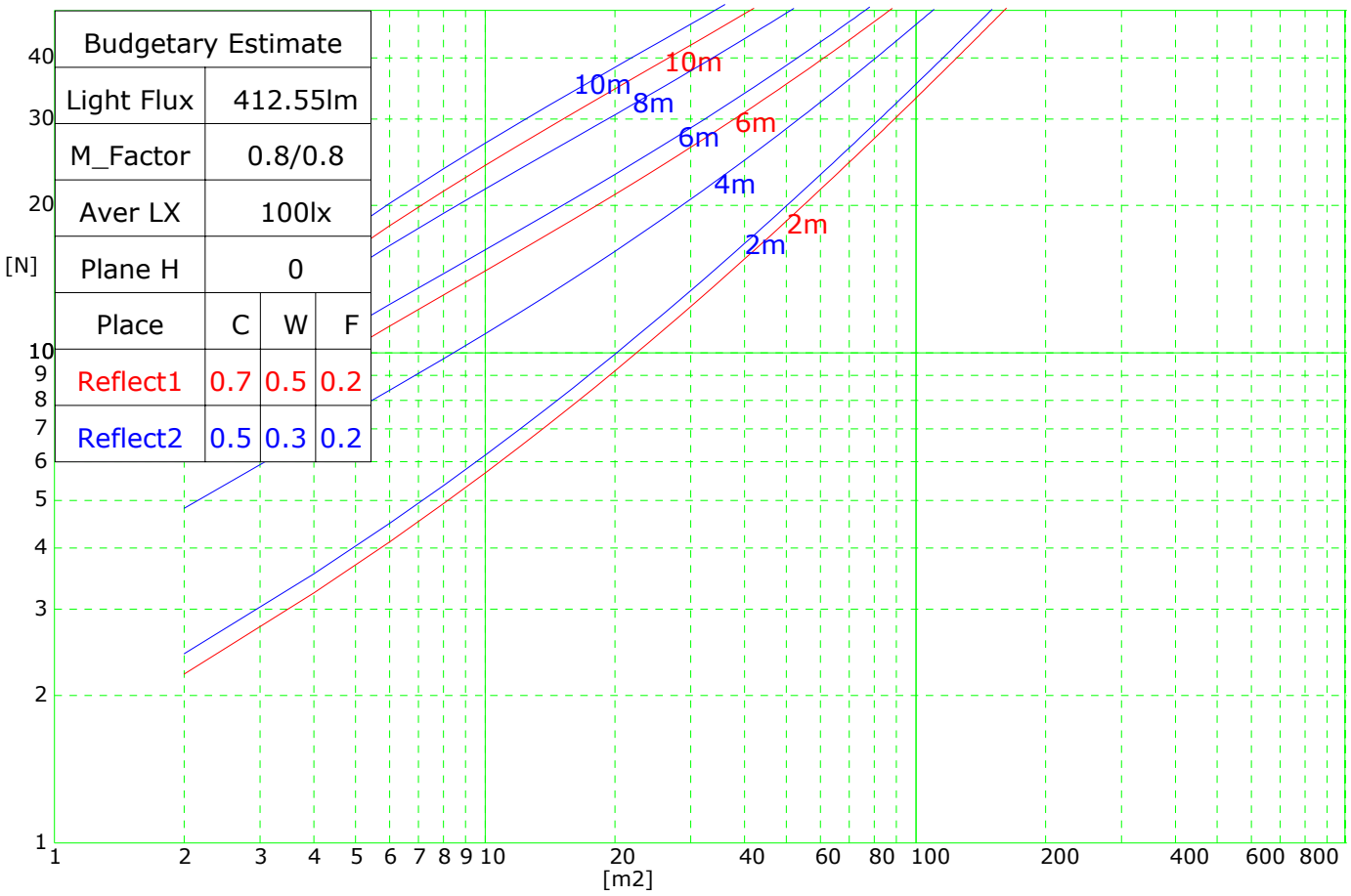
Indoor Budgetary Estimate Chart



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UGR Glare Index

Ceiling		70	70	50	50	30	70	70	50	50	30
Wall		50	30	50	30	30	50	30	50	30	30
Floor		20	20	20	20	20	20	20	20	20	20
Room Size		Weft to light axis direction of observation					Direction of light axis parallel observation				
X	Y										
2H	2H	14.7	16.0	14.9	15.9	16.5	14.7	15.9	14.8	16.0	16.5
	3H	16.3	17.4	16.7	17.9	17.9	16.2	17.4	16.4	17.8	18.0
	4H	16.9	18.1	17.4	18.7	18.8	16.9	18.1	17.3	18.5	18.8
	6H	17.6	18.5	18.0	18.9	18.9	17.4	18.3	17.8	18.9	19.0
	8H	17.8	18.9	18.1	19.0	19.3	17.7	18.7	17.9	19.0	19.3
	12H	17.9	18.8	18.1	19.2	19.5	17.7	18.7	18.1	19.2	19.6
4H	2H	15.7	16.6	15.9	16.8	17.0	15.6	16.6	15.8	16.9	17.0
	3H	17.5	18.4	17.7	18.4	18.8	17.3	18.2	17.6	18.3	18.7
	4H	18.3	18.9	18.5	19.1	19.5	18.0	18.9	18.4	19.1	19.6
	6H	18.8	19.5	19.1	19.8	20.2	18.7	19.5	18.9	19.7	20.0
	8H	19.0	19.7	19.4	20.0	20.3	19.0	19.5	19.3	20.0	20.3
	12H	19.2	19.8	19.7	20.0	20.5	19.1	19.8	19.5	20.1	20.5
8H	4H	18.5	19.2	18.8	19.4	19.8	18.5	19.1	18.7	19.4	19.8
	6H	19.3	19.8	19.8	20.2	20.6	19.2	19.7	19.6	20.2	20.5
	8H	19.8	20.2	20.2	20.5	20.9	19.6	20.0	20.1	20.4	21.0
	12H	20.0	20.4	20.4	20.9	21.1	19.8	20.3	20.3	20.8	21.2
12H	4H	18.6	19.2	19.1	19.6	19.8	18.5	19.0	18.9	19.4	19.8
	6H	19.5	20.0	19.9	20.2	20.7	19.4	19.9	19.8	20.2	20.6
	8H	19.9	20.3	20.4	20.5	21.1	19.8	20.2	20.3	20.6	21.0

G\C	0				90			
	x	y	Tc	Ra	x	y	Tc	Ra
0	0.1937	0.3104	6958	73.9	0.1944	0.3109	6856	74.2
10	0.1938	0.3105	6942	73.8	0.1939	0.3104	6940	73.9
20	0.1938	0.3112	6872	73.7	0.1938	0.3108	6912	73.8
30	0.1936	0.3120	6804	73.5	0.1938	0.3112	6872	73.6
40	0.1932	0.3130	6738	73.2	0.1933	0.3119	6836	73.2
50	0.1929	0.3137	6686	72.9	0.1932	0.3126	6772	73.1
60	0.1925	0.3144	6658	72.6	0.1928	0.3133	6740	72.7
70	0.1918	0.3148	6662	72.0	0.1921	0.3138	6734	72.1
80	0.1910	0.3153	6666	71.1	0.1921	0.3149	6634	71.7
90	0.1917	0.3174	6442	66.7	0.1911	0.3159	6614	68.6
100	0.2035	0.3274	5176	40.1	0.2054	0.3264	5134	40.3
110	0.2014	0.3260	5352	44.0	0.2036	0.3248	5304	42.2
120	0.2005	0.3252	5436	47.0	0.2021	0.3258	5326	45.1
130	0.2006	0.3248	5452	47.9	0.1999	0.3244	5510	47.9
140	0.1983	0.3232	5662	49.3	0.1980	0.3237	5650	51.0
150	0.1993	0.3228	5636	49.7	0.1977	0.3227	5728	50.6
160	0.2003	0.3239	5518	45.6	0.1959	0.3230	5804	50.5
170	0.2011	0.3238	5484	43.7	0.1978	0.3251	5576	45.3
180	0.2064	0.3252	5146	35.1	0.2080	0.3260	5026	35.7
The inhomogeneity of Chromaticity：△u=0.0147 △v=0.01423								