



Guangdong Meide Testing Technology Co., Ltd.



# TEST REPORT OF ANSI/IES LM-79-19

## APPROVED METHOD FOR OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

Client..... : HK Lighting Group

Address..... : 3529 Old Conejo, Suite 118, Newbury Park, CA. USA

Test Model..... : ZXLF-STANCHLON

Product Description .... : LED Luminaire

Brand Name..... : HK Lighting Group

Testing Laboratory..... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road,  
Songshan Lake Hi-tech Industrial Development Zone, Dongguan City,  
Guangdong Pr., China.

Testing location..... : As above

Report No..... : C02A20100034L 01008

Test Date..... : Oct.12,2020 - Oct.13,2020

Report Date..... : Oct.15,2020

Tested by:

Tim Qian/ Test Engineer

Checked by:

Luke Lei/ Project Engineer

Approved by:



Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



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## 1. Product Description for Equipment under Test(EUT)

The client submitted 1 sample of model ZXLF-STANCHLON. The sample was received on 2020-10-12, is in undamaged condition.

Model Tested:	ZXLF-STANCHLON
Manufacturer:	HK Lighting Group
Address:	3529 Old Conejo, Suite 118, Newbury Park, CA. USA
Product Type:	LED Luminaire
Rated Voltage/Frequency:	AC 12V 60Hz
Rated Power:	10W
Nominal CCT:	3000K
LED Manufacturer:	N/A
LED Model No:	N/A

## 2. Standards Used

- ANSI/IES LM-79-19: APPROVED METHOD: OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

## 3. Test equipment list

Test Equipment	Serial No	Model No	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	2021/09/29
Digital Power Meter	MD-E001	PF2010	2021/09/29
AC Testing Power Source	MD-E002	DPS1060	2021/09/29
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2021/09/29

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).



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## 4. Test Method

### Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at  $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$  during measurement. And relative humidity between 10% and 65%.

### Goniophotometer System

The sample was tested according to the ANSI/IES LM-79-19.

Photometric parameters were measured using a type C goniophotometer and software. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals. Photometric distance was more than five times of the Largest dimension of the test SSL product.



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## 5. Goniophotometer Test results

### 5.1 Test Data

Test Ambient Temperature	25.1℃	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	60

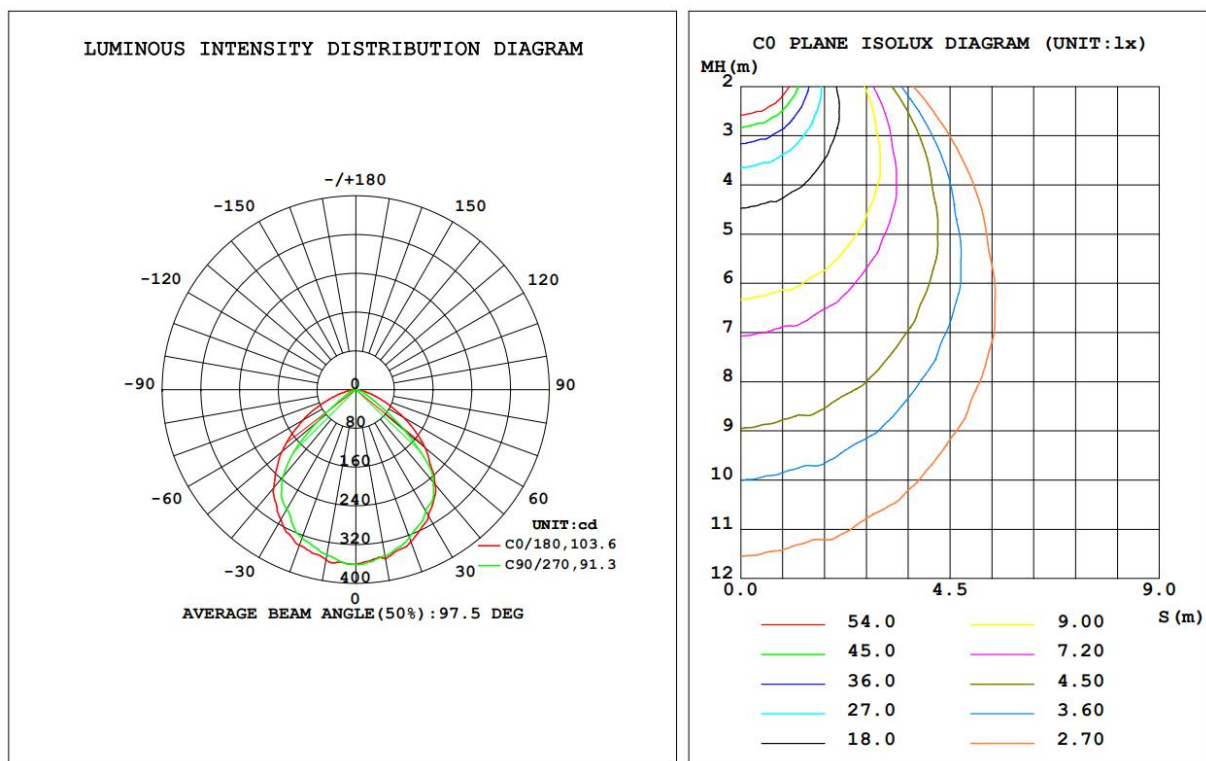
### Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
12.0	60.00	0.8537	0.9395	9.625

### Photometric Measurement

Luminous Flux (lm)	Efficacy(lm/W)	I <sub>max</sub> (cd)	Spacing Criteria (C0/180°)	Spacing Criteria (C90/270°)
788.522	81.92	361.8	1.28	1.19

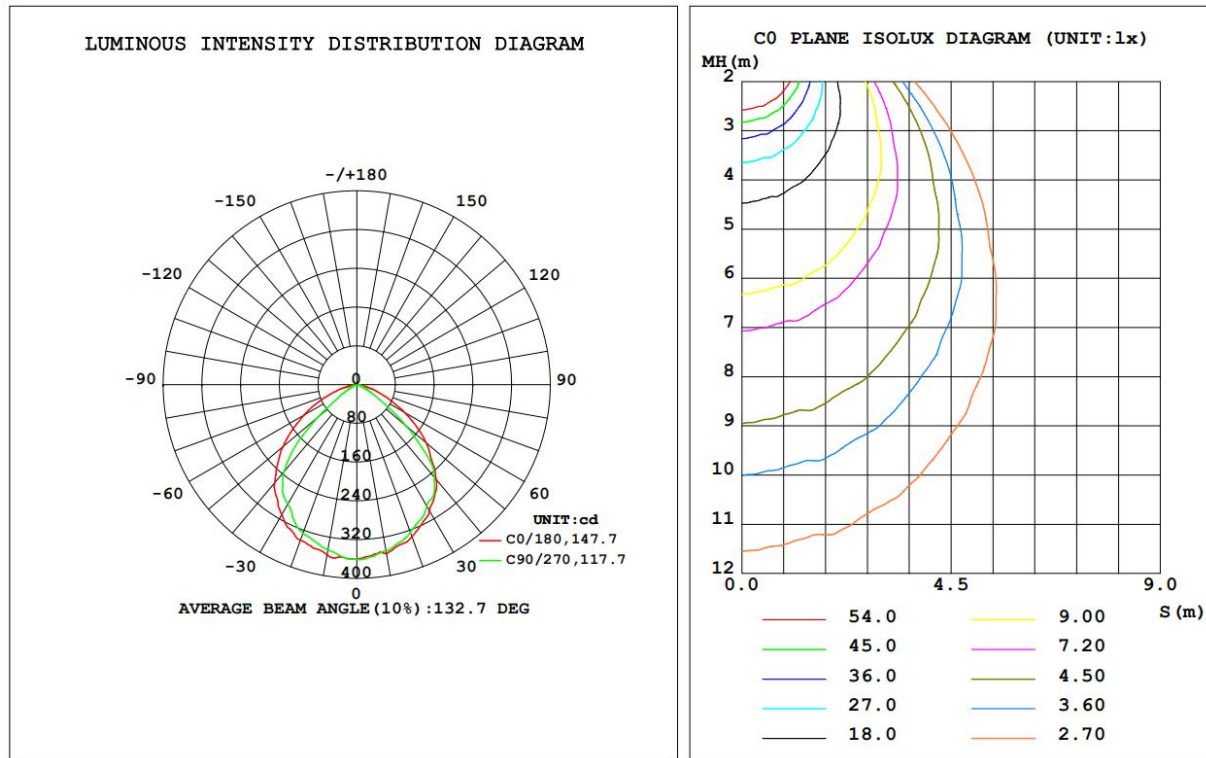
### 5.2 LUMINOUS INTENSITY DISTRIBUTION DIAGRAM AND C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



AVERAGE BEAM ANGLE(50%):97.5 DEG



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AVERAGE BEAM ANGLE(10%):132.7 DEG



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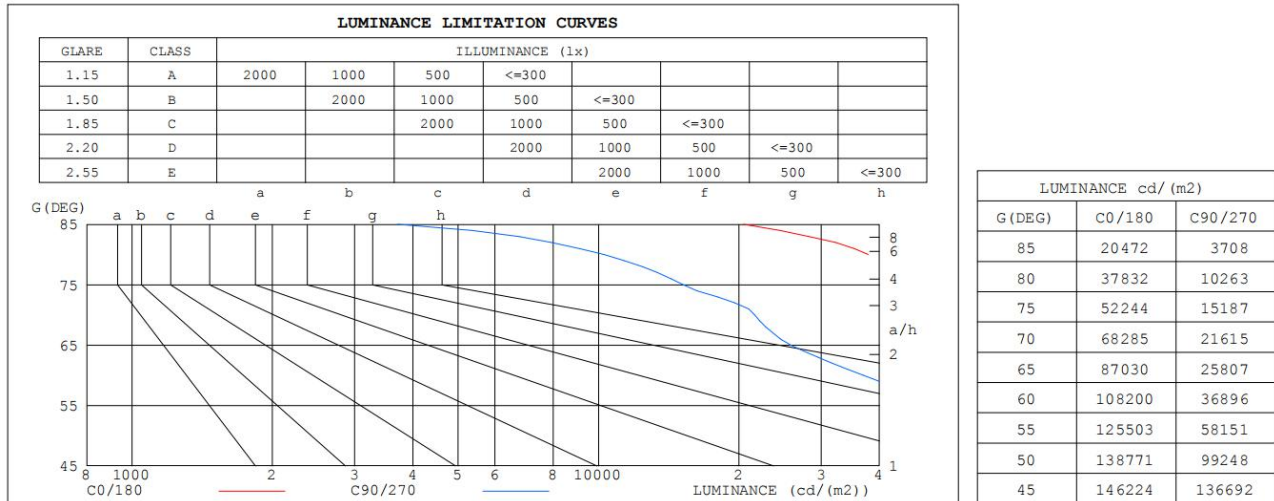


### 5.3 ZONAL FLUX DIAGRAM

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	354.3	343.3	347.8	350.7	356.1	353.2	345.9	344.9	0- 10	33.75	33.75	4.28,4.28
20	334.0	325.6	324.0	329.4	341.8	333.4	325.9	323.4	10- 20	96.05	129.8	16.5,16.5
30	300.5	294.8	289.0	299.5	309.6	297.5	284.8	292.3	20- 30	144.7	274.5	34.8,34.8
40	254.6	249.6	249.0	257.7	264.0	247.3	234.0	241.0	30- 40	171.9	446.4	56.6,56.6
50	187.2	179.3	134.0	189.4	198.8	171.7	104.5	167.4	40- 50	162.2	608.6	77.2,77.2
60	113.5	88.12	38.75	93.57	126.3	80.18	25.40	73.42	50- 60	106.1	714.7	90.6,90.6
70	49.02	27.76	15.53	26.91	59.83	24.83	10.58	23.06	60- 70	51.63	766.3	97.2,97.2
80	13.79	4.369	3.744	4.323	16.86	3.600	1.975	3.326	70- 80	19.05	785.4	99.6,99.6
90	0.0245	0.0198	0.0107	0.0090	0.0352	0.0208	0.0103	0.0250	80- 90	2.435	787.8	99.9,99.9
100	0.0317	0.0194	0.0056	0.0121	0.0667	0.0475	0.0263	0.0530	90-100	0.0258	787.8	99.9,99.9
110	0.0528	0.0327	0.0184	0.0267	0.0859	0.0677	0.0473	0.0754	100-110	0.0449	787.9	99.9,99.9
120	0.0868	0.0594	0.0506	0.0576	0.0881	0.0763	0.0684	0.0828	110-120	0.0593	787.9	99.9,99.9
130	0.1361	0.1055	0.0984	0.1042	0.1312	0.1186	0.1171	0.1238	120-130	0.0822	788.0	99.9,99.9
140	0.1834	0.1634	0.1505	0.1602	0.2221	0.2115	0.2035	0.2181	130-140	0.1179	788.1	100,100
150	0.1968	0.1909	0.1905	0.1912	0.2977	0.2979	0.2937	0.2999	140-150	0.1378	788.3	100,100
160	0.2169	0.2349	0.2459	0.2364	0.3299	0.3466	0.3547	0.3596	150-160	0.1253	788.4	100,100
170	0.2569	0.2535	0.2739	0.2735	0.3217	0.3163	0.3375	0.3485	160-170	0.0835	788.5	100,100
180	0.3067	0.2979	0.3251	0.3200	0.2990	0.2901	0.3078	0.3286	170-180	0.0289	788.5	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



## 5.4 LUMINANCE LIMITATION CURVES



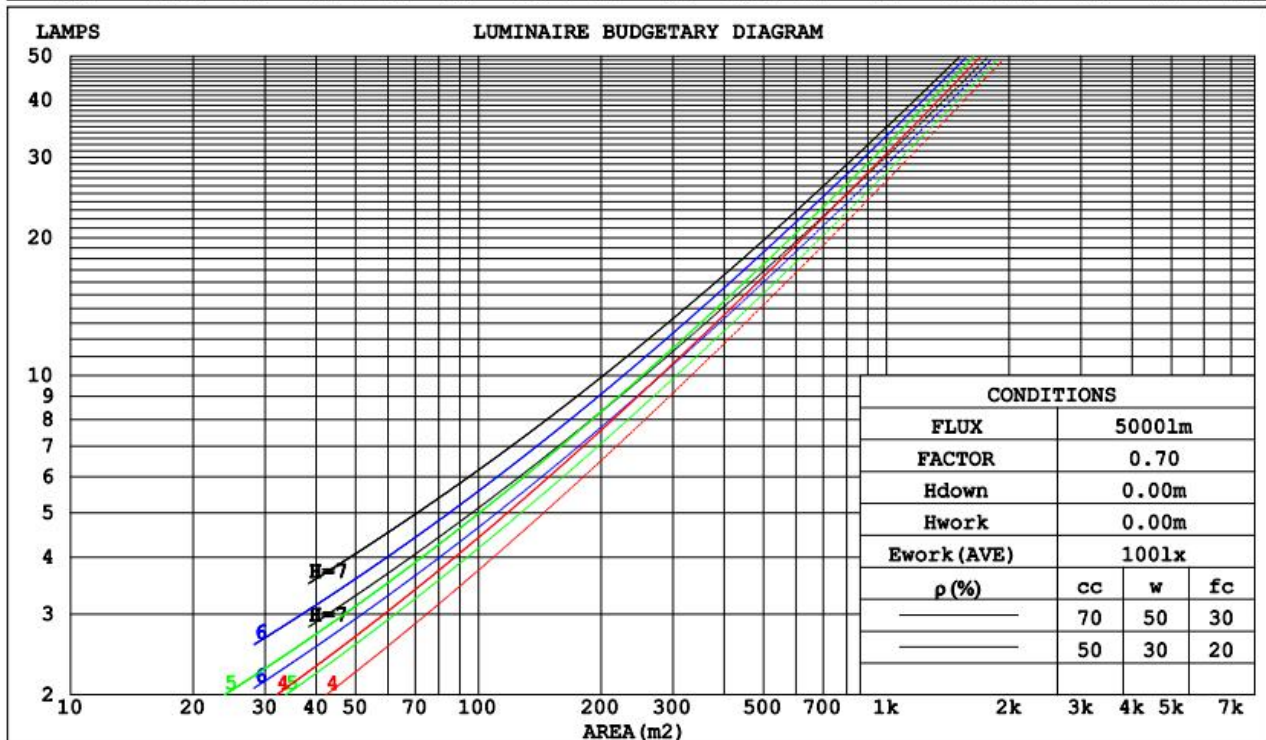


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## 5.5 CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	80%			70%			50%			30%			10%			0	
p <sub>w</sub>	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0	
p <sub>fc</sub>	20%			20%			20%			20%			20%			0	
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)										
0.0	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	.00	
1.0	1.07	1.03	1.00	1.05	1.02	.99	1.01	.98	.96	.97	.95	.93	.93	.91	.90	.88	
2.0	.95	.90	.85	.94	.88	.84	.90	.86	.82	.87	.83	.80	.84	.81	.78	.76	
3.0	.85	.78	.73	.84	.77	.72	.81	.75	.71	.78	.73	.69	.76	.72	.68	.66	
4.0	.77	.69	.63	.75	.68	.62	.73	.67	.62	.71	.65	.61	.69	.64	.60	.58	
5.0	.69	.61	.55	.68	.60	.55	.66	.59	.54	.64	.58	.54	.62	.57	.53	.51	
6.0	.63	.55	.49	.62	.54	.48	.60	.53	.48	.58	.52	.48	.57	.52	.47	.45	
7.0	.57	.49	.43	.56	.49	.43	.55	.48	.43	.54	.47	.43	.52	.47	.42	.41	
8.0	.52	.44	.39	.52	.44	.39	.50	.44	.39	.49	.43	.38	.48	.42	.38	.36	
9.0	.48	.41	.35	.48	.40	.35	.47	.40	.35	.46	.39	.35	.45	.39	.35	.33	
10.0	.45	.37	.32	.44	.37	.32	.43	.37	.32	.42	.36	.32	.41	.36	.32	.30	





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## 5.6 WEC AND CCEC

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.251	.143	.045	.244	.139	.044	.231	.132	.042	.219	.126	.040	.208	.120	.039	
2.0	.244	.134	.041	.238	.131	.040	.227	.126	.039	.216	.121	.038	.207	.117	.037	
3.0	.232	.124	.037	.227	.121	.037	.217	.118	.036	.208	.114	.035	.199	.110	.034	
4.0	.219	.114	.033	.214	.112	.033	.205	.109	.033	.197	.106	.032	.190	.103	.031	
5.0	.206	.105	.030	.202	.104	.030	.194	.101	.030	.187	.098	.029	.180	.096	.029	
6.0	.194	.097	.028	.190	.096	.028	.183	.094	.027	.176	.092	.027	.170	.090	.027	
7.0	.182	.090	.026	.179	.089	.025	.173	.087	.025	.167	.086	.025	.161	.084	.025	
8.0	.172	.084	.024	.169	.083	.024	.163	.082	.023	.158	.080	.023	.153	.079	.023	
9.0	.162	.079	.022	.160	.078	.022	.155	.076	.022	.150	.075	.022	.145	.074	.021	
10.0	.154	.074	.020	.151	.073	.020	.147	.072	.020	.142	.071	.020	.138	.070	.020	

pcc	80%			70%			50%			30%			10%			0	
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0	
pfc	20%			20%			20%			20%			20%			0	
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)										
0.0	.191	.191	.191	.163	.163	.163	.112	.112	.112	.064	.064	.064	.020	.020	.020		
1.0	.177	.157	.140	.151	.135	.120	.104	.093	.083	.060	.054	.048	.019	.017	.016		
2.0	.167	.133	.104	.143	.114	.090	.098	.079	.063	.056	.046	.037	.018	.015	.012		
3.0	.158	.115	.080	.135	.099	.070	.093	.069	.049	.054	.040	.029	.017	.013	.009		
4.0	.150	.101	.064	.129	.087	.055	.089	.061	.039	.051	.036	.023	.016	.012	.008		
5.0	.143	.090	.052	.123	.078	.045	.085	.055	.032	.049	.032	.019	.016	.010	.006		
6.0	.136	.082	.043	.117	.071	.037	.081	.050	.026	.047	.029	.016	.015	.010	.005		
7.0	.130	.075	.036	.112	.065	.032	.077	.045	.022	.045	.027	.013	.014	.009	.004		
8.0	.124	.069	.031	.107	.060	.027	.074	.042	.019	.043	.025	.011	.014	.008	.004		
9.0	.118	.064	.027	.102	.056	.024	.071	.039	.017	.041	.023	.010	.013	.008	.003		
10.0	.113	.060	.024	.098	.052	.021	.068	.037	.015	.039	.022	.009	.013	.007	.003		



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## 5.7 UGR(Unified Glare Rating) Table

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
x = 2H y = 2H	29.6	31.0	29.9	31.2	31.4	27.2	28.6	27.5	28.8	29.0
3H	30.4	31.6	30.7	31.8	32.1	27.2	28.5	27.5	28.7	28.9
4H	30.6	31.7	30.9	32.0	32.2	27.2	28.4	27.5	28.6	28.9
6H	30.6	31.7	31.0	32.0	32.3	27.1	28.2	27.5	28.5	28.8
8H	30.6	31.7	31.0	32.0	32.2	27.1	28.2	27.4	28.4	28.7
12H	30.6	31.6	30.9	31.9	32.2	27.1	28.1	27.4	28.4	28.7
4H 2H	29.7	30.9	30.0	31.1	31.4	27.6	28.8	27.9	29.1	29.3
3H	30.6	31.6	30.9	31.9	32.2	27.7	28.7	28.1	29.0	29.3
4H	30.9	31.8	31.2	32.1	32.4	27.7	28.6	28.1	28.9	29.3
6H	31.0	31.8	31.4	32.2	32.5	27.7	28.5	28.1	28.8	29.2
8H	31.0	31.8	31.4	32.1	32.5	27.6	28.4	28.0	28.7	29.1
12H	31.0	31.7	31.4	32.1	32.5	27.6	28.3	28.0	28.7	29.1
8H 4H	30.8	31.5	31.2	31.9	32.3	27.8	28.5	28.2	28.9	29.3
6H	31.0	31.6	31.4	32.0	32.4	27.7	28.4	28.2	28.8	29.2
8H	31.0	31.6	31.5	32.0	32.4	27.7	28.3	28.2	28.7	29.1
12H	31.0	31.5	31.5	31.9	32.4	27.7	28.1	28.2	28.6	29.1
12H 4H	30.7	31.4	31.2	31.8	32.2	27.7	28.4	28.2	28.8	29.2
6H	30.9	31.5	31.4	31.9	32.4	27.7	28.3	28.2	28.7	29.1
8H	31.0	31.4	31.5	31.9	32.4	27.7	28.2	28.2	28.6	29.1
Variations with the observer position at spacings:										
S = 1.0H	+ 0.4 / - 0.5					+ 1.4 / - 1.9				
1.5H	+ 0.3 / - 0.5					+ 0.7 / - 1.0				
2.0H	+ 0.9 / - 1.0					+ 2.6 / - 3.7				

CIE Pub.117, 788.5 lm Total Lamp Luminous Flux Corrected ( $8\log(F/F_0) = -0.8$ )



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## 5.8 UTILIZATION FACTORS TABLE

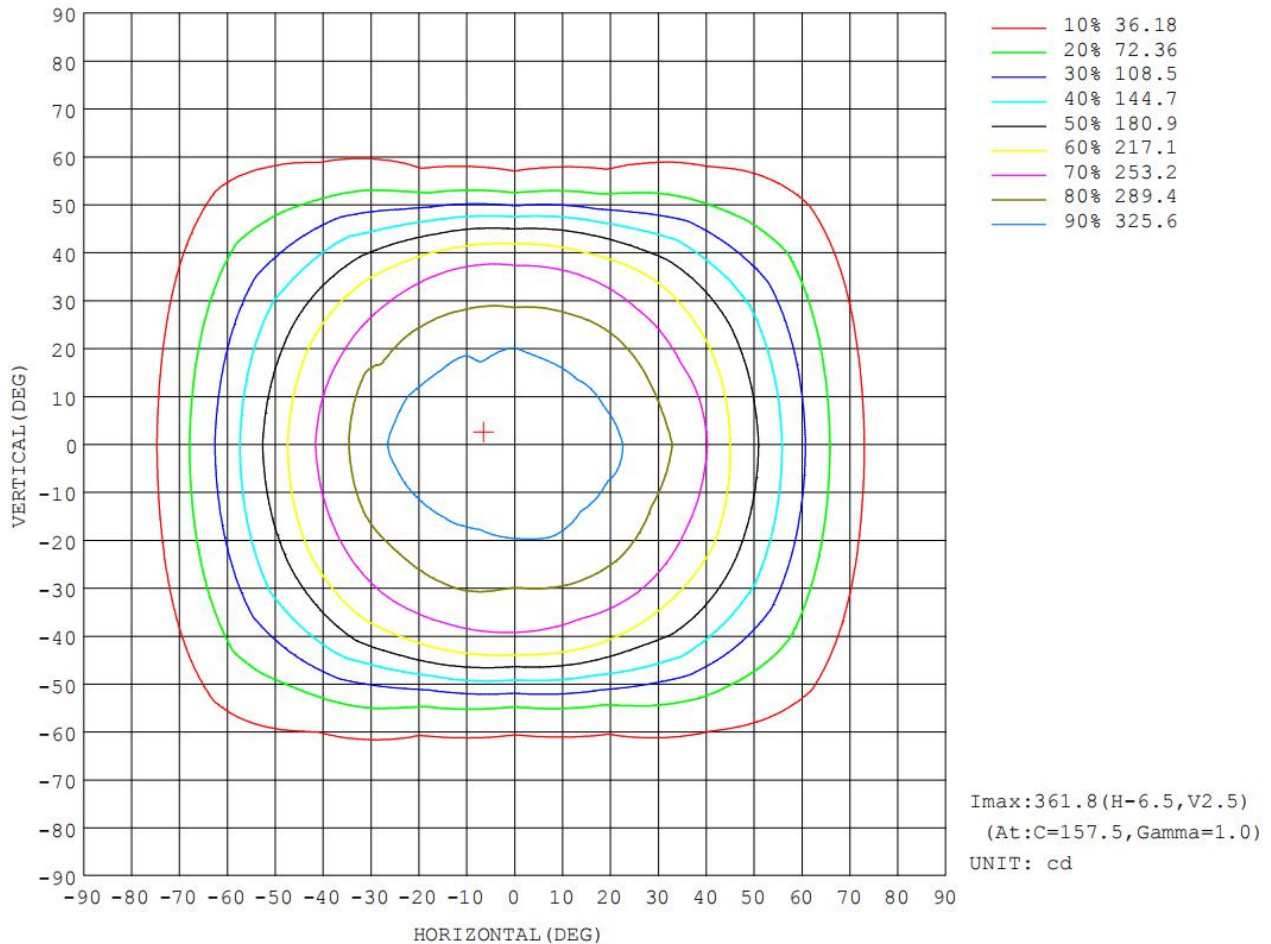
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	64	54	47	63	53	47	62	53	47	41
0.80	74	64	58	73	64	58	72	63	57	51
1.00	83	73	67	82	73	67	80	74	66	60
1.25	90	81	75	88	80	74	86	79	74	67
1.50	94	86	80	93	85	80	90	83	79	72
2.00	100	93	88	98	92	87	95	90	86	79
2.50	103	97	92	101	96	91	98	93	89	82
3.00	106	100	96	104	99	95	100	96	93	85
4.00	109	104	101	107	103	99	103	99	97	88
5.00	111	107	104	109	105	102	104	102	99	90
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHR <sub>NOM</sub> = 1.25		



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## 5.9 ISOCANDELA DIAGRAM

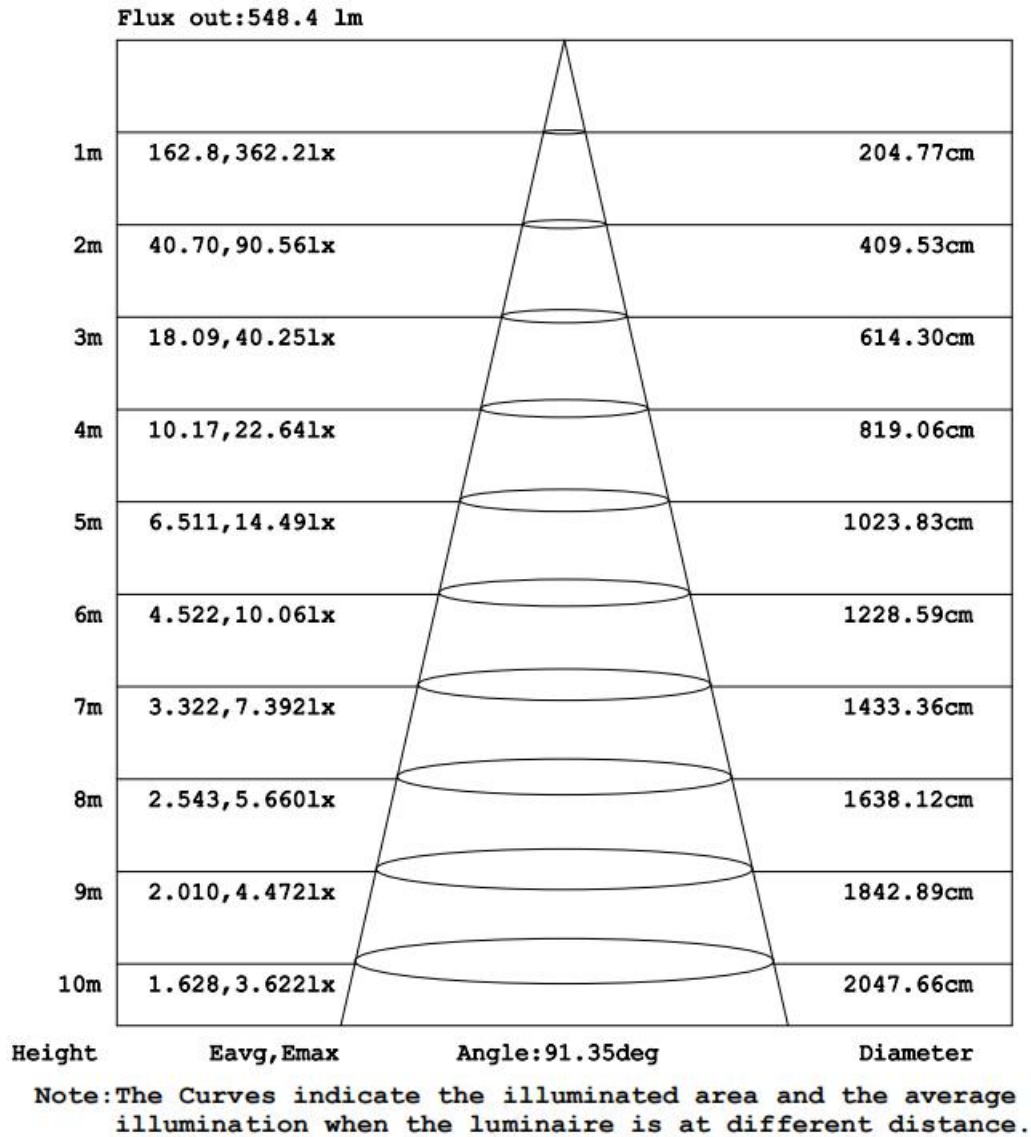




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## 5.10 AAI Figure

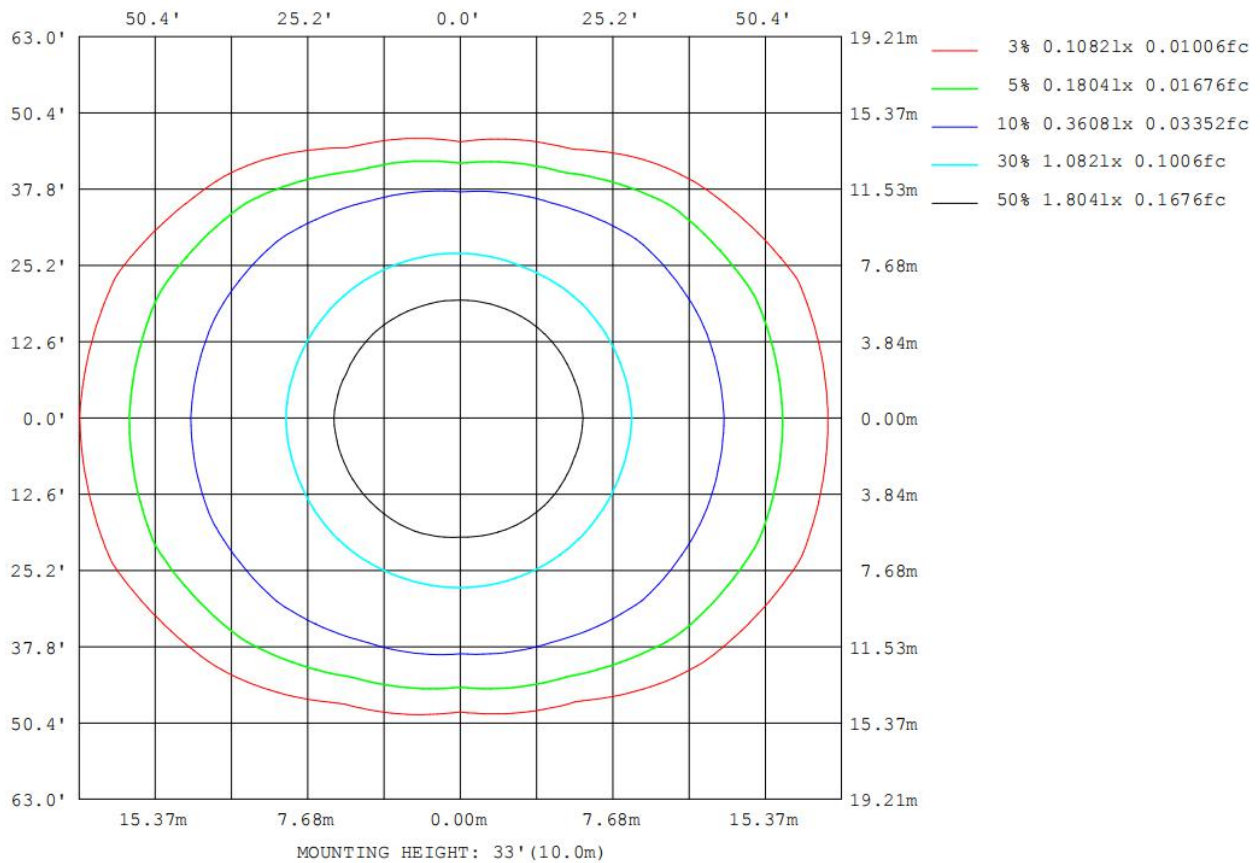




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## 5.11 ISOLUX DIAGRAM

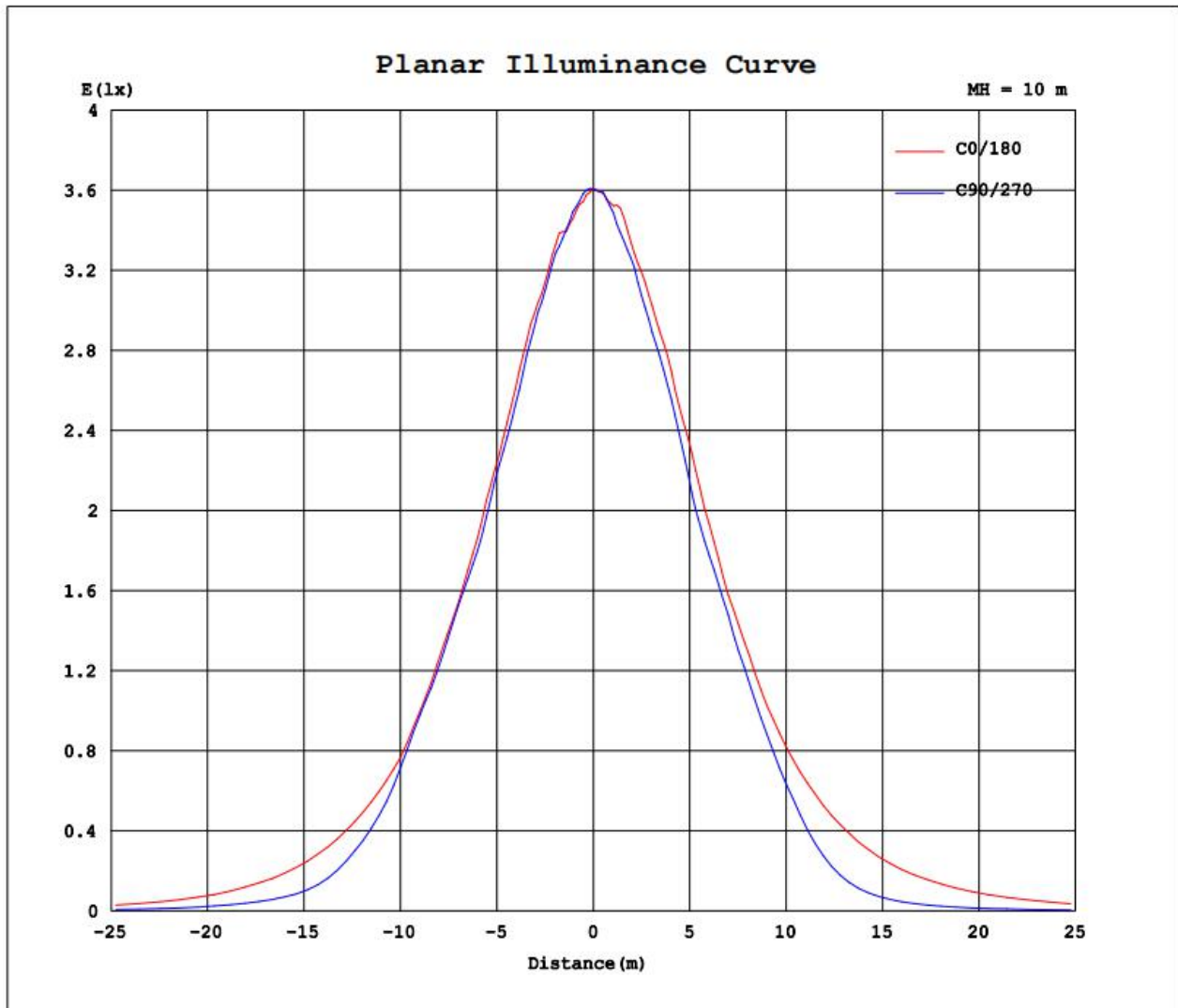




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## 5.12 Planar Illuminance Curve





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### 5.13 Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361			
5	354	354	353	356	356	355	353	357	358	356	355	356	356	355	356	357			
10	354	351	343	348	348	347	351	355	356	357	353	349	346	344	345	349			
15	342	339	338	338	338	336	342	341	349	345	343	338	335	337	335	343			
20	334	327	326	329	324	322	329	340	342	334	333	324	326	320	323	327			
25	318	315	313	310	309	314	323	323	328	322	314	308	309	305	306	315			
30	300	294	295	294	289	296	299	305	310	300	298	289	285	286	292	296			
35	280	275	273	273	278	279	283	286	287	286	276	274	269	270	268	272			
40	255	248	250	248	249	250	258	260	264	253	247	239	234	230	241	247			
45	217	220	214	212	203	216	227	230	232	226	216	195	180	191	206	215			
50	187	186	179	149	134	153	189	197	199	190	172	132	105	126	167	182			
55	151	151	135	88.8	70.1	90.5	140	163	162	153	128	68.2	48.4	66.1	120	145			
60	114	113	88.1	47.3	38.8	49.9	93.6	124	126	117	80.2	34.1	25.4	33.0	73.4	109			
65	77.2	78.3	50.1	26.4	22.9	27.6	52.4	89.4	91.4	83.6	45.3	18.6	15.6	17.7	41.4	74.4			
70	49.0	49.1	27.8	16.6	15.5	15.9	26.9	59.1	59.8	52.9	24.8	11.7	10.6	11.1	23.1	45.6			
75	28.4	28.4	14.5	8.58	8.26	8.45	14.3	33.1	34.8	30.8	12.3	6.74	5.83	6.57	11.8	26.5			
80	13.8	13.4	4.37	3.69	3.74	3.59	4.32	15.8	16.9	14.3	3.60	2.33	1.97	2.28	3.33	12.5			
85	3.74	2.18	0.49	0.64	0.68	0.59	0.70	2.15	4.83	2.01	0.44	0.10	0.10	0.09	0.26	1.29			
90	0.02	0.03	0.02	0.01	0.01	0.01	0.01	0.02	0.04	0.03	0.02	0.01	0.01	0.01	0.02	0.04			
95	0.02	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.05	0.05	0.03	0.02	0.02	0.02	0.04	0.05			
100	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.02	0.07	0.06	0.05	0.03	0.03	0.03	0.05	0.07			
105	0.04	0.03	0.03	0.02	0.01	0.01	0.02	0.03	0.08	0.08	0.06	0.04	0.04	0.05	0.07	0.08			
110	0.05	0.05	0.03	0.02	0.02	0.02	0.03	0.04	0.09	0.08	0.07	0.05	0.05	0.06	0.08	0.09			
115	0.07	0.06	0.04	0.03	0.03	0.03	0.04	0.05	0.09	0.08	0.07	0.06	0.06	0.06	0.08	0.09			
120	0.09	0.08	0.06	0.05	0.05	0.05	0.06	0.07	0.09	0.09	0.08	0.07	0.07	0.07	0.08	0.09			
125	0.11	0.10	0.08	0.08	0.07	0.07	0.08	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.10	0.11			
130	0.14	0.13	0.11	0.10	0.10	0.10	0.10	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.14			
135	0.16	0.15	0.13	0.13	0.13	0.13	0.13	0.15	0.18	0.17	0.16	0.16	0.16	0.16	0.17	0.18			
140	0.18	0.18	0.16	0.15	0.15	0.15	0.16	0.17	0.22	0.21	0.21	0.20	0.20	0.20	0.22	0.23			
145	0.20	0.20	0.18	0.17	0.17	0.18	0.18	0.19	0.27	0.26	0.26	0.25	0.25	0.25	0.26	0.28			
150	0.20	0.20	0.19	0.19	0.19	0.20	0.19	0.19	0.30	0.30	0.30	0.30	0.29	0.30	0.30	0.31			
155	0.21	0.21	0.21	0.22	0.22	0.23	0.22	0.21	0.32	0.33	0.33	0.34	0.33	0.32	0.34	0.34			
160	0.22	0.23	0.23	0.24	0.25	0.25	0.24	0.23	0.33	0.33	0.35	0.35	0.35	0.35	0.36	0.35			
165	0.23	0.24	0.25	0.24	0.25	0.26	0.25	0.24	0.33	0.33	0.33	0.34	0.35	0.35	0.35	0.35			
170	0.26	0.25	0.25	0.26	0.27	0.28	0.27	0.26	0.32	0.32	0.32	0.33	0.34	0.34	0.35	0.34			
175	0.28	0.28	0.28	0.30	0.31	0.31	0.30	0.29	0.30	0.30	0.31	0.32	0.34	0.34	0.35	0.34			
180	0.31	0.29	0.30	0.31	0.33	0.33	0.32	0.31	0.30	0.30	0.29	0.30	0.31	0.32	0.33	0.32			



Guangdong Meide Testing Technology Co., Ltd.



## 6.Photo of sample



Figure 1



Figure 2

\*\*\*\*\* END OF THE TEST REPORT\*\*\*\*\*