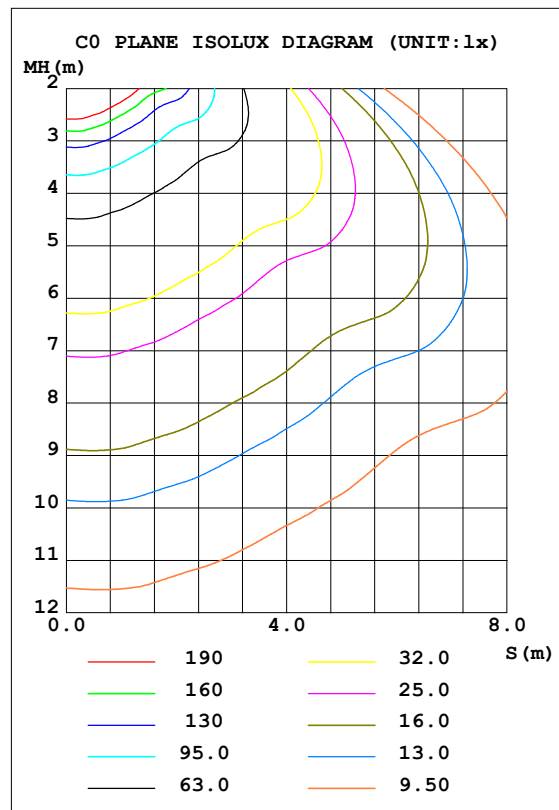
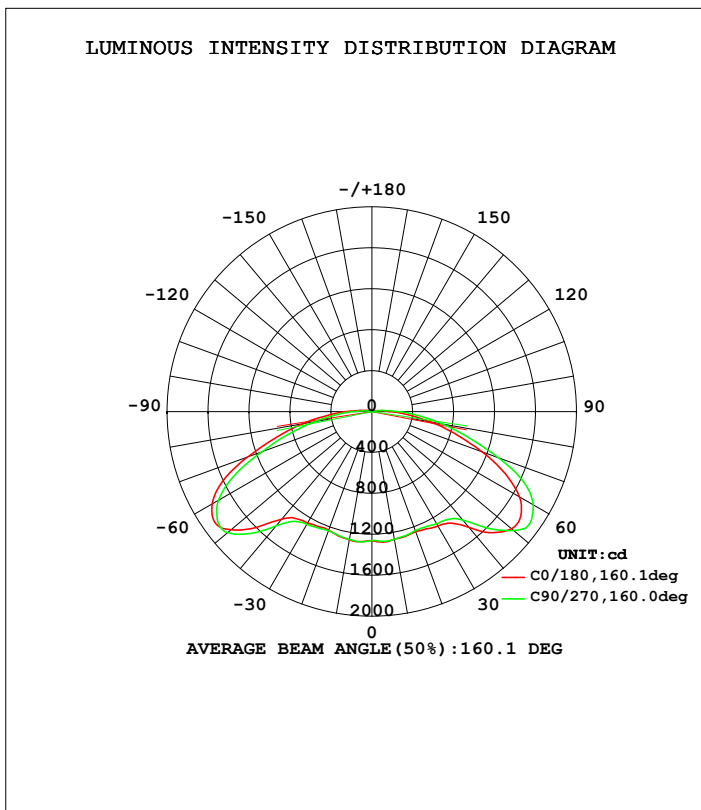


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm		
NAME: 4431-60-5K	TYPE:Frosted pc	WEIGHT:2.68KG
SPEC.:5000K-RA80-126L	DIM.: D290*H110mm	SERIAL No.:
MFR.:	SUR.:260*260mm	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	SMD3030 (757G)	Imax (cd)	1892	S/MH (C0/180)	1.61
NOMINAL POWER (W)	60	LOR (%)	100.0	S/MH (C90/270)	1.85
RATED VOLTAGE (V)	277	TOTAL FLUX (lm)	7914.7	$\eta$ UP, DN (C0-180)	1.3, 48.7
NOMINAL FLUX (lm)	7914.75	CIE CLASS	DIRECT	$\eta$ UP, DN (C180-360)	1.3, 48.7
LAMPS INSIDE	1	$\eta$ up (%)	2.7	CIBSE SHR NOM	2.00
TEST VOLTAGE (V)	277	$\eta$ down (%)	97.3	CIBSE SHR MAX	0.00



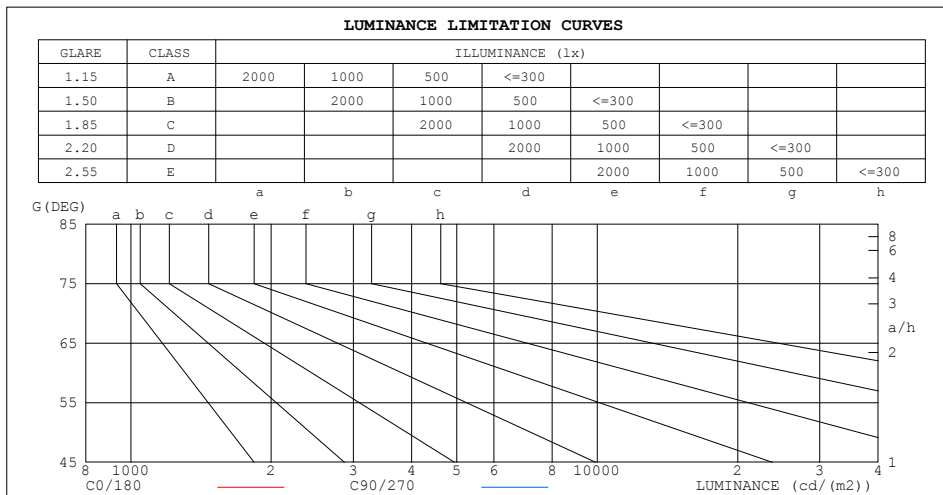
C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

### ZONAL FLUX DIAGRAM AND LUMINANCE LIMITATION CURVES

**ZONAL FLUX DIAGRAM:**

γ	C0	C90	C180	C270					γ	Φ zone	Φ total	%lum, lamp
10	1267	1269	1273	1266					0- 10	121.6	121.6	1.54,1.54
20	1250	1239	1234	1240					10- 20	355.6	477.2	6.03,6.03
30	1290	1266	1258	1273					20- 30	580.0	1057	13.4,13.4
40	1478	1386	1372	1459					30- 40	829.5	1887	23.8,23.8
50	1782	1807	1797	1841					40- 50	1268	3155	39.9,39.9
60	1664	1820	1801	1730					50- 60	1637	4791	60.5,60.5
70	1138	1313	1289	1142					60- 70	1509	6300	79.6,79.6
80	579.5	697.8	685.2	563.0					70- 80	961.0	7261	91.7,91.7
90	192.1	262.4	254.7	191.1					80- 90	443.0	7704	97.3,97.3
100	64.15	59.44	82.59	45.98					90-100	141.4	7846	99.1,99.1
110	23.09	6.377	30.65	6.473					100-110	34.17	7880	99.6,99.6
120	7.470	7.351	8.755	7.319					110-120	11.33	7891	99.7,99.7
130	7.546	7.755	7.412	7.668					120-130	6.723	7898	99.8,99.8
140	7.650	7.846	7.632	7.828					130-140	5.950	7904	99.9,99.9
150	7.534	7.681	7.589	7.657					140-150	4.845	7909	99.9,99.9
160	7.216	7.301	7.325	7.234					150-160	3.447	7912	100,100
170	7.197	7.215	7.289	7.111					160-170	2.046	7914	100,100
180	7.307	7.277	7.338	7.234					170-180	0.6902	7915	100,100
DEG	LUMINOUS INTENSITY:cd MAX (Ii - Iavg)/Iavg (0-135) = 121.0 %									UNIT:lm		



LUMINANCE cd/(m2)		
G( DEG)	C0/180	C90/270
85	75078	97898
80	62886	75731
75	61418	70935
70	62689	72341
65	64133	73092
60	62725	68575
55	58376	62121
50	52233	52990
45	44569	43060

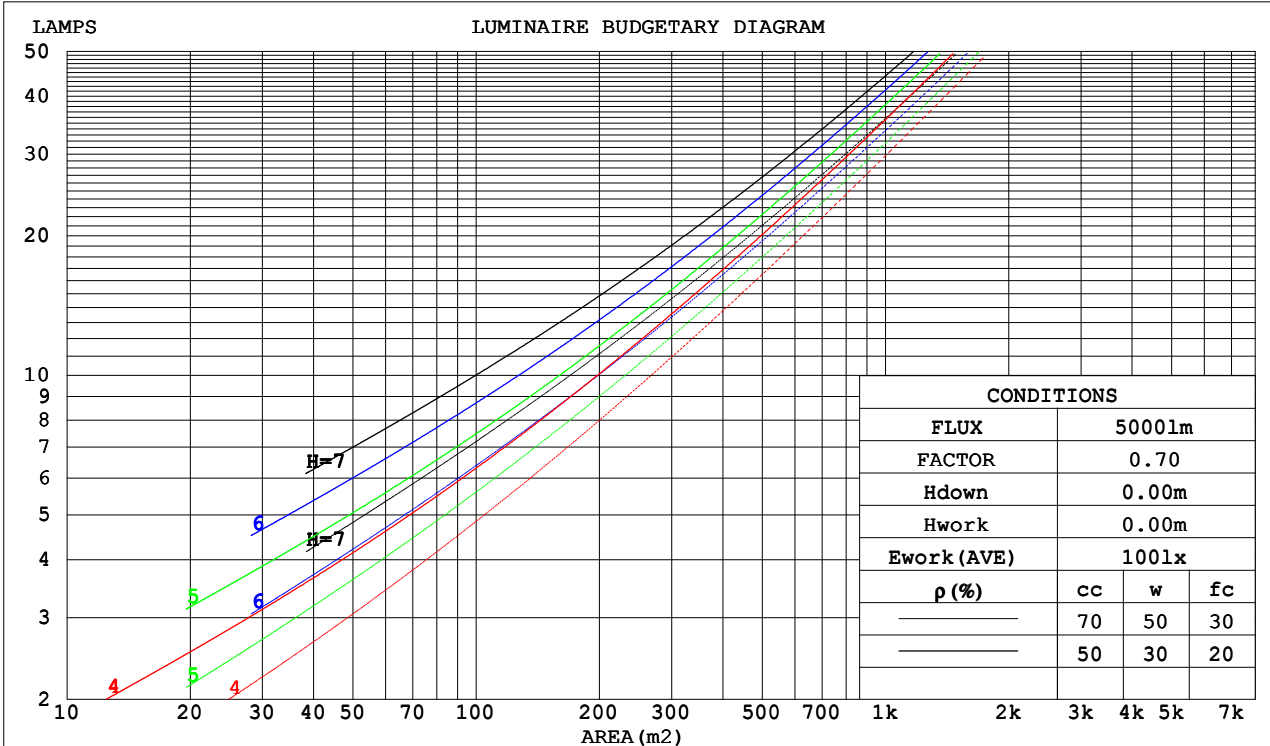
C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm		
NAME: 4431-60-5K	TYPE:Frosted pc	WEIGHT:2.68KG
SPEC.:5000K-RA80-126L	DIM.: D290*H110mm	SERIAL No.:
MFR.:	SUR.:260*260mm	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pf	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization (CU)									
0.0	1.18	1.18	1.18	1.15	1.15	1.15	1.10	1.10	1.10	1.04	1.04	1.04	.00	.00	.00	.97
1.0	.98	.93	.88	.96	.91	.86	.91	.87	.83	.86	.83	.80	.82	.79	.77	.74
2.0	.82	.74	.67	.80	.72	.66	.76	.69	.64	.72	.67	.62	.69	.64	.60	.57
3.0	.70	.60	.52	.68	.59	.51	.65	.57	.50	.61	.55	.49	.58	.52	.48	.45
4.0	.60	.50	.42	.59	.49	.41	.56	.47	.40	.53	.45	.40	.50	.44	.39	.36
5.0	.53	.42	.34	.51	.41	.34	.49	.40	.33	.46	.39	.33	.44	.37	.32	.30
6.0	.46	.36	.29	.45	.36	.29	.43	.34	.28	.41	.33	.27	.39	.32	.27	.25
7.0	.41	.32	.25	.40	.31	.24	.39	.30	.24	.37	.29	.24	.35	.28	.23	.21
8.0	.37	.28	.21	.36	.27	.21	.35	.27	.21	.33	.26	.20	.32	.25	.20	.18
9.0	.34	.25	.19	.33	.24	.18	.32	.24	.18	.30	.23	.18	.29	.22	.18	.16
10.0	.31	.22	.16	.30	.22	.16	.29	.21	.16	.28	.21	.16	.27	.20	.16	.14



C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

WEC AND CCEC

Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm		
NAME: 4431-60-5K	TYPE:Frosted pc	WEIGHT:2.68KG
SPEC.:5000K-RA80-126L	DIM.: D290*H110mm	SERIAL No.:
MFR.:	SUR.:260*260mm	PROTECTION ANGLE:

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	.403	.229	.073	.395	.225	.072	.380	.218	.070	.366	.211	.068	.353	.205	.066	
2.0	.362	.199	.061	.355	.196	.060	.341	.190	.059	.329	.184	.058	.317	.179	.057	
3.0	.326	.173	.052	.319	.171	.051	.307	.166	.051	.295	.162	.050	.285	.158	.049	
4.0	.294	.153	.045	.288	.151	.045	.277	.147	.044	.267	.143	.043	.257	.140	.043	
5.0	.267	.136	.039	.262	.134	.039	.252	.131	.039	.243	.128	.038	.234	.125	.038	
6.0	.244	.122	.035	.239	.121	.035	.230	.118	.034	.222	.115	.034	.214	.113	.033	
7.0	.224	.111	.031	.220	.109	.031	.212	.107	.031	.204	.105	.030	.197	.103	.030	
8.0	.207	.101	.028	.203	.100	.028	.196	.098	.028	.189	.096	.028	.183	.094	.027	
9.0	.192	.093	.026	.189	.092	.026	.182	.090	.026	.176	.088	.025	.170	.087	.025	
10.0	.179	.086	.024	.176	.085	.024	.170	.083	.023	.165	.082	.023	.159	.080	.023	

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	.211	.211	.211	.180	.180	.180	.123	.123	.123	.071	.071	.071	.023	.023	.023	
1.0	.207	.176	.147	.177	.151	.127	.121	.104	.088	.070	.060	.051	.022	.019	.016	
2.0	.202	.152	.110	.173	.131	.095	.119	.091	.066	.068	.053	.039	.022	.017	.013	
3.0	.196	.135	.087	.168	.117	.076	.115	.081	.053	.067	.047	.031	.021	.015	.010	
4.0	.189	.123	.072	.162	.106	.063	.111	.074	.044	.064	.043	.026	.021	.014	.009	
5.0	.181	.113	.063	.155	.098	.054	.107	.068	.038	.062	.040	.023	.020	.013	.008	
6.0	.173	.105	.056	.149	.091	.049	.103	.064	.034	.060	.037	.020	.019	.012	.007	
7.0	.166	.098	.051	.143	.085	.044	.099	.060	.031	.057	.035	.019	.019	.012	.006	
8.0	.159	.092	.047	.137	.080	.041	.095	.056	.029	.055	.033	.017	.018	.011	.006	
9.0	.152	.088	.044	.131	.076	.038	.091	.053	.027	.053	.032	.016	.017	.010	.005	
10.0	.145	.083	.042	.125	.072	.037	.087	.051	.026	.051	.030	.015	.016	.010	.005	

C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

**UGR(Unified Glare Rating) Table**

Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm										
NAME: 4431-60-5K					TYPE:Frosted pc			WEIGHT:2.68KG		
SPEC.:5000K-RA80-126L					DIM.: D290*H110mm			SERIAL No.:		
MFR.:					SUR.:260*260mm			PROTECTION ANGLE:		
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	27.7	29.5	28.0	29.7	30.0	28.0	29.8	28.4	30.0	30.3
3H	29.8	31.4	30.2	31.7	32.0	30.3	31.9	30.7	32.2	32.6
4H	30.6	32.2	31.0	32.5	32.8	31.2	32.7	31.6	33.1	33.4
6H	31.3	32.7	31.7	33.1	33.4	32.0	33.4	32.4	33.8	34.1
8H	31.6	33.0	32.0	33.3	33.7	32.3	33.7	32.7	34.1	34.4
12H	31.8	33.2	32.2	33.5	33.9	32.6	34.0	33.1	34.4	34.8
4H 2H	28.6	30.2	29.0	30.5	30.8	28.9	30.4	29.2	30.7	31.1
3H	30.8	32.2	31.2	32.5	32.9	31.2	32.6	31.6	33.0	33.3
4H	31.7	33.0	32.2	33.4	33.8	32.2	33.5	32.7	33.9	34.3
6H	32.6	33.7	33.0	34.1	34.5	33.1	34.3	33.6	34.7	35.1
8H	32.9	34.0	33.4	34.4	34.8	33.6	34.6	34.0	35.1	35.5
12H	33.2	34.2	33.7	34.7	35.1	34.0	35.0	34.5	35.4	35.9
8H 4H	32.2	33.2	32.6	33.6	34.1	32.6	33.6	33.0	34.1	34.5
6H	33.2	34.1	33.7	34.5	35.0	33.7	34.6	34.2	35.0	35.5
8H	33.7	34.5	34.2	34.9	35.5	34.3	35.1	34.8	35.5	36.1
12H	34.1	34.8	34.7	35.3	35.9	34.9	35.5	35.4	36.0	36.6
12H 4H	32.2	33.2	32.7	33.6	34.1	32.6	33.6	33.1	34.0	34.5
6H	33.3	34.1	33.8	34.6	35.1	33.8	34.6	34.3	35.1	35.6
8H	33.9	34.6	34.4	35.1	35.6	34.4	35.1	35.0	35.6	36.2
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.3 / - 0.6					+ 0.3 / - 0.6				

CIE Pub.117 Corrected 7915 lm Total Lamp Luminous Flux. (8log(F/F0) = 7.2)

C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

**UTILIZATION FACTORS TABLE**

Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm		
NAME: 4431-60-5K	TYPE:Frosted pc	WEIGHT:2.68KG
SPEC.:5000K-RA80-126L	DIM.: D290*H110mm	SERIAL No.:
MFR.:	SUR.:260*260mm	PROTECTION ANGLE:

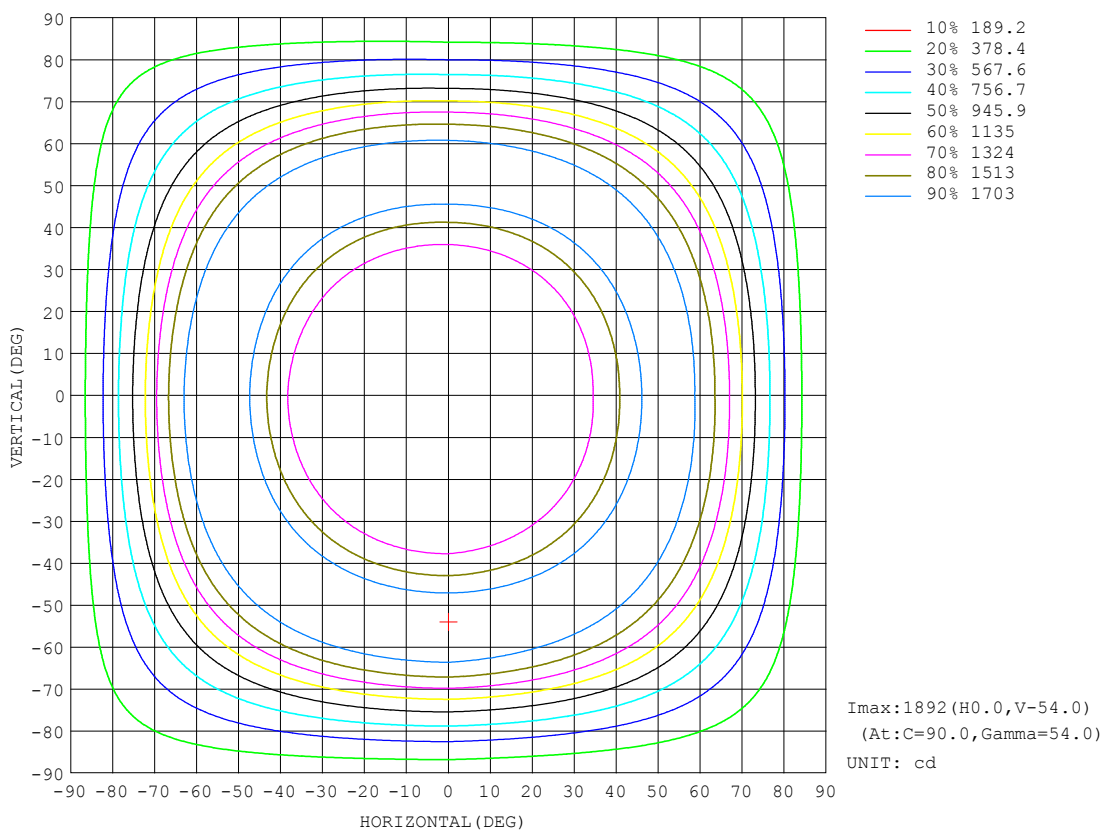
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	45	32	24	45	32	24	43	31	23	16
0.80	55	41	32	54	41	32	52	40	32	23
1.00	64	50	41	63	50	41	60	52	40	32
1.25	72	59	50	70	58	49	67	56	48	39
1.50	78	65	56	76	64	55	72	62	54	45
2.00	86	75	66	84	73	66	80	71	64	54
2.50	91	81	73	89	79	72	84	76	70	60
3.00	95	86	79	93	84	78	88	81	75	65
4.00	101	93	87	98	91	85	93	87	82	72
5.00	104	97	92	101	95	90	96	91	87	76
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

### ISOCANDELA DIAGRAM

Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm		
NAME:4431-60-5K	TYPE:Frosted pc	WEIGHT:2.68KG
SPEC.:5000K-RA80-126L	DIM.: D290*H110mm	SERIAL No.:
MFR.:	SUR.:260*260mm	PROTECTION ANGLE:

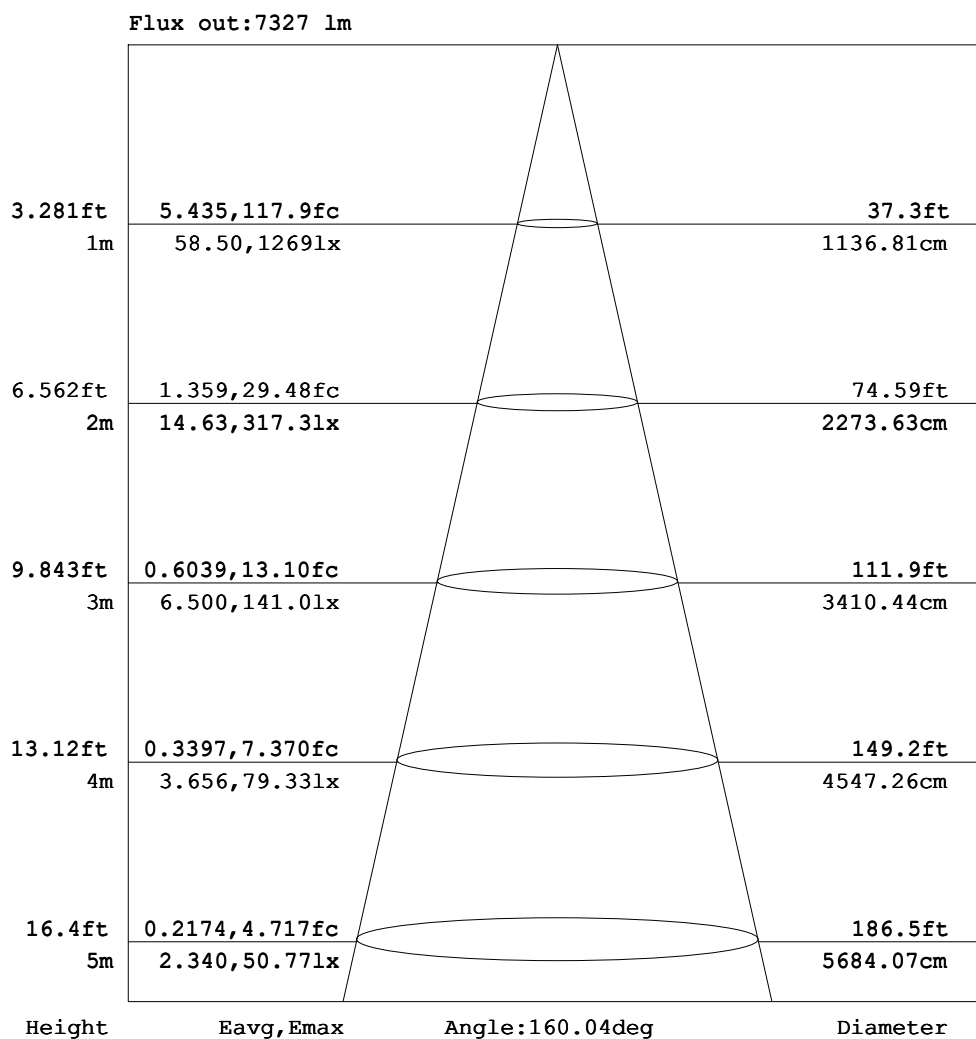


C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

**AAI Figure**

Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm		
NAME: 4431-60-5K	TYPE:Frosted pc	WEIGHT:2.68KG
SPEC.:5000K-RA80-126L	DIM.: D290*H110mm	SERIAL No.:
MFR.:	SUR.:260*260mm	PROTECTION ANGLE:



**Note:**The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

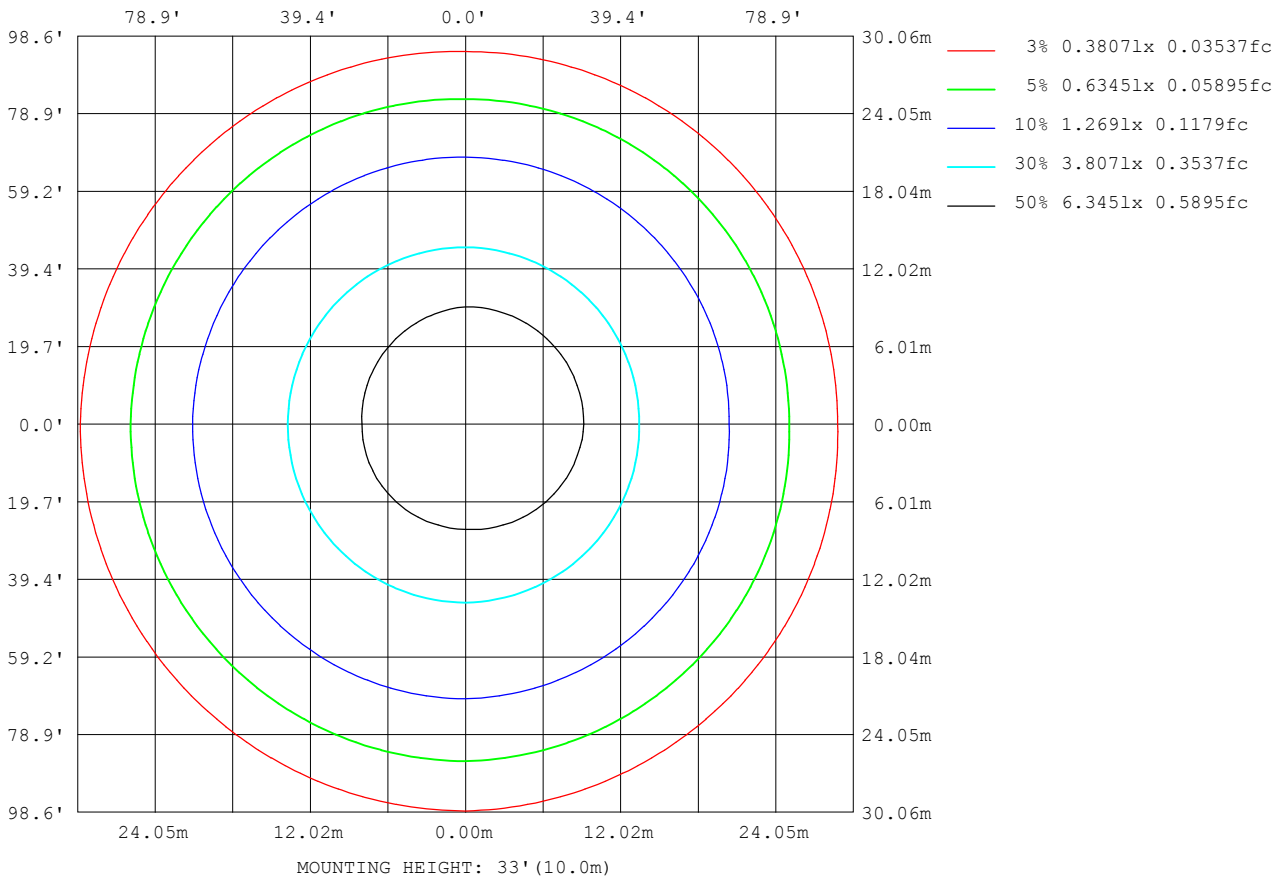
C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:



**ISOLUX DIAGRAM**

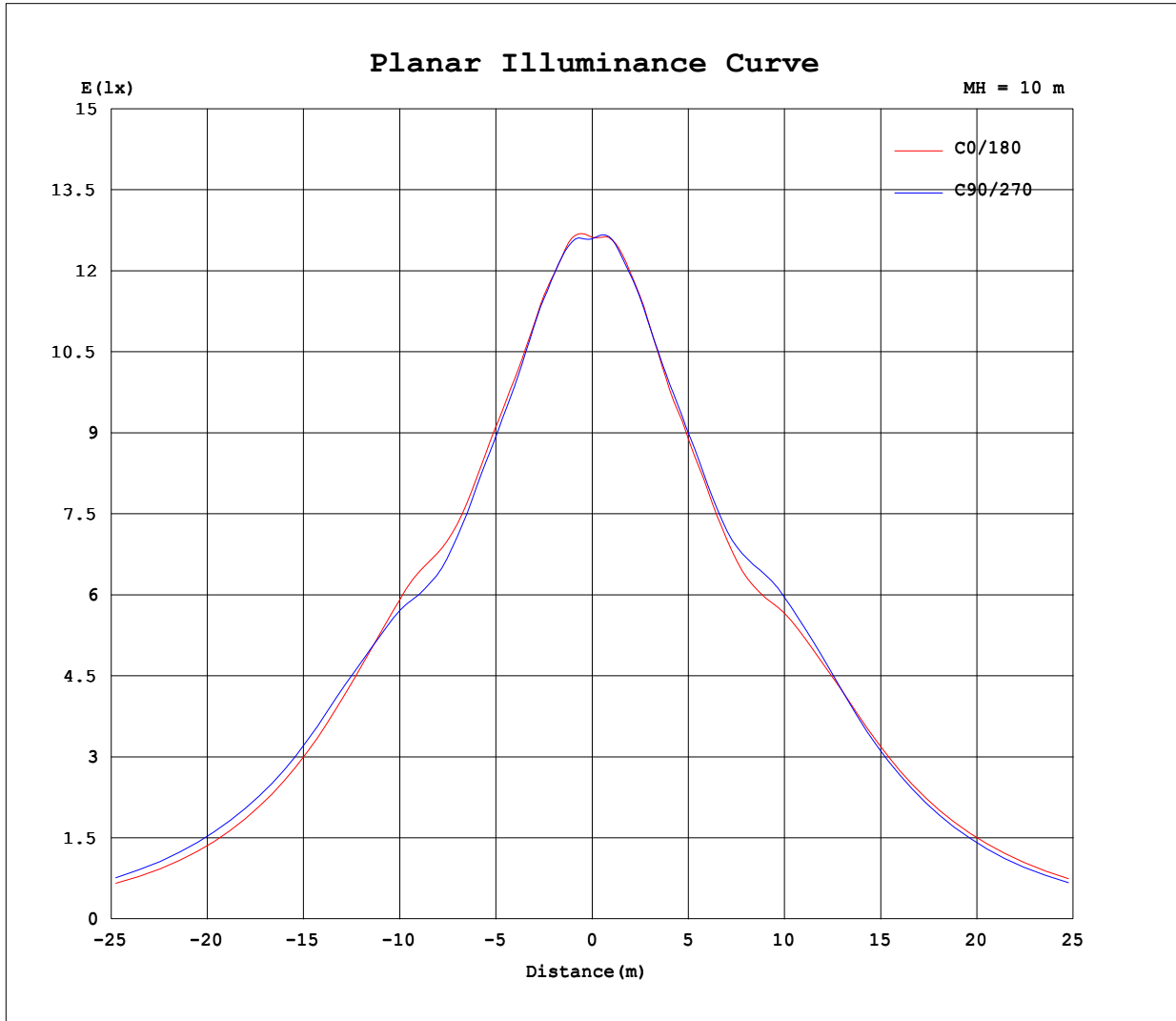
Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm		
NAME: 4431-60-5K	TYPE:Frosted pc	WEIGHT:2.68KG
SPEC.:5000K-RA80-126L	DIM.: D290*H110mm	SERIAL No.:
MFR.:	SUR.:260*260mm	PROTECTION ANGLE:



C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

**Planar Illuminance Curve**



C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:279.0V I:0.2147A P:57.11W PF:0.9535 Lamp Flux:7914.75x1 lm		
NAME: 4431-60-5K	TYPE:Frosted pc	WEIGHT:2.68KG
SPEC.:5000K-RA80-126L	DIM.: D290*H110mm	SERIAL No.:
MFR.:	SUR.:260*260mm	PROTECTION ANGLE:

Table--1

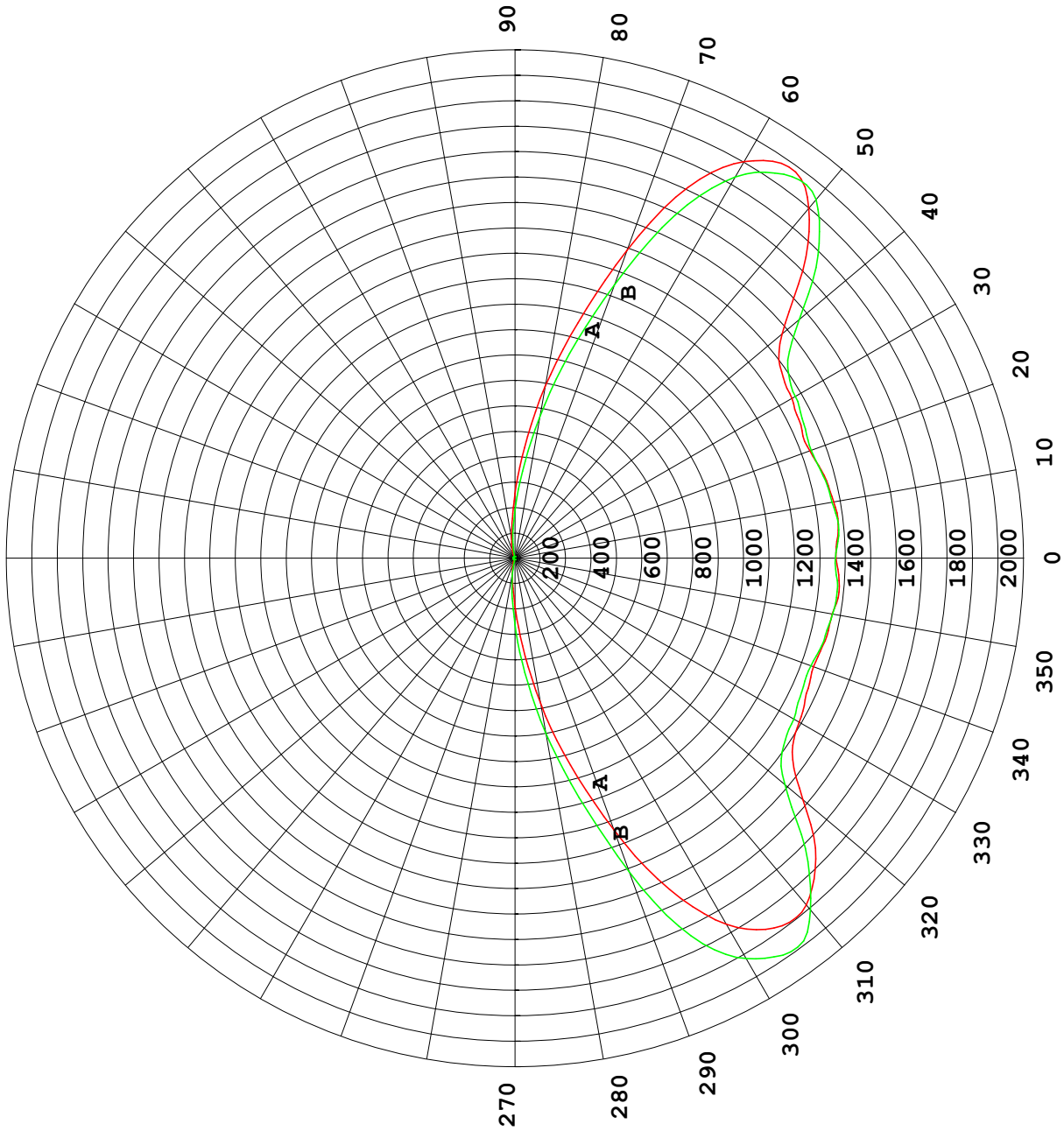
UNIT: cd

C (DEG) \ γ (DEG)	0	90	180	270															
0	1263	1260	1263	1260															
5	1280	1273	1276	1278															
10	1267	1269	1273	1266															
15	1262	1257	1259	1255															
20	1250	1239	1234	1240															
25	1264	1244	1241	1253															
30	1290	1266	1258	1273															
35	1331	1289	1280	1309															
40	1478	1386	1372	1459															
45	1672	1616	1602	1685															
50	1782	1807	1797	1841															
55	1777	1891	1878	1843															
60	1664	1820	1801	1730															
65	1438	1639	1609	1488															
70	1138	1313	1289	1142															
75	844	974	959	834															
80	579	698	685	563															
85	347	453	436	344															
90	192	262	255	191															
95	108	140	140	102															
100	64.1	59.4	82.6	46.0															
105	38.7	12.6	50.1	8.93															
110	23.1	6.38	30.6	6.47															
115	12.3	6.98	17.6	6.98															
120	7.47	7.35	8.75	7.32															
125	7.48	7.61	7.26	7.52															
130	7.55	7.75	7.41	7.67															
135	7.61	7.85	7.54	7.78															
140	7.65	7.85	7.63	7.83															
145	7.65	7.82	7.63	7.83															
150	7.53	7.68	7.59	7.66															
155	7.36	7.49	7.46	7.42															
160	7.22	7.30	7.33	7.23															
165	7.18	7.25	7.27	7.14															
170	7.20	7.22	7.29	7.11															
175	7.22	7.23	7.34	7.19															
180	7.31	7.28	7.34	7.23															

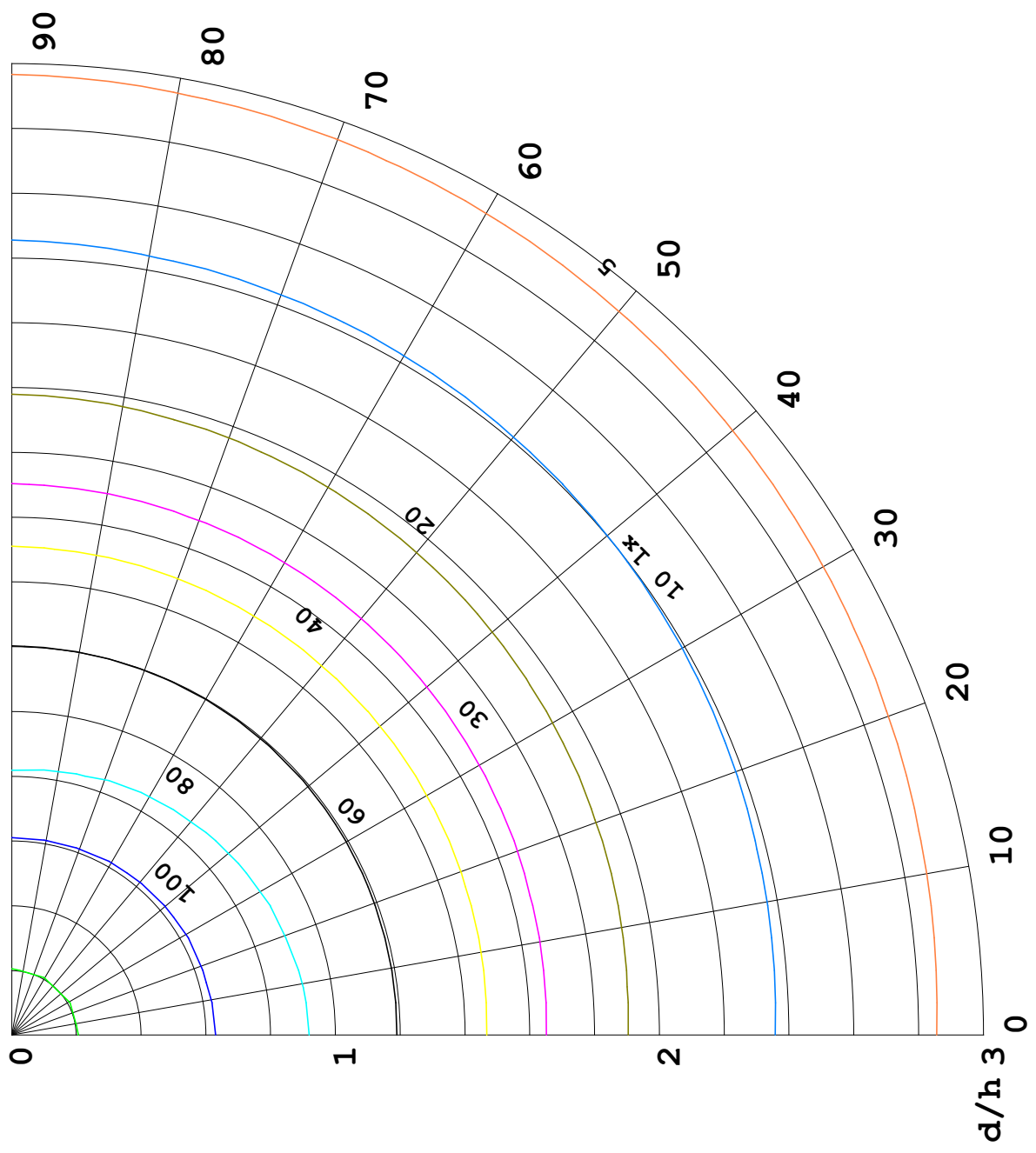
C Range: 0 - 360 DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: DEG  
 Operators:  
 Test Date:2018-05-08

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: GO-2000B\_V1 SYSTEM V2.0.284  
 Humidity:65.0%  
 Test Distance:9.100m [K=1.0000]  
 Remarks:

I (cd)



1000 lm  $K = 1$



F = 5000 lm  
 K = 0.7  
 Hcc = 0.0 m  
 Hfc = 0.0 m  
 Eave = 100 lx

	Pcc	Pw	Pfc
—————	70	50	30
—————	50	30	20

