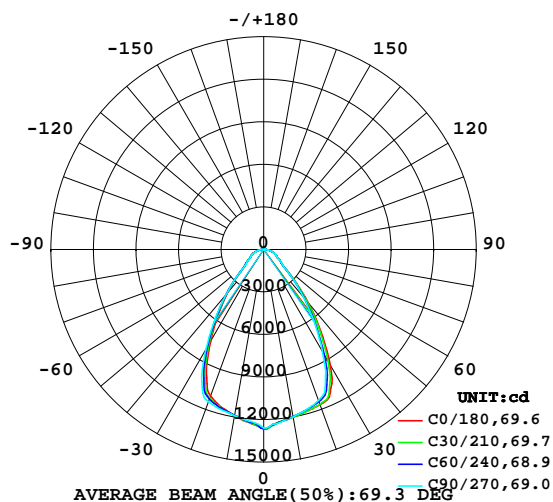


LUMINAIRE PHOTOMETRIC TEST REPORT

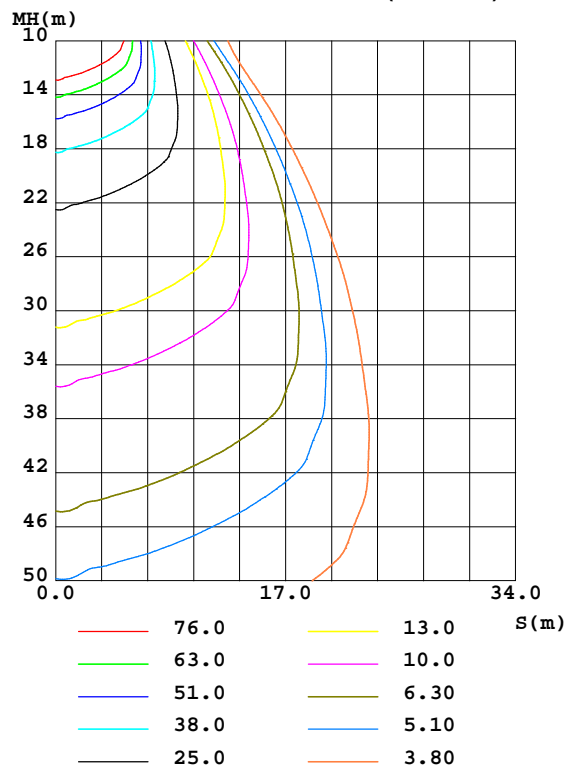
Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 136.32 lm/W			
MODEL	HB2200	Imax(cd)	12687	S/MH(C0/180)	0.98
NOMINAL POWER(W)	130	LOR(%)	100.0	S/MH(C90/270)	1.01
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	18497	η UP,DN(C0-180)	1.0,49.5
NOMINAL FLUX(lm)	18496.7	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.8,48.7
LAMPS INSIDE	1	η up(%)	1.8	CIBSE SHR NOM	1.00
TEST VOLTAGE(V)	220	η down(%)	98.2	CIBSE SHR MAX	1.05

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
 C Interval: 15.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:LUC
 Test Date:03 January 2018

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
 Humidity:65.0%
 Test Distance:8.000m [K=1.0000]
 Remarks: HB2200-130G-A100-57K-90D-REF_181105

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1201	1197	1198	1192	1190	1189	1190	1195	0- 10	1158	1158	6.26,6.26
20	1165	1151	1133	1105	1099	1118	1142	1160	10- 20	3293	4451	24.1,24.1
30	940.5	885.0	829.8	774.1	753.0	786.6	820.1	894.1	20- 30	4666	9117	49.3,49.3
40	487.0	463.6	435.9	411.2	393.4	408.2	408.2	455.1	30- 40	3872	12989	70.2,70.2
50	178.3	177.8	180.6	173.0	169.7	171.3	168.7	170.2	40- 50	2179	15168	82,82
60	108.9	109.2	111.1	110.1	109.2	107.9	105.6	105.9	50- 60	1247	16415	88.7,88.7
70	78.79	79.32	81.38	79.68	77.23	76.50	74.42	75.65	60- 70	940.0	17355	93.8,93.8
80	38.20	38.54	39.87	37.53	34.93	34.89	34.04	35.62	70- 80	601.3	17956	97.1,97.1
90	4.805	4.290	6.911	5.916	5.710	5.686	5.908	4.672	80- 90	209.2	18166	98.2,98.2
100	2.631	2.578	2.933	2.678	1.941	1.815	1.883	1.712	90-100	33.41	18199	98.4,98.4
110	3.469	3.744	3.992	3.922	2.905	2.811	2.863	2.622	100-110	28.60	18228	98.5,98.5
120	4.815	5.092	5.641	5.324	4.313	4.350	4.554	4.043	110-120	39.55	18267	98.8,98.8
130	6.224	6.387	7.024	6.636	5.889	5.779	6.107	5.410	120-130	49.15	18316	99,99
140	7.615	7.732	7.960	7.863	7.399	7.201	7.251	6.874	130-140	52.86	18369	99.3,99.3
150	8.745	8.739	8.800	8.881	8.513	8.310	8.266	8.108	140-150	50.26	18419	99.6,99.6
160	9.324	9.333	9.371	9.290	9.154	9.049	9.075	8.912	150-160	40.94	18460	99.8,99.8
170	9.886	9.862	9.832	9.850	9.887	9.778	9.692	9.617	160-170	26.81	18487	99.9,99.9
180	10.29	10.32	10.17	10.24	10.31	10.32	10.19	10.23	170-180	9.522	18497	100,100
DEG	LUMINOUS INTENSITY:≠10cd									UNIT:lm		

Conical surface Flux(90deg): 14293 lm

%lum = 77.3%

%lamp = 77.3%

Conical surface Flux(120deg): 16415 lm

%lum = 88.7%

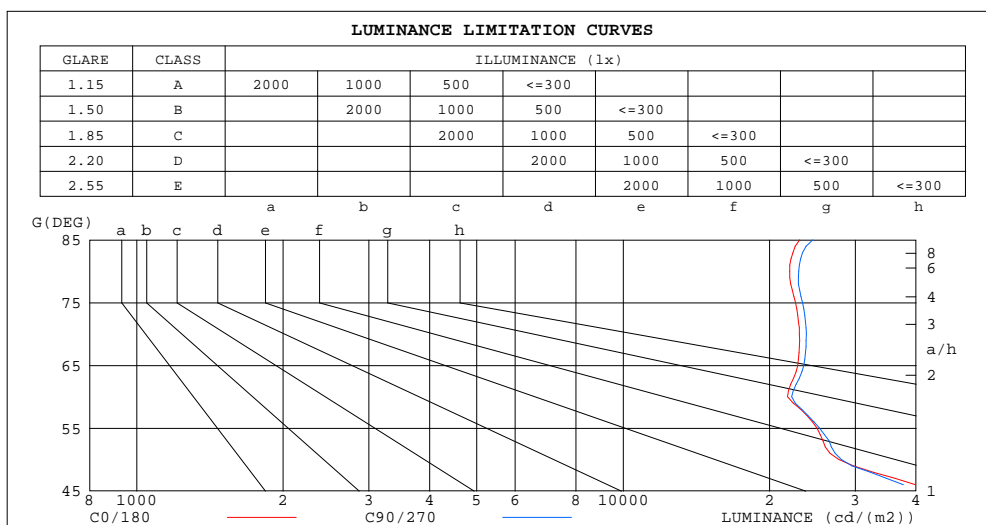
%lamp = 88.7%

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

LUMINANCE LIMITATION CURVES

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	23078	24555
80	21996	22958
75	22607	23368
70	23037	23793
65	22863	23503
60	21776	22211
55	25036	25342
50	27745	28099
45	43520	40783

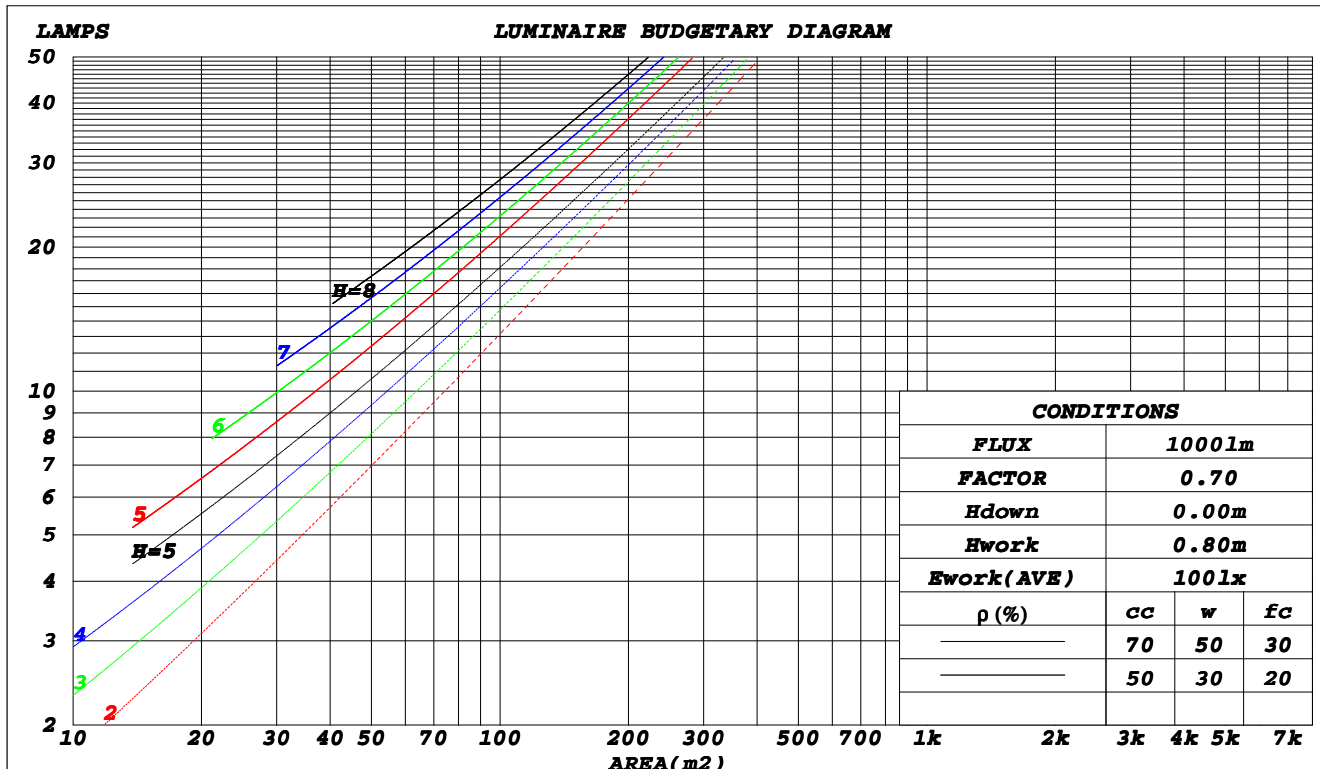
C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: LUC
Test Date: 03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity: 65.0%
Test Distance: 8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	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	1.10	1.10	1.10	1.05	1.05	1.05	1.00	1.00	1.00	.98
1.0	1.07	1.04	1.01	1.05	1.02	.99	1.00	.98	.95	.96	.94	.92	.92	.91	.89	.87
2.0	.97	.91	.87	.95	.90	.86	.91	.87	.84	.88	.84	.81	.85	.82	.79	.77
3.0	.88	.81	.76	.86	.80	.76	.83	.78	.74	.80	.76	.73	.78	.74	.71	.69
4.0	.80	.73	.68	.79	.72	.67	.76	.71	.66	.74	.69	.65	.72	.68	.64	.62
5.0	.74	.66	.61	.73	.66	.61	.70	.64	.60	.68	.63	.59	.67	.62	.58	.57
6.0	.68	.61	.55	.67	.60	.55	.65	.59	.54	.63	.58	.54	.62	.57	.53	.52
7.0	.63	.56	.50	.62	.55	.50	.61	.54	.50	.59	.54	.49	.58	.53	.49	.47
8.0	.58	.51	.46	.58	.51	.46	.56	.50	.46	.55	.50	.45	.54	.49	.45	.43
9.0	.54	.47	.43	.54	.47	.43	.53	.47	.42	.52	.46	.42	.51	.45	.42	.40
10.0	.51	.44	.40	.50	.44	.39	.49	.43	.39	.48	.43	.39	.47	.42	.39	.37



C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

WEC AND CCEC

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

ρ_{cc}	80%			70%			50%			30%			10%			0	
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0	
ρ_{fc}	20%			20%			20%			20%			20%			0	
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)										
0.0																	
1.0	.241	.137	.043	.233	.133	.042	.219	.126	.040	.207	.119	.038	.195	.113	.036		
2.0	.227	.124	.038	.221	.121	.037	.209	.116	.036	.197	.111	.035	.187	.106	.033		
3.0	.212	.113	.034	.207	.111	.033	.196	.106	.032	.187	.102	.031	.178	.098	.030		
4.0	.199	.103	.030	.194	.101	.030	.185	.098	.029	.176	.094	.029	.168	.091	.028		
5.0	.186	.095	.028	.182	.093	.027	.174	.091	.027	.166	.088	.026	.159	.085	.026		
6.0	.175	.088	.025	.171	.087	.025	.164	.084	.024	.157	.082	.024	.151	.079	.024		
7.0	.165	.082	.023	.162	.081	.023	.155	.078	.023	.149	.076	.022	.143	.074	.022		
8.0	.156	.076	.021	.153	.075	.021	.147	.074	.021	.142	.072	.021	.136	.070	.020		
9.0	.148	.072	.020	.145	.071	.020	.140	.069	.020	.135	.068	.019	.130	.066	.019		
10.0	.141	.067	.019	.138	.067	.019	.133	.065	.018	.129	.064	.018	.124	.063	.018		

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.204	.204	.204	.174	.174	.174	.119	.119	.119	.068	.068	.068	.022	.022	.022	
1.0	.189	.170	.154	.162	.146	.132	.111	.101	.091	.064	.058	.053	.020	.019	.017	
2.0	.177	.146	.120	.152	.126	.103	.104	.087	.072	.060	.051	.042	.019	.016	.014	
3.0	.167	.128	.096	.143	.110	.084	.098	.077	.059	.057	.045	.035	.018	.015	.011	
4.0	.158	.114	.080	.136	.098	.069	.093	.069	.049	.054	.040	.029	.017	.013	.009	
5.0	.150	.103	.068	.129	.089	.059	.089	.062	.042	.052	.037	.025	.017	.012	.008	
6.0	.143	.094	.059	.123	.081	.051	.085	.057	.036	.049	.034	.022	.016	.011	.007	
7.0	.137	.087	.052	.118	.075	.045	.081	.053	.032	.047	.031	.019	.015	.010	.006	
8.0	.131	.081	.047	.113	.070	.041	.078	.049	.029	.045	.029	.017	.015	.010	.006	
9.0	.125	.076	.042	.108	.066	.037	.075	.046	.026	.044	.027	.016	.014	.009	.005	
10.0	.121	.072	.039	.104	.062	.034	.072	.044	.024	.042	.026	.014	.014	.008	.005	

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

UGR(Unified Glare Rating) Table

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm										
NAME: HB2200					TYPE:LED			WEIGHT:		
SPEC.:G5 360EA					DIM.:			SERIAL No.:		
MFR.: ICEPIPE					SUR.:			Shielding 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	22.8	24.0	23.1	24.2	24.5	22.6	23.8	22.9	24.0	24.2
3H	23.8	24.9	24.1	25.2	25.4	23.7	24.8	24.0	25.1	25.3
4H	24.4	25.4	24.7	25.7	25.9	24.3	25.3	24.6	25.6	25.9
6H	24.8	25.8	25.1	26.1	26.4	24.8	25.7	25.1	26.0	26.3
8H	25.0	25.9	25.3	26.2	26.5	24.9	25.9	25.3	26.2	26.5
12H	25.1	26.0	25.5	26.3	26.6	25.1	26.0	25.5	26.3	26.6
4H 2H	23.1	24.2	23.4	24.4	24.7	22.9	24.0	23.2	24.2	24.5
3H	24.4	25.3	24.8	25.6	25.9	24.3	25.2	24.7	25.5	25.9
4H	25.1	25.9	25.5	26.2	26.6	25.0	25.9	25.4	26.2	26.5
6H	25.7	26.4	26.1	26.8	27.1	25.6	26.4	26.1	26.8	27.1
8H	25.9	26.6	26.3	27.0	27.4	25.9	26.6	26.3	27.0	27.4
12H	26.1	26.7	26.5	27.1	27.6	26.1	26.8	26.6	27.2	27.6
8H 4H	25.3	26.0	25.7	26.4	26.8	25.3	26.0	25.7	26.3	26.8
6H	26.1	26.6	26.5	27.1	27.5	26.1	26.6	26.5	27.1	27.5
8H	26.4	26.9	26.9	27.3	27.8	26.4	26.9	26.9	27.4	27.9
12H	26.7	27.1	27.2	27.6	28.1	26.7	27.2	27.3	27.7	28.2
12H 4H	25.3	25.9	25.8	26.4	26.8	25.3	25.9	25.7	26.3	26.8
6H	26.1	26.6	26.6	27.1	27.6	26.1	26.6	26.6	27.1	27.6
8H	26.5	26.9	27.0	27.4	27.9	26.5	27.0	27.0	27.4	27.9
Variations with the observer position at spacings:										
S = 1.0H	+ 0.5 / - 0.6					+ 0.4 / - 0.5				
1.5H	+ 0.9 / - 0.6					+ 0.7 / - 0.5				
2.0H	+ 0.9 / - 0.5					+ 0.8 / - 0.4				

CIE Pub.117 Corrected 18497 lm Total Lamp Luminous Flux.(8log(F/F0) = 10.1)

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

UTILIZATION FACTORS TABLE

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

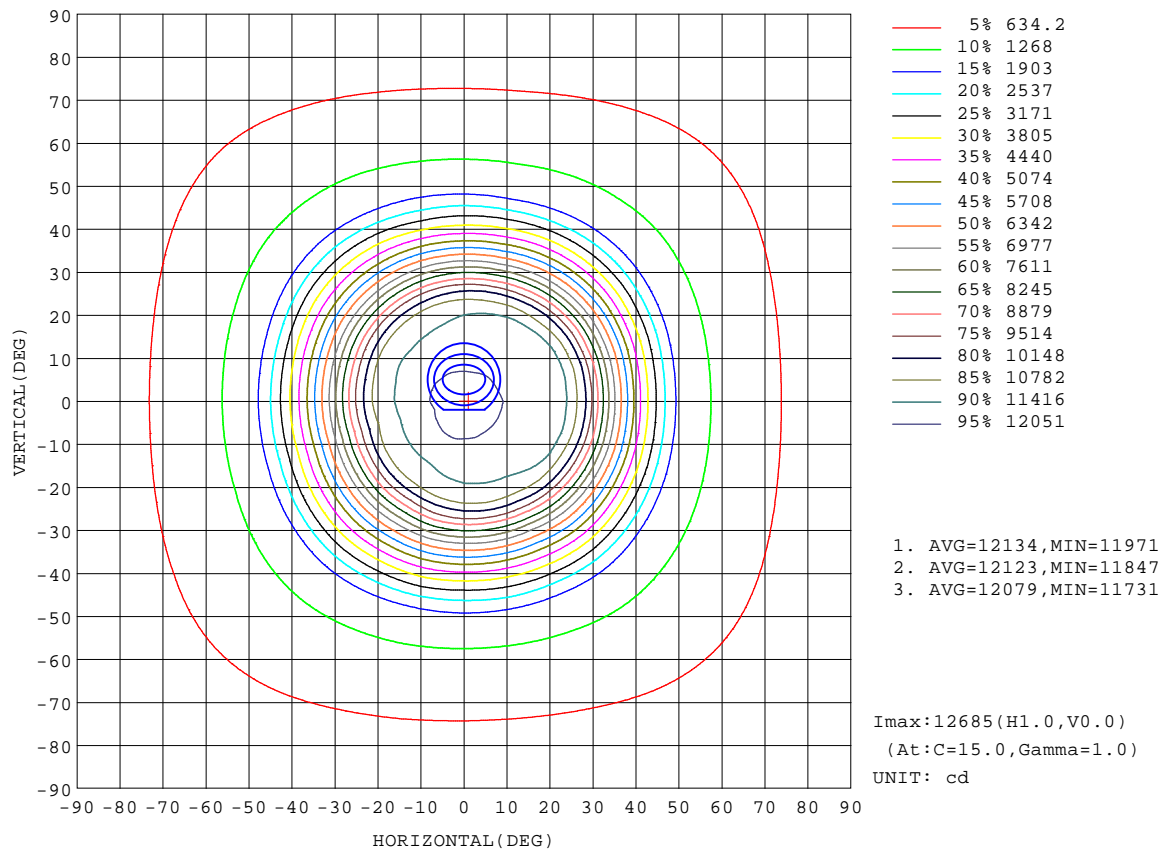
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	73	64	59	73	64	59	71	64	59	54
0.80	82	73	68	81	73	68	79	72	67	62
1.00	88	80	75	87	79	74	85	80	74	68
1.25	94	86	81	92	85	80	90	84	79	74
1.50	97	90	85	96	89	85	93	88	83	77
2.00	102	96	91	100	94	90	97	92	88	82
2.50	105	99	94	103	97	93	99	95	91	84
3.00	107	102	98	105	100	97	101	97	94	86
4.00	110	106	102	107	104	101	103	100	98	89
5.00	112	108	105	109	106	103	105	102	100	91
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: LUC
Test Date: 03 January 2018

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity: 65.0%
Test Distance: 8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

ISOCANDELA DIAGRAM

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

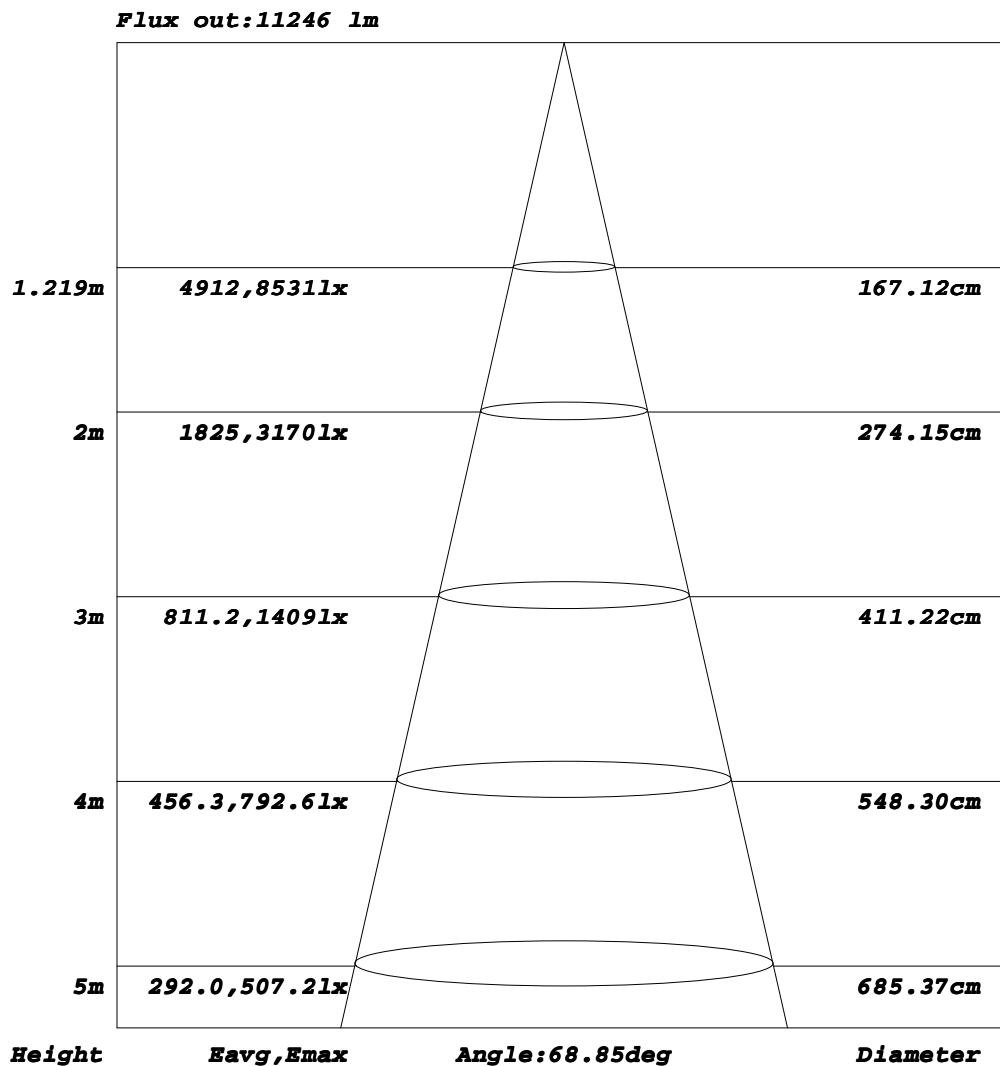


C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

AAI Figure

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:



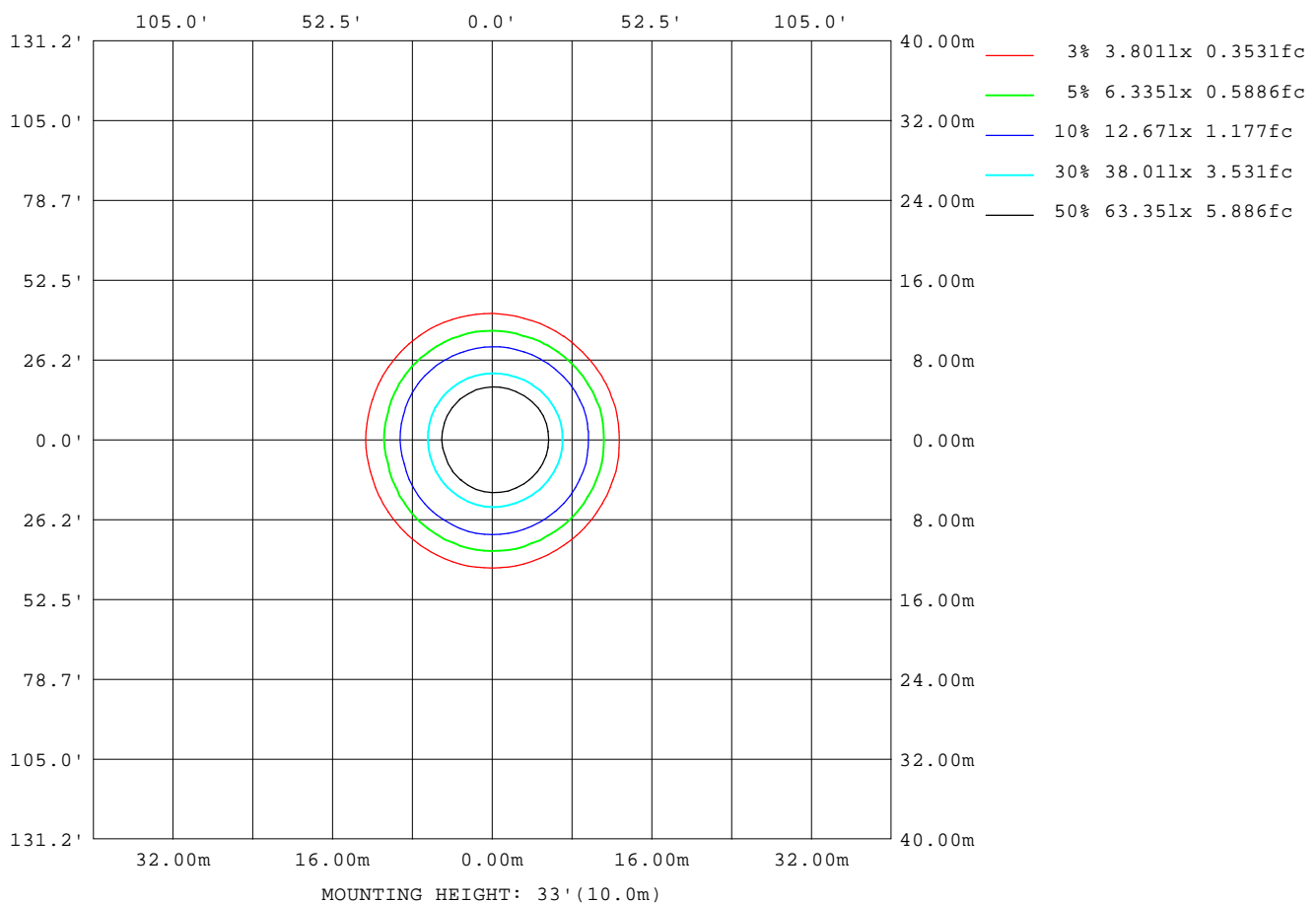
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

ISOLUX DIAGRAM

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:



C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

LED Avg.L Report

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

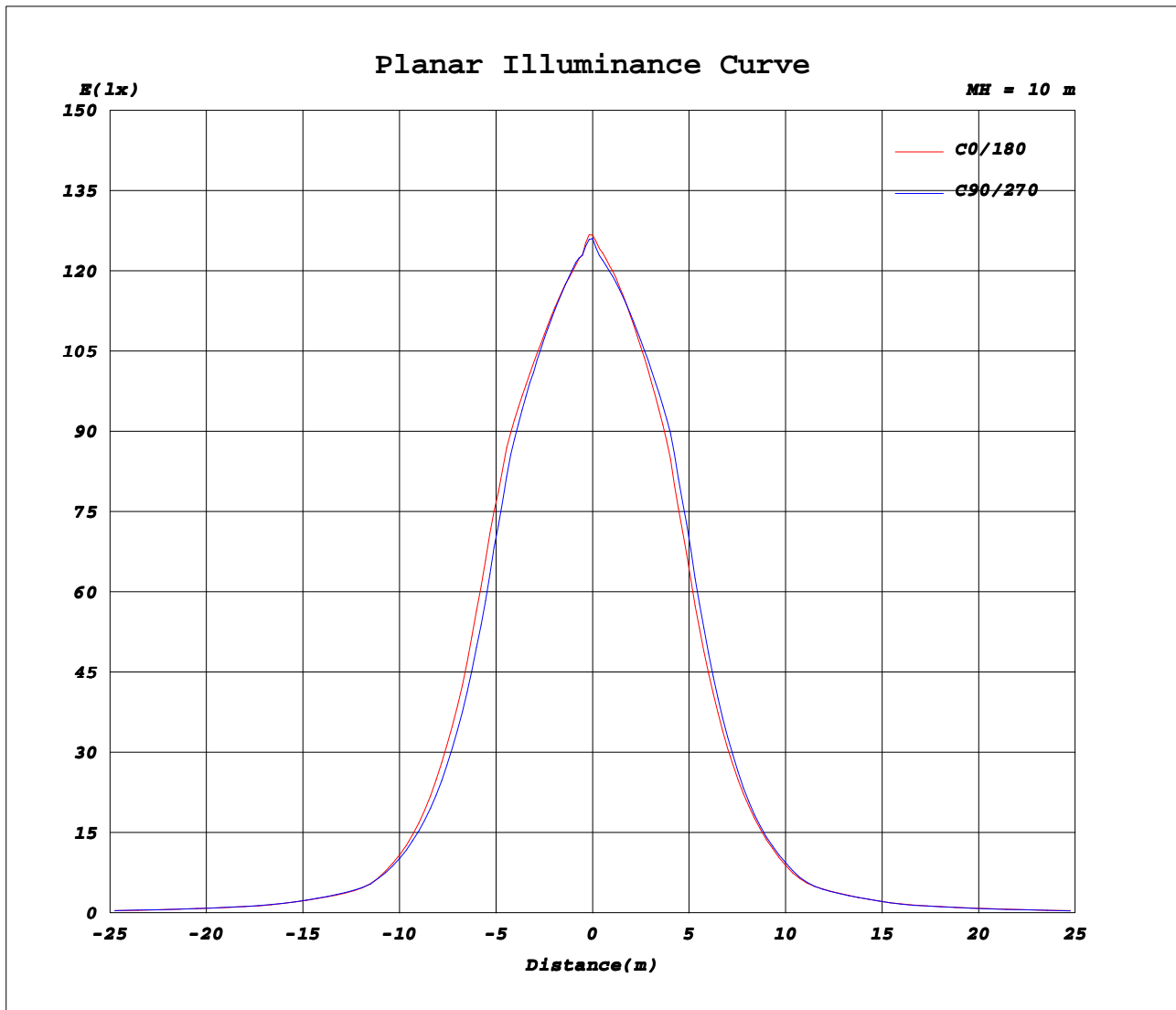
AvgL	cd/m2
L_0~180(65)av	22819
L_0~180(75)av	21995
L_0~180(85)av	21113
L_90~270(65)av	22744
L_90~270(75)av	22049
L_90~270(85)av	21578
L_45(65)av	22723
L_45(75)av	21965
L_45(85)av	21224

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: LUC
Test Date: 03 January 2018

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity: 65.0%
Test Distance: 8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm																		
NAME: HB2200									TYPE:LED					WEIGHT:				
SPEC.:G5 360EA									DIM.:					SERIAL No.:				
MFR.: ICEPIPE									SUR.:					Shielding Angle:				

Table--1

UNIT: #10cd

C(DEG) γ (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1267	1266	1266	1266	1265	1264	1261	1255	1254	1252	1252	1248	1267	1266	1266	1266	1265	1264	1261
5	1225	1223	1223	1226	1224	1226	1229	1232	1227	1224	1220	1217	1224	1223	1221	1217	1218	1215	1214
10	1201	1200	1201	1197	1197	1197	1198	1196	1194	1192	1188	1183	1190	1191	1191	1189	1188	1189	1190
15	1181	1183	1180	1175	1171	1171	1170	1162	1158	1155	1149	1145	1153	1152	1161	1156	1159	1161	1168
20	1165	1163	1163	1151	1142	1139	1133	1121	1107	1105	1100	1086	1099	1103	1115	1118	1122	1130	1142
25	1113	1112	1095	1081	1053	1045	1032	1012	987	973	956	942	959	965	981	994	1003	1018	1033
30	941	932	908	885	853	841	830	815	786	774	755	740	753	761	778	787	796	809	820
35	704	700	682	663	637	629	622	613	591	579	564	550	560	567	578	583	587	593	599
40	487	487	473	464	444	440	436	434	419	411	397	385	393	400	407	408	409	406	408
45	308	309	302	299	290	293	288	287	276	267	253	244	253	253	260	264	262	260	267
50	178	179	177	178	177	179	181	180	175	173	170	168	170	169	171	171	172	171	169
55	144	144	144	144	144	145	145	146	143	140	136	134	137	136	138	138	139	138	136
60	109	109	109	109	109	110	111	111	111	110	109	108	109	109	109	108	107	106	106
65	96.6	96.9	96.8	97.3	97.4	98.5	99.3	99.8	98.9	98.1	96.6	95.1	96.3	95.8	95.8	95.2	94.8	93.9	92.9
70	78.8	79.2	78.9	79.3	79.4	80.5	81.4	81.8	80.7	79.7	77.8	76.2	77.2	76.8	77.0	76.5	76.2	75.4	74.4
75	58.5	58.8	58.5	58.8	58.7	59.6	60.5	60.8	59.3	58.1	56.3	54.5	55.3	55.1	55.4	55.1	55.1	54.3	53.7
80	38.2	38.5	38.2	38.5	38.5	39.1	39.9	39.9	38.6	37.5	36.0	34.6	34.9	34.8	35.3	34.9	34.9	34.3	34.0
85	20.1	20.2	19.7	20.3	20.4	21.2	21.4	21.8	20.3	19.3	17.7	16.6	16.7	16.7	16.8	16.3	16.9	16.1	16.2
90	4.80	4.62	3.97	4.29	5.30	6.47	6.91	7.10	6.39	5.92	5.59	6.04	5.71	5.95	5.84	5.69	6.11	5.75	5.91
95	2.56	2.59	2.51	2.68	3.53	4.36	4.84	4.43	3.53	2.69	2.47	2.53	1.82	1.76	1.67	1.70	2.55	3.28	3.54
100	2.63	2.64	2.58	2.58	2.64	2.78	2.93	2.88	2.72	2.68	2.69	2.74	1.94	1.94	1.86	1.82	1.81	1.86	1.88
105	2.95	2.97	3.08	3.10	3.10	3.24	3.29	3.20	3.16	3.22	3.35	3.26	2.34	2.33	2.30	2.21	2.19	2.23	2.25
110	3.47	3.49	3.57	3.74	3.87	3.98	3.99	3.95	3.94	3.92	3.88	3.88	2.90	2.91	2.94	2.81	2.74	2.80	2.86
115	4.11	4.12	4.20	4.41	4.62	4.77	4.81	4.74	4.74	4.58	4.51	4.55	3.58	3.54	3.52	3.57	3.51	3.56	3.65
120	4.82	4.83	4.86	5.09	5.31	5.54	5.64	5.58	5.50	5.32	5.17	5.26	4.31	4.26	4.19	4.35	4.43	4.54	4.55
125	5.54	5.55	5.55	5.72	6.02	6.34	6.44	6.36	6.24	5.94	5.93	6.02	5.10	5.04	4.94	5.06	5.24	5.46	5.49
130	6.22	6.24	6.24	6.39	6.67	6.92	7.02	6.95	6.91	6.64	6.62	6.73	5.89	5.83	5.71	5.78	5.93	6.09	6.11
135	6.96	6.98	7.01	7.08	7.22	7.43	7.52	7.47	7.38	7.24	7.34	7.41	6.66	6.60	6.54	6.49	6.57	6.68	6.71
140	7.61	7.65	7.79	7.73	7.73	7.86	7.96	7.90	7.85	7.86	8.03	8.07	7.40	7.37	7.30	7.20	7.12	7.25	7.25
145	8.23	8.25	8.30	8.31	8.28	8.35	8.35	8.36	8.37	8.41	8.43	8.52	8.01	7.94	7.93	7.81	7.74	7.75	7.74
150	8.75	8.72	8.72	8.74	8.76	8.79	8.80	8.80	8.82	8.88	8.84	8.90	8.51	8.43	8.36	8.31	8.29	8.28	8.27
155	9.06	9.06	9.03	9.04	9.10	9.13	9.12	9.12	9.13	9.06	9.07	9.14	8.85	8.79	8.72	8.69	8.71	8.70	8.69
160	9.32	9.33	9.33	9.33	9.35	9.39	9.37	9.36	9.31	9.29	9.32	9.33	9.15	9.11	9.07	9.05	9.05	9.08	9.07
165	9.62	9.62	9.60	9.60	9.62	9.63	9.58	9.57	9.55	9.57	9.61	9.62	9.54	9.51	9.47	9.43	9.40	9.40	9.39
170	9.89	9.88	9.86	9.86	9.89	9.90	9.83	9.83	9.83	9.85	9.89	9.91	9.89	9.87	9.84	9.78	9.74	9.71	9.69
175	10.1	10.1	10.1	10.1	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.2	10.1	10.1	10.0	9.99
180	10.3	10.3	10.3	10.3	10.3	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.3	10.3	10.3	10.3	10.3	10.2	10.2

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:219.9V I:0.6333A P:135.7W PF:0.9742 Lamp Flux:18496.7x1 lm		
NAME: HB2200	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

Table--2

UNIT: #10cd

C(DEG) γ (DEG)	285	300	315	330	345														
0	1255	1254	1252	1252	1248														
5	1213	1216	1219	1219	1219														
10	1190	1193	1195	1197	1198														
15	1169	1172	1176	1180	1179														
20	1148	1154	1160	1166	1163														
25	1045	1065	1081	1108	1119														
30	832	861	894	926	941														
35	607	633	661	688	704														
40	416	436	455	477	489														
45	265	274	285	303	312														
50	167	169	170	175	179														
55	135	137	138	141	143														
60	105	105	106	107	109														
65	92.2	92.9	93.6	94.8	95.8														
70	73.8	74.8	75.7	77.1	78.3														
75	53.2	54.4	55.4	57.0	58.3														
80	33.7	34.8	35.6	37.1	38.1														
85	16.5	17.4	18.1	19.2	20.3														
90	5.96	5.42	4.67	4.68	4.68														
95	3.07	2.35	1.68	1.69	1.76														
100	1.84	1.75	1.71	1.78	1.83														
105	2.20	2.10	2.12	2.06	2.03														
110	2.81	2.68	2.62	2.62	2.51														
115	3.56	3.41	3.31	3.13	3.08														
120	4.47	4.31	4.04	3.78	3.77														
125	5.32	5.12	4.75	4.51	4.49														
130	5.96	5.77	5.41	5.22	5.22														
135	6.57	6.36	6.11	6.04	6.01														
140	7.11	6.94	6.87	6.83	6.75														
145	7.67	7.57	7.50	7.50	7.46														
150	8.20	8.16	8.11	8.01	8.01														
155	8.67	8.63	8.49	8.47	8.47														
160	9.04	8.96	8.91	8.88	8.86														
165	9.38	9.32	9.29	9.26	9.24														
170	9.70	9.66	9.62	9.60	9.59														
175	9.98	10.00	9.97	9.93	9.91														
180	10.2	10.2	10.2	10.2	10.2														

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity:65.0%
Test Distance:8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

Photometric Data Table [cd]

G/C	0.0	15.0	30.0	45.0	60.0	75.0	90.0	105.0	120.0	135.0
0.0	12671	12664	12665	12658	12654	12642	12607	12551	12543	12522
3.0	12351	12372	12403	12419	12416	12403	12343	12322	12344	12336
6.0	12181	12168	12176	12188	12181	12196	12222	12223	12191	12184
9.0	12055	12042	12042	12031	12030	12040	12033	12050	12023	11997
12.0	11924	11921	11926	11893	11860	11862	11865	11812	11778	11774
15.0	11808	11832	11800	11745	11705	11706	11696	11623	11577	11547
18.0	11716	11696	11696	11607	11538	11519	11516	11407	11261	11257
21.0	11612	11593	11573	11460	11344	11302	11231	11094	10961	10915
24.0	11405	11398	11278	11146	10879	10825	10696	10501	10254	10096
27.0	10617	10570	10383	10189	9930	9802	9660	9466	9149	9008
30.0	9405	9318	9083	8850	8533	8409	8298	8147	7860	7741
33.0	7947	7898	7675	7467	7160	7087	7000	6894	6660	6552
36.0	6589	6563	6385	6226	5950	5883	5815	5741	5538	5425
39.0	5301	5282	5139	5012	4790	4732	4698	4654	4506	4419
42.0	4098	4093	3996	3935	3806	3773	3739	3737	3590	3523
45.0	3077	3091	3016	2990	2903	2933	2884	2873	2758	2675
48.0	2186	2192	2154	2138	2107	2109	2157	2073	2010	1954
51.0	1677	1683	1673	1683	1680	1703	1716	1716	1681	1664
54.0	1492	1502	1496	1503	1499	1516	1524	1528	1495	1473
57.0	1300	1310	1297	1303	1292	1302	1307	1309	1280	1257
60.0	1089	1091	1089	1092	1094	1102	1111	1113	1107	1101
63.0	1018	1021	1020	1025	1027	1037	1045	1049	1044	1039
66.0	933.0	936.0	934.8	939.1	939.9	950.9	960.3	964.2	954.9	947.0
69.0	826.1	829.7	827.1	831.1	831.7	842.8	852.4	856.9	845.7	836.5
72.0	708.8	712.7	709.2	713.1	713.0	723.3	732.3	736.2	722.9	712.5
75.0	585.1	588.1	584.8	588.0	587.3	596.4	604.8	607.6	592.7	581.0
78.0	459.8	462.6	459.1	461.8	461.7	469.1	476.5	478.8	464.7	453.9
81.0	344.3	346.9	344.5	347.8	347.1	353.9	360.4	361.3	348.2	337.9
84.0	235.9	237.5	231.5	237.6	239.4	245.8	248.4	252.6	238.5	228.6
87.0	132.7	132.5	126.5	130.8	135.5	142.4	145.3	149.2	136.3	125.1
90.0	48.05	46.15	39.66	42.90	52.98	64.75	69.11	71.03	63.89	59.16
93.0	24.43	24.54	24.16	27.24	40.12	53.16	58.38	53.57	39.94	27.54
96.0	26.18	26.63	25.42	25.75	32.65	39.41	43.25	40.90	33.56	26.47
99.0	26.26	26.69	26.12	25.20	25.94	29.37	32.02	31.25	27.17	26.12
102.0	27.04	26.97	27.06	27.34	27.85	28.91	29.47	29.16	28.60	28.42
105.0	29.48	29.65	30.80	30.98	31.01	32.39	32.86	32.00	31.58	32.15
108.0	32.51	32.68	33.52	34.78	35.60	36.56	36.83	36.19	35.98	36.37
111.0	35.86	36.06	36.89	38.64	40.20	41.35	41.53	40.96	41.09	40.57
114.0	39.73	39.92	40.73	42.67	44.82	46.17	46.58	45.79	45.75	44.44
117.0	43.86	43.99	44.50	47.02	49.00	51.09	51.50	51.12	50.35	48.86
120.0	48.15	48.26	48.60	50.92	53.13	55.41	56.41	55.76	54.97	53.24
123.0	52.58	52.64	52.40	54.58	57.20	60.34	61.10	60.49	59.41	56.89
126.0	56.82	56.90	56.99	58.58	62.08	64.89	65.95	65.05	64.55	61.27
129.0	60.92	60.93	61.07	62.63	65.53	68.28	69.32	68.44	67.76	64.96
132.0	65.12	65.40	65.58	66.85	69.10	71.15	72.15	71.49	71.23	68.81
135.0	69.60	69.83	70.13	70.78	72.19	74.28	75.19	74.67	73.82	72.42
138.0	74.06	74.04	75.02	74.84	75.17	77.15	77.93	77.21	76.52	76.53
141.0	77.35	77.77	78.95	78.48	78.35	79.63	80.01	79.67	79.51	79.77
144.0	80.93	81.41	82.13	82.18	81.62	82.51	82.58	82.70	82.86	82.93
147.0	84.50	84.54	84.95	85.01	85.00	85.40	85.39	85.49	85.75	86.22
150.0	87.45	87.17	87.15	87.39	87.59	87.92	88.00	88.01	88.21	88.81
153.0	89.51	89.47	89.22	89.39	90.02	89.98	90.00	89.91	90.25	90.12
156.0	91.03	91.15	90.99	90.90	91.51	91.94	91.80	91.75	91.82	90.94
159.0	92.76	92.77	92.78	92.79	93.00	93.43	93.36	93.12	92.84	92.34
162.0	94.31	94.49	94.30	94.40	94.47	94.70	94.44	94.30	93.96	94.04
165.0	96.20	96.22	96.02	96.04	96.18	96.31	95.79	95.74	95.54	95.74
168.0	97.88	97.85	97.57	97.57	97.84	98.07	97.38	97.29	97.29	97.31
171.0	99.36	99.22	99.00	99.17	99.47	99.26	98.64	98.61	98.96	99.11
174.0	100.6	100.6	100.5	100.9	101.0	100.6	100.1	100.2	100.3	100.6
177.0	101.9	101.9	102.5	102.5	101.7	101.3	101.3	101.3	101.3	101.6
180.0	102.9	102.9	102.9	103.2	102.6	102.2	101.7	101.7	102.0	102.4
G/C	150.0	165.0	180.0	195.0	210.0	225.0	240.0	255.0	270.0	285.0
0.0	12517	12483	12671	12664	12665	12658	12654	12642	12607	12551
3.0	12329	12299	12390	12382	12373	12320	12285	12280	12252	12234
6.0	12172	12115	12191	12190	12168	12126	12126	12099	12094	12104
9.0	11943	11905	11979	11977	11974	11953	11931	11937	11946	11939
12.0	11735	11691	11745	11782	11795	11776	11753	11789	11802	11812
15.0	11493	11451	11527	11516	11606	11564	11594	11612	11679	11685
18.0	11236	11121	11239	11277	11367	11355	11388	11446	11536	11579
21.0	10836	10705	10840	10901	11028	11076	11110	11204	11342	11421
24.0	9906	9740	9915	9981	10157	10287	10382	10528	10648	10752
27.0	8763	8588	8781	8848	9034	9165	9328	9460	9584	9715
30.0	7548	7396	7530	7615	7782	7866	7959	8088	8201	8324

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: LUC
Test Date: 03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity: 65.0%
Test Distance: 8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105

Photometric Data Table [cd]

33.0	6377	6244	6353	6429	6561	6611	6664	6754	6817	6904
36.0	5271	5141	5243	5316	5418	5448	5477	5529	5582	5671
39.0	4275	4153	4245	4302	4385	4395	4407	4400	4430	4508
42.0	3394	3275	3360	3401	3477	3497	3486	3433	3476	3532
45.0	2531	2444	2531	2527	2601	2643	2625	2601	2665	2646
48.0	1876	1840	1876	1876	1911	1929	1920	1932	1926	1885
51.0	1635	1620	1640	1632	1649	1652	1657	1643	1625	1602
54.0	1437	1411	1440	1437	1455	1461	1469	1452	1438	1421
57.0	1224	1193	1216	1216	1229	1228	1236	1224	1211	1202
60.0	1090	1082	1092	1088	1086	1079	1074	1065	1056	1049
63.0	1027	1016	1028	1023	1021	1015	1010	1001	991.4	984.9
66.0	930.9	916.2	927.3	922.5	923.5	917.6	913.0	904.1	894.9	887.2
69.0	818.6	802.9	813.2	809.3	810.6	805.2	802.4	793.4	783.6	777.5
72.0	693.9	676.7	686.3	683.3	685.5	681.0	679.5	671.4	662.6	657.2
75.0	562.6	545.4	553.4	551.3	554.5	551.1	550.9	543.5	536.5	532.2
78.0	437.8	422.1	428.1	427.0	431.3	427.7	427.2	421.0	415.4	411.8
81.0	321.4	308.3	311.5	309.9	313.2	309.6	310.5	305.4	302.7	301.0
84.0	211.8	200.6	202.4	202.7	203.1	197.8	202.5	195.1	196.1	198.6
87.0	111.0	101.3	101.5	102.6	102.7	99.56	105.6	99.05	99.06	102.5
90.0	55.94	60.38	57.10	59.49	58.35	56.86	61.08	57.49	59.08	59.61
93.0	24.95	29.21	23.44	23.90	22.90	21.18	32.11	42.28	47.37	40.39
96.0	25.08	25.93	18.42	17.86	16.82	16.62	21.41	28.19	29.49	24.57
99.0	26.36	27.18	19.16	19.06	18.08	17.62	17.65	18.26	18.55	18.00
102.0	28.70	29.06	20.63	20.32	19.83	19.47	19.44	19.89	19.91	19.67
105.0	33.49	32.55	23.43	23.31	23.05	22.13	21.89	22.33	22.45	21.97
108.0	36.88	36.50	26.72	26.73	27.33	25.52	24.94	25.38	25.89	25.26
111.0	39.99	39.93	30.26	30.34	30.45	29.55	28.79	29.41	30.14	29.53
114.0	43.77	44.04	34.33	34.00	33.98	34.16	33.45	33.94	34.84	33.96
117.0	47.58	48.25	38.69	38.16	37.80	38.70	38.56	39.26	39.93	39.03
120.0	51.68	52.63	43.13	42.60	41.94	43.50	44.25	45.41	45.54	44.71
123.0	55.99	57.15	47.82	47.32	46.24	47.85	49.29	51.41	51.59	50.09
126.0	60.78	61.62	52.54	52.03	51.05	51.96	53.80	56.01	56.23	54.62
129.0	64.75	65.91	57.31	56.76	55.60	56.31	58.08	59.64	59.91	58.35
132.0	69.09	70.16	62.05	61.42	60.44	60.50	61.89	63.21	63.47	62.00
135.0	73.37	74.12	66.60	66.03	65.41	64.90	65.73	66.81	67.05	65.73
138.0	77.39	78.07	71.13	70.75	70.02	69.07	68.84	70.38	70.47	68.92
141.0	81.35	81.83	75.49	75.15	74.43	73.48	72.42	73.11	73.46	71.94
144.0	83.84	84.53	79.03	78.62	78.16	76.79	76.15	76.41	76.29	75.51
147.0	86.06	86.77	82.31	81.45	81.30	79.91	79.79	79.83	79.57	78.93
150.0	88.37	88.95	85.13	84.29	83.62	83.10	82.89	82.79	82.66	81.99
153.0	90.03	90.62	87.42	86.71	85.81	85.59	85.34	85.32	85.30	84.81
156.0	91.17	91.73	89.12	88.48	87.90	87.61	87.72	87.84	87.75	87.52
159.0	92.63	92.90	90.88	90.39	89.96	89.71	89.87	90.08	90.12	89.79
162.0	94.33	94.35	92.95	92.53	92.34	92.05	91.84	92.04	91.97	91.59
165.0	96.10	96.20	95.43	95.05	94.75	94.27	94.01	93.96	93.92	93.78
168.0	97.92	98.06	97.60	97.39	97.09	96.48	96.02	95.91	95.80	95.85
171.0	99.38	99.55	99.42	99.28	99.06	98.53	98.03	97.75	97.50	97.41
174.0	100.8	100.7	101.1	100.9	101.0	100.6	100.2	99.74	99.26	99.28
177.0	101.8	101.5	102.5	102.3	102.6	102.3	101.8	101.4	101.0	100.9
180.0	101.9	101.8	103.1	102.8	103.0	103.2	102.7	102.1	101.9	101.6
G/C	300.0	315.0	330.0	345.0						
0.0	12543	12522	12517	12483						
3.0	12281	12291	12305	12325						
6.0	12118	12141	12140	12133						
9.0	11980	12000	12014	12014						
12.0	11845	11866	11901	11887						
15.0	11722	11762	11799	11786						
18.0	11618	11670	11705	11690						
21.0	11482	11546	11633	11605						
24.0	10969	11121	11379	11445						
27.0	9977	10292	10561	10655						
30.0	8611	8941	9264	9413						
33.0	7175	7473	7792	7960						
36.0	5933	6189	6444	6604						
39.0	4733	4931	5169	5324						
42.0	3680	3835	4010	4124						
45.0	2743	2854	3025	3116						
48.0	1959	2028	2101	2193						
51.0	1610	1619	1650	1674						
54.0	1435	1441	1469	1485						
57.0	1221	1235	1273	1292						
60.0	1054	1059	1070	1085						
63.0	988.7	993.4	1001	1007						
66.0	894.5	902.1	915.1	925.3						

C Range: 0 - 360DEG

C Interval: 15.0DEG

Test Speed: HIGH

Temperature: 25.3DEG

Operators: LUC

Test Date: 03 January 2018

γ Range: 0 - 180DEG

γ Interval: 1.0DEG

Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.351

Humidity: 65.0%

Test Distance: 8.000m [K=1.0000]

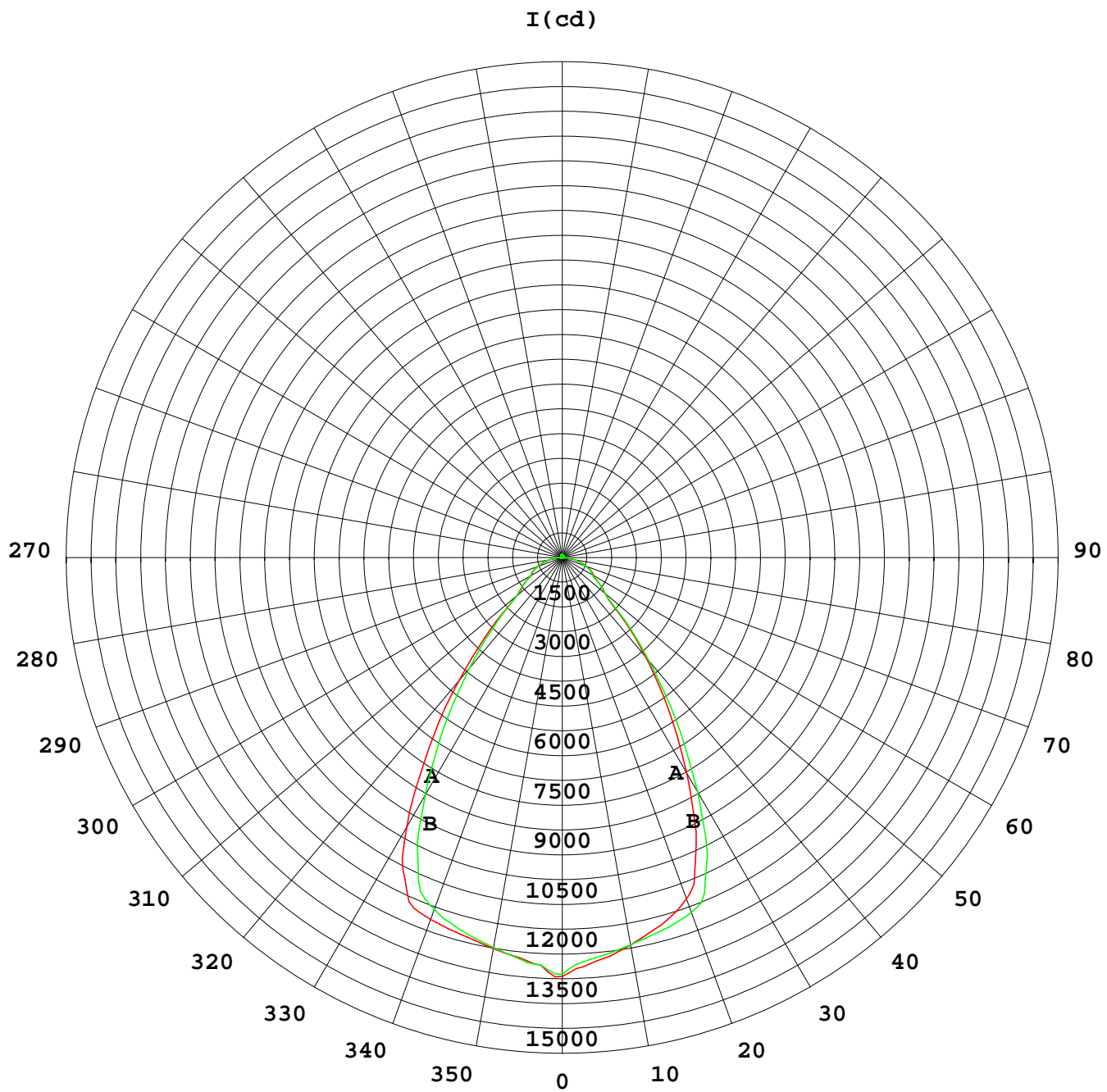
Remarks: HB2200-130G-A100-57K-90D-REF_181105

Photometric Data Table [cd]

69.0	786.2	794.6	808.7	820.2
72.0	667.4	677.2	692.8	705.0
75.0	543.9	553.9	570.3	582.6
78.0	423.0	431.8	447.3	459.0
81.0	312.0	319.4	333.7	343.6
84.0	208.0	214.9	226.1	237.4
87.0	110.7	116.3	126.7	135.5
90.0	54.21	46.72	46.82	46.82
93.0	29.14	18.38	16.64	17.86
96.0	18.69	16.35	17.18	17.94
99.0	16.96	16.77	17.75	18.34
102.0	18.71	18.19	18.14	18.31
105.0	21.04	21.24	20.60	20.33
108.0	23.96	24.03	24.49	23.08
111.0	28.21	27.42	26.97	26.05
114.0	32.64	31.71	30.11	29.48
117.0	37.54	35.83	33.98	33.44
120.0	43.11	40.43	37.83	37.65
123.0	47.89	44.64	41.95	41.96
126.0	52.81	48.90	46.75	46.35
129.0	56.34	52.74	50.91	50.78
132.0	60.28	56.91	55.28	55.22
135.0	63.60	61.09	60.37	60.15
138.0	67.00	65.51	65.13	65.00
141.0	70.60	70.04	69.94	68.96
144.0	74.55	73.80	73.96	73.19
147.0	78.16	77.64	77.26	76.92
150.0	81.59	81.08	80.11	80.09
153.0	84.66	83.74	82.94	82.98
156.0	87.13	85.71	85.53	85.49
159.0	88.95	88.26	87.94	87.82
162.0	91.02	90.65	90.34	90.12
165.0	93.24	92.86	92.62	92.43
168.0	95.24	94.82	94.70	94.57
171.0	97.26	96.82	96.59	96.51
174.0	99.25	98.89	98.63	98.44
177.0	101.2	101.1	100.5	100.4
180.0	102.0	102.3	102.0	101.7

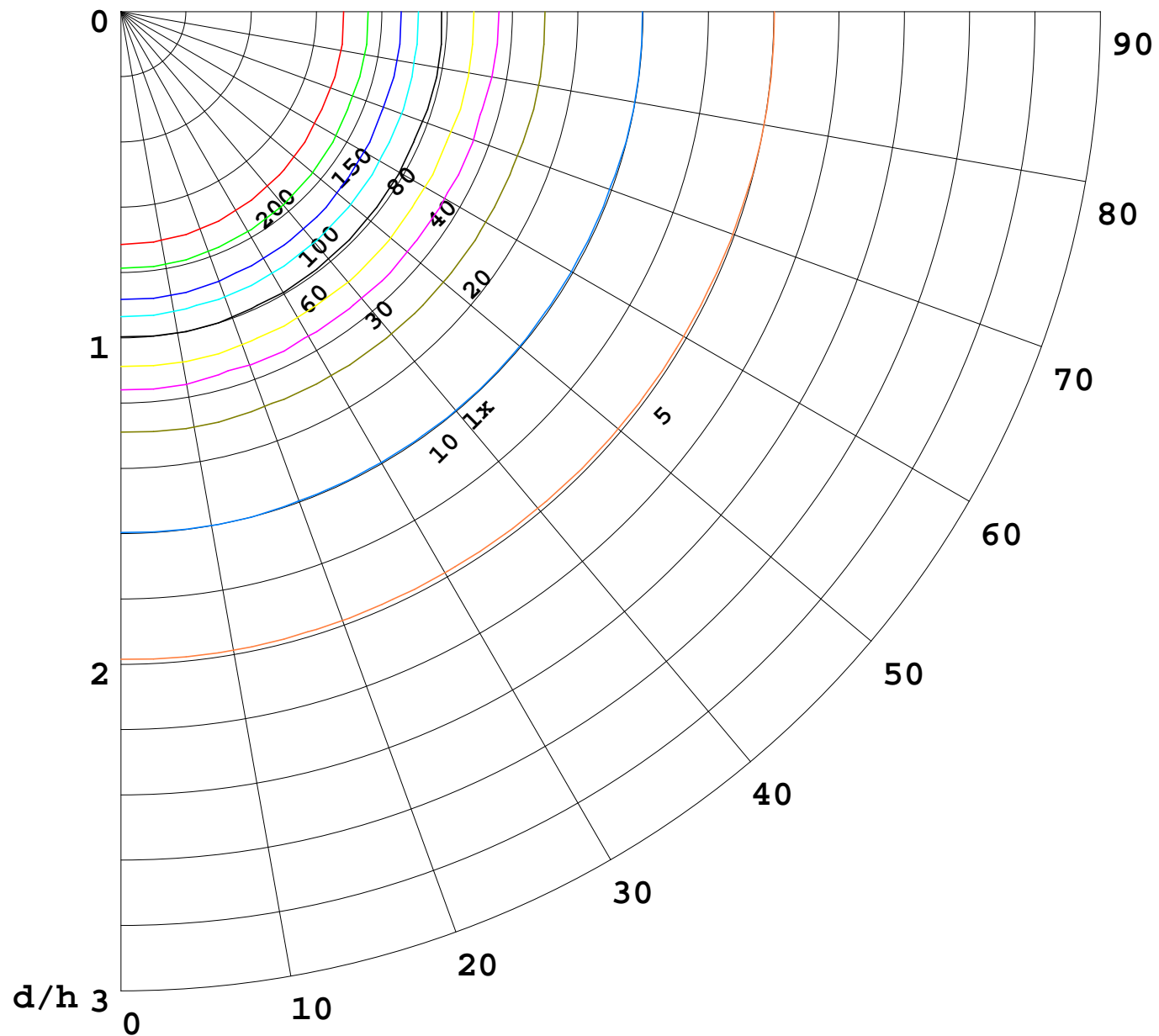
C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: LUC
Test Date: 03 January 2018

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity: 65.0%
Test Distance: 8.000m [K=1.0000]
Remarks: HB2200-130G-A100-57K-90D-REF_181105



1000 lm

$K = 1$



F = 1000 lm
 K = 0.7
 H_{cc} = 0.8 m
 H_{fc} = 0.0 m
 E_{ave} = 100 lx

	P_{cc}	P_w	P_{fc}
—————	70	50	30
—————	50	30	20

