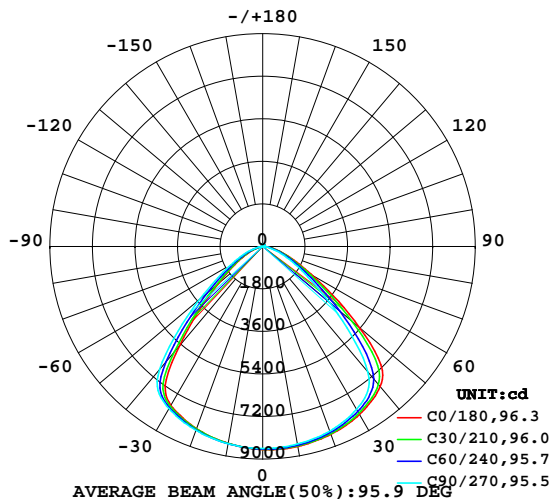


LUMINAIRE PHOTOMETRIC TEST REPORT

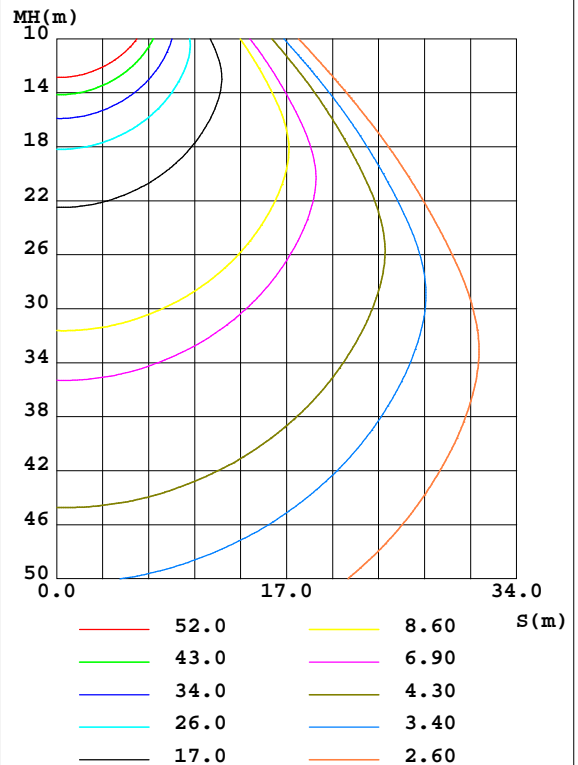
Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 152.59 lm/W			
HB2200-130G-A100-G5 360EA-90D_180911		Imax(cd)	8615	S/MH(C0/180)	1.24
NOMINAL POWER(W)	130	LOR(%)	100.0	S/MH(C90/270)	1.35
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	19952	η UP,DN(C0-180)	0.8,49.9
NOMINAL FLUX(lm)	19951.6	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.7,48.5
LAMPS INSIDE	1	η up(%)	1.6	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220	η down(%)	98.4	CIBSE SHR MAX	1.35

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-G5 360EA-90D_180911

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	8591	8549	8491	8400	8456	8459	8472	8494	0- 10	813.1	813.1	4.08,4.08
20	8458	8400	8313	8177	8201	8229	8276	8339	10- 20	2378	3191	16,16
30	8203	8106	7955	7762	7771	7838	7930	8062	20- 30	3761	6952	34.8,34.8
40	7737	7499	6924	5885	5469	6053	6793	7529	30- 40	4707	11659	58.4,58.4
50	5370	4643	3695	2660	2450	2787	3495	4638	40- 50	4045	15704	78.7,78.7
60	2380	2099	1704	1188	1099	1251	1573	2012	50- 60	2276	17980	90.1,90.1
70	1056	955.9	765.4	486.7	393.9	496.0	671.2	883.3	60- 70	1126	19105	95.8,95.8
80	358.6	280.2	175.1	97.00	70.39	90.94	141.2	251.6	70- 80	439.4	19545	98,98
90	30.68	25.13	33.37	29.16	22.38	21.74	24.79	21.36	80- 90	91.17	19636	98.4,98.4
100	25.84	26.41	29.03	32.48	27.26	24.84	21.95	18.71	90-100	25.31	19661	98.5,98.5
110	35.38	37.83	40.36	43.93	38.70	36.12	33.24	28.86	100-110	32.84	19694	98.7,98.7
120	46.78	48.41	52.48	55.48	50.30	47.91	45.74	40.26	110-120	42.15	19736	98.9,98.9
130	58.37	59.51	63.05	65.59	60.91	58.25	56.29	51.12	120-130	48.17	19784	99.2,99.2
140	68.17	69.13	71.32	73.87	70.30	67.41	64.89	60.96	130-140	49.21	19834	99.4,99.4
150	76.47	77.02	78.93	81.47	79.08	76.19	73.50	69.60	140-150	45.28	19879	99.6,99.6
160	84.82	86.16	88.20	91.20	90.08	87.58	84.36	79.98	150-160	37.37	19916	99.8,99.8
170	95.53	96.60	97.85	99.79	99.88	98.35	95.57	92.04	160-170	25.88	19942	100,100
180	102.8	103.1	102.1	101.4	102.8	103.1	102.2	101.3	170-180	9.470	19952	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 13894 lm

%lum = 69.6%

%lamp = 69.6%

Conical surface Flux(120deg): 17980 lm

%lum = 90.1%

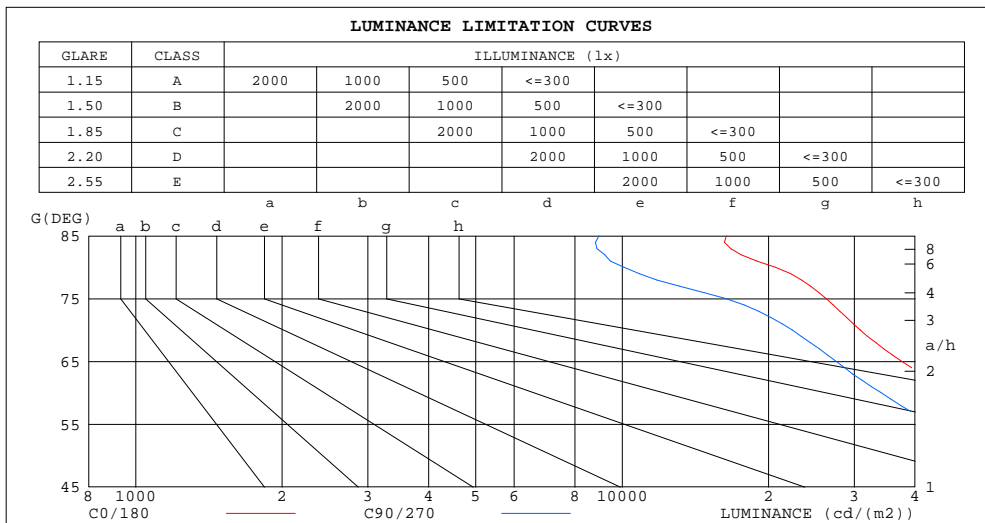
%lamp = 90.1%

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-G5 360EA-90D_180911

LUMINANCE LIMITATION CURVES

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	16374	8959
80	20651	10081
75	26267	16361
70	30865	22379
65	37576	27552
60	47592	34076
55	63775	43279
50	83540	57486
45	100010	75133

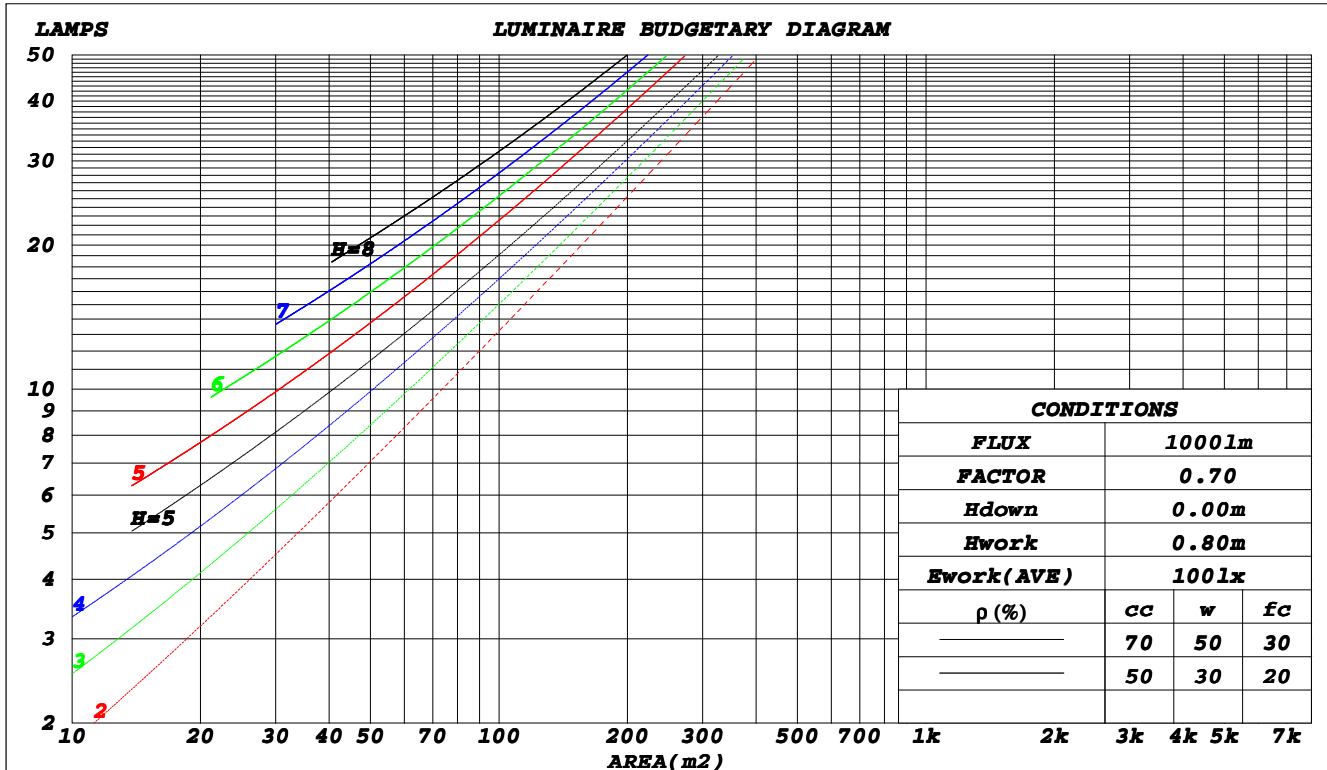
C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

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-G5 360EA-90D_180911

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	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	1.01	1.01	1.01	.98
1.0	1.07	1.03	1.00	1.04	1.01	.98	.90	.97	.95	.96	.94	.92	.92	.90	.89	.87
2.0	.95	.90	.85	.93	.88	.84	.90	.85	.82	.86	.83	.80	.83	.80	.78	.76
3.0	.86	.79	.73	.84	.77	.72	.81	.75	.71	.78	.73	.70	.75	.71	.68	.66
4.0	.77	.69	.63	.76	.68	.63	.73	.67	.62	.71	.65	.61	.68	.64	.60	.58
5.0	.70	.62	.56	.68	.61	.55	.66	.60	.55	.64	.58	.54	.62	.57	.53	.51
6.0	.63	.55	.49	.62	.55	.49	.60	.54	.49	.59	.53	.48	.57	.52	.48	.46
7.0	.58	.50	.44	.57	.49	.44	.55	.48	.43	.54	.48	.43	.52	.47	.43	.41
8.0	.53	.45	.40	.52	.45	.39	.51	.44	.39	.49	.43	.39	.48	.43	.39	.37
9.0	.49	.41	.36	.48	.41	.36	.47	.40	.35	.46	.40	.35	.45	.39	.35	.33
10.0	.45	.38	.33	.44	.37	.33	.43	.37	.32	.42	.36	.32	.41	.36	.32	.30



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-G5 360EA-90D_180911

WEC AND CCEC

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	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	.248	.141	.045	.240	.137	.044	.226	.130	.041	.214	.123	.040	.202	.117	.038		
2.0	.240	.132	.040	.234	.129	.040	.222	.123	.038	.211	.118	.037	.200	.113	.036		
3.0	.228	.121	.036	.222	.119	.036	.212	.115	.035	.202	.111	.034	.193	.107	.033		
4.0	.215	.112	.033	.210	.110	.033	.201	.106	.032	.192	.103	.031	.184	.100	.030		
5.0	.203	.103	.030	.198	.102	.030	.190	.099	.029	.182	.096	.029	.175	.093	.028		
6.0	.191	.096	.027	.187	.094	.027	.179	.092	.027	.172	.090	.026	.166	.087	.026		
7.0	.180	.089	.025	.176	.088	.025	.170	.086	.025	.163	.084	.024	.157	.082	.024		
8.0	.170	.083	.023	.167	.082	.023	.161	.080	.023	.155	.078	.023	.150	.077	.022		
9.0	.161	.078	.022	.158	.077	.022	.152	.075	.021	.147	.074	.021	.142	.072	.021		
10.0	.152	.073	.020	.150	.072	.020	.145	.071	.020	.140	.070	.020	.136	.068	.020		

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	.203	.203	.203	.173	.173	.173	.118	.118	.118	.068	.068	.068	.022	.022	.022	
1.0	.188	.169	.151	.161	.145	.130	.110	.100	.090	.063	.058	.052	.020	.019	.017	
2.0	.178	.144	.116	.152	.124	.101	.104	.086	.070	.060	.050	.041	.019	.016	.013	
3.0	.169	.126	.093	.145	.109	.080	.099	.076	.056	.057	.044	.033	.018	.014	.011	
4.0	.161	.113	.076	.138	.097	.066	.095	.068	.046	.055	.040	.027	.018	.013	.009	
5.0	.154	.102	.064	.132	.088	.055	.091	.062	.039	.053	.036	.023	.017	.012	.008	
6.0	.147	.093	.055	.126	.081	.048	.087	.057	.034	.051	.033	.020	.016	.011	.007	
7.0	.141	.086	.048	.121	.075	.042	.084	.052	.030	.049	.031	.018	.016	.010	.006	
8.0	.135	.081	.043	.116	.070	.038	.080	.049	.027	.047	.029	.016	.015	.009	.005	
9.0	.129	.076	.039	.112	.066	.034	.077	.046	.024	.045	.027	.015	.015	.009	.005	
10.0	.124	.071	.036	.107	.062	.032	.074	.044	.022	.043	.026	.013	.014	.008	.004	

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-G5 360EA-90D_180911

UGR(Unified Glare Rating) Table

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	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	27.4	28.7	27.6	28.9	29.1	26.2	27.5	26.4	27.7	27.9
3H	27.8	29.0	28.1	29.3	29.5	26.5	27.7	26.8	28.0	28.2
4H	28.0	29.1	28.3	29.4	29.7	26.6	27.7	26.9	28.0	28.3
6H	28.1	29.1	28.4	29.4	29.7	26.6	27.6	26.9	27.9	28.2
8H	28.1	29.1	28.4	29.4	29.7	26.6	27.6	26.9	27.9	28.2
12H	28.0	29.0	28.4	29.3	29.7	26.5	27.5	26.9	27.8	28.1
4H 2H	27.4	28.6	27.8	28.9	29.1	26.4	27.5	26.7	27.8	28.1
3H	28.0	29.0	28.4	29.3	29.7	26.9	27.9	27.3	28.2	28.5
4H	28.3	29.2	28.7	29.5	29.9	27.1	28.0	27.5	28.3	28.7
6H	28.5	29.2	28.9	29.6	30.0	27.1	27.9	27.5	28.3	28.6
8H	28.5	29.2	28.9	29.6	30.0	27.1	27.8	27.5	28.2	28.6
12H	28.5	29.2	29.0	29.6	30.0	27.1	27.7	27.5	28.1	28.6
8H 4H	28.3	29.0	28.7	29.4	29.8	27.1	27.9	27.6	28.2	28.7
6H	28.5	29.1	29.0	29.6	30.0	27.2	27.8	27.7	28.2	28.7
8H	28.6	29.1	29.1	29.6	30.0	27.2	27.8	27.7	28.2	28.7
12H	28.6	29.1	29.1	29.6	30.1	27.2	27.7	27.7	28.1	28.7
12H 4H	28.3	28.9	28.7	29.3	29.8	27.1	27.8	27.6	28.2	28.6
6H	28.5	29.0	29.0	29.5	30.0	27.2	27.7	27.7	28.2	28.7
8H	28.6	29.0	29.1	29.5	30.0	27.2	27.7	27.7	28.2	28.7
Variations with the observer position at spacings:										
S = 1.0H	+ 0.8 / - 0.7					+ 1.0 / - 1.2				
1.5H	+ 0.7 / - 0.6					+ 0.4 / - 0.9				
2.0H	+ 1.9 / - 1.7					+ 1.8 / - 1.7				

CIE Pub.117 Corrected 19952 lm Total Lamp Luminous Flux.(8log(F/F0) = 10.4)

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-G5 360EA-90D_180911

UTILIZATION FACTORS TABLE

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

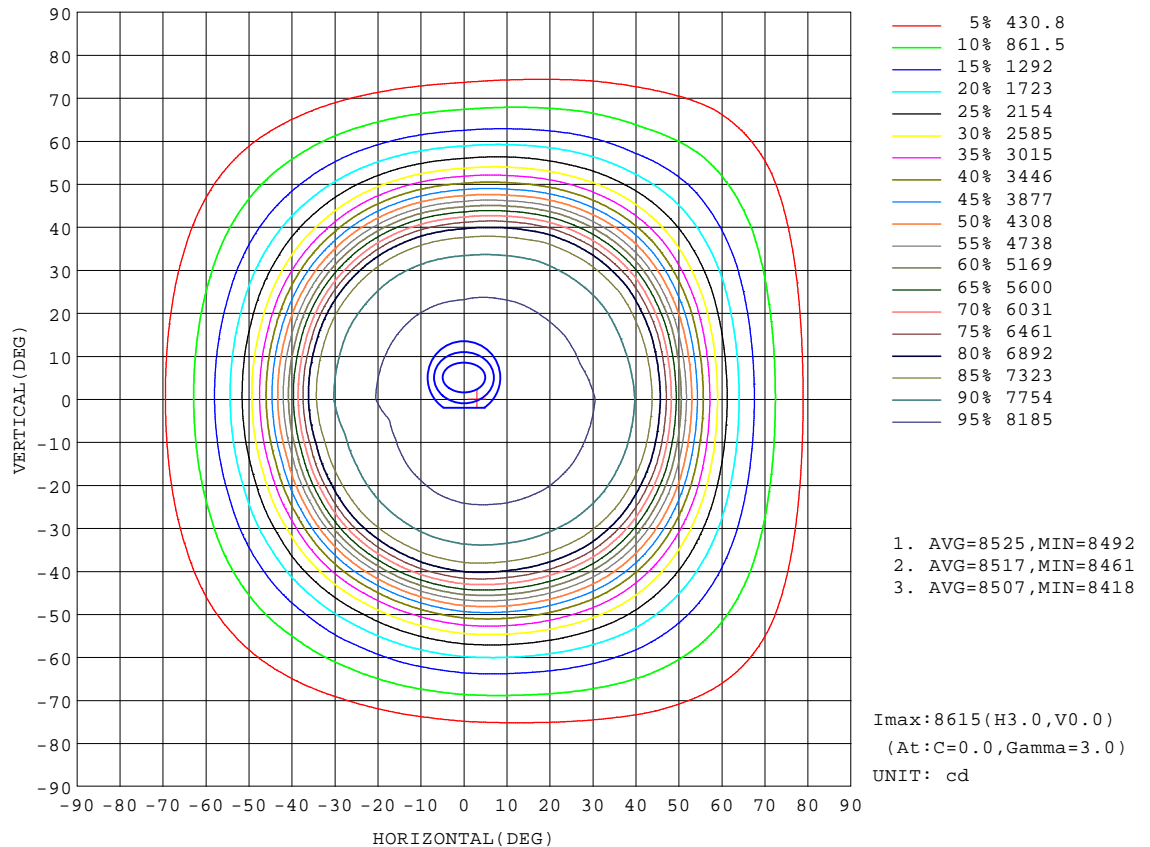
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	65	55	49	65	55	49	63	54	49	43
0.80	75	66	59	74	65	59	73	64	59	53
1.00	84	74	68	82	74	68	80	74	67	61
1.25	90	82	76	89	81	75	86	79	74	68
1.50	95	87	81	93	86	80	90	84	79	73
2.00	100	93	88	98	92	87	95	90	86	79
2.50	103	97	92	101	96	91	97	93	89	81
3.00	106	100	96	104	99	95	100	96	92	84
4.00	109	104	101	107	103	99	102	99	96	88
5.00	111	107	104	108	105	102	104	101	99	90
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-G5 360EA-90D_180911

ISOCANDELA DIAGRAM

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:



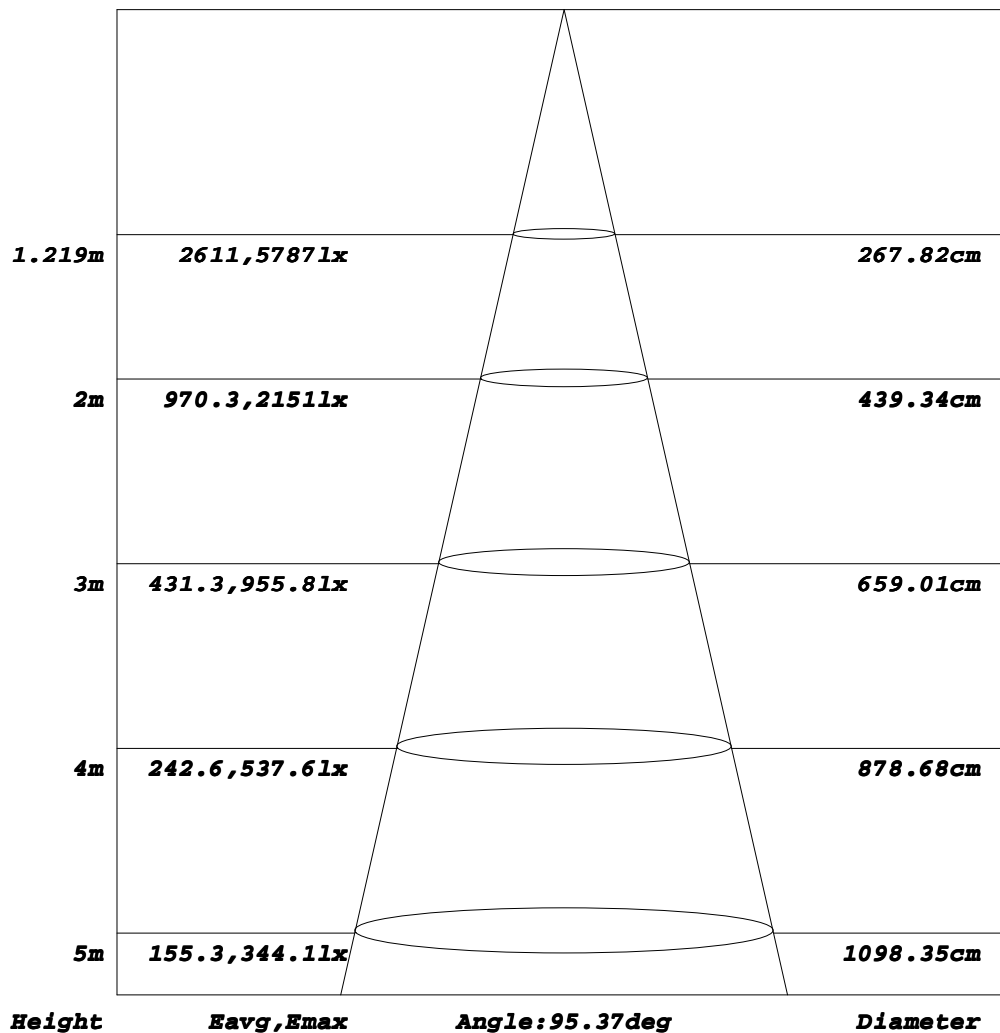
C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:LUC
Test Date:03 January 2018

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-G5 360EA-90D_180911

AAI Figure

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

Flux out:15040 lm



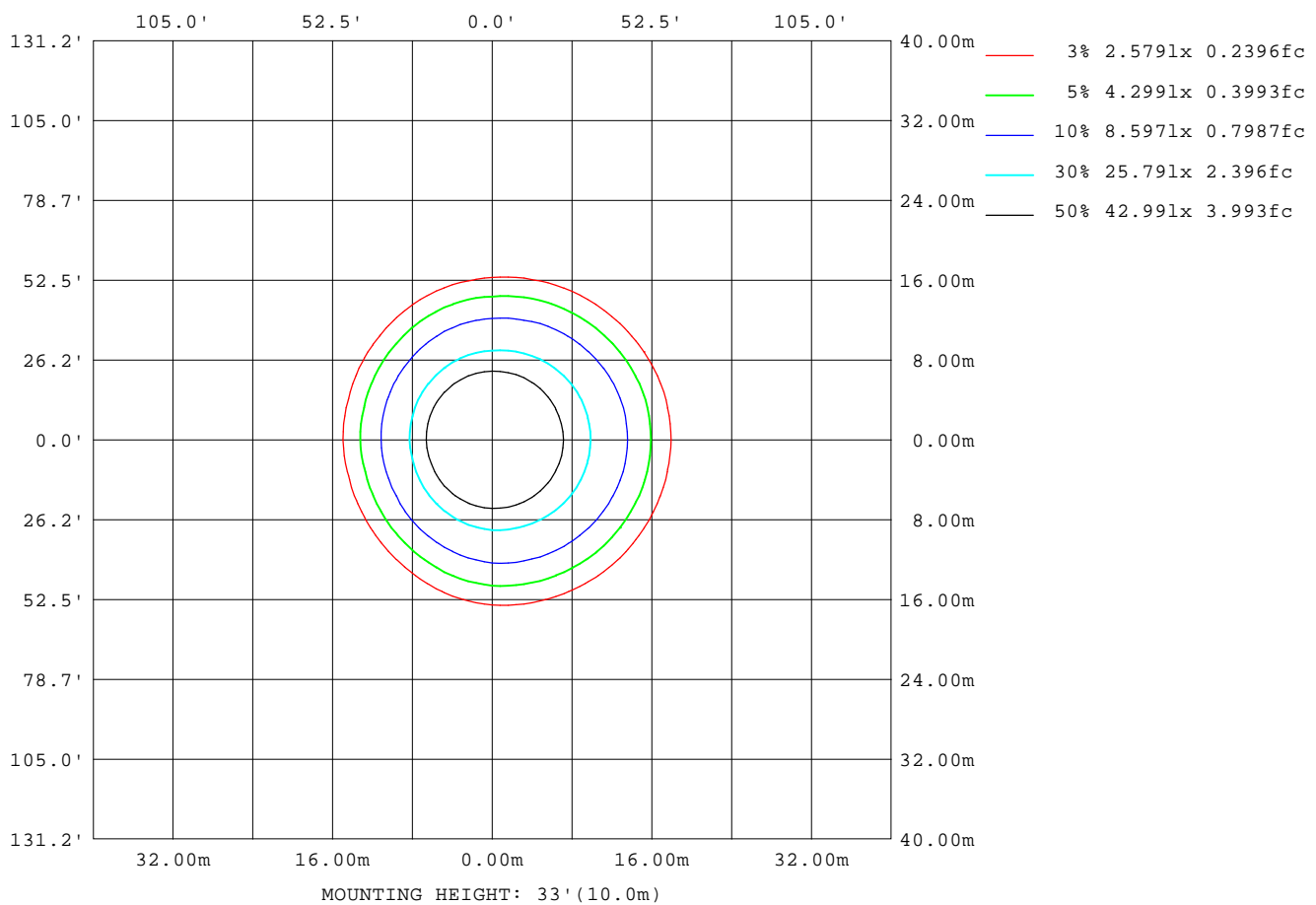
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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-G5 360EA-90D_180911

ISOLUX DIAGRAM

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	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-G5 360EA-90D_180911

LED Avg.L Report

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

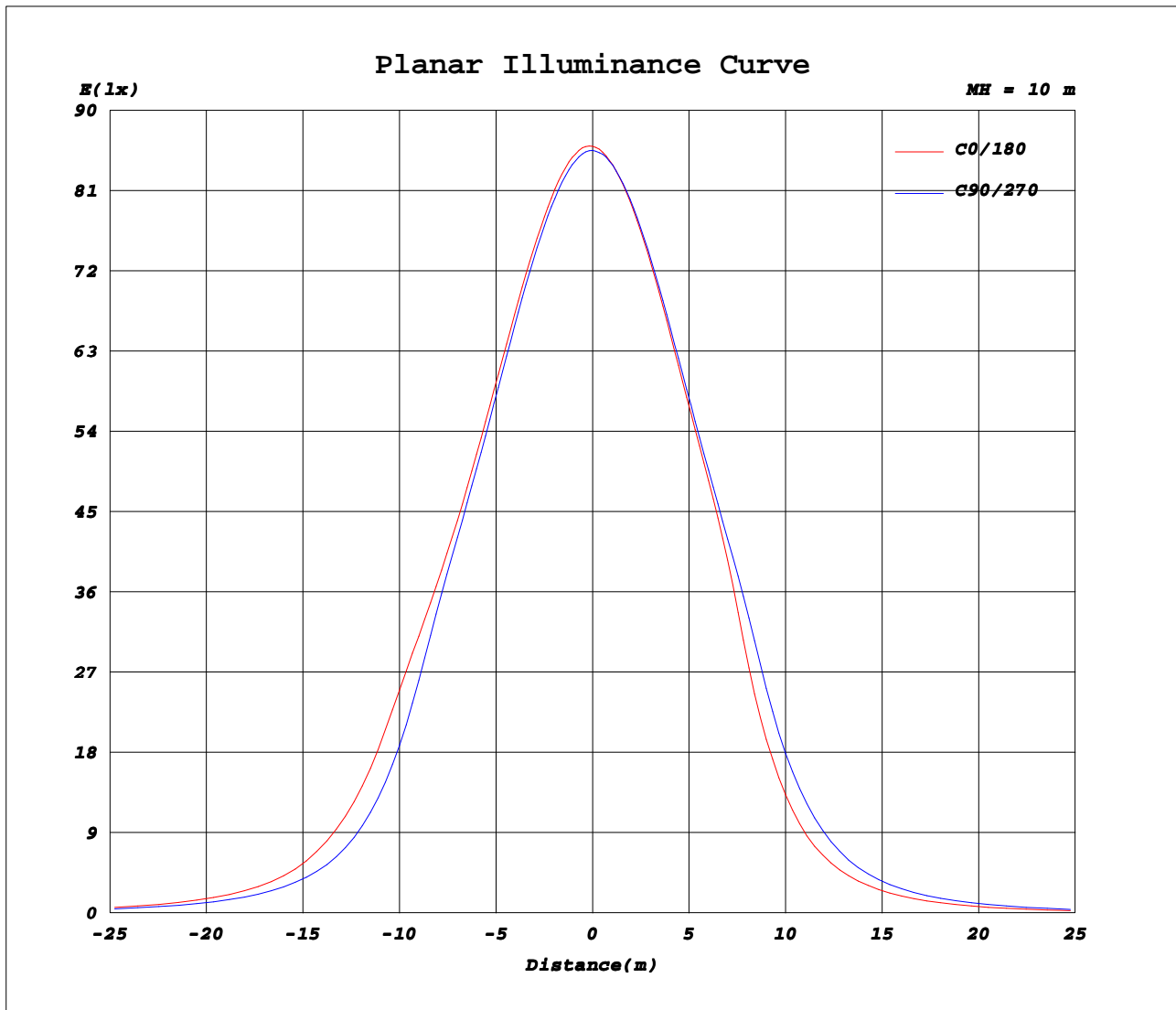
AvgL	cd/m2
L_0~180(65)av	27198
L_0~180(75)av	16315
L_0~180(85)av	9914
L_90~270(65)av	26239
L_90~270(75)av	14749
L_90~270(85)av	7714
L_45(65)av	25890
L_45(75)av	15184
L_45(85)av	7947

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-G5 360EA-90D_180911

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-G5 360EA-90D_180911

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	8597	8584	8585	8581	8573	8560	8552	8545	8538	8519	8508	8504	8597	8584	8585	8581	8573	8560	8552
5	8611	8603	8593	8584	8573	8550	8535	8524	8497	8477	8457	8453	8539	8530	8534	8532	8536	8532	8529
10	8591	8581	8569	8549	8536	8512	8491	8466	8438	8400	8378	8370	8456	8451	8458	8459	8471	8469	8472
15	8532	8526	8511	8488	8473	8442	8417	8390	8345	8303	8275	8262	8351	8343	8361	8365	8382	8389	8392
20	8458	8443	8429	8400	8377	8339	8313	8276	8225	8177	8132	8118	8201	8202	8213	8229	8255	8266	8276
25	8348	8333	8309	8277	8237	8192	8156	8113	8046	7996	7942	7931	8006	8012	8038	8055	8089	8107	8127
30	8203	8175	8147	8106	8056	8003	7955	7899	7826	7762	7700	7677	7771	7781	7817	7838	7880	7904	7930
35	8007	7977	7936	7879	7810	7724	7660	7557	7431	7310	7159	7086	7200	7255	7364	7445	7528	7587	7631
40	7737	7696	7622	7499	7311	7105	6924	6618	6240	5885	5545	5365	5469	5572	5816	6053	6371	6614	6793
45	7072	6978	6743	6414	5980	5622	5313	4883	4440	4095	3785	3652	3757	3830	4017	4243	4546	4845	5064
50	5370	5261	4946	4643	4280	3966	3695	3293	2933	2660	2448	2384	2450	2492	2618	2787	3062	3295	3495
55	3658	3553	3334	3126	2871	2665	2482	2234	1960	1771	1645	1602	1642	1667	1752	1865	2039	2198	2320
60	2380	2320	2204	2099	1954	1821	1704	1540	1356	1188	1115	1076	1099	1109	1173	1251	1372	1480	1573
65	1588	1555	1486	1427	1330	1234	1164	1047	904	795	739	702	711	724	771	823	906	984	1053
70	1056	1043	999	956	888	821	765	679	570	487	424	389	394	409	451	496	557	617	671
75	680	673	637	600	539	478	423	342	258	210	178	166	165	170	189	211	249	293	340
80	359	351	312	280	231	201	175	144	116	97.0	82.1	74.7	70.4	72.4	80.8	90.9	107	124	141
85	143	136	122	110	96.8	86.9	78.1	63.0	46.9	37.0	35.9	36.2	30.1	29.1	29.0	28.0	33.9	45.1	56.4
90	30.7	27.9	24.8	25.1	28.0	30.8	33.4	32.8	31.1	29.2	28.6	28.9	22.4	22.2	22.0	21.7	22.7	23.7	24.8
95	22.4	22.5	22.7	22.6	23.6	25.0	25.9	26.5	27.0	27.6	28.7	29.8	23.3	22.7	21.4	20.1	19.1	18.6	18.2
100	25.8	25.8	26.1	26.4	27.2	28.4	29.0	30.1	31.3	32.5	33.6	34.5	27.3	26.7	25.8	24.8	23.7	22.7	21.9
105	30.2	30.3	30.9	31.8	33.1	34.1	34.4	35.3	36.7	38.0	39.5	40.1	32.8	32.3	31.5	30.4	29.1	28.1	27.5
110	35.4	35.6	36.4	37.8	39.3	40.2	40.4	41.1	42.4	43.9	45.1	45.8	38.7	38.2	37.3	36.1	34.8	33.8	33.2
115	41.0	41.2	41.9	43.2	44.8	45.9	46.5	47.4	48.8	49.8	50.7	51.4	44.5	43.9	43.0	42.2	40.9	40.0	39.4
120	46.8	46.9	47.3	48.4	50.0	51.6	52.5	53.6	54.6	55.5	56.1	57.1	50.3	49.7	48.6	47.9	47.0	46.4	45.7
125	52.4	52.6	53.1	54.1	55.7	57.1	58.1	59.2	60.3	60.9	61.4	62.3	55.8	55.1	54.1	53.3	52.6	52.0	51.4
130	58.4	58.3	58.5	59.5	60.8	62.2	63.1	64.1	65.1	65.6	66.3	67.2	60.9	60.2	59.1	58.3	57.6	56.9	56.3
135	63.3	63.4	64.0	64.5	65.4	66.7	67.5	68.4	69.1	69.9	70.7	71.7	65.8	64.9	63.9	62.9	61.9	61.4	60.8
140	68.2	68.3	68.6	69.1	69.7	70.8	71.3	72.3	73.1	73.9	74.8	75.6	70.3	69.3	68.5	67.4	66.3	65.6	64.9
145	72.6	72.6	72.8	73.2	73.8	74.6	75.2	76.0	76.8	77.6	78.4	79.2	74.6	73.6	72.8	71.7	70.6	69.8	69.2
150	76.5	76.5	76.5	77.0	77.8	78.5	78.9	79.7	80.5	81.5	82.2	83.0	79.1	78.2	77.3	76.2	75.2	74.2	73.5
155	80.2	80.3	80.3	81.1	81.9	82.6	83.1	84.0	85.0	85.9	86.7	87.4	84.4	83.6	82.5	81.5	80.3	79.1	78.4
160	84.8	85.0	85.4	86.2	87.0	87.7	88.2	89.2	90.2	91.2	91.8	92.4	90.1	89.5	88.5	87.6	86.4	85.2	84.4
165	90.5	90.7	91.1	91.6	92.3	93.2	93.5	94.4	95.1	96.1	96.7	97.1	95.7	95.3	94.6	93.5	92.2	91.4	90.5
170	95.5	95.7	96.1	96.6	97.3	97.9	97.8	98.5	99.1	99.8	100	100	99.9	99.8	99.3	98.3	97.3	96.4	95.6
175	99.8	100	100	101	101	101	101	101	101	102	102	101	103	103	102	102	101	100	99.8
180	103	103	103	103	103	103	102	102	102	101	101	100	103	103	103	103	103	102	102

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-G5 360EA-90D_180911

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.0V I:0.6156A P:130.8W PF:0.9655 Lamp Flux:19951.6x1 lm		
NAME: HB2200-130G-A100-G5 360EA-90D_180911	TYPE:LED	WEIGHT:
SPEC.:G5 360EA	DIM.:	SERIAL No.:
MFR.: ICEPIPE	SUR.:	Shielding Angle:

Table--2

UNIT: cd

C(DEG) γ (DEG)	285	300	315	330	345														
0	8545	8538	8519	8508	8504														
5	8532	8532	8528	8522	8527														
10	8479	8487	8494	8497	8514														
15	8408	8430	8433	8442	8457														
20	8300	8326	8339	8362	8374														
25	8161	8198	8222	8249	8269														
30	7972	8033	8062	8101	8124														
35	7715	7809	7860	7909	7940														
40	7078	7382	7529	7637	7681														
45	5473	6028	6475	6862	7033														
50	3789	4233	4638	5047	5314														
55	2532	2782	3074	3368	3599														
60	1713	1867	2012	2194	2349														
65	1152	1265	1332	1482	1571														
70	755	836	883	997	1058														
75	418	502	551	636	679														
80	172	212	252	316	356														
85	71.0	87.1	103	123	138														
90	24.6	20.9	21.4	27.6	29.6														
95	16.8	15.4	14.3	14.9	15.4														
100	20.5	19.2	18.7	17.9	17.8														
105	26.2	24.5	23.1	22.3	21.8														
110	32.1	30.4	28.9	27.4	27.0														
115	38.0	36.4	34.7	33.0	32.5														
120	44.2	42.1	40.3	38.6	38.1														
125	49.7	47.7	45.7	44.3	44.0														
130	54.7	52.8	51.1	49.8	49.8														
135	59.2	57.5	56.3	55.3	54.9														
140	63.5	62.1	61.0	60.2	59.9														
145	67.8	66.5	65.3	64.6	64.6														
150	72.1	70.8	69.6	68.8	68.8														
155	76.9	75.6	74.2	73.2	73.2														
160	82.8	81.4	80.0	78.8	78.5														
165	89.1	87.5	86.2	85.2	84.9														
170	94.5	93.3	92.0	91.1	90.7														
175	99.1	98.4	97.4	96.5	96.1														
180	102	102	101	101	100														

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-G5 360EA-90D_180911

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	8597	8584	8585	8581	8573	8560	8552	8545	8538	8519
3.0	8615	8599	8593	8584	8579	8555	8546	8533	8519	8496
6.0	8614	8601	8593	8582	8570	8547	8531	8512	8487	8462
9.0	8601	8589	8576	8559	8545	8523	8506	8479	8453	8423
12.0	8566	8562	8551	8530	8511	8489	8463	8437	8407	8371
15.0	8532	8526	8511	8488	8473	8442	8417	8390	8345	8303
18.0	8495	8477	8462	8437	8421	8385	8358	8323	8279	8238
21.0	8437	8423	8408	8380	8351	8313	8283	8246	8190	8148
24.0	8372	8357	8337	8307	8270	8227	8192	8146	8085	8036
27.0	8297	8276	8254	8215	8168	8123	8082	8033	7967	7910
30.0	8203	8175	8147	8106	8056	8003	7955	7899	7826	7762
33.0	8088	8061	8024	7977	7919	7857	7799	7727	7631	7543
36.0	7966	7930	7886	7820	7736	7645	7569	7447	7289	7132
39.0	7806	7767	7704	7602	7450	7289	7144	6903	6575	6263
42.0	7567	7513	7397	7212	6896	6596	6353	5956	5500	5137
45.0	7072	6978	6743	6414	5980	5622	5313	4883	4440	4095
48.0	6124	6007	5683	5345	4938	4602	4310	3883	3479	3171
51.0	5008	4895	4597	4309	3957	3665	3407	3046	2697	2451
54.0	3982	3868	3633	3381	3112	2884	2682	2407	2118	1922
57.0	3068	2998	2808	2652	2456	2289	2137	1922	1680	1511
60.0	2380	2320	2204	2099	1954	1821	1704	1540	1356	1188
63.0	1868	1823	1738	1666	1547	1447	1352	1224	1060	934.0
66.0	1463	1434	1374	1319	1228	1141	1077	967.1	832.9	730.2
69.0	1146	1130	1084	1037	966.9	893.4	836.8	747.7	633.6	545.5
72.0	894.0	883.2	844.4	804.6	743.1	680.4	625.0	544.8	441.5	359.8
75.0	679.8	673.5	636.8	599.5	538.7	477.6	423.4	342.3	258.0	210.3
78.0	486.2	480.5	445.4	401.6	336.2	289.9	245.1	200.4	157.4	131.2
81.0	296.0	294.7	256.4	227.1	195.1	169.6	148.1	122.9	99.27	83.21
84.0	169.7	165.3	146.9	132.9	116.3	103.2	92.03	76.44	58.53	44.79
87.0	93.65	89.35	77.73	67.76	60.85	58.43	52.25	40.76	36.20	34.02
90.0	30.68	27.92	24.77	25.13	28.02	30.83	33.37	32.77	31.06	29.16
93.0	24.59	24.19	22.16	22.06	24.23	26.83	27.70	27.08	26.29	26.34
96.0	23.09	23.28	23.07	23.17	24.04	25.17	26.07	26.93	27.67	28.45
99.0	25.07	25.03	25.20	25.51	26.26	27.49	28.05	29.10	30.33	31.41
102.0	27.48	27.50	27.90	28.46	29.40	30.63	31.10	32.10	33.38	34.73
105.0	30.16	30.31	30.90	31.75	33.14	34.14	34.45	35.34	36.69	37.99
108.0	33.21	33.43	34.17	35.43	36.83	37.80	37.96	38.78	40.09	41.48
111.0	36.47	36.70	37.51	38.95	40.45	41.31	41.56	42.40	43.73	45.21
114.0	39.85	40.04	40.82	42.17	43.79	44.73	45.22	46.22	47.52	48.68
117.0	43.32	43.44	43.97	45.30	46.83	48.29	48.85	49.90	51.19	52.14
120.0	46.78	46.93	47.34	48.41	50.05	51.58	52.48	53.59	54.62	55.48
123.0	50.27	50.39	50.87	51.81	53.43	55.00	55.76	57.06	58.08	58.67
126.0	53.57	53.80	54.24	55.21	56.87	58.22	59.18	60.25	61.22	61.79
129.0	57.23	57.22	57.44	58.47	59.86	61.30	62.14	63.21	64.16	64.69
132.0	60.56	60.50	60.82	61.67	62.68	64.03	64.84	65.91	66.70	67.36
135.0	63.26	63.41	64.03	64.48	65.37	66.69	67.46	68.41	69.09	69.94
138.0	66.18	66.36	66.87	67.35	68.01	69.10	69.82	70.71	71.50	72.35
141.0	69.11	69.20	69.49	70.02	70.51	71.58	72.11	73.06	73.82	74.63
144.0	71.78	71.78	72.02	72.39	73.06	73.87	74.41	75.29	76.01	76.88
147.0	74.18	74.20	74.30	74.73	75.46	76.14	76.64	77.45	78.27	79.15
150.0	76.47	76.48	76.53	77.02	77.80	78.47	78.93	79.70	80.54	81.47
153.0	78.67	78.68	78.74	79.36	80.20	80.86	81.32	82.12	83.08	84.04
156.0	81.04	81.08	81.28	81.98	82.83	83.54	84.03	84.96	86.00	86.93
159.0	83.77	83.98	84.35	85.10	85.92	86.64	87.09	88.13	89.15	90.11
162.0	87.01	87.29	88.34	89.16	89.94	90.38	91.38	92.21	93.22	93.22
165.0	90.52	90.68	91.08	91.64	92.34	93.22	93.55	94.43	95.13	96.05
168.0	93.66	93.82	94.18	94.68	95.48	96.22	96.26	97.00	97.66	98.45
171.0	96.40	96.62	96.95	97.52	98.26	98.66	98.57	99.14	99.74	100.4
174.0	98.93	99.22	99.60	100.1	100.6	100.6	100.4	100.9	101.1	101.5
177.0	101.2	101.5	101.7	102.1	102.3	102.1	101.8	101.9	101.9	102.1
180.0	102.8	102.9	103.0	103.1	102.8	102.5	102.1	101.9	101.6	101.4
G/C	150.0	165.0	180.0	195.0	210.0	225.0	240.0	255.0	270.0	285.0
0.0	8508	8504	8597	8584	8585	8581	8573	8560	8552	8545
3.0	8481	8478	8566	8556	8558	8553	8554	8547	8545	8539
6.0	8445	8437	8526	8515	8521	8521	8528	8521	8525	8523
9.0	8396	8388	8476	8472	8473	8477	8488	8489	8487	8493
12.0	8338	8334	8416	8415	8419	8423	8443	8439	8443	8452
15.0	8275	8262	8351	8343	8361	8365	8382	8389	8392	8408
18.0	8196	8183	8268	8266	8276	8293	8311	8318	8327	8349
21.0	8098	8083	8168	8168	8180	8203	8228	8237	8248	8277
24.0	7983	7972	8054	8053	8075	8095	8124	8141	8163	8196
27.0	7857	7839	7922	7929	7956	7975	8011	8032	8054	8091
30.0	7700	7677	7771	7781	7817	7838	7880	7904	7930	7972

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-G5 360EA-90D_180911

Photometric Data Table [cd]

33.0	7452	7415	7513	7544	7608	7651	7708	7746	7776	7831
36.0	6929	6823	6947	7026	7172	7286	7399	7472	7537	7638
39.0	5925	5749	5861	5956	6199	6437	6707	6905	7048	7278
42.0	4794	4631	4746	4829	5045	5299	5612	5911	6142	6556
45.0	3785	3652	3757	3830	4017	4243	4546	4845	5064	5473
48.0	2897	2819	2883	2948	3118	3307	3602	3866	4091	4412
51.0	2261	2197	2257	2295	2411	2566	2806	3035	3219	3500
54.0	1781	1733	1777	1804	1895	2022	2206	2375	2511	2746
57.0	1404	1368	1401	1413	1493	1590	1742	1874	1987	2171
60.0	1115	1076	1099	1109	1173	1251	1372	1480	1573	1713
63.0	875.6	838.4	851.0	864.6	915.3	975.1	1074	1162	1239	1350
66.0	674.7	635.7	643.6	658.3	703.6	754.4	828.7	902.4	967.8	1064
69.0	488.6	454.0	459.4	474.2	513.3	558.0	621.7	685.3	739.9	826.2
72.0	296.7	276.6	277.4	282.8	318.3	363.4	428.0	486.8	537.9	617.3
75.0	178.4	165.6	164.7	170.3	189.2	211.2	249.2	293.1	340.0	418.4
78.0	112.3	103.8	100.5	103.5	115.0	130.1	150.6	174.4	198.0	242.2
81.0	68.86	61.28	56.75	58.50	66.39	75.33	89.50	104.4	119.0	144.6
84.0	37.45	36.86	31.13	29.74	30.89	34.11	46.45	58.63	69.34	85.95
87.0	32.88	32.15	25.88	25.79	25.89	25.86	27.44	27.51	32.62	44.40
90.0	28.64	28.89	22.38	22.17	22.03	21.74	22.66	23.73	24.79	24.60
93.0	27.49	29.23	22.96	22.32	20.95	19.40	19.19	19.74	19.23	18.25
96.0	29.53	30.63	23.62	23.04	22.00	20.90	19.79	19.08	18.47	17.20
99.0	32.52	33.45	26.27	25.72	24.75	23.79	22.65	21.73	20.93	19.53
102.0	35.80	36.57	29.37	28.82	27.96	27.06	25.82	24.81	24.14	22.83
105.0	39.47	40.07	32.80	32.28	31.52	30.38	29.06	28.10	27.54	26.25
108.0	42.86	43.60	36.56	36.05	35.16	33.77	32.46	31.51	30.93	29.81
111.0	46.22	46.88	39.79	39.30	38.45	37.39	35.95	34.97	34.44	33.27
114.0	49.58	50.31	43.29	42.77	41.89	41.06	39.64	38.72	38.15	36.83
117.0	52.87	53.67	46.86	46.23	45.33	44.54	43.57	42.48	41.89	40.50
120.0	56.14	57.05	50.30	49.67	48.63	47.91	47.01	46.36	45.74	44.18
123.0	59.35	60.25	53.67	53.02	51.95	51.23	50.49	49.86	49.18	47.50
126.0	62.40	63.32	56.80	56.20	55.06	54.34	53.68	53.01	52.41	50.72
129.0	65.33	66.25	59.89	59.19	58.12	57.27	56.66	55.97	55.37	53.72
132.0	68.07	69.02	62.89	62.13	61.05	60.12	59.41	58.77	58.13	56.49
135.0	70.71	71.68	65.82	64.91	63.88	62.91	61.92	61.41	60.80	59.20
138.0	73.23	74.10	68.56	67.58	66.67	65.67	64.54	63.85	63.22	61.71
141.0	75.52	76.37	71.19	70.21	69.34	68.26	67.14	66.45	65.76	64.39
144.0	77.66	78.52	73.76	72.78	71.93	70.81	69.72	69.01	68.39	66.92
147.0	79.93	80.67	76.35	75.42	74.53	73.41	72.39	71.55	70.89	69.44
150.0	82.25	82.97	79.08	78.24	77.25	76.19	75.18	74.17	73.50	72.05
153.0	84.87	85.56	82.14	81.32	80.31	79.26	78.11	77.00	76.27	74.79
156.0	87.64	88.43	85.49	84.70	83.66	82.69	81.52	80.28	79.49	78.04
159.0	90.75	91.43	88.90	88.24	87.32	86.33	85.18	83.96	83.11	81.62
162.0	93.83	94.38	92.42	91.85	91.04	89.99	88.81	87.74	86.87	85.37
165.0	96.69	97.11	95.74	95.34	94.57	93.46	92.25	91.37	90.50	89.09
168.0	98.99	99.36	98.44	98.25	97.64	96.54	95.37	94.52	93.64	92.49
171.0	100.5	100.7	100.5	100.4	100.1	99.20	98.17	97.34	96.48	95.49
174.0	101.5	101.3	102.2	102.0	101.9	101.4	100.6	99.78	99.05	98.30
177.0	101.8	101.5	103.4	103.3	103.2	102.8	102.2	101.6	101.1	100.5
180.0	100.6	100.2	102.8	102.8	103.0	103.1	102.9	102.4	102.2	101.8
G/C	300.0	315.0	330.0	345.0						
0.0	8538	8519	8508	8504						
3.0	8540	8525	8520	8525						
6.0	8525	8520	8520	8529						
9.0	8502	8503	8502	8518						
12.0	8469	8472	8477	8490						
15.0	8430	8433	8442	8457						
18.0	8369	8381	8392	8410						
21.0	8310	8318	8343	8355						
24.0	8231	8246	8275	8294						
27.0	8137	8161	8199	8217						
30.0	8033	8062	8101	8124						
33.0	7905	7945	7992	8017						
36.0	7752	7814	7865	7895						
39.0	7505	7624	7711	7747						
42.0	6988	7267	7448	7514						
45.0	6028	6475	6862	7033						
48.0	4921	5351	5811	6088						
51.0	3910	4300	4683	4938						
54.0	3044	3351	3678	3912						
57.0	2360	2588	2824	3022						
60.0	1867	2012	2194	2349						
63.0	1478	1575	1732	1846						
66.0	1167	1236	1370	1450						

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

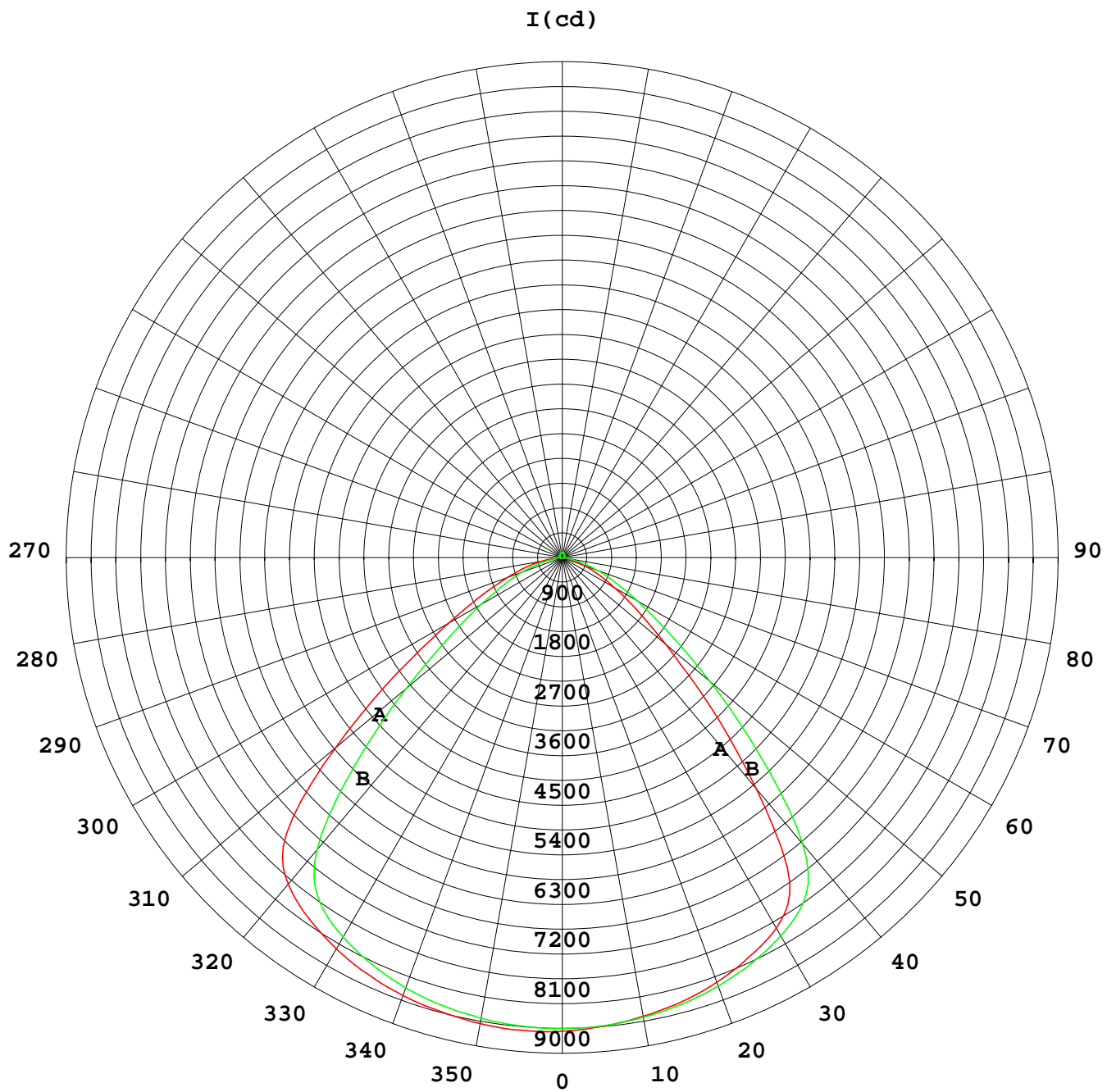
γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.351
Humidity: 65.0%
Test Distance: 8.000m [K=1.0000]
Remarks: HB2200-130G-A100-G5 360EA-90D_180911

Photometric Data Table [cd]

69.0	910.4	961.7	1080	1147
72.0	699.1	741.9	842.0	894.2
75.0	502.4	551.0	636.1	679.0
78.0	318.0	368.9	447.0	485.2
81.0	178.7	210.3	266.0	292.5
84.0	105.7	125.7	149.0	165.7
87.0	55.55	64.37	79.29	89.02
90.0	20.92	21.36	27.58	29.58
93.0	16.14	13.68	14.55	15.69
96.0	15.89	15.11	15.37	15.77
99.0	18.26	17.65	17.12	17.13
102.0	21.08	20.16	19.56	19.26
105.0	24.46	23.06	22.26	21.83
108.0	27.95	26.46	25.32	24.85
111.0	31.67	30.13	28.47	28.06
114.0	35.29	33.48	31.81	31.41
117.0	38.83	37.00	35.32	34.75
120.0	42.15	40.26	38.58	38.10
123.0	45.48	43.50	42.01	41.69
126.0	48.84	46.79	45.39	45.18
129.0	51.89	50.05	48.79	48.64
132.0	54.77	53.25	52.11	51.94
135.0	57.46	56.27	55.31	54.94
138.0	60.23	59.15	58.36	57.94
141.0	62.96	61.87	61.09	60.87
144.0	65.67	64.49	63.76	63.68
147.0	68.28	67.06	66.29	66.30
150.0	70.83	69.60	68.81	68.82
153.0	73.56	72.27	71.37	71.34
156.0	76.64	75.27	74.21	74.09
159.0	80.13	78.77	77.61	77.34
162.0	83.87	82.45	81.39	81.04
165.0	87.54	86.20	85.19	84.87
168.0	91.12	89.77	88.84	88.48
171.0	94.43	93.16	92.14	91.85
174.0	97.48	96.41	95.43	95.04
177.0	100.1	99.28	98.46	98.14
180.0	101.6	101.3	100.7	100.3

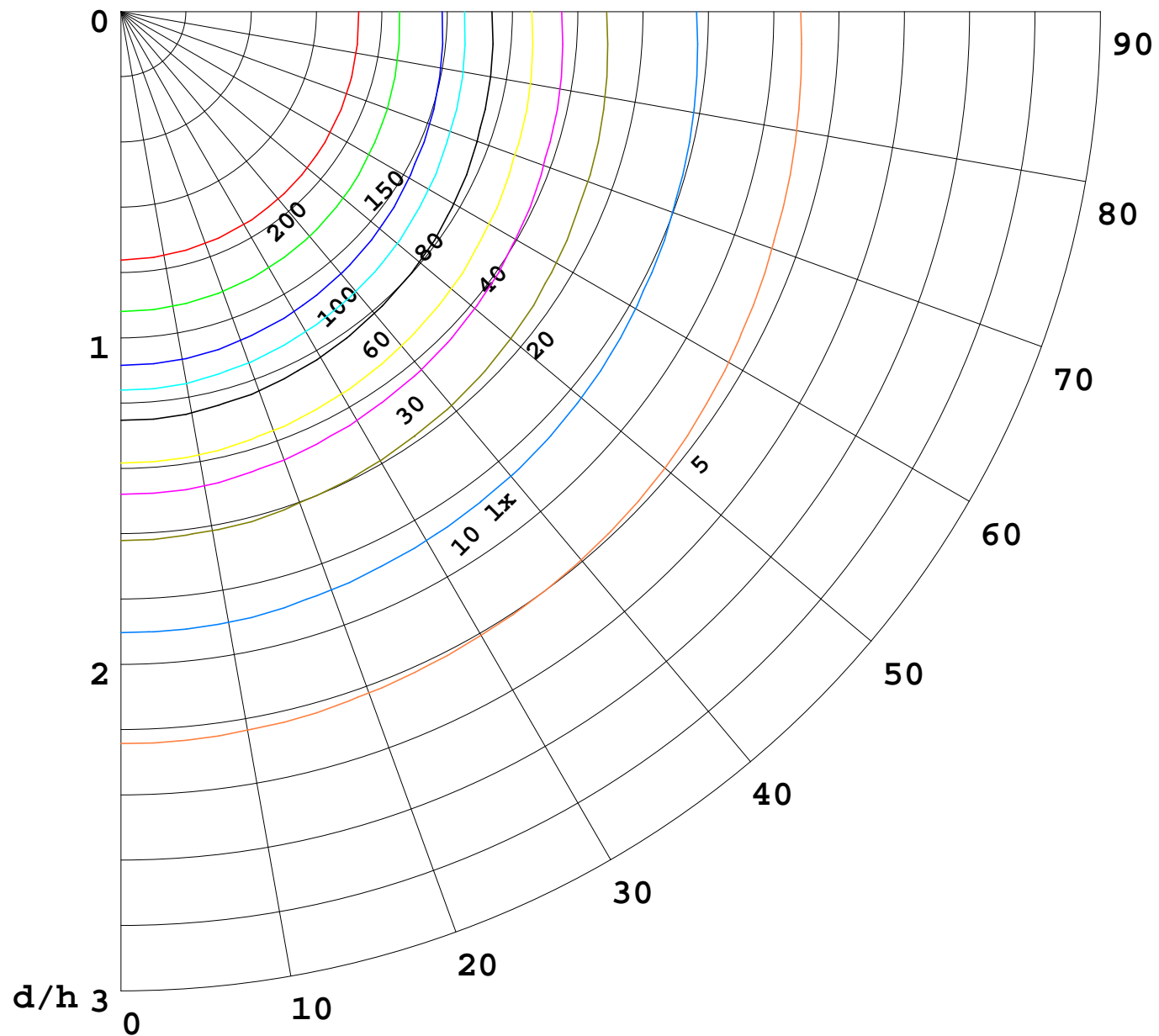
C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: LUC
Test Date: 03 January 2018

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-G5 360EA-90D_180911



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

