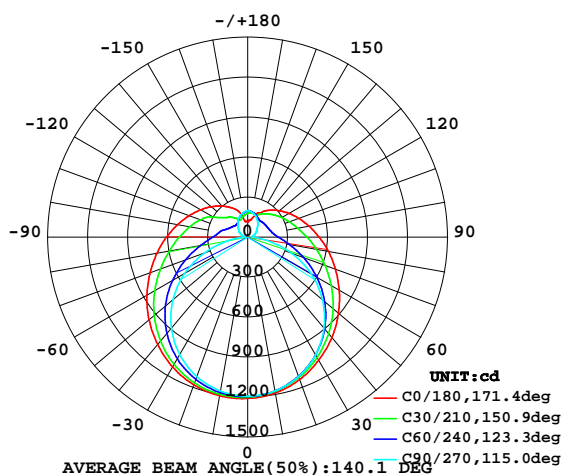


LUMINAIRE PHOTOMETRIC TEST REPORT

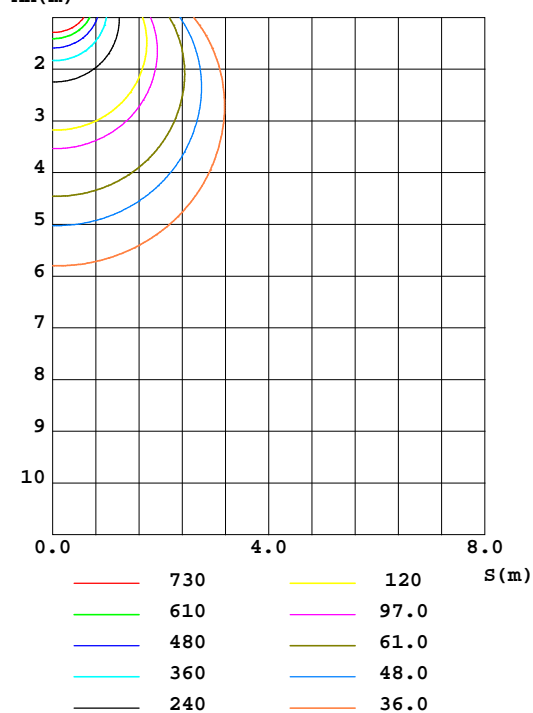
Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm		
NAME: UP-DB18-1600-50W-4000K	TYPE:50W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:
MFR.:	SUR.:0.09438	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 121.42 lm/W			
MODEUP-DB18-1600-50W-4000K		I _{max} (cd)	1214	S/MH(C0/180)	1.39
NOMINAL POWER(W)	50	LOR(%)	100.0	S/MH(C90/270)	1.27
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	6022.6	η UP,DN(C0-180)	12.6,37.8
NOMINAL FLUX(lm)	6022.64	CIE CLASS	SEMI-D.	η UP,DN(C180-360)	12.3,37.3
LAMPS INSIDE	1	η up(%)	24.9	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	230.4	η down(%)	75.1	CIBSE SHR MAX	1.55

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-12-22

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.480m [K=1.0000]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Φ lum, lamp
10	1209	1192	1173	1164	1187	1175	1174	1184	0- 10	113.5	113.5	1.88,1.88
20	1180	1151	1115	1108	1138	1118	1115	1146	10- 20	327.9	441.4	7.33,7.33
30	1127	1080	1019	1023	1066	1031	1020	1077	20- 30	506.1	947.6	15.7,15.7
40	1051	980.6	890.6	915.8	983.3	922.0	892.2	981.5	30- 40	629.9	1577	26.2,26.2
50	966.9	860.8	731.6	793.4	889.9	795.9	733.6	866.6	40- 50	689.3	2267	37.6,37.6
60	873.1	728.1	547.4	664.6	793.2	661.5	549.8	739.4	50- 60	683.7	2950	49,49
70	779.4	595.2	340.6	539.5	700.3	531.1	344.3	611.9	60- 70	622.1	3573	59.3,59.3
80	691.1	476.5	136.7	432.6	615.4	419.3	140.4	498.4	70- 80	524.6	4097	68,68
90	610.4	388.2	26.62	352.0	536.8	337.4	30.40	411.7	80- 90	423.4	4521	75.1,75.1
100	536.2	330.3	31.98	299.2	470.0	286.4	37.27	342.3	90-100	352.3	4873	80.9,80.9
110	469.4	276.1	51.08	263.7	410.7	253.9	55.45	281.6	100-110	297.8	5171	85.9,85.9
120	410.1	224.4	72.31	237.8	358.6	230.2	74.75	240.8	110-120	245.3	5416	89.9,89.9
130	356.0	180.7	90.31	216.5	309.7	210.6	91.25	191.0	120-130	194.7	5611	93.2,93.2
140	305.3	163.7	118.1	197.1	264.4	192.7	119.7	170.4	130-140	151.0	5762	95.7,95.7
150	257.2	152.4	146.5	182.9	218.8	182.0	147.5	155.8	140-150	114.3	5876	97.6,97.6
160	208.0	156.1	171.0	180.6	182.3	179.3	171.9	154.0	150-160	80.54	5957	98.9,98.9
170	120.6	174.6	189.1	193.4	130.2	188.9	190.0	174.8	160-170	49.23	6006	99.7,99.7
180	116.7	188.7	200.4	193.5	117.6	189.0	200.1	193.5	170-180	16.90	6023	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

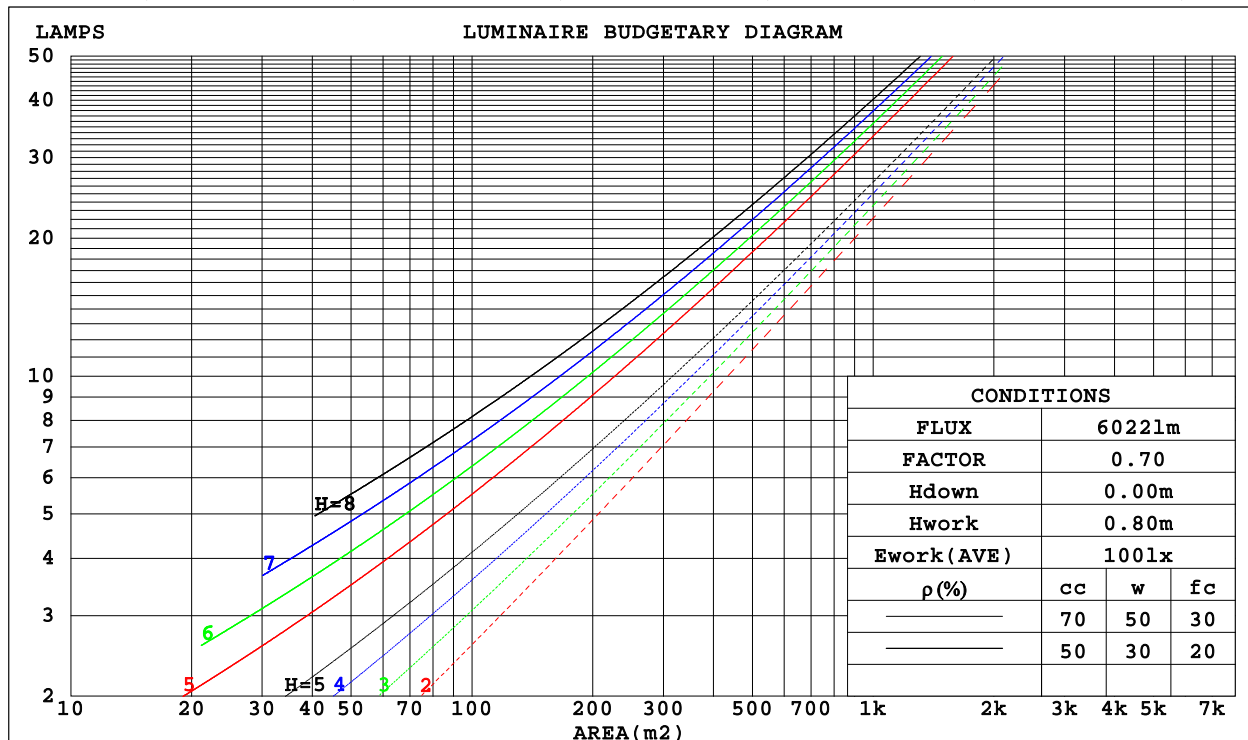
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.480m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm		
NAME: UP-DB18-1600-50W-4000K	TYPE:50W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:
MFR.:	SUR.:0.09438	PROTECTION 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	1.13	1.13	1.13	1.08	1.08	1.08	.97	.97	.97	.88	.88	.88	.79	.79	.79	.75	
1.0	.94	.89	.84	.90	.85	.81	.81	.77	.74	.73	.70	.67	.65	.63	.61	.57	
2.0	.81	.73	.67	.77	.70	.64	.69	.64	.59	.62	.58	.54	.56	.52	.49	.45	
3.0	.70	.61	.54	.67	.59	.52	.60	.54	.48	.54	.49	.44	.48	.44	.40	.37	
4.0	.62	.52	.45	.59	.50	.44	.53	.46	.40	.48	.42	.37	.43	.38	.34	.31	
5.0	.55	.45	.38	.52	.43	.37	.47	.40	.34	.42	.36	.32	.38	.33	.29	.26	
6.0	.49	.40	.33	.47	.38	.32	.42	.35	.30	.38	.32	.28	.34	.29	.25	.23	
7.0	.44	.35	.29	.42	.34	.28	.38	.31	.26	.35	.29	.24	.31	.26	.22	.20	
8.0	.40	.31	.26	.38	.30	.25	.35	.28	.23	.32	.26	.21	.29	.24	.20	.18	
9.0	.37	.28	.23	.35	.27	.22	.32	.25	.21	.29	.23	.19	.27	.22	.18	.16	
10.0	.34	.26	.20	.32	.25	.20	.30	.23	.19	.27	.21	.17	.25	.20	.16	.14	



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.480m [K=1.0000]
Remarks:

WEC AND CCEC

Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm		
NAME: UP-DB18-1600-50W-4000K	TYPE:50W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:
MFR.:	SUR.:0.09438	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	.376	.214	.068	.361	.206	.065	.334	.191	.061	.308	.178	.057	.285	.165	.053	
2.0	.326	.179	.055	.313	.172	.053	.288	.160	.050	.264	.148	.046	.243	.137	.043	
3.0	.290	.154	.046	.278	.149	.045	.255	.138	.042	.234	.128	.039	.214	.119	.037	
4.0	.261	.136	.040	.250	.131	.039	.230	.122	.036	.210	.113	.034	.192	.105	.032	
5.0	.238	.121	.035	.228	.117	.034	.209	.109	.032	.191	.101	.030	.175	.093	.028	
6.0	.218	.109	.031	.209	.106	.030	.192	.098	.029	.176	.091	.027	.160	.084	.025	
7.0	.201	.100	.028	.193	.096	.027	.177	.090	.026	.162	.083	.024	.148	.077	.023	
8.0	.187	.091	.026	.179	.088	.025	.164	.082	.023	.151	.076	.022	.138	.071	.021	
9.0	.174	.084	.024	.167	.081	.023	.154	.076	.022	.141	.071	.020	.129	.065	.019	
10.0	.163	.078	.022	.157	.076	.021	.144	.071	.020	.132	.066	.019	.121	.061	.017	

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	.380	.380	.380	.325	.325	.325	.222	.222	.222	.128	.128	.128	.041	.041	.041	
1.0	.376	.347	.321	.322	.298	.276	.220	.205	.191	.127	.119	.111	.041	.038	.036	
2.0	.370	.325	.287	.317	.279	.248	.217	.193	.173	.125	.112	.101	.040	.036	.033	
3.0	.362	.308	.265	.311	.266	.230	.213	.185	.161	.123	.108	.095	.040	.035	.031	
4.0	.355	.296	.251	.304	.256	.218	.209	.178	.154	.121	.104	.091	.039	.034	.030	
5.0	.347	.286	.241	.298	.248	.210	.205	.173	.148	.119	.102	.088	.038	.033	.029	
6.0	.340	.279	.235	.292	.241	.204	.201	.169	.144	.117	.099	.086	.038	.032	.028	
7.0	.333	.272	.229	.286	.236	.200	.198	.165	.142	.115	.097	.084	.037	.032	.028	
8.0	.326	.267	.225	.281	.231	.197	.194	.162	.139	.113	.096	.083	.037	.031	.028	
9.0	.320	.262	.222	.276	.227	.194	.191	.160	.138	.111	.094	.082	.036	.031	.027	
10.0	.314	.258	.220	.271	.224	.192	.188	.157	.136	.110	.093	.081	.036	.031	.027	

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.480m [K=1.0000]
 Remarks:

Uncorrected UGR Table

Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm											
NAME: UP-DB18-1600-50W-4000K					TYPE:50W			WEIGHT:			
DIM.:					SPEC.:4000K			SERIAL No.:			
MFR.:					SUR.:0.09438			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	21.6	22.9	22.2	23.5	24.2	19.8	21.1	20.4	21.7	22.4	
3H	24.3	25.5	24.9	26.1	26.9	21.4	22.6	22.0	23.2	23.9	
4H	25.8	27.0	26.5	27.6	28.4	22.0	23.1	22.7	23.8	24.5	
6H	27.6	28.6	28.2	29.3	30.0	22.5	23.5	23.1	24.2	25.0	
8H	28.5	29.5	29.2	30.2	31.0	22.6	23.6	23.3	24.3	25.1	
12H	29.6	30.6	30.3	31.3	32.1	22.7	23.7	23.4	24.4	25.2	
4H	2H	22.2	23.3	22.8	24.0	24.7	20.9	22.0	21.5	22.6	23.4
3H	25.1	26.1	25.8	26.8	27.6	22.7	23.7	23.4	24.4	25.2	
4H	26.8	27.7	27.5	28.4	29.3	23.5	24.4	24.2	25.1	26.0	
6H	28.8	29.6	29.5	30.3	31.1	24.2	25.0	24.9	25.7	26.6	
8H	29.8	30.6	30.6	31.3	32.2	24.5	25.2	25.2	25.9	26.8	
12H	31.1	31.8	31.8	32.5	33.4	24.6	25.3	25.4	26.1	27.0	
8H	4H	27.2	27.9	27.9	28.7	29.5	24.5	25.3	25.3	26.0	26.9
6H	29.4	30.0	30.2	30.8	31.7	25.6	26.2	26.4	27.0	27.9	
8H	30.7	31.3	31.5	32.1	33.0	26.1	26.6	26.9	27.4	28.4	
12H	32.2	32.7	33.0	33.5	34.5	26.5	27.0	27.3	27.8	28.7	
12H	4H	27.2	27.9	27.9	28.6	29.5	24.9	25.6	25.6	26.3	27.2
6H	29.5	30.1	30.3	30.9	31.8	26.2	26.7	27.0	27.5	28.5	
8H	30.9	31.4	31.7	32.2	33.2	26.8	27.3	27.6	28.1	29.1	
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	+ 0.2 / - 0.3					+ 0.2 / - 0.4					

CIE Pub.117 Corrected 6023 lm Total Lamp Luminous Flux.(8log(F/F0) = 6.2)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-12-22

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.480m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm		
NAME: UP-DB18-1600-50W-4000K	TYPE:50W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:
MFR.:	SUR.:0.09438	PROTECTION ANGLE:

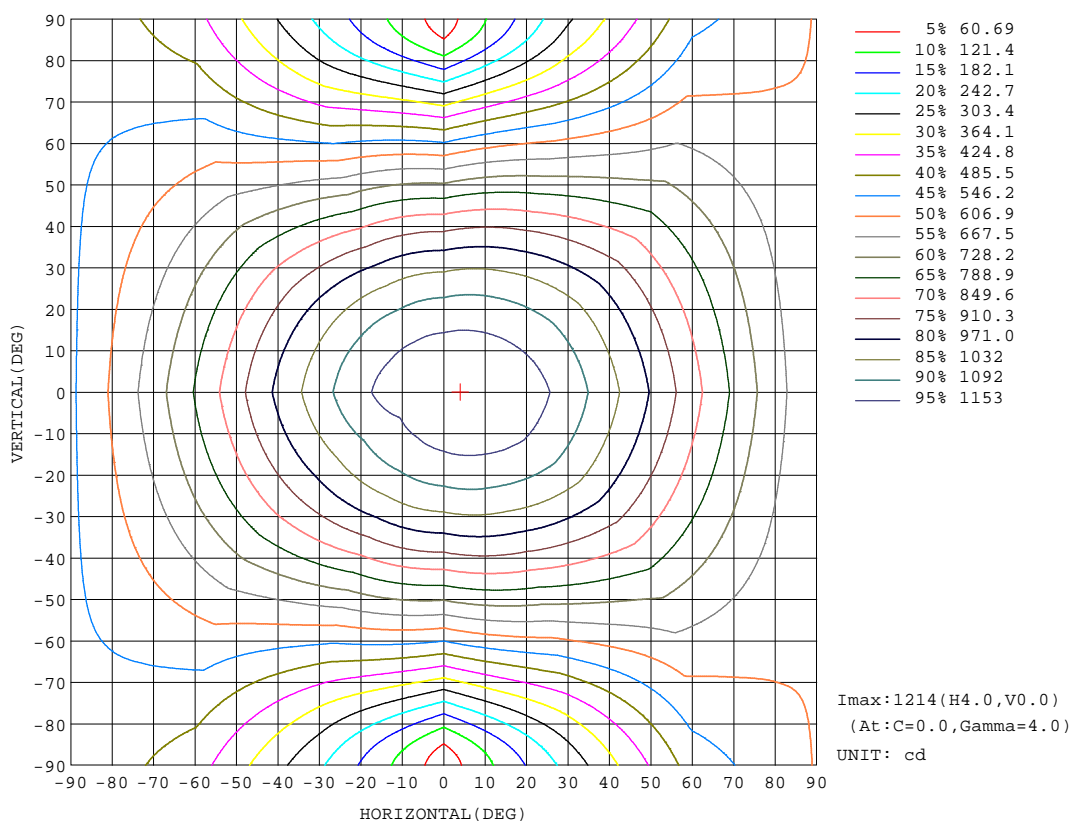
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	46	34	27	45	33	26	42	32	26	19
0.80	55	42	34	53	41	34	50	40	33	24
1.00	63	50	42	61	49	41	56	48	39	30
1.25	70	57	49	67	56	48	62	52	45	35
1.50	75	63	54	72	61	53	66	57	50	39
2.00	82	71	63	79	69	61	72	64	57	44
2.50	87	77	69	83	74	66	76	68	62	48
3.00	91	81	74	86	78	71	79	72	66	51
4.00	95	87	81	91	84	78	82	77	72	55
5.00	98	91	85	94	87	82	85	80	76	58
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.480m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm		
NAME: UP-DB18-1600-50W-4000K	TYPE:50W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:
MFR.:	SUR.:0.09438	PROTECTION ANGLE:



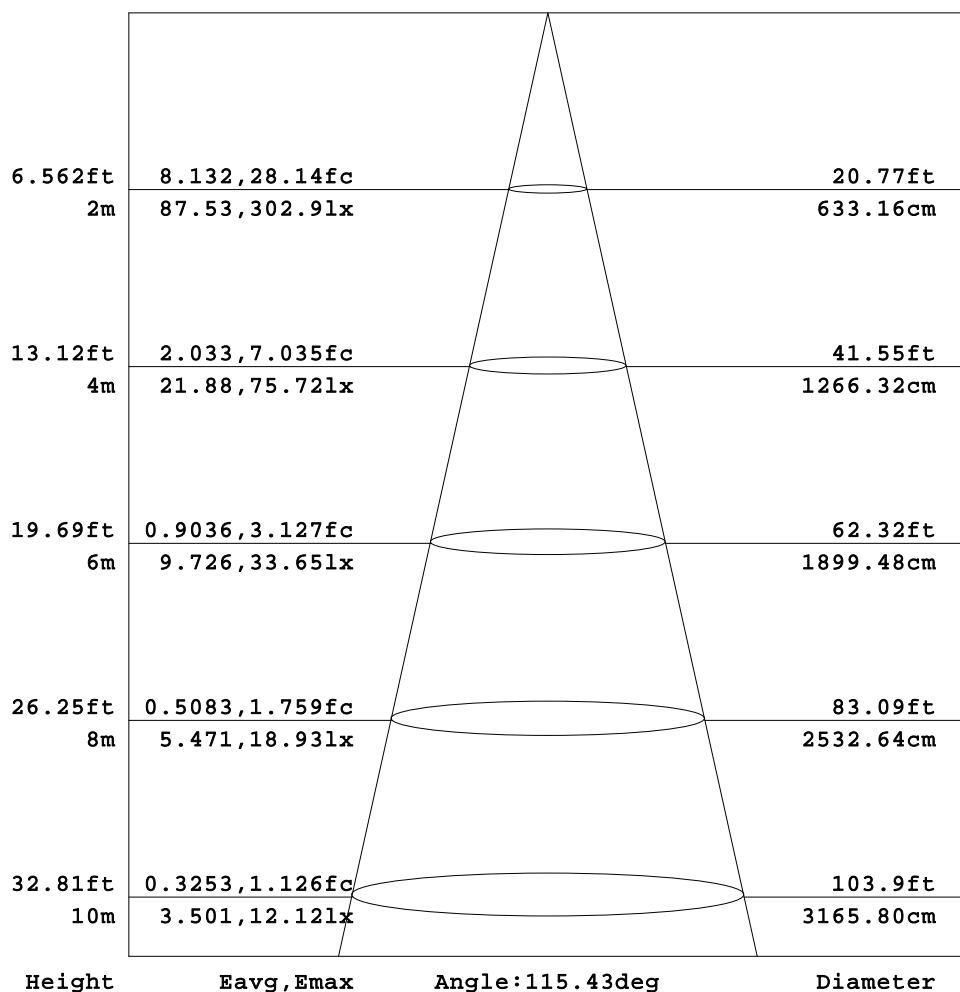
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.480m [K=1.0000]
Remarks:

AAI Figure

Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm		
NAME: UP-DB18-1600-50W-4000K	TYPE:50W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:
MFR.:	SUR.:0.09438	PROTECTION ANGLE:

Flux out:2817 lm



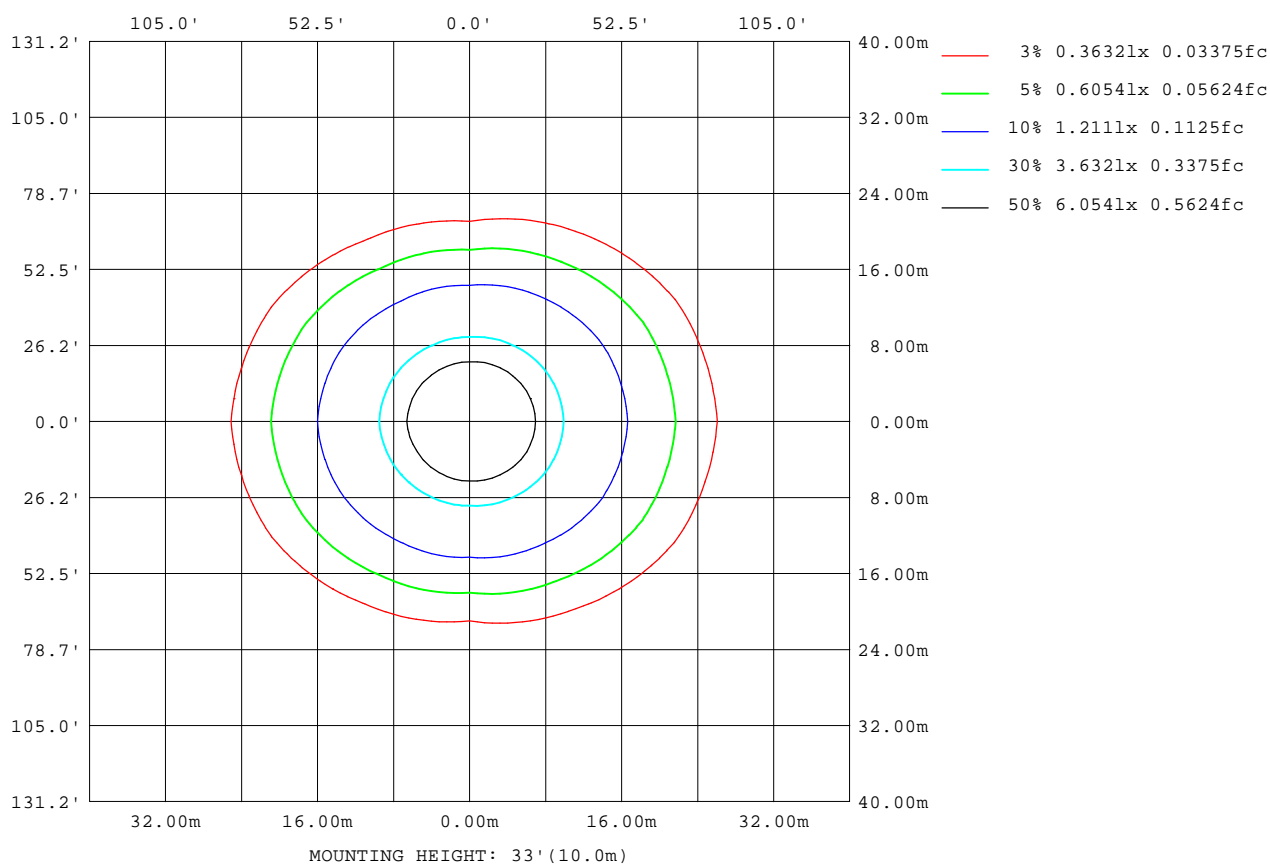
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2016-12-22

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.480m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

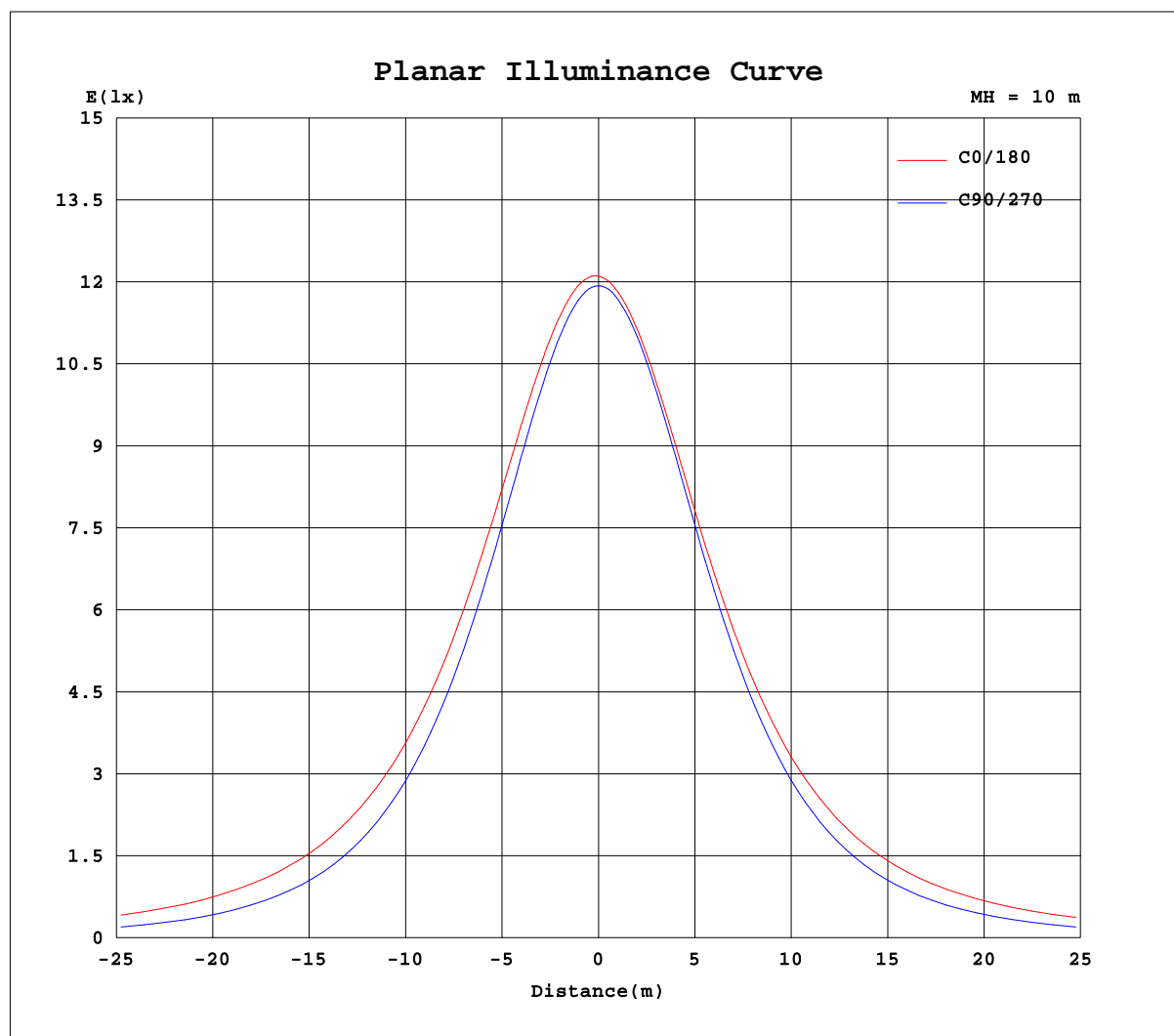
Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm		
NAME: UP-DB18-1600-50W-4000K	TYPE:50W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:
MFR.:	SUR.:0.09438	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2016-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.480m [K=1.0000]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2016-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.480m [K=1.0000]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.4V I:0.2290A P:49.60W PF:0.9380 Lamp Flux:6022.64x1 lm					
NAME: UP-DB18-1600-50W-4000K			TYPE:50W		WEIGHT:
DIM.:			SPEC.:4000K		SERIAL No.:
MFR.:			SUR.:0.09438		PROTECTION ANGLE:

Table--1

UNIT: cd

C(DEC) γ (DEC)	0	30	60	90	120	150	180	210	240	270	300	330						
0	1211	1202	1197	1193	1191	1190	1211	1202	1197	1193	1191	1190						
5	1214	1205	1195	1188	1183	1179	1202	1193	1189	1189	1190	1192						
10	1209	1199	1185	1173	1165	1163	1187	1177	1173	1174	1180	1188						
15	1198	1186	1165	1149	1140	1139	1166	1153	1147	1149	1161	1176						
20	1180	1166	1137	1115	1106	1109	1138	1122	1113	1115	1134	1157						
25	1157	1138	1100	1072	1064	1073	1105	1085	1071	1072	1099	1131						
30	1127	1104	1055	1019	1015	1031	1066	1042	1020	1020	1056	1099						
35	1091	1064	1003	959	958	985	1026	995	963	960	1006	1060						
40	1051	1018	943	891	895	937	983	945	899	892	948	1015						
45	1010	967	877	815	827	886	938	892	829	816	885	967						
50	967	916	806	732	755	832	890	837	754	734	816	917						
55	921	862	730	642	681	777	841	780	677	645	742	866						
60	873	806	650	547	606	723	793	724	599	550	666	812						
65	826	750	572	446	531	671	746	669	520	449	591	759						
70	779	696	494	341	459	620	700	617	445	344	517	707						
75	734	645	421	235	393	573	657	568	376	239	447	657						
80	691	597	357	137	336	530	615	524	315	140	386	611						
85	650	553	303	58.8	289	489	575	482	267	62.6	334	568						
90	610	513	264	26.6	252	452	537	445	230	30.4	295	529						
95	572	476	235	27.6	226	419	502	412	206	31.8	266	492						
100	536	444	217	32.0	208	390	470	383	190	37.3	225	460						
105	502	414	198	40.8	196	364	439	358	179	45.7	219	429						
110	469	379	173	51.1	188	340	411	335	173	55.4	192	372						
115	439	349	158	61.9	181	319	384	315	168	65.3	170	353						
120	410	302	147	72.3	177	299	359	296	165	74.7	158	323						
125	383	257	139	81.8	173	280	333	278	163	83.4	149	274						
130	356	230	132	90.3	171	262	310	260	161	91.2	142	240						
135	330	212	127	103	167	246	287	244	159	105	135	214						
140	305	198	129	118	164	230	264	229	156	120	136	204						
145	281	179	133	133	160	216	244	215	155	134	139	189						
150	257	161	144	146	164	202	219	201	163	148	142	169						
155	234	145	157	159	172	188	203	187	170	160	155	153						
160	208	144	168	171	181	180	182	178	181	172	168	140						
165	166	156	177	181	188	185	152	181	187	182	177	151						
170	121	164	185	189	192	195	130	186	192	190	185	164						
175	118	172	192	196	195	193	129	185	198	196	193	177						
180	117	179	199	200	198	189	118	178	200	200	198	189						

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-12-22

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.480m [K=1.0000]
Remarks: