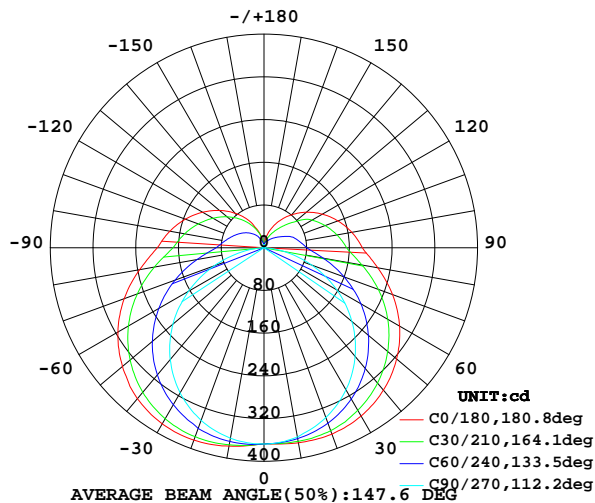


LUMINAIRE PHOTOMETRIC TEST REPORT

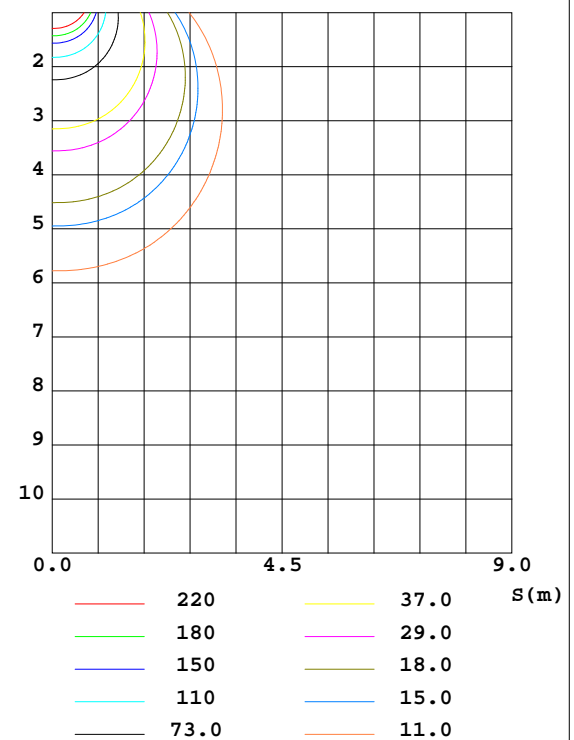
Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm		
NAME: UP-ML13-900-15W-C3-4000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0656	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 132.15 lm/W			
MODEL-ML13-900-15W-C3-4000K		I _{max} (cd)	383.7	S/MH(C0/180)	1.49
NOMINAL POWER(W)	15	LOR(%)	100.0	S/MH(C90/270)	1.24
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1969.1	η UP,DN(C0-180)	11.0,38.2
NOMINAL FLUX(lm)	1969.1	CIE CLASS	SEMI-D.	η UP,DN(C180-360)	11.4,39.4
LAMPS INSIDE	1	η up(%)	22.4	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	230.1	η down(%)	77.6	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:2020-01-16

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.443m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	$\%lum, lamp$
10	370.9	365.6	360.2	370.1	377.2	371.6	362.1	367.6	0- 10	35.17	35.17	1.79,1.79
20	371.5	357.2	338.5	365.3	383.5	368.3	344.0	360.0	10- 20	103.5	138.7	7.04,7.04
30	363.9	339.2	307.1	351.3	381.0	354.7	314.0	344.0	20- 30	163.7	302.4	15.4,15.4
40	347.9	312.9	265.5	327.0	368.9	332.0	273.2	318.8	30- 40	209.1	511.5	26,26
50	324.1	278.7	214.9	294.8	346.0	300.0	222.6	285.4	40- 50	234.5	746.0	37.9,37.9
60	293.2	238.6	157.3	255.2	315.8	260.3	163.4	244.9	50- 60	237.6	983.6	50,50
70	256.1	193.8	95.12	210.0	278.5	214.9	99.44	199.7	60- 70	218.9	1202	61.1,61.1
80	216.4	149.6	35.19	164.2	236.6	167.9	37.46	154.5	70- 80	183.0	1386	70.4,70.4
90	184.4	117.5	1.281	128.0	199.9	130.2	1.317	121.3	80- 90	142.2	1528	77.6,77.6
100	167.1	103.4	1.861	111.1	179.1	112.8	1.866	106.6	90-100	118.0	1646	83.6,83.6
110	147.4	89.88	2.514	95.80	156.9	96.97	2.465	92.61	100-110	100.4	1746	88.7,88.7
120	126.0	73.17	3.261	81.06	133.1	81.91	3.195	73.99	110-120	80.62	1827	92.8,92.8
130	103.6	53.53	3.967	66.73	108.9	67.12	3.864	58.64	120-130	59.87	1887	95.8,95.8
140	80.87	37.01	4.619	52.48	84.53	52.50	4.505	40.59	130-140	40.50	1927	97.9,97.9
150	58.41	24.72	5.284	38.38	60.66	38.17	5.127	27.13	140-150	24.31	1951	99.1,99.1
160	36.82	16.25	5.661	24.24	35.20	23.91	5.624	17.26	150-160	12.31	1964	99.7,99.7
170	15.98	10.25	5.966	11.99	11.96	11.83	5.887	10.10	160-170	4.531	1968	100,100
180	6.044	6.048	6.037	6.026	6.050	6.051	6.043	6.029	170-180	0.8121	1969	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

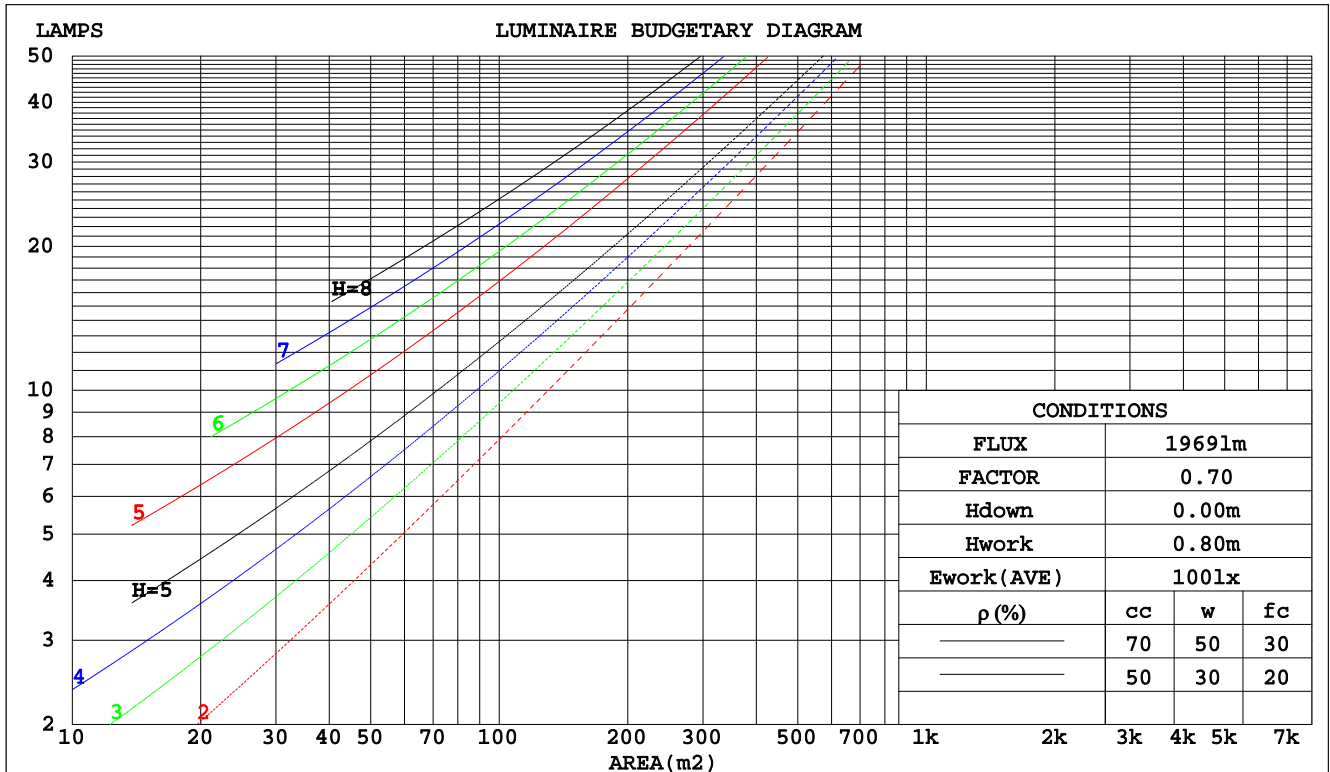
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2020-01-16

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.443m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm		
NAME: UP-ML13-900-15W-C3-4000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0656	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															



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2020-01-16

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: 65.0%
 Test Distance: 9.443m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm					
NAME: UP-ML13-900-15W-C3-4000K			TYPE:15W		WEIGHT:
DIM.:			SPEC.:4000K		SERIAL No.:1
MFR.:			SUR.:0.0656		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	.383	.218	.069	.369	.211	.067	.343	.197	.063	.319	.184	.059	.296	.172	.055	
2.0	.332	.182	.056	.319	.176	.054	.296	.164	.051	.274	.153	.048	.253	.143	.045	
3.0	.295	.157	.047	.284	.152	.046	.262	.142	.043	.242	.133	.041	.224	.124	.038	
4.0	.266	.138	.041	.255	.134	.039	.236	.125	.037	.217	.117	.035	.200	.109	.033	
5.0	.242	.123	.036	.232	.119	.035	.214	.112	.033	.198	.104	.031	.182	.097	.029	
6.0	.221	.111	.032	.213	.107	.031	.196	.101	.029	.181	.094	.028	.167	.088	.026	
7.0	.204	.101	.029	.196	.098	.028	.181	.092	.026	.167	.086	.025	.154	.080	.024	
8.0	.189	.093	.026	.182	.090	.025	.168	.084	.024	.155	.079	.023	.143	.073	.021	
9.0	.176	.085	.024	.170	.083	.023	.157	.078	.022	.145	.073	.021	.134	.068	.020	
10.0	.165	.079	.022	.159	.077	.021	.147	.072	.020	.136	.067	.019	.125	.063	.018	

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	.361	.361	.361	.309	.309	.309	.211	.211	.211	.121	.121	.121	.039	.039	.039	
1.0	.358	.328	.301	.306	.281	.259	.209	.193	.179	.120	.112	.104	.039	.036	.034	
2.0	.351	.305	.266	.301	.263	.230	.206	.182	.161	.119	.106	.094	.038	.034	.031	
3.0	.344	.289	.245	.295	.249	.212	.202	.173	.149	.117	.101	.088	.038	.033	.029	
4.0	.336	.276	.231	.288	.239	.201	.198	.166	.141	.115	.097	.084	.037	.032	.027	
5.0	.328	.267	.221	.282	.231	.192	.194	.161	.136	.113	.095	.081	.036	.031	.027	
6.0	.321	.259	.214	.276	.224	.187	.190	.157	.132	.110	.092	.078	.036	.030	.026	
7.0	.314	.252	.209	.270	.219	.182	.187	.153	.129	.108	.090	.077	.035	.030	.025	
8.0	.307	.247	.205	.265	.214	.179	.183	.150	.127	.107	.089	.076	.034	.029	.025	
9.0	.301	.242	.202	.259	.210	.176	.180	.148	.125	.105	.087	.075	.034	.029	.025	
10.0	.295	.238	.200	.255	.207	.174	.177	.145	.124	.103	.086	.074	.033	.028	.025	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-01-16

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

Uncorrected UGR Table

Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm											
NAME: UP-ML13-900-15W-C3-4000K						TYPE:15W		WEIGHT:			
DIM.:						SPEC.:4000K		SERIAL No.:1			
MFR.:						SUR.:0.0656		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	2H	19.2	20.5	19.7	21.1	21.7	16.8	18.2	17.4	18.7	19.4
	3H	21.8	23.1	22.4	23.6	24.3	18.3	19.6	18.9	20.2	20.9
	4H	23.3	24.4	23.9	25.1	25.8	18.9	20.1	19.5	20.7	21.4
	6H	24.9	26.0	25.5	26.6	27.4	19.3	20.4	20.0	21.0	21.8
	8H	25.8	26.8	26.4	27.5	28.2	19.4	20.5	20.1	21.1	21.9
	12H	26.8	27.8	27.5	28.5	29.3	19.5	20.5	20.1	21.1	21.9
4H	2H	19.7	20.9	20.3	21.5	22.2	18.0	19.2	18.7	19.8	20.5
	3H	22.6	23.6	23.3	24.3	25.0	19.8	20.8	20.5	21.5	22.3
	4H	24.3	25.2	24.9	25.9	26.7	20.6	21.6	21.3	22.2	23.0
	6H	26.1	26.9	26.8	27.6	28.4	21.2	22.1	21.9	22.8	23.6
	8H	27.1	27.9	27.8	28.6	29.4	21.4	22.2	22.2	22.9	23.8
	12H	28.3	29.0	29.0	29.7	30.6	21.6	22.3	22.3	23.0	23.9
8H	4H	24.6	25.4	25.3	26.1	26.9	21.7	22.5	22.4	23.2	24.0
	6H	26.7	27.4	27.4	28.1	29.0	22.7	23.4	23.5	24.1	25.0
	8H	27.9	28.5	28.7	29.3	30.2	23.2	23.7	23.9	24.5	25.4
	12H	29.4	29.9	30.1	30.6	31.6	23.5	24.0	24.3	24.8	25.7
12H	4H	24.6	25.3	25.3	26.0	26.9	22.1	22.8	22.8	23.5	24.4
	6H	26.8	27.4	27.6	28.2	29.1	23.3	23.9	24.1	24.6	25.5
	8H	28.1	28.7	28.9	29.4	30.4	23.9	24.4	24.7	25.2	26.1
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					+ 0.3 / - 0.5					

CIE Pub.117 Corrected 1969 lm Total Lamp Luminous Flux.(8log(F/F0) = 2.4)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-01-16

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm		
NAME: UP-ML13-900-15W-C3-4000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0656	PROTECTION ANGLE:

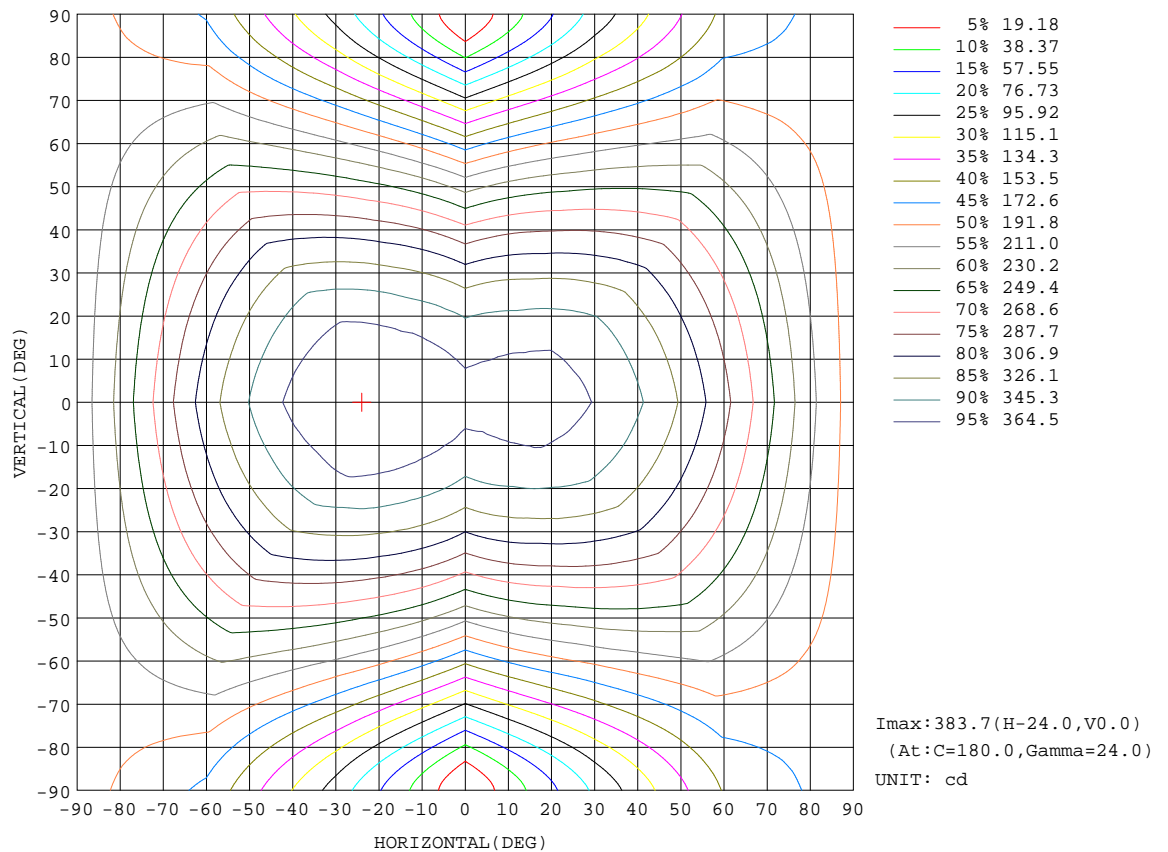
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	46	34	26	45	33	26	43	32	25	19
0.80	55	42	34	53	41	33	50	40	32	24
1.00	63	50	41	61	49	41	57	49	39	30
1.25	70	57	48	67	56	47	63	53	45	35
1.50	75	63	54	72	61	53	67	57	50	39
2.00	82	71	63	79	69	61	73	64	58	45
2.50	87	77	69	83	74	67	76	69	63	49
3.00	91	81	74	87	78	71	79	73	67	53
4.00	96	88	81	91	84	78	83	78	73	57
5.00	99	92	86	94	88	83	86	81	77	60
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:2020-01-16

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm		
NAME: UP-ML13-900-15W-C3-4000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0656	PROTECTION ANGLE:

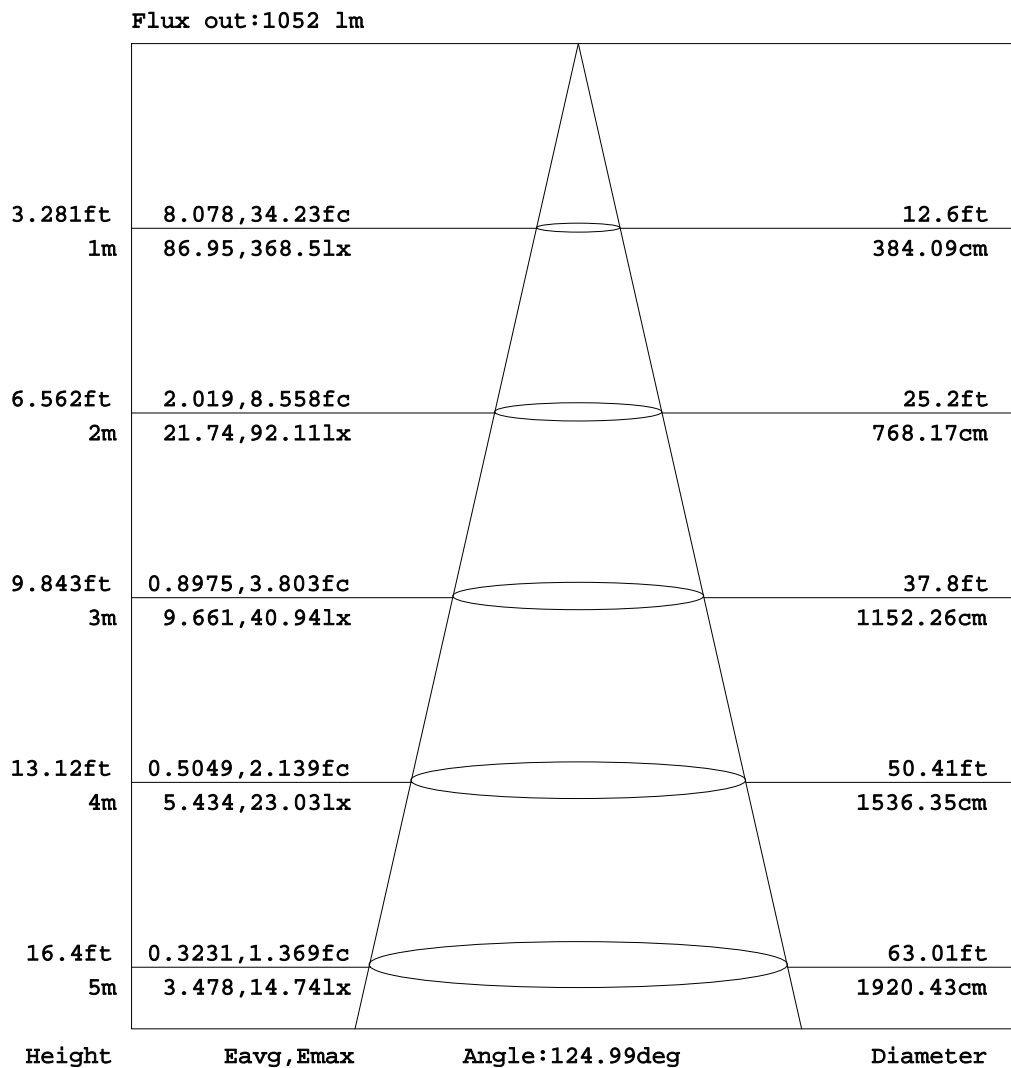


C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-01-16

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

AAI Figure

Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm		
NAME: UP-ML13-900-15W-C3-4000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0656	PROTECTION ANGLE:



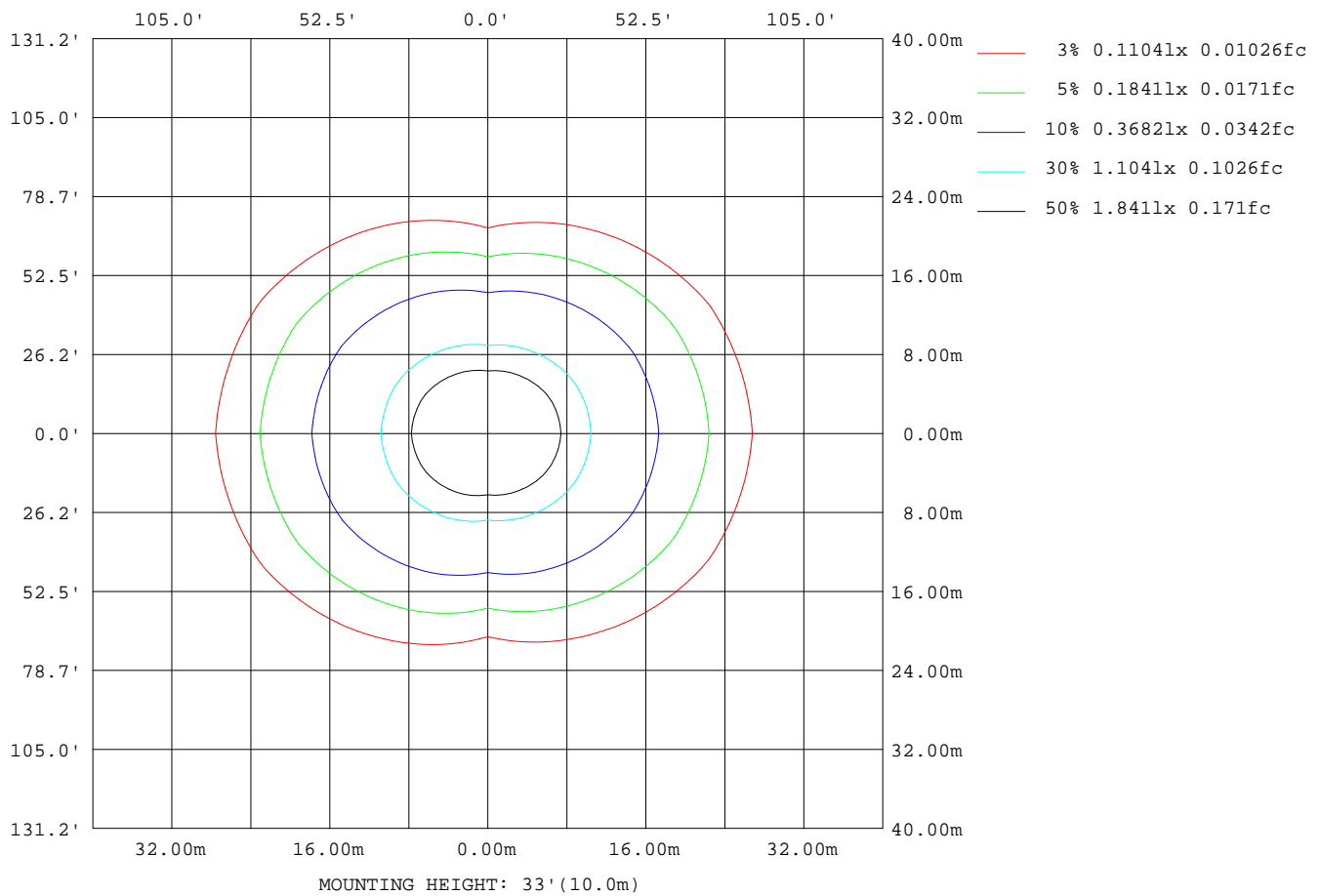
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-01-16

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

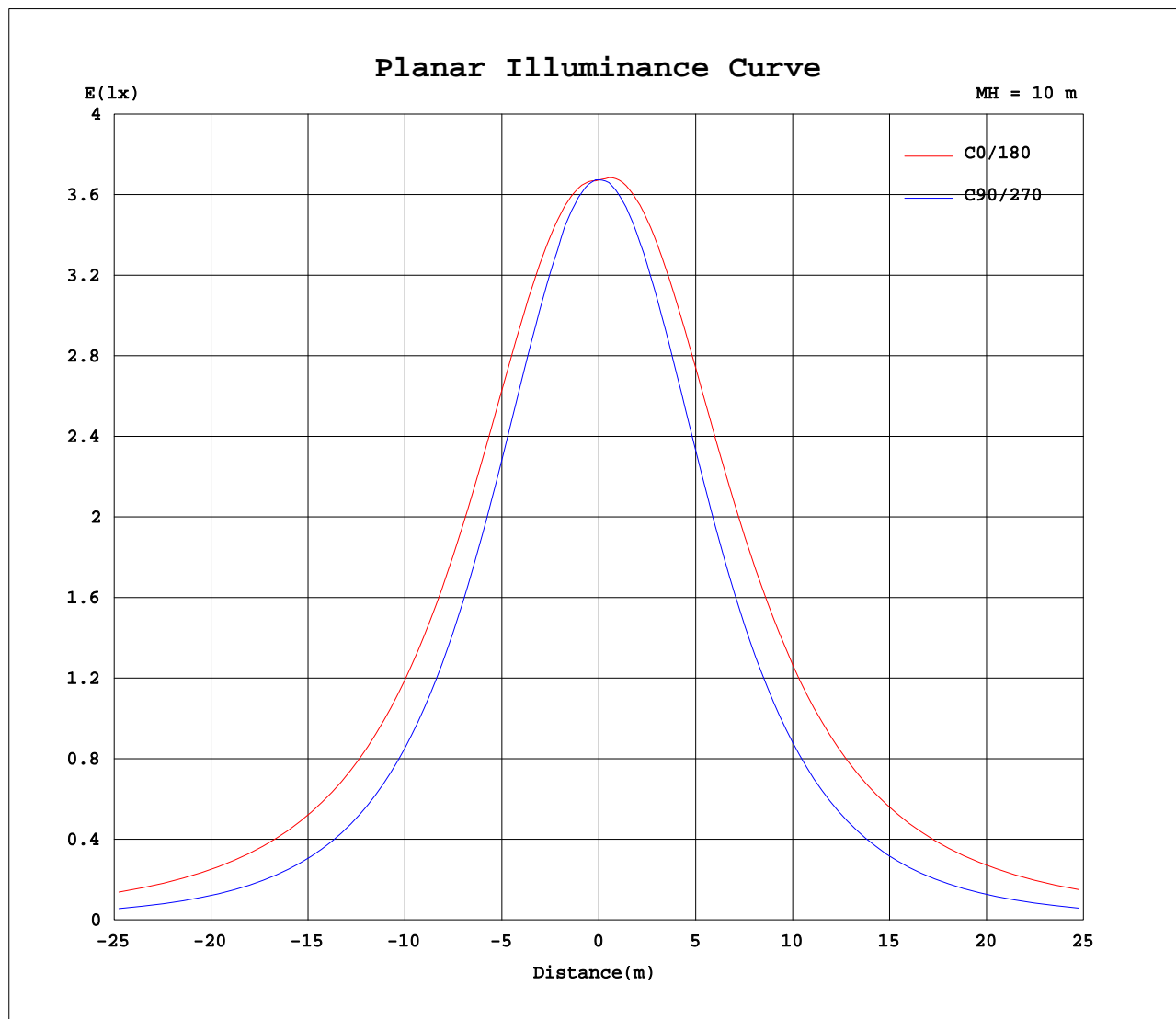
Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm		
NAME: UP-ML13-900-15W-C3-4000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0656	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-01-16

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [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: 2020-01-16

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.443m [K=1.0000]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.1V I:0.0690A P:14.90W PF:0.9360 Lamp Flux:1969.1x1 lm																	
NAME: UP-ML13-900-15W-C3-4000K									TYPE:15W			WEIGHT:					
DIM.:									SPEC.:4000K			SERIAL No.:1					
MFR.:									SUR.:0.0656			PROTECTION ANGLE:					

Table--1

UNIT: cd

C(DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330						
0	367	367	367	367	367	367	367	367	367	367	367	367						
5	369	368	366	365	368	371	372	372	369	366	367	369						
10	371	368	363	360	366	374	377	375	368	362	365	370						
15	372	367	357	350	362	375	381	377	365	354	361	369						
20	372	365	350	338	356	375	383	376	360	344	353	367						
25	369	360	339	324	347	372	383	375	350	330	343	363						
30	364	351	327	307	335	367	381	370	340	314	332	356						
35	357	342	312	287	322	359	376	363	326	295	318	347						
40	348	331	295	266	305	349	369	353	311	273	302	336						
45	337	318	276	241	287	336	358	341	293	249	283	323						
50	324	302	255	215	267	322	346	327	273	223	262	308						
55	310	286	233	187	245	306	332	311	251	194	240	292						
60	293	268	210	157	222	288	316	293	227	163	216	274						
65	275	248	184	126	197	269	298	273	203	132	191	254						
70	256	228	160	95.1	172	248	279	252	177	99.4	166	233						
75	236	207	136	63.9	147	226	258	230	152	67.4	142	212						
80	216	186	113	35.2	124	205	237	208	127	37.5	118	191						
85	199	168	93.3	12.1	103	185	217	187	106	13.4	98.1	172						
90	184	155	80.1	1.28	87.6	168	200	171	89.6	1.32	84.1	158						
95	176	147	73.6	1.53	79.8	159	189	161	81.4	1.61	77.2	150						
100	167	139	67.8	1.86	73.1	149	179	151	74.5	1.87	71.2	142						
105	158	130	62.7	2.17	67.2	140	168	141	68.4	2.19	65.7	133						
110	147	122	57.9	2.51	61.9	130	157	131	62.9	2.46	60.7	124						
115	137	113	50.7	2.88	57.0	120	145	121	57.9	2.82	52.5	114						
120	126	104	42.4	3.26	52.4	110	133	111	53.1	3.19	45.3	103						
125	115	92.7	35.9	3.59	48.0	99.8	121	101	48.4	3.52	38.8	91.1						
130	104	76.4	30.6	3.97	43.6	89.9	109	90.4	43.8	3.86	33.9	83.4						
135	92.3	63.3	26.2	4.34	39.2	79.9	96.7	80.2	39.3	4.18	29.0	69.5						
140	80.9	51.5	22.5	4.62	34.9	70.1	84.5	70.2	34.8	4.50	24.4	56.7						
145	69.6	41.5	19.1	4.96	30.5	60.3	72.5	60.3	30.3	4.86	20.5	45.9						
150	58.4	33.0	16.4	5.28	26.0	50.8	60.7	50.5	25.9	5.13	17.4	36.9						
155	47.4	25.7	15.0	5.50	20.8	41.2	46.8	40.9	20.7	5.42	14.7	28.7						
160	36.8	19.5	13.0	5.66	16.4	32.1	35.2	31.6	16.2	5.62	12.8	21.7						
165	26.8	14.1	11.2	5.84	12.6	22.5	24.2	22.2	12.5	5.77	11.0	15.6						
170	16.0	11.2	9.30	5.97	9.29	14.7	12.0	14.4	9.25	5.89	9.15	11.0						
175	7.82	8.12	7.53	6.04	7.27	9.10	7.64	8.73	7.15	6.00	7.48	8.36						
180	6.04	6.02	6.07	6.04	6.03	6.02	6.05	6.04	6.06	6.04	6.03	6.03						

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-01-16

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks: