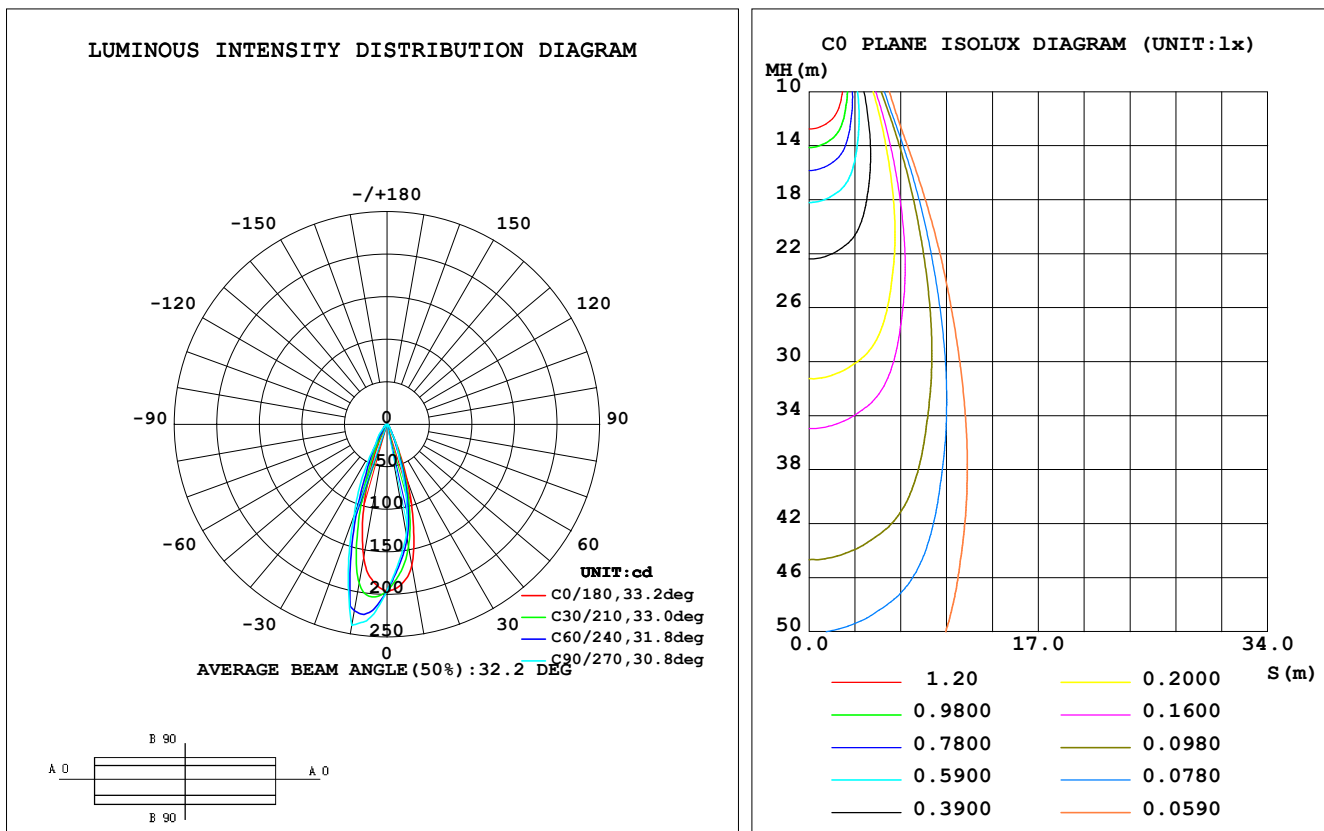


LUMINAIRE PHOTOMETRIC TEST REPORT

Name: REL20 (Single head)	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:2020030601
	SUR.:0.026	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	REL20 (Single head)	I _{max} (cd)	239.8	S/MH (C0/180)	0.51
NOMINAL POWER (W)		LOR (%)	100.0	S/MH (C90/270)	0.67
RATED VOLTAGE (V)	3.95	TOTAL FLUX (lm)	81.944	η UP, DN (C0-180)	0.0, 39.3
NOMINAL FLUX (lm)	81.9437	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 60.7
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE (V)	3.95	η down (%)	100.0	CIBSE SHR MAX	0.50



C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: WLM
Test Date: 2020-03-06

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System: EVERFINE GO-2000H_V1 SYSTEM V2.0.287
Humidity: 65.0%
Test Distance: 13.669m [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
5	189.4	170.5	162.3	166.3	185.7	213.0	227.8	215.1	0- 5	4.626	4.626	5.64,5.64
10	168.7	140.1	131.8	130.9	158.8	204.5	239.8	208.7	5- 10	13.06	17.68	21.6,21.6
15	119.9	99.53	87.21	90.37	109.3	157.7	176.4	165.6	10- 15	17.65	35.33	43.1,43.1
20	68.57	56.23	42.59	49.19	57.76	87.55	113.0	94.45	15- 20	15.79	51.12	62.4,62.4
25	29.58	24.01	25.87	20.66	23.33	41.86	69.46	44.80	20- 25	10.54	61.66	75.3,75.3
30	10.31	10.53	9.140	9.380	9.503	19.00	25.95	19.98	25- 30	5.888	67.55	82.4,82.4
35	6.239	6.445	7.124	6.071	5.811	9.271	19.06	9.435	30- 35	3.171	70.72	86.3,86.3
40	4.411	4.606	5.107	4.285	4.237	5.779	12.16	5.421	35- 40	2.302	73.03	89.1,89.1
45	3.563	3.672	3.254	3.570	3.432	4.583	5.874	4.378	40- 45	1.801	74.83	91.3,91.3
50	3.101	2.968	2.711	3.102	3.175	3.791	4.438	3.664	45- 50	1.482	76.31	93.1,93.1
55	2.714	2.450	2.332	2.704	2.692	3.131	3.608	3.071	50- 55	1.344	77.65	94.8,94.8
60	2.189	2.088	1.953	2.190	2.166	2.436	2.779	2.516	55- 60	1.179	78.83	96.2,96.2
65	1.684	1.695	1.743	1.733	1.609	1.834	2.071	1.975	60- 65	0.9859	79.82	97.4,97.4
70	1.160	1.247	1.534	1.337	1.158	1.345	1.362	1.420	65- 70	0.7818	80.60	98.4,98.4
75	0.7306	0.6686	1.188	1.063	0.7187	0.9855	1.070	0.8764	70- 75	0.5763	81.18	99.1,99.1
80	0.2150	0.4218	0.8421	0.7433	0.4178	0.6858	0.7778	0.5923	75- 80	0.3954	81.57	99.5,99.5
85	0.0215	0.2502	0.4962	0.4306	0.1605	0.4098	0.4855	0.3816	80- 85	0.2457	81.82	99.8,99.8
90	0.0107	0.0858	0.1502	0.1179	0.0107	0.1395	0.1931	0.1824	85- 90	0.1275	81.94	100,100
95									90- 95			
100									95-100			
105									100-105			
110									105-110			
115									110-115			
120									115-120			
125									120-125			
130									125-130			
135									130-135			
140									135-140			
145									140-145			
150									145-150			
155									150-155			
160									155-160			
165									160-165			
170									165-170			
175									170-175			
180									175-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

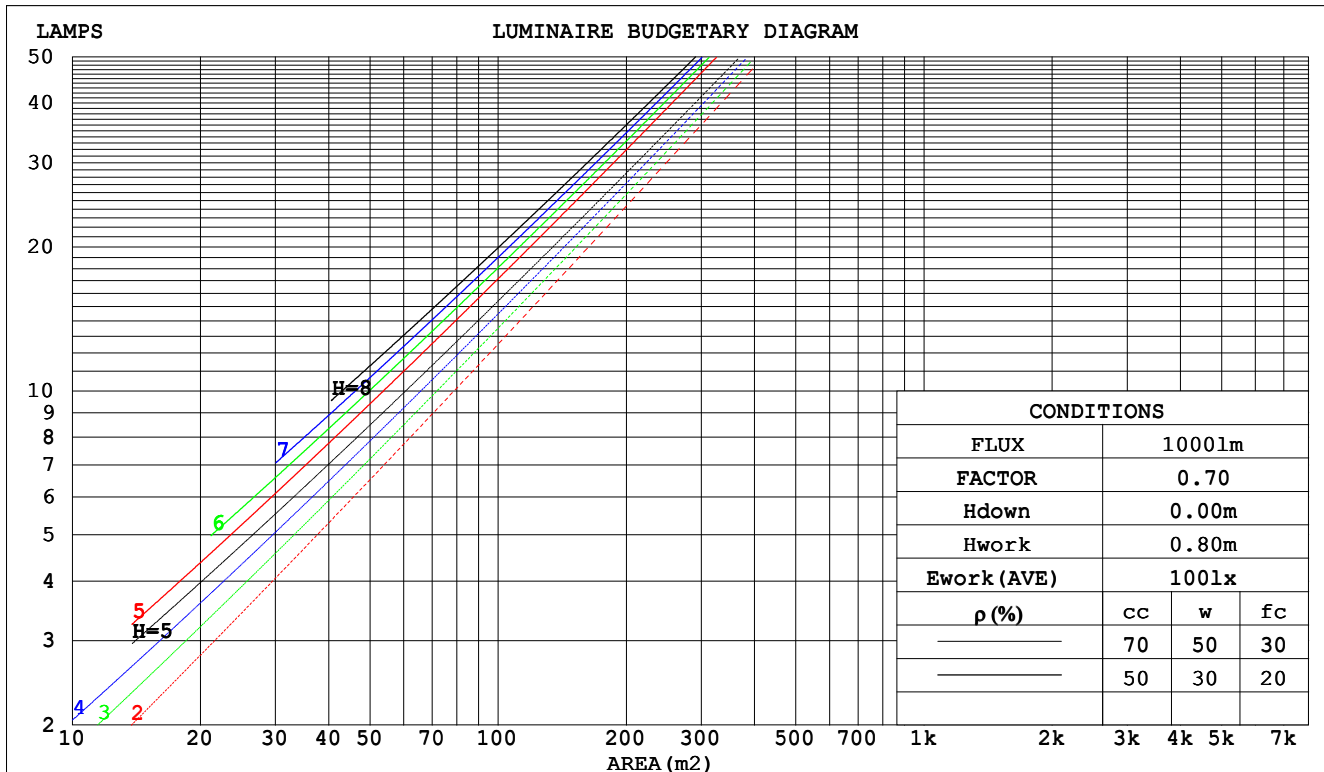
C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:WLM
 Test Date:2020-03-06

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
 Humidity:65.0%
 Test Distance:13.669m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Name: REL20 (Single head)	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:2020030601
	SUR.:0.026	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
p _w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
p _{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	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	.00
1.0	1.11	1.09	1.06	1.09	1.07	1.05	1.05	1.03	1.01	1.01	.98	.98	.98	.97	.96	.94
2.0	1.04	1.00	.97	1.02	.99	.96	.99	.96	.94	.96	.94	.92	.93	.91	.90	.88
3.0	.98	.93	.89	.96	.92	.89	.94	.90	.87	.91	.88	.86	.89	.87	.85	.83
4.0	.93	.87	.84	.91	.87	.83	.89	.85	.82	.87	.84	.81	.86	.83	.80	.79
5.0	.88	.83	.79	.87	.82	.78	.85	.81	.78	.84	.80	.77	.82	.79	.76	.75
6.0	.84	.78	.75	.83	.78	.74	.82	.77	.74	.80	.76	.73	.79	.76	.73	.72
7.0	.80	.75	.71	.79	.74	.71	.78	.74	.70	.77	.73	.70	.76	.72	.70	.68
8.0	.77	.71	.68	.76	.71	.68	.75	.71	.67	.74	.70	.67	.73	.70	.67	.66
9.0	.74	.68	.65	.73	.68	.65	.72	.68	.65	.71	.67	.64	.71	.67	.64	.63
10.0	.71	.66	.62	.70	.66	.62	.70	.65	.62	.69	.65	.62	.68	.65	.62	.61



C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:WLM
 Test Date:2020-03-06

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
 Humidity:65.0%
 Test Distance:13.669m [K=1.0000]
 Remarks:

WEC AND CCEC

Name: REL20 (Single head)	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:2020030601
	SUR.:0.026	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						Wall Exitance Coefficients(WEC)										
0.0																	
1.0	.174	.099	.031	.168	.096	.030	.155	.089	.028	.144	.083	.027	.133	.077	.025		
2.0	.163	.089	.027	.157	.087	.027	.147	.082	.025	.137	.077	.024	.128	.072	.023		
3.0	.152	.081	.024	.147	.079	.024	.138	.075	.023	.130	.071	.022	.122	.068	.021		
4.0	.142	.074	.022	.138	.072	.021	.130	.069	.021	.123	.066	.020	.117	.063	.019		
5.0	.134	.068	.020	.130	.067	.019	.123	.064	.019	.117	.062	.018	.112	.060	.018		
6.0	.126	.063	.018	.123	.062	.018	.117	.060	.017	.112	.058	.017	.107	.056	.017		
7.0	.119	.059	.017	.117	.058	.017	.112	.056	.016	.107	.055	.016	.102	.053	.016		
8.0	.113	.055	.016	.111	.055	.015	.106	.053	.015	.102	.052	.015	.098	.050	.015		
9.0	.108	.052	.015	.106	.052	.014	.102	.050	.014	.098	.049	.014	.095	.048	.014		
10.0	.103	.049	.014	.101	.049	.014	.098	.048	.013	.094	.047	.013	.091	.046	.013		

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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.171	.157	.145	.146	.135	.125	.100	.093	.086	.058	.054	.050	.018	.017	.016	
2.0	.155	.133	.114	.133	.114	.098	.091	.079	.069	.052	.046	.040	.017	.015	.013	
3.0	.142	.114	.091	.121	.098	.079	.083	.068	.055	.048	.040	.033	.015	.013	.011	
4.0	.130	.099	.074	.112	.085	.065	.077	.059	.045	.045	.035	.027	.014	.011	.009	
5.0	.121	.087	.062	.104	.075	.054	.071	.052	.038	.041	.031	.022	.013	.010	.007	
6.0	.113	.077	.052	.097	.067	.045	.067	.047	.032	.039	.028	.019	.012	.009	.006	
7.0	.105	.069	.044	.091	.060	.038	.063	.042	.027	.036	.025	.016	.012	.008	.005	
8.0	.099	.063	.038	.085	.054	.033	.059	.038	.023	.034	.023	.014	.011	.007	.005	
9.0	.094	.057	.033	.081	.050	.029	.056	.035	.020	.033	.021	.012	.011	.007	.004	
10.0	.089	.053	.029	.076	.046	.025	.053	.032	.018	.031	.019	.011	.010	.006	.004	

C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:WLM
 Test Date:2020-03-06

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
 Humidity:65.0%
 Test Distance:13.669m [K=1.0000]
 Remarks:

UGR(Unified Glare Rating) Table

Name: REL20 (Single head)					TYPE:		WEIGHT:				
SPEC.:					DIM.:		SERIAL No.:2020030601				
					SUR.:0.026		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		9.6	10.5	9.9	10.6	10.8	9.6	10.4	9.8	10.6	10.7
	3H	10.8	11.6	11.1	11.8	12.0	11.2	11.9	11.4	12.1	12.3
	4H	11.1	11.9	11.4	12.1	12.3	11.9	12.7	12.2	12.9	13.1
	6H	11.2	11.9	11.5	12.1	12.4	12.7	13.4	13.0	13.6	13.9
	8H	11.2	11.8	11.5	12.1	12.4	13.0	13.7	13.3	13.9	14.2
	12H	11.1	11.8	11.4	12.0	12.3	13.3	13.9	13.6	14.2	14.5
4H	2H	10.2	11.0	10.5	11.2	11.4	10.2	11.0	10.5	11.2	11.4
	3H	11.5	12.2	11.8	12.4	12.7	11.9	12.6	12.2	12.9	13.1
	4H	11.9	12.5	12.2	12.8	13.1	12.8	13.4	13.2	13.7	14.0
	6H	11.9	12.5	12.3	12.8	13.1	13.7	14.3	14.1	14.6	14.9
	8H	11.9	12.4	12.3	12.7	13.1	14.1	14.6	14.5	15.0	15.3
	12H	11.8	12.3	12.2	12.7	13.0	14.5	14.9	14.9	15.3	15.7
8H	4H	12.0	12.5	12.4	12.9	13.2	13.0	13.4	13.3	13.8	14.2
	6H	12.1	12.5	12.5	12.9	13.3	14.0	14.4	14.4	14.8	15.2
	8H	12.0	12.4	12.5	12.8	13.3	14.5	14.9	15.0	15.3	15.8
	12H	12.0	12.3	12.5	12.7	13.2	15.1	15.4	15.5	15.8	16.3
12H	4H	12.1	12.5	12.5	12.9	13.3	12.9	13.4	13.3	13.7	14.1
	6H	12.2	12.5	12.6	13.0	13.4	14.0	14.4	14.4	14.8	15.2
	8H	12.1	12.4	12.6	12.9	13.4	14.6	14.9	15.0	15.3	15.8
Variations with the observer position at spacings:											
S = 1.0H		+ 0.2 / - 0.3					+ 0.2 / - 0.2				
1.5H		+ 0.1 / - 0.1					+ 0.3 / - 0.1				
2.0H		+ 0.4 / - 0.6					+ 0.1 / - 0.2				

CIE Pub.117 Corrected 81.94 lm Total Lamp Luminous Flux. (8log(F/F0) = -8.7)

C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:WLM
 Test Date:2020-03-06

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
 Humidity:65.0%
 Test Distance:13.669m [K=1.0000]
 Remarks:

UTILIZATION FACTORS TABLE

Name: REL20 (Single head)	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:2020030601
	SUR.:0.026	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) $k(RI) \times RCR = 5$									
$k = 0.60$	85	78	74	84	78	74	84	78	74	70
0.80	92	86	82	92	86	82	90	85	81	78
1.00	97	91	87	96	90	87	95	90	86	82
1.25	101	96	92	100	95	91	98	94	91	86
1.50	104	99	95	103	98	95	101	97	94	89
2.00	107	102	99	106	101	98	103	99	97	91
2.50	109	105	102	107	104	101	104	101	99	93
3.00	111	107	104	109	106	103	105	103	101	94
4.00	113	110	107	111	108	106	107	105	103	96
5.00	114	112	110	112	110	108	108	107	105	97
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = SHRNOM = 1.25		

C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:WLM
 Test Date:2020-03-06

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
 Humidity:65.0%
 Test Distance:13.669m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Name: REL20 (Single head)	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:2020030601
	SUR.:0.026	PROTECTION ANGLE:

Conical surface Flux(90deg):

74.826 lm

%lum = 91.3%

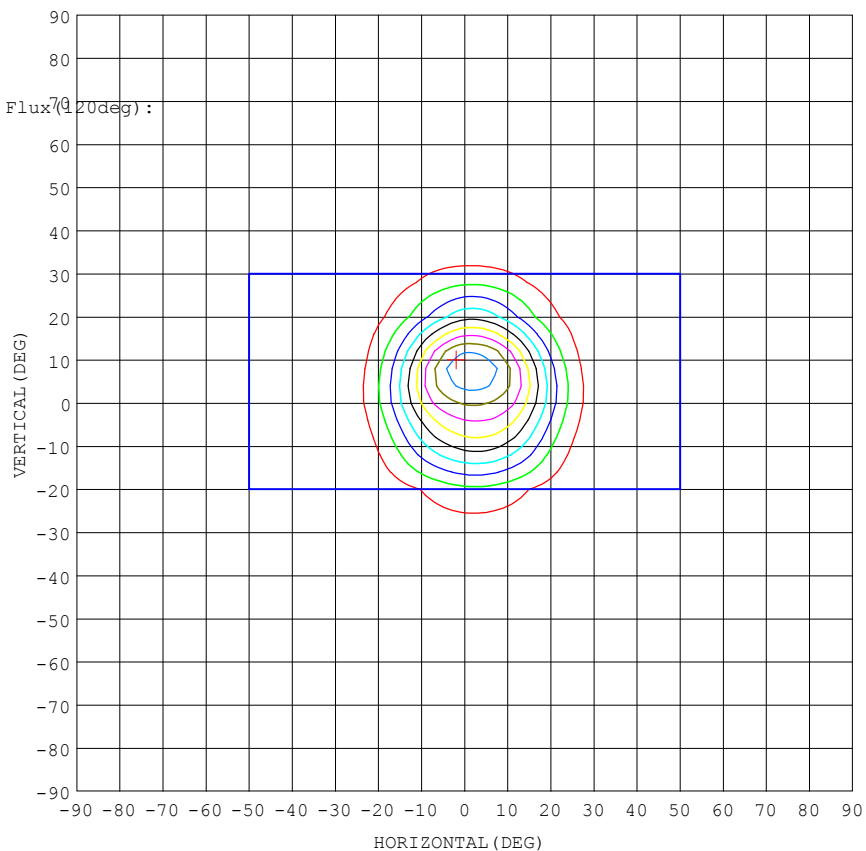
%lamp = 91.3%

Conical surface Flux(70deg):

78.831 lm

%lum = 96.2%

%lamp = 96.2%

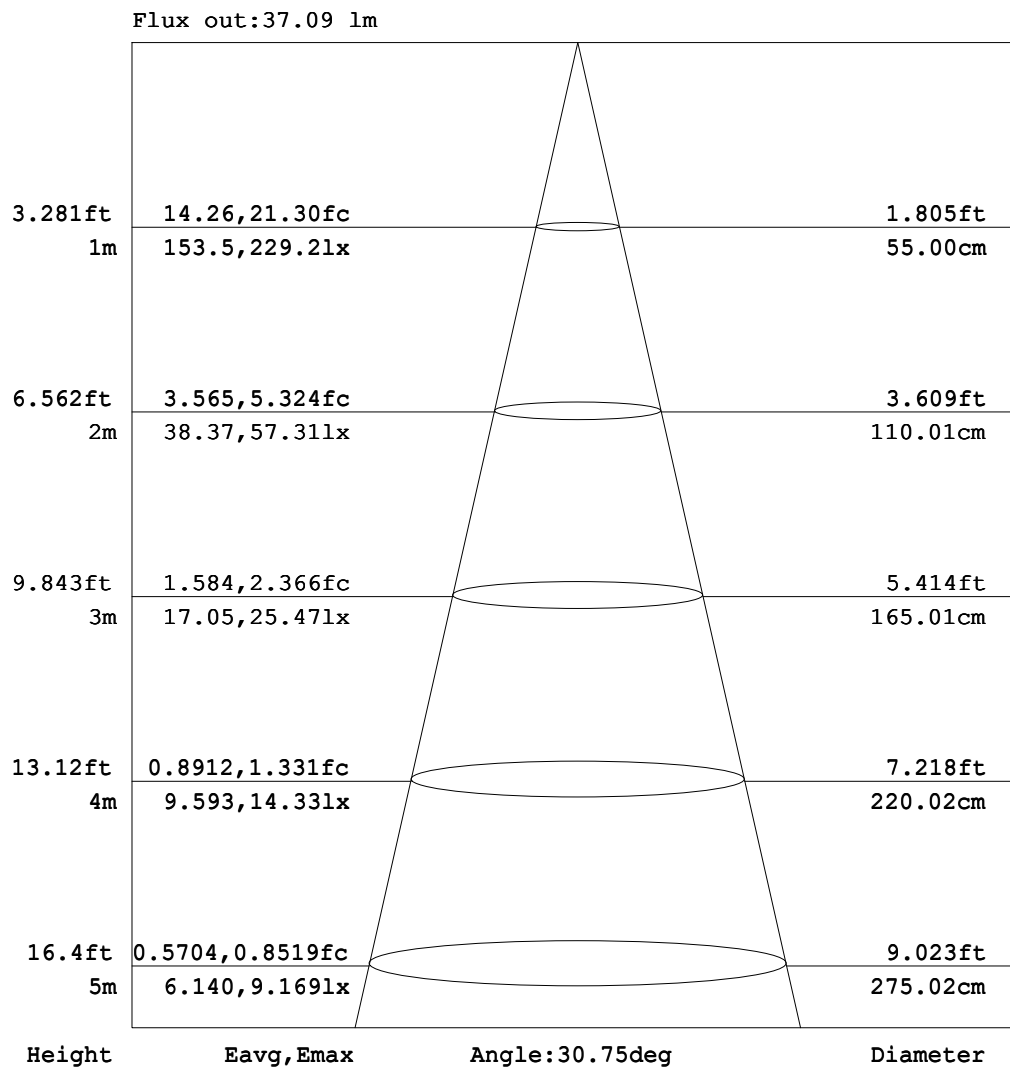


C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WLM
Test Date:2020-03-06

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
Humidity:65.0%
Test Distance:13.669m [K=1.0000]
Remarks:

AAI Figure

Name: REL20 (Single head)	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:2020030601
	SUR.:0.026	PROTECTION ANGLE:



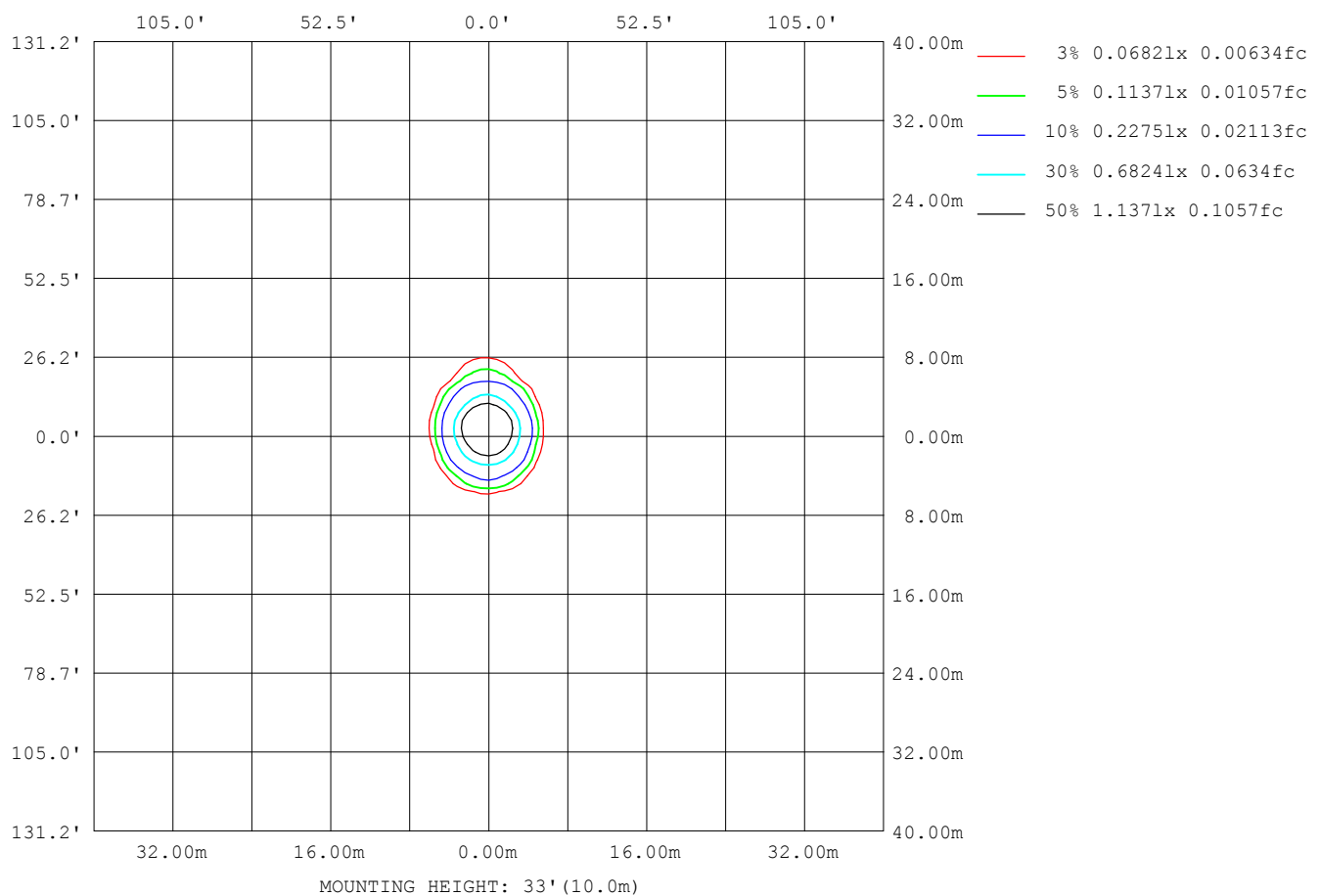
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WLM
Test Date:2020-03-06

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
Humidity:65.0%
Test Distance:13.669m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

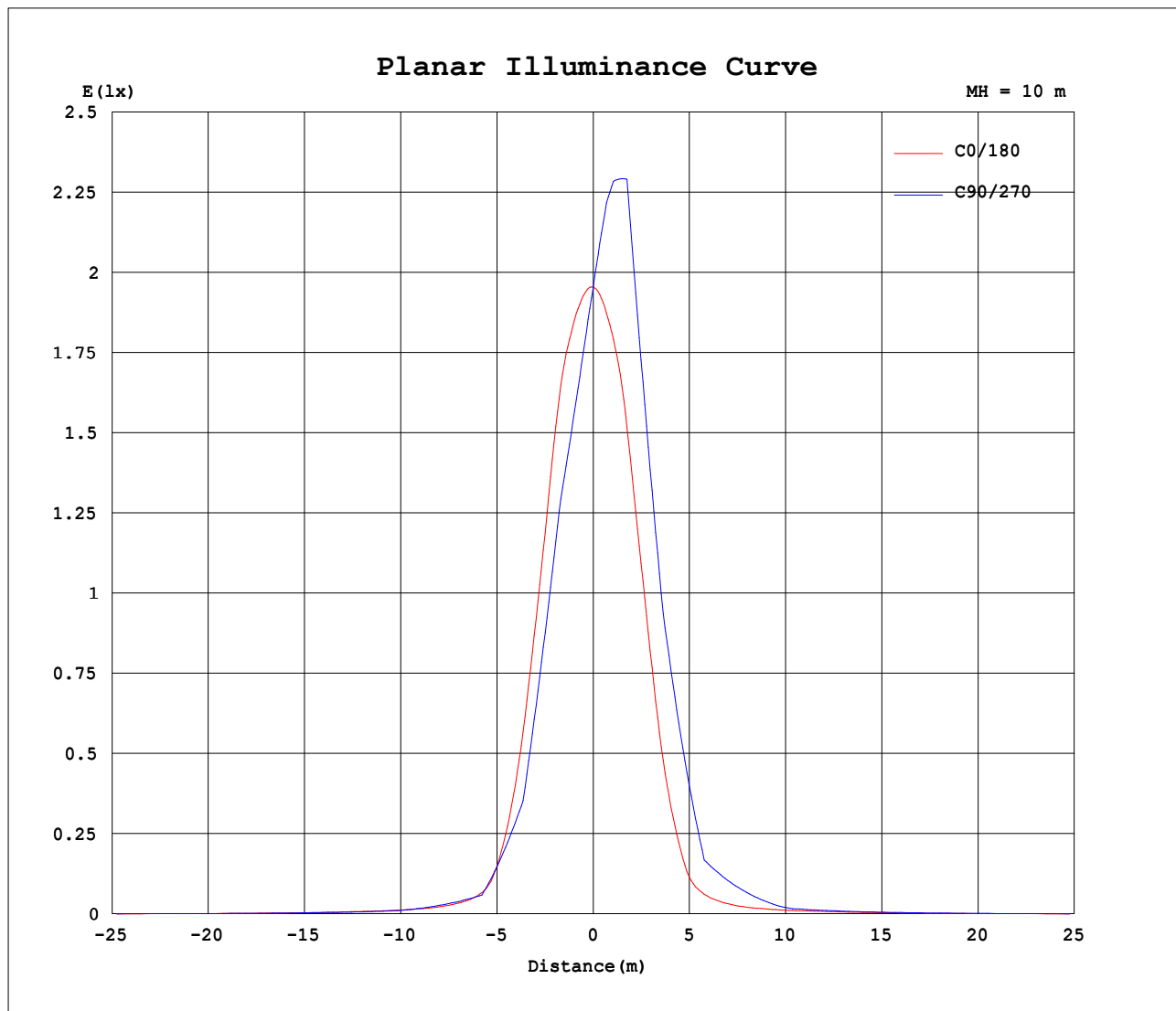
Name: REL20 (Single head)	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:2020030601
	SUR.:0.026	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WLM
Test Date:2020-03-06

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
Humidity:65.0%
Test Distance:13.669m [K=1.0000]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: WLM
Test Date: 2020-03-06

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
Test System: EVERFINE GO-2000H_V1 SYSTEM V2.0.287
Humidity: 65.0%
Test Distance: 13.669m [K=1.0000]
Remarks:

UNIT: cd

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000H_v1 SYSTEM V2.0.287
Humidity:65.0%
Test Distance:13.669m [K=1.0000]
Remarks:

```

LUMINOUS DISTRIBUTION INTENSITY DATA

Name: REL20 (Single head)	TYPE :	WEIGHT :
SPEC. :	DIM. :	SERIAL No. : 2020030601
	SUR. : 0.026	PROTECTION ANGLE :

Table--2

UNIT: cd

[illegible]

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WLM
Test Date:2020-03-06

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
Humidity:65.0%
Test Distance:13.669m [K=1.0000]
Remarks:

```

Name: REL20 (Single head)	TYPE :	WEIGHT :
SPEC. :	DIM. :	SERIAL No. : 2020030601
	SUR. : 0.026	PROTECTION ANGLE :

UNIT: cd

[illegible]

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
Humidity:65.0%
Test Distance:13.669m [K=1.0000]
Remarks:

```

Name: REL20 (Single head)	TYPE :	WEIGHT :
SPEC. :	DIM. :	SERIAL No. : 2020030601
	SUR. : 0.026	PROTECTION ANGLE :

[illegible][illegible][illegible]

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: WLM
Test Date: 2020-03-06

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000H_V1 SYSTEM V2.0.287
Humidity:65.0%
Test Distance:13.669m [K=1.0000]
Remarks:

```