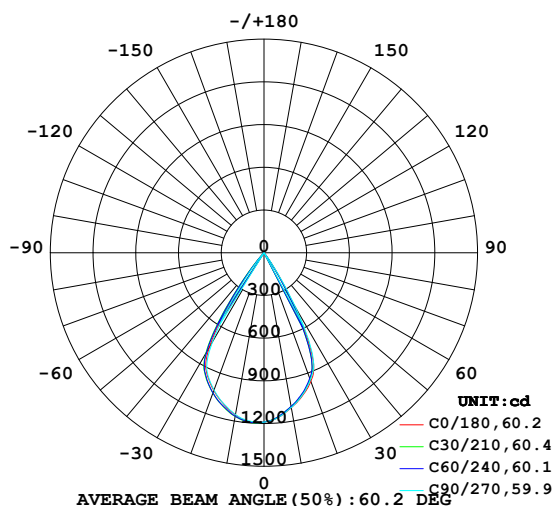


**LUMINAIRE PHOTOMETRIC TEST REPORT**

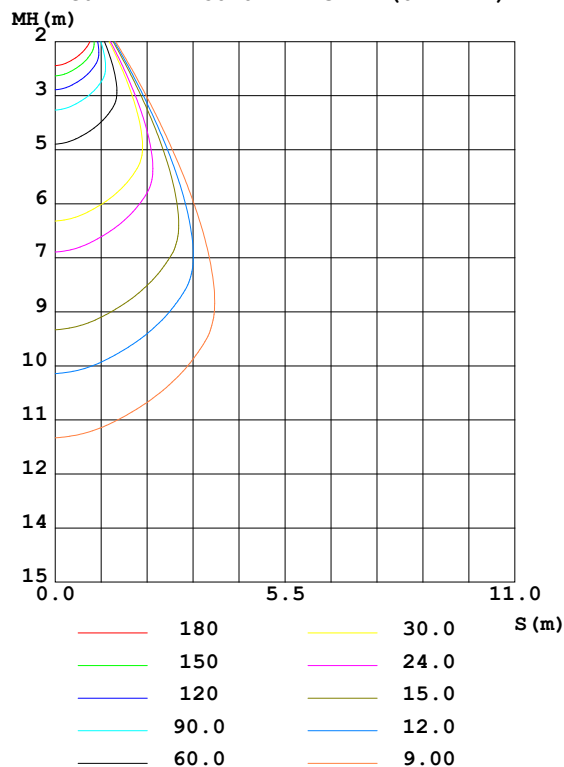
Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\phi$ 55mm*H150mm	
MFR.: NEKO LIGHTING AG		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 62.25 lm/W			
MODEL	CITIZEN-3000K	I <sub>max</sub> (cd)	1197	S/MH (C0/180)	0.93
NOMINAL POWER (W)	15	LOR (%)	100.0	S/MH (C90/270)	0.91
RATED VOLTAGE (V)	220	TOTAL FLUX (lm)	960.99	$\eta$ UP,DN (C0-180)	0.0,47.1
NOMINAL FLUX (lm)	960.986	CIE CLASS	DIRECT	$\eta$ UP,DN (C180-360)	0.0,52.9
LAMPS INSIDE	1	$\eta$ up (%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE (V)	220	$\eta$ down (%)	100.0	CIBSE SHR MAX	0.65

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: Jason Long  
 Test Date: 2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
 Humidity: 58%  
 Test Distance: 5.850m [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	1105	1096	1104	1149	1157	1165	1154	1111	0- 10	110.7	110.7	11.5,11.5
20	961.8	943.9	951.9	1009	1030	1049	1026	968.3	10- 20	300.3	411.0	42.8,42.8
30	417.9	368.3	447.5	729.8	769.7	813.0	726.1	441.9	20- 30	384.8	795.8	82.8,82.8
40	11.94	8.612	11.27	55.85	75.47	90.59	48.65	14.49	30- 40	154.2	950.1	98.9,98.9
50	1.915	2.017	2.398	3.652	3.753	3.879	2.952	2.032	40- 50	8.253	958.3	99.7,99.7
60	0.7682	0.7565	1.059	1.455	1.403	1.517	1.223	0.8602	50- 60	1.610	959.9	99.9,99.9
70	0.3003	0.2703	0.3990	0.5477	0.5253	0.5131	0.3938	0.3226	60- 70	0.6919	960.6	100,100
80	0.1153	0.0828	0.1361	0.1928	0.1802	0.1922	0.1400	0.1142	70- 80	0.2722	960.9	100,100
90	0.0609	0.0589	0.0569	0.0768	0.0587	0.0611	0.0591	0.0307	80- 90	0.0952	961.0	100,100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 956.57 lm

%lum = 99.5%

%lamp = 99.5%

Conical surface Flux(120deg): 959.93 lm

%lum = 99.9%

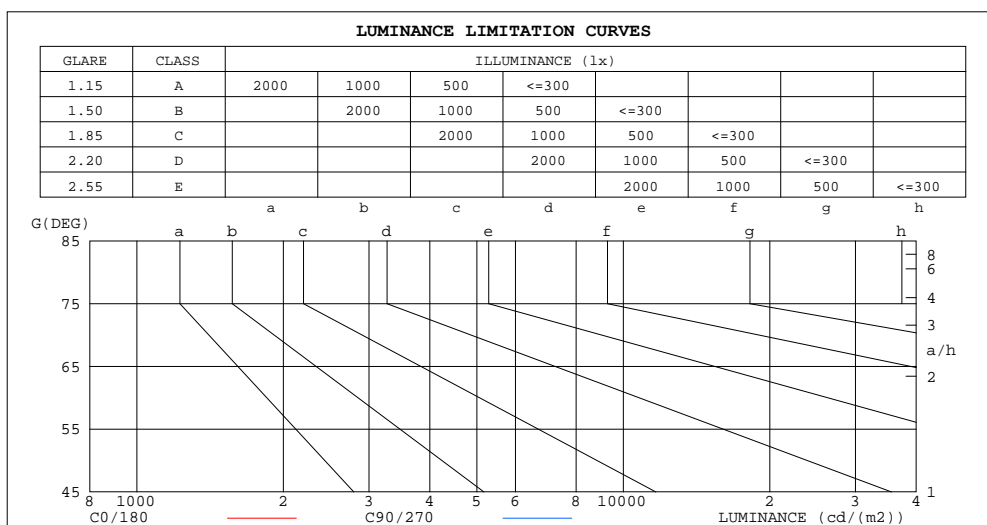
%lamp = 99.9%

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Jason Long  
Test Date:2020-01-04

γ Range: 0 - 90DEG  
γ Interval: 0.5DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:58%  
Test Distance:5.850m [K=1.0000]  
Remarks:

### LUMINANCE LIMITATION CURVES

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\phi$ 55mm*H150mm	
MFR.: NEKO LIGHTING AG		



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	47	44
80	33	39
75	37	47
70	44	58
65	56	76
60	77	105
55	114	147
50	149	185
45	270	289

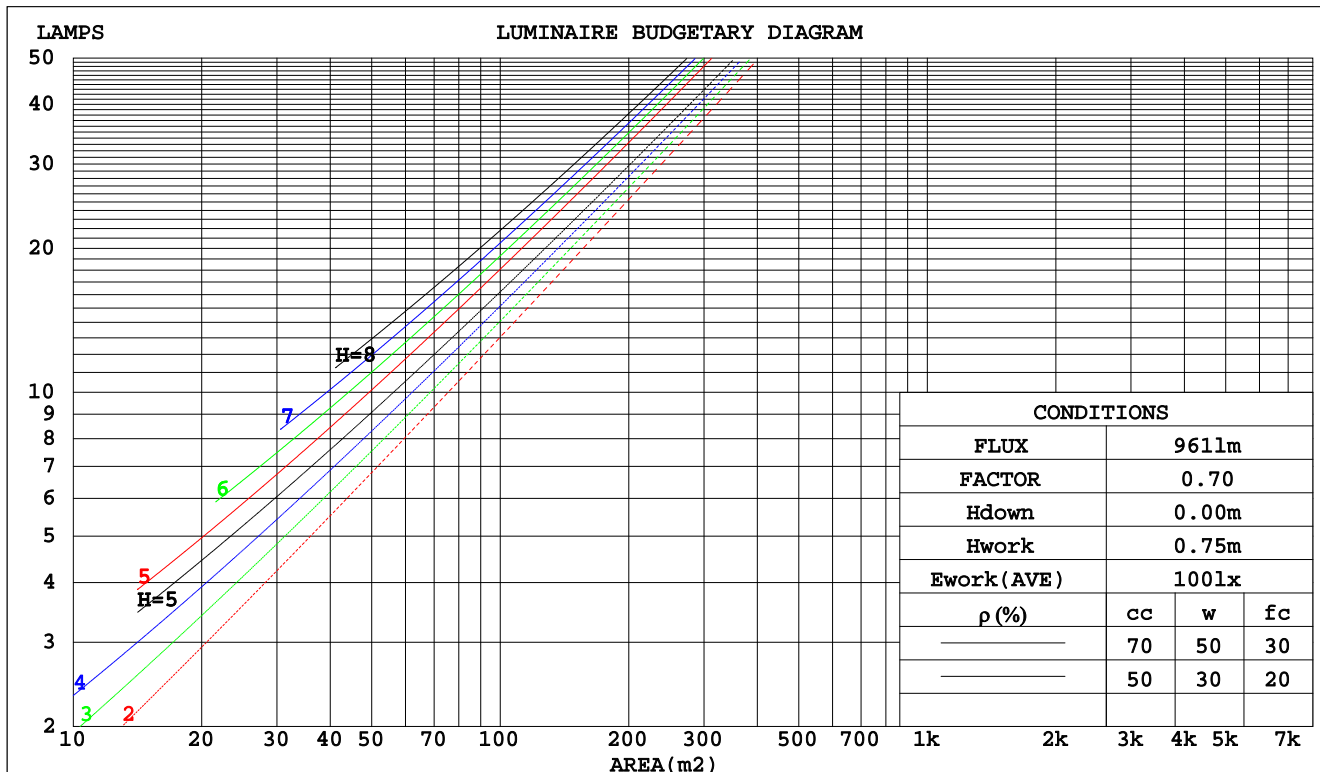
C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Jason Long  
Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:58%  
Test Distance:5.850m [K=1.0000]  
Remarks:

**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\phi$ 55mm*H150mm	
MFR.: NEKO LIGHTING AG		

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	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	1.00
1.0	1.11	1.09	1.07	1.09	1.07	1.05	1.05	1.03	1.02	1.01	1.00	.99	.98	.97	.96	.94
2.0	1.04	1.01	.97	1.03	.99	.96	.99	.97	.94	.96	.94	.92	.94	.92	.90	.89
3.0	.98	.93	.90	.97	.92	.89	.94	.90	.87	.92	.89	.86	.89	.87	.85	.83
4.0	.92	.87	.83	.91	.86	.83	.89	.85	.82	.87	.83	.81	.85	.82	.80	.78
5.0	.87	.81	.77	.86	.81	.77	.84	.80	.76	.83	.79	.76	.81	.78	.75	.74
6.0	.82	.76	.72	.81	.76	.72	.80	.75	.72	.78	.74	.71	.77	.74	.71	.69
7.0	.78	.72	.68	.77	.72	.68	.76	.71	.67	.74	.70	.67	.73	.70	.67	.65
8.0	.73	.68	.64	.73	.68	.64	.72	.67	.64	.71	.66	.63	.70	.66	.63	.62
9.0	.70	.64	.60	.69	.64	.60	.68	.63	.60	.67	.63	.60	.67	.63	.60	.58
10.0	.66	.61	.57	.66	.61	.57	.65	.60	.57	.64	.60	.57	.63	.59	.57	.55



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Jason Long  
Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:58%  
Test Distance:5.850m [K=1.0000]  
Remarks:

WEC AND CCEC

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\phi$ 55mm*H150mm	
MFR.: NEKO LIGHTING AG		

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	.167	.095	.030	.160	.092	.029	.148	.085	.027	.136	.079	.025	.126	.073	.023		
2.0	.159	.087	.027	.153	.085	.026	.143	.079	.025	.133	.075	.023	.124	.070	.022		
3.0	.151	.080	.024	.146	.078	.024	.138	.075	.023	.129	.071	.022	.122	.067	.021		
4.0	.144	.075	.022	.140	.073	.022	.132	.070	.021	.125	.067	.020	.119	.064	.020		
5.0	.138	.070	.020	.134	.069	.020	.127	.066	.020	.121	.064	.019	.115	.062	.019		
6.0	.132	.066	.019	.128	.065	.019	.123	.063	.018	.117	.061	.018	.112	.059	.018		
7.0	.126	.062	.018	.123	.061	.018	.118	.060	.017	.113	.058	.017	.109	.057	.017		
8.0	.121	.059	.017	.119	.058	.017	.114	.057	.016	.110	.056	.016	.106	.054	.016		
9.0	.116	.056	.016	.114	.056	.016	.110	.054	.015	.106	.053	.015	.102	.052	.015		
10.0	.112	.054	.015	.110	.053	.015	.106	.052	.015	.103	.051	.015	.099	.050	.014		

pcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	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	.170	.157	.146	.146	.135	.125	.100	.093	.087	.057	.054	.050	.018	.017	.016	
2.0	.155	.133	.114	.132	.114	.099	.091	.079	.069	.052	.046	.040	.017	.015	.013	
3.0	.142	.113	.091	.121	.098	.079	.083	.068	.055	.048	.040	.033	.015	.013	.011	
4.0	.131	.099	.074	.112	.085	.064	.077	.059	.045	.045	.035	.027	.014	.011	.009	
5.0	.122	.087	.061	.105	.075	.053	.072	.053	.037	.042	.031	.022	.013	.010	.007	
6.0	.114	.077	.051	.098	.067	.044	.068	.047	.031	.039	.028	.019	.013	.009	.006	
7.0	.108	.070	.043	.093	.061	.038	.064	.042	.027	.037	.025	.016	.012	.008	.005	
8.0	.102	.064	.037	.088	.055	.032	.061	.039	.023	.035	.023	.014	.011	.007	.005	
9.0	.097	.058	.032	.084	.051	.028	.058	.036	.020	.034	.021	.012	.011	.007	.004	
10.0	.093	.054	.028	.080	.047	.024	.056	.033	.017	.032	.019	.010	.011	.006	.003	

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:Jason Long  
 Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
 Humidity:58%  
 Test Distance:5.850m [K=1.0000]  
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm										
NAME: ROXY Art-Z-15W-930-35-60#60					TYPE:Downlight			SERIAL No.:		
SPEC.:3000K					DIM.: $\phi$ 55mm*H150mm					
MFR.: NEKO LIGHTING AG										
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	7.2	8.0	7.4	8.2	8.4	7.3	8.2	7.5	8.4	8.5
3H	7.0	7.8	7.2	8.0	8.2	7.2	8.0	7.4	8.2	8.4
4H	6.9	7.7	7.2	7.9	8.1	7.1	7.8	7.3	8.1	8.3
6H	6.8	7.5	7.1	7.8	8.0	7.0	7.7	7.3	7.9	8.2
8H	6.8	7.5	7.1	7.7	8.0	6.9	7.6	7.3	7.9	8.1
12H	6.7	7.4	7.0	7.7	7.9	6.9	7.6	7.2	7.8	8.1
4H 2H	6.9	7.7	7.2	7.9	8.1	7.1	7.8	7.3	8.1	8.3
3H	6.7	7.4	7.0	7.7	7.9	6.9	7.6	7.2	7.8	8.1
4H	6.6	7.2	7.0	7.5	7.8	6.8	7.4	7.2	7.7	8.0
6H	6.5	7.1	6.9	7.4	7.7	6.7	7.2	7.1	7.6	7.9
8H	6.5	7.0	6.9	7.3	7.7	6.7	7.1	7.1	7.5	7.9
12H	6.4	6.9	6.8	7.3	7.6	6.6	7.1	7.0	7.4	7.8
8H 4H	6.5	7.0	6.9	7.3	7.7	6.7	7.1	7.1	7.5	7.9
6H	6.4	6.8	6.8	7.2	7.6	6.6	7.0	7.0	7.3	7.8
8H	6.3	6.7	6.8	7.1	7.5	6.5	6.9	6.9	7.3	7.7
12H	6.3	6.6	6.7	7.0	7.5	6.4	6.7	6.9	7.2	7.7
12H 4H	6.4	6.9	6.8	7.3	7.6	6.6	7.1	7.0	7.4	7.8
6H	6.3	6.7	6.8	7.1	7.5	6.5	6.9	6.9	7.3	7.7
8H	6.3	6.6	6.7	7.0	7.5	6.4	6.7	6.9	7.2	7.7
Variations with the observer position at spacings:										
S = 1.0H	+ 5.8 / -10.3					+ 6.1 / - 9.2				
1.5H	+ 8.5 / - 8.6					+ 8.7 / - 7.9				
2.0H	+ 4.0 / - 3.1					+ 3.7 / - 3.1				

CIE Pub.117, 961.0 lm Total Lamp Luminous Flux Correct ( $8\log(F/F_0) = -0.1$ )

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Jason Long  
Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:58%  
Test Distance:5.850m [K=1.0000]  
Remarks:

UTILIZATION FACTORS TABLE

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\varnothing 55\text{mm} \times H150\text{mm}$	
MFR.: NEKO LIGHTING AG		

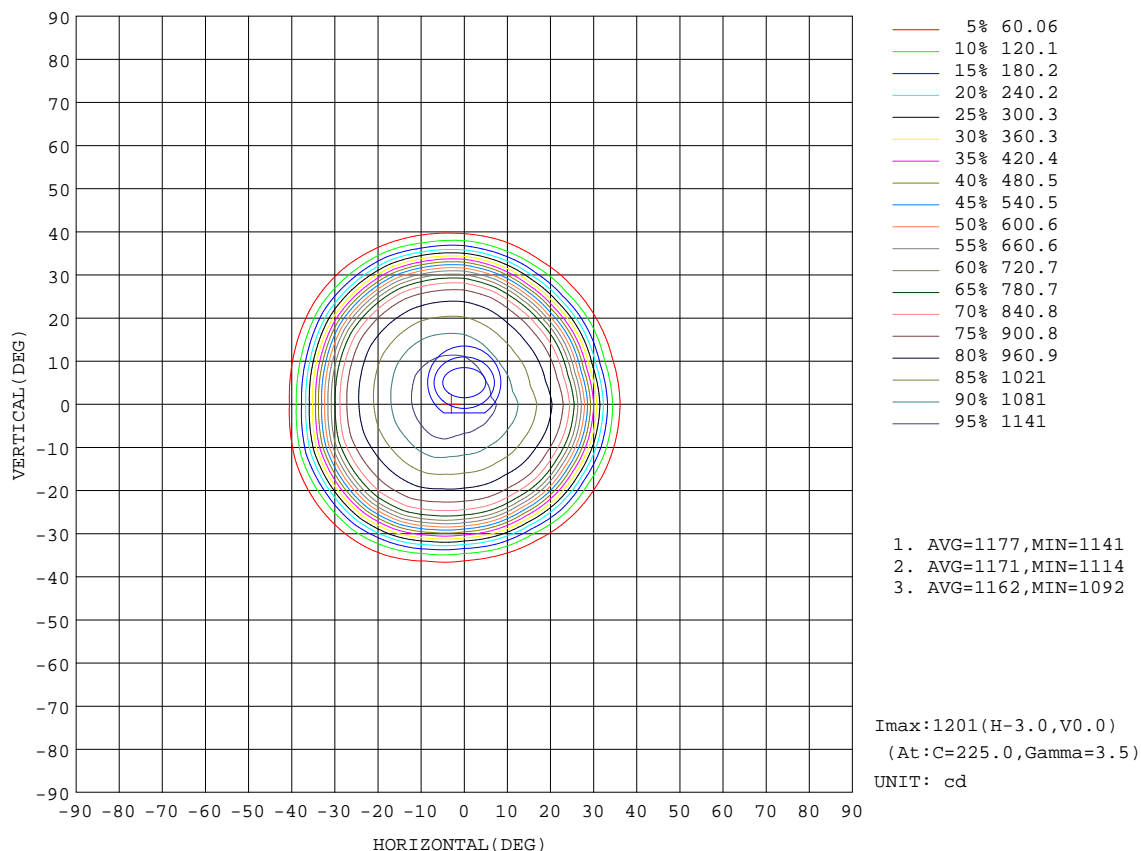
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	91	85	82	90	85	82	90	85	82	78
0.80	98	93	89	97	92	89	96	92	89	86
1.00	102	97	93	101	96	93	99	96	93	89
1.25	105	101	97	104	100	97	102	99	96	92
1.50	108	103	100	106	103	100	104	101	99	95
2.00	110	106	103	108	105	102	106	103	101	96
2.50	111	108	105	110	107	104	107	104	102	97
3.00	113	110	107	111	108	106	108	106	104	98
4.00	115	112	110	112	110	109	109	107	106	99
5.00	116	114	112	114	112	110	110	108	107	100
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:Jason Long  
 Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
 Humidity:58%  
 Test Distance:5.850m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\phi$ 55mm*H150mm	
MFR.: NEKO LIGHTING AG		



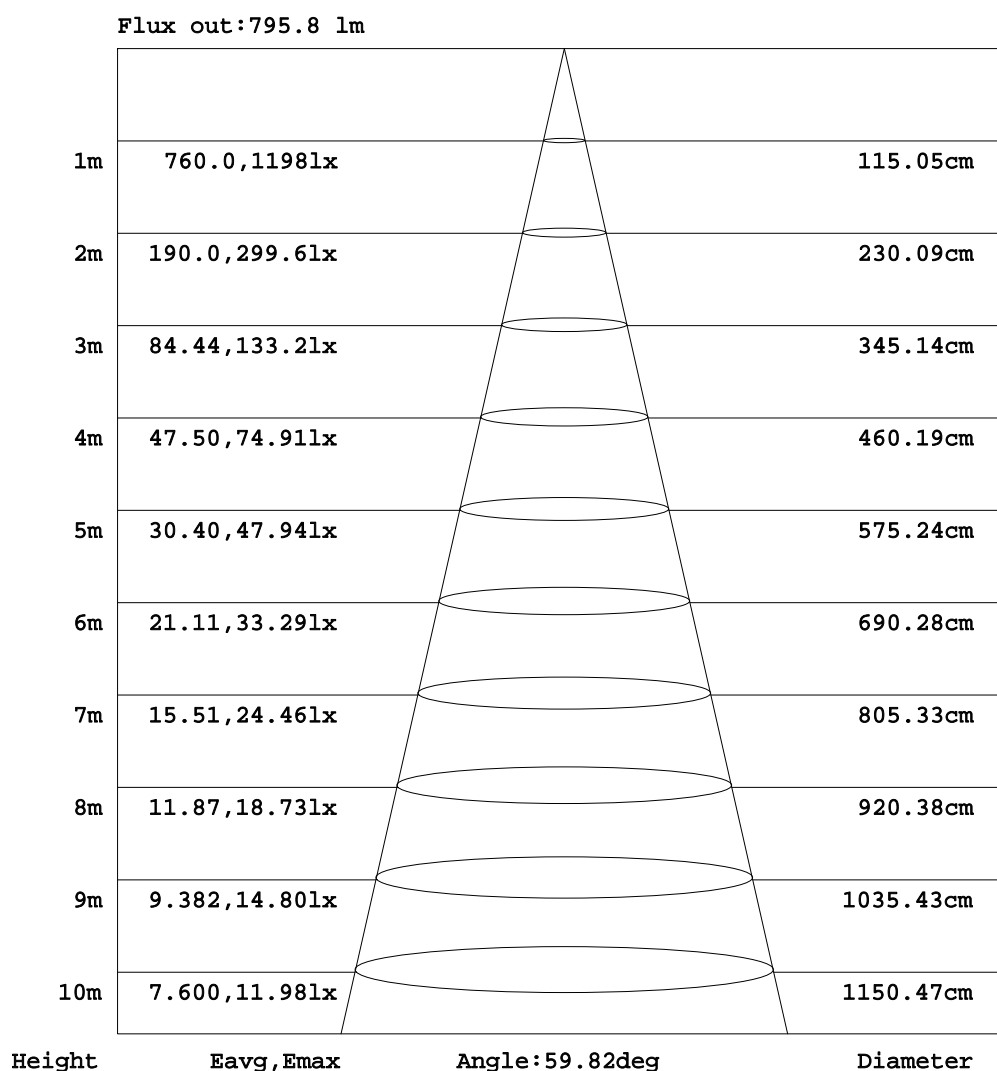
C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Jason Long  
Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:58%  
Test Distance:5.850m [K=1.0000]  
Remarks:



**AAI Figure**

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\phi$ 55mm*H150mm	
MFR.: NEKO LIGHTING AG		



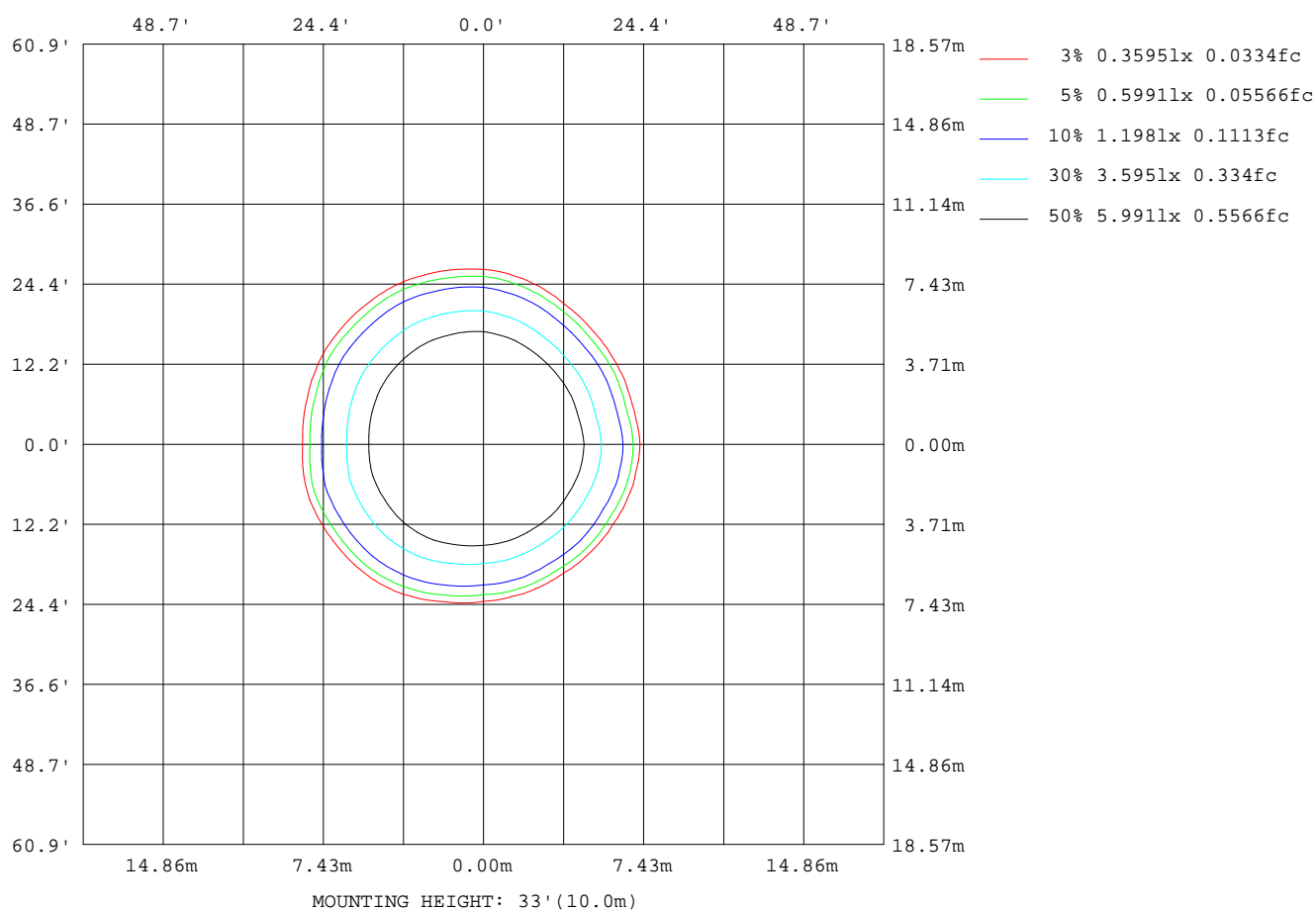
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Jason Long  
Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:58%  
Test Distance:5.850m [K=1.0000]  
Remarks:

**ISOLUX DIAGRAM**

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\phi$ 55mm*H150mm	
MFR.: NEKO LIGHTING AG		



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Jason Long  
Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:58%  
Test Distance:5.850m [K=1.0000]  
Remarks:

### LED Avg.L Report

Test:U:220.9V I:0.0738A P:15.44W PF:0.9462 Freq:49.99Hz Lamp Flux:960.986x1 lm		
NAME: ROXY Art-Z-15W-930-35-60#60	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: $\phi$ 55mm*H150mm	
MFR.: NEKO LIGHTING AG		

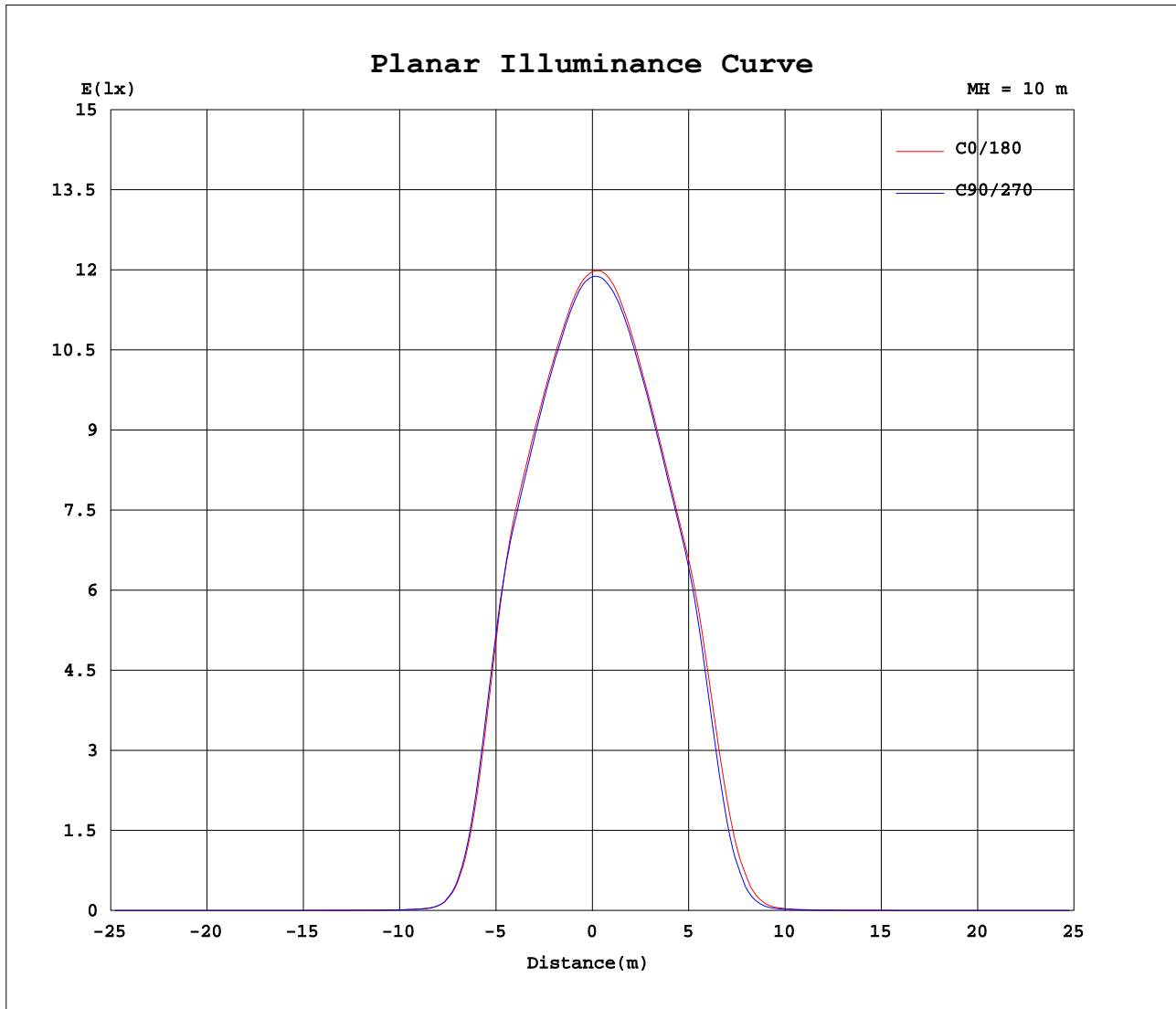
AvgL	cd/m2
L_0~180 (65) av	78
L_0~180 (75) av	49
L_0~180 (85) av	46
L_90~270 (65) av	78
L_90~270 (75) av	47
L_90~270 (85) av	41
L_45 (65) av	79
L_45 (75) av	49
L_45 (85) av	47

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:Jason Long  
 Test Date:2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
 Humidity:58%  
 Test Distance:5.850m [K=1.0000]  
 Remarks:

### Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: Jason Long  
Test Date: 2020-01-04

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity: 58%  
Test Distance: 5.850m [K=1.0000]  
Remarks:

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:58%
Test Distance:5.850m [K=1.0000]
Remarks:

```

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:58%
Test Distance:5.850m [K=1.0000]
Remarks:

```