

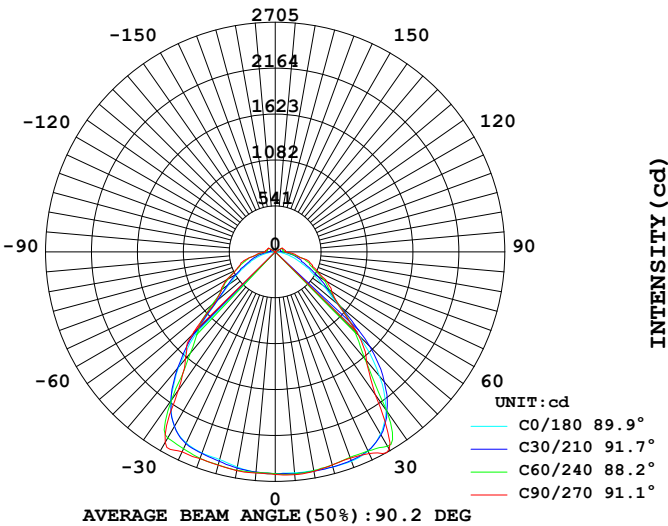
LUMINAIRE PHOTOMETRIC TEST REPORT

Report number:

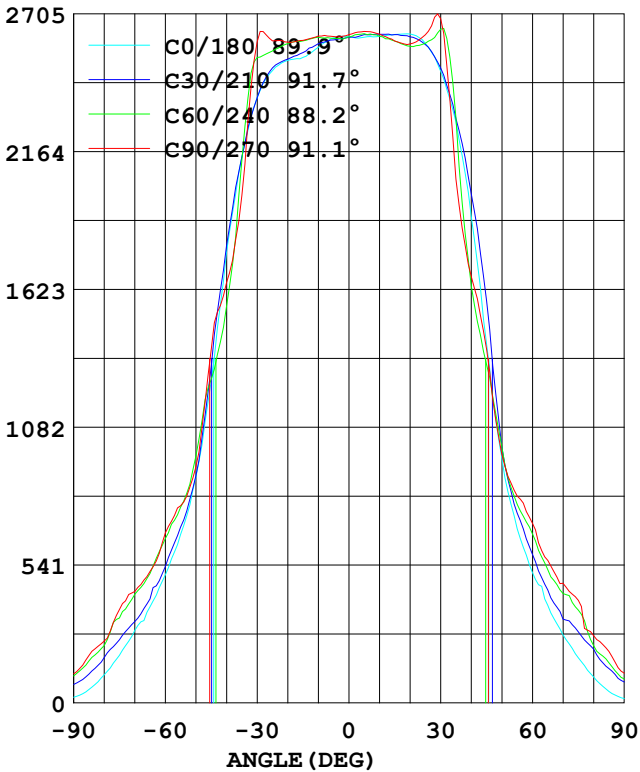
MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:

DATA OF LAMP		Imax(cd)	2705	S/MH(C0/180)	1.27
MODEL		EFFICIENCY(%)	100.0	S/MH(C90/270)	1.26
NOMINAL POWER(W)	44	TOTAL FLUX(lm)	6358.2	Voltage(V)	219.8
RATED VOLTAGE(V)	220	EFFICIENCY(lm/W)	147.3	Current(A)	0.205
NOMINAL FLUX(lm)	6358.3	η up(%)	3.4	Power(W)	43.16
LAMPS QUANTITY	1	η down(%)	96.6	Power Factor(PF)	0.956
TEST VOLTAGE(V)	219.8	Effective Flux(lm)	5895.8	EEI	0.100

LUMINOUS INTENSITY DISTRIBUTION



LUMINOUS INTENSITY DISTRIBUTION



Test System:HOPOO HPG1800
Temperature:25.3DEG
Operators:
Test Date:2022年09月16日

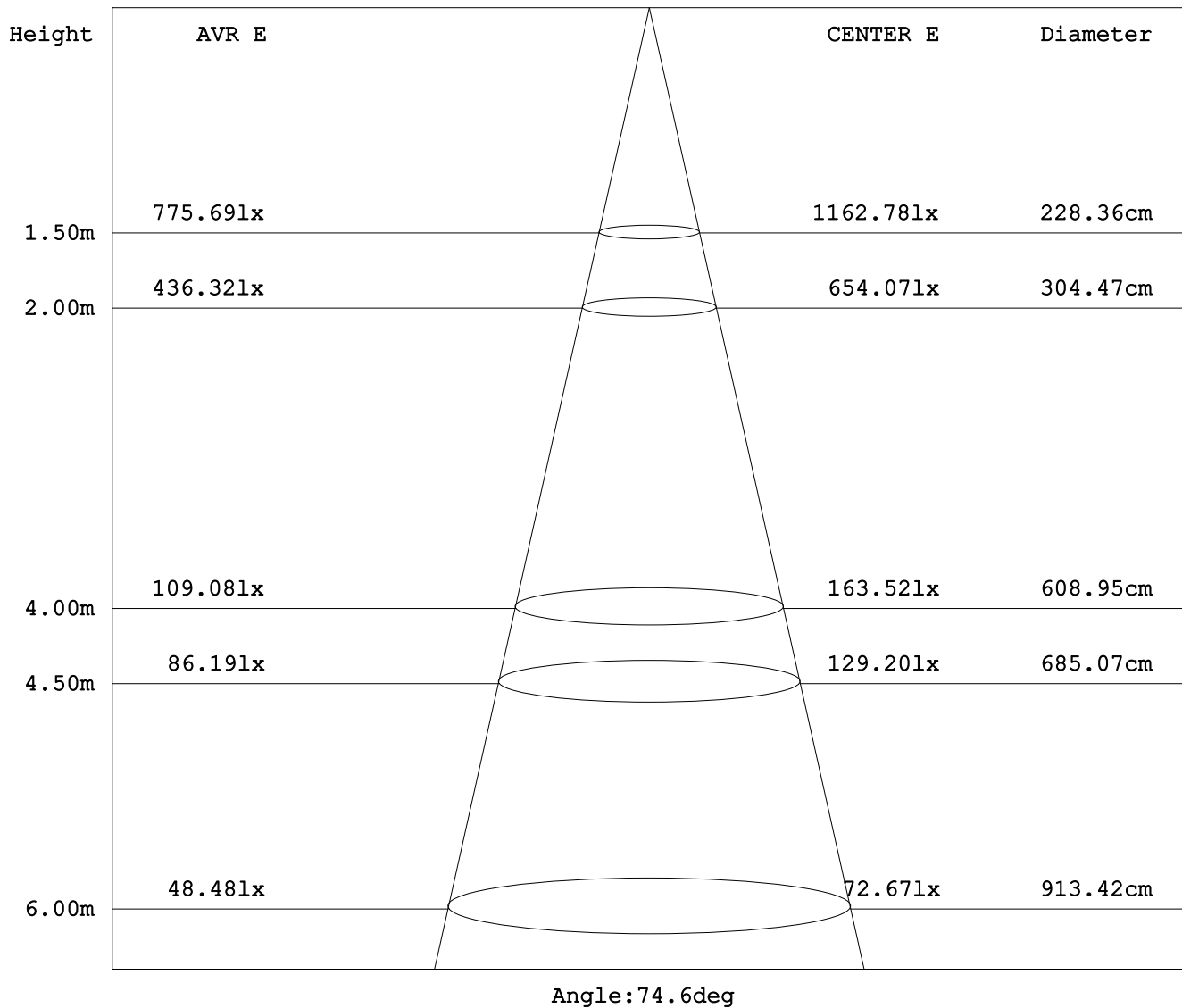
Test Set: 10.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.000 m
Remarks:

HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

AVERAGE AND CENTER E Figure

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:



Test System: HOPOO HPG1800
 Temperature: 25.3DEG
 Operators:
 Test Date: 2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
 Humidity: 65.0%
 Test Distance: 11.000 m
 Remarks:

HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

ZONAL FLUX DIAGRAM

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Zone	total
5.0	2611	2605	2616	2604	2613	2625	2636	2623	0- 5	62.53	62.53
10.0	2574	2600	2618	2600	2617	2621	2625	2603	5- 10	186.8	249.4
15.0	2534	2576	2601	2607	2624	2611	2598	2566	10- 15	308.2	557.6
20.0	2522	2558	2594	2608	2626	2596	2587	2534	15- 20	425.7	983.3
25.0	2482	2526	2599	2591	2590	2587	2623	2498	20- 25	538.8	1522
30.0	2376	2454	2594	2519	2480	2568	2685	2430	25- 30	642.5	2165
35.0	2144	2138	1992	2351	2281	2296	2057	2248	30- 35	701.9	2867
40.0	1769	1676	1650	1838	1909	1818	1674	1710	35- 40	659.5	3526
45.0	1267	1297	1390	1331	1406	1452	1387	1269	40- 45	573.5	4100
50.0	888.5	931.2	927.8	1010	961.1	1004	974.5	976.6	45- 50	462.5	4562
55.0	661.2	728.9	773.4	752.9	683.4	762.0	812.2	747.2	50- 55	366.3	4929
60.0	503.2	590.4	667.3	571.9	511.8	623.6	705.0	577.3	55- 60	307.7	5236
65.0	377.2	458.2	516.0	451.3	382.9	483.0	559.2	450.9	60- 65	254.7	5491
70.0	284.1	372.8	437.2	348.9	267.0	379.0	469.7	361.7	65- 70	207.5	5699
75.0	186.9	290.6	366.3	269.1	176.6	321.3	402.5	284.8	70- 75	171.1	5870
80.0	110.2	201.8	242.9	186.7	102.1	218.2	264.1	192.5	75- 80	128.8	5999
85.0	52.51	138.6	185.4	126.1	44.77	146.2	201.7	129.6	80- 85	86.97	6086
90.0	22.02	89.47	113.7	78.46	16.45	88.02	116.2	77.86	85- 90	55.16	6141
95.0	14.03	85.00	119.0	73.50	10.64	86.93	126.3	73.26	90- 95	41.71	6183
100.0	12.34	75.74	110.2	63.58	9.075	79.37	117.0	66.12	95-100	37.91	6221
105.0	12.46	77.19	101.3	64.19	10.40	79.37	109.6	68.24	100-105	36.15	6257
110.0	13.43	76.16	96.92	63.40	11.85	79.55	101.6	66.97	105-110	34.96	6292
115.0	14.64	72.23	95.46	61.64	13.43	75.92	99.34	64.55	110-115	33.08	6325
120.0	14.39	65.88	92.20	59.71	16.33	73.56	94.01	62.13	115-120	30.64	6355
125.0	0	0	0	0	0	0	0	0	120-125	2.911	6358
130.0	0	0	0	0	0	0	0	0	125-130	0	6358
135.0	0	0	0	0	0	0	0	0	130-135	0	6358
140.0	0	0	0	0	0	0	0	0	135-140	0	6358
145.0	0	0	0	0	0	0	0	0	140-145	0	6358
150.0	0	0	0	0	0	0	0	0	145-150	0	6358
155.0	0	0	0	0	0	0	0	0	150-155	0	6358
160.0	0	0	0	0	0	0	0	0	155-160	0	6358
165.0	0	0	0	0	0	0	0	0	160-165	0	6358
170.0	0	0	0	0	0	0	0	0	165-170	0	6358
175.0	0	0	0	0	0	0	0	0	170-175	0	6358
180.0	0	0	0	0	0	0	0	0	175-180	0	6358
DEG	LUMINOUS INTENSITY:cd									UNIT:lm	

Test System:HOPOO HPG1800
 Temperature:25.3DEG
 Operators:
 Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.000 m
 Remarks:

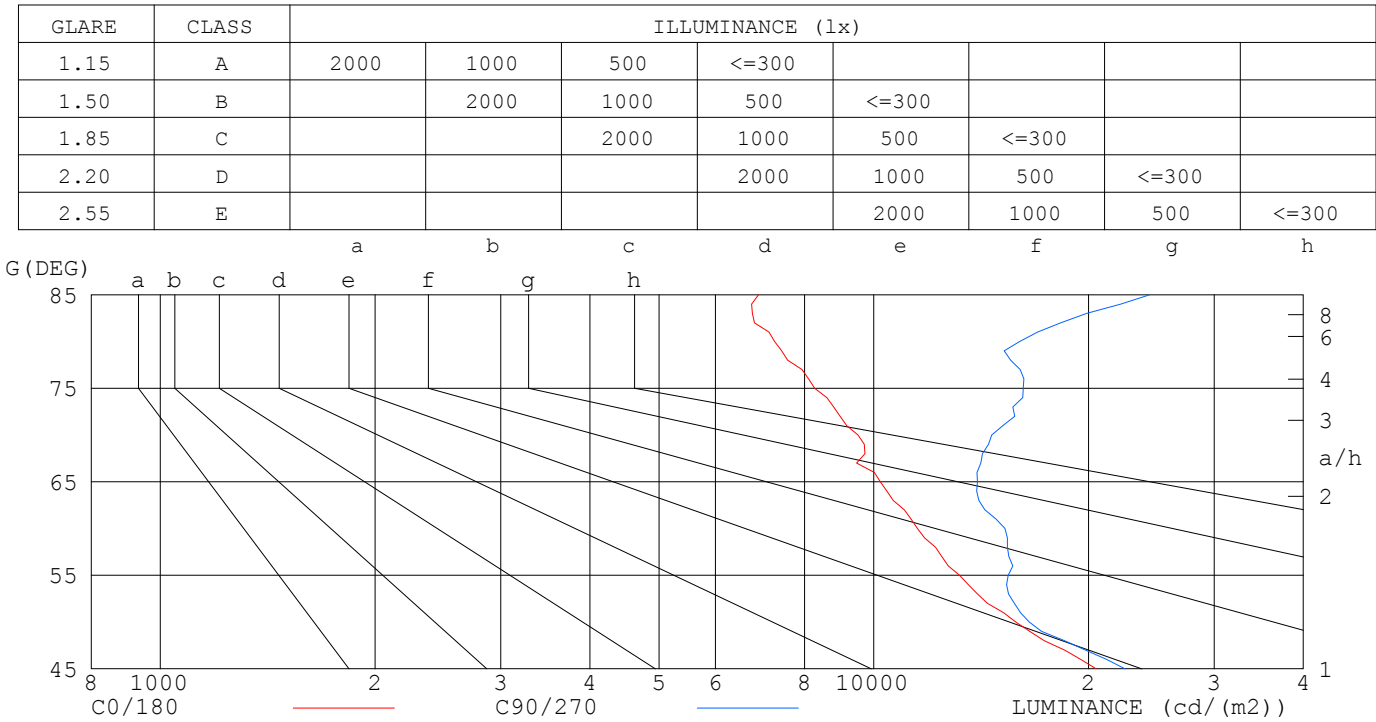
HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

LUMINANCE LIMITATION CURVES

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:

LUMINANCE LIMITATION CURVES



LUMINANCE cd/ (m2)		
G (DEG)	C0/180	C90/270
85	6894	24351
80	7263	16009
75	8264	16197
70	9504	14629
65	10214	13972
60	11516	15270
55	13191	15428
50	15815	16515
45	20503	22496

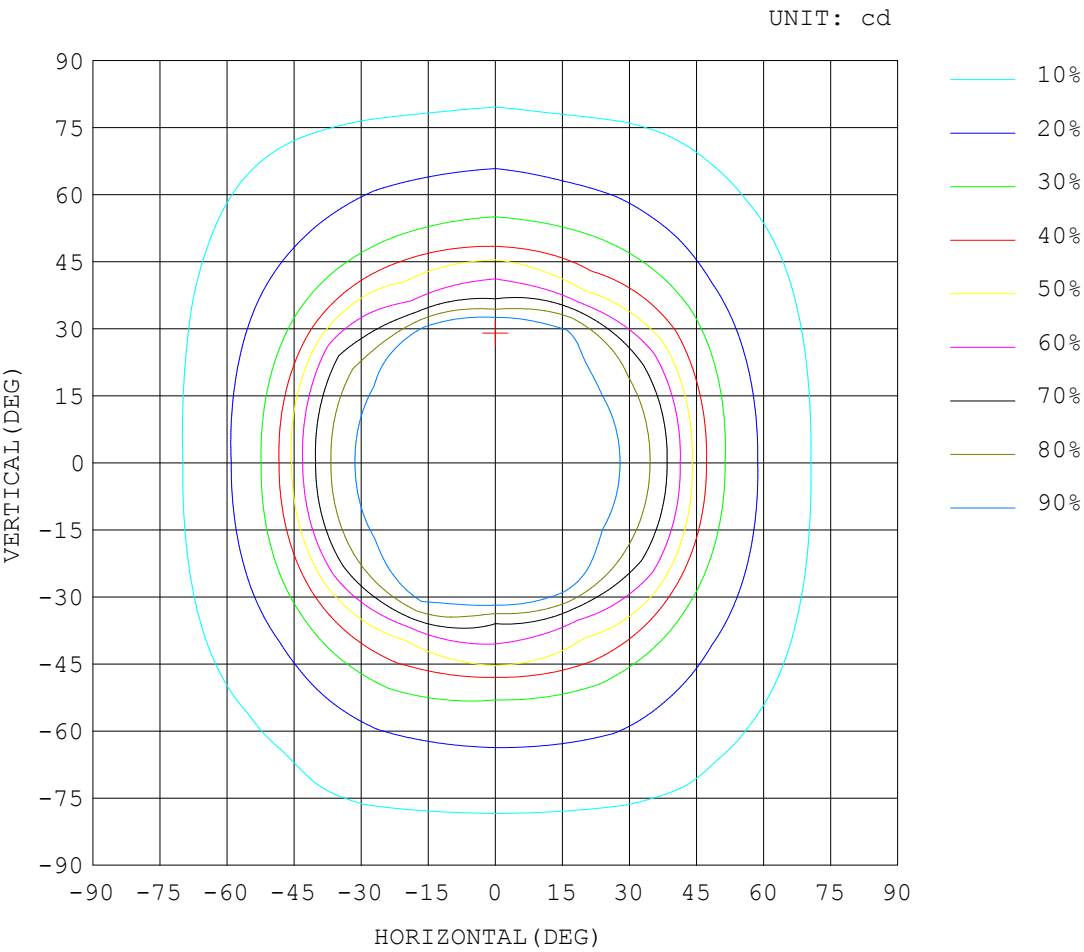
Test System:HOPOO HPG1800
Temperature:25.3DEG
Operators:
Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.000 m
Remarks:

ISOCANDELA DIAGRAM

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:



Test System:HOPOO HPG1800
Temperature:25.3DEG
Operators:
Test Date:2022年09月16日

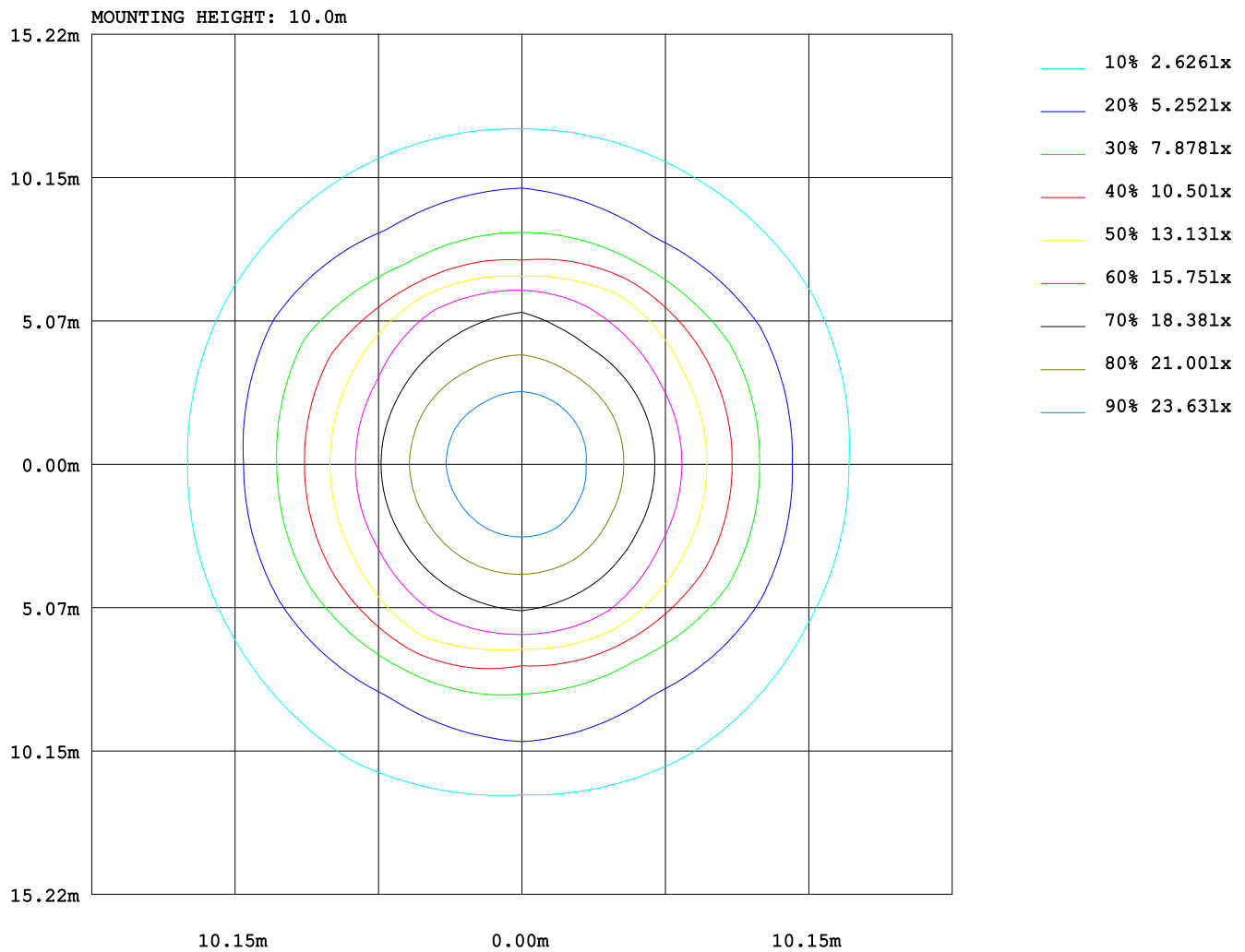
Test Set: 10.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.000 m
Remarks:

HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

ISOLUX DIAGRAM

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:



Test System:HOPOO HPG1800
Temperature:25.3DEG
Operators:
Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.000 m
Remarks:

HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

AREA LUMINOUS FLUX

Report number:

MANUFACTURER:																			
Address:																			
NAME: RE-RIP5S5-72N1WD-B4-TR										TYPE:					WEIGHT:				
SPECIFICATION:										DIMENSION: 1450*67mm					SERIAL No.:				

VERTICAL (DEG)	AREA FLUX DIAGRAM																		UNIT:lm			Φ t	Φ a
	0.09	0.46	1.15	1.97	2.73	3.50	4.28	5.04	5.65	5.61	4.93	4.09	3.23	2.41	1.65	0.97	0.41	0.09	48.3	0.00			
90																							
80	0.10	0.64	1.72	3.25	4.96	6.97	8.92	10.3	11.1	11.0	9.88	8.34	6.41	4.40	2.74	1.46	0.57	0.11	93.0	60.7			
70	0.12	0.82	2.42	4.73	7.44	10.4	13.2	15.3	16.8	16.6	15.0	12.5	9.69	6.76	4.08	2.05	0.75	0.12	139	127			
60	0.14	1.02	3.03	5.82	9.58	14.3	19.0	22.5	24.6	24.5	22.2	18.3	13.5	9.00	5.43	2.72	0.95	0.14	197	189			
50	0.15	1.21	3.55	7.21	12.8	19.6	27.8	35.3	40.2	39.5	33.4	26.5	19.2	11.9	6.76	3.39	1.13	0.16	290	285			
40	0.17	1.35	4.06	8.95	16.6	30.3	44.3	56.2	64.1	64.0	56.3	41.2	27.7	16.2	8.32	3.96	1.31	0.17	446	441			
30	0.17	1.46	4.57	10.5	22.2	44.6	62.7	76.0	79.5	78.3	72.8	60.4	40.0	20.9	9.98	4.45	1.46	0.18	591	587			
	0.18	1.51	4.95	11.7	27.9	52.7	69.1	76.2	78.6	78.1	74.2	66.1	48.8	25.2	11.2	4.82	1.55	0.19	634	630			
	0.17	1.51	5.09	12.3	30.6	55.7	70.8	77.0	79.4	79.1	74.7	68.0	52.4	27.7	11.8	4.99	1.58	0.19	654	651			
	0.17	1.49	5.05	12.2	30.2	55.6	70.7	76.8	78.9	78.8	74.7	67.9	52.3	27.6	11.7	5.00	1.58	0.19	652	648			
	0.17	1.45	4.84	11.4	26.8	51.8	68.9	76.4	78.9	78.7	74.8	66.1	48.4	24.7	11.0	4.83	1.55	0.19	632	628			
-30	0.16	1.35	4.41	10.0	21.3	42.2	63.3	75.0	78.8	78.4	73.3	58.7	39.4	19.7	9.92	4.47	1.47	0.19	583	579			
-40	0.15	1.20	3.80	8.33	16.0	28.7	43.9	58.6	63.4	61.5	53.1	40.9	27.1	15.3	8.42	3.97	1.34	0.17	436	432			
-50	0.14	1.03	3.12	6.70	11.8	19.3	27.8	34.8	39.7	39.4	34.3	26.8	18.6	12.0	6.82	3.42	1.17	0.16	288	281			
-60	0.12	0.85	2.45	5.05	8.90	13.4	18.3	21.9	23.6	23.4	21.7	18.5	13.8	9.14	5.46	2.81	0.98	0.14	191	182			
-70	0.10	0.65	1.84	3.67	6.33	9.39	12.3	14.4	15.7	15.8	14.7	12.8	9.98	6.95	4.27	2.16	0.77	0.13	132	118			
-80	0.09	0.48	1.26	2.49	4.24	6.35	8.24	9.59	10.5	10.6	9.82	8.54	6.68	4.64	2.88	1.50	0.58	0.11	88.6	55.3			
-90	0.07	0.35	0.81	1.48	2.36	3.37	4.26	4.89	5.34	5.38	4.99	4.42	3.60	2.64	1.76	1.00	0.43	0.10	47.2	0.00			
	-90	-80	-70	-60	-50	-40	-30	-20	HORIZONTAL (DEG)					20	30	40	50	60	70	80	90		
Φ t	2.48	18.8	58.2	128	263	469	638	747	796	790	725	611	441	248	125	58.0	19.6	2.74	6358				
Φ a	0.00	0.00	38.1	112	249	456	626	734	782	776	712	598	429	234	108	38.7	0.55	0.00		5896			

Test System:HOPOO HPG1800
Temperature:25.3DEG
Operators:
Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.000 m
Remarks:

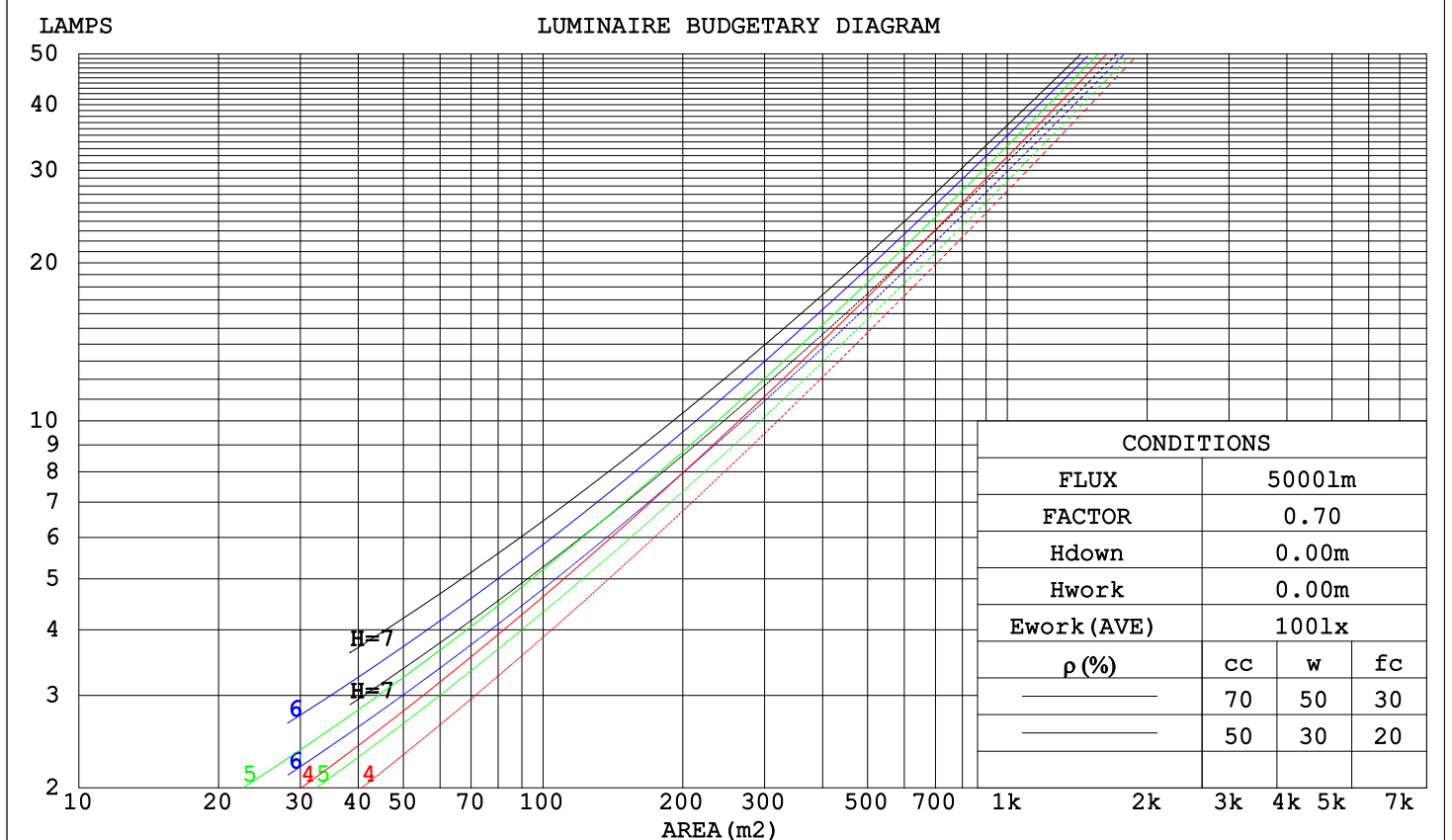
HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Report number:

MANUFACTURER:															
Address:															
NAME: RE-RIP5S5-72N1WD-B4-TR								TYPE:				WEIGHT:			
SPECIFICATION:								DIMENSION: 1450*67mm				SERIAL No.:			

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															



Test System:HOPOO HPG1800
 Temperature:25.3DEG
 Operators:
 Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.000 m
 Remarks:

HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

WEC AND CCEC

Report number:

MANUFACTURER:															
Address:															
NAME: RE-RIP5S5-72N1WD-B4-TR								TYPE:				WEIGHT:			
SPECIFICATION:								DIMENSION: 1450*67mm				SERIAL No.:			

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	.281	.160	.051	.273	.156	.050	.258	.148	.047	.244	.141	.045	.232	.134	.043															
2.0	.262	.144	.044	.255	.140	.043	.242	.134	.042	.229	.129	.040	.218	.123	.039															
3.0	.243	.129	.039	.237	.127	.038	.225	.122	.037	.214	.117	.036	.204	.113	.035															
4.0	.226	.117	.034	.220	.115	.034	.210	.111	.033	.200	.107	.032	.191	.104	.032															
5.0	.210	.107	.031	.205	.105	.031	.196	.102	.030	.187	.099	.029	.179	.096	.029															
6.0	.196	.098	.028	.192	.097	.028	.183	.094	.027	.176	.091	.027	.168	.089	.026															
7.0	.184	.091	.026	.180	.090	.026	.172	.087	.025	.165	.085	.025	.159	.082	.024															
8.0	.173	.084	.024	.169	.083	.024	.162	.081	.023	.156	.079	.023	.150	.077	.022															
9.0	.163	.079	.022	.160	.078	.022	.153	.076	.022	.148	.074	.021	.142	.072	.021															
10.0	.154	.074	.020	.151	.073	.020	.145	.071	.020	.140	.070	.020	.135	.068	.019															

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	.217	.217	.217	.185	.185	.185	.126	.126	.126	.073	.073	.073	.023	.023	.023	
1.0	.205	.183	.163	.175	.157	.140	.120	.108	.097	.069	.062	.056	.022	.020	.018	
2.0	.195	.158	.128	.167	.136	.111	.114	.094	.077	.066	.055	.045	.021	.018	.015	
3.0	.186	.141	.105	.159	.121	.091	.109	.084	.064	.063	.049	.038	.020	.016	.012	
4.0	.178	.127	.089	.153	.110	.077	.105	.077	.054	.061	.045	.032	.020	.015	.011	
5.0	.170	.117	.077	.146	.101	.067	.101	.070	.047	.058	.041	.028	.019	.013	.009	
6.0	.163	.108	.069	.140	.094	.060	.097	.066	.042	.056	.039	.025	.018	.013	.008	
7.0	.157	.101	.062	.135	.088	.054	.093	.061	.038	.054	.036	.023	.017	.012	.008	
8.0	.151	.095	.057	.130	.083	.050	.090	.058	.035	.052	.034	.021	.017	.011	.007	
9.0	.145	.090	.054	.125	.078	.047	.087	.055	.033	.050	.033	.020	.016	.011	.007	
10.0	.140	.086	.051	.120	.075	.044	.084	.053	.031	.049	.031	.019	.016	.010	.006	

Test System:HOPOO HPG1800
 Temperature:25.3DEG
 Operators:
 Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.000 m
 Remarks:

HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

Uncorrected UGR Table

Report number:

MANUFACTURER:											
Address:											
NAME: RE-RIP5S5-72N1WD-B4-TR					TYPE:			WEIGHT:			
SPECIFICATION:					DIMENSION: 1450*67mm			SERIAL No.:			
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	20.9	22.3	21.2	22.5	22.8	21.6	22.9	21.9	23.2	23.4	
	21.7	23.0	22.1	23.3	23.6	22.9	24.2	23.3	24.4	24.7	
	22.1	23.3	22.4	23.6	23.9	23.7	24.9	24.1	25.2	25.5	
	22.4	23.4	22.7	23.8	24.1	24.4	25.5	24.7	25.8	26.1	
	22.4	23.5	22.8	23.8	24.2	24.7	25.7	25.1	26.1	26.4	
	22.5	23.5	22.9	23.8	24.2	25.1	26.1	25.5	26.5	26.8	
4H	2H	21.4	22.5	21.7	22.8	23.1	21.9	23.1	22.3	23.4	23.7
	3H	22.4	23.4	22.8	23.8	24.2	23.5	24.6	23.9	24.9	25.3
	4H	22.9	23.9	23.4	24.2	24.6	24.5	25.5	25.0	25.8	26.2
	6H	23.4	24.2	23.8	24.6	25.0	25.4	26.2	25.8	26.6	27.0
	8H	23.5	24.3	24.0	24.7	25.1	25.8	26.5	26.2	27.0	27.4
	12H	23.6	24.3	24.1	24.8	25.2	26.3	27.0	26.8	27.4	27.9
8H	4H	23.4	24.1	23.8	24.6	25.0	24.8	25.5	25.2	26.0	26.4
	6H	24.0	24.6	24.5	25.1	25.6	25.8	26.4	26.3	26.9	27.4
	8H	24.3	24.8	24.8	25.3	25.8	26.4	26.9	26.9	27.4	27.9
	12H	24.5	25.0	25.0	25.5	26.0	27.1	27.6	27.6	28.1	28.6
12H	4H	23.4	24.1	23.9	24.6	25.1	24.8	25.5	25.2	25.9	26.4
	6H	24.2	24.7	24.7	25.2	25.7	25.9	26.4	26.4	26.9	27.4
	8H	24.5	25.0	25.0	25.5	26.1	26.5	27.0	27.0	27.5	28.0
Variations with the observer position at spacings:											
S = 1.0H	+ 0.4 / - 0.5					+ 0.2 / - 0.2					
1.5H	+ 0.3 / - 0.3					+ 0.1 / - 0.2					
2.0H	+ 0.7 / - 0.5					+ 0.3 / - 0.4					

CIE Pub.117 Corrected 6358 lm Total Lamp Luminous Flux. (8log(F/F0) = 6.4)

Test System:HOPOO HPG1800
 Temperature:25.3DEG
 Operators:
 Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.000 m
 Remarks:

HOPOO GONIOPHOTOMETERS SYSTEM TEST REPORT

UTILIZATION FACTORS TABLE

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:

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) $k(RI) \times RCR = 5$									
$k = 0.60$	64	54	47	63	53	47	62	53	47	41
0.80	73	63	57	72	63	56	71	62	56	50
1.00	81	71	65	80	70	64	77	71	64	57
1.25	87	78	72	86	77	71	83	76	70	64
1.50	92	83	77	90	82	76	87	80	75	68
2.00	97	90	84	95	88	83	92	86	81	74
2.50	101	94	88	98	92	87	94	89	85	77
3.00	103	97	92	101	96	91	97	92	88	80
4.00	107	102	97	104	100	96	100	96	93	83
5.00	109	105	101	106	102	99	101	98	95	86
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

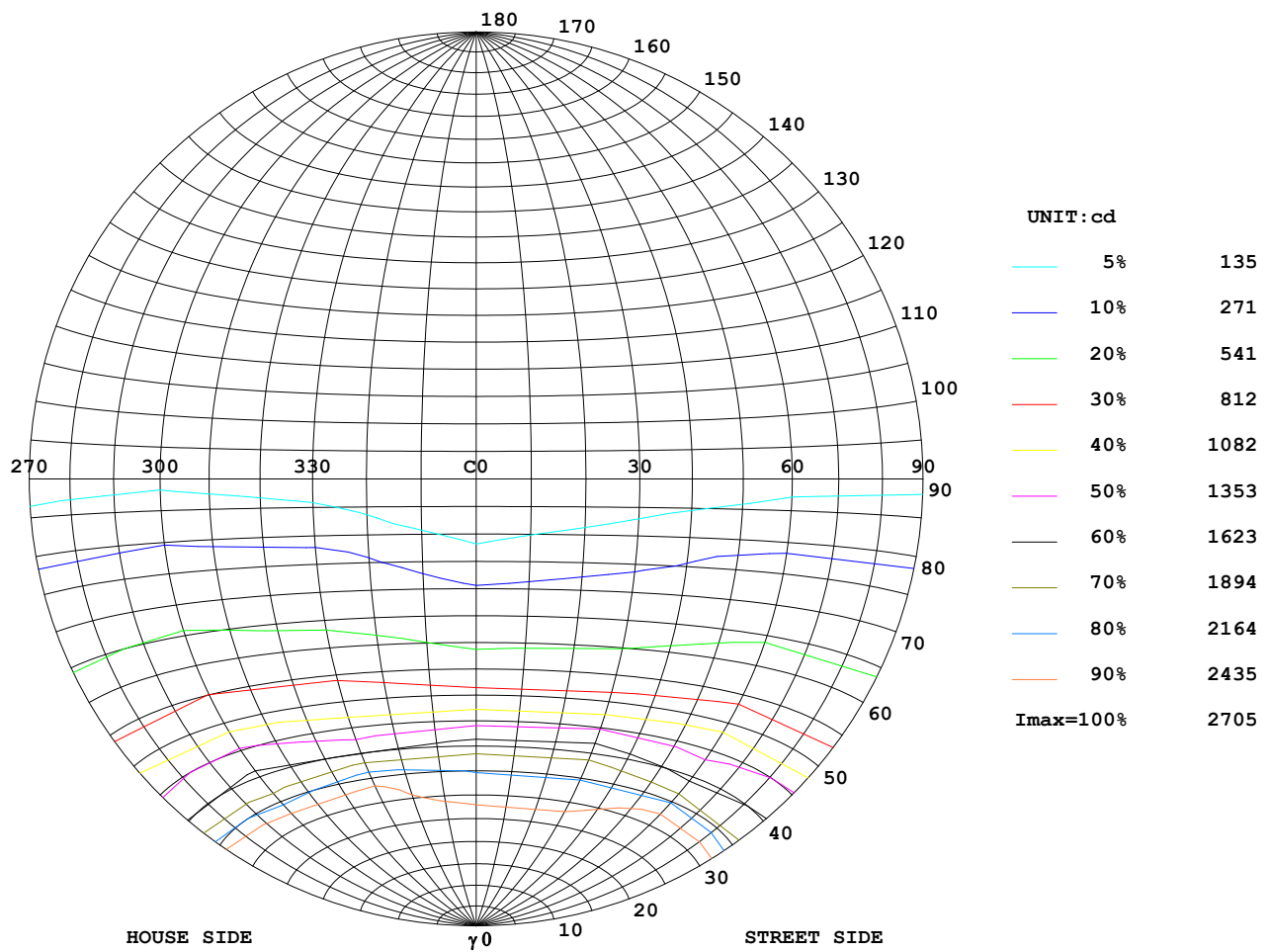
Test System:HOPOO HPG1800
 Temperature:25.3DEG
 Operators:
 Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.000 m
 Remarks:

ISOCANDELA DIAGRAM

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:



Test System:HOPOO HPG1800
Temperature:25.3DEG
Operators:
Test Date:2022年09月16日

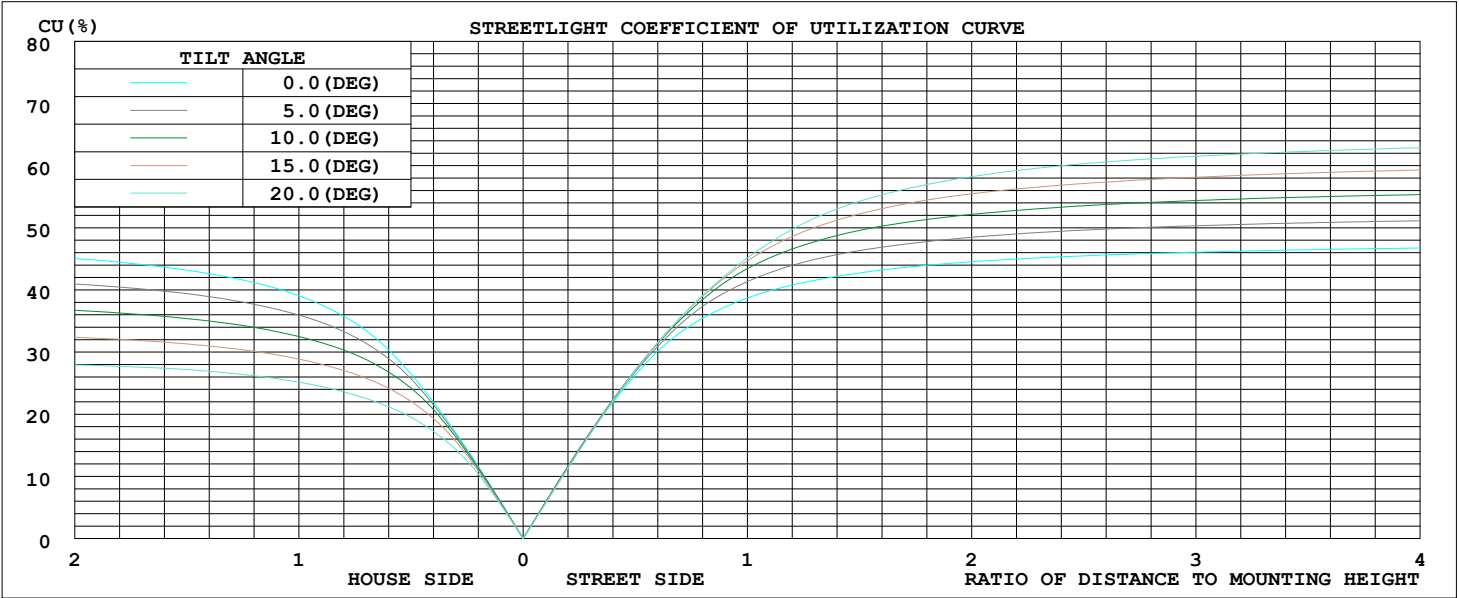
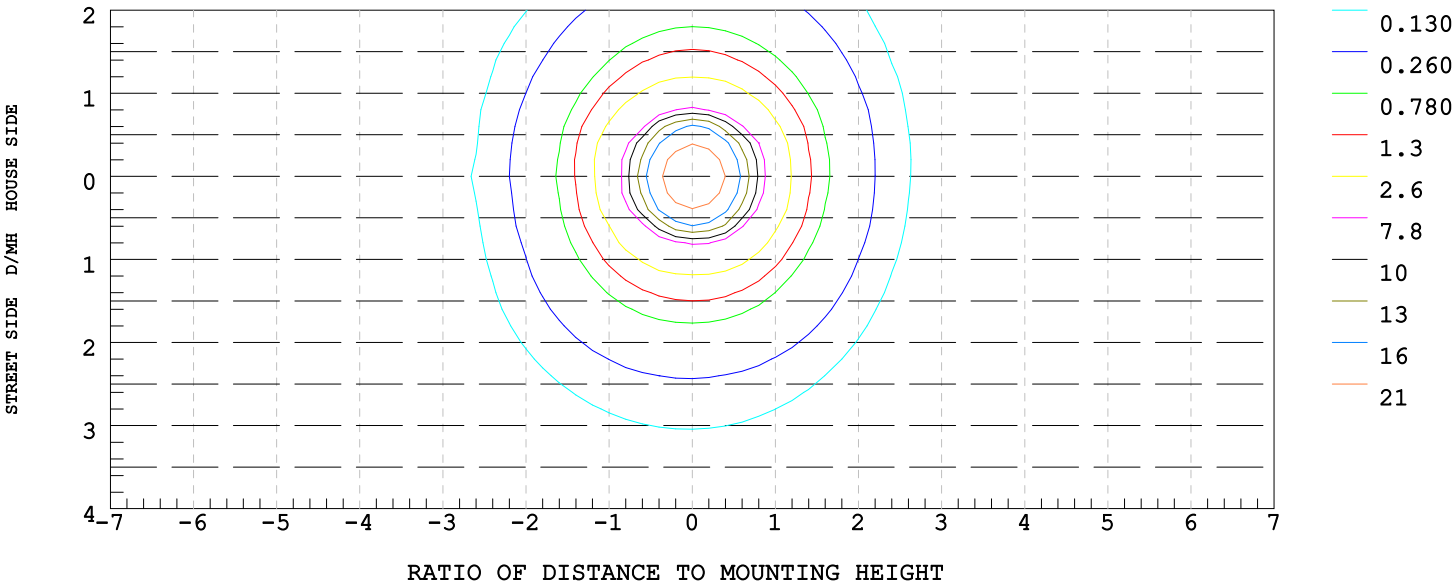
Test Set: 10.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.000 m
Remarks:

ISOLUX DIAGRAM

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:

ILLUMINANCE AT MH=10 m,Enadir = 26.16 lx



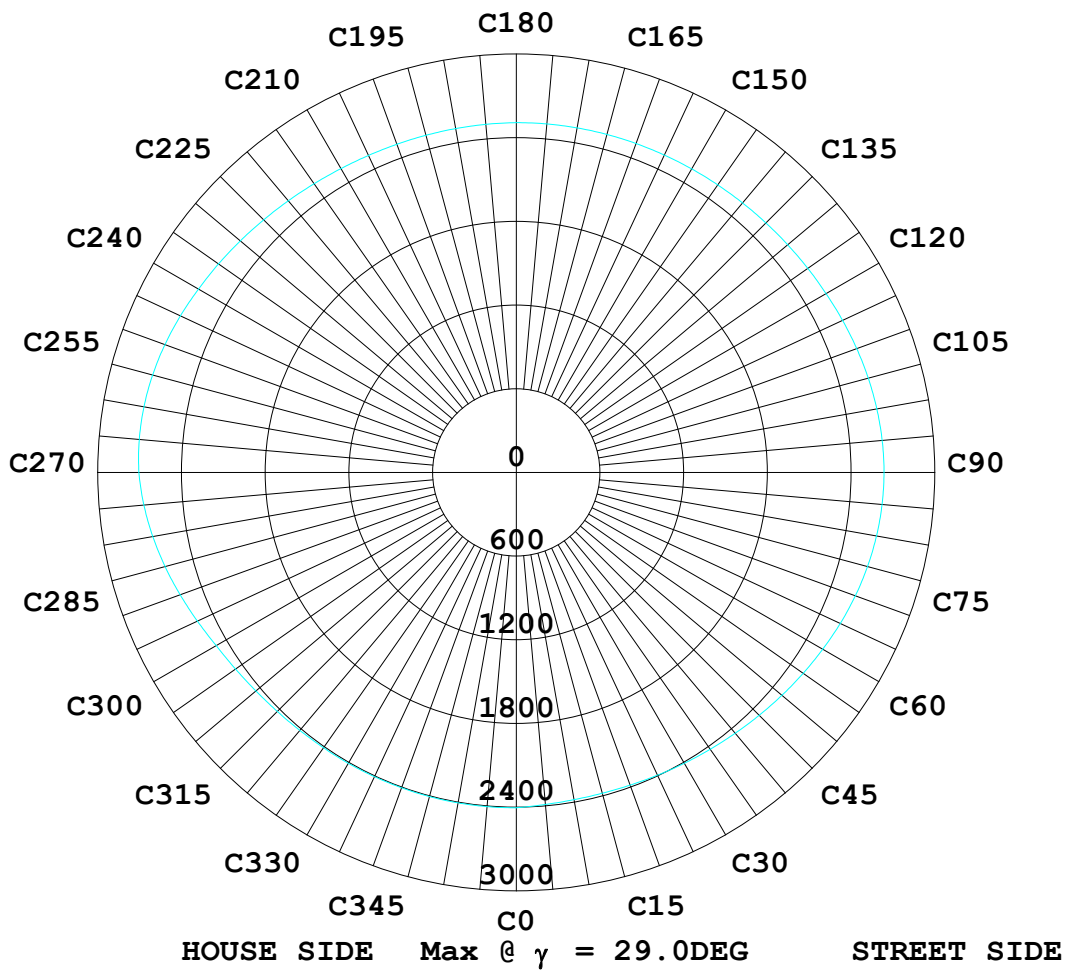
Test System:HOPOO HPG1800
Temperature:25.3DEG
Operators:
Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.000 m
Remarks:

ISOCANDELA DIAGRAM

Report number:

MANUFACTURER:		
Address:		
NAME: RE-RIP5S5-72N1WD-B4-TR	TYPE:	WEIGHT:
SPECIFICATION:	DIMENSION: 1450*67mm	SERIAL No.:



Test System:HOPOO HPG1800
Temperature:25.3DEG
Operators:
Test Date:2022年09月16日

Test Set: 10.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.000 m
Remarks: