

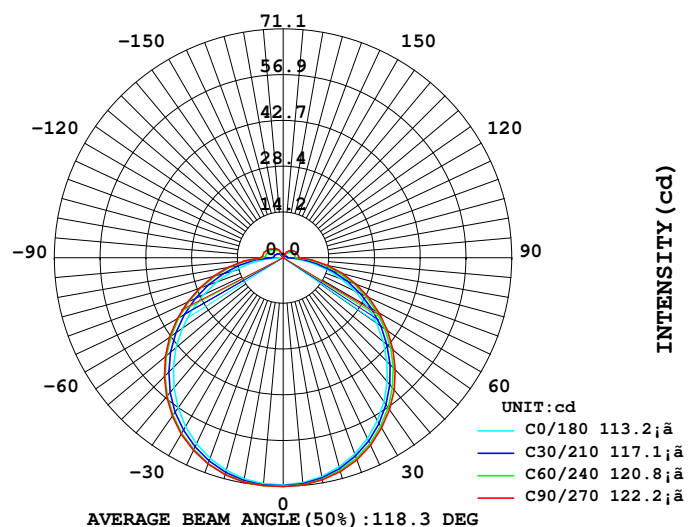
LUMINAIRE PHOTOMETRIC TEST REPORT

Report number: GO2018-037A

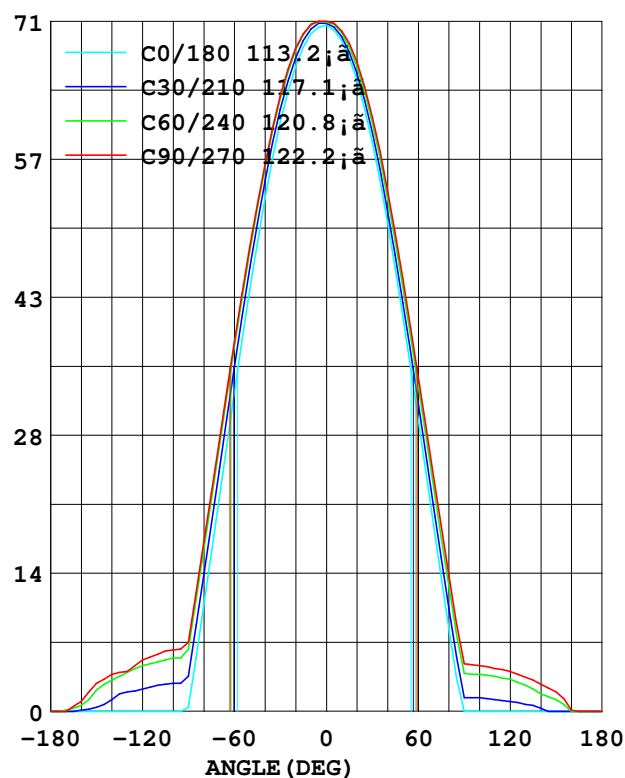
MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	SERIAL No.:

DATA OF LAMP		Imax(cd)	71.10	S/MH (C0/180)	1.27
MODEL	HALO_4.5W/line foot_1ft	EFFICIENCY (%)	100.0	S/MH (C90/270)	1.32
NOMINAL POWER(W)	4	TOTAL FLUX(lm)	238.00	Voltage(V)	24.10
RATED VOLTAGE(V)	24	EFFICIENCY(lm/W)	59.5	Current(A)	0.166
NOMINAL FLUX(lm)	238.0	η up(%)	6.1	Power(W)	4.000
LAMPS QUANTITY	1	η down(%)	93.9	Power Factor(PF)	1.000
TEST VOLTAGE(V)	24.1	Effective Flux(lm)	221.7	EEI	0.192

LUMINOUS INTENSITY DISTRIBUTION



LUMINOUS INTENSITY DISTRIBUTION



Test System: LSG-1800
 Temperature: 25.3 DEG
 Operators: G
 Test Date: 02-21-2018

Test Set: 5.0 deg/s C-Gamma (TYPE C)
 Humidity: 65.0%
 Test Distance: 10.000 m
 Remarks:

ZONAL FLUX DIAGRAM

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	SERIAL No.:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	zone	total
10.0	69.80	70.09	70.80	69.90	69.09	70.09	70.09	70.50	0- 10	6.736	6.736
20.0	66.39	67.00	68.30	66.59	65.00	66.90	66.90	67.59	10- 20	19.42	26.15
30.0	60.70	61.59	63.40	61.19	58.60	61.29	61.19	62.30	20- 30	29.68	55.83
40.0	52.89	54.20	56.40	53.60	50.40	53.70	53.70	54.90	30- 40	36.17	92.01
50.0	43.50	45.20	47.90	44.70	40.70	44.60	44.60	46.00	40- 50	38.15	130.1
60.0	32.90	35.29	38.10	34.59	30.10	34.40	34.50	35.79	50- 60	35.55	165.7
70.0	21.79	24.69	27.70	24.00	19.20	23.70	24.20	25.09	60- 70	28.99	194.7
80.0	10.90	14.40	17.40	13.60	8.500	13.09	14.00	14.50	70- 80	19.69	214.4
90.0	0.400	4.200	7.100	3.700	0	3.700	4.900	4.300	80- 90	9.146	223.5
100.0	0	3.600	6.300	3.600	0	3.500	4.700	3.800	90-100	3.628	227.1
110.0	0	3.400	5.900	2.700	0	3.200	4.400	3.600	100-110	3.245	230.4
120.0	0	3.100	5.300	2.100	0	2.800	4.100	3.200	110-120	2.712	233.1
130.0	0	2.600	4.100	2.200	0	2.300	3.500	2.700	120-130	2.119	235.2
140.0	0	2.000	3.800	2.000	0	1.700	2.800	2.200	130-140	1.516	236.7
150.0	0	0.900	2.900	0.900	0	0.900	2.000	1.300	140-150	0.887	237.6
160.0	0	0	1.000	0	0	0	0.100	0.400	150-160	0.306	237.9
170.0	0	0	0	0	0	0	0	0	160-170	0.031	238.0
180.0	0	0	0	0	0	0	0	0	170-180	0.000	238.0
DEG	LUMINOUS INTENSITY: cd									UNIT: lm	

Test System: LSG-1800
Temperature: 25.3 DEG
Operators: G
Test Date: 02-21-2018

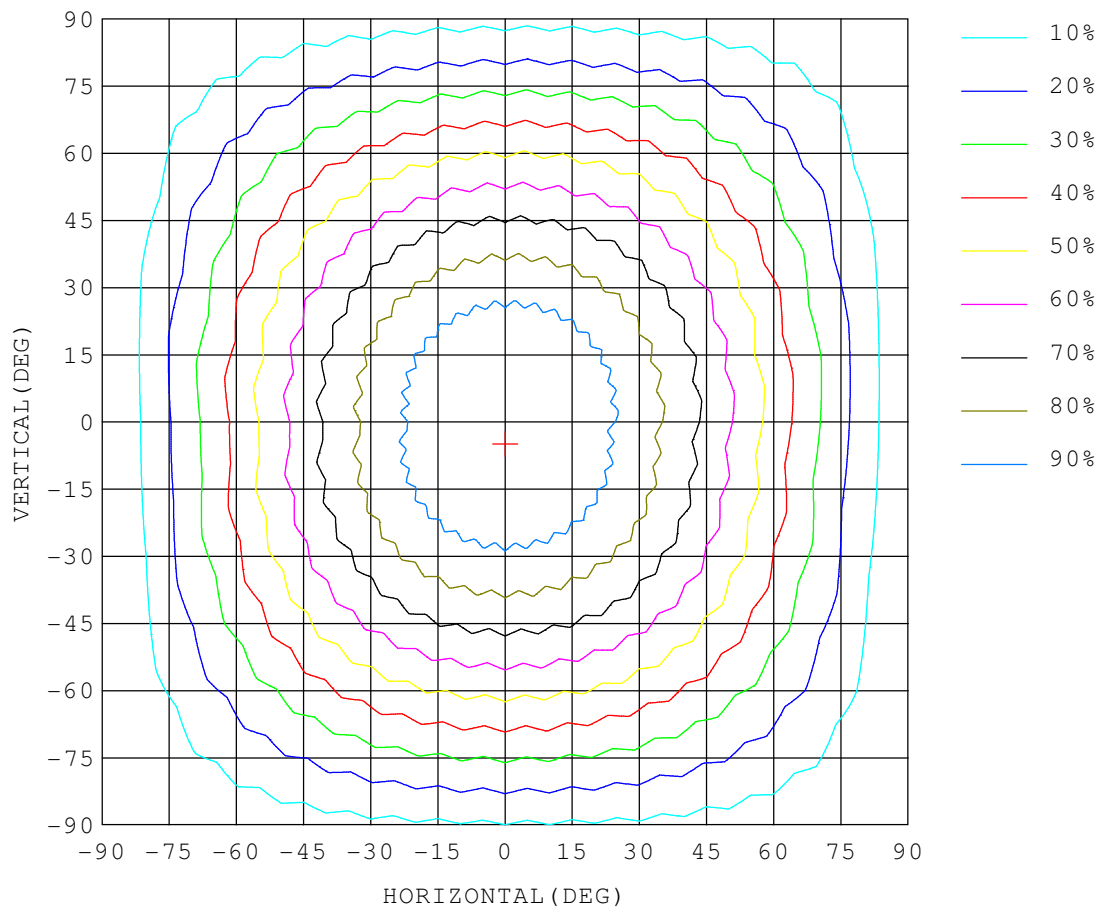
Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity: 65.0%
Test Distance: 10.000 m
Remarks:

ISOCANDELA DIAGRAM

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	SERIAL No.:

UNIT: cd



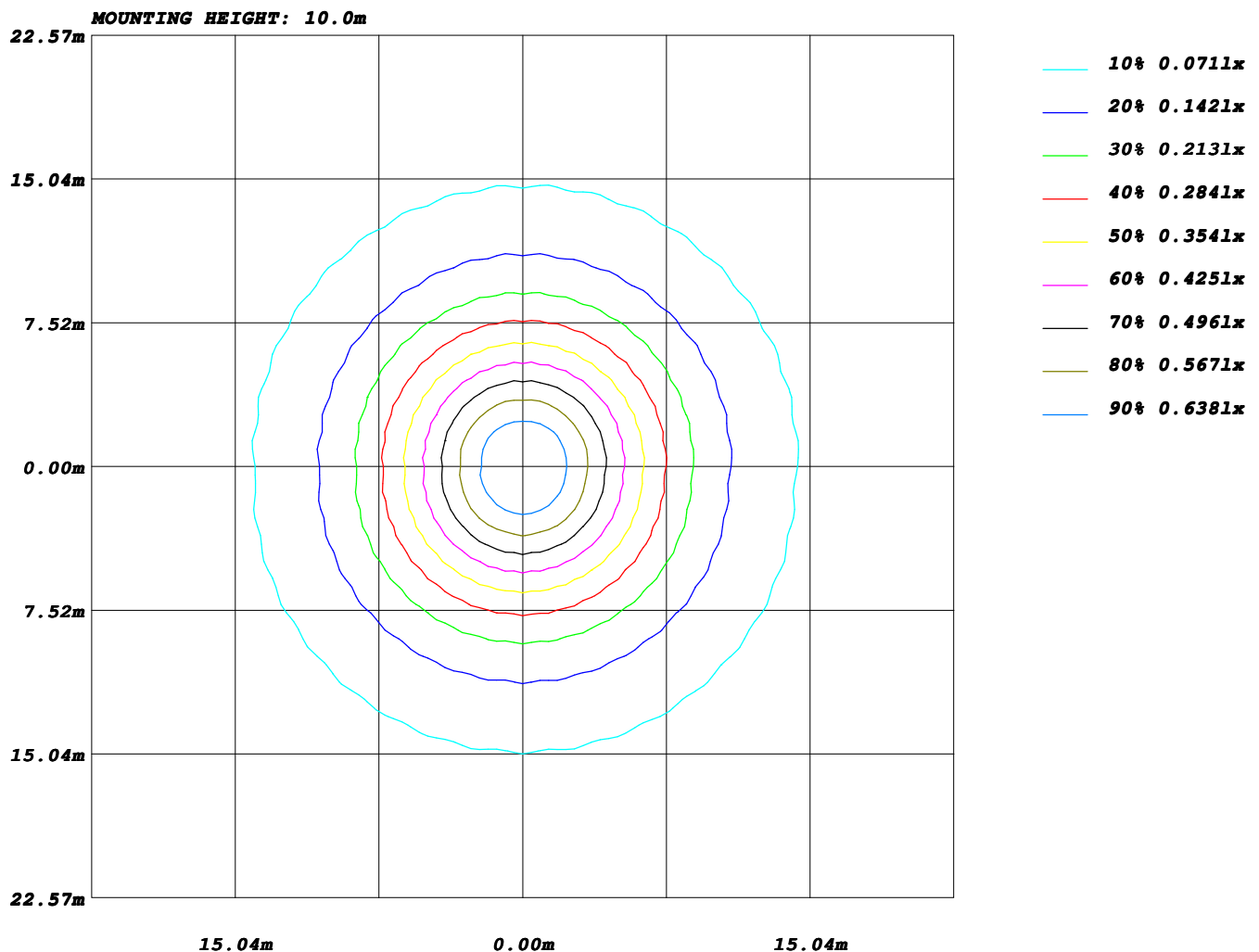
Test System: LSG-1800
 Temperature: 25.3 DEG
 Operators: G
 Test Date: 02-21-2018

Test Set: 5.0 deg/s C-Gamma (TYPE C)
 Humidity: 65.0%
 Test Distance: 10.000 m
 Remarks:

ISOLUX DIAGRAM

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	SERIAL No.:



Test System: LSG-1800
Temperature: 25.3DEG
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Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity: 65.0%
Test Distance: 10.000 m
Remarks:

AREA LUMINOUS FLUX

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	SERIAL No.:

VERTICAL (DEG)	AREA FLUX DIAGRAM																	UNIT:lm		Φ t	Φ a
	90	80	70	60	50	40	30	20	10	0	10	20	30	40	50	60	70	80	90		
VERTICAL (DEG)	90	0.00	0.01	0.04	0.08	0.14	0.19	0.24	0.27	0.29	0.30	0.28	0.25	0.21	0.16	0.10	0.06	0.02	0.00	2.64	1.85
	80	0.00	0.03	0.09	0.18	0.28	0.39	0.48	0.55	0.59	0.60	0.57	0.50	0.41	0.31	0.20	0.11	0.04	0.01	5.34	5.21
	70	0.01	0.05	0.14	0.28	0.43	0.59	0.74	0.84	0.90	0.91	0.86	0.76	0.62	0.46	0.30	0.17	0.06	0.01	8.13	8.07
	60	0.01	0.07	0.19	0.37	0.58	0.79	0.99	1.13	1.21	1.21	1.15	1.01	0.82	0.61	0.40	0.21	0.08	0.01	10.8	10.8
	50	0.01	0.08	0.23	0.45	0.71	0.98	1.21	1.40	1.50	1.50	1.42	1.24	1.00	0.75	0.48	0.26	0.10	0.02	13.3	13.3
	40	0.01	0.10	0.28	0.52	0.82	1.13	1.41	1.62	1.75	1.75	1.64	1.44	1.17	0.86	0.56	0.30	0.11	0.02	15.5	15.5
	30	0.01	0.11	0.30	0.58	0.91	1.25	1.57	1.81	1.94	1.95	1.83	1.60	1.29	0.95	0.61	0.32	0.12	0.02	17.2	17.1
		0.01	0.12	0.32	0.61	0.97	1.34	1.67	1.93	2.07	2.08	1.95	1.70	1.37	1.00	0.65	0.35	0.13	0.02	18.3	18.3
		0.01	0.12	0.33	0.64	1.00	1.37	1.71	1.98	2.12	2.13	2.00	1.75	1.41	1.03	0.67	0.36	0.13	0.02	18.8	18.8
		0.01	0.11	0.32	0.62	0.99	1.37	1.72	1.98	2.13	2.13	1.99	1.74	1.40	1.02	0.65	0.35	0.13	0.02	18.7	18.7
		0.01	0.11	0.32	0.63	0.98	1.35	1.69	1.94	2.08	2.09	1.95	1.70	1.37	1.00	0.65	0.34	0.12	0.02	18.3	18.3
	-30	0.01	0.11	0.31	0.59	0.93	1.28	1.60	1.84	1.97	1.97	1.85	1.61	1.30	0.95	0.61	0.32	0.12	0.02	17.4	17.3
	-40	0.01	0.10	0.28	0.54	0.85	1.16	1.45	1.67	1.78	1.79	1.68	1.46	1.18	0.87	0.56	0.29	0.11	0.01	15.8	15.8
	-50	0.01	0.09	0.25	0.47	0.74	1.01	1.26	1.45	1.55	1.55	1.45	1.27	1.03	0.76	0.49	0.26	0.10	0.01	13.7	13.7
	-60	0.01	0.07	0.20	0.39	0.61	0.84	1.03	1.19	1.27	1.27	1.19	1.05	0.85	0.63	0.41	0.22	0.08	0.01	11.3	11.3
	-70	0.01	0.05	0.15	0.30	0.47	0.64	0.79	0.91	0.97	0.97	0.92	0.80	0.65	0.48	0.31	0.17	0.06	0.01	8.66	8.60
	-80	0.00	0.03	0.10	0.20	0.31	0.43	0.54	0.62	0.66	0.66	0.62	0.55	0.45	0.33	0.22	0.12	0.04	0.01	5.89	5.77
	-90	0.00	0.02	0.05	0.10	0.16	0.23	0.28	0.33	0.35	0.35	0.33	0.29	0.24	0.18	0.12	0.06	0.02	0.00	3.12	2.59
	-90	-80	-70	-60	-50	-40	-30	-20	HORIZONTAL (DEG)					20	30	40	50	60	70	80	90
Φ t	0.17	1.37	3.90	7.54	11.8	16.3	20.4	23.5	25.1	25.2	23.7	20.7	16.8	12.3	7.99	4.25	1.59	0.23	238		
Φ a	0.03	1.19	3.74	7.39	11.7	16.2	20.3	23.4	25.1	25.2	23.6	20.7	16.7	12.2	7.87	4.12	1.44	0.10		222	

Test System: LSG-1800
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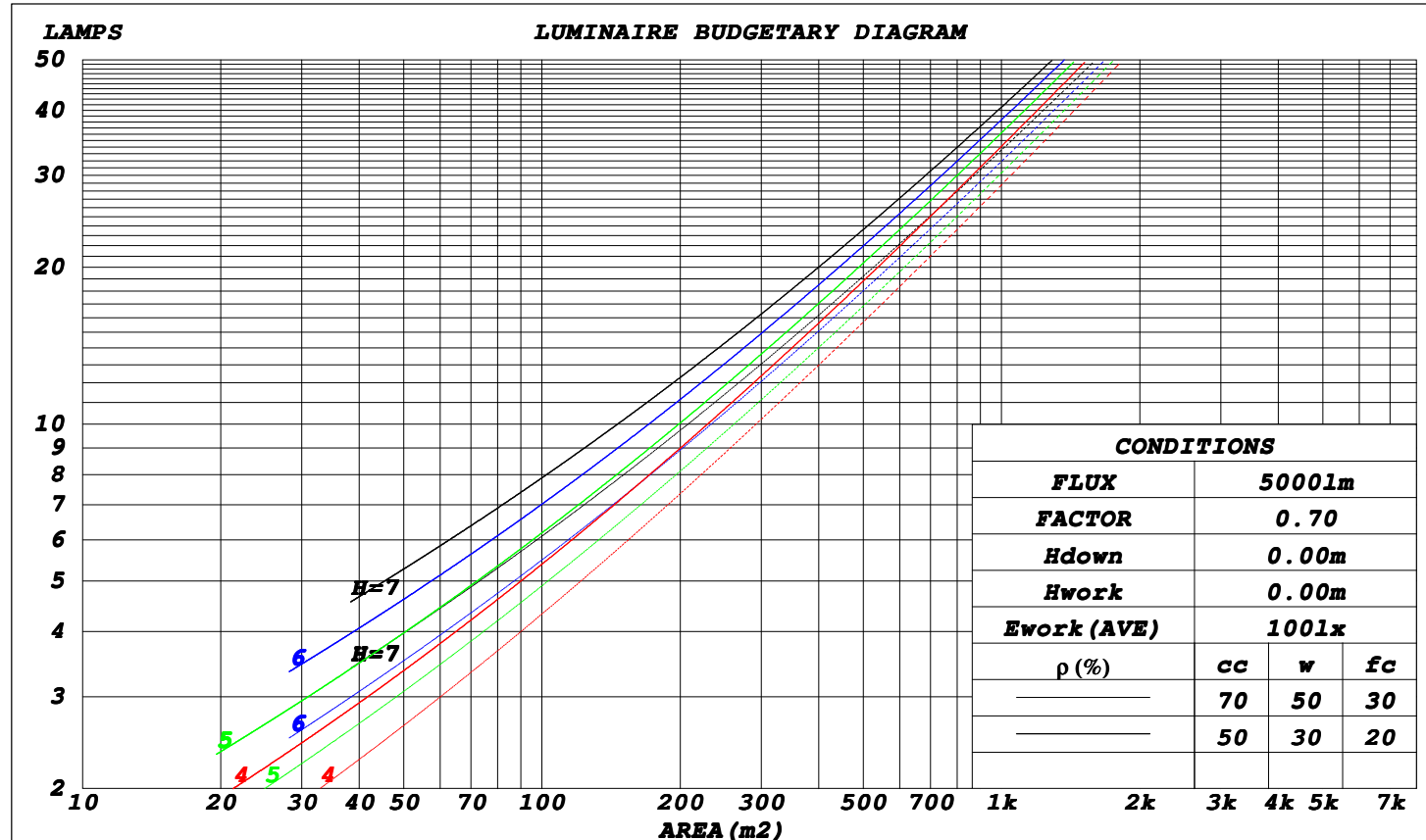
Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity: 65.0%
Test Distance: 10.000 m
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)				
NAME: HALO_4.5W/line foot_1ft	TYPE: wall			WEIGHT:	
SPECIFICATION: wall	DIMENSION: 305x50x20			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						Coefficients of Utilization (CU)									
0.0	1.18	1.18	1.18	1.14	1.14	1.14	1.08	1.08	1.08	1.02	1.02	1.02	.96	.96	.96	.94
1.0	1.01	.96	.92	.98	.94	.90	.93	.89	.86	.88	.85	.82	.83	.81	.79	.76
2.0	.87	.80	.74	.85	.78	.72	.80	.75	.70	.76	.71	.67	.72	.68	.65	.62
3.0	.76	.68	.61	.74	.66	.60	.70	.64	.58	.67	.61	.56	.63	.59	.54	.52
4.0	.67	.58	.51	.65	.57	.50	.62	.55	.49	.59	.53	.48	.56	.51	.46	.44
5.0	.60	.51	.44	.58	.50	.43	.56	.48	.42	.53	.46	.41	.50	.45	.40	.38
6.0	.54	.45	.38	.52	.44	.38	.50	.42	.37	.48	.41	.36	.46	.40	.35	.33
7.0	.49	.40	.33	.48	.39	.33	.45	.38	.32	.43	.37	.32	.42	.36	.31	.29
8.0	.44	.36	.30	.43	.35	.29	.41	.34	.29	.40	.33	.28	.38	.32	.28	.26
9.0	.41	.32	.27	.40	.32	.26	.38	.31	.26	.37	.30	.25	.35	.29	.25	.23
10.0	.37	.29	.24	.37	.29	.24	.35	.28	.23	.34	.28	.23	.33	.27	.23	.21



Test System: LSG-1800
 Temperature: 25.3DEG
 Operators: G
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Test Set: 5.0deg/s C-Gamma (TYPE C)
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 Remarks:

WEC AND CCEC

Report number: GO2018-037A

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NAME: HALO_4.5W/line foot_1ft	TYPE: wall			WEIGHT:	
SPECIFICATION: wall	DIMENSION: 305x50x20			SERIAL No.:	

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						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.339	.193	.061	.330	.188	.060	.313	.180	.057	.297	.172	.055	.283	.164	.053	
2.0	.309	.169	.052	.301	.166	.051	.286	.159	.049	.272	.152	.048	.259	.146	.046	
3.0	.281	.150	.045	.274	.147	.044	.260	.141	.043	.248	.136	.042	.236	.131	.041	
4.0	.257	.133	.039	.250	.131	.039	.238	.126	.038	.227	.122	.037	.217	.118	.036	
5.0	.236	.120	.035	.230	.118	.034	.219	.114	.034	.209	.110	.033	.200	.107	.032	
6.0	.218	.109	.031	.212	.107	.031	.203	.104	.030	.194	.101	.030	.185	.097	.029	
7.0	.202	.100	.028	.197	.098	.028	.188	.095	.027	.180	.092	.027	.172	.089	.026	
8.0	.188	.092	.026	.184	.090	.026	.176	.088	.025	.168	.085	.025	.161	.083	.024	
9.0	.176	.085	.024	.172	.084	.024	.165	.081	.023	.158	.079	.023	.151	.077	.022	
10.0	.165	.079	.022	.161	.078	.022	.155	.076	.021	.148	.074	.021	.143	.072	.021	

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	.237	.237	.237	.202	.202	.202	.138	.138	.138	.079	.079	.079	.025	.025	.025	
1.0	.229	.203	.179	.196	.174	.154	.134	.120	.106	.077	.069	.062	.025	.022	.020	
2.0	.221	.179	.143	.190	.154	.124	.130	.106	.086	.075	.062	.051	.024	.020	.016	
3.0	.214	.162	.120	.183	.139	.104	.126	.097	.073	.073	.057	.043	.023	.018	.014	
4.0	.206	.149	.105	.177	.128	.091	.122	.089	.064	.070	.052	.038	.023	.017	.012	
5.0	.199	.138	.094	.171	.120	.082	.117	.084	.058	.068	.049	.034	.022	.016	.011	
6.0	.191	.130	.086	.164	.113	.075	.113	.079	.053	.066	.046	.032	.021	.015	.010	
7.0	.184	.123	.081	.159	.107	.070	.110	.075	.050	.064	.044	.030	.021	.014	.010	
8.0	.178	.118	.076	.153	.102	.067	.106	.072	.047	.062	.042	.028	.020	.014	.009	
9.0	.172	.113	.073	.148	.098	.064	.102	.069	.045	.060	.041	.027	.019	.013	.009	
10.0	.166	.109	.070	.143	.094	.061	.099	.066	.044	.058	.039	.026	.019	.013	.009	

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Operators: G
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Test Set: 5.0deg/s C-Gamma (TYPE C)
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Test Distance: 10.000 m
Remarks:

Uncorrected UGR Table

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)			
NAME: HALO_4.5W/line foot_1ft	TYPE: wall		WEIGHT:	
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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	11.1	12.5	11.4	12.9	13.2	11.7	13.1	12.0	13.5	13.8
3H	12.7	14.1	13.1	14.4	14.8	13.6	15.0	14.0	15.3	15.7
4H	13.4	14.7	13.8	15.1	15.5	14.6	15.9	15.0	16.2	16.6
6H	14.0	15.2	14.4	15.6	16.0	15.5	16.7	15.9	17.1	17.5
8H	14.2	15.3	14.6	15.7	16.2	15.9	17.1	16.3	17.5	17.9
12H	14.3	15.4	14.7	15.8	16.3	16.3	17.5	16.8	17.9	18.3
4H 2H	11.9	13.2	12.3	13.5	13.9	12.3	13.6	12.7	14.0	14.4
3H	13.7	14.9	14.2	15.3	15.7	14.5	15.6	14.9	16.0	16.4
4H	14.6	15.6	15.0	16.0	16.5	15.6	16.6	16.0	17.0	17.5
6H	15.3	16.2	15.8	16.7	17.2	16.7	17.6	17.2	18.1	18.6
8H	15.6	16.4	16.1	16.9	17.4	17.2	18.1	17.7	18.5	19.1
12H	15.8	16.6	16.3	17.0	17.6	17.7	18.5	18.2	19.0	19.5
8H 4H	15.1	15.9	15.6	16.4	16.9	15.9	16.8	16.4	17.3	17.8
6H	16.0	16.8	16.6	17.3	17.8	17.2	18.0	17.8	18.5	19.0
8H	16.5	17.1	17.0	17.6	18.2	17.9	18.6	18.5	19.1	19.7
12H	16.7	17.3	17.3	17.9	18.5	18.6	19.2	19.2	19.7	20.3
12H 4H	15.2	16.0	15.7	16.5	17.0	16.0	16.8	16.5	17.2	17.8
6H	16.2	16.9	16.8	17.4	18.0	17.4	18.0	17.9	18.5	19.1
8H	16.7	17.3	17.3	17.9	18.5	18.1	18.7	18.7	19.2	19.9
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.2 / - 0.2					+ 0.2 / - 0.2				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				

CIE Pub.117 Corrected 238.0 lm Total Lamp Luminous Flux. (8log(F/F0) = -5.0)

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UTILIZATION FACTORS TABLE

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	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) $k(RI) \times RCR = 5$									
$k = 0.60$	54	42	35	53	42	35	52	41	34	28
0.80	64	52	44	62	51	44	60	50	43	36
1.00	72	60	52	70	59	52	68	60	51	43
1.25	79	68	60	77	67	59	74	65	58	50
1.50	84	73	66	82	72	65	78	70	63	55
2.00	91	82	74	89	80	73	84	77	71	62
2.50	95	87	80	93	85	79	88	81	76	66
3.00	99	91	85	96	89	83	91	85	81	70
4.00	103	96	91	100	94	89	95	90	86	75
5.00	106	100	95	103	98	93	97	93	89	78
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SERNOM = 1.25		

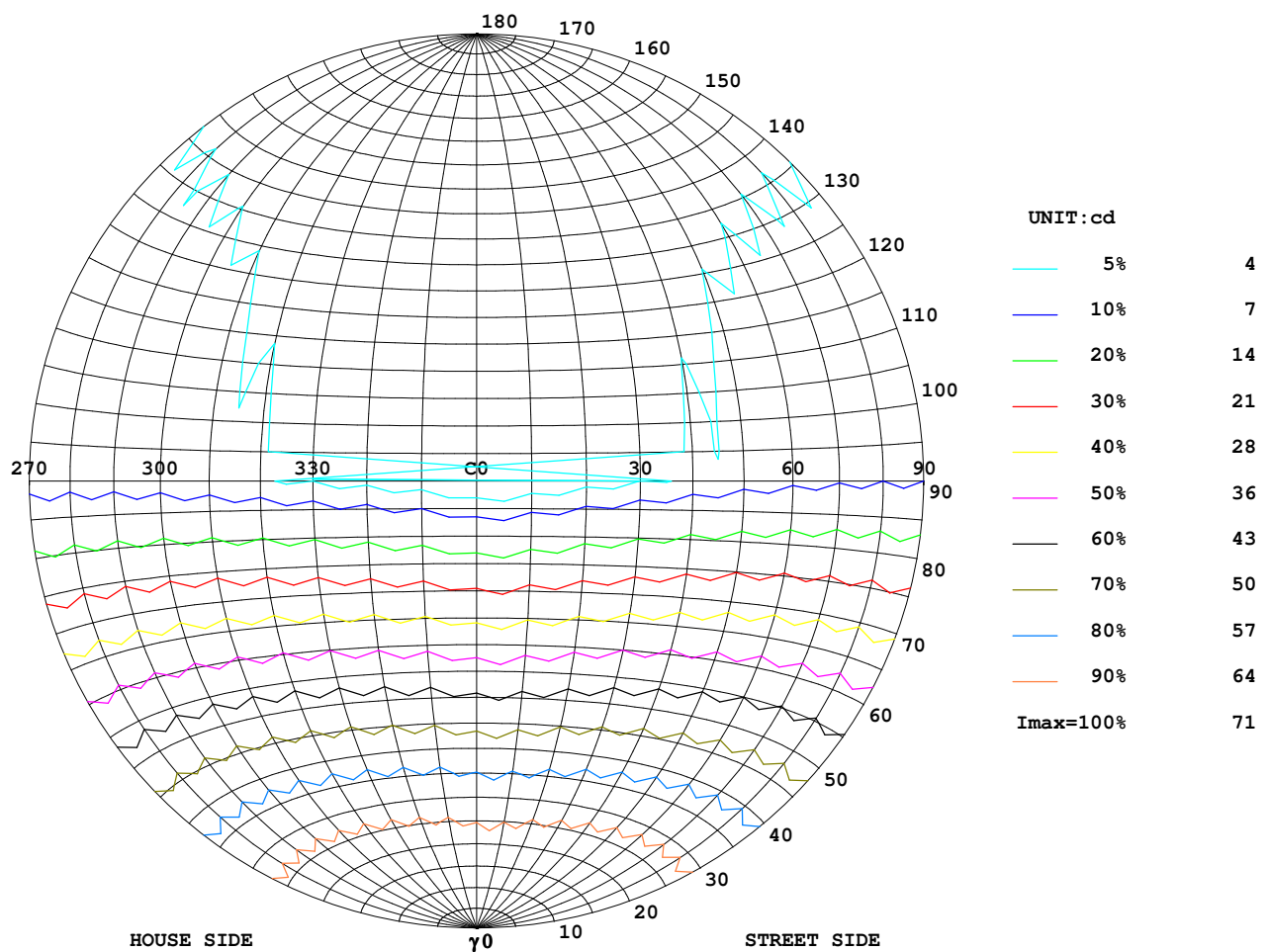
Test System: LSG-1800
Temperature: 25.3 DEG
Operators: G
Test Date: 02-21-2018

Test Set: 5.0 deg/s C-Gamma (TYPE C)
Humidity: 65.0%
Test Distance: 10.000 m
Remarks:

ISOCANDELA DIAGRAM

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	SERIAL No.:



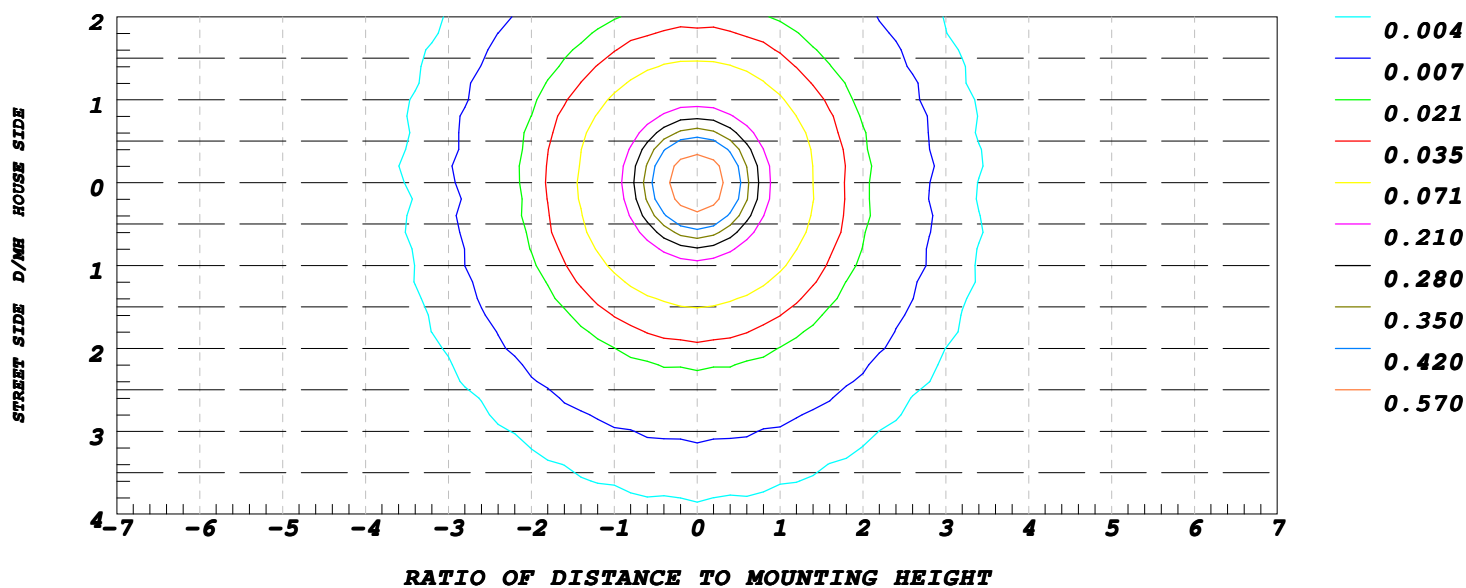
Test System: LSG-1800
Temperature: 25.3DEG
Operators: G
Test Date: 02-21-2018

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity: 65.0%
Test Distance: 10.000 m
Remarks:

ISOLUX DIAGRAM

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	SERIAL No.:

ILLUMINANCE AT MH=10 m, Enadir = 0.71 lx

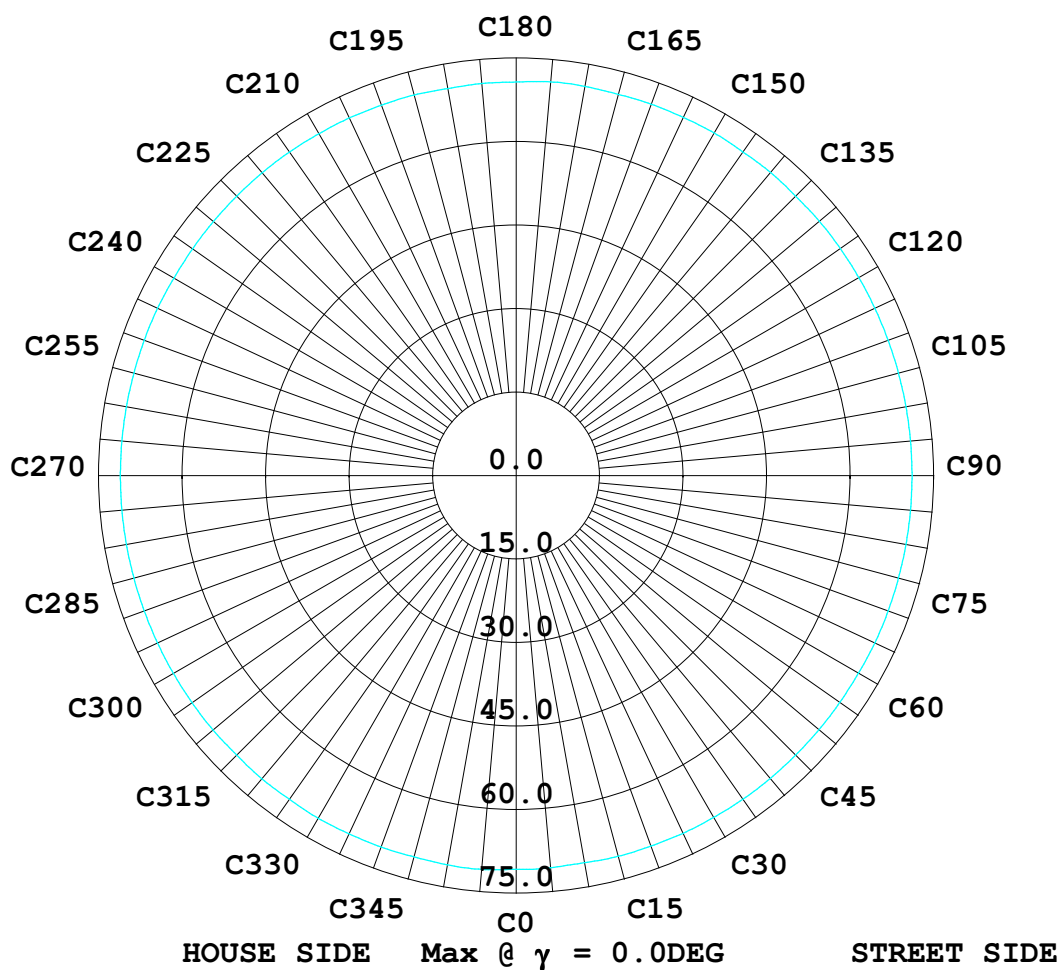
Test System: LSG-1800
Temperature: 25.3 DEG
Operators: G
Test Date: 02-21-2018

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity: 65.0%
Test Distance: 10.000 m
Remarks:

ISOCANDELA DIAGRAM

Report number: GO2018-037A

MANUFACTURER: BACKLIGHT SRL	Address: Via Volta 5 - Ornago (MB)	
NAME: HALO_4.5W/line foot_1ft	TYPE: wall	WEIGHT:
SPECIFICATION: wall	DIMENSION: 305x50x20	SERIAL No.:



Test System: LSG-1800
 Temperature: 25.3DEG
 Operators: G
 Test Date: 02-21-2018

Test Set: 5.0deg/s C-Gamma (TYPE C)
 Humidity: 65.0%
 Test Distance: 10.000 m
 Remarks: