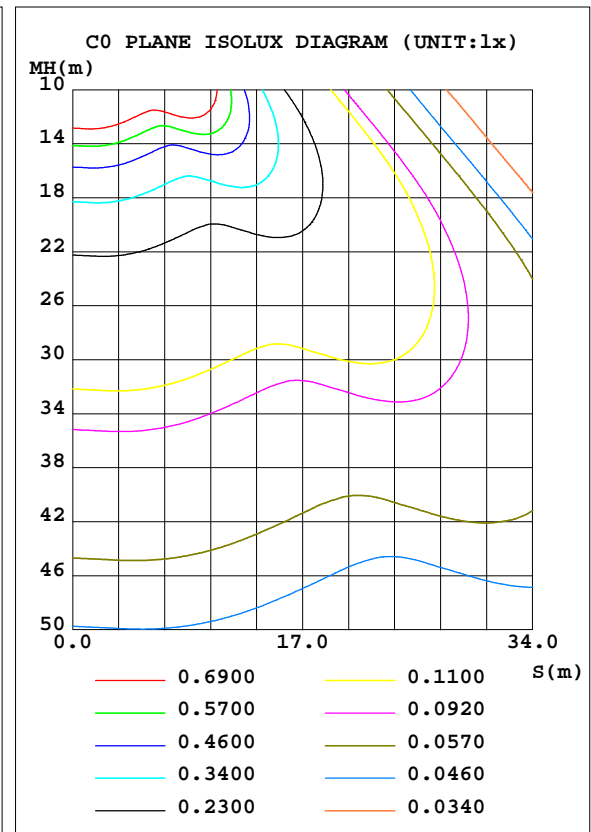
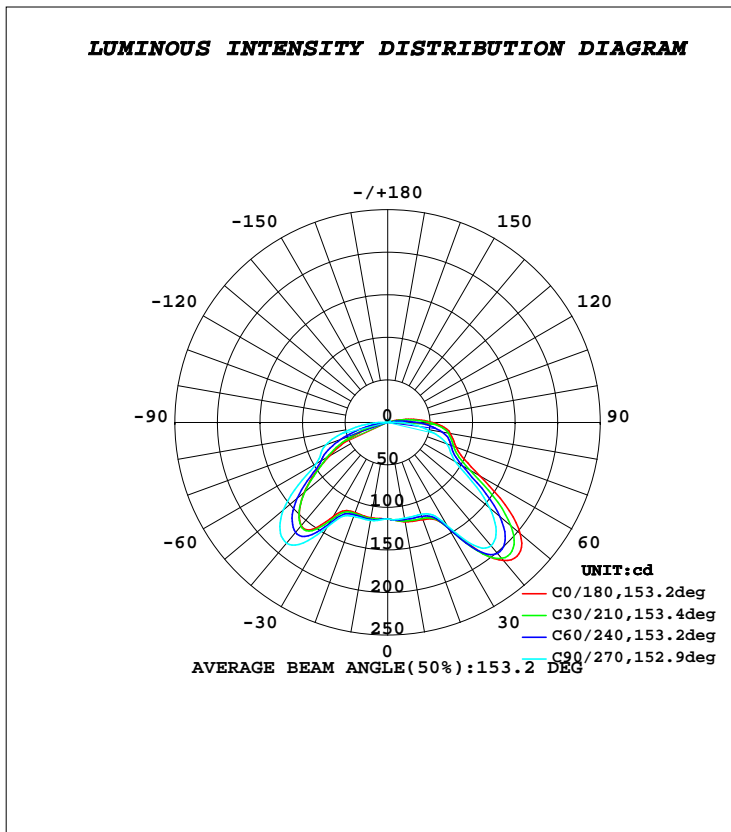


LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: Midgard Modular Schirm 3309	TYPE:	WEIGHT:
SPEC.:	DIM.: a=110 mm; b=107.5 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL		Imax(cd)	221.6	S/MH(C0/180)	1.80
NOMINAL POWER(W)	8.12	LOR(%)	100.0	S/MH(C90/270)	1.93
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	661.04	η UP, DN(C0-180)	2.4, 48.0
NOMINAL FLUX(lm)	661.038	CIE CLASS	DIRECT	η UP, DN(C180-360)	2.0, 47.7
LAMPS INSIDE	1	η up(%)	4.3	CIBSE SHR NOM	2.00
TEST VOLTAGE(V)	230	η down(%)	95.7	CIBSE SHR MAX	0.00



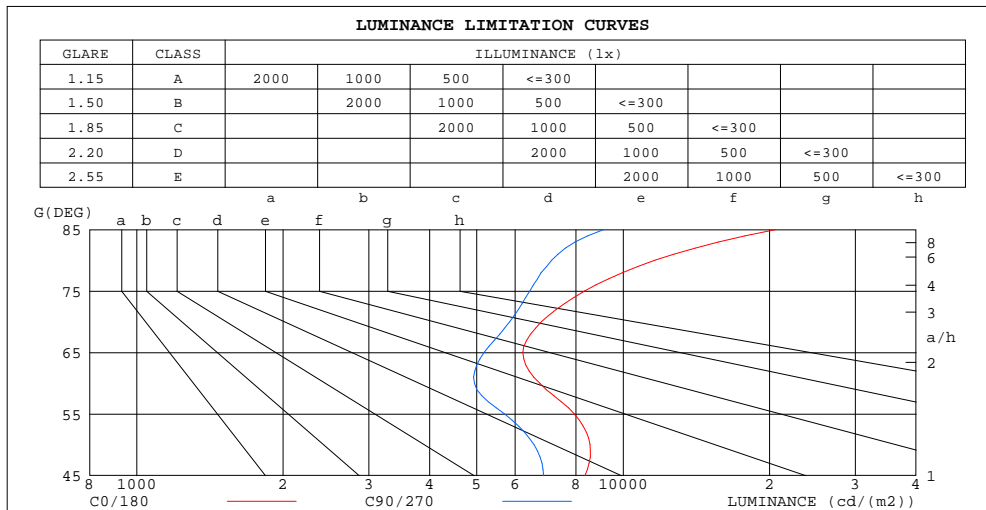
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: JB
Test Date: 21 December 2017

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 4.850m [K=1.0000]
Remarks: Midgard Modular Schirm 3309

ZONAL FLUX DIAGRAM
AND LUMINANCE LIMITATION CURVES

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	118.5	116.8	114.4	113.9	113.8	115.3	117.0	118.2	0- 10	11.00	11.00	1.66,1.66
20	121.7	119.0	115.1	113.1	112.8	114.6	117.5	120.5	10- 20	32.97	43.97	6.65,6.65
30	143.1	145.0	139.8	131.1	127.2	134.7	141.8	140.5	20- 30	56.92	100.9	15.3,15.3
40	211.9	205.7	189.1	164.3	158.2	163.0	185.1	207.9	30- 40	105.8	206.7	31.3,31.3
50	203.7	180.7	156.8	132.4	128.2	132.4	160.0	198.5	40- 50	137.8	344.4	52.1,52.1
60	124.8	105.6	91.96	83.85	79.35	87.00	97.42	125.4	50- 60	116.5	460.9	69.7,69.7
70	86.06	81.18	74.32	49.13	35.37	49.31	77.36	86.49	60- 70	80.93	541.8	82,82
80	74.65	70.00	46.04	13.02	2.852	10.34	42.18	71.48	70- 80	57.28	599.1	90.6,90.6
90	52.53	43.10	14.53	1.866	2.326	2.241	8.512	39.68	80- 90	33.27	632.4	95.7,95.7
100	21.85	13.72	1.888	2.117	2.186	2.122	2.219	9.581	90-100	14.31	646.7	97.8,97.8
110	2.001	1.946	2.125	2.376	2.271	2.117	2.124	2.278	100-110	3.962	650.7	98.4,98.4
120	2.166	2.167	2.356	2.605	2.510	2.329	2.121	2.185	110-120	2.231	652.9	98.8,98.8
130	2.335	2.341	2.529	2.787	2.695	2.534	2.281	2.135	120-130	2.143	655.0	99.1,99.1
140	2.441	2.474	2.667	2.868	2.777	2.646	2.428	2.232	130-140	1.944	657.0	99.4,99.4
150	2.590	2.619	2.740	2.869	2.785	2.675	2.516	2.379	140-150	1.631	658.6	99.6,99.6
160	2.860	2.869	2.943	3.051	2.982	2.873	2.737	2.632	150-160	1.262	659.9	99.8,99.8
170	3.174	3.173	3.210	3.262	3.256	3.179	3.081	2.994	160-170	0.8504	660.7	100,100
180	3.368	3.341	3.308	3.275	3.368	3.340	3.306	3.275	170-180	0.3077	661.0	100,100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	20612	9131
80	11605	7129
75	8327	6426
70	6793	5843
65	6223	5175
60	6739	4946
55	7942	5700
50	8553	6557
45	8339	6863

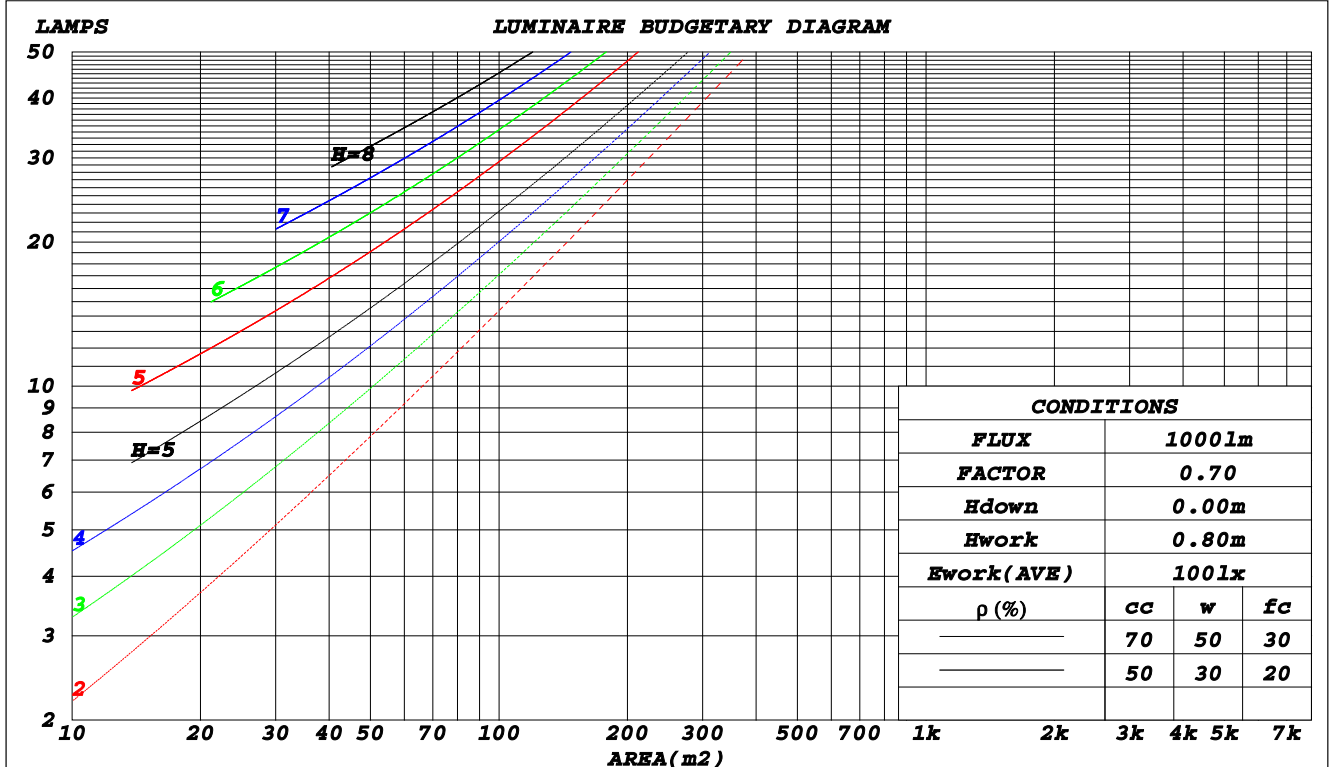
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: JB
Test Date: 21 December 2017

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 4.850m [K=1.0000]
Remarks: Midgard Modular Schirm 3309

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: Midgard Modular Schirm 3309	TYPE:	WEIGHT:
SPEC.:	DIM.: a=110 mm; b=107.5 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding 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															
	Coefficients of Utilization(CU)															
0.0	1.18	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.09	1.03	1.03	1.03	.98	.98	.98	.96
1.0	1.00	.95	.90	.97	.93	.89	.92	.88	.85	.87	.84	.82	.83	.81	.78	.76
2.0	.86	.78	.71	.83	.76	.70	.79	.73	.68	.75	.70	.66	.71	.67	.64	.61
3.0	.74	.65	.58	.72	.64	.57	.68	.61	.55	.65	.59	.54	.62	.57	.52	.50
4.0	.65	.55	.48	.63	.54	.47	.60	.52	.46	.57	.50	.45	.54	.48	.44	.41
5.0	.57	.47	.40	.55	.46	.39	.53	.45	.39	.50	.43	.38	.48	.42	.37	.35
6.0	.51	.41	.34	.49	.40	.34	.47	.39	.33	.45	.38	.32	.43	.37	.32	.29
7.0	.45	.36	.29	.44	.35	.29	.42	.34	.28	.40	.33	.28	.39	.32	.27	.25
8.0	.41	.32	.25	.40	.31	.25	.38	.30	.25	.36	.29	.24	.35	.29	.24	.22
9.0	.37	.28	.22	.36	.28	.22	.35	.27	.22	.33	.26	.21	.32	.26	.21	.19
10.0	.34	.25	.20	.33	.25	.20	.32	.24	.19	.30	.24	.19	.29	.23	.19	.17



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: JB
 Test Date: 21 December 2017

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 4.850m [K=1.0000]
 Remarks: Midgard Modular Schirm 3309

WEC AND CCEC

NAME: Midgard Modular Schirm 3309	TYPE:	WEIGHT:
SPEC.:	DIM.: a=110 mm; b=107.5 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding 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	.363	.206	.065	.354	.202	.064	.338	.194	.062	.323	.187	.060	.310	.180	.058	
2.0	.327	.179	.055	.320	.176	.054	.306	.170	.053	.292	.164	.051	.280	.158	.050	
3.0	.297	.158	.047	.291	.156	.047	.278	.151	.046	.266	.146	.045	.255	.141	.044	
4.0	.271	.141	.041	.265	.139	.041	.254	.135	.040	.243	.131	.039	.233	.127	.039	
5.0	.249	.127	.037	.243	.125	.036	.233	.121	.036	.223	.118	.035	.215	.115	.034	
6.0	.229	.115	.033	.224	.113	.033	.215	.110	.032	.207	.107	.032	.198	.104	.031	
7.0	.212	.105	.030	.208	.104	.030	.200	.101	.029	.192	.098	.029	.184	.096	.028	
8.0	.198	.097	.027	.194	.095	.027	.186	.093	.027	.179	.091	.026	.172	.088	.026	
9.0	.184	.089	.025	.181	.088	.025	.174	.086	.024	.167	.084	.024	.161	.082	.024	
10.0	.173	.083	.023	.170	.082	.023	.163	.080	.023	.157	.078	.022	.152	.076	.022	

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	.223	.223	.223	.191	.191	.191	.130	.130	.130	.075	.075	.075	.024	.024	.024	
1.0	.217	.189	.163	.186	.162	.141	.127	.112	.097	.073	.065	.057	.023	.021	.018	
2.0	.211	.165	.127	.180	.142	.110	.124	.098	.077	.071	.057	.045	.023	.019	.015	
3.0	.203	.148	.104	.174	.128	.090	.120	.089	.063	.069	.052	.037	.022	.017	.012	
4.0	.196	.135	.089	.168	.117	.077	.116	.081	.054	.067	.048	.032	.022	.016	.011	
5.0	.189	.125	.078	.162	.108	.068	.112	.076	.048	.065	.044	.029	.021	.015	.009	
6.0	.182	.117	.071	.156	.101	.062	.108	.071	.044	.062	.042	.026	.020	.014	.009	
7.0	.175	.110	.065	.150	.096	.057	.104	.067	.040	.060	.040	.024	.019	.013	.008	
8.0	.168	.105	.061	.145	.091	.054	.100	.064	.038	.058	.038	.023	.019	.012	.007	
9.0	.162	.100	.058	.139	.087	.051	.097	.061	.036	.056	.036	.022	.018	.012	.007	
10.0	.156	.096	.056	.134	.083	.049	.093	.058	.035	.054	.035	.021	.018	.011	.007	

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: JB
 Test Date: 21 December 2017

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 4.850m [K=1.0000]
 Remarks: Midgard Modular Schirm 3309

UGR(Unified Glare Rating) Table

NAME: Midgard Modular Schirm 3309					TYPE:					WEIGHT:				
SPEC.:					DIM.: a=110 mm; b=107.5 mm					SERIAL No.:				
MFR.: Midgard					SUR.:					Shielding 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	20.3	21.9	20.6	22.2	22.5	19.2	20.8	19.6	21.1	21.4				
3H	21.9	23.3	22.2	23.6	24.0	20.9	22.4	21.3	22.7	23.0				
4H	22.9	24.3	23.3	24.7	25.0	21.9	23.3	22.3	23.7	24.0				
6H	24.3	25.6	24.7	26.0	26.3	22.9	24.2	23.3	24.6	24.9				
8H	25.1	26.4	25.5	26.7	27.1	23.3	24.6	23.7	25.0	25.3				
12H	26.0	27.3	26.4	27.6	28.0	23.7	24.9	24.1	25.3	25.7				
4H 2H	20.7	22.1	21.1	22.4	22.8	19.9	21.3	20.2	21.6	22.0				
3H	22.6	23.8	23.0	24.2	24.6	21.9	23.1	22.3	23.5	23.9				
4H	23.9	25.0	24.4	25.4	25.9	23.1	24.3	23.6	24.7	25.1				
6H	25.5	26.5	26.0	27.0	27.5	24.4	25.4	24.8	25.8	26.3				
8H	26.5	27.4	27.0	27.9	28.4	24.9	25.9	25.4	26.3	26.8				
12H	27.6	28.5	28.1	28.9	29.4	25.4	26.3	25.9	26.8	27.3				
8H 4H	24.4	25.4	24.9	25.8	26.3	23.8	24.7	24.3	25.2	25.7				
6H	26.4	27.2	26.9	27.7	28.2	25.4	26.2	25.9	26.7	27.2				
8H	27.6	28.3	28.1	28.8	29.3	26.2	26.9	26.7	27.4	27.9				
12H	28.9	29.5	29.4	30.0	30.6	26.9	27.5	27.4	28.0	28.6				
12H 4H	24.5	25.4	25.0	25.9	26.4	24.0	24.9	24.5	25.3	25.8				
6H	26.6	27.3	27.1	27.8	28.4	25.7	26.4	26.3	26.9	27.5				
8H	27.9	28.5	28.4	29.0	29.6	26.6	27.2	27.2	27.8	28.3				
Variations with the observer position at spacings:														
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.2								
1.5H	+ 0.2 / - 0.4					+ 0.2 / - 0.4								
2.0H	+ 0.1 / - 0.2					+ 0.1 / - 0.3								

CIE Pub.117 Corrected 661.0 lm Total Lamp Luminous Flux.(8log(F/F0) = -1.4)

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:JB
 Test Date:21 December 2017

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.295
 Humidity:65.0%
 Test Distance:4.850m [K=1.0000]
 Remarks: Midgard Modular Schirm 3309

UTILIZATION FACTORS TABLE

NAME: Midgard Modular Schirm 3309	TYPE:	WEIGHT:
SPEC.:	DIM.: a=110 mm; b=107.5 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding 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	49	36	29	48	36	28	47	35	28	21
0.80	60	46	38	58	46	38	56	45	38	30
1.00	69	56	48	67	55	48	65	57	47	39
1.25	76	64	56	75	64	56	72	62	55	46
1.50	82	70	62	80	69	62	76	67	60	52
2.00	90	79	72	87	78	71	83	75	69	60
2.50	94	85	77	91	83	76	87	80	74	64
3.00	98	89	83	95	87	81	90	84	79	69
4.00	102	95	89	99	93	88	94	89	84	74
5.00	105	99	93	102	96	92	96	92	88	77
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: JB
Test Date: 21 December 2017

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 4.850m [K=1.0000]
Remarks: Midgard Modular Schirm 3309

ISOCANDELA DIAGRAM

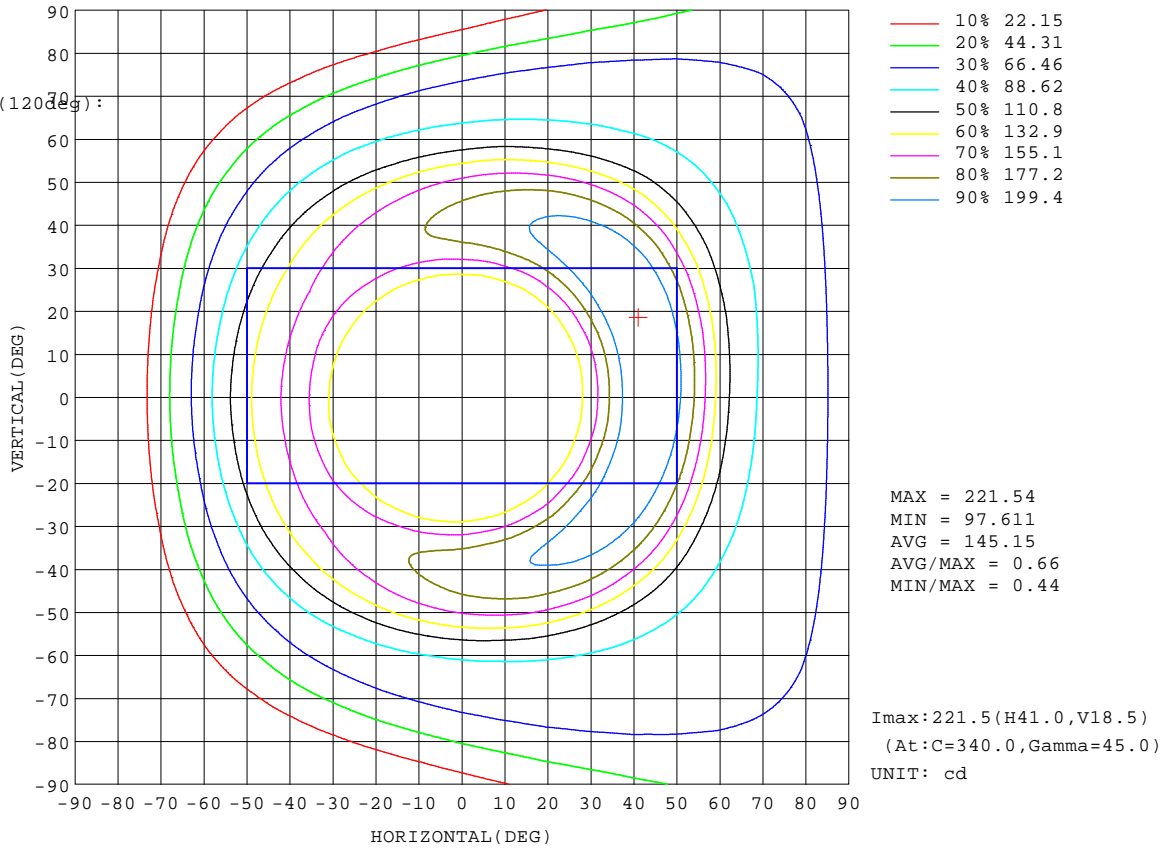
NAME: Midgard Modular Schirm 3309	TYPE:	WEIGHT:
SPEC.:	DIM.: a=110 mm; b=107.5 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:

Conical surface Flux(90deg):

274.91 lm
 %lum = 41.6%
 %lamp = 41.6%

Conical surface Flux(120deg):

460.91 lm
 %lum = 69.7%
 %lamp = 69.7%



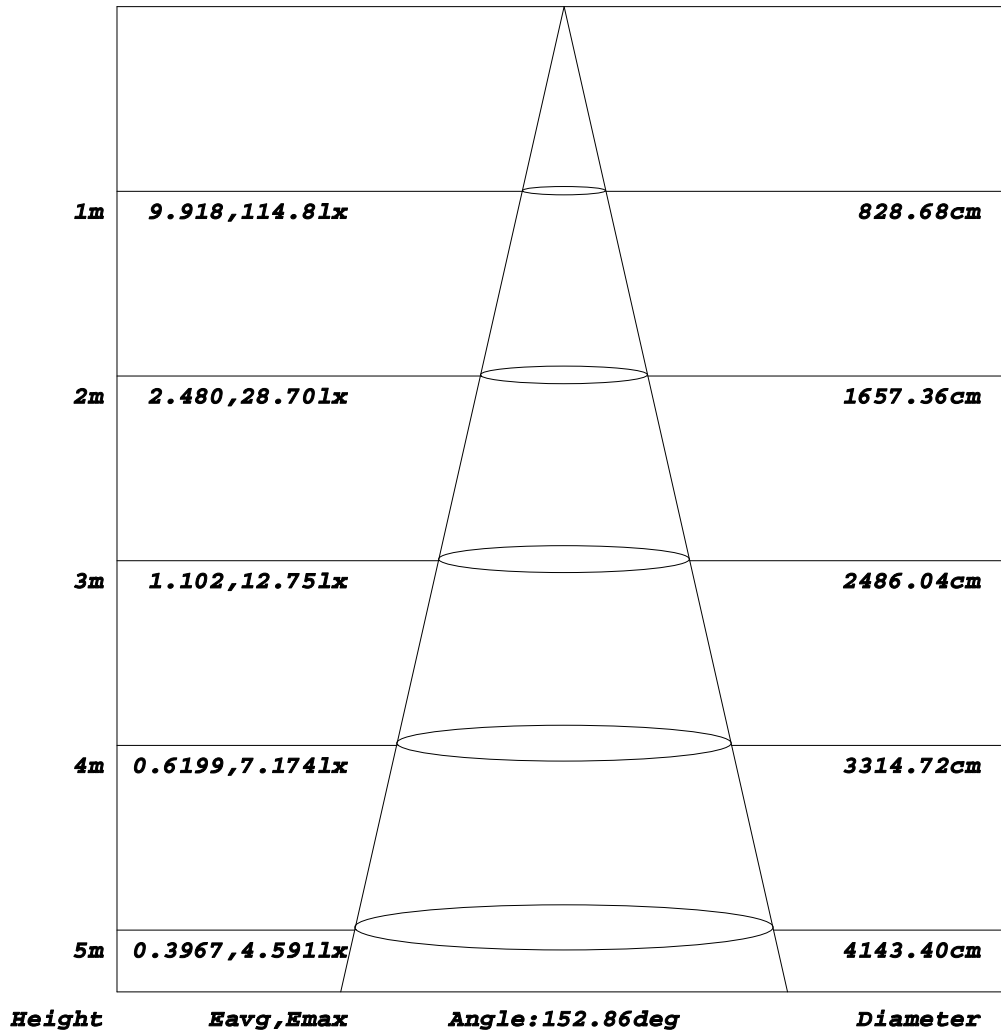
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: JB
Test Date: 21 December 2017

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 4.850m [K=1.0000]
Remarks: Midgard Modular Schirm 3309

AAI Figure

NAME: Midgard Modular Schirm 3309	TYPE:	WEIGHT:
SPEC.:	DIM.: a=110 mm; b=107.5 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:

Flux out:584.6 lm



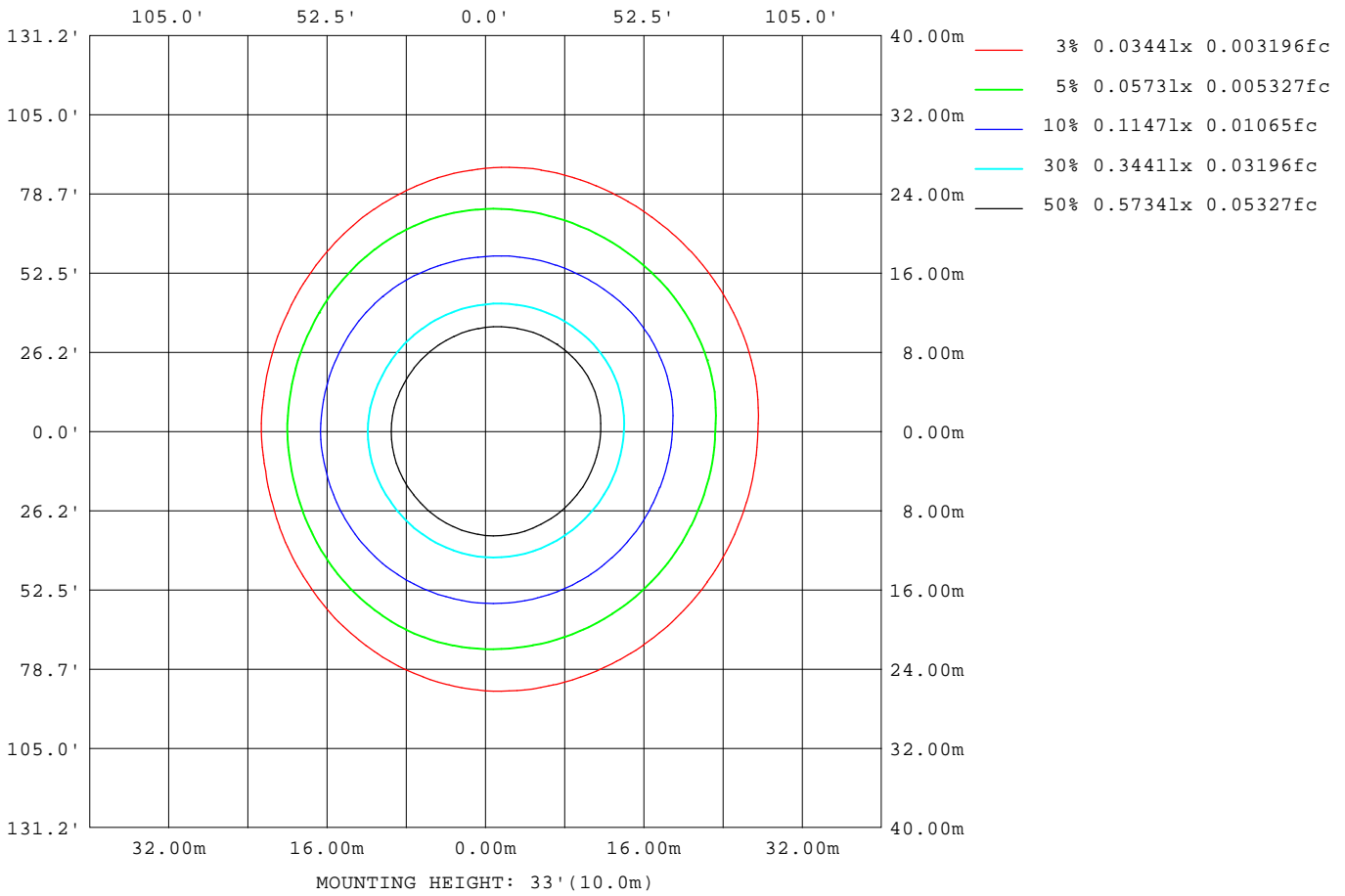
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: JB
 Test Date: 21 December 2017

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 4.850m [K=1.0000]
 Remarks: Midgard Modular Schirm 3309

ISOLUX DIAGRAM

NAME: Midgard Modular Schirm 3309	TYPE:	WEIGHT:
SPEC.:	DIM.: a=110 mm; b=107.5 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: JB
Test Date: 21 December 2017

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 4.850m [K=1.0000]
Remarks: Midgard Modular Schirm 3309

LED Avg.L Report

NAME: Midgard Modular Schirm 3309	TYPE:	WEIGHT:
SPEC.:	DIM.: a=110 mm; b=107.5 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:

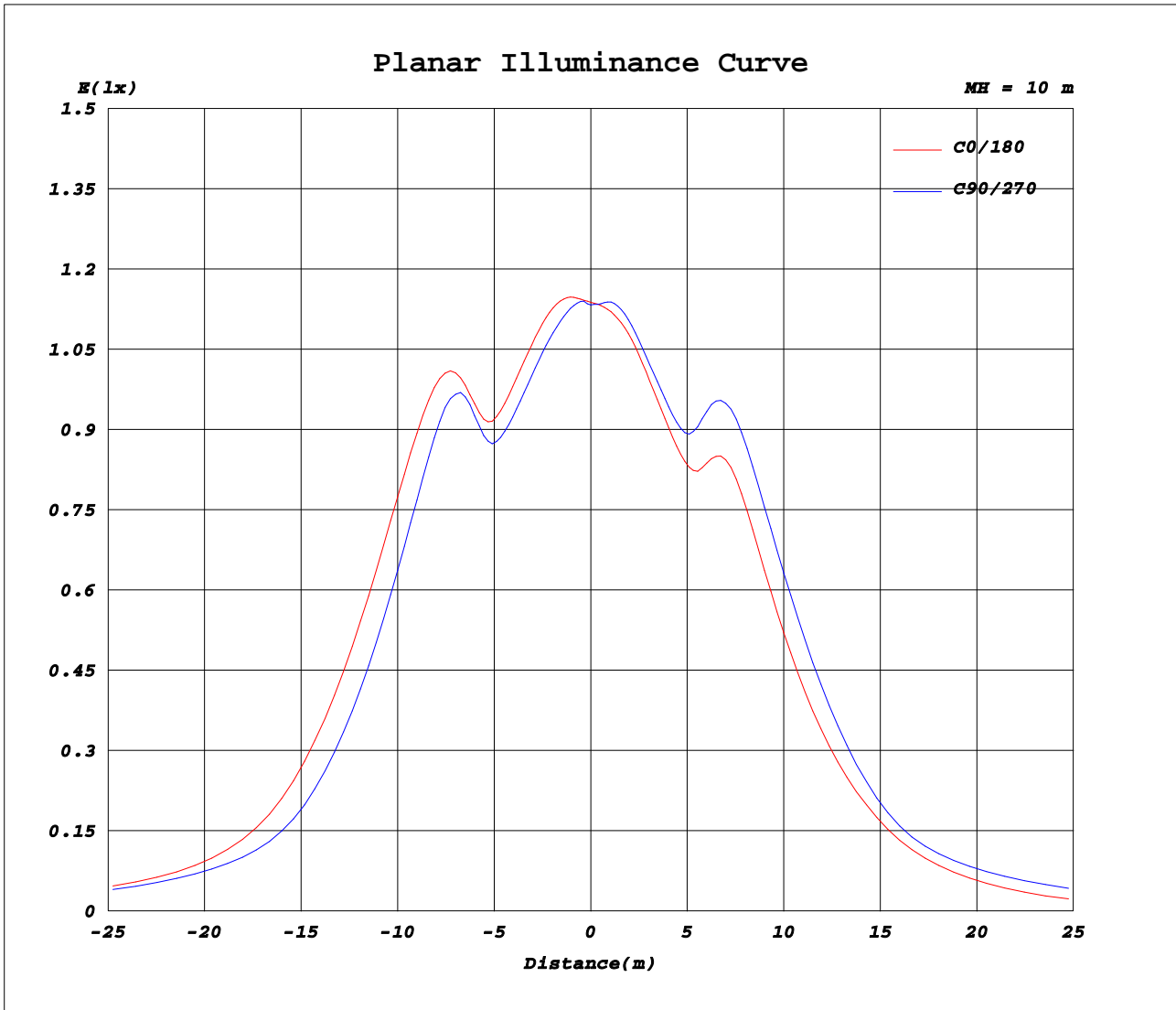
AvgL	cd/m2
L_0~180(65)av	4932
L_0~180(75)av	4957
L_0~180(85)av	10655
L_90~270(65)av	5353
L_90~270(75)av	6401
L_90~270(85)av	8220
L_45(65)av	5153
L_45(75)av	5581
L_45(85)av	9205

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: JB
Test Date: 21 December 2017

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 4.850m [K=1.0000]
Remarks: Midgard Modular Schirm 3309

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: JB
Test Date: 21 December 2017

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 4.850m [K=1.0000]
Remarks: Midgard Modular Schirm 3309