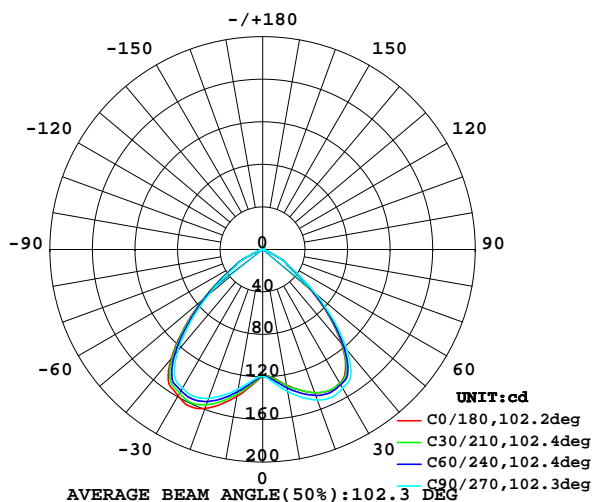


LUMINAIRE PHOTOMETRIC TEST REPORT

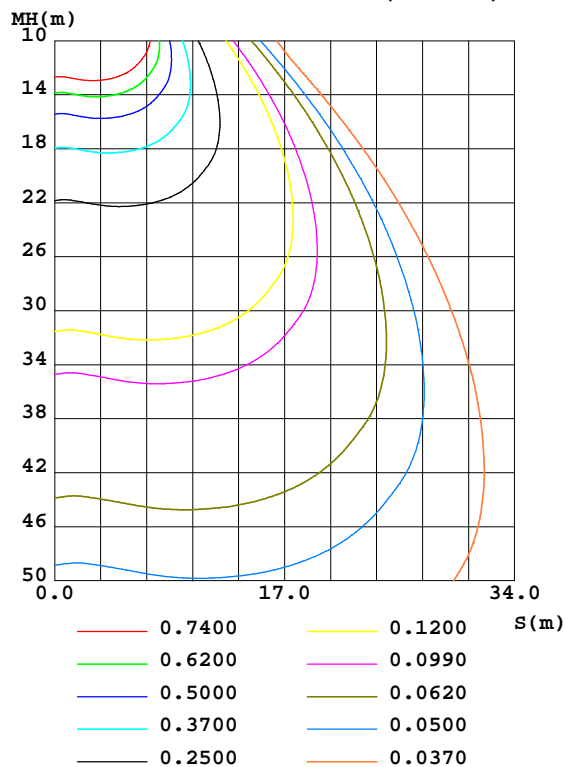
NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 43.04 lm/W
MODEL		Imax(cd)	162.8	S/MH(C0/180)	1.51	
NOMINAL POWER(W)	8.125	LOR(%)	100.0	S/MH(C90/270)	1.47	
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	349.70	η UP,DN(C0-180)	1.3,48.4	
NOMINAL FLUX(lm)	349.698	CIE CLASS	DIRECT	η UP,DN(C180-360)	1.1,49.3	
LAMPS INSIDE	1	η up(%)	2.4	CIBSE SHR NOM	1.25	
TEST VOLTAGE(V)	230	η down(%)	97.6	CIBSE SHR MAX	1.35	

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



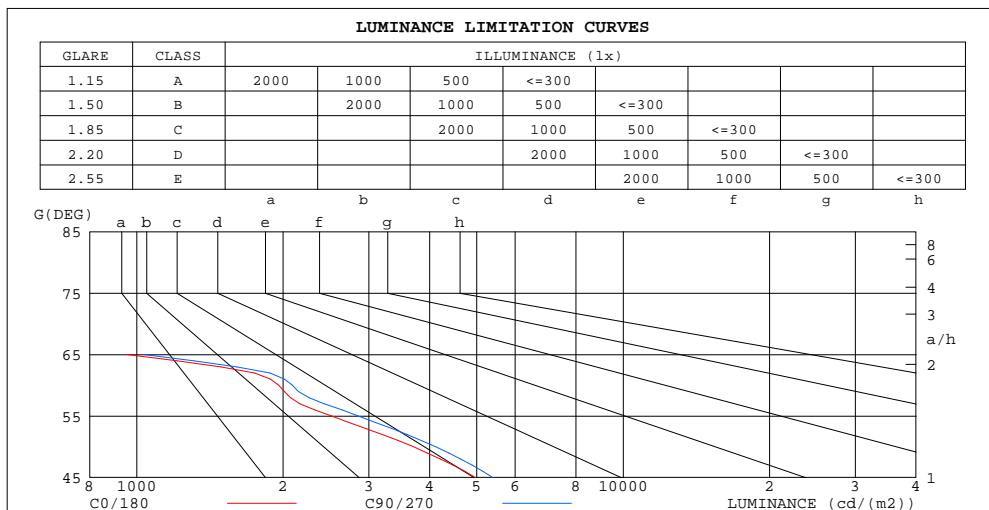
C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:JB
 Test Date:02 January 2018

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 K831 Aluminium

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	129.5	130.8	135.5	140.0	140.1	136.8	133.4	130.7	0- 10	12.26	12.26	3.51,3.51
20	143.3	144.3	150.6	158.6	159.0	153.7	148.8	146.1	10- 20	40.82	53.08	15.2,15.2
30	145.0	145.8	150.7	158.3	159.0	155.0	150.6	149.3	20- 30	70.83	123.9	35.4,35.4
40	115.1	117.8	123.5	131.0	133.5	130.0	123.8	120.4	30- 40	89.19	213.1	60.9,60.9
50	59.27	61.93	65.75	71.29	74.01	71.54	66.23	63.50	40- 50	73.57	286.7	82,82
60	24.37	25.45	25.98	28.13	29.45	28.71	27.15	26.72	50- 60	38.49	325.2	93,93
70	3.042	3.109	3.129	3.264	4.346	4.374	4.116	4.054	60- 70	13.24	338.4	96.8,96.8
80	0.9574	0.9727	0.9647	0.9587	1.355	1.365	1.275	1.245	70- 80	2.190	340.6	97.4,97.4
90	0.6216	0.6140	0.5971	0.5904	0.5725	0.5820	0.5683	0.5672	80- 90	0.8589	341.4	97.6,97.6
100	0.8253	0.8135	0.7907	0.7733	0.5644	0.5783	0.5920	0.6030	90-100	0.6804	342.1	97.8,97.8
110	1.111	1.089	1.059	1.036	0.7794	0.7955	0.8228	0.8476	100-110	0.8562	343.0	98.1,98.1
120	1.427	1.402	1.363	1.336	1.061	1.078	1.117	1.152	110-120	1.080	344.1	98.4,98.4
130	1.732	1.705	1.664	1.634	1.364	1.380	1.426	1.463	120-130	1.250	345.3	98.7,98.7
140	1.972	1.957	1.918	1.891	1.628	1.645	1.686	1.716	130-140	1.297	346.6	99.1,99.1
150	2.156	2.152	2.124	2.102	1.857	1.871	1.902	1.918	140-150	1.196	347.8	99.5,99.5
160	2.357	2.350	2.329	2.314	2.110	2.120	2.144	2.152	150-160	0.9759	348.8	99.7,99.7
170	2.577	2.572	2.564	2.558	2.438	2.444	2.454	2.457	160-170	0.6681	349.5	99.9,99.9
180	2.693	2.690	2.694	2.690	2.692	2.692	2.692	2.690	170-180	0.2468	349.7	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



LUMINANCE cd/(m2)		
G(°)	C0/180	C90/270
85	320	319
80	222	223
75	243	251
70	357	368
65	951	1032
60	1958	2089
55	2514	2848
50	3704	4113
45	4969	5403

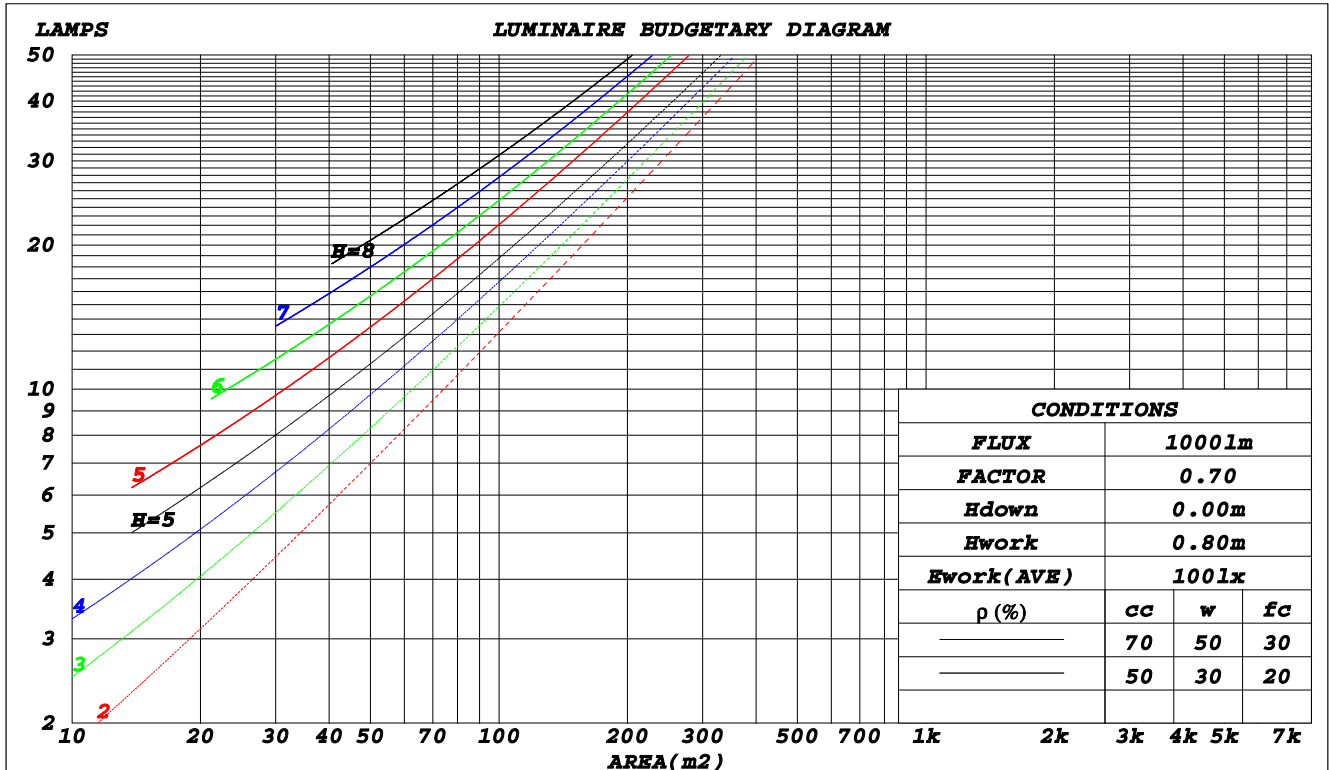
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JB
Test Date:02 January 2018

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 K831 Aluminium

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 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	1.10	1.10	1.10	1.05	1.05	1.05	.00	.00	.00	.98
1.0	1.07	1.04	1.01	1.05	1.02	.99	1.00	.98	.96	.96	.94	.92	.92	.91	.89	.87
2.0	.96	.91	.87	.94	.90	.85	.91	.87	.83	.87	.84	.81	.84	.81	.79	.77
3.0	.87	.80	.75	.85	.79	.74	.82	.77	.72	.79	.75	.71	.76	.73	.69	.67
4.0	.78	.71	.65	.77	.70	.65	.74	.68	.63	.72	.67	.62	.69	.65	.61	.59
5.0	.71	.63	.57	.70	.62	.57	.67	.61	.56	.65	.60	.55	.63	.58	.55	.53
6.0	.64	.56	.51	.63	.56	.50	.61	.55	.50	.59	.54	.49	.58	.53	.49	.47
7.0	.59	.51	.45	.58	.50	.45	.56	.49	.45	.54	.48	.44	.53	.48	.44	.42
8.0	.54	.46	.41	.53	.45	.40	.51	.45	.40	.50	.44	.40	.49	.43	.39	.38
9.0	.49	.42	.37	.49	.41	.36	.47	.41	.36	.46	.40	.36	.45	.40	.36	.34
10.0	.45	.38	.33	.45	.38	.33	.44	.37	.33	.43	.37	.33	.42	.36	.32	.31



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: JB
 Test Date: 02 January 2018

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 K831 Aluminium

WEC AND CCEC

NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 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	.234	.133	.042	.226	.129	.041	.212	.122	.039	.199	.115	.037	.187	.108	.035		
2.0	.229	.125	.038	.222	.122	.038	.210	.117	.036	.198	.111	.035	.188	.106	.033		
3.0	.219	.117	.035	.213	.114	.034	.202	.110	.033	.192	.105	.032	.183	.101	.031		
4.0	.208	.108	.032	.203	.106	.031	.194	.103	.031	.185	.099	.030	.176	.096	.029		
5.0	.197	.101	.029	.193	.099	.029	.184	.096	.028	.176	.093	.028	.169	.090	.027		
6.0	.187	.094	.027	.183	.092	.027	.175	.090	.026	.168	.087	.026	.161	.085	.025		
7.0	.177	.087	.025	.173	.086	.025	.166	.084	.024	.160	.082	.024	.154	.080	.023		
8.0	.168	.082	.023	.164	.081	.023	.158	.079	.023	.152	.077	.022	.146	.075	.022		
9.0	.159	.077	.021	.156	.076	.021	.150	.074	.021	.145	.073	.021	.140	.071	.021		
10.0	.151	.072	.020	.148	.072	.020	.143	.070	.020	.138	.069	.020	.133	.067	.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	.208	.208	.208	.178	.178	.178	.122	.122	.122	.070	.070	.070	.022	.022	.022	
1.0	.193	.175	.159	.165	.150	.136	.113	.103	.094	.065	.060	.055	.021	.019	.018	
2.0	.182	.150	.124	.156	.130	.107	.107	.090	.075	.062	.052	.044	.020	.017	.014	
3.0	.173	.132	.100	.148	.114	.087	.102	.079	.061	.059	.046	.036	.019	.015	.012	
4.0	.165	.119	.083	.142	.102	.072	.097	.071	.051	.056	.042	.030	.018	.014	.010	
5.0	.158	.108	.071	.136	.093	.061	.094	.065	.043	.054	.038	.026	.017	.012	.008	
6.0	.152	.099	.062	.130	.086	.054	.090	.060	.038	.052	.035	.023	.017	.012	.007	
7.0	.146	.092	.055	.125	.080	.048	.087	.056	.034	.050	.033	.020	.016	.011	.007	
8.0	.140	.086	.050	.121	.075	.043	.083	.053	.031	.049	.031	.018	.016	.010	.006	
9.0	.135	.082	.046	.116	.071	.040	.080	.050	.028	.047	.029	.017	.015	.010	.006	
10.0	.130	.077	.042	.112	.067	.037	.078	.047	.026	.045	.028	.016	.015	.009	.005	

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JB
Test Date:02 January 2018

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 K831 Aluminium

UGR(Unified Glare Rating) Table

NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 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	15.7	17.0	16.0	17.2	17.5	16.0	17.3	16.3	17.5	17.7
3H	15.6	16.7	15.9	17.0	17.3	15.9	17.0	16.2	17.3	17.6
4H	15.5	16.6	15.8	16.9	17.2	15.8	16.9	16.1	17.1	17.4
6H	15.4	16.4	15.8	16.7	17.0	15.7	16.7	16.0	17.0	17.3
8H	15.4	16.3	15.7	16.6	17.0	15.6	16.6	16.0	16.9	17.2
12H	15.3	16.2	15.7	16.6	16.9	15.6	16.5	16.0	16.8	17.2
4H 2H	15.7	16.8	16.0	17.0	17.3	15.9	17.0	16.2	17.3	17.6
3H	15.5	16.5	15.9	16.8	17.2	15.8	16.7	16.2	17.1	17.4
4H	15.5	16.3	15.9	16.7	17.0	15.7	16.6	16.1	16.9	17.3
6H	15.4	16.1	15.8	16.5	16.9	15.6	16.4	16.1	16.8	17.2
8H	15.3	16.0	15.8	16.4	16.9	15.6	16.3	16.0	16.7	17.1
12H	15.3	15.9	15.8	16.4	16.8	15.6	16.2	16.0	16.6	17.0
8H 4H	15.3	16.0	15.8	16.4	16.8	15.6	16.3	16.0	16.7	17.1
6H	15.3	15.8	15.7	16.3	16.7	15.5	16.1	16.0	16.5	17.0
8H	15.2	15.7	15.7	16.2	16.7	15.5	16.0	16.0	16.4	16.9
12H	15.2	15.6	15.7	16.1	16.6	15.4	15.9	16.0	16.3	16.9
12H 4H	15.3	15.9	15.7	16.3	16.8	15.5	16.2	16.0	16.6	17.0
6H	15.2	15.7	15.7	16.2	16.7	15.5	16.0	16.0	16.4	16.9
8H	15.2	15.6	15.7	16.1	16.6	15.4	15.8	15.9	16.3	16.9
Variations with the observer position at spacings:										
S = 1.0H	+ 1.7 / - 2.5					+ 1.6 / - 2.4				
1.5H	+ 1.0 / - 1.6					+ 0.9 / - 1.7				
2.0H	+ 2.9 / - 3.5					+ 3.0 / - 3.7				

CIE Pub.117 Corrected 349.7 lm Total Lamp Luminous Flux.(8log(F/F0) = -3.7)

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JB
Test Date:02 January 2018

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 K831 Aluminium

UTILIZATION FACTORS TABLE

NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 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) $k(RI) \times RCR = 5$									
$k = 0.60$	66	57	51	66	56	51	65	56	50	45
0.80	77	67	61	76	67	61	74	66	61	55
1.00	85	76	70	84	76	70	82	76	69	63
1.25	92	83	78	90	83	77	88	81	77	70
1.50	96	88	83	94	87	82	91	86	81	75
2.00	101	95	90	99	94	89	96	91	87	81
2.50	104	98	94	102	97	93	98	94	91	83
3.00	107	101	97	104	100	96	100	97	94	86
4.00	109	105	102	107	103	100	103	100	97	88
5.00	111	107	104	109	105	103	104	101	99	90
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: 02 January 2018

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 K831 Aluminium

ISOCANDELA DIAGRAM

NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:

Conical surface Flux(90deg):

253.94 lm

%lum = 72.6%

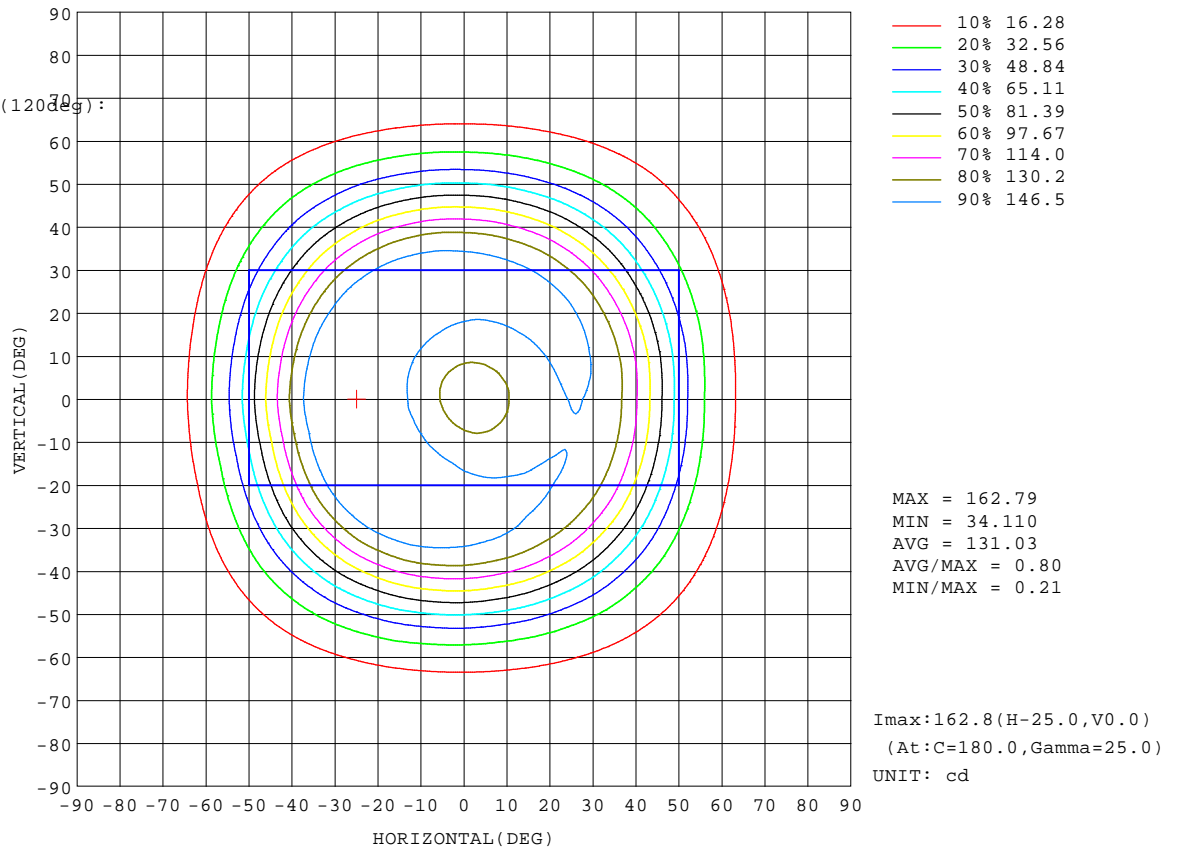
%lamp = 72.6%

Conical surface Flux(120deg):

325.16 lm

%lum = 93.0%

%lamp = 93.0%



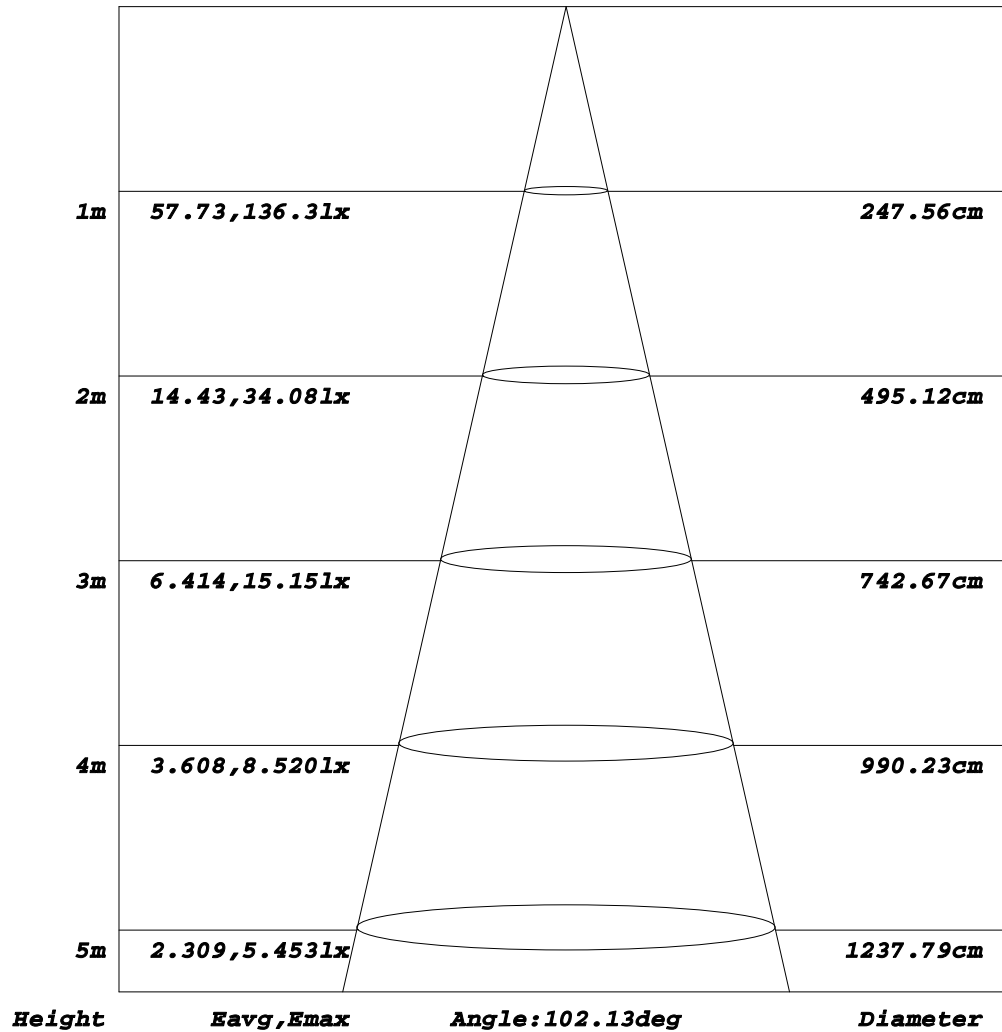
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JB
Test Date:02 January 2018

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 K831 Aluminium

AAI Figure

NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:

Flux out:297.1 lm



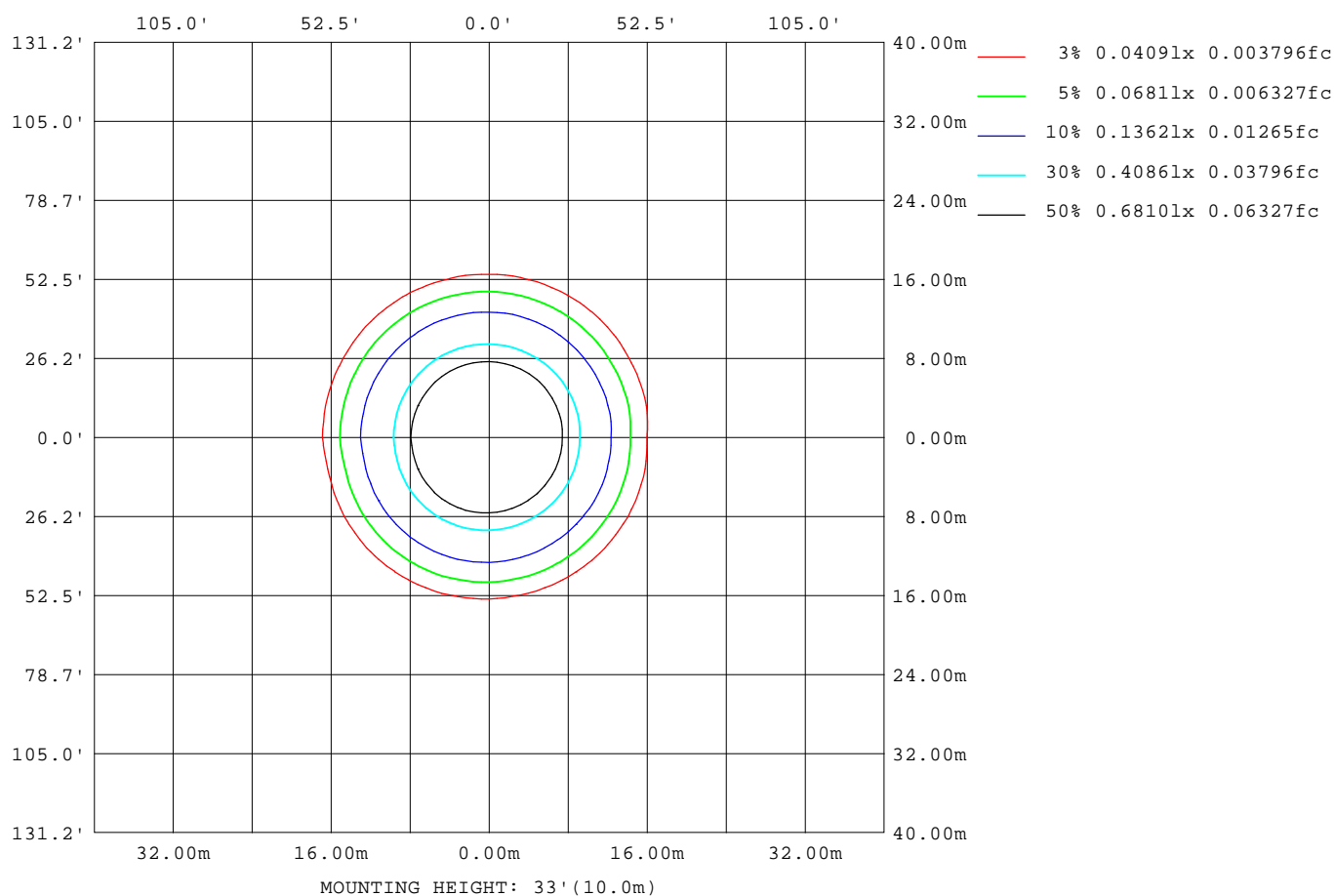
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: JB
 Test Date: 02 January 2018

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 K831 Aluminium

ISOLUX DIAGRAM

NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 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: 02 January 2018

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 K831 Aluminium

LED Avg.L Report

NAME: Midgard K831 Aluminium	TYPE:	WEIGHT:
SPEC.:	DIM.: 178 mm	SERIAL No.:
MFR.: Midgard	SUR.:	Shielding Angle:

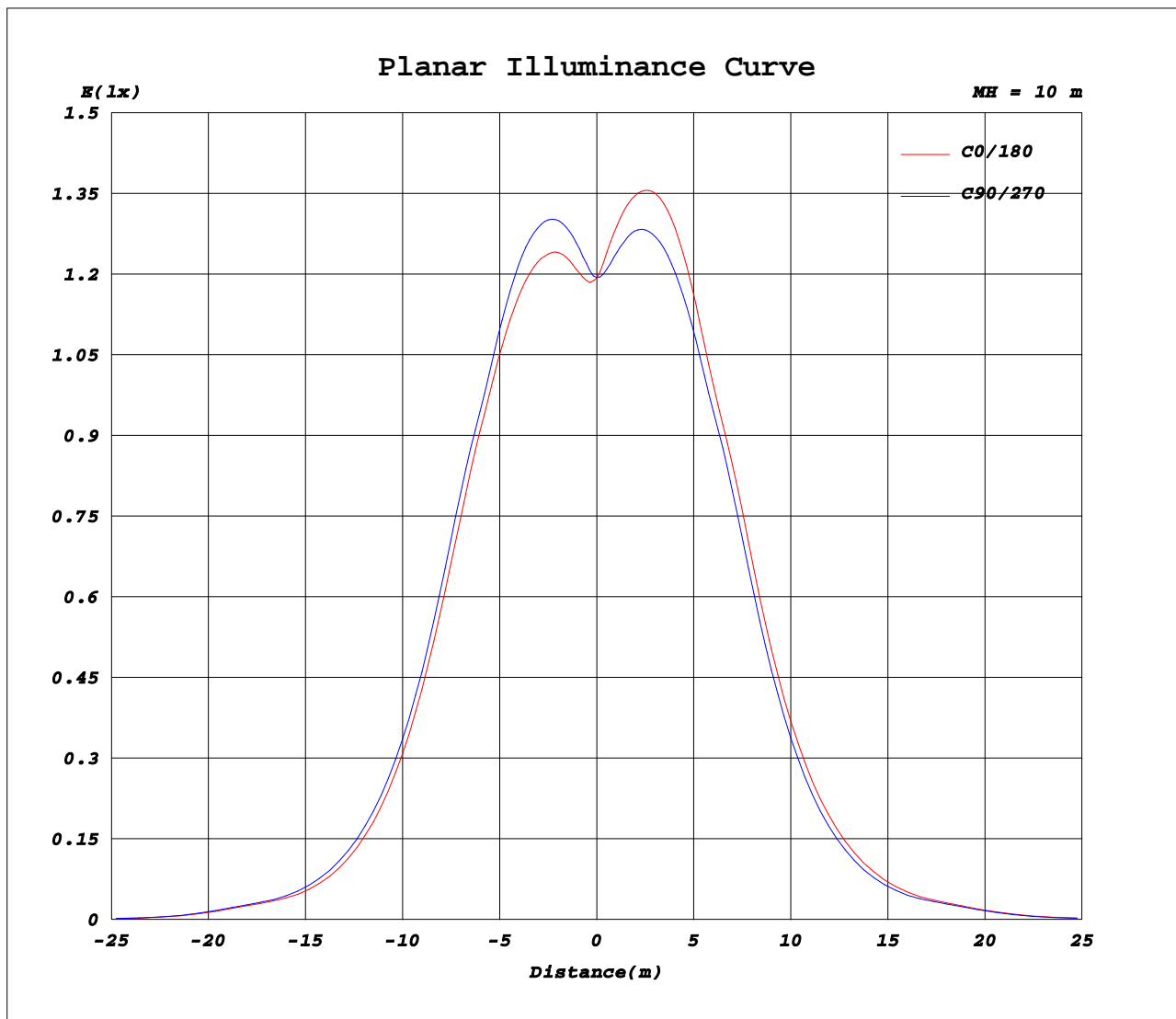
AvgL	cd/m2
L_0~180(65)av	1133
L_0~180(75)av	303
L_0~180(85)av	353
L_90~270(65)av	1117
L_90~270(75)av	296
L_90~270(85)av	345
L_45(65)av	1149
L_45(75)av	301
L_45(85)av	347

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JB
Test Date:02 January 2018

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 K831 Aluminium

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: JB
 Test Date: 02 January 2018

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 K831 Aluminium