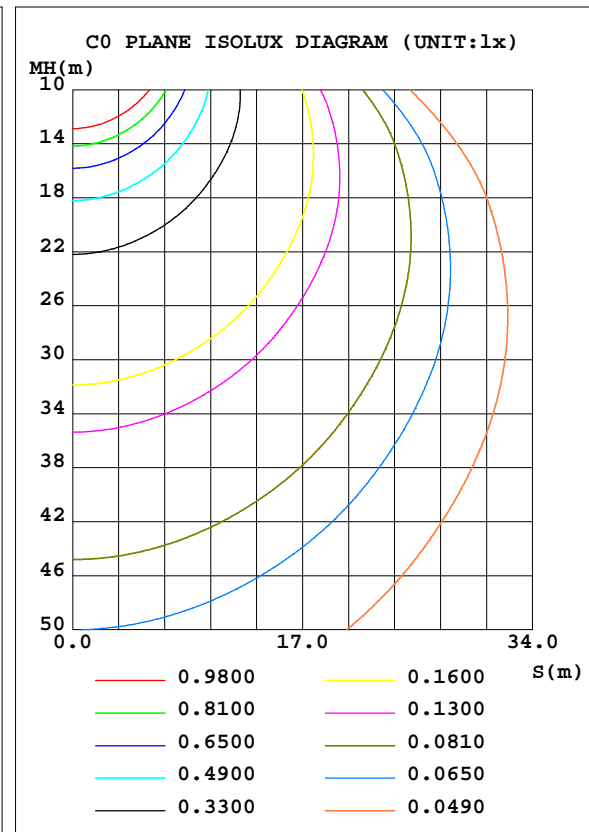
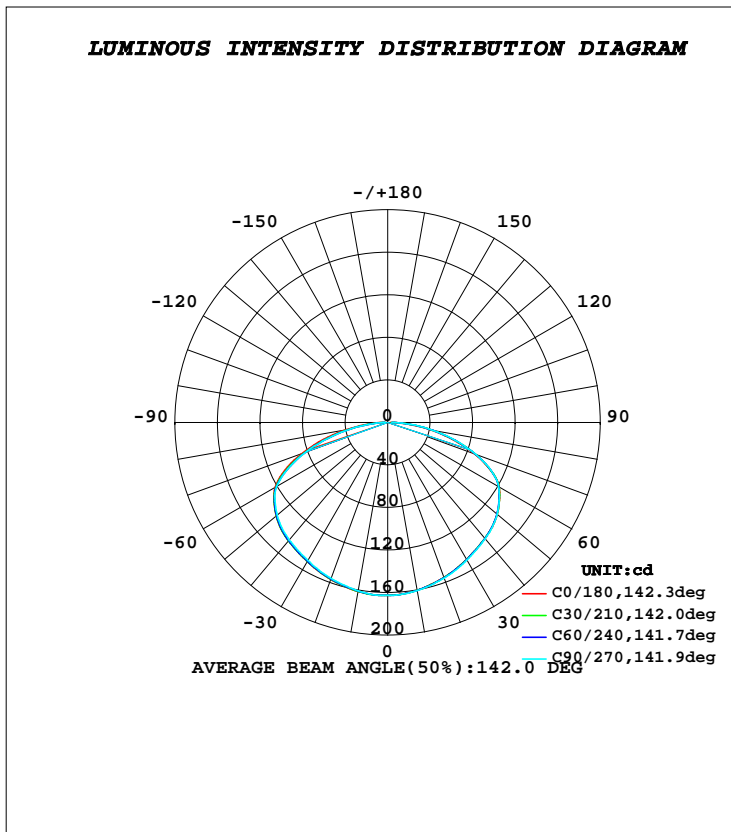


**LUMINAIRE PHOTOMETRIC TEST REPORT**

NAME: Midgard Federzugleuchte	TYPE:	WEIGHT:
SPEC.:	DIM.: 195 mm	SERIAL No.:
MFR.: RLT	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL		Imax(cd)	162.8	S/MH(C0/180)	1.41
NOMINAL POWER(W)	8.117	LOR(%)	100.0	S/MH(C90/270)	1.40
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	638.47	η UP, DN(C0-180)	0.0,50.3
NOMINAL FLUX(lm)	638.467	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0,49.7
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	230	η down(%)	100.0	CIBSE SHR MAX	1.55



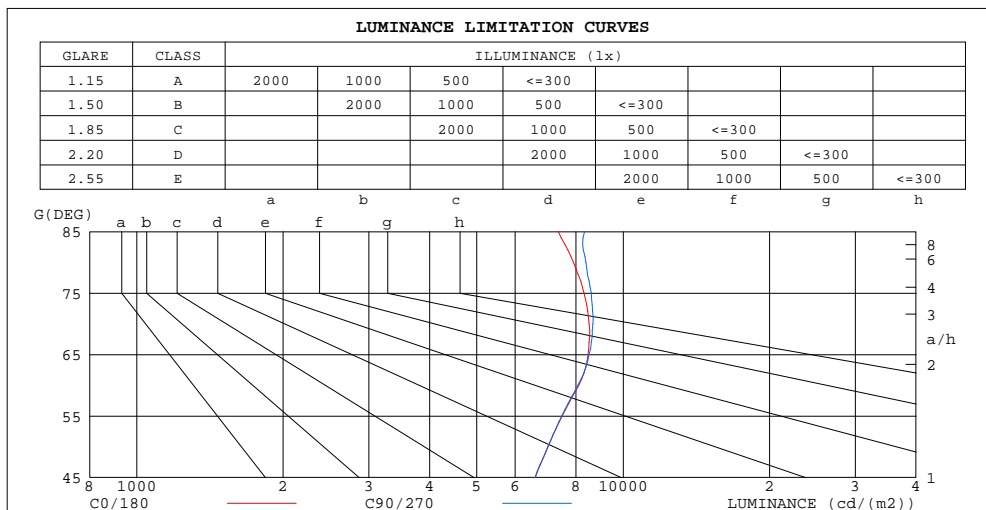
**C Range: 0 - 360DEG**  
**C Interval: 10.0DEG**  
**Test Speed: HIGH**  
**Temperature:25.3DEG**  
**Operators:JB**  
**Test Date:19 December 2017**

**γ Range: 0 - 90DEG**  
**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 Federzugleuchte**

ZONAL FLUX DIAGRAM  
AND LUMINANCE LIMITATION CURVES

ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum,lamp
10	160.2	160.3	160.5	160.8	161.3	161.1	160.7	160.6	0- 10	15.44	15.44	2.42,2.42
20	155.1	155.2	155.7	156.3	157.0	156.7	156.0	155.5	10- 20	44.83	60.27	9.44,9.44
30	148.7	148.7	149.3	150.1	151.1	150.9	149.9	149.2	20- 30	70.72	131.0	20.5,20.5
40	142.4	142.2	142.7	143.6	145.2	145.3	144.1	143.3	30- 40	92.02	223.0	34.9,34.9
50	134.5	134.3	134.4	135.1	136.8	136.8	135.7	135.3	40- 50	108.3	331.3	51.9,51.9
60	121.1	120.8	120.5	120.8	122.4	121.3	120.6	121.7	50- 60	115.4	446.7	70,70
70	86.97	88.13	88.49	87.64	86.22	82.77	82.25	85.63	60- 70	104.4	551.1	86.3,86.3
80	40.99	42.97	43.48	41.73	39.38	35.66	35.25	38.89	70- 80	66.42	617.6	96.7,96.7
90	2.552	3.730	3.969	2.894	2.751	2.681	2.652	2.688	80- 90	20.91	638.5	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			



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	7355	8327
80	7900	8386
75	8311	8601
70	8510	8665
65	8470	8514
60	8105	8070
55	7491	7480
50	7002	7004
45	6583	6594

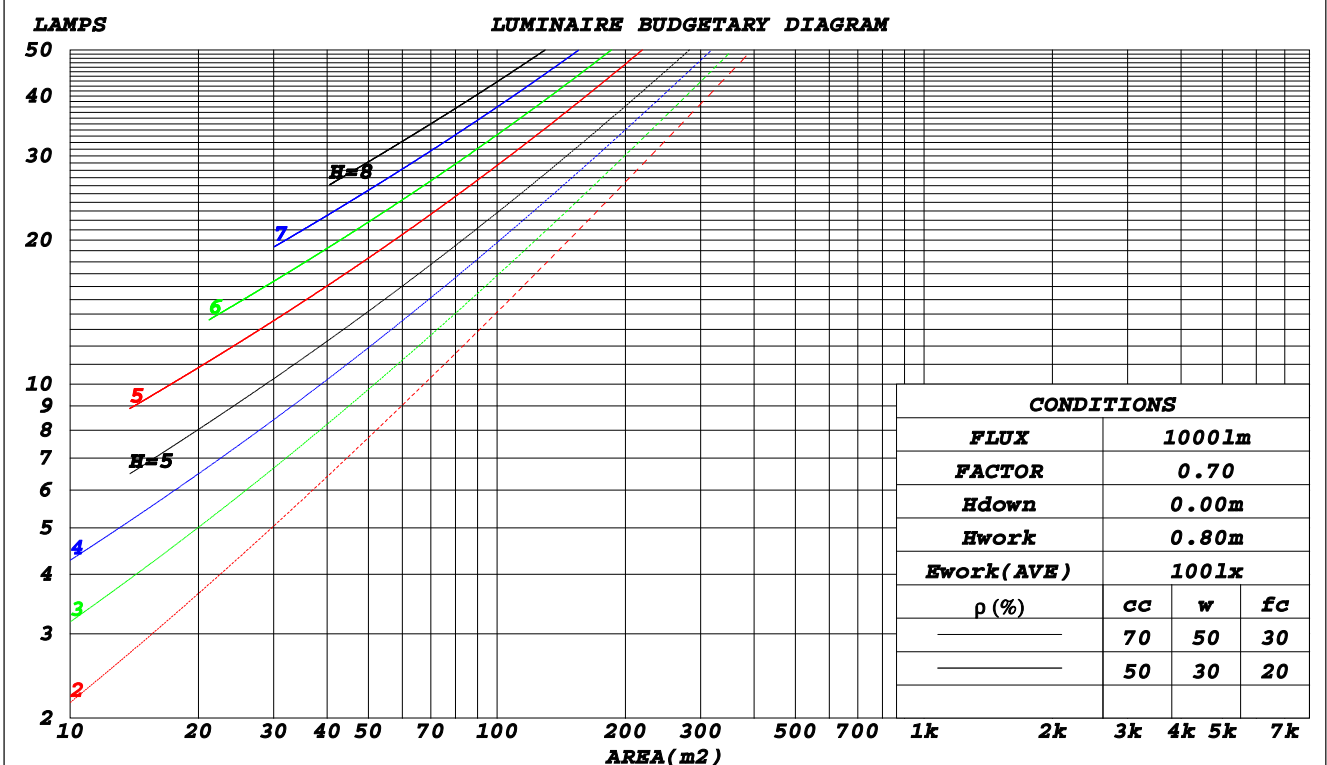
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: JB  
Test Date: 19 December 2017

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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 Federzugleuchte

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: Midgard Federzugleuchte	TYPE:	WEIGHT:
SPEC.:	DIM.: 195 mm	SERIAL No.:
MFR.: RLT	SUR.:	Shielding Angle:

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	20%			20%			20%			20%			20%			0
<b>RCR</b>	<b>RCR:Room Cavity Ratio</b>						<b>Coefficients of Utilization(CU)</b>									
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	1.01	.96	.92	.99	.95	.90	.95	.91	.88	.91	.88	.85	.87	.85	.82	.80
2.0	.87	.79	.72	.85	.78	.71	.81	.75	.70	.78	.73	.68	.74	.70	.67	.64
3.0	.75	.66	.58	.73	.65	.58	.70	.63	.57	.67	.61	.56	.64	.59	.55	.52
4.0	.65	.56	.48	.64	.55	.48	.61	.53	.47	.59	.52	.46	.57	.51	.46	.43
5.0	.58	.48	.41	.57	.47	.40	.54	.46	.40	.52	.45	.39	.50	.44	.39	.37
6.0	.51	.42	.35	.50	.41	.35	.49	.40	.34	.47	.40	.34	.45	.39	.34	.31
7.0	.46	.37	.30	.45	.37	.30	.44	.36	.30	.42	.35	.30	.41	.34	.29	.27
8.0	.42	.33	.27	.41	.33	.27	.40	.32	.26	.39	.31	.26	.37	.31	.26	.24
9.0	.38	.30	.24	.38	.29	.24	.37	.29	.24	.35	.28	.23	.34	.28	.23	.21
10.0	.35	.27	.21	.35	.27	.21	.34	.26	.21	.33	.26	.21	.32	.26	.21	.19



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: JB  
 Test Date: 19 December 2017

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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 Federzugleuchte

WEC AND CCEC

NAME: Midgard Federzugleuchte	TYPE:	WEIGHT:
SPEC.:	DIM.: 195 mm	SERIAL No.:
MFR.: RLT	SUR.:	Shielding Angle:

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	20%			20%			20%			20%			20%			0
<b>RCR</b>	<b>RCR:Room Cavity Ratio</b>						<b>Wall Exitance Coefficients(WEC)</b>									
0.0																
1.0	.356	.203	.064	.349	.199	.063	.336	.193	.062	.323	.186	.060	.312	.181	.058	
2.0	.329	.180	.055	.322	.177	.055	.310	.172	.054	.299	.168	.053	.289	.163	.052	
3.0	.300	.159	.048	.294	.157	.047	.283	.153	.047	.273	.150	.046	.264	.146	.045	
4.0	.273	.142	.042	.268	.140	.041	.258	.137	.041	.250	.134	.040	.241	.131	.040	
5.0	.250	.127	.037	.245	.126	.037	.237	.123	.036	.229	.121	.036	.222	.118	.036	
6.0	.230	.115	.033	.226	.114	.033	.218	.112	.033	.211	.110	.032	.205	.108	.032	
7.0	.212	.105	.030	.209	.104	.030	.202	.102	.029	.196	.100	.029	.190	.099	.029	
8.0	.197	.096	.027	.194	.095	.027	.188	.094	.027	.182	.092	.027	.177	.091	.026	
9.0	.184	.089	.025	.181	.088	.025	.175	.087	.025	.170	.085	.024	.166	.084	.024	
10.0	.172	.082	.023	.169	.082	.023	.164	.081	.023	.160	.079	.023	.156	.078	.022	

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	20%			20%			20%			20%			20%			0
<b>RCR</b>	<b>RCR:Room Cavity Ratio</b>						<b>Ceiling Cavity Exitance Coefficients(CCEC)</b>									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.184	.156	.131	.157	.134	.112	.107	.092	.078	.062	.053	.045	.020	.017	.015	
2.0	.177	.132	.094	.152	.113	.081	.104	.078	.056	.060	.046	.033	.019	.015	.011	
3.0	.170	.114	.070	.146	.099	.061	.100	.069	.043	.058	.040	.025	.019	.013	.008	
4.0	.163	.102	.055	.140	.088	.048	.096	.061	.034	.056	.036	.020	.018	.012	.007	
5.0	.155	.091	.044	.133	.079	.039	.092	.055	.027	.053	.032	.016	.017	.011	.005	
6.0	.148	.083	.037	.127	.072	.032	.088	.050	.023	.051	.030	.013	.016	.010	.004	
7.0	.140	.076	.031	.121	.066	.027	.083	.046	.019	.049	.027	.012	.016	.009	.004	
8.0	.134	.071	.027	.115	.061	.024	.080	.043	.017	.046	.025	.010	.015	.008	.003	
9.0	.127	.066	.024	.110	.057	.021	.076	.040	.015	.044	.024	.009	.014	.008	.003	
10.0	.121	.061	.022	.104	.053	.019	.072	.037	.013	.042	.022	.008	.014	.007	.003	

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: JB  
 Test Date: 19 December 2017

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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 Federzugleuchte

UGR(Unified Glare Rating) Table

NAME: Midgard Federzugleuchte					TYPE:					WEIGHT:				
SPEC.:					DIM.: 195 mm					SERIAL No.:				
MFR.: RLT					SUR.:					Shielding Angle:				
<b>ceiling/cavity</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>				
<b>walls</b>	<b>0.5</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>	<b>0.3</b>				
<b>working plane</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>				
<b>Room dimensions</b>	<b>Viewed crosswise</b>					<b>Viewed endwise</b>								
<b>x = 2H y = 2H</b>	<b>20.4</b>	<b>22.0</b>	<b>20.7</b>	<b>22.3</b>	<b>22.5</b>	<b>20.4</b>	<b>22.0</b>	<b>20.7</b>	<b>22.2</b>	<b>22.5</b>				
<b>3H</b>	<b>22.5</b>	<b>24.1</b>	<b>22.9</b>	<b>24.3</b>	<b>24.6</b>	<b>22.6</b>	<b>24.1</b>	<b>22.9</b>	<b>24.3</b>	<b>24.6</b>				
<b>4H</b>	<b>23.4</b>	<b>24.9</b>	<b>23.7</b>	<b>25.1</b>	<b>25.4</b>	<b>23.5</b>	<b>24.9</b>	<b>23.8</b>	<b>25.2</b>	<b>25.4</b>				
<b>6H</b>	<b>24.1</b>	<b>25.4</b>	<b>24.4</b>	<b>25.7</b>	<b>26.0</b>	<b>24.1</b>	<b>25.5</b>	<b>24.5</b>	<b>25.8</b>	<b>26.1</b>				
<b>8H</b>	<b>24.3</b>	<b>25.6</b>	<b>24.6</b>	<b>25.9</b>	<b>26.2</b>	<b>24.4</b>	<b>25.7</b>	<b>24.7</b>	<b>26.0</b>	<b>26.3</b>				
<b>12H</b>	<b>24.4</b>	<b>25.7</b>	<b>24.8</b>	<b>26.0</b>	<b>26.3</b>	<b>24.6</b>	<b>25.9</b>	<b>24.9</b>	<b>26.2</b>	<b>26.5</b>				
<b>4H 2H</b>	<b>21.2</b>	<b>22.7</b>	<b>21.6</b>	<b>23.0</b>	<b>23.2</b>	<b>21.2</b>	<b>22.7</b>	<b>21.6</b>	<b>23.0</b>	<b>23.2</b>				
<b>3H</b>	<b>23.5</b>	<b>24.8</b>	<b>23.9</b>	<b>25.1</b>	<b>25.4</b>	<b>23.5</b>	<b>24.8</b>	<b>23.9</b>	<b>25.1</b>	<b>25.5</b>				
<b>4H</b>	<b>24.5</b>	<b>25.7</b>	<b>24.9</b>	<b>26.0</b>	<b>26.4</b>	<b>24.6</b>	<b>25.8</b>	<b>24.9</b>	<b>26.1</b>	<b>26.4</b>				
<b>6H</b>	<b>25.3</b>	<b>26.4</b>	<b>25.7</b>	<b>26.7</b>	<b>27.1</b>	<b>25.4</b>	<b>26.5</b>	<b>25.8</b>	<b>26.8</b>	<b>27.2</b>				
<b>8H</b>	<b>25.6</b>	<b>26.6</b>	<b>26.0</b>	<b>27.0</b>	<b>27.3</b>	<b>25.7</b>	<b>26.7</b>	<b>26.1</b>	<b>27.1</b>	<b>27.5</b>				
<b>12H</b>	<b>25.8</b>	<b>26.7</b>	<b>26.2</b>	<b>27.1</b>	<b>27.5</b>	<b>25.9</b>	<b>26.9</b>	<b>26.4</b>	<b>27.3</b>	<b>27.7</b>				
<b>8H 4H</b>	<b>24.9</b>	<b>25.9</b>	<b>25.3</b>	<b>26.3</b>	<b>26.7</b>	<b>24.9</b>	<b>25.9</b>	<b>25.4</b>	<b>26.3</b>	<b>26.7</b>				
<b>6H</b>	<b>25.9</b>	<b>26.7</b>	<b>26.3</b>	<b>27.1</b>	<b>27.5</b>	<b>26.0</b>	<b>26.8</b>	<b>26.4</b>	<b>27.2</b>	<b>27.6</b>				
<b>8H</b>	<b>26.3</b>	<b>27.0</b>	<b>26.7</b>	<b>27.4</b>	<b>27.9</b>	<b>26.4</b>	<b>27.1</b>	<b>26.8</b>	<b>27.6</b>	<b>28.0</b>				
<b>12H</b>	<b>26.6</b>	<b>27.2</b>	<b>27.1</b>	<b>27.7</b>	<b>28.2</b>	<b>26.7</b>	<b>27.4</b>	<b>27.2</b>	<b>27.8</b>	<b>28.3</b>				
<b>12H 4H</b>	<b>24.9</b>	<b>25.9</b>	<b>25.4</b>	<b>26.3</b>	<b>26.7</b>	<b>25.0</b>	<b>25.9</b>	<b>25.4</b>	<b>26.3</b>	<b>26.7</b>				
<b>6H</b>	<b>26.0</b>	<b>26.7</b>	<b>26.4</b>	<b>27.1</b>	<b>27.6</b>	<b>26.1</b>	<b>26.8</b>	<b>26.5</b>	<b>27.2</b>	<b>27.7</b>				
<b>8H</b>	<b>26.4</b>	<b>27.1</b>	<b>26.9</b>	<b>27.5</b>	<b>28.0</b>	<b>26.5</b>	<b>27.2</b>	<b>27.0</b>	<b>27.6</b>	<b>28.1</b>				
<b>Variations with the observer position at spacings:</b>														
<b>S = 1.0H</b>	<b>+ 0.1 / - 0.1</b>					<b>+ 0.1 / - 0.1</b>								
<b>1.5H</b>	<b>+ 0.2 / - 0.3</b>					<b>+ 0.2 / - 0.2</b>								
<b>2.0H</b>	<b>+ 0.2 / - 0.5</b>					<b>+ 0.2 / - 0.4</b>								

CIE Pub.117 Corrected 638.5 lm Total Lamp Luminous Flux.(8log(F/F0) = -1.6)

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:JB  
 Test Date:19 December 2017

γ Range: 0 - 90DEG  
 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 Federzugleuchte

**UTILIZATION FACTORS TABLE**

NAME: Midgard Federzugleuchte	TYPE:	WEIGHT:
SPEC.:	DIM.: 195 mm	SERIAL No.:
MFR.: RLT	SUR.:	Shielding Angle:

<b>REFLECTANCE</b>										
<b>Ceiling</b>	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
<b>Walls</b>	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
<b>Working plane</b>	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
<b>ROOM INDEX</b>	<b>UTILIZATION FACTORS(PERCENT) <math>k(RI) \times RCR = 5</math></b>									
<b>k = 0.60</b>	52	40	32	51	39	32	50	39	32	25
<b>0.80</b>	62	49	41	61	49	41	59	48	41	33
<b>1.00</b>	71	58	50	69	58	50	67	59	49	41
<b>1.25</b>	78	66	58	76	65	58	74	64	57	49
<b>1.50</b>	83	72	64	82	71	64	78	69	63	54
<b>2.00</b>	91	81	74	89	80	73	85	78	71	63
<b>2.50</b>	96	87	80	93	85	79	89	82	77	68
<b>3.00</b>	99	91	85	97	90	84	93	87	82	73
<b>4.00</b>	104	97	92	101	96	91	97	92	88	79
<b>5.00</b>	107	101	97	104	99	95	100	96	92	82
<b>ROOM INDEX</b>	<b>UF(total)</b>									<b>Direct</b>
<b>According to DIN EN 13032-2 2004</b>			<b>Suspended</b>				<b>SHRNOM = 1.25</b>			

**C Range: 0 - 360DEG**  
**C Interval: 10.0DEG**  
**Test Speed: HIGH**  
**Temperature: 25.3DEG**  
**Operators: JB**  
**Test Date: 19 December 2017**

**$\gamma$  Range: 0 - 90DEG**  
 **$\gamma$  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 Federzugleuchte**

ISOCANDELA DIAGRAM

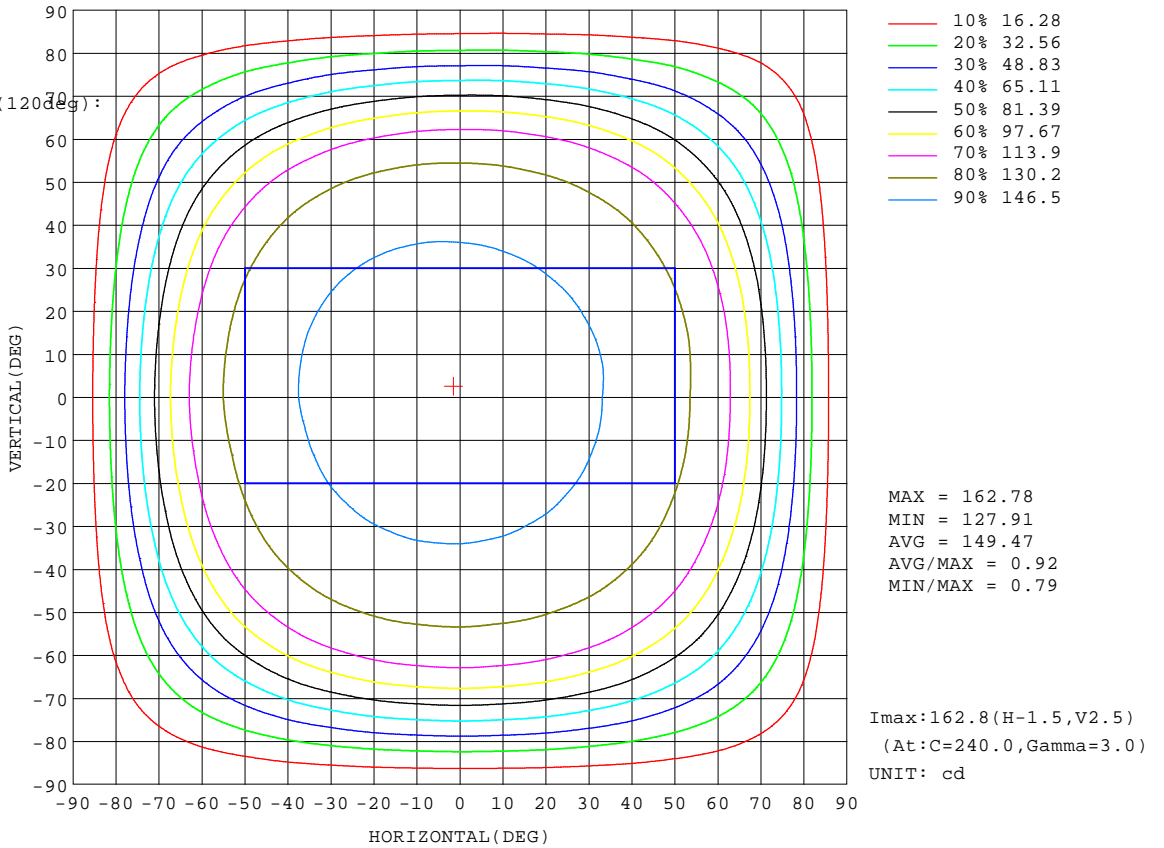
NAME: Midgard Federzugleuchte	TYPE:	WEIGHT:
SPEC.:	DIM.: 195 mm	SERIAL No.:
MFR.: RLT	SUR.:	Shielding Angle:

Conical surface Flux(90deg):

275.57 lm  
%lum = 43.2%  
%lamp = 43.2%

Conical surface Flux(120deg):

446.73 lm  
%lum = 70.0%  
%lamp = 70.0%



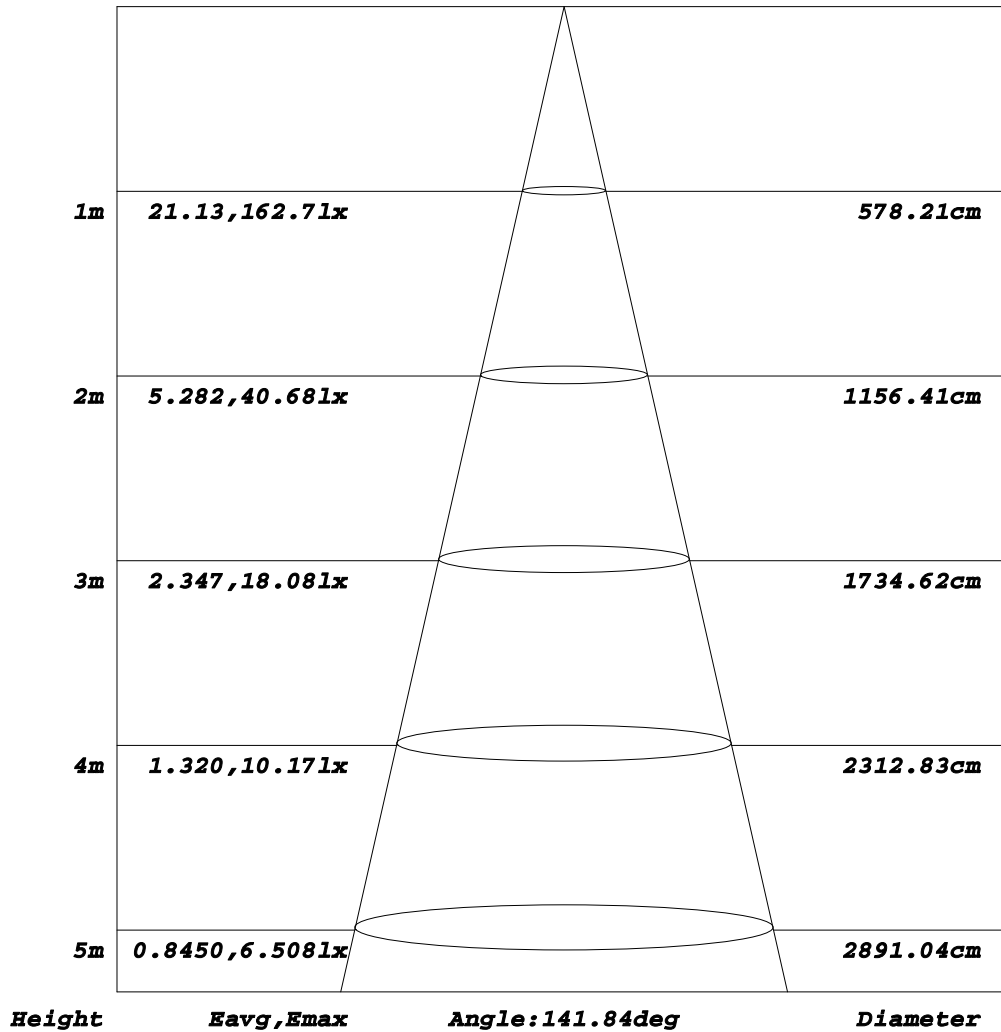
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JB  
Test Date:19 December 2017

γ Range: 0 - 90DEG  
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 Federzugleuchte

**AAI Figure**

NAME: Midgard Federzugleuchte	TYPE:	WEIGHT:
SPEC.:	DIM.: 195 mm	SERIAL No.:
MFR.: RLT	SUR.:	Shielding Angle:

**Flux out:559.8 lm**



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

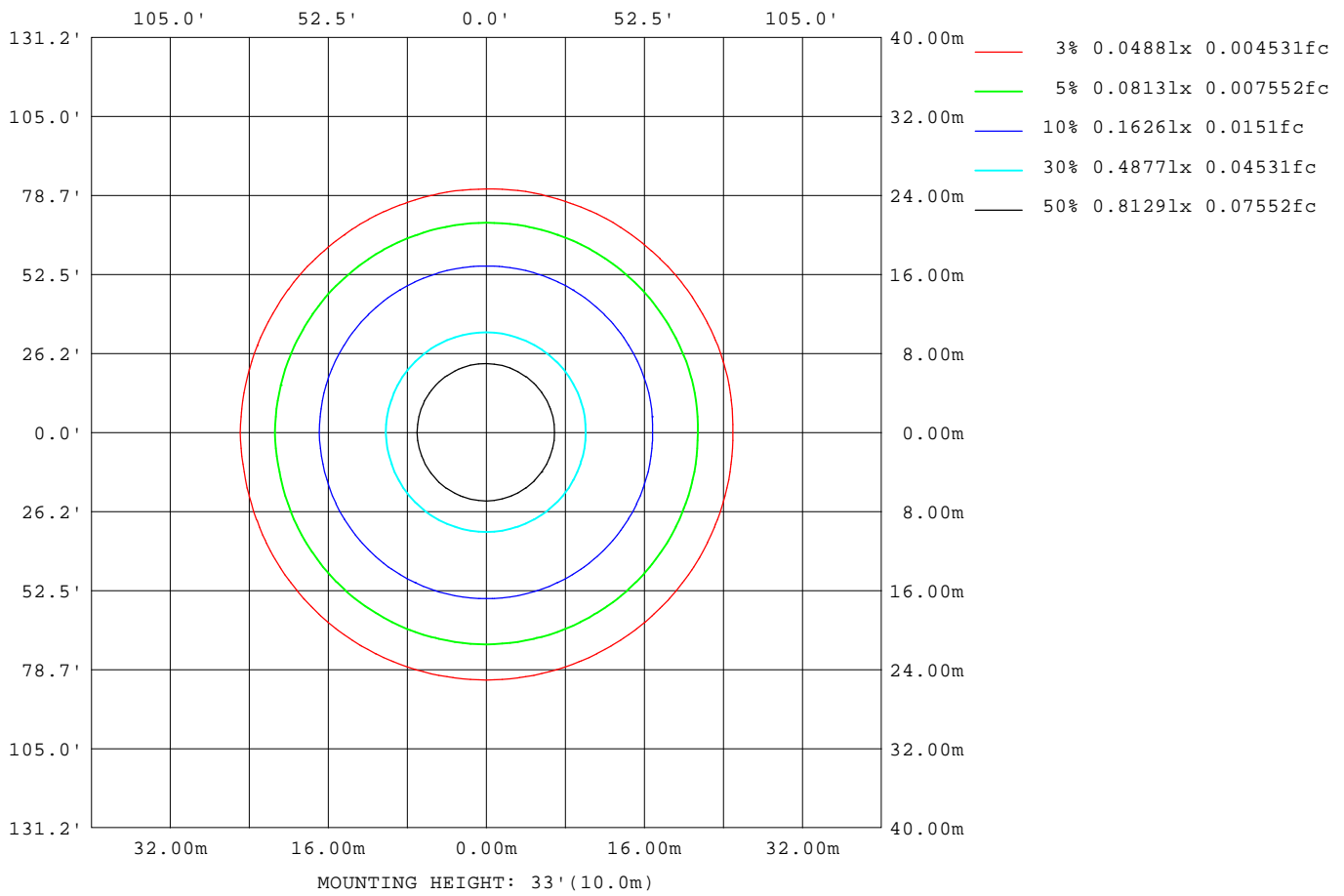
**C Range: 0 - 360DEG**  
**C Interval: 10.0DEG**  
**Test Speed: HIGH**  
**Temperature: 25.3DEG**  
**Operators: JB**  
**Test Date: 19 December 2017**

**γ Range: 0 - 90DEG**  
**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 Federzugleuchte**



**ISOLUX DIAGRAM**

NAME: Midgard Federzugleuchte	TYPE:	WEIGHT:
SPEC.:	DIM.: 195 mm	SERIAL No.:
MFR.: RLT	SUR.:	Shielding Angle:



**C Range: 0 - 360DEG**  
**C Interval: 10.0DEG**  
**Test Speed: HIGH**  
**Temperature: 25.3DEG**  
**Operators: JB**  
**Test Date: 19 December 2017**

**γ Range: 0 - 90DEG**  
**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 Federzugleuchte**

**LED Avg.L Report**

NAME: Midgard Federzugleuchte	TYPE:	WEIGHT:
SPEC.:	DIM.: 195 mm	SERIAL No.:
MFR.: RLT	SUR.:	Shielding Angle:

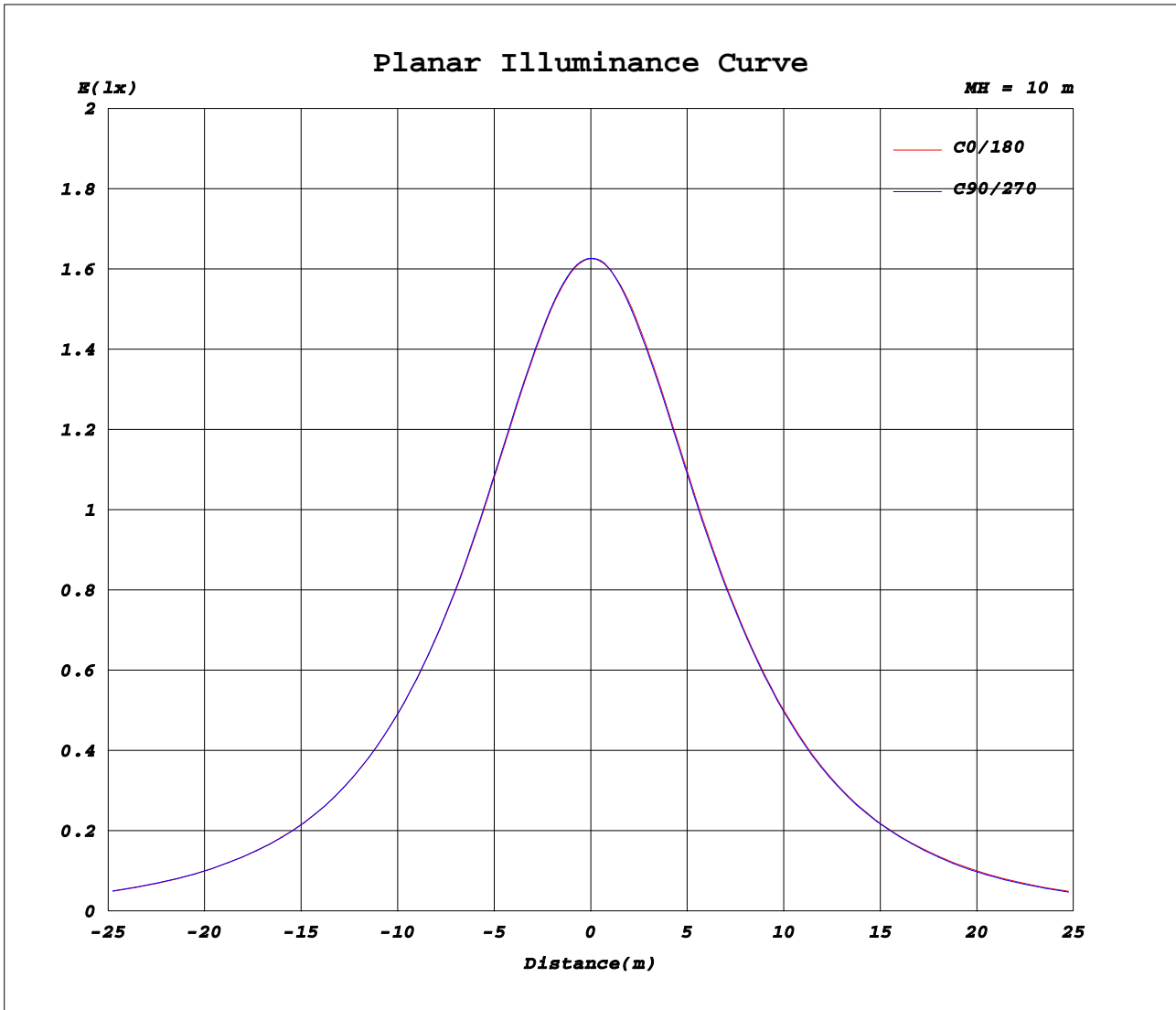
AvgL	cd/m2
L_0~180(65)av	8478
L_0~180(75)av	8215
L_0~180(85)av	7111
L_90~270(65)av	8368
L_90~270(75)av	8084
L_90~270(85)av	6908
L_45(65)av	8428
L_45(75)av	8158
L_45(85)av	7022

Standard: GB/T 29293-2012

**C Range: 0 - 360DEG**  
**C Interval: 10.0DEG**  
**Test Speed: HIGH**  
**Temperature:25.3DEG**  
**Operators:JB**  
**Test Date:19 December 2017**

**γ Range: 0 - 90DEG**  
**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 Federzugleuchte**

Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: JB  
Test Date: 19 December 2017

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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 Federzugleuchte