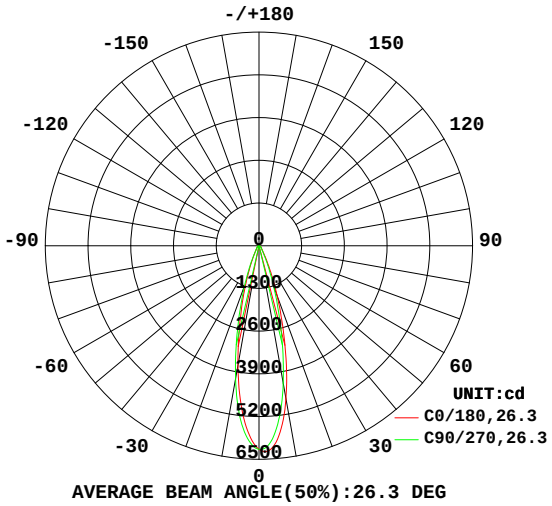
LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

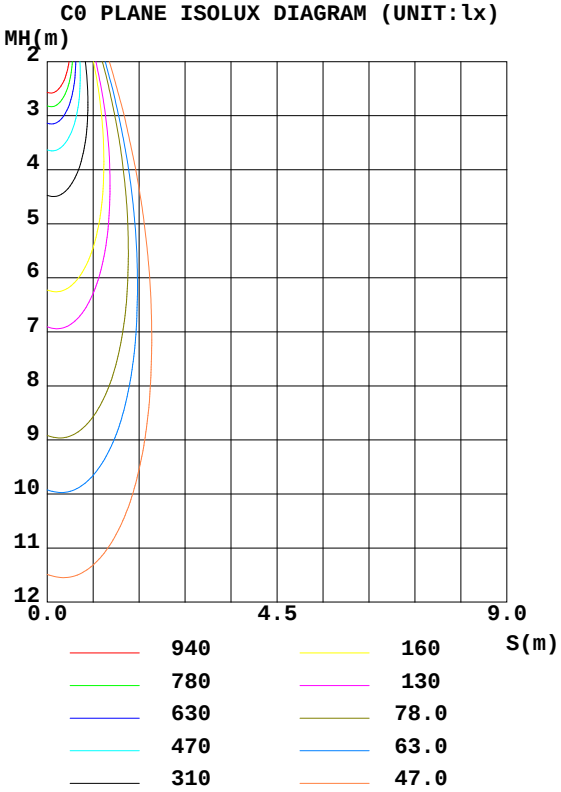
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 93.96 lm/W	
MODEL	LUMINUS	Imax(cd)	6286	S/MH(C0/180)	0.40
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	0.44
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1818.5	η UP,DN(C0-180)	0.0,51.8
NOMINAL FLUX(lm)	1818.47	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,48.2
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.00
TEST VOLTAGE(V)	230	η down(%)	100.0	CIBSE SHR MAX	1.00

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):26.3 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

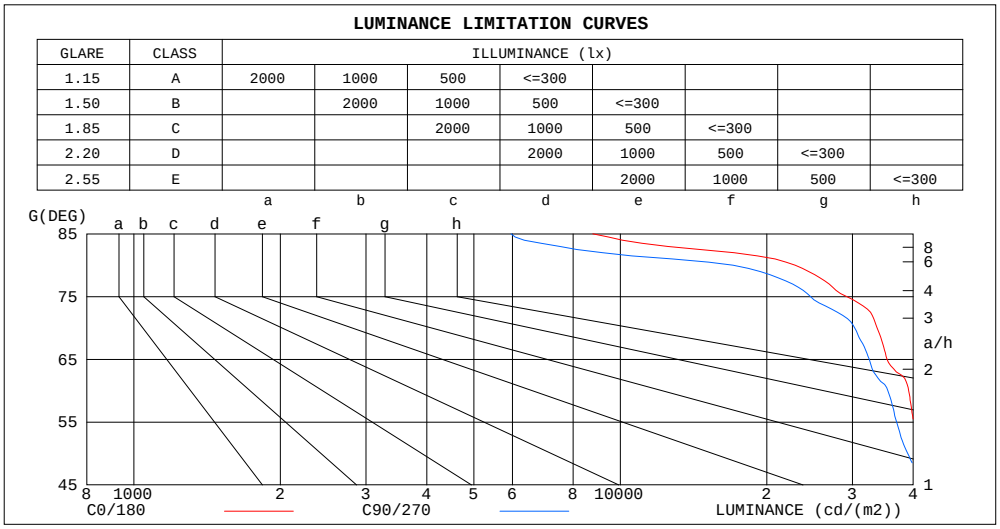
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	4733	4619	4253	3898	3699	3789	4112	4480	0- 10	491.4	491.4	27,27
20	1614	1523	1299	1138	1100	1160	1270	1460	10- 20	698.1	1190	65.4,65.4
30	359.4	345.7	288.6	263.0	270.6	283.2	289.7	302.2	20- 30	301.0	1491	82,82
40	140.4	137.8	125.9	120.9	120.6	120.4	124.0	126.1	30- 40	117.4	1608	88.4,88.4
50	89.08	88.13	83.14	79.80	79.32	79.76	80.31	82.43	40- 50	77.91	1686	92.7,92.7
60	64.86	62.91	58.89	55.86	53.20	54.28	56.64	59.50	50- 60	62.69	1749	96.2,96.2
70	38.20	37.08	34.44	31.29	29.64	30.46	33.03	35.97	60- 70	44.91	1793	98.6,98.6
80	13.16	12.83	9.829	5.938	4.377	4.957	7.925	10.86	70- 80	22.15	1816	99.8,99.8
90	0.8187	0.7759	0.6942	0.7060	0.7238	0.7030	0.6721	0.6685	80- 90	2.875	1818	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		

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

LUMINANCE LIMITATION CURVES

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	8781	5962
80	22876	17052
75	29200	24606
70	33708	30331
65	35345	32487
60	39150	35482
55	40115	36983
50	41821	38963
45	46545	42572

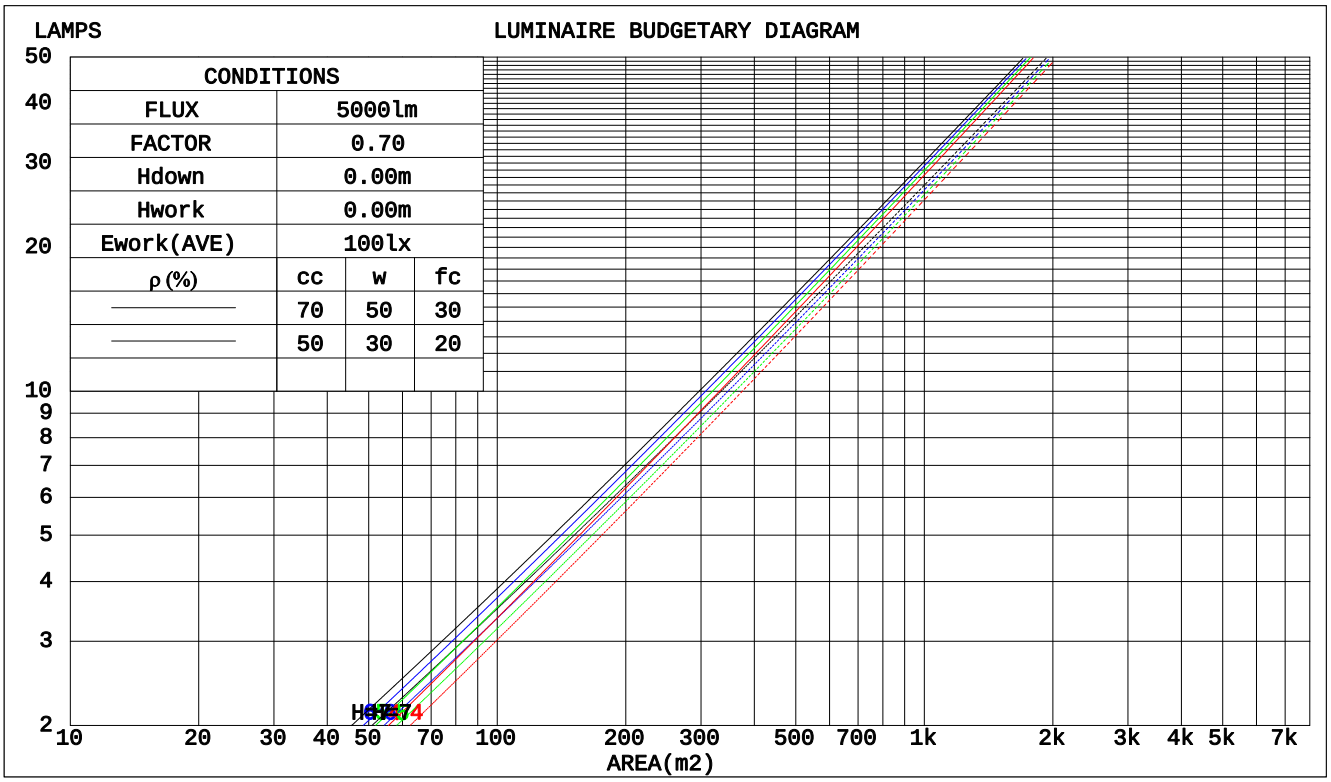
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: VN-TLO020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

ρcc	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			Coefficients of Utilization(CU)												
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	.00
1.0	1.11	1.09	1.07	1.09	1.07	1.05	1.05	1.03	1.02	1.01	1.00	.99	.98	.97	.96	.94
2.0	1.04	1.01	.97	1.03	.99	.96	.99	.97	.94	.96	.94	.92	.94	.92	.90	.89
3.0	.98	.94	.90	.97	.93	.90	.94	.91	.88	.92	.89	.87	.90	.87	.85	.84
4.0	.93	.88	.85	.92	.88	.84	.90	.86	.83	.88	.85	.82	.86	.84	.81	.80
5.0	.89	.84	.80	.88	.83	.80	.86	.82	.79	.85	.81	.78	.83	.80	.78	.76
6.0	.85	.80	.76	.84	.79	.76	.83	.78	.75	.81	.78	.75	.80	.77	.74	.73
7.0	.81	.76	.73	.81	.76	.72	.79	.75	.72	.78	.75	.72	.77	.74	.71	.70
8.0	.78	.73	.70	.78	.73	.69	.77	.72	.69	.76	.72	.69	.75	.71	.69	.67
9.0	.75	.70	.67	.75	.70	.67	.74	.70	.67	.73	.69	.66	.72	.69	.66	.65
10.0	.73	.68	.65	.72	.68	.65	.72	.67	.64	.71	.67	.64	.70	.67	.64	.63



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

WEC AND CCEC

NAME: VN-TLO020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

ρcc	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						Wall Exitance Coeffcients(WEC)									
0.0																
1.0	.169	.096	.030	.162	.092	.029	.150	.086	.027	.138	.080	.026	.127	.074	.024	
2.0	.159	.087	.027	.153	.084	.026	.143	.079	.025	.133	.075	.023	.124	.070	.022	
3.0	.148	.079	.024	.143	.077	.023	.135	.073	.022	.126	.069	.021	.119	.066	.020	
4.0	.138	.072	.021	.134	.070	.021	.127	.067	.020	.120	.064	.019	.113	.062	.019	
5.0	.130	.066	.019	.126	.065	.019	.120	.062	.018	.114	.060	.018	.108	.058	.017	
6.0	.122	.061	.018	.119	.060	.017	.114	.058	.017	.108	.056	.017	.103	.054	.016	
7.0	.116	.057	.016	.113	.056	.016	.108	.055	.016	.103	.053	.015	.099	.051	.015	
8.0	.110	.054	.015	.107	.053	.015	.103	.051	.015	.099	.050	.014	.095	.049	.014	
9.0	.104	.050	.014	.102	.050	.014	.098	.049	.014	.095	.047	.014	.091	.046	.013	
10.0	.099	.048	.013	.097	.047	.013	.094	.046	.013	.091	.045	.013	.088	.044	.013	

ρcc	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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.171	.157	.146	.146	.135	.125	.100	.093	.087	.057	.054	.050	.018	.017	.016	
2.0	.154	.133	.114	.132	.114	.099	.091	.079	.069	.052	.046	.040	.017	.015	.013	
3.0	.141	.113	.092	.121	.098	.079	.083	.068	.056	.048	.040	.033	.015	.013	.011	
4.0	.130	.099	.075	.111	.085	.065	.076	.059	.046	.044	.035	.027	.014	.011	.009	
5.0	.120	.087	.062	.103	.075	.054	.071	.052	.038	.041	.031	.023	.013	.010	.007	
6.0	.111	.077	.052	.096	.067	.046	.066	.047	.032	.038	.027	.019	.012	.009	.006	
7.0	.104	.069	.045	.089	.060	.039	.062	.042	.028	.036	.025	.016	.012	.008	.005	
8.0	.098	.062	.038	.084	.054	.033	.058	.038	.024	.034	.022	.014	.011	.007	.005	
9.0	.092	.057	.033	.079	.049	.029	.055	.035	.021	.032	.021	.012	.010	.007	.004	
10.0	.087	.052	.029	.075	.045	.026	.052	.032	.018	.030	.019	.011	.010	.006	.004	

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

UGR(Unified Glare Rating) Table

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	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	19.1	19.9	19.3	20.1	20.2	18.7	19.5	18.9	19.6	19.8
	3H	20.4	21.1	20.6	21.3	21.5	19.9	20.7	20.2	20.9	21.1
	4H	20.9	21.6	21.2	21.8	22.0	20.3	21.1	20.6	21.3	21.5
	6H	21.2	21.9	21.5	22.1	22.3	20.6	21.3	20.9	21.5	21.7
	8H	21.2	21.9	21.5	22.1	22.4	20.6	21.2	20.9	21.5	21.7
	12H	21.2	21.8	21.5	22.1	22.4	20.5	21.2	20.8	21.4	21.7
4H	2H	19.6	20.3	19.9	20.5	20.8	19.3	20.0	19.5	20.2	20.4
	3H	21.1	21.7	21.4	22.0	22.3	20.7	21.3	21.0	21.6	21.9
	4H	21.7	22.3	22.0	22.6	22.9	21.2	21.8	21.6	22.1	22.4
	6H	22.1	22.6	22.4	22.9	23.3	21.5	22.1	21.9	22.4	22.7
	8H	22.1	22.6	22.5	23.0	23.3	21.5	22.0	21.9	22.4	22.7
	12H	22.1	22.5	22.5	22.9	23.3	21.5	21.9	21.9	22.3	22.7
8H	4H	21.9	22.4	22.3	22.7	23.1	21.4	21.9	21.8	22.3	22.6
	6H	22.3	22.7	22.8	23.1	23.5	21.8	22.2	22.3	22.6	23.0
	8H	22.4	22.8	22.9	23.2	23.6	21.9	22.2	22.3	22.6	23.1
	12H	22.4	22.7	22.9	23.1	23.6	21.8	22.1	22.3	22.6	23.0
12H	4H	21.8	22.3	22.3	22.7	23.0	21.4	21.9	21.8	22.3	22.6
	6H	22.3	22.7	22.8	23.1	23.5	21.8	22.2	22.3	22.6	23.1
	8H	22.4	22.7	22.9	23.1	23.6	21.9	22.2	22.3	22.6	23.1

Variations with the observer position at spacings:		
S = 1.0H	+ 0.3 / - 0.3	+ 0.3 / - 0.4
1.5H	+ 0.2 / - 0.2	+ 0.1 / - 0.3
2.0H	+ 0.2 / - 0.3	+ 0.2 / - 0.4

CIE Pub.117, 1818 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 2.1)

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

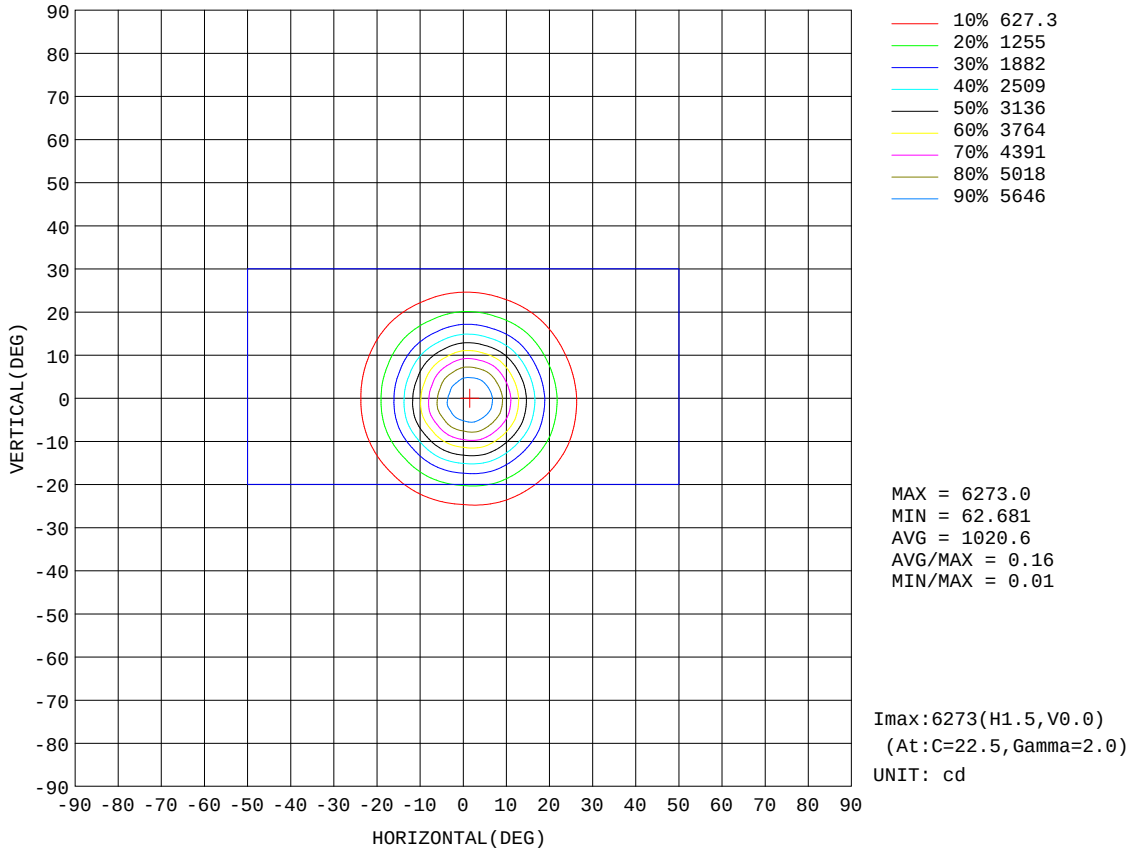
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	84	78	73	84	77	73	83	77	73	69
0.80	92	86	81	91	85	81	90	85	81	77
1.00	97	91	87	96	90	86	94	90	86	81
1.25	101	95	91	100	95	91	98	93	90	86
1.50	104	99	95	103	98	94	100	96	93	89
2.00	107	102	99	106	101	98	103	99	97	91
2.50	109	105	101	107	103	101	104	101	99	92
3.00	111	107	104	109	106	103	105	103	101	94
4.00	113	110	107	111	108	106	107	105	103	96
5.00	114	112	110	112	110	108	108	107	105	97
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended					SHRNOM = 1.25	

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



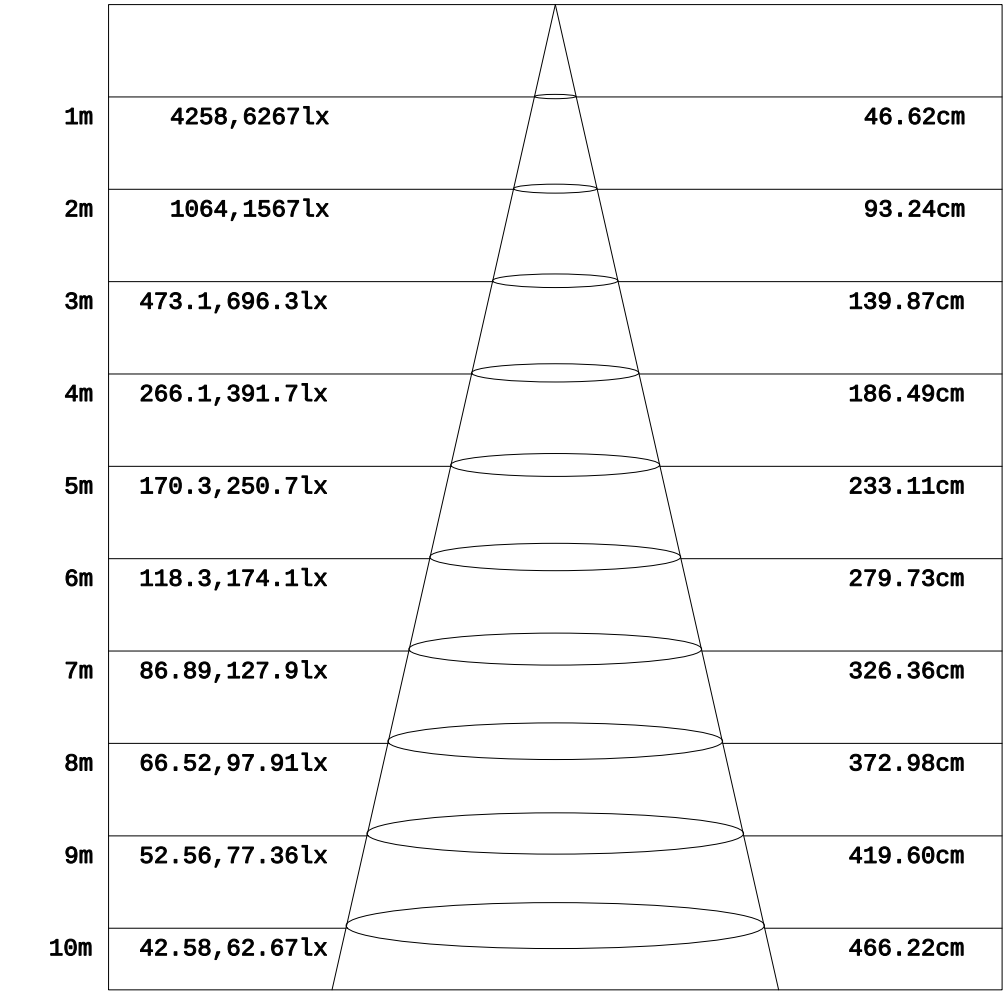
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

AAI Figure

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

Flux out:770.9 lm



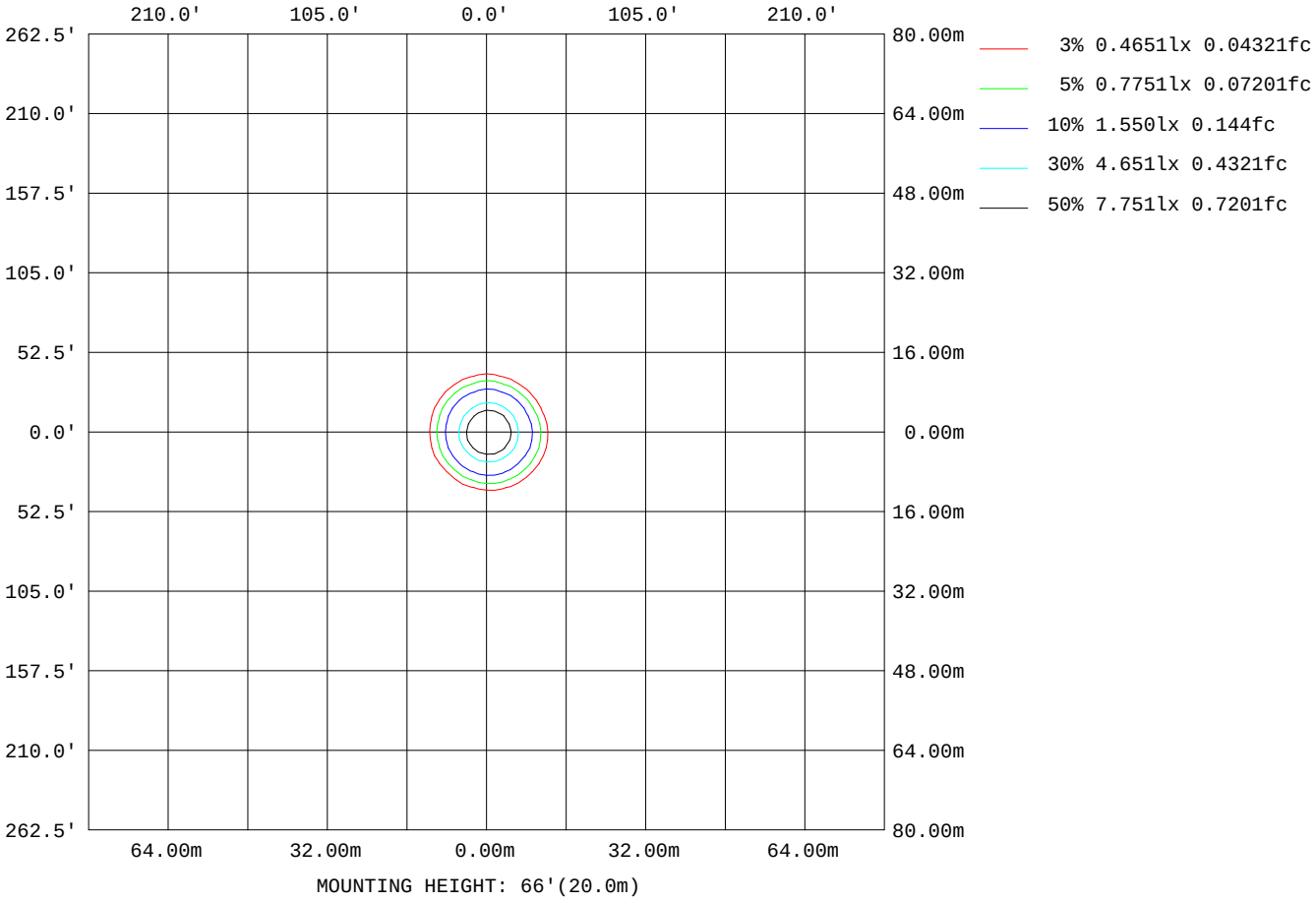
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

NAME: vN-TLo0020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

LED Avg.L Report

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

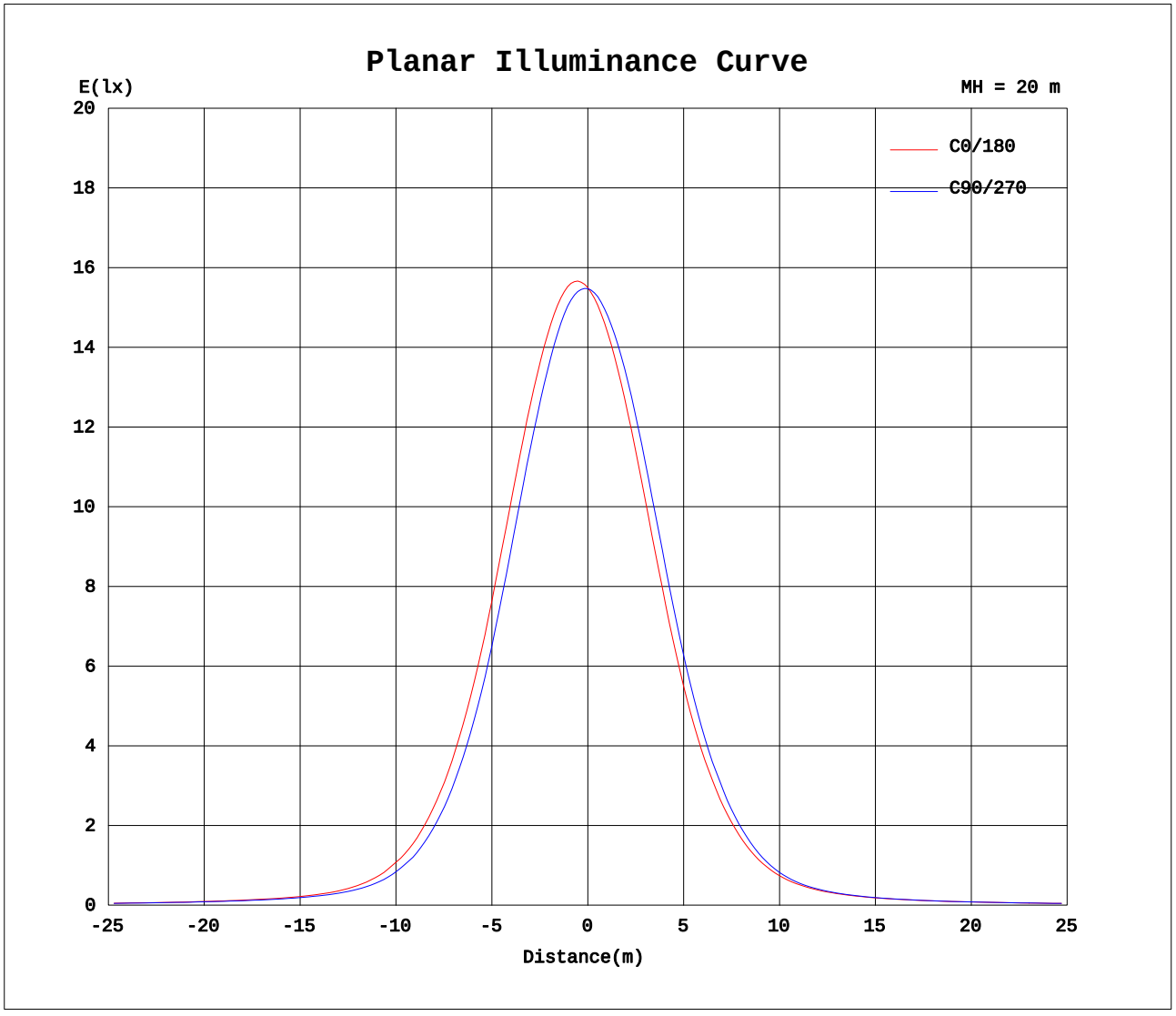
AvgL	cd/m2
L_0~180(65)av	32424
L_0~180(75)av	24491
L_0~180(85)av	6255
L_90~270(65)av	31916
L_90~270(75)av	23861
L_90~270(85)av	5527
L_45(65)av	32138
L_45(75)av	23961
L_45(85)av	5789

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
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γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 24D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

Table--1 UNIT: cd

C(DEG) / γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	6195	6195	6195	6195	6195	6195	6195	6195	6195	6195	6195	6195	6195	6195	6195	6195			
5	5998	6037	5942	5867	5698	5595	5441	5393	5288	5260	5347	5413	5576	5670	5821	5890			
10	4733	4780	4619	4525	4253	4117	3898	3846	3699	3664	3789	3884	4112	4238	4480	4572			
15	3013	3063	2889	2789	2544	2438	2268	2237	2143	2126	2226	2286	2462	2558	2779	2860			
20	1614	1655	1523	1470	1299	1236	1138	1133	1100	1101	1160	1178	1270	1317	1460	1496			
25	759	783	714	678	599	563	525	525	520	531	555	561	588	607	656	684			
30	359	377	346	325	289	275	263	271	271	273	283	281	290	284	302	319			
35	202	210	198	189	175	169	166	168	169	168	172	170	176	170	178	187			
40	140	144	138	134	126	122	121	121	121	120	120	121	124	121	126	132			
45	109	110	107	105	99.9	96.0	95.3	96.3	95.2	94.2	95.1	96.3	96.5	95.3	98.8	103			
50	89.1	88.4	88.1	87.2	83.1	79.6	79.8	81.4	79.3	78.1	79.8	81.0	80.3	79.4	82.4	85.5			
55	76.2	74.9	74.3	73.6	70.4	67.8	67.9	67.3	67.0	65.7	67.2	67.7	68.5	68.0	70.8	73.6			
60	64.9	63.8	62.9	60.3	58.9	56.6	55.9	54.1	53.2	52.8	54.3	54.5	56.6	56.9	59.5	60.3			
65	49.5	50.3	48.8	47.6	45.6	44.3	42.6	41.9	41.4	41.7	42.3	43.0	43.9	44.9	46.5	47.6			
70	38.2	38.7	37.1	36.1	34.4	33.1	31.3	30.4	29.6	29.8	30.5	31.6	33.0	34.2	36.0	36.8			
75	25.0	25.4	24.0	23.0	21.1	19.8	18.4	17.8	17.0	16.8	17.5	18.5	19.8	20.8	22.4	23.3			
80	13.2	13.4	12.8	12.0	9.83	7.99	5.94	5.47	4.38	4.23	4.96	6.02	7.93	9.20	10.9	11.9			
85	2.54	2.57	2.28	2.03	1.73	1.51	1.33	1.23	1.08	1.08	1.14	1.27	1.47	1.67	1.94	2.13			
90	0.82	0.81	0.78	0.72	0.69	0.69	0.71	0.71	0.72	0.71	0.70	0.67	0.67	0.65	0.67	0.72			

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.401
Humidity:65.0%
Test Distance:5.190m [K=1.0000]
Remarks: