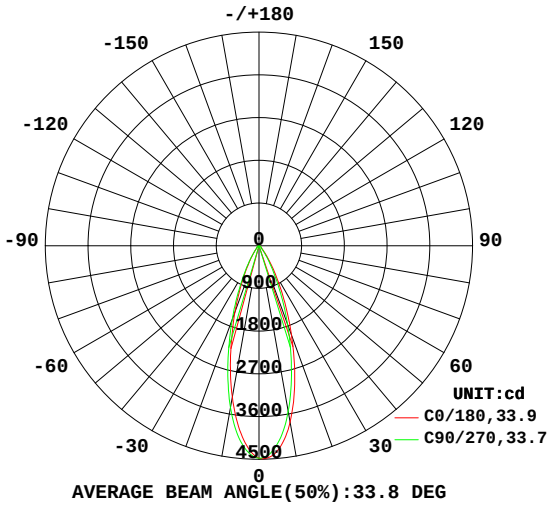
LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 38D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

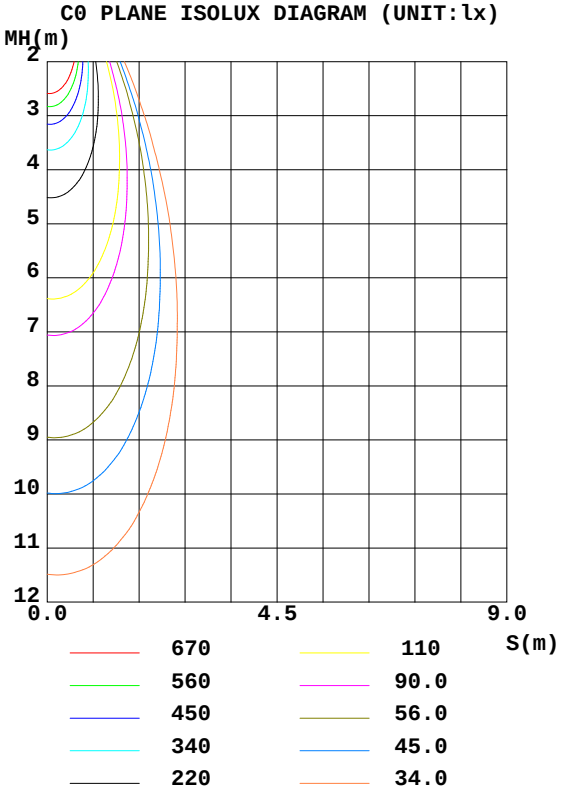
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 98.55 lm/W	
MODEL	LUMINUS	Imax(cd)	4493	S/MH(C0/180)	0.51
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	0.55
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1908.5	η UP,DN(C0-180)	0.0,51.9
NOMINAL FLUX(lm)	1908.47	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,48.1
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE(V)	230	η down(%)	100.0	CIBSE SHR MAX	0.60

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):33.8 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:

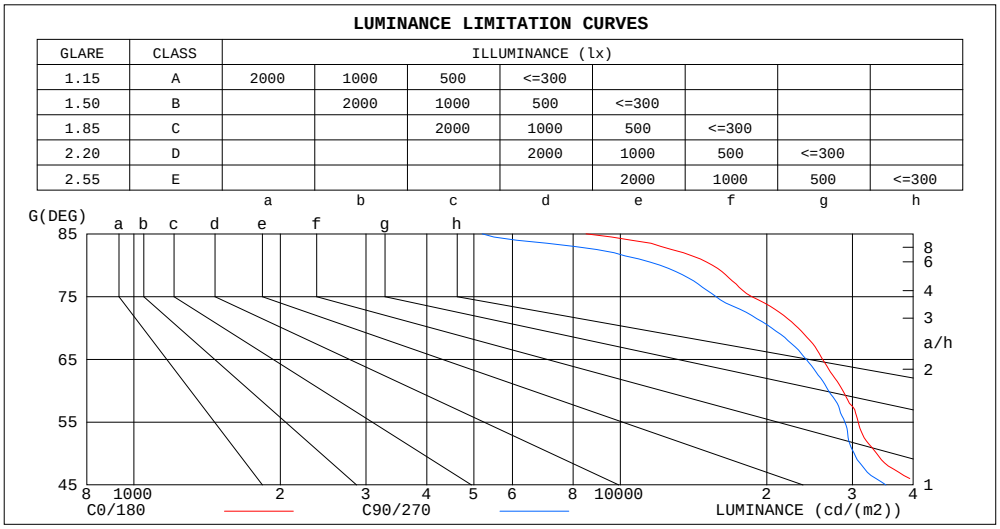
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	3773	3729	3544	3353	3241	3294	3464	3651	0- 10	378.5	378.5	19.8,19.8
20	2002	1944	1756	1566	1483	1508	1655	1867	10- 20	710.2	1089	57,57
30	688.3	648.6	546.5	458.8	448.8	454.2	500.6	597.4	20- 30	473.1	1562	81.8,81.8
40	177.1	166.8	135.8	117.6	116.1	117.6	129.2	151.6	30- 40	181.3	1743	91.3,91.3
50	71.59	68.56	64.53	61.14	59.90	57.63	60.79	66.28	40- 50	68.26	1811	94.9,94.9
60	47.46	47.08	44.45	41.44	39.48	39.91	42.05	44.96	50- 60	47.97	1859	97.4,97.4
70	26.28	25.93	23.24	20.46	18.86	19.44	21.56	24.06	60- 70	32.48	1892	99.1,99.1
80	8.887	8.691	6.957	5.068	4.144	4.374	5.822	7.401	70- 80	14.30	1906	99.9,99.9
90	0.6901	0.6601	0.5991	0.5992	0.6218	0.5983	0.5748	0.5704	80- 90	2.451	1908	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 38D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	8501	5201
80	15458	12070
75	18622	15726
70	23209	20466
65	26048	24102
60	28668	26784
55	30842	28931
50	33641	30245
45	42183	35141

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:

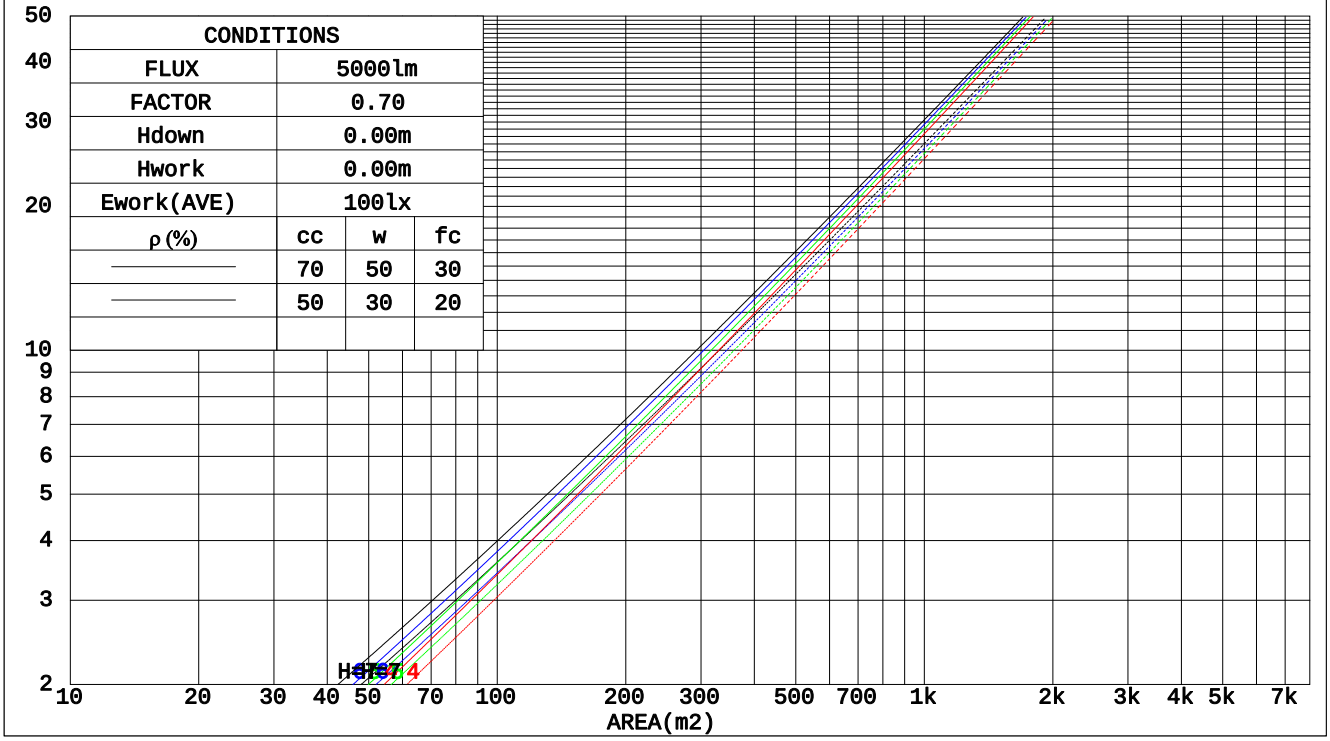
CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 38D	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	1.00
1.0	1.11	1.09	1.07	1.09	1.07	1.05	1.05	1.03	1.02	1.01	.00	.99	.98	.97	.96	.94
2.0	1.04	1.00	.97	1.02	.99	.96	.99	.96	.94	.96	.94	.92	.94	.92	.90	.88
3.0	.98	.93	.90	.97	.92	.89	.94	.90	.88	.92	.89	.86	.89	.87	.85	.83
4.0	.92	.87	.84	.91	.87	.83	.89	.85	.82	.87	.84	.81	.85	.83	.80	.79
5.0	.88	.82	.78	.87	.82	.78	.85	.81	.77	.83	.80	.77	.82	.79	.76	.75
6.0	.83	.78	.74	.83	.77	.74	.81	.77	.73	.80	.76	.73	.78	.75	.72	.71
7.0	.79	.74	.70	.79	.74	.70	.78	.73	.70	.76	.72	.69	.75	.72	.69	.68
8.0	.76	.71	.67	.75	.70	.67	.74	.70	.66	.73	.69	.66	.72	.69	.66	.65
9.0	.73	.67	.64	.72	.67	.64	.71	.67	.64	.70	.66	.63	.70	.66	.63	.62
10.0	.70	.65	.61	.69	.64	.61	.68	.64	.61	.68	.64	.61	.67	.63	.61	.59

LAMPS

LUMINAIRE BUDGETARY DIAGRAM



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 38D	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	.170	.097	.031	.163	.093	.030	.151	.087	.028	.139	.080	.026	.129	.075	.024	
2.0	.161	.088	.027	.155	.085	.026	.144	.080	.025	.135	.076	.024	.126	.071	.022	
3.0	.151	.080	.024	.146	.078	.024	.137	.074	.023	.129	.071	.022	.122	.067	.021	
4.0	.142	.074	.022	.138	.072	.021	.131	.069	.021	.123	.066	.020	.117	.064	.019	
5.0	.134	.068	.020	.131	.067	.020	.124	.065	.019	.118	.062	.019	.112	.060	.018	
6.0	.127	.064	.018	.124	.063	.018	.118	.061	.018	.113	.059	.017	.108	.057	.017	
7.0	.121	.060	.017	.118	.059	.017	.113	.057	.016	.108	.056	.016	.104	.054	.016	
8.0	.115	.056	.016	.113	.056	.016	.108	.054	.015	.104	.053	.015	.100	.051	.015	
9.0	.110	.053	.015	.108	.053	.015	.104	.051	.015	.100	.050	.014	.096	.049	.014	
10.0	.105	.050	.014	.103	.050	.014	.100	.049	.014	.096	.048	.014	.093	.047	.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	.145	.146	.135	.125	.100	.093	.087	.057	.054	.050	.018	.017	.016	
2.0	.155	.133	.114	.133	.114	.098	.091	.079	.069	.052	.046	.040	.017	.015	.013	
3.0	.142	.113	.091	.121	.098	.079	.083	.068	.055	.048	.040	.033	.015	.013	.011	
4.0	.130	.099	.074	.112	.085	.064	.077	.059	.045	.045	.035	.027	.014	.011	.009	
5.0	.121	.087	.061	.104	.075	.053	.072	.052	.038	.041	.031	.022	.013	.010	.007	
6.0	.113	.077	.052	.097	.067	.045	.067	.047	.032	.039	.028	.019	.013	.009	.006	
7.0	.106	.069	.044	.091	.060	.038	.063	.042	.027	.037	.025	.016	.012	.008	.005	
8.0	.100	.063	.038	.086	.055	.033	.059	.038	.023	.035	.023	.014	.011	.007	.005	
9.0	.094	.058	.033	.081	.050	.029	.056	.035	.020	.033	.021	.012	.011	.007	.004	
10.0	.090	.053	.029	.077	.046	.025	.054	.032	.018	.031	.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 38D	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	18.7	19.6	18.9	19.7	19.9	17.9	18.8	18.1	18.9	19.1
3H	19.3	20.1	19.6	20.3	20.5	18.6	19.4	18.9	19.6	19.8
4H	19.6	20.3	19.8	20.5	20.8	18.8	19.6	19.1	19.8	20.0
6H	19.7	20.4	20.0	20.6	20.9	18.9	19.6	19.2	19.9	20.1
8H	19.7	20.4	20.0	20.7	20.9	18.9	19.6	19.2	19.9	20.1
12H	19.7	20.4	20.0	20.6	20.9	18.9	19.5	19.2	19.8	20.1
4H 2H	18.9	19.6	19.2	19.9	20.1	18.2	19.0	18.5	19.2	19.4
3H	19.7	20.4	20.0	20.6	20.9	19.1	19.7	19.4	20.0	20.3
4H	20.0	20.6	20.4	20.9	21.2	19.4	20.0	19.7	20.3	20.6
6H	20.2	20.8	20.6	21.1	21.5	19.6	20.1	19.9	20.4	20.8
8H	20.3	20.8	20.7	21.1	21.5	19.6	20.1	20.0	20.4	20.8
12H	20.3	20.7	20.7	21.1	21.5	19.5	20.0	20.0	20.4	20.8
8H 4H	20.1	20.6	20.5	20.9	21.3	19.5	20.0	19.9	20.3	20.7
6H	20.4	20.8	20.8	21.2	21.6	19.7	20.1	20.2	20.5	20.9
8H	20.5	20.8	20.9	21.2	21.7	19.8	20.1	20.2	20.6	21.0
12H	20.5	20.8	20.9	21.2	21.7	19.8	20.1	20.2	20.5	21.0
12H 4H	20.1	20.5	20.5	20.9	21.3	19.5	19.9	19.9	20.3	20.7
6H	20.4	20.7	20.8	21.1	21.6	19.7	20.1	20.2	20.5	20.9
8H	20.5	20.8	20.9	21.2	21.7	19.8	20.1	20.3	20.5	21.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.9 / - 1.0					+ 0.6 / - 0.8				
1.5H	+ 2.0 / - 0.8					+ 1.2 / - 0.7				
2.0H	+ 0.6 / - 0.5					+ 0.3 / - 0.5				

CIE Pub.117, 1908 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 2.2)

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 38D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

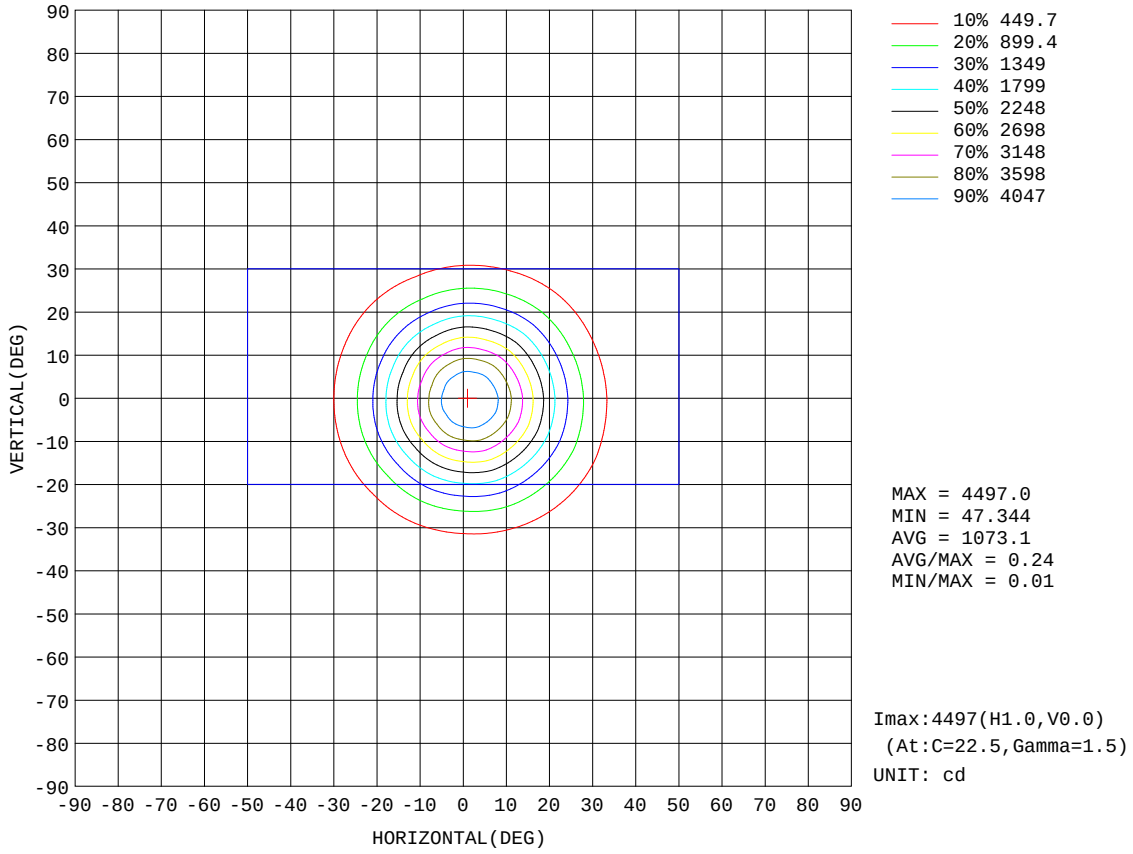
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	86	80	76	86	79	76	85	79	76	72
0.80	94	88	84	93	87	84	92	87	83	79
1.00	98	92	89	97	92	88	96	92	88	84
1.25	102	97	93	101	96	93	99	95	92	88
1.50	105	100	97	104	99	96	102	98	95	90
2.00	108	103	100	106	102	99	104	100	98	93
2.50	110	106	103	108	104	102	105	102	100	94
3.00	111	108	105	109	106	104	106	104	102	95
4.00	113	111	108	111	109	107	108	106	104	97
5.00	115	112	110	113	111	109	109	107	106	98
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 38D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



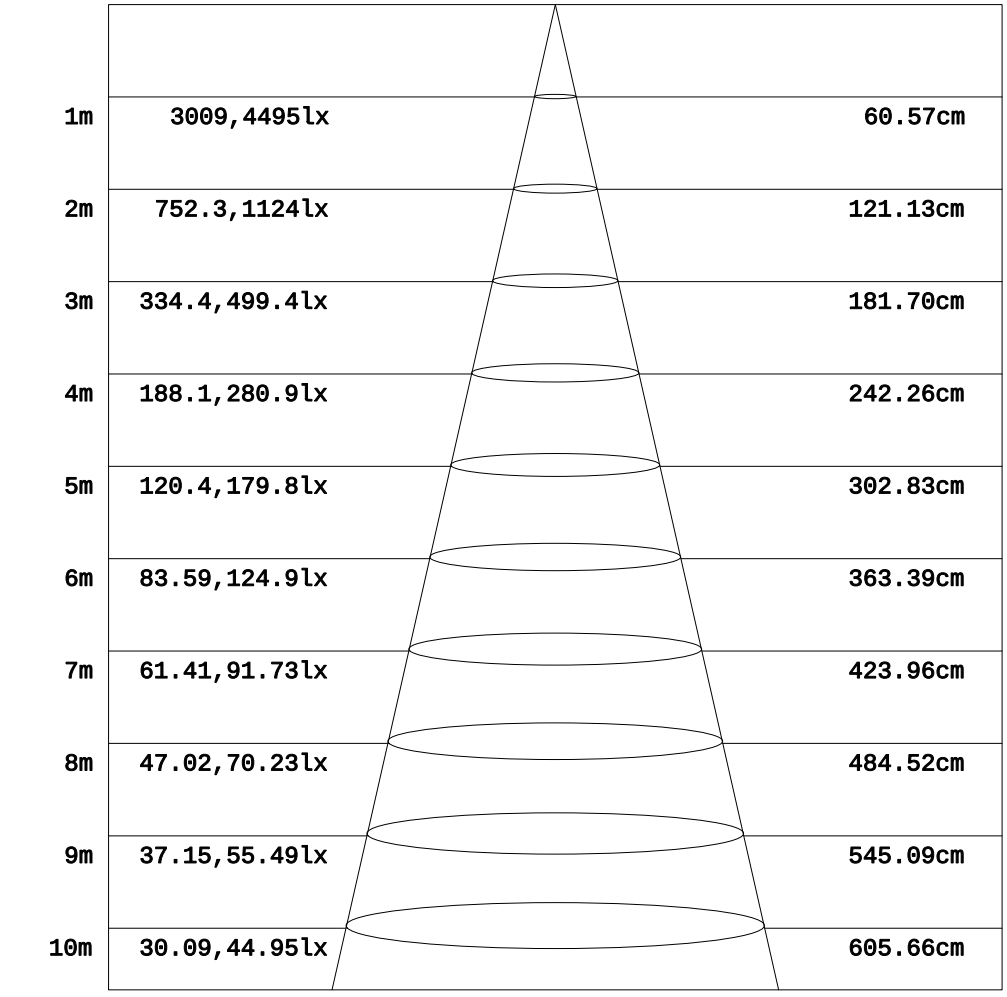
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

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 38D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

Flux out:883.7 lm



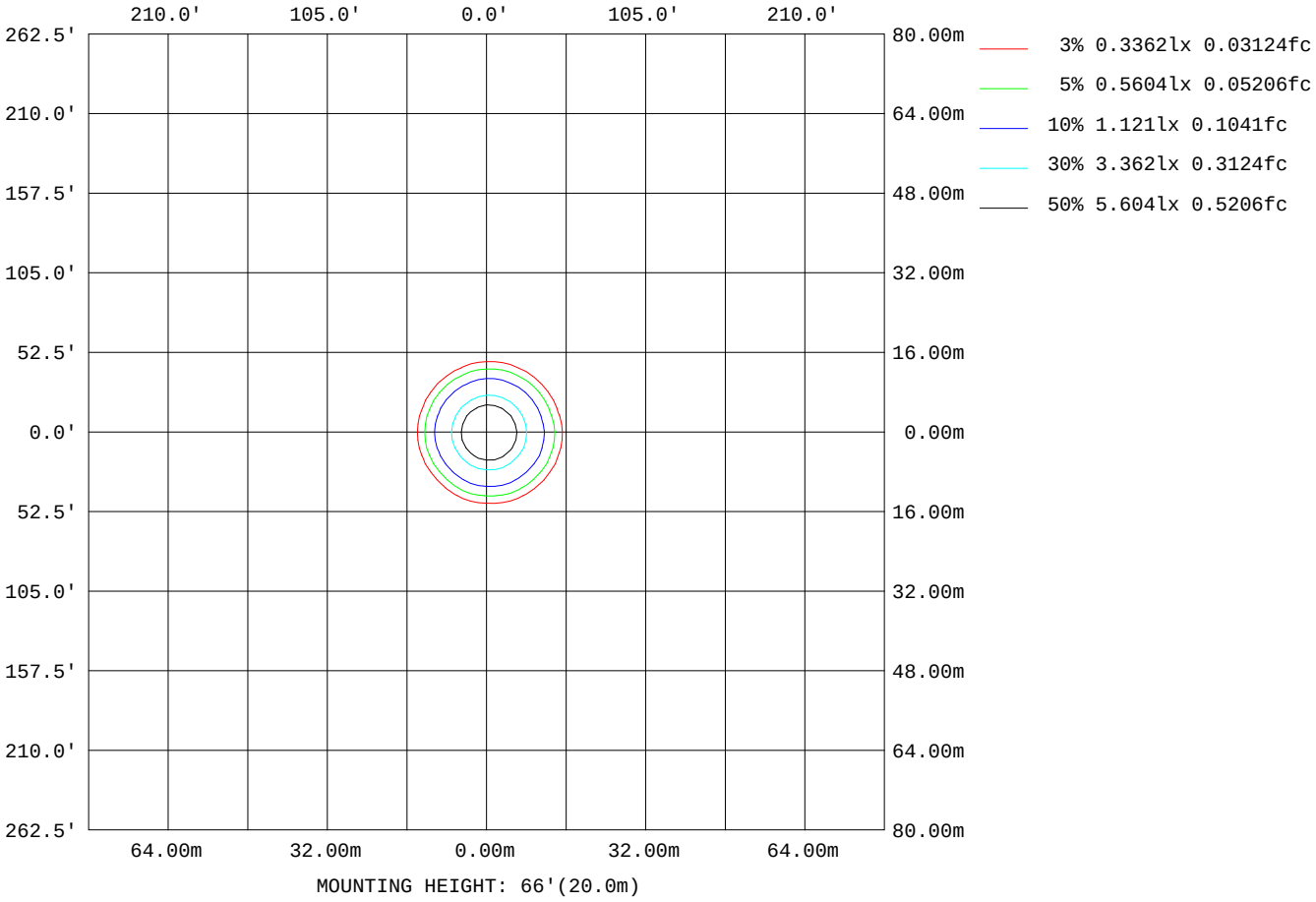
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 38D	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 38D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

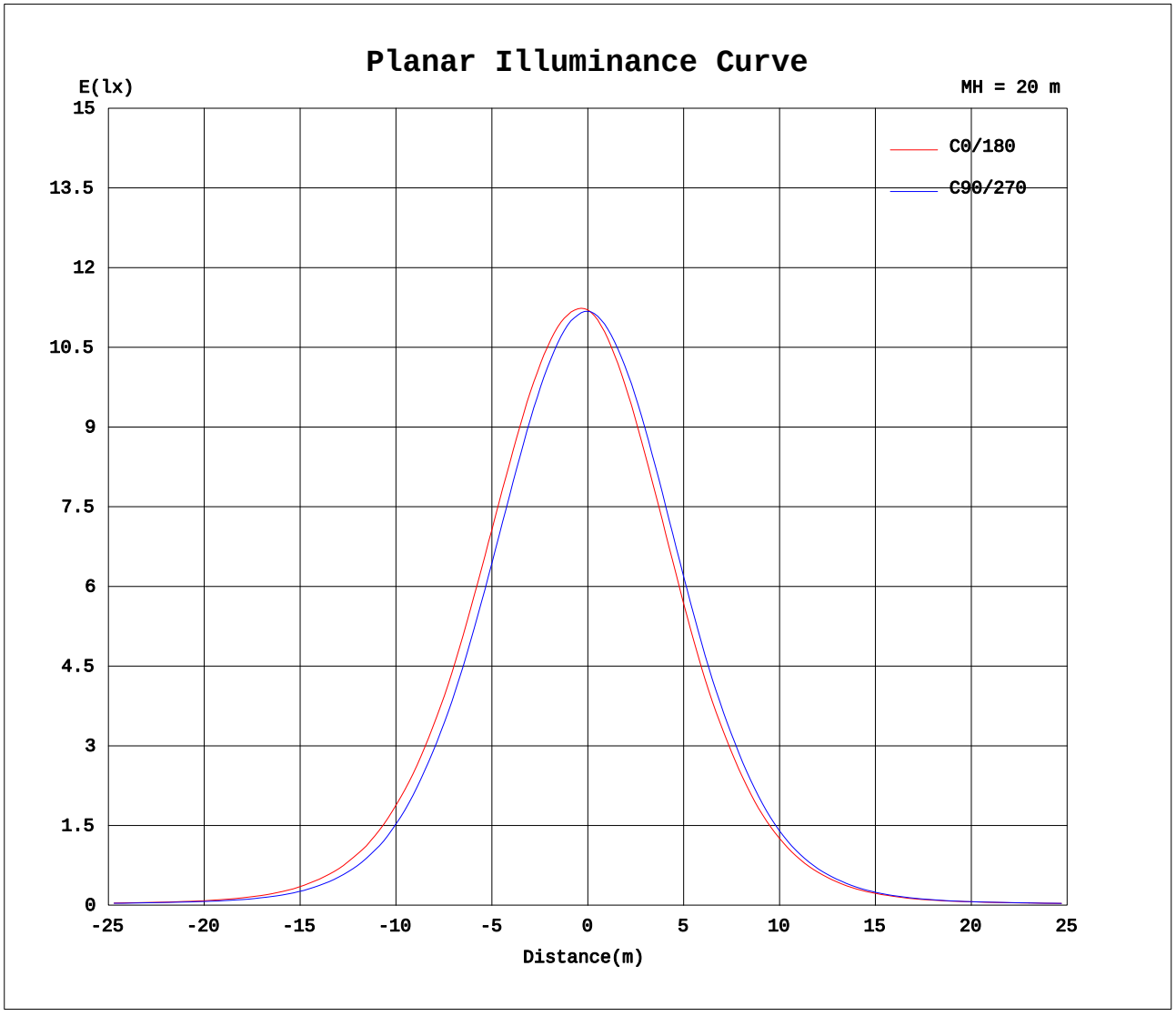
AvgL	cd/m2
L_0~180(65)av	23418
L_0~180(75)av	15339
L_0~180(85)av	5775
L_90~270(65)av	23405
L_90~270(75)av	14970
L_90~270(85)av	4654
L_45(65)av	23439
L_45(75)av	15107
L_45(85)av	5090

Standard: GB/T 29293-2012

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:

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 38D	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	4475	4475	4475	4475	4475	4475	4475	4475	4475	4475	4475	4475	4475	4475	4475	4475			
5	4350	4368	4329	4301	4225	4179	4108	4084	4043	4034	4077	4111	4179	4213	4283	4304			
10	3773	3802	3729	3679	3544	3467	3353	3313	3241	3223	3294	3348	3464	3527	3651	3702			
15	2915	2947	2863	2800	2643	2547	2417	2371	2304	2285	2355	2404	2530	2607	2758	2820			
20	2002	2023	1944	1888	1756	1680	1566	1532	1483	1463	1508	1544	1655	1726	1867	1921			
25	1243	1267	1197	1144	1036	978	889	873	851	840	858	877	954	1022	1123	1173			
30	688	707	649	604	546	506	459	456	449	445	454	456	501	540	597	634			
35	358	365	335	305	273	252	227	228	224	222	228	229	250	272	303	326			
40	177	181	167	152	136	128	118	116	116	117	118	120	129	137	152	162			
45	98.8	102	93.7	88.8	82.5	78.3	76.0	73.7	75.6	75.5	72.3	73.9	78.6	80.5	88.6	92.0			
50	71.6	73.7	68.6	67.2	64.5	62.9	61.1	59.8	59.9	59.9	57.6	58.6	60.8	62.4	66.3	67.8			
55	58.6	59.8	57.4	56.8	55.1	54.1	51.8	50.8	50.4	49.9	49.6	50.2	52.5	53.5	55.3	56.1			
60	47.5	47.9	47.1	46.3	44.5	43.1	41.4	40.6	39.5	39.1	39.9	40.5	42.0	43.0	45.0	45.7			
65	36.4	36.8	36.3	35.6	33.8	32.6	31.0	30.3	29.2	28.9	29.8	30.4	31.8	32.8	34.4	35.3			
70	26.3	26.6	25.9	25.0	23.2	22.0	20.5	19.8	18.9	18.7	19.4	20.1	21.6	22.6	24.1	25.0			
75	16.0	16.3	15.6	14.9	13.5	12.6	11.5	11.0	10.4	10.3	10.7	11.2	12.2	12.9	14.0	14.7			
80	8.89	9.14	8.69	8.08	6.96	6.10	5.07	4.57	4.14	4.12	4.37	4.82	5.82	6.50	7.40	8.02			
85	2.45	2.57	2.22	1.87	1.50	1.27	1.10	1.01	0.89	0.89	0.92	1.03	1.19	1.37	1.64	1.87			
90	0.69	0.68	0.66	0.62	0.60	0.60	0.60	0.63	0.62	0.60	0.60	0.57	0.57	0.56	0.57	0.60			

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: