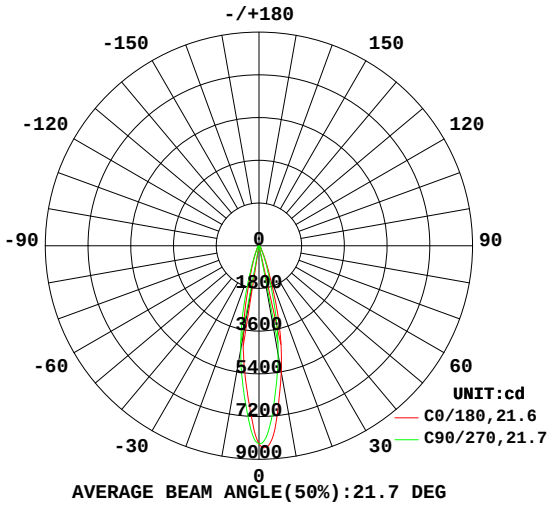
LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 15D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

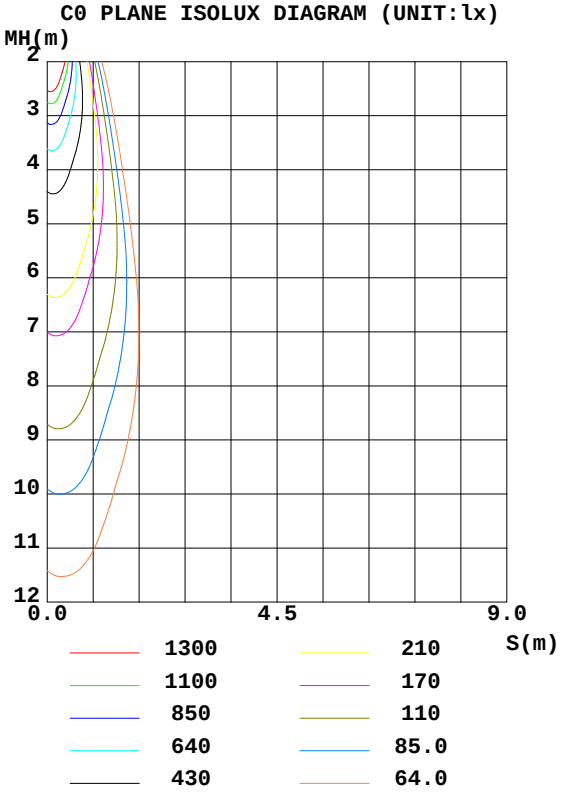
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 90.93 lm/W	
MODEL	LUMINUS	Imax(cd)	8534	S/MH(C0/180)	0.31
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	0.36
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1759.0	η UP,DN(C0-180)	0.0,52.6
NOMINAL FLUX(lm)	1759.03	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,47.4
LAMPS INSIDE	1	η 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%):21.7 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:

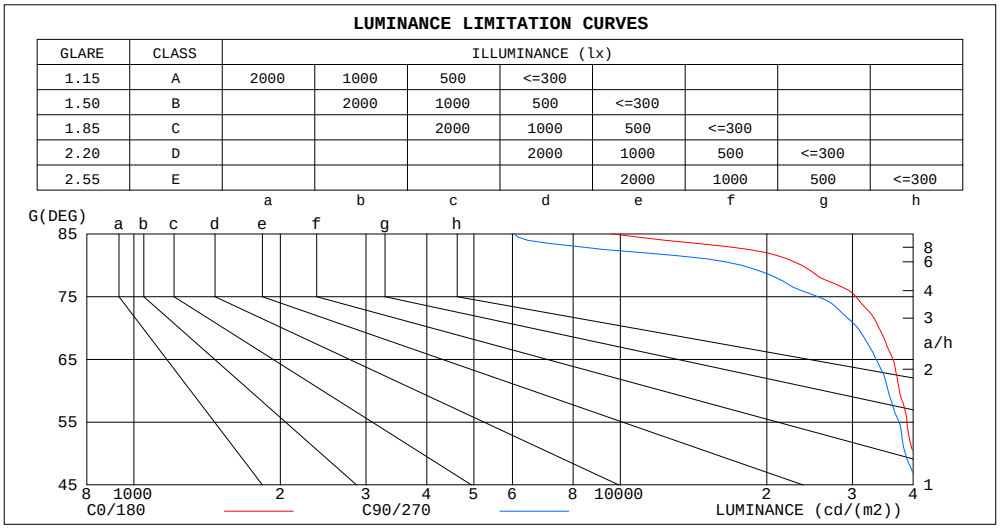
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	5412	5216	4653	4086	3833	3987	4451	4993	0- 10	576.8	576.8	32.8,32.8
20	1291	1163	985.6	804.8	730.0	722.6	879.2	1090	10- 20	652.2	1229	69.9,69.9
30	292.6	268.0	251.0	220.7	200.6	195.2	223.8	271.0	20- 30	221.8	1451	82.5,82.5
40	129.2	125.8	120.8	112.2	108.6	109.8	116.5	124.1	30- 40	100.8	1552	88.2,88.2
50	85.46	83.63	82.23	77.52	77.44	77.03	81.05	82.26	40- 50	74.80	1626	92.5,92.5
60	62.13	61.13	58.97	55.39	53.87	54.59	57.80	59.70	50- 60	61.73	1688	96,96
70	38.60	37.64	34.93	30.85	28.99	29.76	33.27	36.17	60- 70	45.47	1734	98.6,98.6
80	13.59	12.73	10.22	6.774	4.646	5.459	8.866	11.68	70- 80	22.28	1756	99.8,99.8
90	0.8415	0.7809	0.6854	0.6987	0.7223	0.7013	0.6699	0.6656	80- 90	3.096	1759	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 15D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	9607	6032
80	23590	17731
75	30495	25444
70	34025	30760
65	36335	33552
60	37468	35525
55	38827	37442
50	40087	38532
45	44078	41395

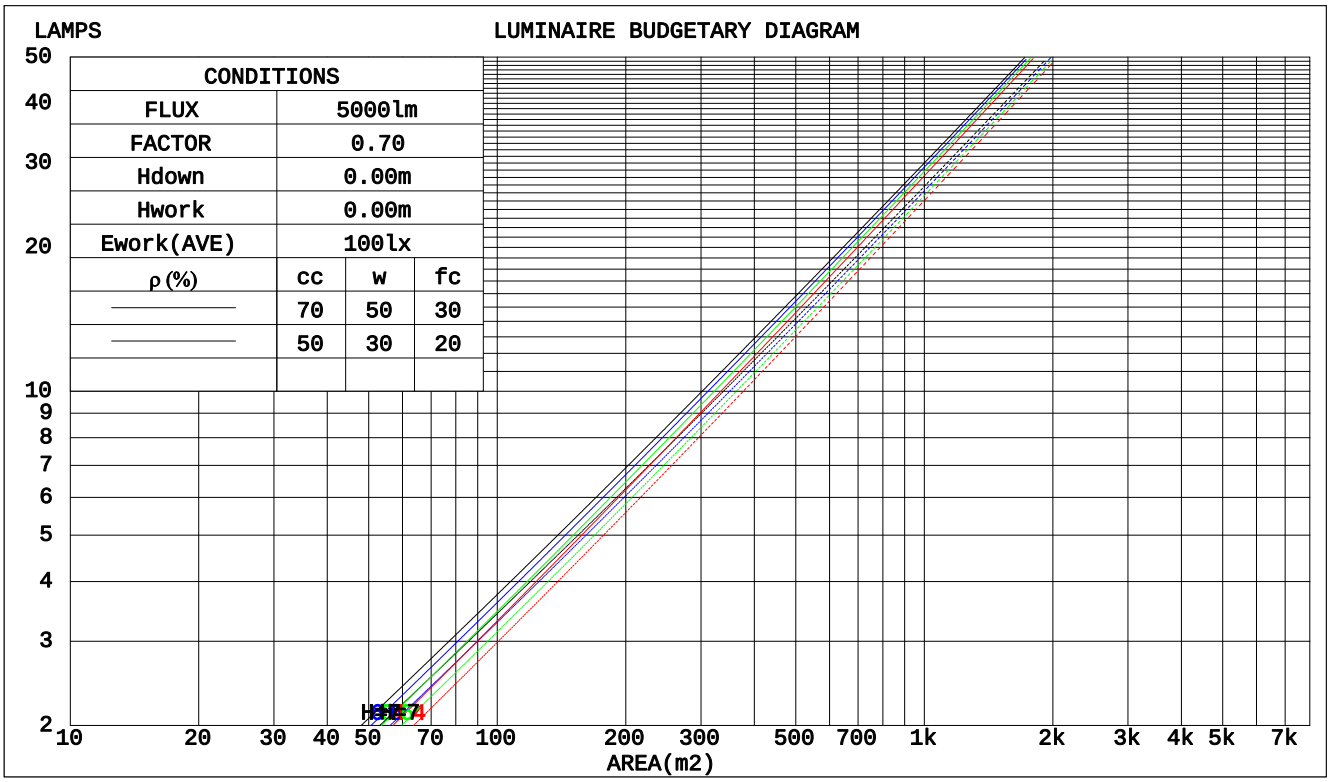
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

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 15D	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	1.04	1.02	1.02	1.00	.99	.98	.97	.96	.95
2.0	1.05	1.01	.98	1.03	.00	.97	.00	.97	.95	.97	.95	.93	.94	.93	.91	.89
3.0	.99	.95	.91	.98	.94	.91	.95	.92	.89	.93	.90	.88	.91	.88	.86	.85
4.0	.94	.90	.86	.93	.89	.85	.91	.87	.84	.89	.86	.83	.87	.85	.82	.81
5.0	.90	.85	.82	.89	.85	.81	.87	.83	.80	.86	.82	.80	.84	.81	.79	.78
6.0	.86	.81	.78	.86	.81	.78	.84	.80	.77	.83	.79	.77	.82	.79	.76	.75
7.0	.83	.78	.75	.82	.78	.75	.81	.77	.74	.80	.77	.74	.79	.76	.73	.72
8.0	.80	.75	.72	.80	.75	.72	.79	.75	.72	.78	.74	.71	.77	.74	.71	.70
9.0	.78	.73	.70	.77	.73	.70	.76	.72	.69	.75	.72	.69	.75	.71	.69	.68
10.0	.75	.71	.67	.75	.70	.67	.74	.70	.67	.73	.70	.67	.73	.69	.67	.66



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 15D	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	.165	.094	.030	.158	.090	.029	.145	.083	.027	.134	.077	.025	.123	.072	.023	
2.0	.154	.084	.026	.149	.082	.025	.138	.077	.024	.128	.072	.023	.120	.068	.021	
3.0	.143	.076	.023	.139	.074	.022	.130	.070	.021	.122	.067	.020	.114	.063	.020	
4.0	.134	.069	.020	.130	.068	.020	.122	.065	.019	.115	.062	.019	.109	.059	.018	
5.0	.125	.064	.018	.122	.062	.018	.115	.060	.018	.109	.058	.017	.104	.055	.017	
6.0	.117	.059	.017	.114	.058	.017	.109	.056	.016	.104	.054	.016	.099	.052	.015	
7.0	.111	.055	.016	.108	.054	.015	.103	.052	.015	.099	.051	.015	.094	.049	.014	
8.0	.105	.051	.014	.102	.050	.014	.098	.049	.014	.094	.048	.014	.090	.046	.013	
9.0	.099	.048	.013	.097	.047	.013	.093	.046	.013	.090	.045	.013	.087	.044	.013	
10.0	.094	.045	.013	.093	.045	.012	.089	.044	.012	.086	.043	.012	.083	.042	.012	

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	.170	.157	.146	.146	.135	.126	.100	.093	.087	.057	.054	.050	.018	.017	.016	
2.0	.154	.133	.115	.132	.114	.099	.090	.079	.069	.052	.046	.041	.017	.015	.013	
3.0	.140	.113	.092	.120	.098	.080	.082	.068	.056	.048	.040	.033	.015	.013	.011	
4.0	.128	.098	.076	.110	.085	.066	.076	.059	.046	.044	.035	.027	.014	.011	.009	
5.0	.118	.086	.063	.102	.075	.055	.070	.052	.039	.041	.031	.023	.013	.010	.008	
6.0	.110	.077	.053	.094	.066	.046	.065	.046	.033	.038	.027	.019	.012	.009	.006	
7.0	.102	.069	.045	.088	.060	.039	.061	.042	.028	.035	.025	.017	.011	.008	.005	
8.0	.096	.062	.039	.082	.054	.034	.057	.038	.024	.033	.022	.014	.011	.007	.005	
9.0	.090	.056	.034	.077	.049	.030	.054	.034	.021	.031	.020	.013	.010	.007	.004	
10.0	.085	.052	.030	.073	.045	.026	.051	.032	.019	.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 15D	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	19.0	19.8	19.2	19.9	20.1	18.7	19.5	18.9	19.6	19.8
	3H	20.4	21.2	20.7	21.4	21.5	20.1	20.8	20.3	21.0	21.2
	4H	21.0	21.7	21.3	21.9	22.1	20.5	21.2	20.8	21.5	21.7
	6H	21.3	22.0	21.6	22.2	22.4	20.8	21.4	21.0	21.7	21.9
	8H	21.4	22.0	21.7	22.3	22.5	20.8	21.4	21.1	21.7	21.9
	12H	21.4	22.0	21.7	22.2	22.5	20.7	21.4	21.0	21.6	21.9
4H	2H	19.6	20.3	19.8	20.5	20.7	19.4	20.1	19.6	20.3	20.5
	3H	21.2	21.8	21.5	22.1	22.4	20.9	21.5	21.2	21.8	22.0
	4H	21.9	22.4	22.2	22.7	23.0	21.5	22.0	21.8	22.3	22.6
	6H	22.3	22.8	22.6	23.1	23.4	21.7	22.2	22.1	22.6	22.9
	8H	22.3	22.8	22.7	23.2	23.5	21.8	22.2	22.2	22.6	22.9
	12H	22.3	22.8	22.7	23.1	23.5	21.7	22.2	22.1	22.5	22.9
8H	4H	22.0	22.5	22.4	22.9	23.2	21.7	22.1	22.1	22.5	22.9
	6H	22.5	22.9	22.9	23.3	23.7	22.0	22.4	22.5	22.8	23.2
	8H	22.6	23.0	23.1	23.4	23.8	22.1	22.4	22.5	22.9	23.3
	12H	22.7	22.9	23.1	23.4	23.9	22.1	22.4	22.5	22.8	23.3
12H	4H	22.0	22.4	22.4	22.8	23.2	21.7	22.1	22.1	22.5	22.9
	6H	22.5	22.9	23.0	23.3	23.7	22.1	22.4	22.5	22.8	23.3
	8H	22.7	23.0	23.1	23.4	23.9	22.1	22.4	22.6	22.8	23.3
Variations with the observer position at spacings:											
S = 1.0H		+ 0.2 / - 0.3					+ 0.2 / - 0.3				
1.5H		+ 0.1 / - 0.2					+ 0.1 / - 0.2				
2.0H		+ 0.2 / - 0.3					+ 0.2 / - 0.4				

CIE Pub.117, 1759 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 2.0)

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 15D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

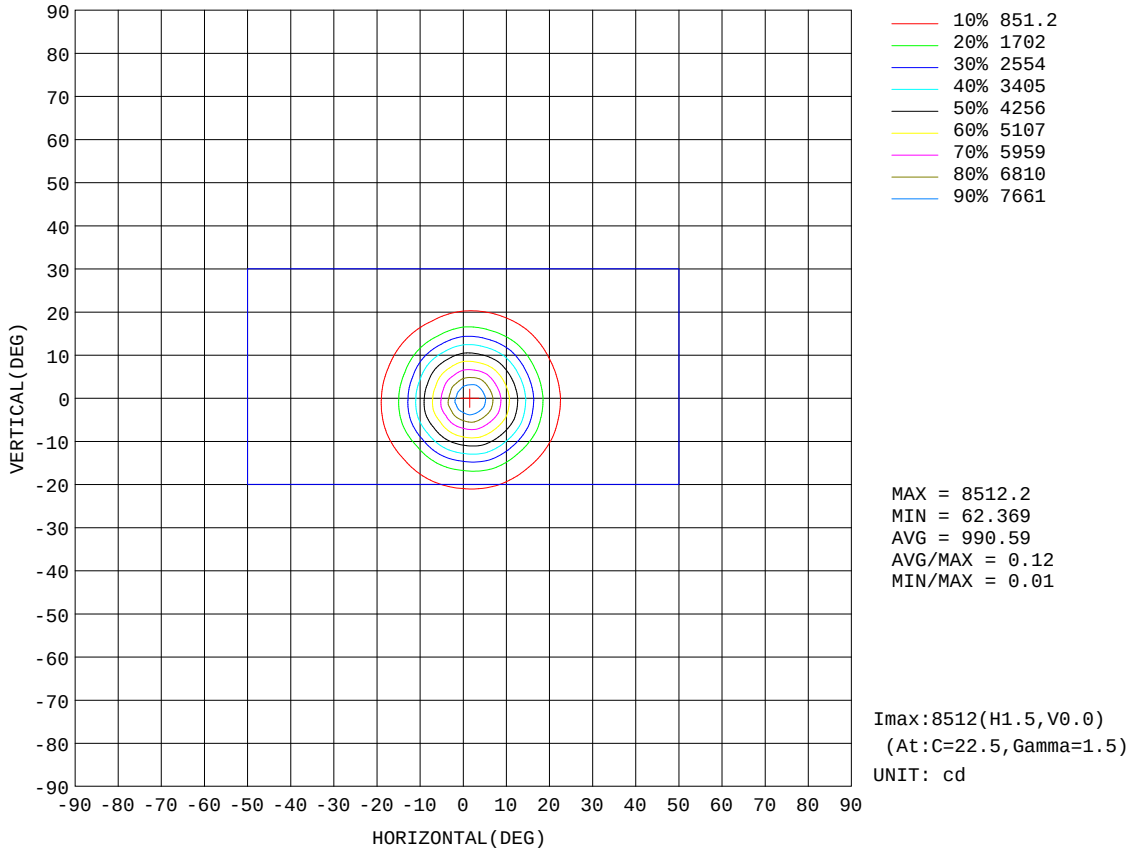
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	84	77	73	84	77	73	83	77	73	69
0.80	92	85	81	91	85	81	90	84	81	77
1.00	97	90	86	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	88
2.00	107	102	99	105	101	98	103	99	96	91
2.50	109	105	101	107	103	100	104	101	99	92
3.00	111	107	104	109	105	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 15D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



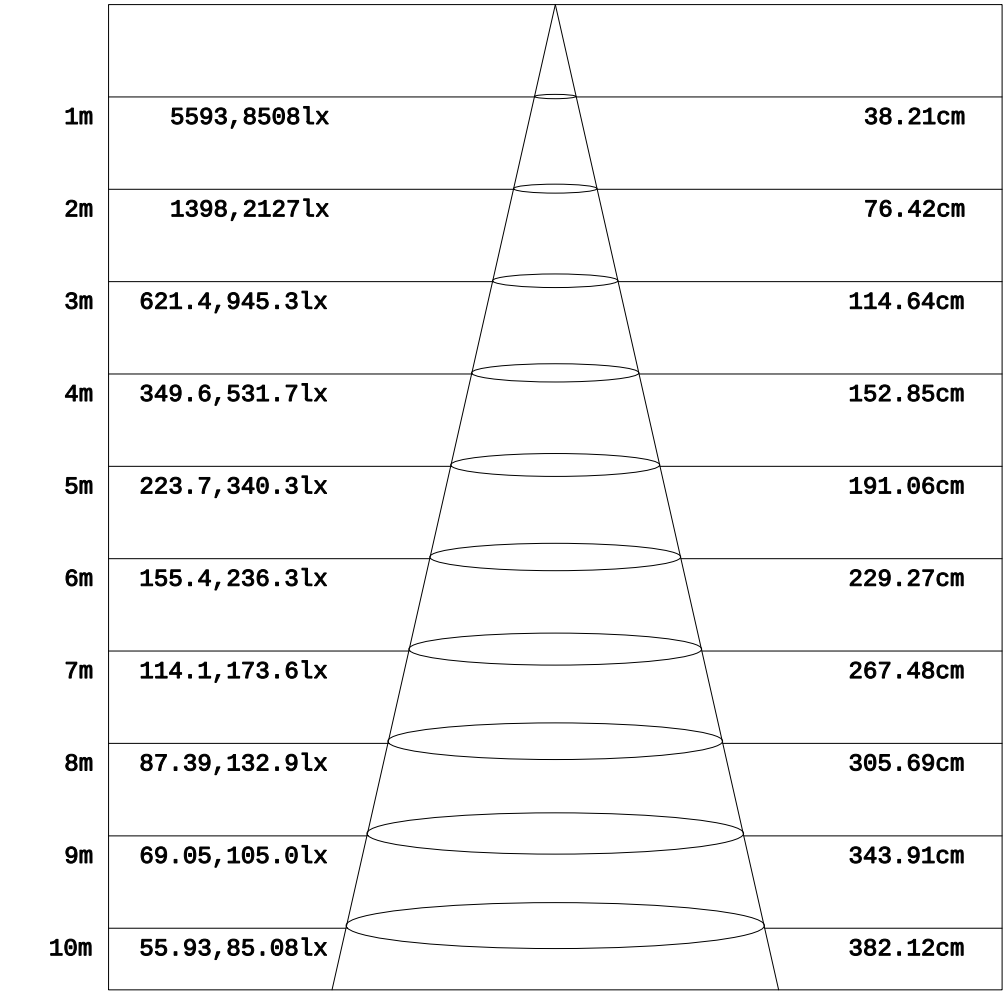
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

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 15D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

Flux out:663.9 lm



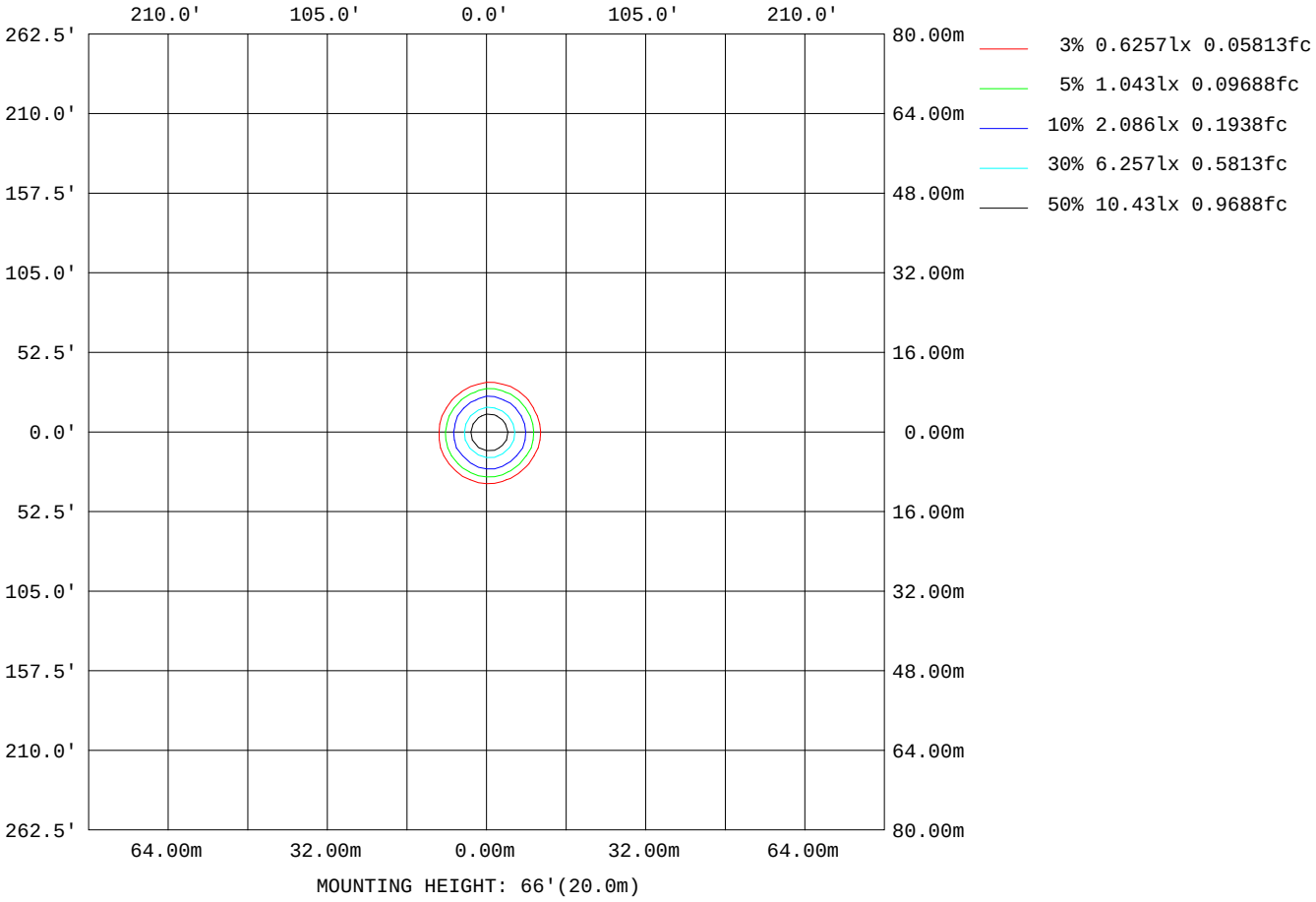
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 15D	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 15D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

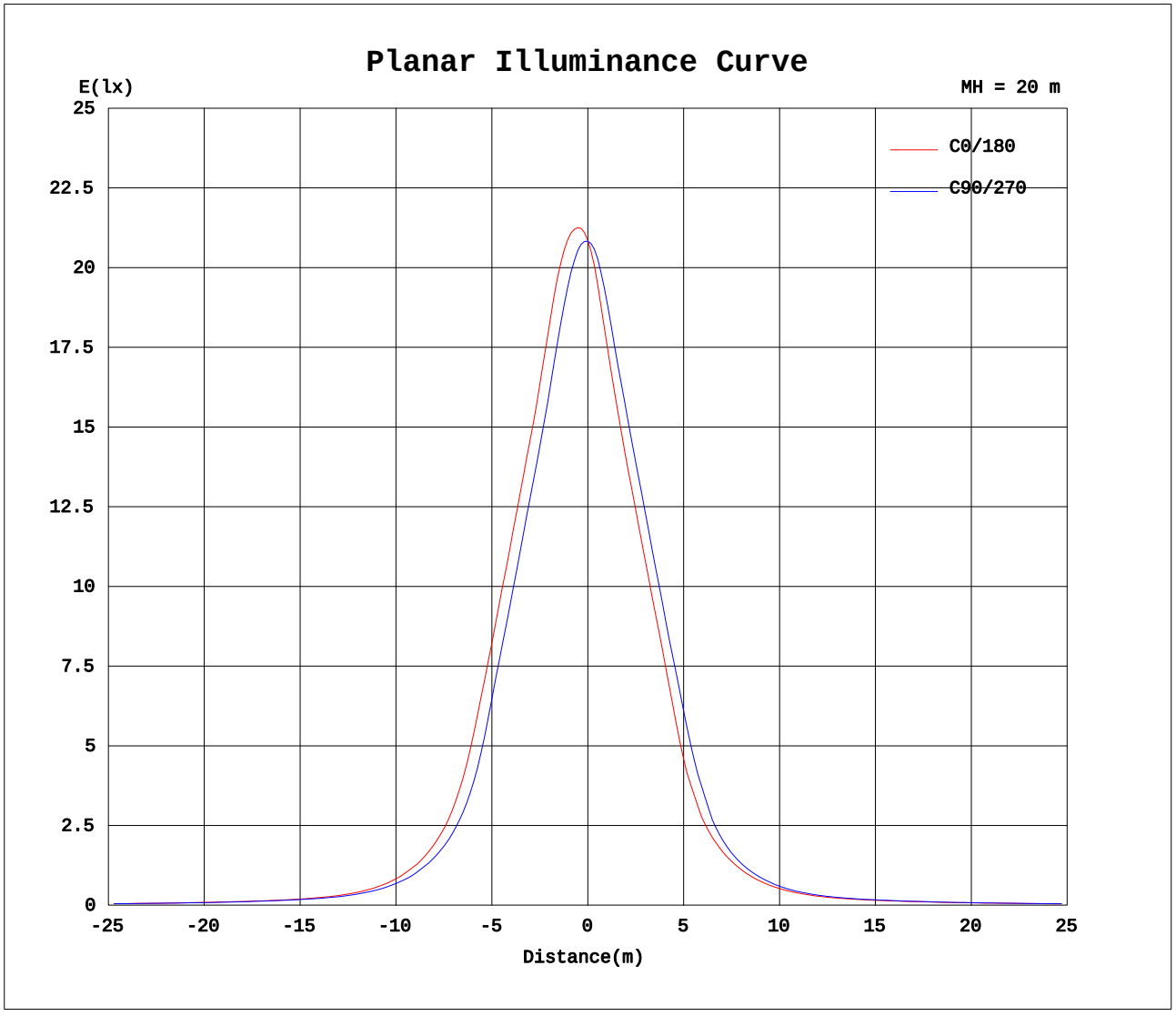
AvgL	cd/m2
L_0~180(65)av	32980
L_0~180(75)av	24590
L_0~180(85)av	6575
L_90~270(65)av	33036
L_90~270(75)av	24447
L_90~270(85)av	5516
L_45(65)av	32742
L_45(75)av	24279
L_45(85)av	5833

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 15D	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	8342	8342	8342	8342	8342	8342	8342	8342	8342	8342	8342	8342	8342	8342	8342	8342			
5	7742	7803	7522	7333	6902	6624	6274	6152	6009	5988	6156	6307	6624	6881	7295	7459			
10	5412	5494	5216	5041	4653	4401	4086	3992	3833	3806	3987	4139	4451	4644	4993	5146			
15	3168	3235	2969	2810	2382	2149	1833	1772	1690	1631	1765	1917	2252	2449	2784	2914			
20	1291	1308	1163	1115	986	904	805	775	730	696	723	756	879	966	1090	1154			
25	590	575	535	512	471	446	404	383	360	343	347	364	415	456	516	538			
30	293	292	268	261	251	245	221	208	201	197	195	200	224	247	271	274			
35	176	179	166	162	160	156	146	140	137	138	137	138	149	157	167	168			
40	129	132	126	124	121	117	112	110	109	109	110	111	116	120	124	126			
45	103	104	101	99.6	97.2	95.2	91.5	90.3	89.9	90.2	90.8	91.5	94.6	96.8	99.1	100			
50	85.5	85.9	83.6	83.1	82.2	80.0	77.5	76.2	77.4	76.3	77.0	77.9	81.0	80.6	82.3	82.9			
55	73.9	73.1	71.8	71.3	71.3	68.2	66.3	64.9	65.1	65.2	65.9	67.0	70.1	68.7	70.1	70.7			
60	62.1	62.4	61.1	60.7	59.0	57.3	55.4	54.0	53.9	54.0	54.6	55.7	57.8	58.1	59.7	60.4			
65	50.9	51.2	49.8	48.9	47.1	45.3	43.2	42.0	41.5	41.4	42.4	43.3	45.5	46.4	48.2	49.1			
70	38.6	38.9	37.6	36.6	34.9	33.0	30.8	29.9	29.0	28.7	29.8	30.9	33.3	34.5	36.2	36.6			
75	26.2	26.3	25.2	24.1	21.9	19.9	17.7	16.8	16.0	15.9	16.7	17.7	20.1	21.7	23.8	24.5			
80	13.6	13.7	12.7	11.8	10.2	8.59	6.77	5.72	4.65	4.53	5.46	6.76	8.87	10.1	11.7	12.3			
85	2.78	2.80	2.40	2.09	1.75	1.49	1.28	1.16	1.02	1.02	1.09	1.23	1.44	1.67	1.97	2.20			
90	0.84	0.82	0.78	0.72	0.69	0.68	0.70	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: