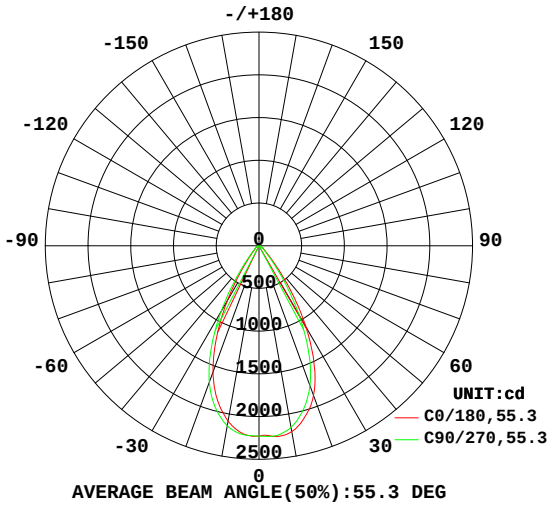
LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 60D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

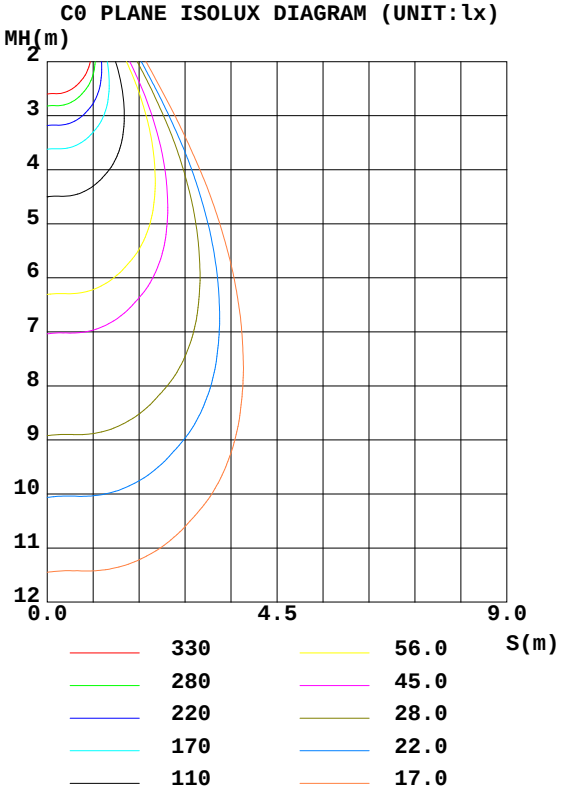
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 98.47 lm/W	
MODEL	LUMINUS	Imax(cd)	2243	S/MH(C0/180)	0.78
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	0.83
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1905.9	η UP,DN(C0-180)	0.0,51.9
NOMINAL FLUX(lm)	1905.93	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,48.1
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE(V)	230	η down(%)	100.0	CIBSE SHR MAX	0.85

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):55.3 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:

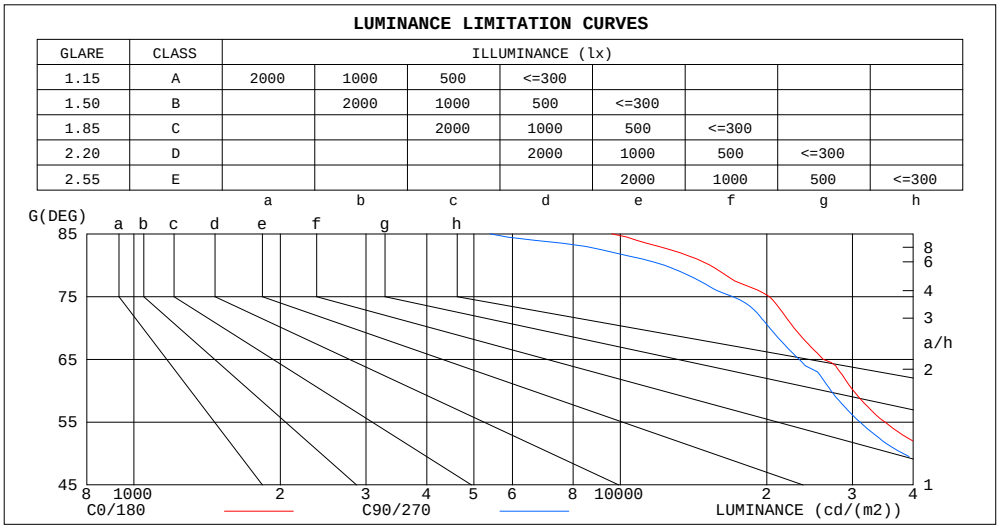
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	2208	2199	2159	2123	2085	2096	2139	2190	0- 10	210.0	210.0	11,11
20	1866	1842	1743	1644	1576	1604	1702	1803	10- 20	550.4	760.4	39.9,39.9
30	1102	1077	945.3	815.4	739.1	770.2	886.5	1015	20- 30	608.9	1369	71.8,71.8
40	328.0	313.1	255.3	202.3	177.8	185.9	223.9	278.8	30- 40	329.0	1698	89.1,89.1
50	96.12	91.06	81.26	73.00	68.27	68.40	74.83	85.66	40- 50	105.9	1804	94.7,94.7
60	49.98	48.85	44.97	41.62	39.24	39.40	42.34	46.56	50- 60	52.92	1857	97.4,97.4
70	25.81	25.34	23.00	20.35	18.57	18.86	20.93	23.70	60- 70	31.91	1889	99.1,99.1
80	8.801	8.719	7.093	4.967	3.708	3.936	5.246	7.121	70- 80	14.46	1904	99.9,99.9
90	0.7089	0.6692	0.5897	0.5902	0.5984	0.5875	0.5632	0.5615	80- 90	2.421	1906	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 60D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	9601	5397
80	15285	12315
75	20230	17007
70	22758	20275
65	26120	23306
60	30143	27116
55	34995	31090
50	45097	38117
45	69567	56359

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:

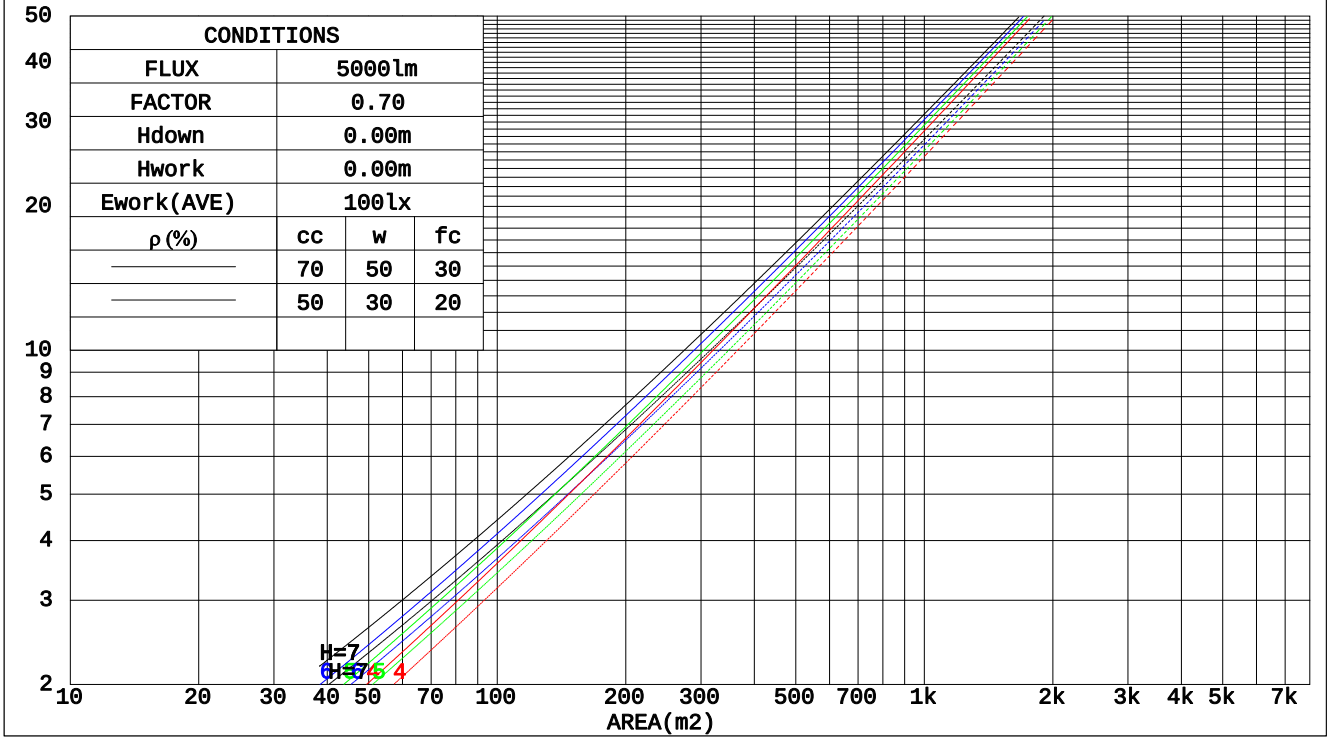
CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: vN-TLo020-02 WHITE	TYPE:LED TRACK LIGHT	WEIGHT:
SPEC.:CRI90 3000K 60D	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	1.10	1.08	1.05	1.08	1.06	1.04	1.04	1.02	1.01	1.00	.99	.98	.97	.96	.95	.93
2.0	1.02	.98	.95	1.01	.97	.94	.97	.94	.92	.94	.92	.90	.92	.90	.88	.86
3.0	.95	.90	.86	.94	.89	.85	.91	.87	.84	.89	.85	.83	.86	.84	.81	.80
4.0	.89	.83	.79	.88	.82	.78	.86	.81	.77	.84	.80	.77	.82	.78	.76	.74
5.0	.83	.77	.73	.82	.77	.73	.80	.76	.72	.79	.75	.71	.77	.74	.71	.69
6.0	.78	.72	.68	.77	.72	.67	.76	.71	.67	.74	.70	.67	.73	.69	.66	.65
7.0	.74	.67	.63	.73	.67	.63	.72	.66	.63	.70	.66	.62	.69	.65	.62	.61
8.0	.69	.63	.59	.69	.63	.59	.68	.62	.59	.67	.62	.59	.66	.61	.58	.57
9.0	.66	.60	.56	.65	.59	.56	.64	.59	.55	.63	.59	.55	.62	.58	.55	.54
10.0	.62	.56	.52	.62	.56	.52	.61	.56	.52	.60	.55	.52	.59	.55	.52	.51

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 60D	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	.186	.106	.033	.179	.102	.032	.166	.095	.030	.155	.089	.029	.144	.084	.027	
2.0	.177	.097	.030	.172	.095	.029	.161	.090	.028	.151	.085	.027	.142	.080	.025	
3.0	.168	.090	.027	.163	.088	.026	.154	.084	.025	.146	.080	.025	.138	.076	.024	
4.0	.160	.083	.024	.155	.081	.024	.147	.078	.023	.140	.075	.023	.133	.072	.022	
5.0	.151	.077	.022	.148	.076	.022	.141	.073	.022	.134	.071	.021	.129	.069	.021	
6.0	.144	.072	.021	.141	.071	.020	.135	.069	.020	.129	.067	.020	.124	.065	.019	
7.0	.137	.068	.019	.134	.067	.019	.129	.065	.019	.124	.064	.018	.119	.062	.018	
8.0	.131	.064	.018	.128	.063	.018	.124	.062	.018	.119	.060	.017	.115	.059	.017	
9.0	.125	.061	.017	.123	.060	.017	.119	.059	.017	.114	.057	.016	.111	.056	.016	
10.0	.120	.057	.016	.118	.057	.016	.114	.056	.016	.110	.055	.016	.107	.054	.015	

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	.172	.157	.144	.147	.135	.124	.101	.093	.086	.058	.054	.050	.019	.017	.016	
2.0	.157	.132	.112	.134	.114	.097	.092	.079	.067	.053	.046	.040	.017	.015	.013	
3.0	.145	.114	.089	.124	.098	.077	.085	.068	.054	.049	.040	.032	.016	.013	.010	
4.0	.135	.099	.072	.116	.086	.062	.080	.060	.044	.046	.035	.026	.015	.011	.009	
5.0	.126	.087	.059	.108	.076	.051	.075	.053	.036	.043	.031	.021	.014	.010	.007	
6.0	.119	.078	.049	.102	.068	.043	.070	.047	.030	.041	.028	.018	.013	.009	.006	
7.0	.112	.071	.042	.096	.061	.036	.067	.043	.026	.039	.025	.015	.013	.008	.005	
8.0	.106	.064	.036	.092	.056	.031	.063	.039	.022	.037	.023	.013	.012	.008	.004	
9.0	.101	.059	.031	.087	.051	.027	.060	.036	.019	.035	.021	.011	.011	.007	.004	
10.0	.097	.055	.027	.083	.048	.024	.058	.034	.017	.034	.020	.010	.011	.007	.003	

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 60D	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	21.7	22.7	21.9	22.8	23.0	20.9	21.9	21.2	22.1	22.2
	3H	21.9	22.8	22.1	23.0	23.2	21.1	22.0	21.4	22.2	22.4
	4H	22.0	22.8	22.2	23.0	23.2	21.2	22.0	21.5	22.3	22.5
	6H	22.0	22.8	22.3	23.0	23.3	21.2	22.0	21.5	22.2	22.5
	8H	22.0	22.7	22.3	23.0	23.2	21.2	22.0	21.5	22.2	22.5
	12H	21.9	22.7	22.3	22.9	23.2	21.2	21.9	21.5	22.2	22.4
4H	2H	21.6	22.5	21.9	22.7	22.9	20.9	21.8	21.2	22.0	22.2
	3H	21.9	22.7	22.2	22.9	23.2	21.2	22.0	21.6	22.2	22.5
	4H	22.1	22.7	22.4	23.0	23.4	21.4	22.1	21.7	22.4	22.7
	6H	22.2	22.7	22.5	23.1	23.4	21.5	22.0	21.8	22.4	22.7
	8H	22.2	22.7	22.6	23.1	23.4	21.4	22.0	21.8	22.3	22.7
	12H	22.1	22.6	22.6	23.0	23.4	21.4	21.9	21.8	22.3	22.7
8H	4H	22.1	22.6	22.4	23.0	23.3	21.4	21.9	21.8	22.3	22.7
	6H	22.2	22.6	22.6	23.0	23.4	21.5	22.0	21.9	22.3	22.8
	8H	22.2	22.6	22.7	23.0	23.5	21.5	21.9	22.0	22.3	22.8
	12H	22.2	22.5	22.7	23.0	23.5	21.5	21.8	22.0	22.3	22.7
12H	4H	22.0	22.5	22.4	22.9	23.3	21.4	21.9	21.8	22.2	22.6
	6H	22.2	22.5	22.6	23.0	23.4	21.5	21.9	21.9	22.3	22.7
	8H	22.2	22.5	22.7	23.0	23.4	21.5	21.8	22.0	22.3	22.8

Variations with the observer position at spacings:		
S = 1.0H	+ 2.0 / - 2.4	+ 1.5 / - 2.2
1.5H	+ 3.6 / - 2.1	+ 2.9 / - 1.9
2.0H	+ 2.1 / - 1.0	+ 1.7 / - 1.0

CIE Pub.117, 1906 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 60D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

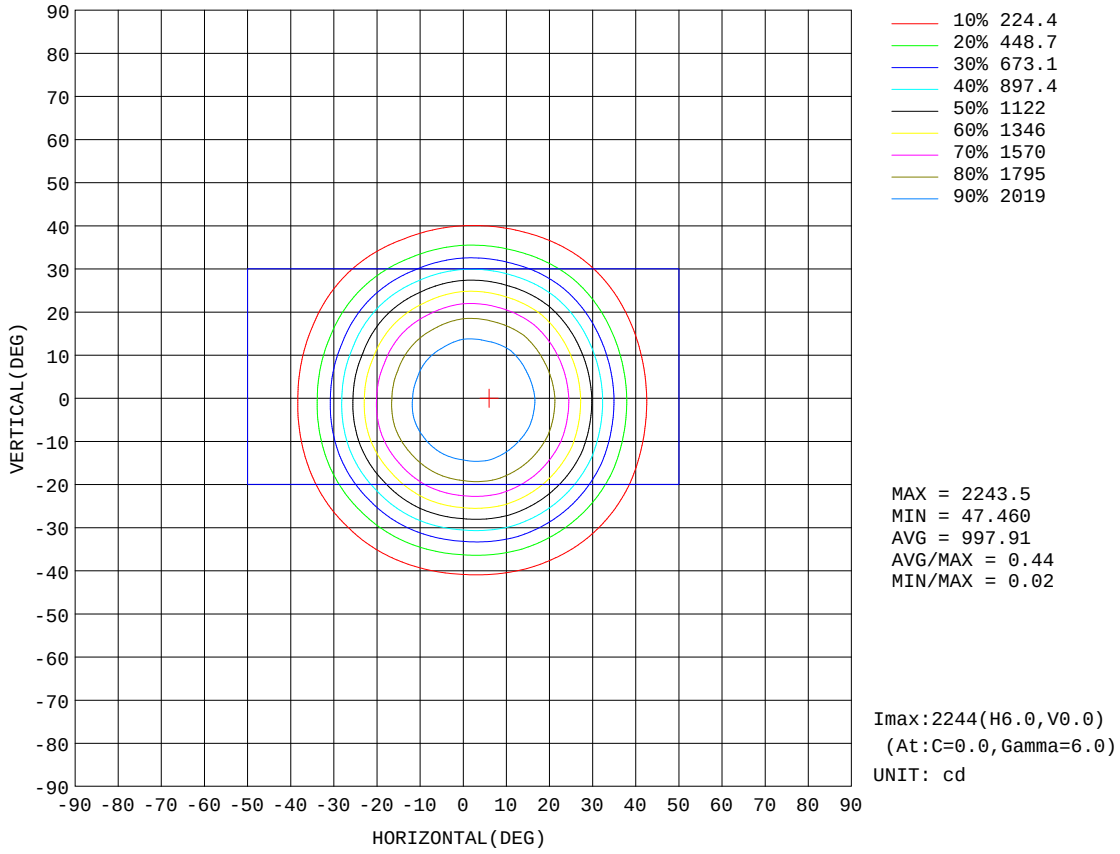
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	85	78	74	84	78	74	83	77	74	70
0.80	92	86	82	92	86	82	91	85	82	78
1.00	97	91	87	96	91	87	95	91	86	82
1.25	102	96	92	100	95	92	98	94	91	87
1.50	104	99	96	103	99	95	101	97	94	89
2.00	107	103	100	106	102	99	103	100	97	92
2.50	109	105	102	108	104	101	105	102	99	93
3.00	111	107	104	109	106	103	106	103	101	95
4.00	113	110	108	111	109	106	107	105	104	97
5.00	115	112	110	112	110	108	108	107	105	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 60D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:



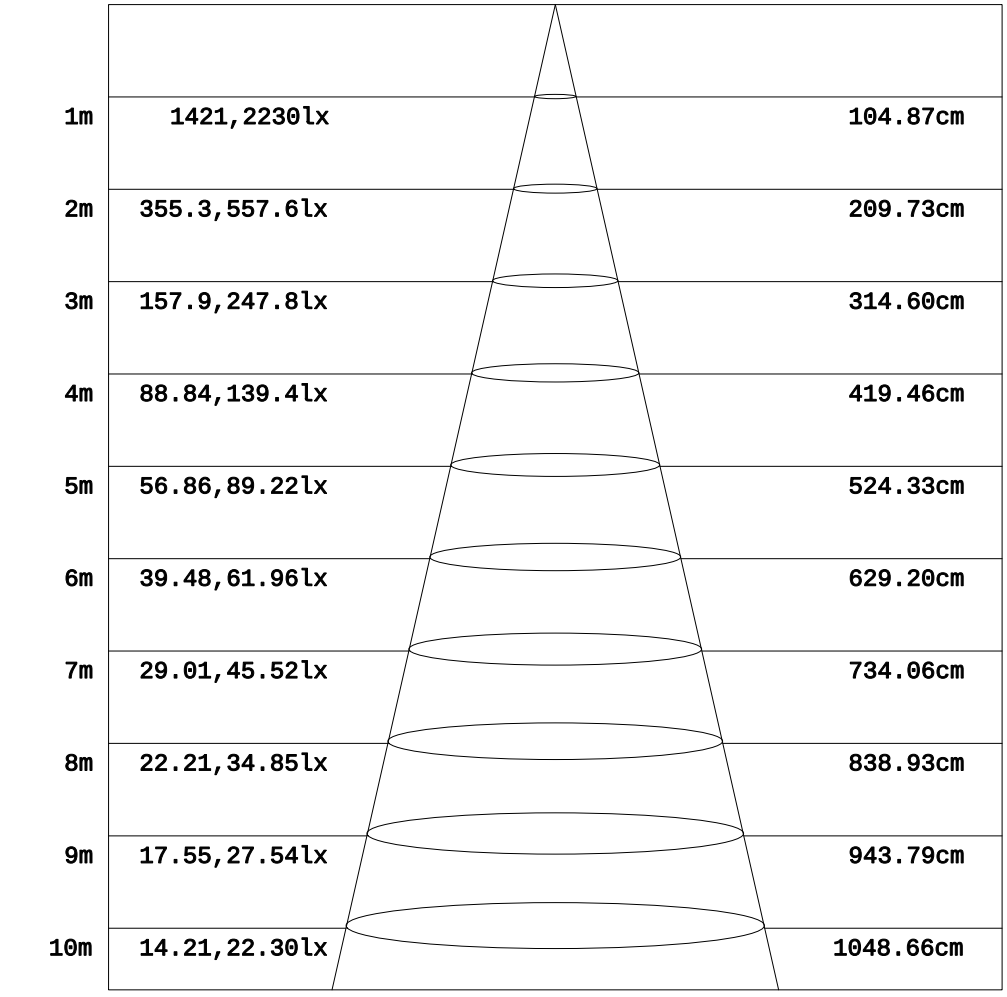
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:HTJ
Test Date:2018-05-19

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 60D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

Flux out:1262 lm



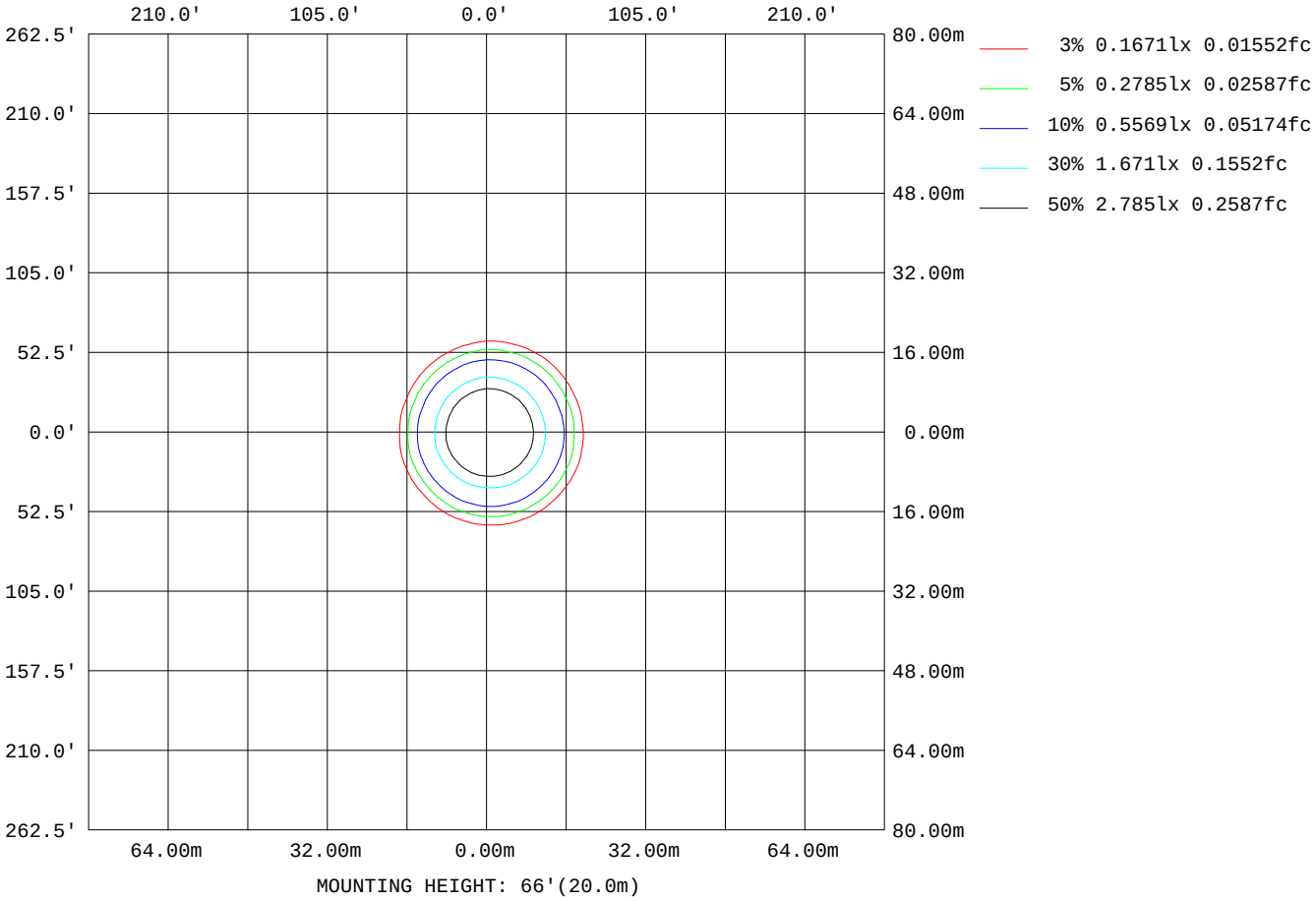
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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 60D	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 60D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

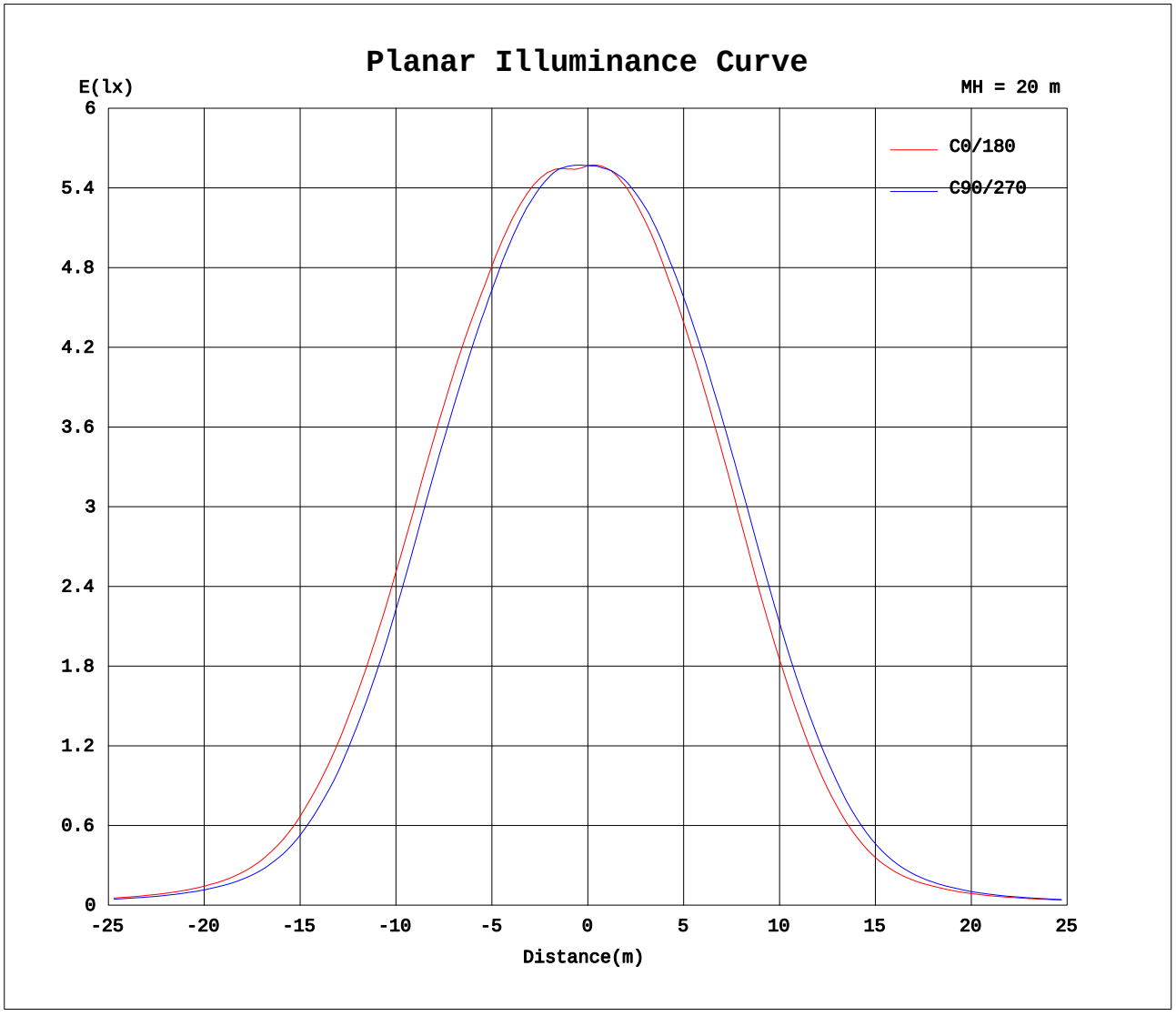
AvgL	cd/m2
L_0~180(65)av	22799
L_0~180(75)av	16017
L_0~180(85)av	6220
L_90~270(65)av	22437
L_90~270(75)av	15528
L_90~270(85)av	4667
L_45(65)av	22620
L_45(75)av	15768
L_45(85)av	5392

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 60D	DIM.:	SERIAL No.:
MFR.: 1	SUR.:	Shielding Angle:

Table--1 UNIT: cd

γ (DEG) \ C(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	2227	2227	2227	2227	2227	2227	2227	2227	2227	2227	2227	2227	2227	2227	2227	2227			
5	2240	2241	2242	2238	2232	2228	2222	2215	2204	2202	2210	2214	2218	2223	2230	2235			
10	2208	2206	2199	2185	2159	2142	2123	2108	2085	2081	2096	2109	2139	2159	2190	2202			
15	2073	2074	2058	2039	1991	1965	1928	1908	1875	1870	1898	1917	1967	1993	2042	2054			
20	1866	1872	1842	1808	1743	1701	1644	1616	1576	1565	1604	1636	1702	1738	1803	1825			
25	1529	1545	1507	1461	1378	1324	1242	1217	1169	1154	1204	1243	1325	1377	1452	1489			
30	1102	1121	1077	1033	945	890	815	786	739	725	770	808	886	939	1015	1052			
35	669	680	640	609	540	491	435	409	377	368	393	417	479	521	587	621			
40	328	335	313	291	255	230	202	191	178	176	186	196	224	247	279	297			
45	163	166	157	148	132	122	110	105	101	97.8	100	104	118	129	143	150			
50	96.1	96.4	91.1	86.7	81.3	77.5	73.0	71.3	68.3	67.1	68.4	70.1	74.8	80.0	85.7	90.0			
55	66.6	66.6	64.1	62.1	59.1	56.9	54.5	53.7	51.7	50.5	51.6	52.7	55.8	58.4	61.5	63.6			
60	50.0	50.2	48.9	47.2	45.0	43.5	41.6	40.8	39.2	38.6	39.4	40.4	42.3	44.3	46.6	48.2			
65	36.6	37.0	35.7	34.6	32.7	31.2	29.4	28.5	27.3	27.0	27.7	28.5	30.2	31.9	34.0	35.2			
70	25.8	26.1	25.3	24.5	23.0	21.8	20.4	19.6	18.6	18.3	18.9	19.5	20.9	22.1	23.7	24.6			
75	17.4	17.7	17.1	16.3	14.6	13.2	11.8	11.1	10.1	9.90	10.4	10.9	12.1	13.2	15.0	16.0			
80	8.80	9.08	8.72	8.15	7.09	6.08	4.97	4.36	3.71	3.60	3.94	4.37	5.25	6.08	7.12	7.85			
85	2.77	2.90	2.55	2.09	1.56	1.27	1.07	0.95	0.82	0.82	0.86	0.97	1.14	1.37	1.76	2.11			
90	0.71	0.70	0.67	0.61	0.59	0.58	0.59	0.61	0.60	0.59	0.59	0.56	0.56	0.54	0.56	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: