

# IESNA LM-79: 2008

## Measurement and Test Report

### for

## Philips (China) Investment Co., Ltd.

No.2 Bld. No.9, Laue 888, Tian Lin Road, Shanghai, CHINA

Aug 29, 2011

<b>Product Name:</b>	LED Integral Lamp
<b>Model No:</b>	7E26PAR20D-1
<b>Test Engineer:</b>	David Zhang <i>David Zhang</i>
<b>Report No.:</b>	BTR66.180.10.259.02
<b>Sample Received Date:</b>	Aug 26, 2011
<b>Test Performed Date:</b>	Aug 26, 2011 to Aug 29, 2011
<b>Reviewed By:</b>	Steven Hsu <i>Steven Hsu</i>
<b>Prepared By:</b>	<b>BEST Test Service Shenzhen Co., Ltd.</b> 1st Floor, 1st Building, Weitai Industrial Park, Yongde Road, Shiyuan, Baoan, Shenzhen, China TEL: +86-755-28236006 FAX: +86-755-23467087-811 Email: <a href="mailto:certification@bestcert.cn">certification@bestcert.cn</a>



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## 1 - GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

Applicant	:	Philips (China) Investment Co., Ltd.
Product Name	:	LED Integral Lamp
Model No	:	7E26PAR20D-1
Input Rating	:	AC120V/60Hz
Power Rating	:	7W
Shape of Bulb	:	PAR20
Date of Receiving Sample	:	Aug 26, 2011
Quantity of samples	:	1 pcs
Test Requested	:	1. Electrical and Photometric Test; 2. Luminous Intensity Distribution Test;

### 1.2 Objective

The following test report is prepared on behalf of Philips (China) Investment Co., Ltd. in accordance with IESNA LM-79-08, used the following American National Standards or illumination Engineering Society of North America test guides:

ANSI C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products;

ANSI C79.1- 2002: American National Standard for Electric Lamps – Nomenclature for Glass Bulbs Intended for Use with Electric Lamps;

ANSI C78.20 – 2003: American National Standard for Electric Lamps – A, G, PS, and Similar Shapes with E26 Medium Screw Bases;

ANSI C78.21 – 2003: American National Standard for Electric Lamps – PAR and R Shapes;

ANSI C78.24 – 2001: American National Standard for Electric Lamps – Two-inch (51 mm);

Integral-reflector Lamps with Front Covers and GU5.3 or GX 5.3 Bases;

ANSI/IEC C81.61-2003: American National Standard for Electric Lamp Bases;

ANSI/IEEE C62.41 – 1991 (01-May-1991): Surge Voltages in Low-Voltage AC Power Circuits, Recommended Practice for;

CIE Publication No. 13.3 – 1995: Method of Measuring and Specifying Color Rendering of Light Sources;

CIE Publication No. 18.2 – 1983: The Basis of Physical Photometry;

IESNA LM-16-1993: Practical Guide to Colorimetry of Light Sources;

IESNA LM-28-89 – 1989: Guide for the Selection, Care, and Use of Electrical Instruments in the Photometric Laboratory;

IESNA LM-79-08 Electrical and Photometric Measurement of Solid State Lighting Products

UL 1993 – 1999: Standard for Self-Ballasted Lamps and Lamp Adapters;

UL 8750 – 2009: Light Emitting Diode (LED) Equipment for Use in Lighting Products.

### 1.3 Test Facility Description

The Energy Efficiency Lab used by BEST to collect energy efficiency measurement data is located in 1st Floor, 1st Building, Weitai Industrial Park, Yingrenshi, Shiyan, Baoan, Shenzhen, China. BEST Test Service Shenzhen Co., Ltd is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200770-0). BEST Test Service Shenzhen Co., Ltd is also an ELI accredited lab for lighting products (ELI Certificate No. ELI-L04-2010) and UL accredited lab for lighting products

## 1.4 Test Equipment List

Device	Manufacture	Model No	Serial No	Cal. Date	Cal Due Date
Integral Sphere	Everfine	1.5M SPEKTRON	608040T	Oct 20, 2010	Oct 20, 2011
Integral Sphere	Everfine	1.5M SPEKTRON	906025	Oct 20, 2010	Oct 20, 2011
Integral Sphere	Labsphere	LMS-650	6101002416	Mar 10, 2011	Mar 09, 2012
Spectro Meter Assy	Labsphere	CDS 2100	217101416	Mar 10, 2011	Mar 09, 2012
Plus UV-VIS-Near IR Spectrophotometer Colorimeter	Everfine	PMS-50 (380nm-800nm)	608033	Oct 20, 2010	Oct 20, 2011
Plus UV-VIS-Near IR Spectrophotometer Colorimeter	Everfine	PMS-700 (200nm-800nm)	908001	Oct 20, 2010	Oct 20, 2011
Goniophotometer	Everfine	GOR-5000	1009001	Nov 20, 2010	Nov 19, 2011
6 <sup>1/2</sup> Digital Multimeter	Agilent	34401A	MY4702386	Oct 18, 2010	Oct 17, 2011
AC Power Source	California Instrument	1501I	S13093	N/A	N/A
AC Power Source	California Instrument	1501L	L03572	N/A	N/A
Standard Light Source	OSRAM	24V/50W	NO.1	Sep 17, 2010	Sep 16, 2011
Standard Light Source	OSRAM	24V/50W	NO.2	Sep 17, 2010	Sep 16, 2011
Multi-Function AC standard Meter	Everfine	PF2010S	605010	Oct 18, 2010	Oct 17, 2011
Digital Power Meter	Everfine	PF9811	902029	Oct 18, 2010	Oct 17, 2011
Digital Power Meter	YOKOGAWA	WT210	91K310009	Oct 18, 2010	Oct 17, 2011
Digital Power Meter	YOKOGAWA	WT210	91K310017	Oct 18, 2010	Oct 17, 2011
Digital Power Meter	YOKOGAWA	WT210	91K310016	Oct 18, 2010	Oct 17, 2011
Ballast Parameter Analyzer	Everfine	PF9821	905050	Oct 18, 2010	Oct 17, 2011
Second Meter	TIANFU	PC 396	N/A	Oct 18, 2010	Oct 17, 2011
Digital Storage Oscilloscope	Tektronix	TDS2012B	C051911	Oct 18, 2010	Oct 17, 2011

**Statement of Traceability:** BEST Test Service Shenzhen Co., Ltd. certifies that all calibration has been performed using suitable standards traceable to the NIM China.

## 2 - Test Method

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### 2.1 Photometric and Electrical Measurement (Integrated Sphere Method)

Total light output (luminous flux) for the  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ambient temperature conditions is measured using a 1.6m integrating sphere. Temperature is measured at a position inside the sphere. Spectral radiant flux measurements are made using Labsphere LMS-650 to the detector port of the integrating sphere. Each lamp is operated at rated voltage in its designated orientation. Each lamp should be stable before measurements are made. The determining method of stable is as follows:

Step 1 Take 3 measurements of the lamp light output at 15 minute interval (total time=30mintues.)This time period is in addition to the recommended pre-burning time.

Step 2 Calculate the percent difference between the maximum measured value and the minimum measured value for the three consecutive measurements.

Step 3 if the value calculated in Step 2 does not exceed 0.5 percent, the lamp is considered stable.

Luminous flux, chromaticity coordinates, correlated color temperature and color rendering index for each lamp are calculated from the spectral radiant flux measurements taken at 2 nm intervals over the range 350 to 1050 nm. The calibration of the sphere photometer-spectrometer system is traceable to the NIST USA. Lamp efficacy (lumens per watts) for each lamp model is computed based on the revised luminous flux result. Electrical measurements including voltage, current, power and power factor are measured using the YOKOGAWA WT210 digital power Meter.

The total uncertainty of the light output measurements is estimated, at the 95% confidence level, not to exceed  $\pm 1.12\%$  over the wavelength range 350-1050 nm.

### 2.2 Photometric and Electrical Measurement (Gonio Photometer Method)

Before each measurement, the method below should be used to determine the lamp is stable or not.

Step 1 Take 3 measurements of the lamp intensity at 15 minute interval (total time=30mintues.)This time period is in addition to the recommended pre-burning time.

Step 2 Calculate the percent difference between the maximum measured value and the minimum measured value for the three consecutive measurements.

Step 3 if the value calculated in Step 2 does not exceed 0.5 percent, the lamp is considered stable.

A Everfine GOR-5000 Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample. Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to be stable before measurement was made. Electrical measurements including voltage, current, power and power factor were measured using the YOKOGAWA Power Analyzer.

Some graphics were created with Photometric Plus software.

### 3 –Executive Summary

Brand Name= EnduraLED Dimmable PAR20 3000K 25D

12NC number= 929000202204

SKU number= 046677418588

Model Number=7E26PAR20D-1

Input Power (Watts)	Power Factor	Luminous Flux (Lumens)	Luminous Efficiency (Lumens/Watt)	CCT (K)	CRI	Stabilization Time (Hours) (Light & Power)
6.971	0.7308	272.8	39.13	3062.8	82.7	1.5



## 4 – Test Result

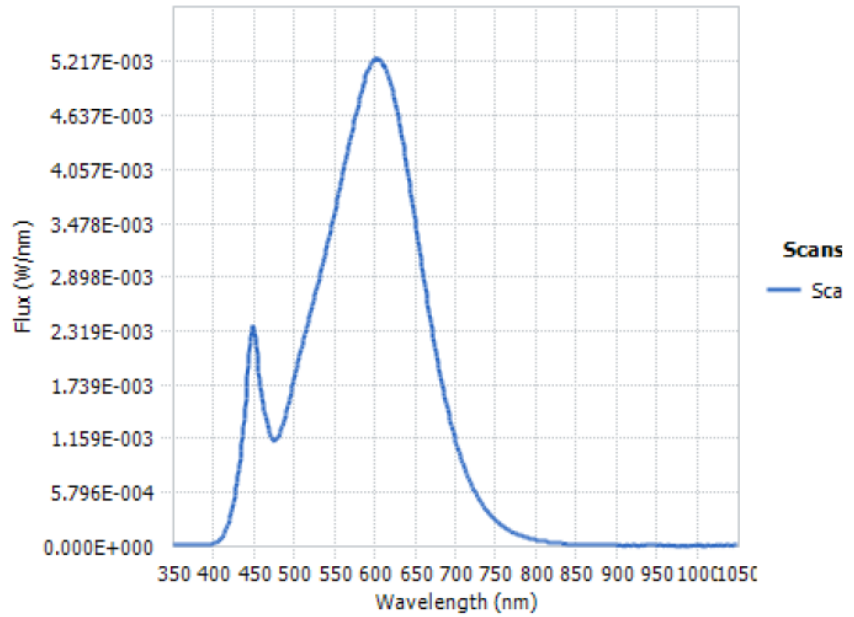
Item	Test Result	Accreditation
Input Voltage	120.0	NVLAP/EPA
Input Current	0.0795	NVLAP/EPA
Power Factor	0.7308	NVLAP/EPA
Input Power	6.971	NVLAP/EPA
Lumen Output (Lumens)	276.18	NVLAP/EPA
Luminous Efficacy (lm/w)	39.62	NVLAP/EPA
Maximum Luminous Intensity (cd)	1104	NVLAP/EPA
Beam Angle ( ° )	22.6	NVLAP/EPA
Correlated Color Temperature (CCT)	3062.8	NVLAP/EPA
x	0.4350	NVLAP/EPA
y	0.4081	NVLAP/EPA
u'	0.2477	NVLAP/EPA
v'	0.5227	NVLAP/EPA
Duv	0.018	NVLAP/EPA
Color Rendering Index- CRI	82.7	NVLAP/EPA
R9	13.5	NVLAP/EPA

## 5 – Spectral Flux Plots

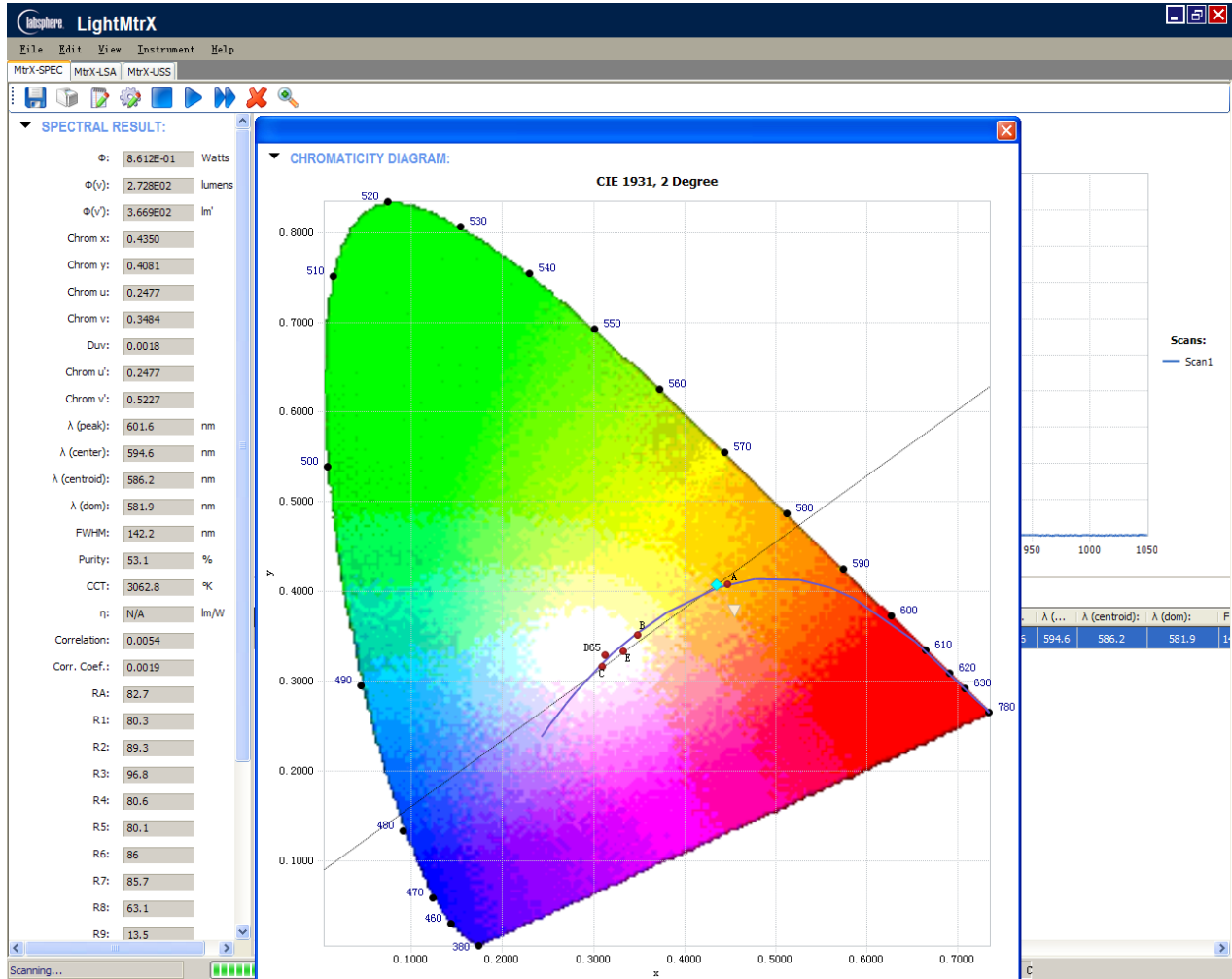
Spectral Results

Name	Value	Unit
Φ	8.612E-01	Watts
Φ(v)	2.728E02	lumens
Φ(v')	3.669E02	lm'
Chrom x	0.4350	
Chrom y	0.4081	
Chrom u	0.2477	
Chrom v	0.3484	
Duv	0.0018	
Chrom u'	0.2477	
Chrom v'	0.5227	
λ (peak)	601.6	nm
λ (center)	594.6	nm
λ (centroid)	586.2	nm
λ (dom)	581.9	nm
FWHM	142.2	nm
Purity	53.1	%
CCT	3062.8	°K
η	N/A	lm/W
Correlation	0.0054	
Corr. Coef.	0.0019	
RA	82.7	
R1	80.3	
R2	89.3	
R3	96.8	
R4	80.6	
R5	80.1	
R6	86	
R7	85.7	
R8	63.1	
R9	13.5	
R10	75.1	
R11	78.4	
R12	70.4	
R13	82.1	
R14	98.1	

Spectral Flux Graph







## 6 – Spectral Energy Distribution

### Derived Data:

Parameter	Scan 1:
Date/Time	2011-8-29 11:23
Radiant Flux (Watts)	8.61E-01
Luminous Flux (lumens)	2.73E+02
Scotopic Luminous Flux (lm')	3.67E+02
Chromaticity x coord	0.435
Chromaticity y coord	0.4081
Chromaticity u coord	0.2477
Chromaticity v coord	0.3484
Delta uv	0.0018
Chromaticity u' coord	0.2477
Chromaticity v' coord	0.5227
Peak Wavelength (nm)	601.6
Center Wavelength (nm)	594.6
Centroid Wavelength (nm)	586.2
Dominant Wavelength (nm)	581.9
Full Width Half Max Bandwidth (nm)	142.2
Excitation Purity (%)	53.1
Correlated Color Temperature (deg. K)	3062.8
Luminous Efficacy (lm/W)	N/A
SDCM	N/A
Correlation	0.0054
Correlation Coefficient	0.0019
Color Rendering Index Average (RA)	82.7
Color Rendering Index (R1)	80.3
Color Rendering Index (R2)	89.3
Color Rendering Index (R3)	96.8
Color Rendering Index (R4)	80.6
Color Rendering Index (R5)	80.1
Color Rendering Index (R6)	86
Color Rendering Index (R7)	85.7
Color Rendering Index (R8)	63.1
Color Rendering Index (R9)	13.5
Color Rendering Index (R10)	75.1
Color Rendering Index (R11)	78.4
Color Rendering Index (R12)	70.4
Color Rendering Index (R13)	82.1
Color Rendering Index (R14)	98.1
Measured DUT Current (A)	0
Measured DUT Voltage (V)	0

## Spectral Data:

Wavelength (nm):	Scan1:
350	2.44E-05
351	2.23E-05
352	1.67E-05
353	2.03E-05
354	1.86E-05
355	1.82E-05
356	1.82E-05
357	1.90E-05
358	1.83E-05
359	1.47E-05
360	1.75E-05
361	1.65E-05
362	1.57E-05
363	1.57E-05
364	1.75E-05
365	1.73E-05
366	1.57E-05
367	1.49E-05
368	1.61E-05
369	1.61E-05
370	1.79E-05
371	1.59E-05
372	1.69E-05
373	1.57E-05
374	1.52E-05
375	1.62E-05
376	1.41E-05
377	1.46E-05
378	1.34E-05
379	1.50E-05
380	1.40E-05
381	1.46E-05
382	1.49E-05
383	1.40E-05
384	1.61E-05
385	1.51E-05
386	1.69E-05
387	1.55E-05
388	1.56E-05
389	1.59E-05
390	1.50E-05
391	1.78E-05
392	1.66E-05
393	1.76E-05
394	1.75E-05
395	1.94E-05

396	2.08E-05
397	1.98E-05
398	2.49E-05
399	2.52E-05
400	2.91E-05
401	3.07E-05
402	3.28E-05
403	3.84E-05
404	4.46E-05
405	4.95E-05
406	5.43E-05
407	6.25E-05
408	7.10E-05
409	8.04E-05
410	9.23E-05
411	0.000102468
412	0.00011636
413	0.000135533
414	0.000152931
415	0.000170664
416	0.000192269
417	0.000215233
418	0.000241614
419	0.000269929
420	0.000299516
421	0.000331644
422	0.000365622
423	0.000406678
424	0.00045081
425	0.000488034
426	0.000536325
427	0.00058599
428	0.000640156
429	0.000687078
430	0.000755761
431	0.000815103
432	0.000883704
433	0.00094678
434	0.001025631
435	0.001097288
436	0.001192502
437	0.001285766
438	0.001375962
439	0.001487801
440	0.001598449
441	0.001714773
442	0.001841661
443	0.001960586

444	0.002076748
445	0.00218677
446	0.00225639
447	0.002325201
448	0.002362664
449	0.002372227
450	0.002347479
451	0.002296948
452	0.002242273
453	0.00215382
454	0.002064463
455	0.001956337
456	0.001876839
457	0.001791884
458	0.00171186
459	0.001648414
460	0.00158346
461	0.001533459
462	0.00150194
463	0.001450269
464	0.001422789
465	0.001378498
466	0.001348692
467	0.001317608
468	0.0012746
469	0.001238809
470	0.001209931
471	0.001193741
472	0.00116826
473	0.001149323
474	0.001138939
475	0.00113242
476	0.001136858
477	0.001137512
478	0.001148354
479	0.001160013
480	0.001167743
481	0.001193417
482	0.001207664
483	0.001230243
484	0.001260495
485	0.001287263
486	0.001301416
487	0.001327698
488	0.001370702
489	0.001399412
490	0.001430409
491	0.00147522

492	0.001504617
493	0.001534239
494	0.001575274
495	0.001618499
496	0.001651715
497	0.001688746
498	0.001731818
499	0.001773003
500	0.001810072
501	0.001850561
502	0.001884786
503	0.001918258
504	0.001963666
505	0.001991594
506	0.002034835
507	0.002070681
508	0.002109144
509	0.002138434
510	0.002163675
511	0.002211554
512	0.002241523
513	0.002285277
514	0.002299889
515	0.002334818
516	0.002376471
517	0.002397699
518	0.002434657
519	0.002478205
520	0.002497164
521	0.002537388
522	0.002572056
523	0.002610668
524	0.00263857
525	0.002675867
526	0.002711851
527	0.002749122
528	0.00277586
529	0.002809279
530	0.002840131
531	0.002881402
532	0.002925324
533	0.002945745
534	0.002998718
535	0.003024068
536	0.003047176
537	0.003096197
538	0.003125603
539	0.003170587

540	0.003200503
541	0.003245634
542	0.003285983
543	0.003330897
544	0.003349866
545	0.003399444
546	0.003422231
547	0.00346703
548	0.003516438
549	0.00353546
550	0.003583922
551	0.003619584
552	0.003677891
553	0.003712931
554	0.003744517
555	0.00379445
556	0.003829876
557	0.003877791
558	0.003925922
559	0.003963854
560	0.003999264
561	0.004038703
562	0.004085559
563	0.004131391
564	0.004161329
565	0.004206003
566	0.004233233
567	0.004262907
568	0.004315266
569	0.004360633
570	0.004407704
571	0.004440331
572	0.00446318
573	0.004513303
574	0.004543312
575	0.00459158
576	0.004612283
577	0.004661754
578	0.004688726
579	0.004730427
580	0.004760665
581	0.004806636
582	0.004838987
583	0.004864445
584	0.00490599
585	0.004931423
586	0.004984773
587	0.004992207

588	0.00502949
589	0.005077832
590	0.005083362
591	0.005115968
592	0.00512094
593	0.005153549
594	0.005163223
595	0.005189673
596	0.005206875
597	0.00521449
598	0.005218449
599	0.005244927
600	0.005247576
601	0.005237797
602	0.005264872
603	0.00524025
604	0.005232514
605	0.005247509
606	0.00523956
607	0.005218569
608	0.005225759
609	0.005207405
610	0.005200034
611	0.005172726
612	0.005176195
613	0.005145307
614	0.005129996
615	0.005098752
616	0.005088528
617	0.005068203
618	0.005047764
619	0.005011793
620	0.004984364
621	0.004945624
622	0.004930958
623	0.004891906
624	0.004834103
625	0.004809963
626	0.004763629
627	0.004715026
628	0.004681976
629	0.004638075
630	0.004583078
631	0.004549525
632	0.004492934
633	0.004443456
634	0.004397684
635	0.004349947



636	0.004310686
637	0.004232953
638	0.004190258
639	0.004135542
640	0.004080286
641	0.004023918
642	0.00397896
643	0.003913612
644	0.003854237
645	0.003801411
646	0.003748514
647	0.003687411
648	0.003637906
649	0.00357861
650	0.003532417
651	0.003467071
652	0.003409901
653	0.003345127
654	0.003287492
655	0.003234441
656	0.003167306
657	0.003110504
658	0.003061775
659	0.003000964
660	0.002941158
661	0.002887849
662	0.002830654
663	0.00277208
664	0.002721586
665	0.002665922
666	0.002609309
667	0.00254723
668	0.002500103
669	0.002439981
670	0.00239246
671	0.002339568
672	0.002297157
673	0.002235319
674	0.002192179
675	0.002139815
676	0.002093992
677	0.002043087
678	0.001993278
679	0.001956602
680	0.001908973
681	0.00186037
682	0.001821402
683	0.001778991

684	0.001731074
685	0.001692715
686	0.001655082
687	0.001613663
688	0.00157546
689	0.001535784
690	0.001500503
691	0.001465246
692	0.001424876
693	0.001385084
694	0.001350119
695	0.001313894
696	0.001277946
697	0.001248977
698	0.001221756
699	0.001185188
700	0.001153826
701	0.001115308
702	0.00108815
703	0.001063483
704	0.001033705
705	0.001004842
706	0.000980635
707	0.000955174
708	0.000923766
709	0.000902108
710	0.000875398
711	0.000854621
712	0.000827279
713	0.000802218
714	0.00078204
715	0.000758698
716	0.000735384
717	0.00072009
718	0.000702321
719	0.000684322
720	0.000662458
721	0.000645817
722	0.00062356
723	0.000609934
724	0.000593871
725	0.000577206
726	0.000558804
727	0.000544459
728	0.000529459
729	0.00051185
730	0.00049848
731	0.000484006

732	0.000478041
733	0.000458295
734	0.00044513
735	0.000431964
736	0.000418298
737	0.000408329
738	0.000398387
739	0.000388578
740	0.000374727
741	0.000365843
742	0.000352973
743	0.000343956
744	0.000332532
745	0.000323538
746	0.00031469
747	0.00030613
748	0.000297929
749	0.000288618
750	0.000280544
751	0.000270941
752	0.000265994
753	0.000255925
754	0.00025119
755	0.00024154
756	0.000235995
757	0.000226587
758	0.000222614
759	0.00021639
760	0.000210948
761	0.000204204
762	0.000198878
763	0.000191539
764	0.00018527
765	0.000181129
766	0.000175845
767	0.000169463
768	0.000166401
769	0.000161356
770	0.000156079
771	0.000150777
772	0.000145874
773	0.000144172
774	0.000141147
775	0.000134721
776	0.000130924
777	0.000127972
778	0.000124868
779	0.000121368

780	0.000117821
781	0.000115135
782	0.00011168
783	0.000106947
784	0.000105715
785	0.000100974
786	9.97E-05
787	9.86E-05
788	9.36E-05
789	9.26E-05
790	8.72E-05
791	8.70E-05
792	8.37E-05
793	8.17E-05
794	7.85E-05
795	7.72E-05
796	7.21E-05
797	7.26E-05
798	6.98E-05
799	6.85E-05
800	6.63E-05
801	6.47E-05
802	6.25E-05
803	6.07E-05
804	5.95E-05
805	5.84E-05
806	5.62E-05
807	5.49E-05
808	5.46E-05
809	5.29E-05
810	5.09E-05
811	5.09E-05
812	4.81E-05
813	4.74E-05
814	4.55E-05
815	4.42E-05
816	4.26E-05
817	4.19E-05
818	4.06E-05
819	4.00E-05
820	3.95E-05
821	3.80E-05
822	3.68E-05
823	3.70E-05
824	3.60E-05
825	3.49E-05
826	3.23E-05
827	3.20E-05

828	3.16E-05
829	3.19E-05
830	3.10E-05
831	2.92E-05
832	2.67E-05
833	2.88E-05
834	2.74E-05
835	2.51E-05
836	2.55E-05
837	2.53E-05
838	2.48E-05
839	2.32E-05
840	2.31E-05
841	2.33E-05
842	2.21E-05
843	2.13E-05
844	2.08E-05
845	2.14E-05
846	1.97E-05
847	1.99E-05
848	1.94E-05
849	1.91E-05
850	1.79E-05
851	1.83E-05
852	1.81E-05
853	1.67E-05
854	1.80E-05
855	1.70E-05
856	1.59E-05
857	1.57E-05
858	1.48E-05
859	1.41E-05
860	1.43E-05
861	1.34E-05
862	1.32E-05
863	1.33E-05
864	1.20E-05
865	1.29E-05
866	1.17E-05
867	1.37E-05
868	1.25E-05
869	1.21E-05
870	1.14E-05
871	1.19E-05
872	1.16E-05
873	1.16E-05
874	1.06E-05
875	1.07E-05

876	1.10E-05
877	8.90E-06
878	1.02E-05
879	9.27E-06
880	8.57E-06
881	1.09E-05
882	9.17E-06
883	9.28E-06
884	7.05E-06
885	8.52E-06
886	8.53E-06
887	1.04E-05
888	7.46E-06
889	7.35E-06
890	8.57E-06
891	7.94E-06
892	8.64E-06
893	7.01E-06
894	8.42E-06
895	6.95E-06
896	7.86E-06
897	7.13E-06
898	7.62E-06
899	8.04E-06
900	7.74E-06
901	6.88E-06
902	4.97E-06
903	6.40E-06
904	5.31E-06
905	5.99E-06
906	5.12E-06
907	6.61E-06
908	6.07E-06
909	5.08E-06
910	7.64E-06
911	5.05E-06
912	5.00E-06
913	5.68E-06
914	6.72E-06
915	3.97E-06
916	5.97E-06
917	5.19E-06
918	5.10E-06
919	5.40E-06
920	6.42E-06
921	5.88E-06
922	5.31E-06
923	5.79E-06

924	3.32E-06
925	6.64E-06
926	4.40E-06
927	5.11E-06
928	4.10E-06
929	5.95E-06
930	3.10E-06
931	5.48E-06
932	6.04E-06
933	6.82E-06
934	9.15E-06
935	2.90E-06
936	1.33E-05
937	8.37E-06
938	9.99E-06
939	7.19E-06
940	6.04E-06
941	1.03E-05
942	7.37E-06
943	1.31E-05
944	9.69E-06
945	1.77E-05
946	1.18E-05
947	1.17E-05
948	7.45E-06
949	1.31E-05
950	7.37E-06
951	4.08E-06
952	9.78E-06
953	7.70E-06
954	6.30E-06
955	7.60E-06
956	6.23E-06
957	-7.79E-07
958	6.81E-06
959	3.27E-06
960	1.13E-05
961	0
962	4.17E-06
963	6.93E-06
964	7.93E-06
965	5.80E-06
966	8.84E-07
967	7.04E-06
968	2.15E-06
969	8.36E-06
970	3.11E-06
971	6.86E-06

972	4.94E-06
973	6.73E-06
974	2.18E-06
975	4.31E-06
976	4.79E-06
977	1.40E-06
978	3.12E-06
979	4.24E-06
980	6.14E-06
981	1.71E-06
982	3.27E-06
983	4.04E-06
984	6.75E-06
985	2.47E-06
986	4.46E-06
987	5.58E-06
988	4.15E-06
989	4.81E-06
990	1.17E-06
991	4.91E-06
992	8.47E-07
993	6.49E-06
994	3.05E-06
995	7.06E-06
996	4.79E-06
997	3.02E-06
998	7.41E-06
999	7.46E-06
1000	5.18E-06
1001	6.42E-07
1002	6.46E-06
1003	3.38E-06
1004	1.05E-05
1005	6.69E-06
1006	2.80E-07
1007	3.92E-06
1008	6.29E-06
1009	2.13E-06
1010	4.46E-06
1011	2.85E-06
1012	1.08E-06
1013	9.28E-06
1014	7.19E-06
1015	8.82E-06
1016	-2.07E-06
1017	9.31E-06
1018	6.08E-06
1019	2.75E-06



1020	5.87E-06
1021	4.54E-07
1022	6.23E-06
1023	8.75E-06
1024	-8.25E-07
1025	1.48E-05
1026	7.97E-06
1027	8.67E-06
1028	3.40E-06
1029	6.39E-07
1030	1.35E-05
1031	1.18E-05
1032	1.51E-05
1033	3.06E-06
1034	6.54E-06
1035	-4.96E-06
1036	6.30E-06
1037	1.40E-05
1038	7.38E-06
1039	1.30E-05
1040	1.13E-05
1041	9.68E-06
1042	2.35E-06
1043	2.09E-05
1044	4.44E-06
1045	2.04E-05
1046	8.54E-06
1047	9.08E-06
1048	1.14E-05
1049	1.49E-05
1050	1.11E-05



## 7 – EUT Photos



## 8 – Luminous Intensity Distribution Test Plots

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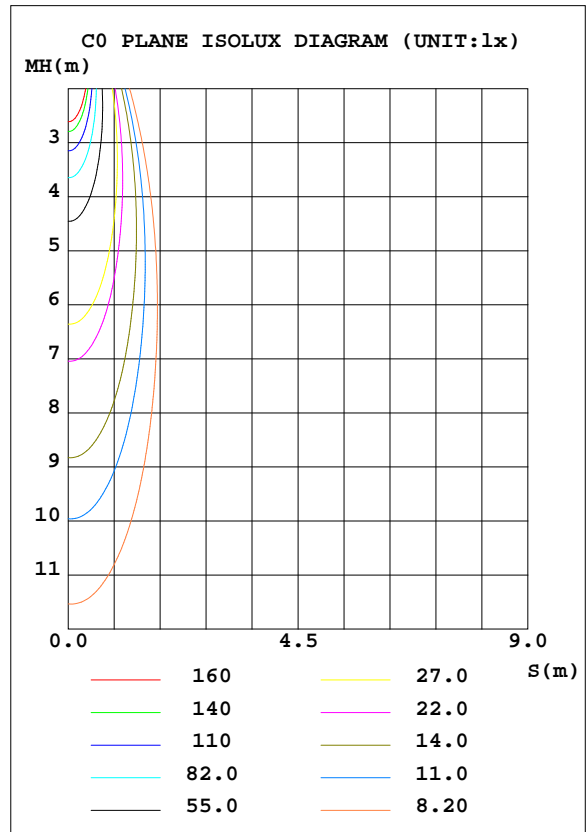
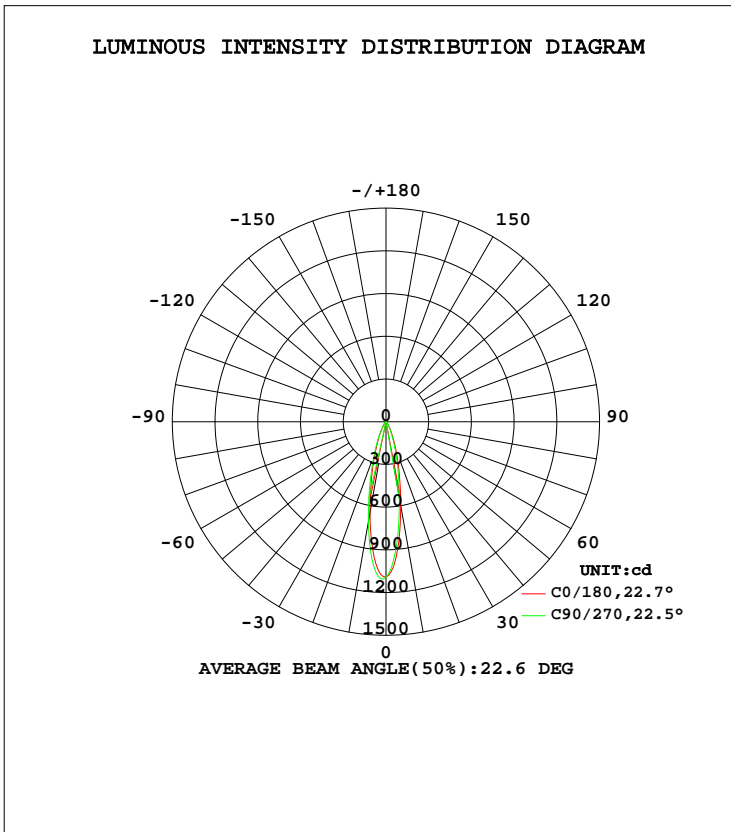
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LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:120.0V I:0.0795A P:6.971W PF:0.7308 Lamp Flux:276.18x1 lm		
NAME:	TYPE:Indoor	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Philips	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 39.62 lm/W			
MODEL	7E26PAR20D-1	I <sub>max</sub> (cd)	1104	S/MH(C0/180)	0.40
NOMINAL POWER(W)	7	LOR(%)	100.0	S/MH(C90/270)	0.43
RATED VOLTAGE(V)	120	TOTAL FLUX(lm)	276.18	η UP, DN(C0-180)	0.0, 53.8
NOMINAL FLUX(lm)	276.18	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0, 46.2
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.00
TEST VOLTAGE(V)	120.0	η down(%)	100.0	CIBSE SHR MAX	1.00



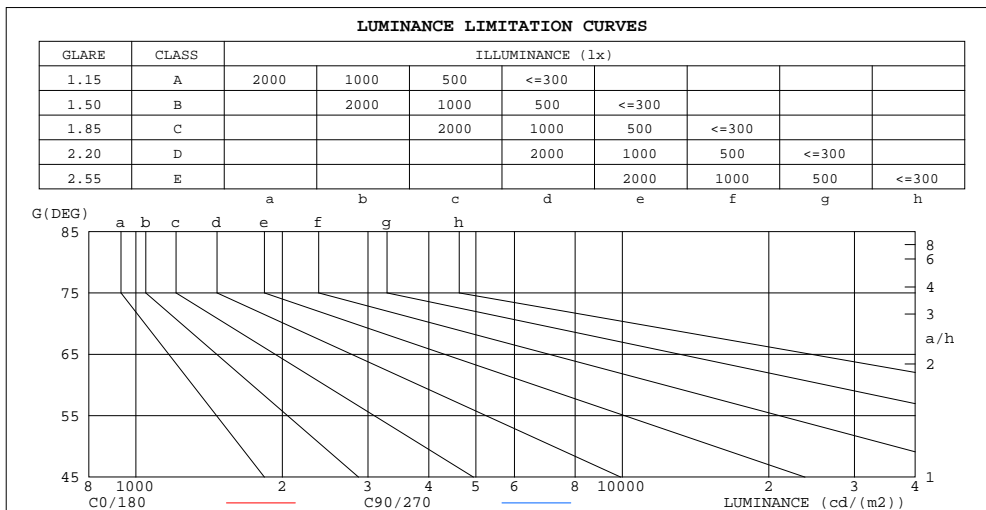
C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature:25.2DEG  
 Operators:Katrina  
 Test Date:2011-08-29

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:49.3%  
 Test Distance:2.441m [K=1.0000]  
 Remarks:

**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	649.6	705.9	712.3	650.2	598.5	554.5	544.6	592.2	0- 10	79.04	79.04	28.6,28.6
20	212.2	229.0	239.0	208.9	195.9	182.2	169.7	193.8	10- 20	102.6	181.6	65.8,65.8
30	59.05	64.14	68.12	58.56	54.27	50.63	47.69	54.68	20- 30	51.47	233.1	84.4,84.4
40	19.91	21.70	22.23	20.31	19.03	17.85	17.31	18.95	30- 40	21.04	254.1	92,92
50	8.874	9.325	9.783	8.977	8.576	8.264	7.882	8.566	40- 50	10.14	264.3	95.7,95.7
60	4.926	5.083	5.469	4.929	4.845	4.750	4.395	4.850	50- 60	5.849	270.1	97.8,97.8
70	2.829	2.943	3.305	2.846	2.767	2.668	2.404	2.737	60- 70	3.766	273.9	99.2,99.2
80	0.9535	1.122	1.348	1.021	0.8687	0.7949	0.5479	0.8615	70- 80	1.968	275.9	99.9,99.9
90	0	0	0	0	0	0	0	0	80- 90	0.3051	276.2	100,100
100	0	0	0	0	0	0	0	0	90-100	0	276.2	100,100
110	0	0	0	0	0	0	0	0	100-110	0	276.2	100,100
120	0	0	0	0	0	0	0	0	110-120	0	276.2	100,100
130	0	0	0	0	0	0	0	0	120-130	0	276.2	100,100
140	0	0	0	0	0	0	0	0	130-140	0	276.2	100,100
150	0	0	0	0	0	0	0	0	140-150	0.0000	276.2	100,100
160	0	0	0	0.0004	0.0011	0	0.0016	0	150-160	0.0001	276.2	100,100
170	0.0002	0.0004	0.0002	0.0002	0.0033	0.0033	0.0040	0.0040	160-170	0.0002	276.2	100,100
180	0	0	0	0	0	0	0	0	170-180	0.0002	276.2	100,100
<b>DEG</b>	<b>LUMINOUS INTENSITY:cd</b>									<b>UNIT:lm</b>		



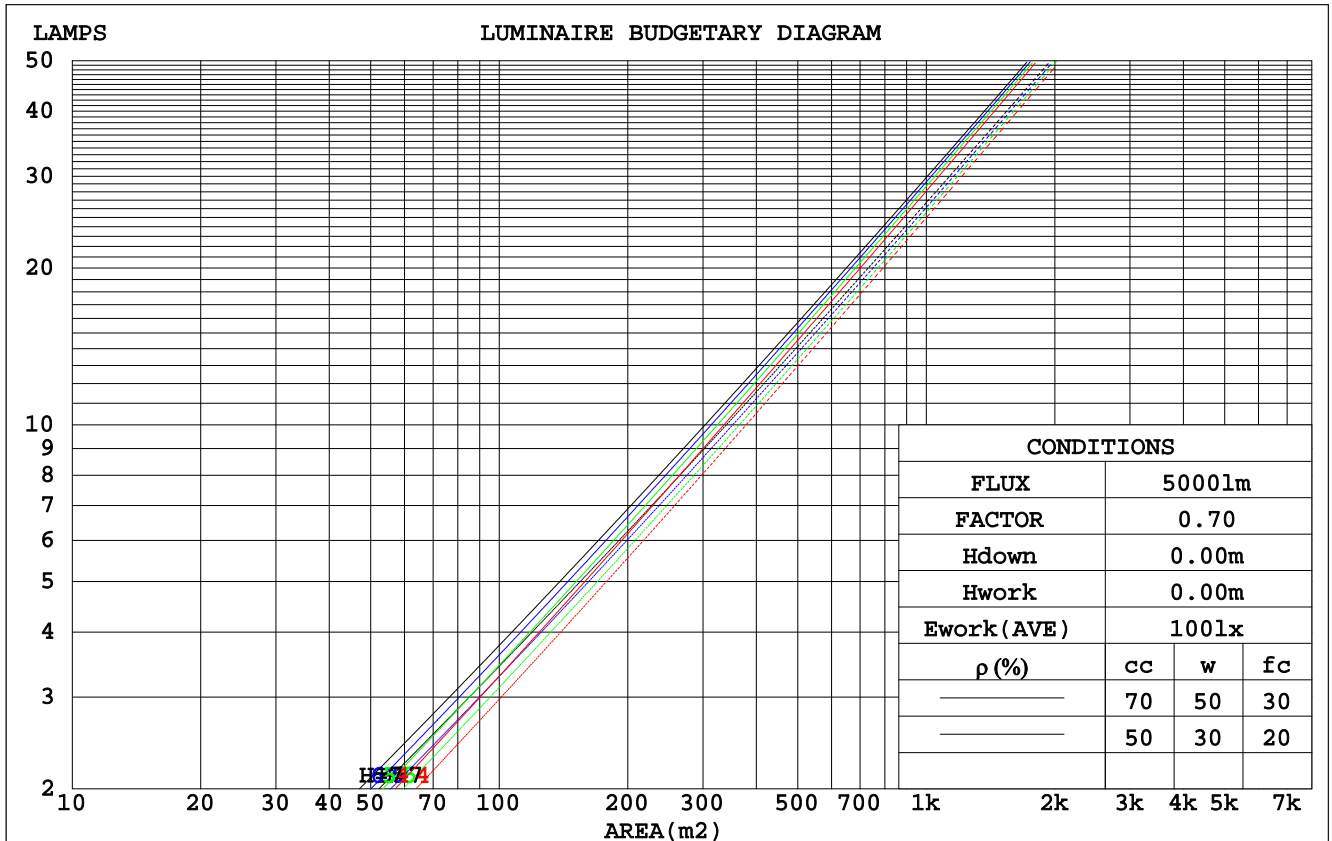
LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	18	60
80	55	78
75	72	88
70	83	97
65	90	102
60	99	109
55	112	124
50	138	152
45	184	203

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature:25.2DEG  
 Operators:Katrina  
 Test Date:2011-08-29

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:49.3%  
 Test Distance:2.441m [K=1.0000]  
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

$\rho_{cc}$	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
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	1.12	1.09	1.07	1.10	1.08	1.06	1.06	1.04	1.03	1.02	1.01	.99	.98	.98	.97	.95
2.0	1.05	1.02	.99	1.04	1.00	.98	1.00	.98	.96	.97	.95	.93	.95	.93	.92	.90
3.0	.90	.95	.92	.98	.94	.91	.96	.92	.90	.93	.91	.88	.91	.89	.87	.86
4.0	.95	.90	.86	.94	.89	.86	.92	.88	.85	.90	.86	.84	.88	.85	.83	.82
5.0	.90	.85	.82	.89	.85	.81	.88	.84	.81	.86	.83	.80	.85	.82	.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	.74	.81	.77	.74	.80	.76	.74	.79	.76	.73	.72
8.0	.80	.75	.72	.79	.75	.71	.78	.74	.71	.77	.74	.71	.76	.73	.71	.69
9.0	.77	.72	.69	.76	.72	.69	.76	.71	.69	.75	.71	.68	.74	.71	.68	.67
10.0	.74	.70	.66	.74	.69	.66	.73	.69	.66	.72	.69	.66	.72	.68	.66	.65



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature: 25.2DEG  
 Operators: Katrina  
 Test Date: 2011-08-29

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity: 49.3%  
 Test Distance: 2.441m [K=1.0000]  
 Remarks:

WEC AND CCEC

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 Coefficients(WEC)									
0.0																
1.0	.160	.091	.029	.153	.087	.028	.141	.081	.026	.129	.074	.024	.118	.069	.022	
2.0	.150	.082	.025	.144	.080	.024	.134	.074	.023	.124	.070	.022	.115	.065	.021	
3.0	.140	.075	.022	.136	.073	.022	.127	.069	.021	.119	.065	.020	.111	.062	.019	
4.0	.132	.068	.020	.128	.067	.020	.120	.064	.019	.113	.061	.018	.107	.058	.018	
5.0	.124	.063	.018	.121	.062	.018	.114	.059	.018	.108	.057	.017	.103	.055	.016	
6.0	.117	.059	.017	.114	.058	.017	.109	.056	.016	.103	.054	.016	.099	.052	.015	
7.0	.111	.055	.016	.108	.054	.015	.104	.052	.015	.099	.051	.015	.095	.049	.014	
8.0	.106	.052	.015	.103	.051	.014	.099	.049	.014	.095	.048	.014	.091	.047	.014	
9.0	.101	.049	.014	.099	.048	.013	.095	.047	.013	.091	.046	.013	.088	.045	.013	
10.0	.096	.046	.013	.094	.046	.013	.091	.045	.013	.088	.044	.012	.085	.043	.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	.145	.135	.126	.099	.093	.087	.057	.054	.051	.018	.017	.016	
2.0	.153	.133	.115	.131	.114	.100	.090	.079	.069	.052	.046	.041	.017	.015	.013	
3.0	.140	.113	.093	.120	.098	.080	.082	.068	.056	.047	.040	.033	.015	.013	.011	
4.0	.128	.098	.076	.110	.085	.066	.075	.059	.046	.044	.035	.027	.014	.011	.009	
5.0	.118	.086	.063	.101	.075	.055	.070	.052	.039	.040	.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	.083	.054	.034	.057	.038	.024	.033	.022	.014	.011	.007	.005	
9.0	.090	.057	.034	.078	.049	.030	.054	.035	.021	.031	.020	.013	.010	.007	.004	
10.0	.085	.052	.030	.074	.045	.026	.051	.032	.018	.030	.019	.011	.010	.006	.004	

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature:25.2DEG  
 Operators:Katrina  
 Test Date:2011-08-29

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:49.3%  
 Test Distance:2.441m [K=1.0000]  
 Remarks:

Uncorrected UGR Table

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	0.3	1.1	0.5	1.2	1.4	0.8	1.6	1.0	1.7	1.9
3H	0.9	1.6	1.2	1.8	2.0	1.5	2.2	1.7	2.4	2.6
4H	1.2	1.9	1.5	2.1	2.3	1.8	2.5	2.1	2.7	2.9
6H	1.4	2.0	1.6	2.2	2.5	2.1	2.7	2.3	2.9	3.2
8H	1.4	2.0	1.7	2.2	2.5	2.1	2.8	2.4	3.0	3.3
12H	1.3	1.9	1.7	2.2	2.5	2.2	2.8	2.5	3.0	3.3
4H 2H	0.5	1.2	0.8	1.4	1.6	0.9	1.6	1.2	1.9	2.1
3H	1.3	1.9	1.7	2.2	2.5	1.8	2.5	2.2	2.7	3.0
4H	1.7	2.3	2.1	2.6	2.9	2.3	2.8	2.6	3.1	3.4
6H	2.0	2.5	2.3	2.8	3.1	2.6	3.1	3.0	3.5	3.8
8H	2.0	2.5	2.4	2.8	3.2	2.7	3.2	3.1	3.5	3.9
12H	2.0	2.4	2.4	2.8	3.1	2.8	3.2	3.2	3.6	4.0
8H 4H	1.9	2.3	2.3	2.7	3.0	2.4	2.8	2.8	3.2	3.6
6H	2.2	2.6	2.6	3.0	3.4	2.8	3.2	3.2	3.6	4.0
8H	2.2	2.6	2.7	3.0	3.4	3.0	3.3	3.4	3.7	4.1
12H	2.2	2.5	2.7	2.9	3.4	3.0	3.3	3.5	3.8	4.2
12H 4H	1.8	2.3	2.3	2.6	3.0	2.4	2.8	2.8	3.1	3.5
6H	2.2	2.5	2.6	2.9	3.4	2.8	3.1	3.2	3.5	4.0
8H	2.2	2.5	2.7	3.0	3.4	3.0	3.2	3.4	3.7	4.2
Variations with the observer position at spacings:										
S = 1.0H	+ 0.7 / - 0.9					+ 0.7 / - 0.9				
1.5H	+ 1.2 / - 0.8					+ 1.4 / - 0.7				
2.0H	+ 1.2 / - 0.7					+ 1.2 / - 0.6				

CIE Pub.117 Corrected 276.2 lm Total Lamp Luminous Flux.(8log(F/F0) = -4.5)

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature:25.2DEG  
 Operators:Katrina  
 Test Date:2011-08-29

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:49.3%  
 Test Distance:2.441m [K=1.0000]  
 Remarks:



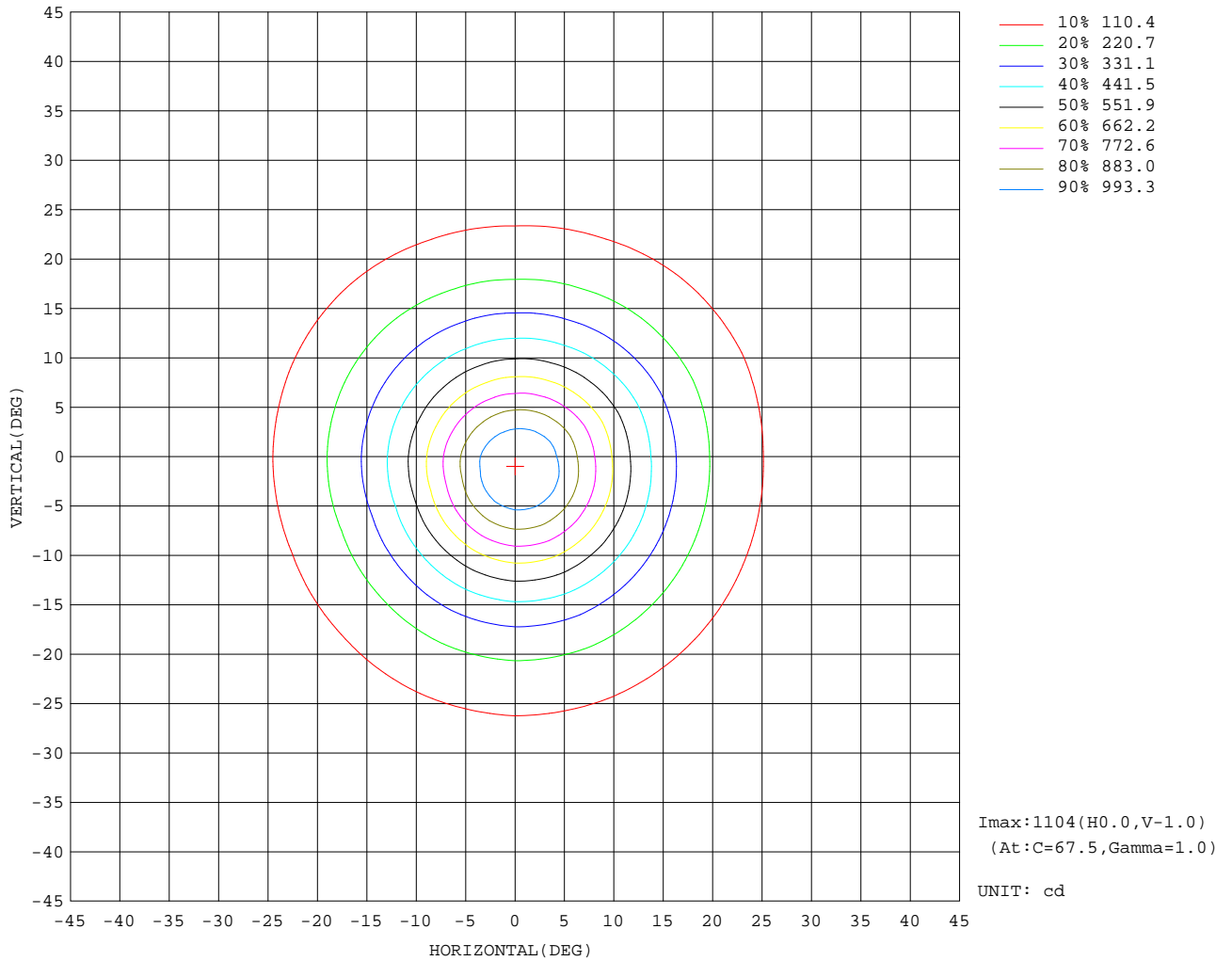
## UTILIZATION FACTORS TABLE

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) $k(RI) \times RCR = 5$									
$k = 0.60$	87	80	76	86	80	76	85	80	76	72
0.80	94	88	84	93	88	84	92	87	84	80
1.00	98	93	89	98	92	89	96	92	88	84
1.25	103	97	94	101	97	93	99	95	92	88
1.50	105	100	97	104	100	96	102	98	95	91
2.00	108	104	100	107	103	100	104	101	98	93
2.50	110	106	103	108	105	102	105	102	100	94
3.00	111	108	105	110	106	104	106	104	102	95
4.00	114	111	108	111	109	107	108	106	104	97
5.00	115	113	111	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: 25.2DEG  
 Operators: Katrina  
 Test Date: 2011-08-29

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity: 49.3%  
 Test Distance: 2.441m [K=1.0000]  
 Remarks:

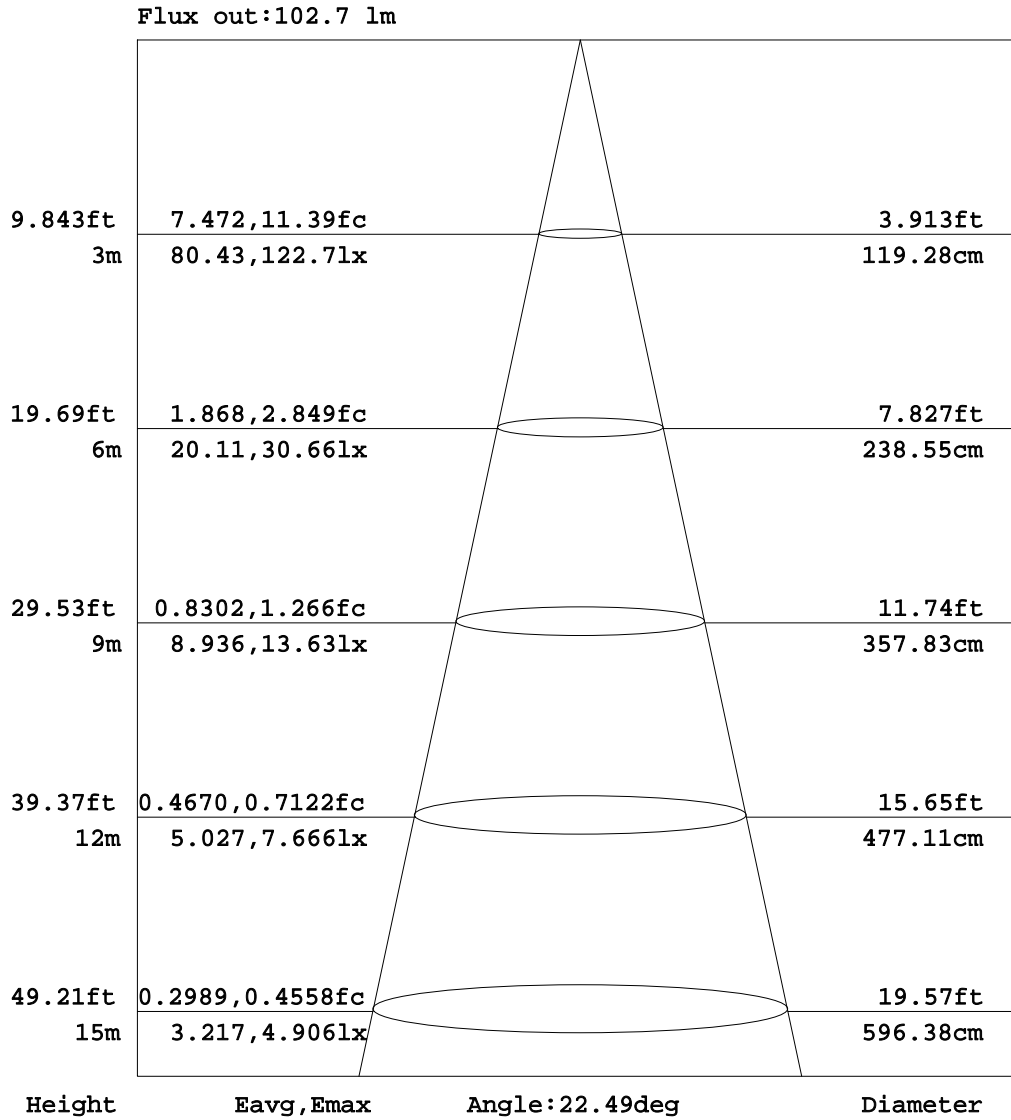
ISOCANDELA DIAGRAM



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: MEDIUM  
Temperature:25.2DEG  
Operators:Katrina  
Test Date:2011-08-29

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
Humidity:49.3%  
Test Distance:2.441m [K=1.0000]  
Remarks:

AAI Figure

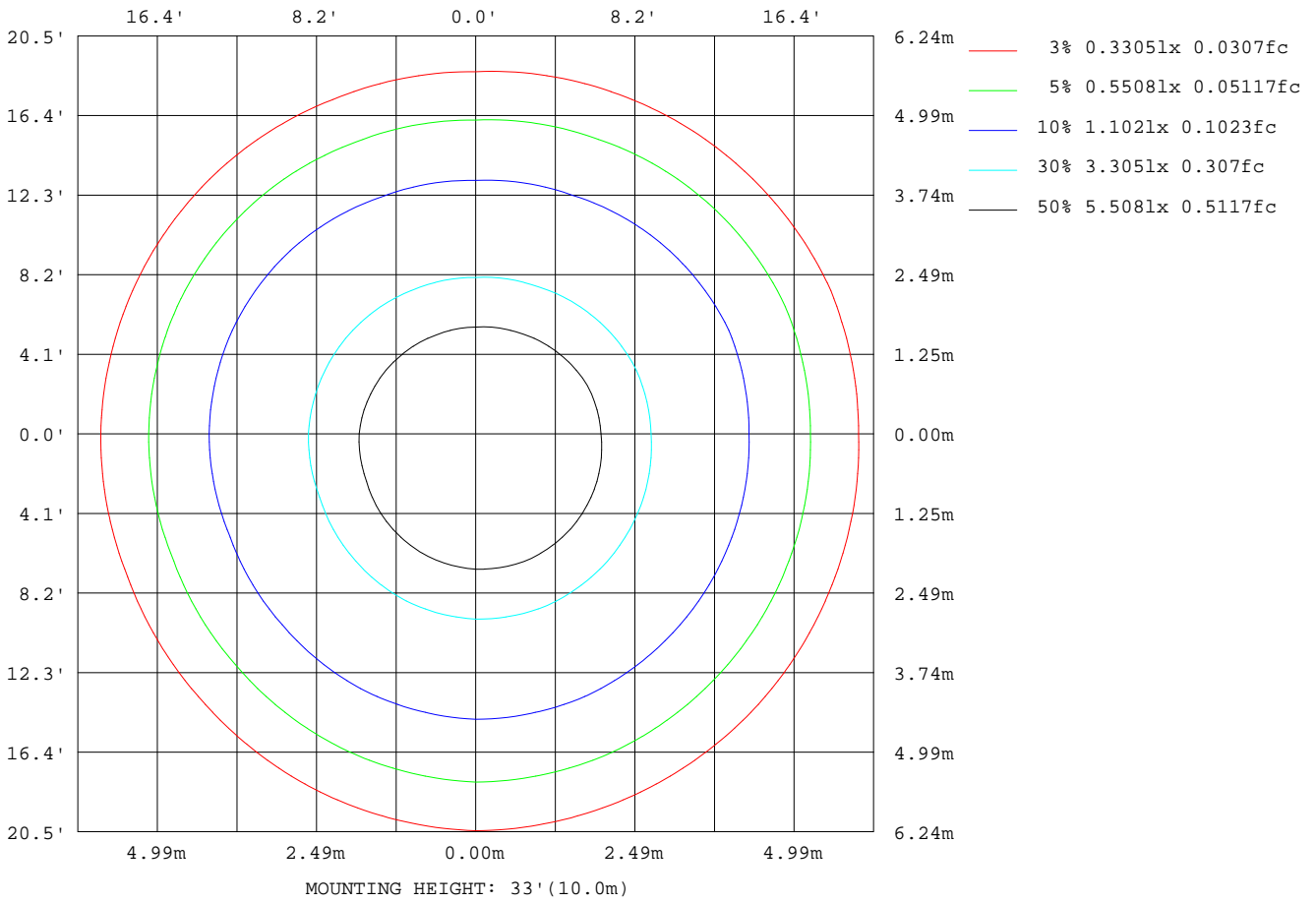


Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature:25.2DEG  
 Operators:Katrina  
 Test Date:2011-08-29

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:49.3%  
 Test Distance:2.441m [K=1.0000]  
 Remarks:

ISOLUX DIAGRAM



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: MEDIUM  
Temperature: 25.2DEG  
Operators: Katrina  
Test Date: 2011-08-29

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
Humidity: 49.3%  
Test Distance: 2.441m [K=1.0000]  
Remarks:

Average Luminance Table(CIBSE)

Parameter description for average Luminance	Symbol	Value	Unit
Luminance in Azimuth Plane	Bc	refer Table 2	cd/sq.m.
Intensity at angle Gamma in given azimuth plane	I	from data	cd/klm
Number of lamps	N	1	
Output of each lamp(initial lumens as specified)	F	276.18	lm
Multiplying factor	K	1	
Luminous area in horizontal plane used in calculations	A	0.1	sq.m.
Angle to the downward vertical from light centre	Gamma	from data	deg

Table 1. Calculation parameters for determination of CIBSE LG3:1996 Average Luminance

G deg	C plane(deg)																		
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
55	112	113	114	114	114	113	113	113	113	113	112	111	110	110	110	110	110	110	110
60	99	99	100	100	100	99	99	98	99	99	98	97	97	97	97	97	97	97	97
65	90	91	91	91	91	90	90	90	90	90	89	88	88	88	88	88	89	89	89
70	83	84	84	84	83	83	83	83	83	83	82	81	81	81	81	81	81	81	81
75	72	74	75	75	74	73	72	72	73	73	72	70	70	70	70	71	70	70	69
80	55	58	59	59	58	56	54	54	54	55	53	52	52	52	52	53	52	51	50
85	18	20	21	20	18	19	21	24	28	30	27	22	17	13	11	11	11	11	11

Table 2. Average Luminance(cd/sq.m.) for defined C plane,Gamma angle

CIBSE Category	Gamma (deg)	Average Luminance		Patch Luminance	
		maximum	specified	maximum	specified
		calculated	maximum	measured	maximum
Category 1	55 to 90	114	200	---	500
Category 2	65 to 90	91	200	---	500
Category 3	75 to 90	75	200	---	500

Table 3. Tabulation of Average and Patch Luminance(cd/sq.m.) for defined CIBSE categories

No match

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature:25.2DEG  
 Operators:Katrina  
 Test Date:2011-08-29

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:49.3%  
 Test Distance:2.441m [K=1.0000]  
 Remarks:

Average Luminance Table(CIBSE)

Parameter description for average Luminance	Symbol	Value	Unit
Luminance in Azimuth Plane	Bc	refer Table 2	cd/sq.m.
Intensity at angle Gamma in given azimuth plane	I	from data	cd/klm
Number of lamps	N	1	
Output of each lamp(initial lumens as specified)	F	276.18	lm
Multiplying factor	K	1	
Luminous area in horizontal plane used in calculations	A	0.1	sq.m.
Angle to the downward vertical from light centre	Gamma	from data	deg

Table 1. Calculation parameters for determination of CIBSE LG3:2001 Average Luminance

G deg	C plane(deg)																		
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
55	112	113	114	114	114	113	113	113	113	113	112	111	110	110	110	110	110	110	110
60	99	99	100	100	100	99	99	98	99	99	98	97	97	97	97	97	97	97	97
65	90	91	91	91	91	90	90	90	90	90	89	88	88	88	88	88	89	89	89
70	83	84	84	84	83	83	83	83	83	83	82	81	81	81	81	81	81	81	81
75	72	74	75	75	74	73	72	72	73	73	72	70	70	70	70	71	70	70	69
80	55	58	59	59	58	56	54	54	54	55	53	52	52	52	52	53	52	51	50
85	18	20	21	20	18	19	21	24	28	30	27	22	17	13	11	11	11	11	11

Table 2. Average Luminance(cd/sq.m.) for defined C plane,Gamma angle

range (deg)	Maximum measured	Average Luminance(cd/sq.m)			
		Maximum limit for screen type & software category used			
		Type I,II screen Some neg.s'ware	Type I,II screen Only pos.s'ware	Type III screen Some neg.s'ware	Type III screen Only pos.s'ware
55 to 90	114	1000	1500	200	500
65 to 90	91	1000	1500	200	500

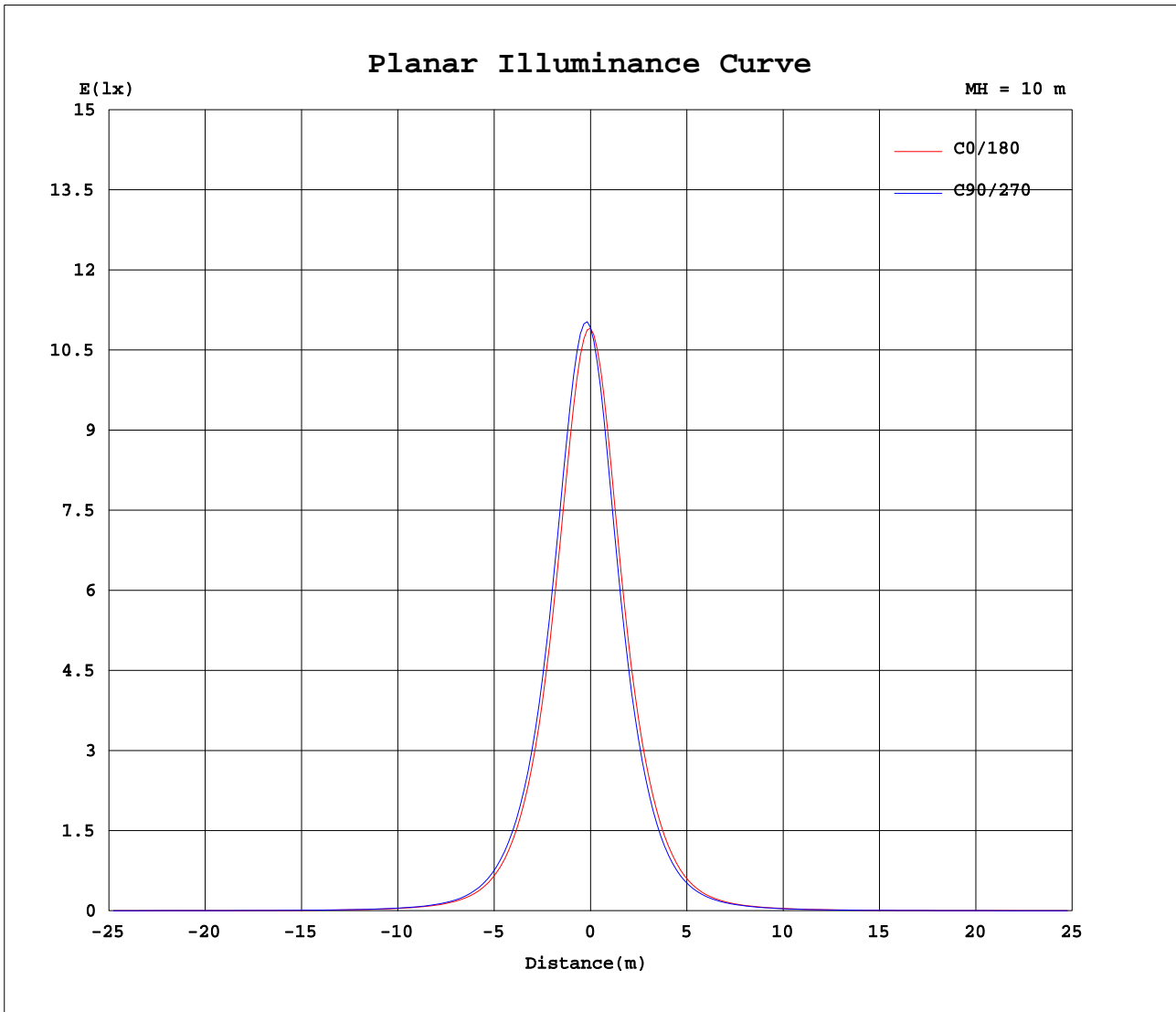
Table 3. Tabulation of average luminance(cd/sq.m.) and luminance limits

The luminaire satisfies the specified luminance criteria for Negative Software with Type I & II Screen(Good to Moderate treatment).

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature:25.2DEG  
 Operators:Katrina  
 Test Date:2011-08-29

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:49.3%  
 Test Distance:2.441m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: MEDIUM  
Temperature: 25.2DEG  
Operators: Katrina  
Test Date: 2011-08-29

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
Humidity: 49.3%  
Test Distance: 2.441m [K=1.0000]  
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Table--1

UNIT: cd

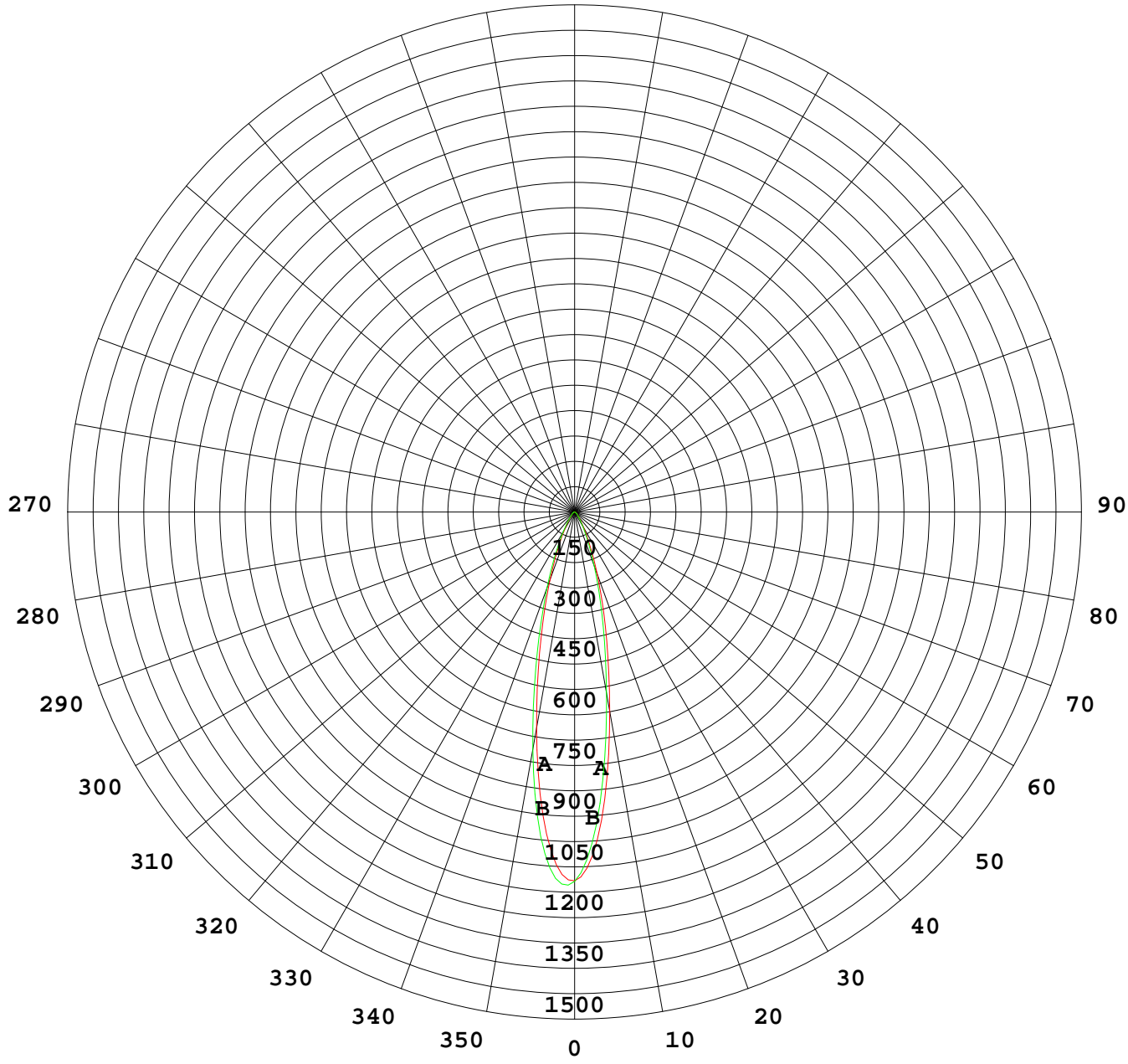
C(DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338			
0	1091	1091	1092	1092	1092	1092	1092	1090	1091	1091	1092	1092	1092	1092	1092	1090			
5	955	985	1007	1018	1014	995	966	931	915	888	870	862	864	880	905	937			
10	650	681	706	719	712	687	650	612	598	574	554	544	545	561	592	630			
15	384	403	419	430	427	408	380	356	352	339	326	316	313	325	348	373			
20	212	220	229	239	239	227	209	196	196	190	182	173	170	177	194	209			
25	112	116	121	128	129	121	110	103	103	101	95.8	90.3	88.6	93.6	103	112			
30	59.0	61.9	64.1	66.8	68.1	63.8	58.6	55.0	54.3	52.6	50.6	48.3	47.7	50.7	54.7	59.0			
35	32.8	34.2	35.6	36.5	37.3	35.4	33.1	31.2	30.8	29.8	28.8	27.9	27.7	29.4	30.8	32.8			
40	19.9	20.6	21.7	21.9	22.2	21.3	20.3	19.2	19.0	18.6	17.8	17.3	17.3	18.1	19.0	19.9			
45	13.0	13.2	13.9	14.2	14.3	13.7	13.1	12.5	12.4	12.2	11.8	11.4	11.3	11.8	12.4	12.9			
50	8.87	9.03	9.33	9.69	9.78	9.38	8.98	8.56	8.58	8.51	8.26	7.94	7.88	8.17	8.57	8.89			
55	6.45	6.53	6.71	6.97	7.11	6.84	6.49	6.24	6.32	6.34	6.14	5.86	5.80	5.98	6.32	6.55			
60	4.93	4.95	5.08	5.30	5.47	5.20	4.93	4.76	4.85	4.93	4.75	4.48	4.39	4.54	4.85	5.06			
65	3.80	3.79	3.91	4.12	4.30	4.05	3.79	3.64	3.74	3.84	3.67	3.41	3.32	3.46	3.75	3.94			
70	2.83	2.84	2.94	3.13	3.31	3.07	2.85	2.72	2.77	2.82	2.67	2.47	2.40	2.52	2.74	2.93			
75	1.87	1.96	2.06	2.16	2.27	2.11	1.96	1.85	1.79	1.80	1.67	1.52	1.51	1.57	1.75	1.91			
80	0.95	1.03	1.12	1.22	1.35	1.17	1.02	0.91	0.87	0.91	0.79	0.61	0.55	0.64	0.86	1.03			
85	0.15	0.16	0.23	0.38	0.52	0.34	0.17	0.10	0.10	0.09	0.03	0.01	0.01	0.03	0.09	0.20			
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: MEDIUM  
 Temperature: 25.2DEG  
 Operators: Katrina  
 Test Date: 2011-08-29

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity: 49.3%  
 Test Distance: 2.441m [K=1.0000]  
 Remarks:

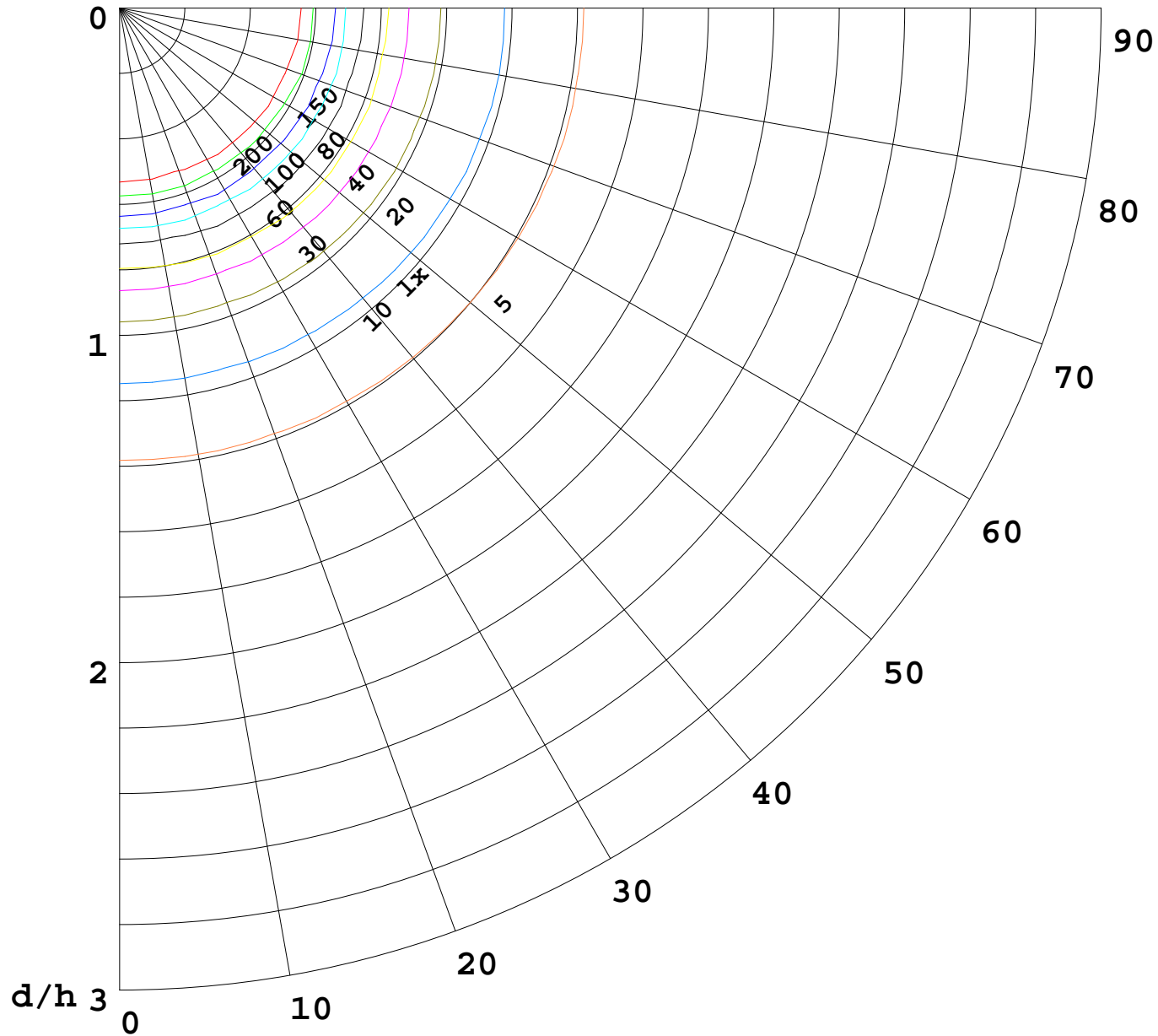


I (cd)



1000 lm

$K = 1$



**F** = 5000 lm  
**K** = 0.7  
**Hcc** = 0.0 m  
**Hfc** = 0.0 m  
**Eave** = 100 lx

	<b>Pcc</b>	<b>Pw</b>	<b>Pfc</b>
—————	70	50	30
—————	50	30	20

