



Cat# 71402
LED High Bay



Model :		71402
OVERALL LAMP PARAMETERS	Input Voltage	100-277VAC 50/60HZ
	Input Current	1.2A Max
	Input Power	104 W
	Power Factor	PF≥0.93
	Luminance	9954 LM
	Luminous Efficiency	95 LM/W
	CRI	83
	Beam Angle	120°
	Main Structure	Aluminium + Tempered Glass
LED DRIVER	Output Voltage	42 VDC
	Output Current	2.28A
	Driver Efficiency	93%
LED	LED Manufacturer	COB
	LED Type	CREE 2520
	LED Quantity	3 PCS
	LED Efficacy	120 LM/W
	Color Temperature	WW/NW/CW (4863K)
Photocell	-	Sold Separately
LIFESPAN & ENVIRONMENT	Lifespan	50000 Hrs.
	Warranty	5 Years
	IP Rating	IP65 Wet Locations
	Operating Temperature	-40F to 131F
	Storage Temperature.Humidity	-40°C—+80°C , 10—90% RH
SAFETY&EMC	Safety Norms	UL1598,UL8750, EN60598, EN61347-2-13, EN62031, EN62471
	Withstand Voltage	I/P-FG: 2121VDC
	Grounding Resistance	≤0.5Ω,OK
	Electromagnetic Compatibility	EN55015, EN61000-2-3, EN61000-3-3, EN61547
OTHERS	Packing Size	master carton: L 16" X W 16" X H 8.5"
	Qty / Carton	1PCS
	Volume	Cbm/carton

Mounting Options(Sold Separately):



Cat# 71407
Ceiling Mount
5-1/2" X 6-1/4"
Includes Plate, Brackets & Hinges

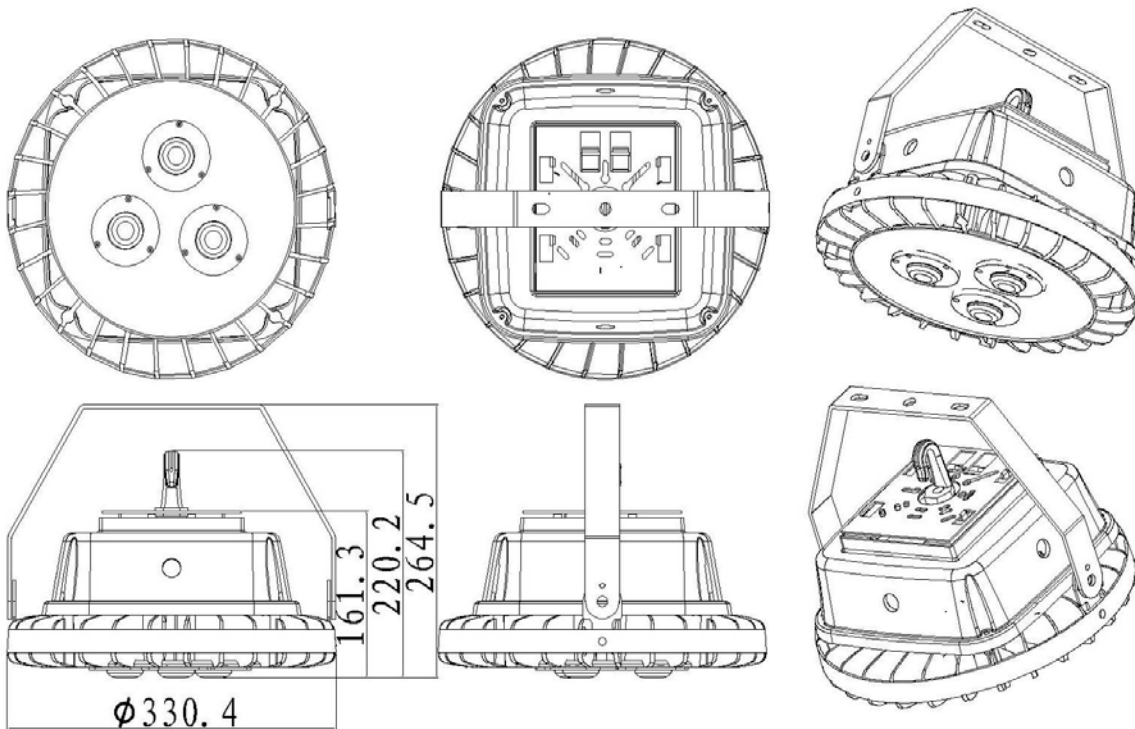


Cat# 71409
Pendant Mount
3/4" X 8" (6" Exposed)



Cat# 71408
Bracket Mount
8-1/2" X 13"

Dimensions :





NVLAP LAB CODE 201011-0

Report No.: GZE140709-N

LM-79-08 Test Report

For

Morris Products Inc.
53 Carey Rd.
Queensbury, NY 12804

High-Bay Luminaires for Commercial and Industrial buildings

Model name(s): 71402

Representative (Tested) Model: 71402

Model Difference: All construction and rating are the same, except CCT

Test & Report By:

Sean Zhuo

Engineer: Sean Zhuo

Date: Oct.13,2014

Review By:

Tommy Liang

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Laboratory: Standard-Tech Co. Ltd Testing Center

NVLAP CODE: 201011-0

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U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Laboratory Information:

Name of Test Laboratory	Standard-Tech Co. Ltd
Date of Test Report	Oct.13,2014
Test Report No.	GZE140709-N
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	Morris Products Inc.	
Brand Name	MORRIS	
Model Number	71402	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	High-Bay Luminaires for Commercial and Industrial buildings	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Integrating Sphere

Goniophotometer

Electrical Measurements:

Output

Output

Input Wattage	95.39	--	W
Input Current	0.7994	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9943	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	9954	--	lm
Initial Lumen Efficacy	104.34	--	lm/w
Correlated color temperature / CCT	4863	--	K
Color rendering index / CRI	83.9	--	
R9 Value	22	--	
Duv	0.0005	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	--	
Beam angle (if applicable)		--	
Zonal lumens in the 0 °-60 °zone		--	
Zonal lumens in the 60 °-90 °zone		--	
Zonal lumens in the 90 °-120 °zone		--	
Zonal lumens in the 120 °-180 °zone		--	

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Test Specifications:	
Date of Receipt	: Oct.10,2014
Date of Test	: Oct.11,2014
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

Test Methods

1. Photometric and Electrical measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

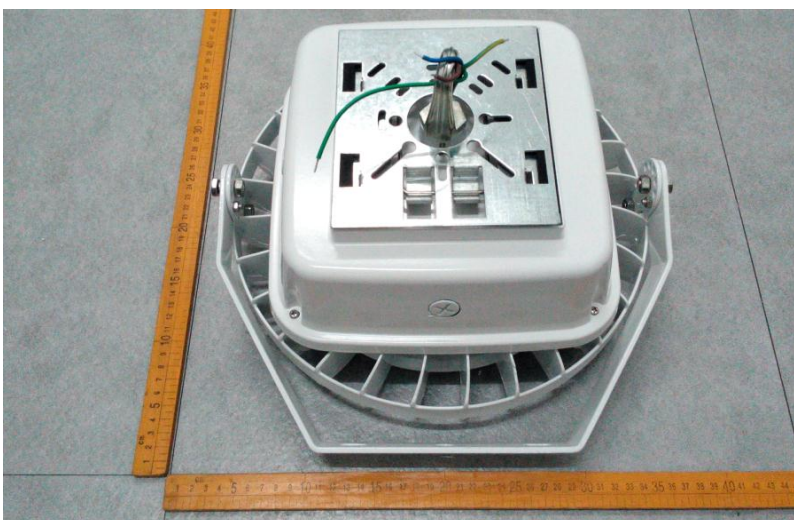
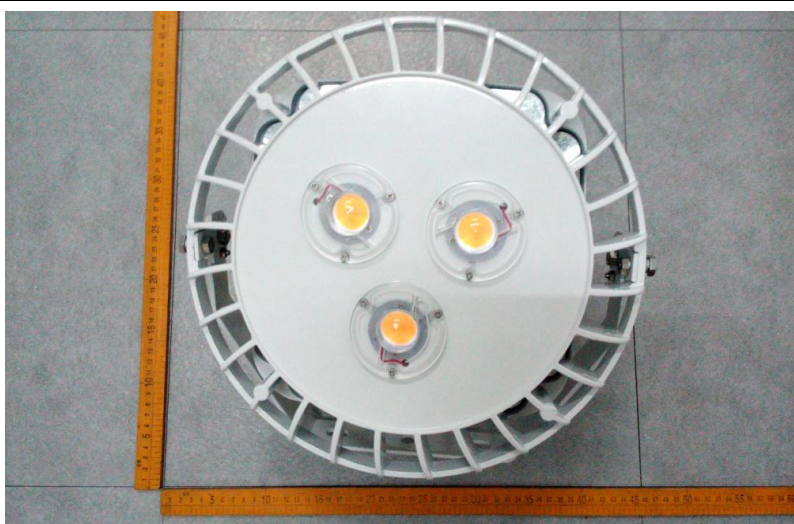
2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

1. Product Information:

Brand Name	MORRIS
Model Number	71402
Luminaire Type	High-Bay Luminaires for Commercial and Industrial buildings
Rated Voltage / Frequency	100 ~ 277 Vac, 50/60 Hz
Nominal Power	100W
Rated Initial Lamp Lumen	--
Declared CCT	5000K
LED Manufacturer	CREE
LED Model	CXA2520
Sample Receipt Date	Oct.10,2014
Sample Number	36 (5000K)

Photo



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2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

IES LM-79 2008

Test date	2014-10-11	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	TL-HBB1001-02(3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
140709-35	120.0	60	0.7763	92.47	0.9924	8.05
	277.1	60	0.3628	93.38	0.9288	14.81

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	83.3
R9	13
CCT (K)	2969
Chromaticity (x, y)	x=0.4410 y=0.4085
Chromaticity (u', v')	u'=0.2513 v'=0.5237
Duv	0.0012

Special Color Rendering Indices			
R1	81	R9	13
R2	90	R10	76
R3	97	R11	81
R4	82	R12	71
R5	81	R13	83
R6	87	R14	98
R7	85	R15	75
R8	62	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	9132.9
Luminous Efficacy (lm/W)	98.77
Beam Angle °	90.7
Center Beam Candle Power (cd)	4639
S/MH(C0/180)	1.30
S/MH(C90/270)	1.29

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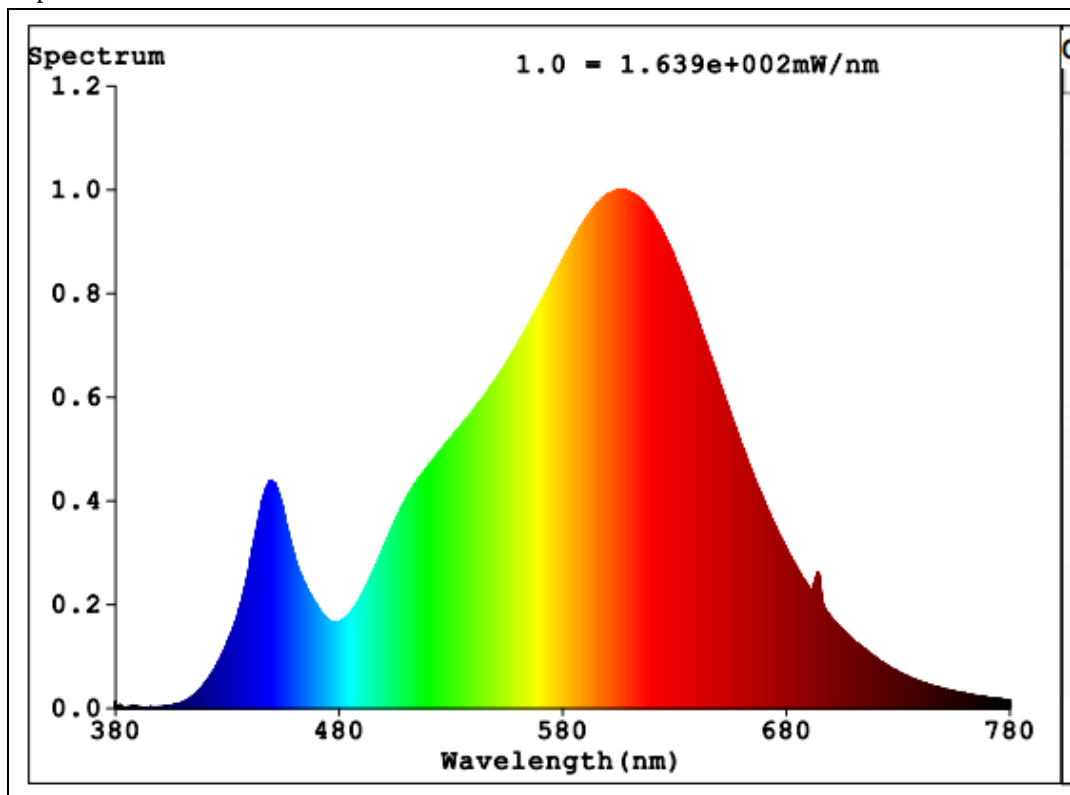
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Spectral Power Distribution

Spectral Power Distribution:



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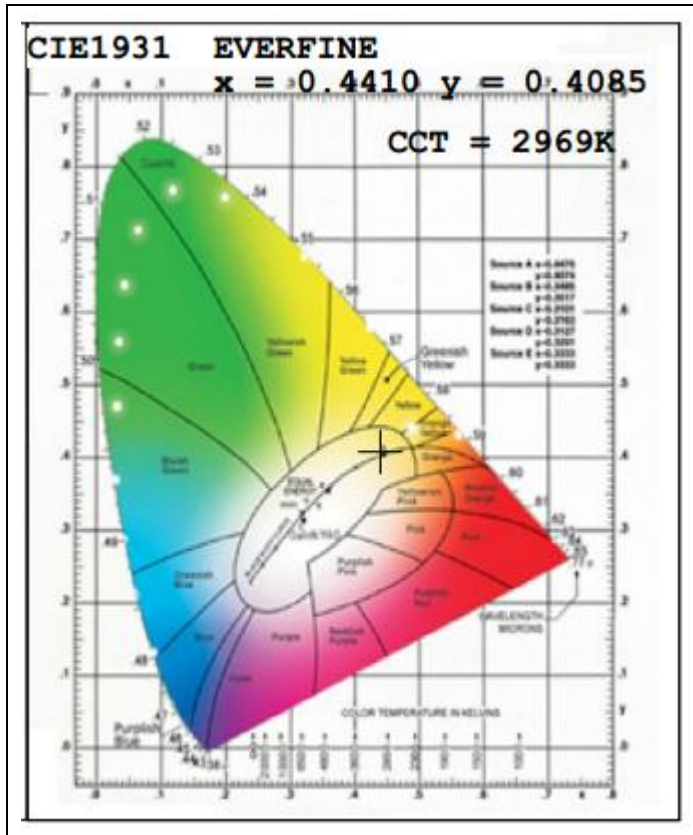
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Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary			
Zone	Lumens	% Lamp	% Luminaire
0-30	3,674.4	40.2%	40.2%
0-40	5,975.5	65.4%	65.4%
0-60	8,331.2	91.2%	91.2%
60-90	779.8	8.5%	8.5%
70-100	309.0	3.4%	3.4%
90-120	1.9	0%	0%
0-90	9,111.1	99.8%	99.8%
90-180	20.6	0.2%	0.2%
0-180	9,131.6	100%	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	439.5	4.8%	90-100	1.0	0%
10-20	1,277.4	14.0%	100-110	0.3	0%
20-30	1,957.5	21.4%	110-120	0.7	0%
30-40	2,301.1	25.2%	120-130	2.1	0%
40-50	1,763.4	19.3%	130-140	3.8	0%
50-60	592.3	6.5%	140-150	4.6	0.1%
60-70	471.8	5.2%	150-160	4.2	0%
70-80	218.5	2.4%	160-170	2.8	0%
80-90	89.6	1.0%	170-180	1.1	0%

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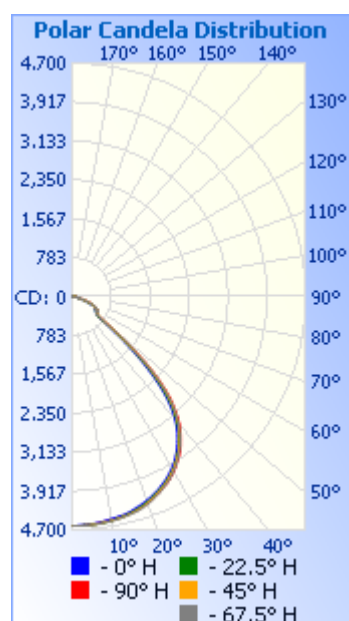
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Photometric Data



Illuminance Plots

Illuminance at a Distance			
	Center Beam fc	Beam Width	
17.0ft	16.04 fc	34.4 ft	34.3 ft
34.0ft	4.01 fc	68.8 ft	68.6 ft
51.0ft	1.78 fc	103.2 ft	103.0 ft
68.0ft	1.00 fc	137.6 ft	137.3 ft
85.0ft	0.64 fc	172.0 ft	171.6 ft
102.0ft	0.45 fc	206.3 ft	205.9 ft
Vert. Spread: 90.7° Horiz. Spread: 90.5°			

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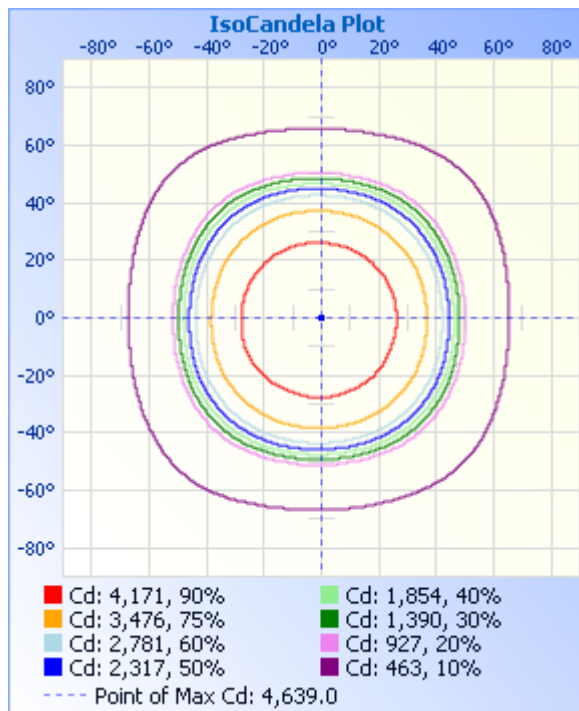
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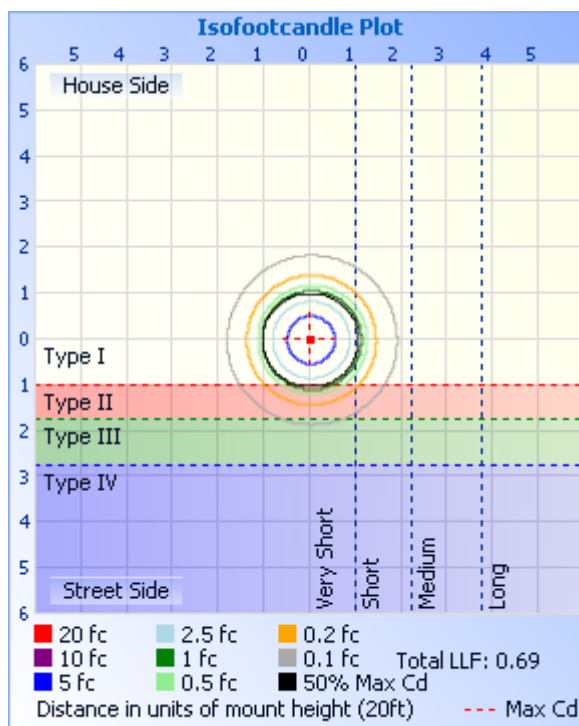
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ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	4634	4634	4634	4634	4634	4634	4634	4634	4634	4634	4634	4634	4634	4634	4634	4634	4634
1	4632	4636	4636	4636	4634	4636	4633	4634	4633	4631	4630	4630	4633	4634	4636	4634	4632
2	4626	4633	4635	4637	4633	4638	4633	4634	4633	4625	4623	4622	4629	4630	4634	4630	4626
3	4622	4632	4634	4638	4632	4638	4630	4630	4628	4620	4617	4612	4624	4623	4630	4627	4622
4	4619	4633	4634	4639	4627	4636	4625	4623	4622	4614	4612	4605	4618	4615	4624	4625	4619
5	4615	4631	4631	4636	4620	4629	4615	4613	4616	4607	4605	4597	4614	4610	4619	4620	4615
6	4606	4625	4626	4629	4612	4622	4604	4605	4608	4599	4597	4590	4606	4605	4613	4614	4606
7	4600	4622	4620	4624	4603	4616	4597	4602	4604	4592	4590	4580	4601	4599	4606	4605	4600
8	4586	4616	4612	4619	4595	4611	4588	4598	4597	4585	4581	4568	4593	4590	4598	4598	4586
9	4575	4609	4604	4612	4587	4608	4583	4593	4591	4578	4573	4557	4584	4580	4591	4590	4575
10	4563	4598	4598	4606	4580	4604	4578	4588	4585	4569	4566	4544	4578	4569	4582	4583	4563
11	4554	4585	4590	4599	4573	4596	4573	4582	4576	4560	4558	4535	4568	4559	4572	4574	4554
12	4545	4575	4580	4590	4563	4587	4566	4572	4565	4549	4548	4525	4558	4549	4558	4560	4545
13	4536	4564	4571	4578	4553	4579	4557	4562	4557	4537	4537	4511	4546	4539	4545	4547	4536
14	4522	4549	4560	4566	4539	4573	4549	4551	4547	4526	4524	4493	4530	4527	4532	4533	4522
15	4504	4530	4542	4554	4526	4561	4539	4541	4536	4514	4512	4473	4512	4510	4515	4520	4504
16	4481	4512	4526	4542	4514	4547	4528	4531	4520	4500	4495	4452	4491	4488	4495	4500	4481
17	4457	4494	4510	4529	4501	4530	4516	4515	4500	4483	4474	4432	4466	4464	4470	4480	4457
18	4435	4472	4492	4510	4486	4514	4496	4489	4480	4461	4452	4408	4438	4436	4440	4453	4435
19	4413	4446	4467	4486	4469	4497	4474	4461	4460	4436	4427	4380	4412	4409	4407	4424	4413
20	4389	4420	4438	4461	4447	4478	4447	4433	4435	4408	4399	4352	4382	4380	4377	4391	4389
21	4359	4392	4410	4433	4420	4453	4418	4407	4404	4378	4366	4326	4354	4346	4346	4359	4359
22	4328	4357	4382	4402	4390	4424	4386	4377	4372	4346	4332	4300	4321	4315	4315	4331	4328
23	4299	4323	4348	4371	4360	4390	4355	4342	4336	4311	4298	4272	4284	4280	4281	4301	4299
24	4266	4293	4310	4338	4327	4355	4327	4307	4302	4277	4261	4238	4247	4244	4244	4265	4266
25	4229	4263	4273	4302	4294	4321	4295	4272	4268	4240	4219	4200	4206	4205	4204	4223	4229
26	4190	4227	4239	4263	4260	4285	4258	4228	4235	4200	4182	4157	4168	4167	4159	4179	4190
27	4154	4184	4198	4223	4225	4247	4217	4185	4197	4153	4142	4114	4126	4124	4110	4135	4154
28	4109	4140	4150	4182	4185	4204	4172	4145	4153	4110	4096	4070	4076	4077	4061	4090	4109
29	4061	4096	4103	4134	4141	4159	4127	4103	4100	4064	4042	4023	4022	4026	4012	4042	4061

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30	4014	4046	4058	4081	4092	4109	4079	4060	4049	4014	3988	3969	3962	3969	3956	3992	4014
31	3963	3997	4004	4030	4039	4057	4027	4009	3999	3962	3932	3907	3902	3906	3895	3934	3963
32	3901	3942	3945	3977	3981	4004	3972	3955	3942	3903	3873	3846	3836	3838	3829	3873	3901
33	3833	3874	3888	3913	3923	3951	3909	3892	3879	3836	3807	3786	3762	3770	3762	3809	3833
34	3766	3808	3822	3841	3867	3887	3843	3826	3808	3765	3739	3716	3688	3696	3687	3742	3766
35	3693	3740	3751	3775	3800	3814	3772	3757	3734	3692	3658	3634	3605	3613	3607	3666	3693
36	3617	3666	3680	3708	3725	3739	3696	3681	3654	3613	3572	3549	3517	3522	3519	3584	3617
37	3532	3583	3600	3624	3643	3657	3614	3597	3566	3522	3480	3454	3419	3423	3424	3494	3532
38	3435	3491	3511	3533	3557	3566	3527	3510	3469	3422	3380	3352	3310	3316	3326	3397	3435
39	3335	3390	3423	3437	3468	3476	3440	3408	3367	3316	3272	3227	3192	3195	3214	3284	3335
40	3225	3277	3321	3334	3366	3370	3337	3300	3233	3177	3132	3102	3056	3065	3091	3162	3225
41	3095	3157	3200	3219	3256	3262	3200	3158	3099	3038	2991	2976	2914	2918	2958	3033	3095
42	2949	3030	3076	3098	3119	3119	3063	3016	2965	2900	2851	2813	2743	2754	2798	2887	2949
43	2792	2870	2934	2955	2982	2976	2927	2874	2805	2729	2663	2628	2547	2563	2621	2714	2792
44	2610	2694	2775	2791	2845	2833	2764	2700	2612	2525	2461	2410	2332	2347	2425	2520	2610
45	2400	2499	2597	2606	2659	2651	2563	2486	2395	2296	2225	2180	2090	2116	2201	2302	2400
46	2170	2289	2382	2405	2461	2446	2347	2262	2162	2060	1979	1928	1834	1868	1956	2052	2170
47	1924	2051	2155	2176	2233	2233	2104	2023	1908	1796	1699	1650	1564	1599	1684	1793	1924
48	1671	1794	1906	1930	1988	1979	1863	1756	1635	1514	1420	1361	1293	1326	1414	1520	1671
49	1398	1525	1634	1668	1722	1728	1597	1470	1357	1232	1142	1090	1022	1052	1144	1247	1398
50	1125	1256	1359	1393	1450	1440	1320	1200	1078	965	875	844	803	810	874	974	1125
51	871	987	1085	1119	1179	1158	1053	944	824	752	709	705	675	683	707	763	871
52	715	778	845	867	925	892	806	742	686	649	646	654	636	642	642	661	715
53	658	670	705	710	732	716	666	649	647	625	620	628	613	618	623	631	658
54	632	632	656	649	646	637	625	625	625	602	595	602	589	592	603	606	632
55	603	606	634	624	619	612	610	601	603	581	575	584	575	575	588	584	603
56	580	581	610	600	599	589	592	577	588	570	565	572	566	567	578	573	580
57	566	566	591	585	584	572	581	564	578	562	559	567	571	569	574	566	566
58	560	559	576	576	575	564	572	558	578	564	565	575	587	589	585	568	560
59	566	561	570	575	572	564	569	566	594	577	574	577	585	591	590	577	566
60	576	576	577	592	580	572	581	577	593	578	562	551	551	569	575	577	576
61	562	575	576	596	587	580	583	570	567	532	520	516	519	535	527	537	562

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62	519	541	559	584	578	568	558	533	532	513	512	508	509	526	513	515	519
63	511	519	524	544	534	519	521	516	522	506	507	499	503	521	510	509	511
64	506	510	513	526	519	500	513	509	516	500	496	486	489	510	505	505	506
65	499	504	508	515	512	496	507	501	504	483	469	461	466	483	484	487	499
66	472	483	498	505	504	489	497	481	478	458	438	432	436	450	455	457	472
67	435	453	474	481	484	464	471	454	447	431	408	404	403	414	422	424	435
68	403	423	446	454	458	432	440	423	413	396	376	373	368	380	387	396	403
69	370	392	415	424	432	404	410	392	380	361	341	337	334	347	352	366	370
70	334	358	378	387	403	375	379	360	346	329	307	301	298	311	317	330	334
71	299	319	341	348	366	344	343	327	311	294	273	265	261	274	281	296	299
72	265	283	302	308	328	311	306	292	276	258	241	234	228	240	245	262	265
73	235	248	263	271	292	277	271	257	246	228	210	206	198	213	215	229	235
74	208	216	230	240	255	246	237	227	221	202	185	184	175	190	191	200	208
75	184	191	203	212	223	219	208	199	200	181	167	166	158	171	173	177	184
76	165	170	180	189	196	194	185	176	182	165	152	151	146	160	159	159	165
77	150	154	163	171	175	175	167	159	169	154	142	141	138	153	149	145	150
78	139	141	152	157	159	160	151	148	160	143	134	133	131	147	142	135	139
79	132	134	145	150	148	148	140	139	150	133	128	128	124	142	135	127	132
80	125	128	139	145	140	138	130	131	138	122	123	124	111	134	125	122	125
81	119	122	133	139	133	131	123	121	127	102	117	118	98	125	116	116	119
82	112	111	125	129	125	125	116	111	119	90	112	113	90	118	107	108	112
83	104	100	116	119	114	121	109	103	110	81	104	104	80	110	98	101	104
84	91	92	107	110	106	116	99	95	100	73	95	96	73	105	90	89	91
85	80	80	100	104	98	109	90	87	91	63	87	89	66	94	81	79	80
86	72	71	93	99	89	101	83	78	79	52	80	82	61	87	73	70	72
87	62	63	83	92	81	93	75	68	62	42	70	74	55	73	61	54	62
88	45	42	74	86	74	85	64	47	32	18	43	52	26	45	39	38	45
89	21	24	54	70	65	69	38	24	19	11	18	15	10	13	17	20	21
90	14	13	23	30	27	24	18	6	6	2	1	1	1	0	1	3	14

2.2 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2014-10-11	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	TL-HBB1001-02(5000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
140709-36	120.0	60	0.7994	95.39	0.9943	7.85
	277.0	60	0.3743	96.69	0.9325	14.14

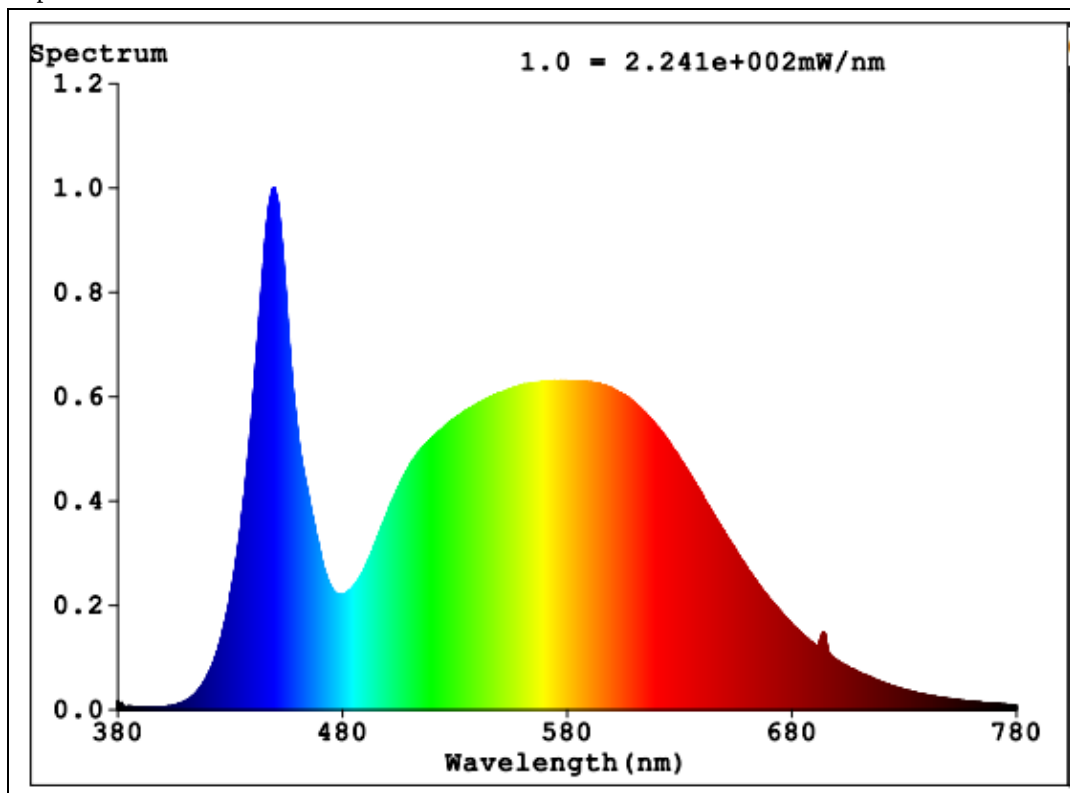
Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	83.9
R9	22
CCT (K)	4863
Chromaticity (x, y)	x=0.3492 y=0.3558
Chromaticity (u', v')	u'=0.2125 v'=0.4873
Duv	0.0005
Total Luminous (lm)	9954
Luminous Efficacy (lm/W)	104.34

Special Color Rendering Indices			
R1	83	R9	22
R2	87	R10	69
R3	90	R11	83
R4	84	R12	60
R5	83	R13	84
R6	82	R14	94
R7	89	R15	79
R8	73	--	--

Spectral Power Distribution

Spectral Power Distribution:



Laboratory: Standard-Tech Co. Ltd Testing Center

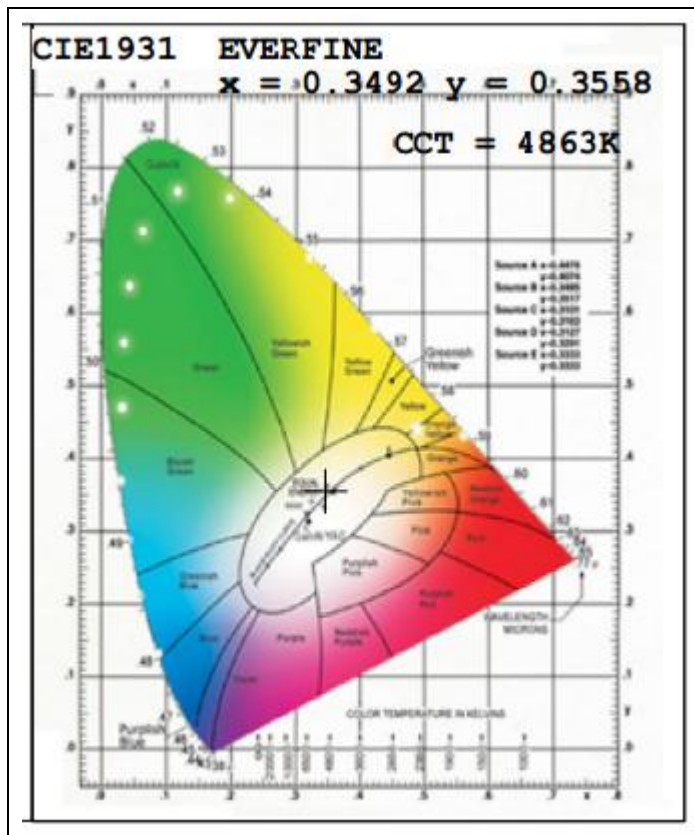
NVLAP CODE: 201011-0

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Chromaticity Diagram



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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2014-07-01	2015-06-30
ST-R-331	Spectral analysis system HAAS-2000	2014-07-01	2015-06-30
D204	Standard Lamp	2014-07-01	2015-06-30
PF2010	Power Meter for Integrating Sphere	2014-07-01	2015-06-30
EE-09	Goniophotometer system	2014-07-01	2015-06-30
D908S	Standard Lamp	2014-07-01	2015-06-30
PF210	Power Meter for Goniophotometer	2014-07-01	2015-06-30
ST-R-181A	Temperature Tester	2014-07-01	2015-06-30

******* END OF DATASHEET PACKAGE *******

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