



Report No.: GZE151292-A

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

IGT LIGHTING INC.

3755 Lincoln St. Suite B, Riverside, CA 92503

High-Bay Luminaires for Commercial and Industrial buildings

Model name(s): IGTHB-0215050C

Remark: The letter "XX" of the model name stand for different CCT as follow: "40"="4000K"; "57"="5700K"; The letter "YYY" in the model name stand for different employed diffuser, such as: "60: 60 °angle diffuser"; "120: 120 °angle diffuser".

Representative (Tested) Model: IGTHB-0215050C

Test & Report By:

Peeta Cao

Engineer: Peeta Cao

Date: 2015-12-29

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

Report Format Number STD/QR4909-C/2

Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

Fax: 8620-32290422

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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	2015-12-29
Test Report No.	GZE151292-A
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	IGT LIGHTING INC.	
Brand Name	IGT LIGHTING	
Model Number	IGTHB-0215050C	
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	--	144.5	W
Input Current	--	1.211	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9947	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	18765	lm
Initial Lumen Efficacy	--	129.86	lm/w
Correlated color temperature / CCT	3885	--	K
Color rendering index / CRI	71.5	--	
R9 Value	0	--	
Duv	0.0022	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	6659	cd
Beam angle (if applicable)		113.8	°
Zonal lumens in the 0°-60° zone		81.8	%
Zonal lumens in the 60°-90° zone		18	%
Zonal lumens in the 90°-120° zone		0.1	%
Zonal lumens in the 120°-180° zone		0.1	%

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Test Specifications:	
Date of Receipt	: 2015-11-23
Date of Test	: 2015-12-20
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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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.

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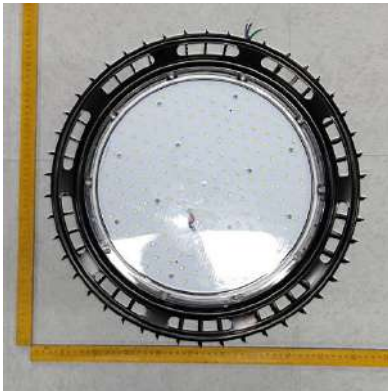
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1. Product Information:

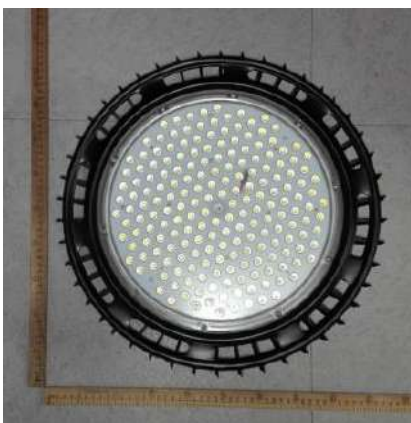
Brand Name	IGT LIGHTING
Model Number	IGTHB-0215050C
Luminaire Type	High-Bay Luminaires for Commercial and Industrial buildings
Rated Voltage / Frequency	100~ 277Vac, 50/60Hz
Nominal Power	150W
Rated Initial Lamp Lumen	--
Declared CCT	4000K,5700K
LED Manufacturer	Nichia Corporation
LED Model	NF2L757DR
Sample Receipt Date	2015-11-23
Sample Number	GZE151292-A1(4000K)[XSY-HBPF150W-40K-120] GZE151292-A2(5700K)[XSY-HBPF150W-57K-120] GZE151292-A3(4000K)[XSY-HBPF150W-40K-60] GZE151292-A4(5700K)[XSY-HBPF150W-57K-60]

Photo

XSY-HBPF150W-40K-120



XSY-HBPF150W-40K-60



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2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-12-20	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IGTHB-0215050C		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE151292	120.0	60	1.211	144.5	0.9947	10.06
-A1	277.0	60	0.5521	142.6	0.9324	14.12

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	71.5
R9	0
CCT (K)	3885
Chromaticity (x, y)	x=0.3874 y=0.3858
Chromaticity (u', v')	u'=0.2261 v'=0.5065
Duv	0.0022

Special Color Rendering Indices			
R1	69	R9	0
R2	77	R10	45
R3	83	R11	66
R4	71	R12	37
R5	68	R13	70
R6	67	R14	90
R7	82	R15	64
R8	55	--	--

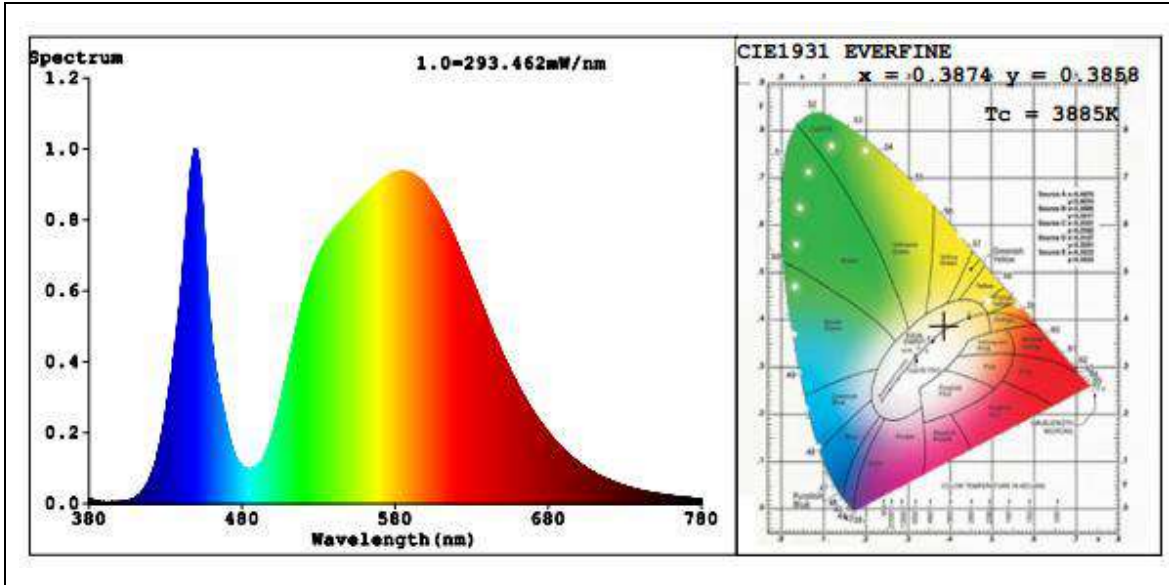
Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	18765
Luminous Efficacy (lm/W)	129.86
Beam Angle °	113.8
Center Beam Candle Power (cd)	6659

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	18683
Luminous Efficacy (lm/W)	131.02

Spectral Power Distribution & Chromaticity Diagram



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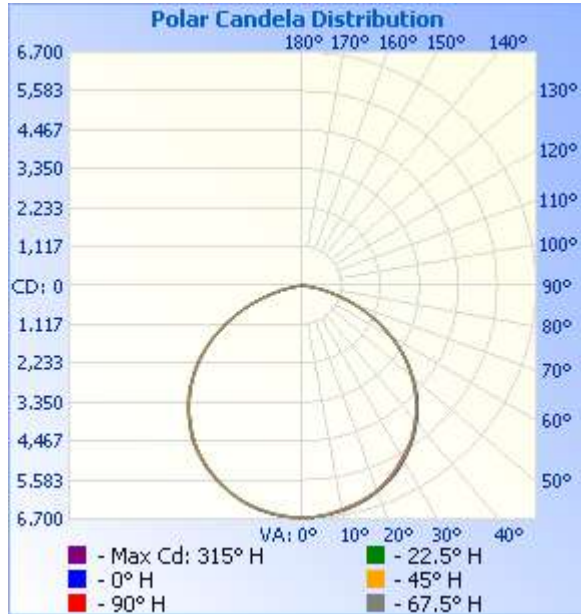
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Zonal Lumen Tabulation

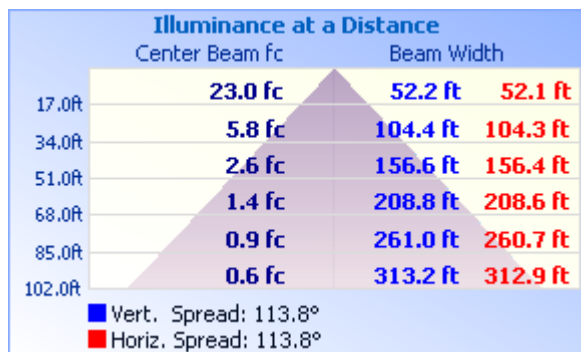
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5,229.8	27.9%
0-40	8,629.3	46%
0-60	15,353.1	81.8%
60-90	3,370.1	18%
70-100	1,130.0	6%
90-120	10.5	0.1%
0-90	18,723.2	99.8%
90-180	40.2	0.2%
0-180	18,763.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	630.1	3.4%	90-100	1.7	0%
10-20	1,815.9	9.7%	100-110	3.4	0%
20-30	2,783.7	14.8%	110-120	5.4	0%
30-40	3,399.5	18.1%	120-130	7.1	0%
40-50	3,554.2	18.9%	130-140	7.1	0%
50-60	3,169.6	16.9%	140-150	6.2	0%
60-70	2,241.8	11.9%	150-160	4.9	0%
70-80	1,009.1	5.4%	160-170	3.1	0%
80-90	119.2	0.6%	170-180	1.2	0%

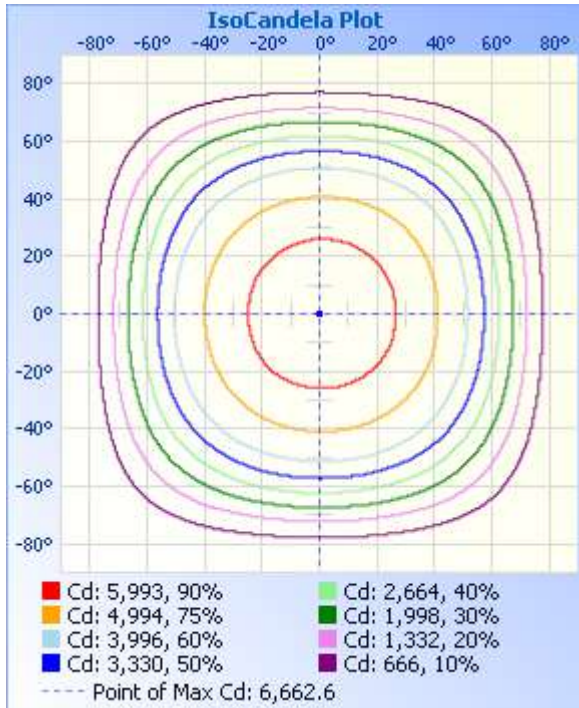
Photometric Data



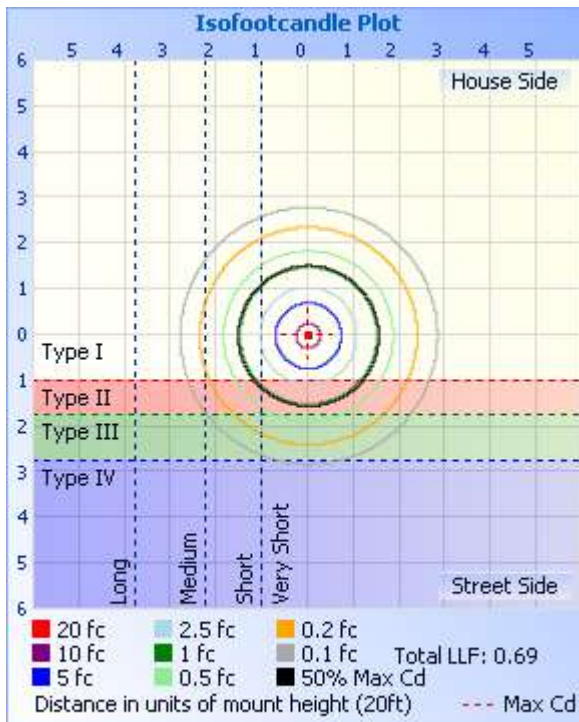
Illuminance Plots



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	6659	6659	6659	6659	6659	6659	6659	6659	6659	6659	6659	6659	6659	6659	6659	6659	6659
1	6659	6658	6656	6657	6658	6654	6656	6660	6659	6659	6660	6658	6658	6661	6662	6656	6659
2	6656	6654	6648	6652	6653	6648	6650	6657	6658	6654	6656	6656	6656	6659	6663	6652	6656
3	6651	6648	6642	6645	6645	6639	6643	6651	6654	6647	6649	6651	6653	6655	6660	6647	6651
4	6642	6637	6632	6636	6632	6627	6632	6640	6646	6637	6640	6645	6647	6645	6655	6640	6642
5	6630	6625	6620	6626	6618	6614	6617	6626	6638	6625	6630	6637	6639	6636	6646	6631	6630
6	6617	6612	6607	6611	6600	6600	6602	6612	6630	6612	6617	6624	6627	6625	6631	6621	6617
7	6604	6599	6592	6596	6579	6585	6587	6596	6618	6598	6602	6608	6612	6613	6616	6609	6604
8	6592	6583	6576	6580	6560	6569	6572	6580	6603	6584	6586	6588	6597	6600	6599	6594	6592
9	6578	6567	6558	6565	6537	6551	6556	6560	6585	6568	6568	6568	6580	6585	6583	6577	6578
10	6562	6551	6536	6546	6516	6533	6539	6541	6565	6550	6548	6549	6563	6568	6566	6557	6562
11	6545	6534	6516	6526	6494	6513	6521	6518	6544	6531	6523	6529	6544	6547	6550	6538	6545
12	6524	6513	6492	6504	6472	6493	6498	6495	6523	6511	6498	6509	6524	6523	6528	6516	6524
13	6500	6490	6467	6481	6449	6470	6474	6468	6500	6486	6475	6493	6501	6498	6504	6494	6500
14	6477	6465	6440	6454	6424	6444	6445	6442	6476	6458	6449	6472	6476	6474	6476	6469	6477
15	6452	6435	6414	6425	6396	6417	6414	6414	6445	6429	6421	6444	6448	6447	6449	6444	6452
16	6424	6405	6385	6397	6368	6386	6380	6387	6410	6396	6393	6414	6416	6417	6420	6416	6424
17	6396	6374	6356	6365	6342	6352	6347	6354	6373	6362	6362	6378	6380	6384	6388	6387	6396
18	6365	6341	6326	6332	6312	6312	6312	6319	6335	6326	6329	6340	6341	6350	6356	6354	6365
19	6326	6307	6294	6296	6279	6275	6278	6279	6293	6289	6292	6303	6298	6313	6323	6320	6326
20	6285	6272	6257	6256	6240	6236	6239	6241	6252	6253	6251	6264	6253	6277	6287	6283	6285
21	6244	6232	6217	6214	6199	6195	6196	6203	6210	6214	6208	6230	6209	6240	6248	6244	6244
22	6203	6191	6174	6167	6153	6151	6153	6162	6165	6173	6166	6194	6170	6200	6208	6207	6203
23	6161	6148	6129	6121	6105	6109	6108	6115	6117	6127	6125	6152	6133	6158	6165	6167	6161
24	6120	6103	6083	6074	6054	6064	6061	6066	6070	6081	6083	6105	6094	6117	6120	6125	6120
25	6075	6053	6029	6027	5999	6015	6015	6016	6020	6034	6037	6058	6047	6071	6069	6078	6075
26	6028	5999	5977	5977	5944	5961	5965	5963	5967	5983	5985	6010	5994	6023	6016	6027	6028
27	5975	5944	5924	5927	5889	5907	5912	5909	5914	5930	5931	5961	5937	5968	5960	5975	5975
28	5919	5893	5870	5870	5828	5846	5851	5854	5860	5875	5879	5909	5880	5909	5903	5922	5919
29	5859	5836	5814	5812	5770	5785	5791	5799	5807	5819	5821	5853	5823	5847	5850	5868	5859

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30	5797	5776	5754	5752	5709	5726	5730	5742	5752	5760	5760	5793	5768	5789	5796	5810	5797
31	5733	5715	5695	5687	5652	5666	5668	5680	5692	5697	5695	5731	5713	5729	5736	5750	5733
32	5667	5653	5630	5624	5593	5603	5607	5617	5630	5633	5631	5668	5656	5665	5668	5683	5667
33	5599	5591	5563	5557	5534	5540	5541	5549	5567	5568	5564	5598	5599	5601	5603	5618	5599
34	5531	5523	5498	5490	5475	5473	5471	5481	5499	5501	5495	5527	5544	5539	5538	5545	5531
35	5465	5450	5426	5423	5416	5402	5403	5411	5427	5430	5422	5451	5480	5474	5474	5472	5465
36	5398	5376	5354	5352	5345	5329	5330	5343	5351	5354	5352	5377	5403	5400	5403	5403	5398
37	5324	5297	5281	5277	5264	5251	5253	5268	5275	5276	5276	5306	5317	5324	5330	5332	5324
38	5245	5216	5199	5200	5183	5172	5175	5188	5199	5195	5198	5231	5228	5246	5254	5253	5245
39	5162	5136	5120	5121	5101	5098	5095	5107	5116	5117	5121	5150	5143	5169	5177	5173	5162
40	5084	5059	5041	5043	5023	5014	5011	5022	5032	5037	5045	5070	5057	5084	5097	5093	5084
41	5005	4984	4960	4960	4945	4927	4924	4937	4951	4956	4968	4988	4975	4998	5013	5009	5005
42	4919	4901	4877	4872	4856	4838	4841	4852	4865	4873	4879	4898	4892	4914	4928	4923	4919
43	4834	4813	4793	4781	4766	4753	4753	4766	4779	4781	4788	4810	4807	4832	4839	4834	4834
44	4745	4723	4701	4690	4681	4667	4665	4675	4689	4691	4699	4724	4722	4741	4746	4747	4745
45	4649	4632	4606	4594	4591	4577	4571	4580	4597	4597	4611	4635	4634	4648	4650	4652	4649
46	4556	4541	4511	4498	4504	4483	4478	4490	4499	4503	4517	4540	4541	4558	4552	4555	4556
47	4457	4437	4410	4402	4409	4385	4381	4393	4409	4409	4418	4438	4442	4459	4454	4459	4457
48	4356	4331	4312	4307	4310	4287	4287	4300	4316	4312	4320	4333	4337	4355	4357	4360	4356
49	4251	4225	4212	4201	4207	4189	4183	4198	4209	4209	4217	4234	4236	4254	4255	4253	4251
50	4139	4121	4103	4098	4099	4083	4076	4093	4098	4105	4108	4131	4129	4148	4146	4146	4139
51	4030	4014	3995	3993	3990	3974	3972	3985	3993	4006	4004	4024	4024	4039	4037	4035	4030
52	3922	3906	3890	3886	3879	3861	3862	3874	3884	3895	3890	3907	3921	3929	3931	3926	3922
53	3808	3798	3781	3775	3773	3754	3752	3759	3775	3781	3778	3798	3810	3815	3818	3813	3808
54	3691	3688	3670	3659	3662	3645	3639	3648	3661	3659	3666	3681	3697	3698	3704	3698	3691
55	3581	3569	3557	3545	3549	3531	3523	3535	3542	3543	3550	3559	3579	3580	3584	3586	3581
56	3460	3445	3443	3426	3429	3417	3399	3421	3425	3424	3432	3438	3455	3456	3468	3470	3460
57	3340	3326	3318	3304	3303	3292	3277	3295	3305	3306	3311	3313	3327	3338	3343	3347	3340
58	3214	3206	3191	3176	3186	3168	3158	3172	3181	3183	3190	3192	3203	3215	3224	3224	3214
59	3088	3083	3067	3046	3055	3041	3030	3043	3047	3050	3057	3058	3075	3086	3099	3099	3088
60	2956	2955	2943	2920	2923	2914	2901	2914	2912	2918	2923	2924	2949	2958	2968	2972	2956
61	2821	2823	2809	2788	2791	2787	2772	2785	2778	2785	2790	2790	2821	2824	2830	2841	2821

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62	2685	2699	2683	2659	2665	2661	2642	2653	2645	2656	2660	2660	2692	2690	2699	2710	2685
63	2551	2564	2552	2526	2534	2532	2514	2522	2508	2524	2526	2525	2555	2559	2561	2577	2551
64	2417	2427	2417	2391	2403	2402	2382	2386	2375	2397	2391	2390	2418	2424	2419	2436	2417
65	2282	2292	2284	2263	2273	2269	2250	2247	2243	2257	2254	2259	2280	2288	2284	2298	2282
66	2148	2156	2144	2128	2135	2136	2111	2104	2108	2115	2117	2124	2141	2150	2148	2161	2148
67	2011	2022	2006	1998	2007	2005	1976	1967	1979	1981	1980	1990	2002	2010	2006	2023	2011
68	1881	1886	1875	1868	1874	1872	1848	1829	1848	1842	1847	1855	1863	1870	1875	1880	1881
69	1746	1747	1745	1738	1743	1738	1721	1687	1716	1711	1710	1717	1728	1736	1741	1736	1746
70	1611	1611	1611	1605	1615	1612	1588	1554	1583	1576	1578	1579	1585	1600	1606	1592	1611
71	1479	1477	1480	1467	1484	1475	1458	1427	1447	1439	1437	1430	1446	1464	1471	1456	1479
72	1347	1342	1349	1330	1352	1333	1323	1301	1314	1306	1301	1287	1313	1328	1337	1320	1347
73	1215	1208	1217	1193	1220	1194	1189	1171	1185	1171	1172	1155	1187	1192	1202	1183	1215
74	1079	1080	1088	1063	1089	1075	1061	1050	1060	1045	1052	1029	1061	1064	1072	1061	1079
75	957	960	967	933	963	944	938	929	936	917	924	907	934	940	948	940	957
76	838	835	841	822	842	827	820	810	821	803	800	773	813	819	830	824	838
77	729	719	714	712	720	720	712	701	703	696	687	658	689	707	708	715	729
78	615	613	606	598	607	609	611	598	610	596	578	568	577	583	594	599	615
79	506	508	501	501	499	493	504	486	492	477	477	463	484	470	496	480	506
80	398	393	408	398	420	412	400	389	391	384	384	362	383	380	388	388	398
81	307	309	325	312	326	318	308	298	304	292	295	282	288	290	302	293	307
82	225	231	244	231	240	228	241	220	224	216	220	207	212	218	225	220	225
83	153	158	170	165	171	171	164	156	153	148	156	143	152	150	156	148	153
84	93	98	109	112	120	115	108	99	95	93	97	95	99	96	95	91	93
85	52	55	63	71	74	71	65	57	53	53	56	58	59	57	54	53	52
86	27	29	34	40	42	41	36	30	26	26	30	33	33	32	29	27	27
87	12	13	16	20	22	21	17	12	9	9	13	16	17	15	13	12	12
88	3	5	7	8	9	8	5	2	2	2	3	13	4	5	5	4	3
89	2	2	2	2	1	7	1	1	1	1	1	10	4	1	2	2	2
90	1	1	1	1	1	6	1	1	1	1	1	7	3	1	1	1	1
91	1	1	1	1	1	5	1	1	1	1	1	4	3	1	1	1	1
92	1	1	1	1	1	3	1	1	1	1	1	1	2	1	1	1	1
93	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1

Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-C/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

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94	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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99	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
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124	10	9	8	9	7	7	6	7	8	7	6	7	9	8	8	9	10
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126	10	9	8	9	8	8	6	8	9	8	6	7	9	9	8	9	10
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Laboratory: Standard-Tech Co. Ltd Testing Center
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158	13	12	11	10	10	10	10	11	9	10	11	10	10	9	12	12	13
159	13	12	11	10	10	10	10	11	10	10	11	10	10	9	11	12	13
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179	14	14	13	11	12	12	11	12	13	14	13	13	12	11	13	14	14
180	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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