



GONIOPHOTOMETER TEST REPORT

IES LM79-08 Section 9.3

TÜV SÜD America

Photometric Testing and Evaluation in Accordance with LM79-2008

Report Prepared for:

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Sample Tested: Draco BS730 5700K Medium 40W
Manufacturer: Beghelli North America

Technical Report Number: JI1302916-15-GONIO
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Page 1

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GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# JI1302916-15-GONIO

June 12, 2013

Summary of Key Test Results

Model# **Draco BS730 5700K Medium 40W**
Manufacturer **Beghelli North America**
TÜV Sample# **712-8**
Date of Test **June 10, 2013**

Notes:

Tested in intended orientation (Horizontal)



Parameter	Measured Result
Luminous Flux	2883.8 Lumens
Input Power	35.36 Watts
Efficacy	81.56 Lumens/Watt
Beam Angle	21.3°
Stabilization Time	60 minutes
In-Situ Temp Test (ISTMT)**	70.7°C

The above results are recorded / derived from measurements in accordance with LM79-08

**ISTMT in accordance with "Energy Star Program Requirements for Luminaires – Version 1.2".

TABLE OF CONTENTS

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Page 2

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GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# JI1302916-15-GONIO

June 12, 2013

Test Results	4
Zonal Lumen Summary	4
Illuminance Plots.....	4
Candela Plots	5
Candela Tabulation	6
Photometric Testing Information	7
Equipment List:	7

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Page 3

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Report# JI1302916-15-GONIO

June 12, 2013

Test Results –

The following results were obtained after stabilization of the sample in accordance with the requirements set forth in section 5.0 of IES LM79-2008. Stability is achieved when the variation of 3 readings of light output and electrical power over a period of 30 minutes, taken 15 minutes apart, is less than 0.5%.

Photometric Results	Draco BS730 5700K Medium 40W
	Goniophotometer
Total Luminous Flux (Lumens)	2883.8
Luminous Efficacy (Lumens/Watt)	81.56

Electrical Results	Draco BS730 5700K Medium 40W
	Goniophotometer
Input Power (Watts)	35.36
Input Voltage (Volts AC)	119.97
Input Current (Amps)	0.300
Power Factor (120/277V)	0.982/0.911
Input Frequency (Hertz)	60.0
A-THD (Current %) (120/277V)	1.56/6.27

Additional Parameters	Draco BS730 5700K Medium 40W
	Goniophotometer
Stabilization Time (Light and Power)	60 minutes
Test Geometry Configuration	Type C
Photometer	Gigahertz Optik P9801
Ambient Temperature	25.2°C
ISTMT (In-Situ Temperature Measurement)	70.7°C
Spacing Criteria	0.38 (0° – 180°) / 0.38 (90° – 270°)

Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0 - 60	2818.7	97.7 %
60 - 90	65.2	2.3 %
0 - 90	2883.8	100.0 %
90 - 180	0.0	0.0 %
0 - 180	2883.8	100.0 %

Test Results – Illuminance Plots

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Page 4

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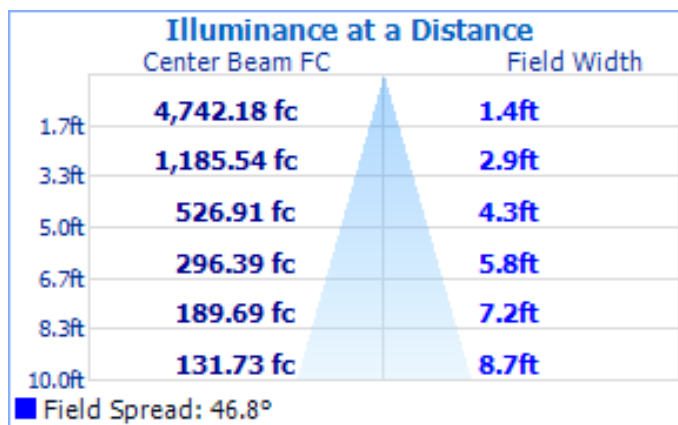
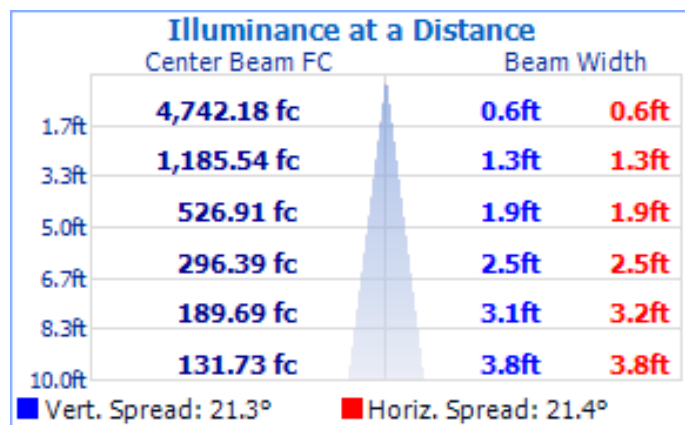
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GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

June 12, 2013

The following images depict the illuminance characteristics of the luminaire.

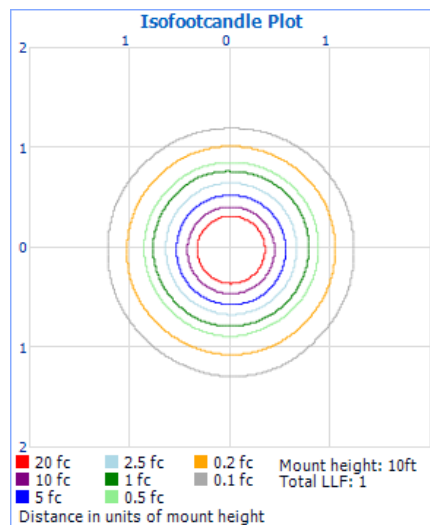


Beam Angle = 21.3°

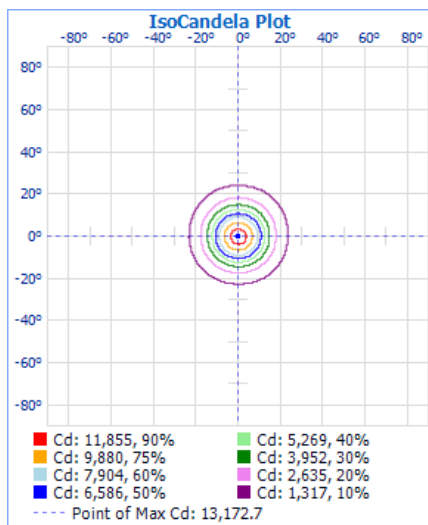
Field Angle = 46.8°

Test Results – Candela Plots

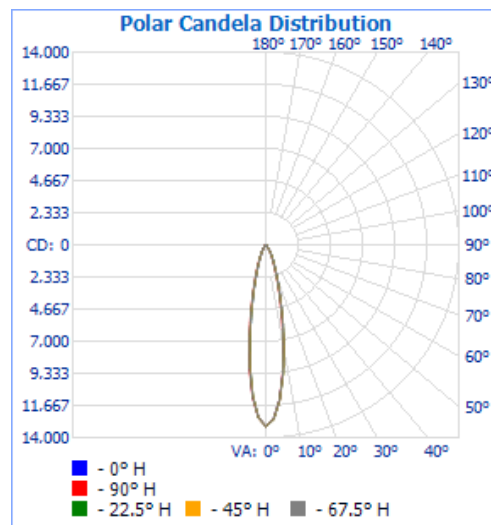
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



IsoCandela Plot



Polar Candela



GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# JI1302916-15-GONIO

June 12, 2013

Test Results – Candela Tabulation

The table below displays the tabulated Candela measurements from the IES file:

Horizontal (lateral) angles are shown in **red** across the top of the table, in increments of 22.5°.

Vertical (longitudinal) angles are shown in **blue** down the side of the table, in increments of 2.5°.

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0	202.5	225.0	247.5	270.0	292.5	315.0	337.5	360.0
0.0	13173	13173	13173	13173	13173	13173	13173	13173	13173	13173	13173	13173	13173	13173	13173	13173	13173
2.5	12635	12678	12664	12675	12670	12612	12595	12549	12521	12544	12549	12559	12550	12597	12623	12631	12633
5.0	11302	11328	11353	11322	11287	11212	11125	11043	11021	10976	11001	11033	11102	11159	11192	11237	11295
7.5	9436	9471	9494	9437	9338	9230	9088	8976	8912	8885	8925	9030	9136	9195	9292	9347	9422
10.0	7422	7473	7475	7387	7266	7122	6959	6792	6733	6714	6768	6890	7006	7127	7264	7332	7414
12.5	5610	5611	5608	5501	5348	5228	5048	4894	4856	4839	4906	5029	5124	5263	5438	5510	5601
15.0	4094	4087	4067	3978	3842	3729	3580	3438	3411	3412	3471	3591	3655	3791	3964	4020	4088
17.5	3013	2973	2956	2868	2760	2660	2540	2418	2418	2426	2463	2578	2622	2743	2890	2935	3006
20.0	2233	2193	2162	2080	1990	1911	1822	1737	1728	1752	1795	1869	1932	2004	2130	2179	2230
22.5	1665	1643	1594	1523	1469	1380	1323	1285	1265	1290	1340	1371	1434	1498	1588	1637	1663
25.0	1244	1239	1192	1129	1104	1032	994	975	948	982	1023	1019	1065	1114	1171	1217	1241
27.5	931	935	903	850	833	793	774	763	740	762	789	783	810	844	883	914	930
30.0	714	723	701	680	651	635	620	614	602	616	621	623	628	647	680	691	713
32.5	516	500	502	493	462	480	470	461	462	475	460	463	453	456	486	494	516
35.0	324	338	330	335	326	333	330	325	323	315	305	321	309	325	333	323	324
37.5	223	217	215	214	216	222	220	207	203	221	208	207	215	210	211	221	223
40.0	145	129	134	138	139	149	140	133	129	129	125	133	131	130	131	141	145
42.5	98	93	91	93	91	91	88	85	83	82	82	86	87	90	90	94	98
45.0	75	74	70	69	67	68	65	62	61	62	62	63	65	71	70	71	75
47.5	59	58	55	54	53	51	50	49	48	48	49	51	52	54	55	56	59
50.0	51	49	45	45	43	42	41	40	39	39	40	42	43	44	45	47	51
52.5	42	42	38	37	34	35	34	33	32	33	33	35	35	36	38	39	42
55.0	37	36	33	32	31	31	30	30	29	29	30	31	31	32	33	34	37
57.5	33	33	30	30	28	29	28	28	27	27	28	29	29	30	30	31	33
60.0	30	30	29	28	27	27	27	26	26	26	26	27	27	28	28	28	30
62.5	28	28	27	27	26	26	25	25	25	25	25	26	26	26	26	26	27
65.0	26	26	26	25	25	25	24	24	24	24	24	24	24	24	25	25	26
67.5	24	24	24	24	23	23	23	23	23	23	23	23	23	23	23	23	24
70.0	23	23	23	23	22	22	22	22	22	22	22	22	22	22	22	22	23
72.5	22	22	22	22	21	21	21	21	21	22	22	21	21	21	21	22	22
75.0	21	21	21	21	20	20	20	20	20	21	21	20	20	20	21	21	21
77.5	20	20	20	20	20	19	19	19	20	20	20	19	19	19	20	20	20
80.0	20	19	19	19	19	18	18	18	18	19	19	18	18	19	19	19	19
82.5	19	19	19	19	18	18	18	17	18	18	18	17	18	18	19	19	19
85.0	18	18	18	18	17	17	17	16	17	17	17	17	17	17	18	18	18
87.5	17	17	17	17	16	16	16	16	17	17	17	16	16	16	17	17	17
90.0	16	16	16	16	16	16	16	15	16	16	16	15	16	16	16	16	16

Maximum Candela = **13,172.7** at Horizontal: 0.0°, Vertical: 0.0°

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Page 6

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TÜV SÜD Photometric Testing Information

Testing is performed in accordance with the procedures outlined in IESNA LM79-2008. The sample is evaluated for photometric and electrical characteristics using a goniophotometer, located in an accredited, temperature and humidity-controlled, draft free photometric laboratory.

Sample Stabilization

The sample (UUT) is placed on a goniophotometer and powered by a regulated and conditioned alternating or direct current supply. The stabilization times shown on the results pages of this report denote the time of the 3rd measurement (of the 3 consecutive readings) since this is the minimum time that the sample is assumed to have taken to reach stabilization in accordance with section 5.0 of LM79-2008.

Goniophotometer

The Goniophotometer is a Mirror based Type C optical measurement system in accordance with section 9.3.1 of IESNA LM79-2008.

Goniophotometer Calibration

The Goniophotometer is calibrated using a frosted tungsten filament FDS/DZE lamp with the following specifications:

Manufacturer: General Electric
Part Number: CSB-110
Lamp Number: 112-A
Voltage: 16.52 Volts DC
Wattage: 150.0 Watts
Calibration Current: 4.816 Amperes
Luminous Intensity: 151.5 Candelas
Calibration Date: 02-13-2011 (NIST traceable)

TÜV SÜD Test Equipment List:

TÜV SÜD Mirror Goniophotometer System – contains the following:			
Goniophotometer	M.E. GONC02	GON002	weekly
Spectroradiometer	Gigahertz Optik P9801	GIG002	weekly
Power Analyzer	Yokogawa WT210	ATLE0031	11/16/2013
Power Source	Chroma 61603	AC007	N/A

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