



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 Wide 40W
Manufacturer: Beghelli North America

Technical Report Number: JI1302916-16-GONIO
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GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

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June 12, 2013

Summary of Key Test Results

Model# **Draco BS730 5700K Wide 40W**
Manufacturer **Beghelli North America**
TÜV Sample# **712-8**
Date of Test **June 7, 2013**

Notes:

Tested in intended orientation (Horizontal)



Parameter	Measured Result
Luminous Flux	3003.6 Lumens
Input Power	35.34 Watts
Efficacy	84.99 Lumens/Watt
Beam Angle	31.3°
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".

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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 Wide 40W
	Goniophotometer
Total Luminous Flux (Lumens)	3003.6
Luminous Efficacy (Lumens/Watt)	84.99

Electrical Results	Draco BS730 5700K Wide 40W
	Goniophotometer
Input Power (Watts)	35.34
Input Voltage (Volts AC)	119.96
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 Wide 40W
	Goniophotometer
Stabilization Time (Light and Power)	61 minutes
Test Geometry Configuration	Type C
Photometer	Gigahertz Optik P9801
Ambient Temperature	25.1°C
ISTMT (In-Situ Temperature Measurement)	70.7°C
Spacing Criteria	0.54 (0° – 180°) / 0.56 (90° – 270°)

Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0 - 60	2931.6	97.6 %
60 - 90	72.0	2.4 %
0 - 90	3003.6	100.0 %
90 - 180	0.0	0.0 %
0 - 180	3003.6	100.0 %

Test Results – Illuminance Plots

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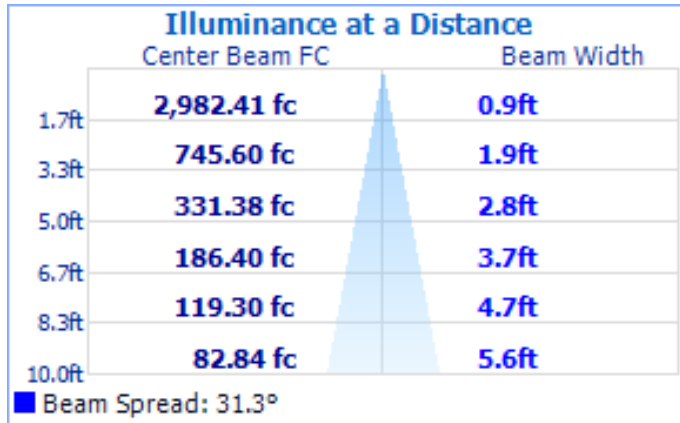


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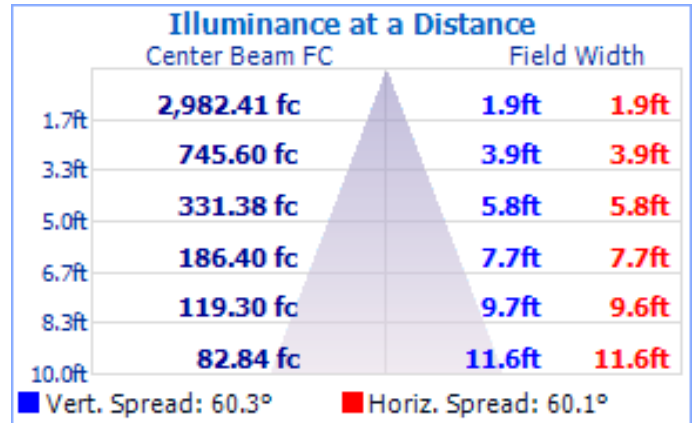
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The following images depict the illuminance characteristics of the luminaire.



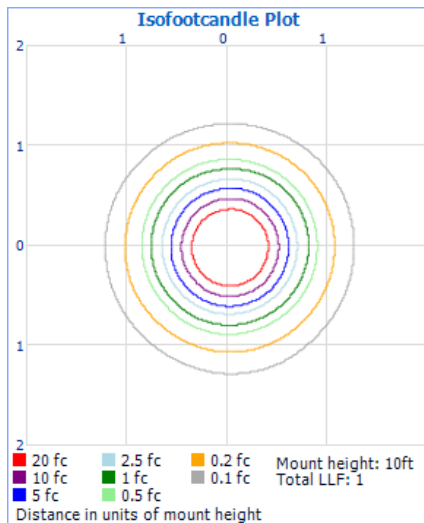
Beam Angle = 31.3°



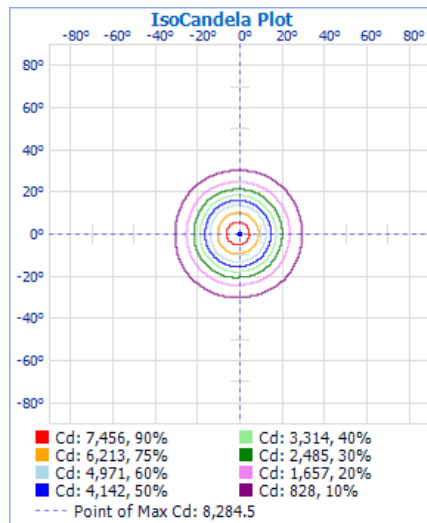
Field Angle = 60.3°

Test Results – Candela Plots

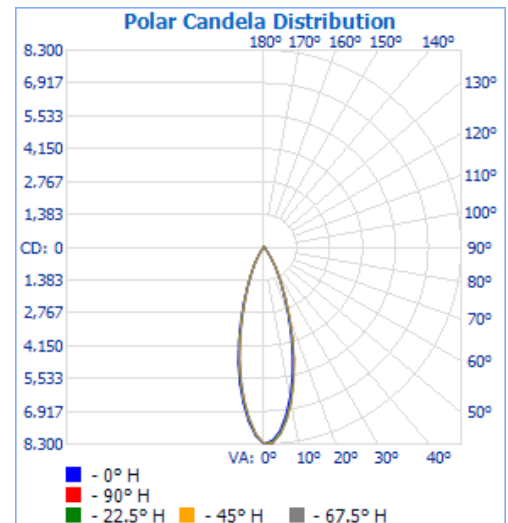
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



IsoCandela Plot



Polar Candela

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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	8284	8284	8284	8284	8284	8284	8284	8284	8284	8284	8284	8284	8284	8284	8284	8284	8284
2.5	8136	8196	8246	8269	8269	8207	8138	8044	7965	7931	7892	7880	7862	7930	8000	8068	8132
5.0	7742	7830	7906	7918	7890	7800	7668	7516	7394	7294	7234	7212	7257	7359	7464	7583	7739
7.5	7113	7255	7336	7335	7292	7184	7002	6824	6637	6534	6481	6461	6527	6626	6772	6930	7111
10.0	6360	6526	6625	6591	6560	6452	6249	6036	5848	5718	5653	5590	5678	5805	5944	6162	6355
12.5	5528	5699	5802	5736	5701	5601	5380	5199	5006	4859	4780	4704	4794	4917	5055	5320	5524
15.0	4612	4792	4916	4871	4830	4718	4509	4327	4098	3961	3891	3818	3893	4019	4152	4418	4610
17.5	3759	3886	4030	3965	3949	3839	3621	3481	3246	3114	3052	2981	3056	3172	3291	3553	3751
20.0	2945	3055	3190	3113	3086	3024	2805	2706	2488	2380	2341	2266	2346	2425	2531	2774	2940
22.5	2244	2347	2453	2375	2371	2307	2119	2062	1883	1792	1771	1713	1765	1840	1922	2132	2239
25.0	1697	1768	1849	1781	1787	1726	1590	1551	1410	1353	1333	1278	1314	1365	1436	1594	1694
27.5	1263	1315	1369	1312	1315	1271	1184	1154	1050	1002	991	956	982	1010	1066	1185	1260
30.0	922	971	1008	969	968	937	875	855	776	748	735	705	721	745	787	869	920
32.5	621	609	645	629	646	650	619	594	541	508	496	473	487	478	510	575	620
35.0	356	397	399	417	432	408	398	399	347	320	321	304	308	311	328	348	355
37.5	237	241	255	254	268	271	262	237	209	206	206	197	199	199	201	221	237
40.0	149	144	151	165	170	172	161	142	134	135	130	129	125	122	126	140	149
42.5	99	99	102	104	102	103	98	94	88	85	83	83	83	84	85	91	99
45.0	73	76	75	77	77	77	73	68	65	64	62	62	62	65	65	67	73
47.5	57	57	56	57	57	57	55	52	51	49	48	50	50	51	51	53	57
50.0	49	49	47	48	48	48	46	43	42	41	41	42	41	42	43	45	49
52.5	41	42	39	39	38	39	37	36	35	35	35	35	35	36	36	38	41
55.0	36	37	35	35	34	34	33	33	32	31	32	32	32	32	32	34	36
57.5	33	33	32	32	31	31	31	30	29	30	30	30	30	30	30	31	33
60.0	30	31	30	30	29	29	29	29	28	28	28	29	28	28	28	29	30
62.5	29	29	29	29	28	28	28	28	27	27	27	27	27	27	27	28	29
65.0	27	28	27	27	27	27	27	26	27	26	26	26	26	26	26	27	27
67.5	26	26	26	26	25	26	26	26	26	26	25	25	25	24	25	25	26
70.0	25	25	25	25	24	25	25	24	25	25	25	24	24	24	24	24	25
72.5	24	24	24	24	23	23	23	23	24	25	25	24	23	23	24	24	24
75.0	24	24	23	23	22	22	22	23	23	24	24	23	22	23	23	23	24
77.5	23	23	22	22	21	21	22	22	22	23	24	22	21	22	22	23	23
80.0	22	21	21	21	20	20	20	20	21	22	21	21	21	21	22	22	22
82.5	21	21	20	20	20	19	19	20	20	21	21	20	20	21	22	22	21
85.0	20	19	19	19	18	18	18	19	20	20	20	19	19	20	20	20	20
87.5	19	18	18	18	18	18	18	19	23	24	20	18	18	18	19	19	19
90.0	18	18	17	17	17	17	17	18	19	19	18	17	17	17	18	18	18

Maximum Candela = **8284.5** at Horizontal: 0.0°, Vertical: 0.0°

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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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