



GONIOPHOTOMETER TEST REPORT

IES LM79-08 Section 9.3

TÜV SÜD America

Photometric Testing and Evaluation in Accordance with LM79-2008

Report Prepared for:

Bill Dixon

Director of Engineering & Operations

Beghelli North America

3250 Corporate Way, Unit B
Miramar, FL 33025
United States

Telephone: 954-442-6189

Sample Tested: Draco 720 5700K (Wide)
Manufacturer: Beghelli North America

Technical Report Number: JI1306325-7-GON
Report Issue Date: June 26, 2013
Total Number of Pages: 7 (including this page)

Report Prepared by:

Byrd Evans

TÜV SÜD Project Handler

Report Reviewed by:

Steve Longo

TÜV SÜD Manager

TÜV SÜD America, Inc.

5945 Cabot Parkway, Suite 100,
Alpharetta GA 30005

Telephone: 678-341-5900 www.tuvamerica.com

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GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

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June 26, 2013

Summary of Key Test Results

Model# Draco 720 5700K
(Wide)
Manufacturer Beghelli North
America
TÜV Sample# 808-2
Date of Test June 25, 2013



Notes:

Tested in intended orientation (LBU)
(with aperture down)

Parameter	Measured Result
Luminous Flux	2,733 Lumens
Input Power	35.04 Watts
Efficacy	78.00 Lumens/Watt
Beam Angle	32.2°
Stabilization Time	60 minutes
In-Situ Temp Test (ISTMT)**	Not Tested on this Model#

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 720 5700K (Wide)
	Goniophotometer
Total Luminous Flux (Lumens)	2,733.1
Luminous Efficacy (Lumens/Watt)	78.00

Electrical Results	Draco 720 5700K (Wide)
	Goniophotometer
Input Power (Watts)	35.04
Input Voltage (Volts AC)	120.00
Input Current (Amps)	0.290
Power Factor	0.996
Input Frequency (Hertz)	60.0
A-THD (Current %)	3.71%

Additional Parameters	Draco 720 5700K (Wide)
	Goniophotometer
Stabilization Time (Light and Power)	60 minutes
Test Geometry Configuration	Type C
Photometer	Gigahertz Optik P9801
Ambient Temperature	25.4°C
ISTMT (In-Situ Temperature Measurement)	Not Tested on this Model#
Spacing Criteria	0.52 (0° – 180°) / 0.44 (90° – 270°)

Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0 - 60	2,649.2	96.9 %
60 - 90	83.9	3.1 %
0 - 90	2,733.1	100 %
90 - 180	0.0	0.0 %
0 - 180	2,733.1	100 %

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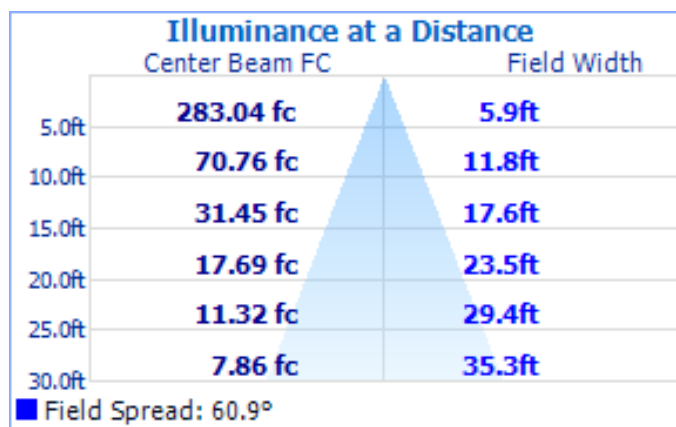
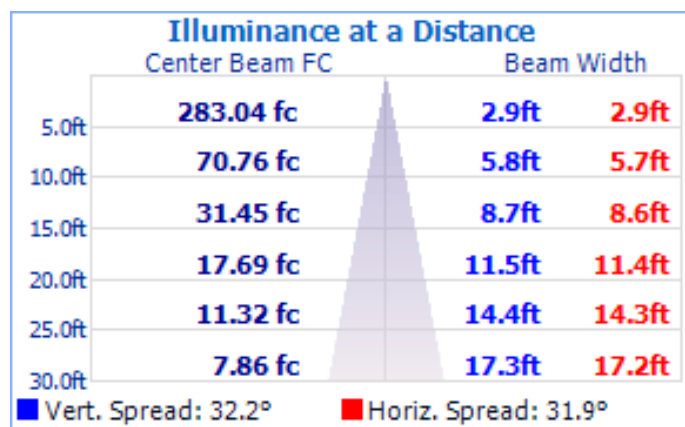
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Test Results – Illuminance Plots

The following images depict the illuminance characteristics of the luminaire (Mount Height = 30ft):

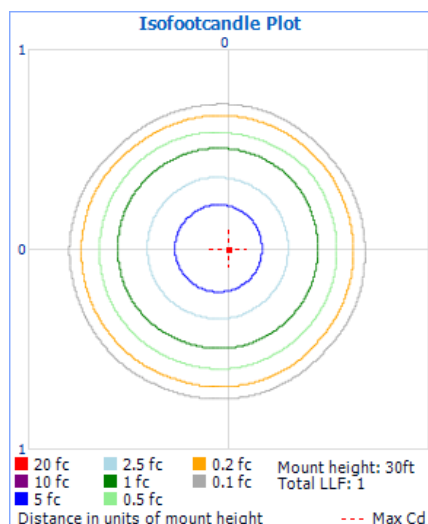


Beam Angle = 32.2°

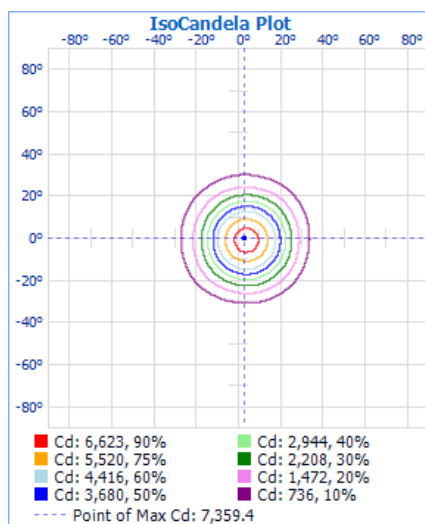
Field Angle = 60.9°

Test Results – Candela Plots

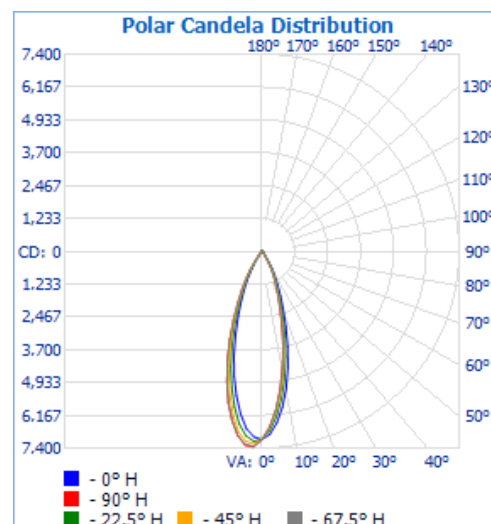
The following images depict the luminous intensity distribution characteristics of the luminaire:



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	7076	7076	7076	7076	7076	7076	7076	7076	7076	7076	7076	7076	7076	7076	7076	7076	7076
2.5	6878	6740	6645	6602	6597	6619	6713	6828	6982	7143	7242	7338	7359	7301	7193	7031	6876
5.0	6463	6227	6057	5984	5979	6041	6198	6428	6692	6955	7151	7277	7311	7178	6984	6704	6462
7.5	5896	5590	5388	5258	5224	5346	5548	5838	6166	6539	6833	6991	6976	6812	6544	6210	5893
10.0	5219	4856	4640	4471	4433	4556	4816	5141	5520	5936	6255	6466	6460	6268	5938	5585	5210
12.5	4477	4076	3843	3692	3646	3782	4074	4416	4823	5244	5551	5823	5837	5628	5289	4887	4480
15.0	3715	3331	3081	2949	2898	3038	3329	3665	4078	4518	4823	5091	5085	4886	4566	4133	3713
17.5	2980	2617	2400	2286	2244	2372	2636	2934	3313	3752	4048	4319	4321	4135	3787	3372	2983
20.0	2326	2049	1861	1772	1745	1836	2061	2299	2623	3021	3278	3531	3531	3364	3026	2642	2325
22.5	1821	1586	1431	1367	1354	1427	1601	1777	2044	2367	2585	2803	2783	2653	2378	2042	1822
25.0	1390	1219	1105	1046	1027	1087	1227	1366	1564	1810	1978	2168	2160	2052	1830	1555	1389
27.5	1056	929	836	781	758	787	898	1025	1176	1363	1498	1634	1627	1553	1380	1190	1054
30.0	792	644	546	470	437	471	586	620	750	954	1118	1219	1221	1167	1048	902	792
32.5	477	387	295	257	239	239	288	354	423	557	715	811	847	822	720	586	477
35.0	261	199	152	141	116	127	125	182	239	272	350	459	475	490	413	327	262
37.5	127	101	80	69	64	65	68	73	93	127	153	231	272	240	213	169	127
40.0	62	61	60	58	55	60	64	63	64	69	72	90	101	102	103	75	62
42.5	54	57	55	54	51	56	61	61	60	65	67	65	61	60	56	55	54
45.0	52	53	49	46	43	46	51	52	54	60	62	61	59	57	55	53	52
47.5	44	44	42	38	36	38	43	44	44	50	51	54	54	54	51	46	44
50.0	37	37	36	33	32	33	36	37	36	40	42	43	44	44	43	38	36
52.5	32	34	35	31	29	30	32	33	32	34	35	36	36	36	35	33	32
55.0	30	32	32	29	28	28	29	30	29	31	31	32	31	32	32	30	30
57.5	28	30	30	28	26	27	27	28	27	29	29	29	29	30	30	28	28
60.0	27	29	29	28	26	26	26	26	26	27	27	28	27	28	28	27	27
62.5	26	29	30	29	26	27	26	25	25	26	26	26	26	27	27	26	26
65.0	26	30	33	31	27	28	27	26	24	26	26	26	25	26	26	26	26
67.5	27	32	34	36	31	36	29	28	24	26	26	25	24	25	26	26	27
70.0	32	44	41	52	57	45	31	29	26	26	25	26	24	25	25	26	32
72.5	34	50	40	46	47	41	28	30	26	29	25	25	24	25	25	27	34
75.0	38	37	38	55	37	44	30	32	26	30	28	25	23	25	27	38	38
77.5	29	35	26	34	25	30	25	31	25	28	27	27	23	26	36	43	29
80.0	23	25	25	25	24	24	23	23	23	25	24	25	22	26	24	27	23
82.5	23	23	23	23	22	21	21	21	21	21	21	21	21	22	22	22	23
85.0	21	21	22	21	21	20	20	20	19	20	20	19	19	20	20	20	21
87.5	20	20	21	21	21	20	19	19	18	19	19	19	18	19	19	20	20
90.0	19	21	26	41	35	34	22	24	18	18	18	18	18	18	18	19	19

Maximum Candela = **7,359.4** at Horizontal: 270.0°, Vertical: 2.5°

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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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Alpharetta GA 30005

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