



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 710 5700K (Medium)
Manufacturer: Beghelli North America

Technical Report Number: JI1306325-11-GON
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GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

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June 26, 2013

Summary of Key Test Results

Model# Draco 710 5700K
(Medium)
Manufacturer Beghelli North
America
TÜV Sample# 808-4
Date of Test June 20, 2013



Notes:

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

Parameter	Measured Result
Luminous Flux	2,406 Lumens
Input Power	34.93 Watts
Efficacy	68.87 Lumens/Watts
Beam Angle	17.7°
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 710 4100K (Medium)
	Goniophotometer
Total Luminous Flux (Lumens)	2,405.6
Luminous Efficacy (Lumens/Watt)	68.87

Electrical Results	Draco 710 4100K (Medium)
	Goniophotometer
Input Power (Watts)	34.93
Input Voltage (Volts AC)	120.04
Input Current (Amps)	0.290
Power Factor	0.996
Input Frequency (Hertz)	60.0
A-THD (Current %)	3.39%

Additional Parameters	Draco 710 4100K (Medium)
	Goniophotometer
Stabilization Time (Light and Power)	75 minutes
Test Geometry Configuration	Type C
Photometer	Gigahertz Optik P9801
Ambient Temperature	25.3°C
ISTMT (In-Situ Temperature Measurement)	Not Tested on this Model#
Spacing Criteria	0.34 (0° – 180°) / 0.30 (90° – 270°)

Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0 - 60	2,232.7	92.8 %
60 - 90	172.9	7.2 %
0 - 90	2,405.6	100 %
90 - 180	0.0	0.0 %
0 - 180	2,405.6	100 %

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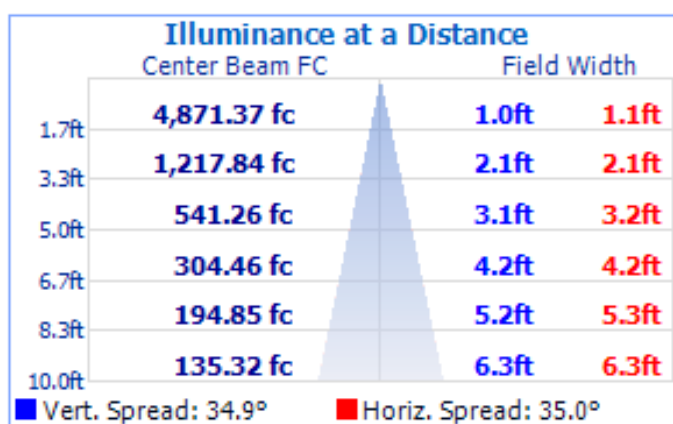
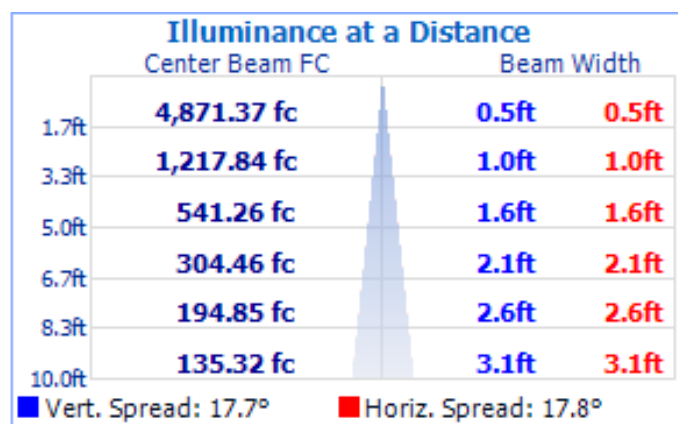
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Test Results – Illuminance Plots

The following images depict the illuminance characteristics of the luminaire (Mount Height = 10ft):

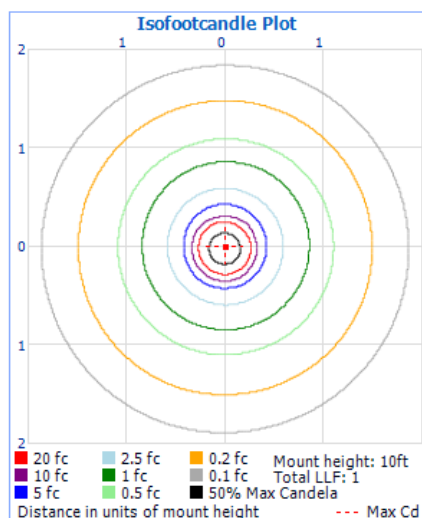


Beam Angle = 17.7°

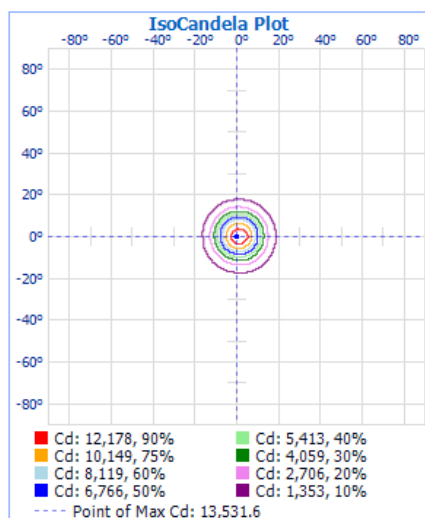
Field Angle = 34.9°

Test Results – Candela Plots

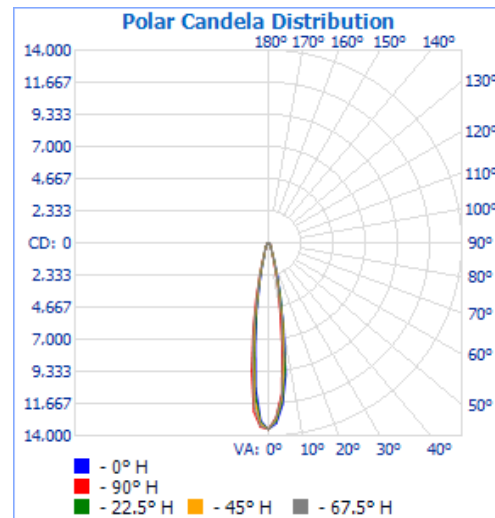
The following images depict the luminous intensity distribution characteristics of the luminaire:



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	13532	13532	13532	13532	13532	13532	13532	13532	13532	13532	13532	13532	13532	13532	13532	13532	13532
2.5	13128	12951	12795	12689	12648	12628	12683	12765	12898	13028	13171	13293	13376	13365	13338	13228	13125
5.0	11781	11525	11291	11124	10942	10668	10335	10438	10591	11043	11479	11952	12294	12295	12221	12014	11776
7.5	9643	9248	8614	8049	7497	7196	7315	7169	7262	7746	8197	8822	9352	9925	10035	9907	9639
10.0	6324	6031	5919	5410	4725	4777	4196	4312	4880	5101	5630	6035	6370	6615	6791	6650	6310
12.5	3932	3947	3367	3100	3234	2704	2821	2839	2940	3223	3424	3626	4111	4125	4262	4301	3928
15.0	2547	2193	2173	1967	1740	1849	1578	1751	1841	2163	2206	2438	2444	2536	2463	2360	2541
17.5	1492	1460	1231	1233	1138	1057	1206	1095	1138	1179	1385	1409	1580	1612	1529	1597	1491
20.0	962	876	915	793	751	769	762	789	807	837	866	957	964	938	981	954	961
22.5	641	638	616	620	631	643	655	673	693	708	704	688	667	668	677	663	640
25.0	535	536	533	534	542	550	559	572	590	602	598	586	571	557	545	535	534
27.5	462	462	458	458	463	468	474	483	497	507	504	496	485	476	468	461	462
30.0	396	396	392	391	394	397	401	408	419	427	424	418	411	406	400	396	396
32.5	339	339	336	334	336	338	341	347	354	359	358	353	348	346	342	339	339
35.0	291	290	288	287	289	293	297	303	308	310	307	302	298	296	293	291	291
37.5	252	251	250	251	255	261	267	269	270	272	272	264	259	257	254	252	252
40.0	222	221	222	225	228	234	239	243	242	241	238	233	230	227	225	223	222
42.5	198	198	199	203	206	210	214	216	215	215	213	209	206	204	202	200	198
45.0	179	178	180	182	183	185	188	189	187	188	188	186	185	184	183	182	179
47.5	162	161	162	163	163	164	165	166	166	166	166	165	164	164	165	164	162
50.0	147	145	146	146	145	146	147	148	148	148	149	149	148	148	149	148	146
52.5	133	132	132	133	131	132	133	133	133	133	135	135	135	134	135	135	133
55.0	122	121	121	121	120	120	120	120	120	121	122	123	123	123	124	124	122
57.5	112	111	111	110	109	109	109	109	109	109	111	112	112	112	114	114	112
60.0	103	102	102	101	100	100	99	99	99	99	101	102	103	103	105	105	103
62.5	95	94	93	92	91	90	90	90	89	90	91	93	94	95	96	97	95
65.0	87	86	85	84	83	82	81	81	80	81	82	84	85	87	88	88	87
67.5	79	79	77	76	74	74	73	72	72	73	74	76	77	79	80	80	79
70.0	72	71	70	69	67	66	65	64	64	65	66	68	70	71	73	73	72
72.5	65	64	63	62	59	58	56	56	56	57	59	61	62	64	66	66	65
75.0	58	57	56	54	51	50	49	48	48	49	51	53	55	57	58	59	58
77.5	50	49	48	46	44	42	41	41	41	42	44	46	48	50	51	52	50
80.0	43	42	40	39	37	36	35	34	34	35	37	39	41	42	44	44	43
82.5	36	35	34	33	31	30	30	29	29	30	31	33	34	36	37	37	37
85.0	31	30	30	29	28	27	27	27	26	26	27	28	29	30	31	32	31
87.5	28	28	27	27	26	26	26	26	25	25	25	25	26	27	28	28	28
90.0	26	26	26	28	28	29	29	29	27	26	26	25	25	25	26	26	26

Maximum Candela = **13,531.6** 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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