



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 710 5700K (Wide)
Manufacturer: Beghelli North America

Technical Report Number: JI1306325-12-GON
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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

Page 1

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GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# JI1306325-12-GON

June 26, 2013

Summary of Key Test Results

Model# Draco 710 5700K
(Wide)
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	2,456 Lumens
Input Power	34.90 Watts
Efficacy	70.34 Lumens/Watts
Beam Angle	22.2°
Stabilization Time	57 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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Page 2

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Report# JI1306325-12-GON

June 26, 2013

TABLE OF CONTENTS

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

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Page 3

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Report# JI1306325-12-GON

June 26, 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 710 5700K (Wide)
	Goniophotometer
Total Luminous Flux (Lumens)	2,455.5
Luminous Efficacy (Lumens/Watt)	70.36

Electrical Results	Draco 710 5700K (Wide)
	Goniophotometer
Input Power (Watts)	34.90
Input Voltage (Volts AC)	120.05
Input Current (Amps)	0.290
Power Factor	0.996
Input Frequency (Hertz)	60.0
A-THD (Current %)	3.38%

Additional Parameters	Draco 710 5700K (Wide)
	Goniophotometer
Stabilization Time (Light and Power)	57 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	0.42 (0° – 180°) / 0.36 (90° – 270°)

Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0 - 60	2,258.7	92.0 %
60 - 90	196.9	8.0 %
0 - 90	2,455.5	100 %
90 - 180	0.0	0.0 %
0 - 180	2,455.5	100 %

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Page 4

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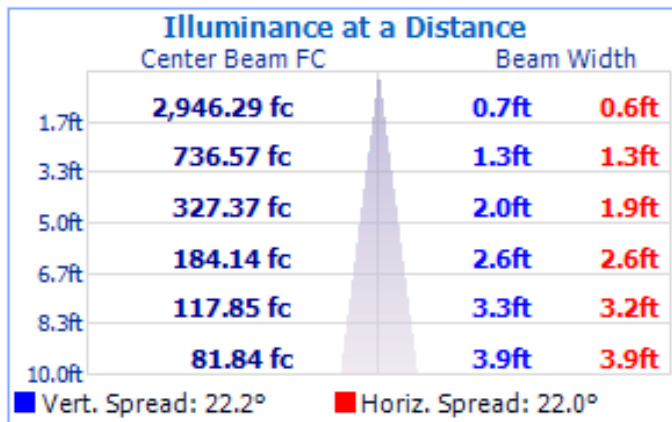
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Report# JI1306325-12-GON

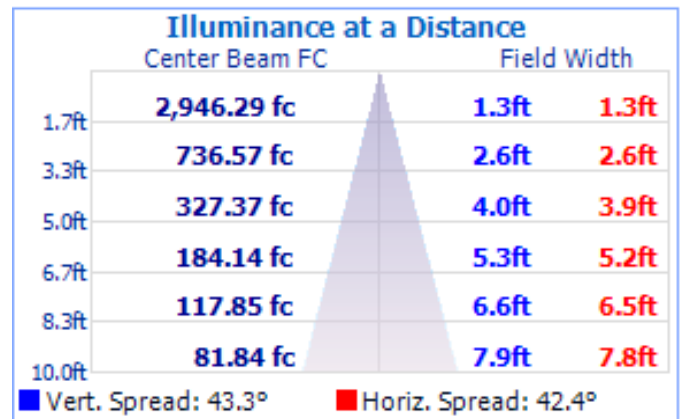
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Test Results – Illuminance Plots

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



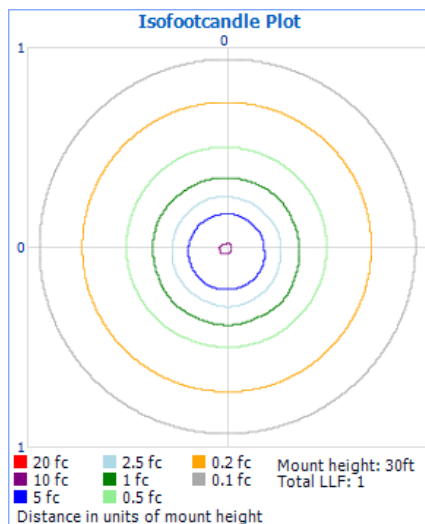
Beam Angle = 22.2°



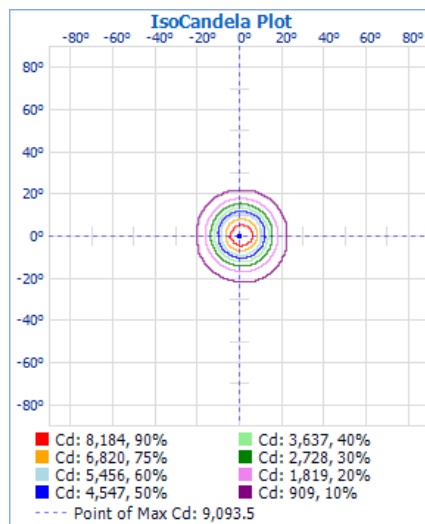
Field Angle = 43.3°

Test Results – Candela Plots

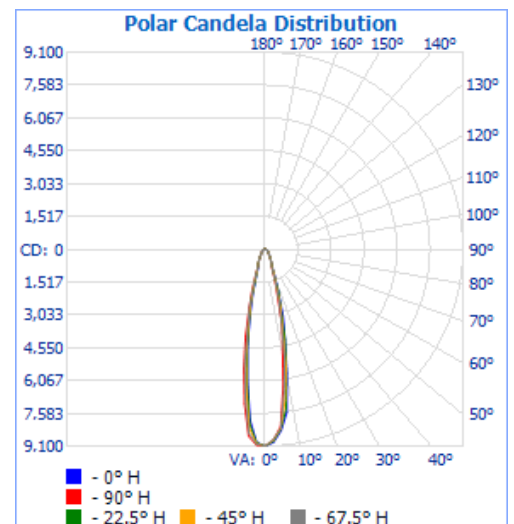
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



Isocandela Plot



Polar Candela



GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# JI1306325-12-GON

June 26, 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	9093	9093	9093	9093	9093	9093	9093	9093	9093	9093	9093	9093	9093	9093	9093	9093	9093
2.5	8933	8876	8831	8803	8825	8842	8881	8897	8933	8945	8978	9005	9051	9050	9024	8972	8928
5.0	8427	8349	8308	8302	8224	7996	7773	7806	7910	8094	8300	8523	8673	8656	8601	8514	8422
7.5	7624	7424	7048	6681	6390	6211	6294	6205	6118	6268	6527	6930	7214	7625	7747	7692	7620
10.0	5800	5648	5565	5187	4628	4679	4278	4296	4634	4701	5001	5333	5596	5783	6047	5972	5787
12.5	4236	4236	3764	3475	3588	3089	3242	3168	3207	3339	3481	3649	4133	4285	4397	4532	4233
15.0	3194	2794	2749	2482	2222	2312	1920	2106	2193	2489	2501	2729	2796	2979	3017	2900	3187
17.5	2009	2024	1646	1637	1502	1301	1493	1353	1424	1488	1697	1724	1957	2056	1994	2102	2006
20.0	1339	1180	1217	1034	929	944	921	948	969	1045	1091	1189	1214	1213	1333	1254	1336
22.5	836	823	770	769	773	780	795	812	841	870	871	865	854	867	880	873	835
25.0	680	675	663	661	662	667	677	690	716	742	743	739	733	721	710	687	680
27.5	582	577	565	562	561	565	572	582	603	625	624	624	620	612	605	587	582
30.0	492	487	476	473	472	476	481	488	504	521	521	522	520	515	510	496	491
32.5	414	410	402	399	398	402	406	412	423	435	435	436	435	433	429	418	414
35.0	351	347	341	340	340	345	350	356	364	371	370	369	367	365	362	354	350
37.5	300	298	294	295	297	303	310	314	316	322	322	318	316	313	310	304	300
40.0	263	260	258	261	264	268	273	278	278	281	279	278	276	274	271	266	262
42.5	233	231	231	233	235	239	244	246	246	248	248	246	244	243	241	237	233
45.0	209	207	207	209	208	210	213	215	215	217	218	218	218	217	216	213	209
47.5	188	186	186	187	186	187	188	190	190	191	193	193	193	194	193	191	188
50.0	170	168	168	168	167	167	168	169	170	171	173	174	174	174	175	173	170
52.5	155	153	153	152	151	151	152	152	153	154	156	158	158	158	159	157	155
55.0	142	140	140	139	137	137	137	138	138	139	141	143	144	144	145	144	142
57.5	130	129	128	127	125	125	125	125	126	126	128	130	131	132	133	133	131
60.0	120	118	117	116	115	114	113	114	114	115	117	119	120	121	122	122	120
62.5	111	109	108	106	104	104	103	103	103	104	106	108	110	111	113	112	111
65.0	101	99	98	97	95	94	93	92	92	94	95	98	99	101	103	102	101
67.5	92	91	89	87	85	84	83	83	82	84	86	88	90	92	93	93	92
70.0	83	82	80	79	76	75	73	73	73	74	76	79	81	83	84	85	83
72.5	74	73	71	70	67	66	64	64	64	65	67	70	72	74	76	76	74
75.0	66	65	63	61	58	57	55	54	55	56	58	61	63	65	67	67	66
77.5	57	56	54	52	49	48	46	46	46	48	50	52	55	57	58	59	57
80.0	49	47	45	43	41	39	39	38	38	40	42	44	46	48	50	50	49
82.5	41	39	38	36	34	33	33	32	32	33	35	36	39	40	41	42	41
85.0	34	33	32	31	30	30	29	29	29	29	30	31	32	33	35	35	34
87.5	31	30	30	29	28	28	28	28	28	27	27	28	28	29	30	30	31
90.0	28	28	29	30	31	31	31	31	30	29	28	28	27	28	28	28	28

Maximum Candela = **9,093.5** 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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TÜV SÜD America, Inc.

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Alpharetta GA 30005

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