



REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G101918458

Date: February 2, 2015

REPORT NO. 101918458LAX-007

TEST OF ONE LED PAR ZOOM

MODEL NO. ARENA Q7 ZOOM 10°

RENDERED TO

ELATION LIGHTING INC.
6122 S. EASTERN AVE
COMMERCE CA 90040

TEST: Electrical and Photometric tests as required to the IESNA test standard.

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number Q500519256.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number ARENA Q7 ZOOM 10°. The sample was received by Intertek on January 29, 2015, in undamaged condition and one sample was tested as received. The sample designation was LAN1501290915-003.

DATES OF TESTS: January 29, 2015

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G101918458

Date: February 2, 2015

REPORT NO. 101918458LAX-008

TEST OF ONE LED PAR ZOOM

MODEL NO. ARENA Q7 ZOOM 60°

RENDERED TO

ELATION LIGHTING INC.
6122 S. EASTERN AVE
COMMERCE CA 90040

TEST: Electrical and Photometric tests as required to the IESNA test standard.

STATEMENT OF LIMITATION: This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number Q500519256.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number ARENA Q7 ZOOM 60°. The sample was received by Intertek on January 29, 2015, in undamaged condition and one sample was tested as received. The sample designation was LAN1501290915-003.

DATES OF TESTS: January 29, 2015

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



SUMMARY

Model No.:	ARENA Q7 ZOOM 60°
Description:	LED PAR ZOOM

Criteria	Result
Total Lumen Output (Lumens)	1416.9
Total Power (W)	90.25
Luminaire Efficacy (LPW)	15.70
Power Factor	0.979

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
LSI High Speed Mirror Goniometer	6440T	000943	01/26/15	02/26/15
Elgar Power Supply	CW1251	000944	VBU	VBU
Yokogawa Power Analyzer	WT210	000945	11/26/14	11/26/15
Temp. & RH Meter	971	001178	12/22/14	12/22/15
Extech Instruments Stop Watch	N/A	001390	12/08/14	12/08/15
Tape Measure	33-430	001491	12/08/14	12/08/15

TEST METHODS

Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

Photometric and Electrical Measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

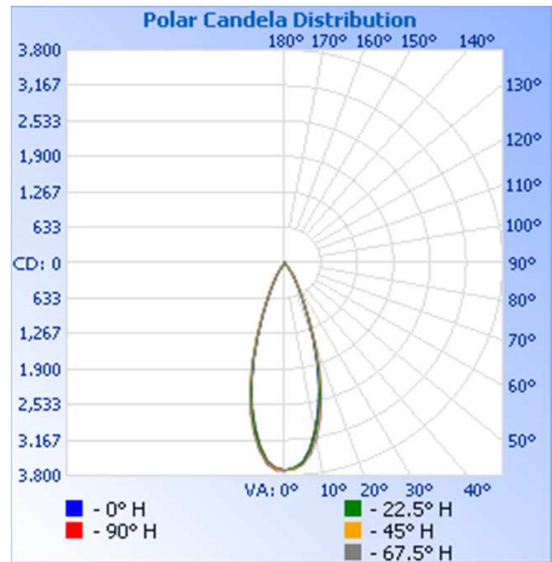
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
LAN1501290915-003	UP	120.00	768.1	90.25	0.979	1416.9	15.70

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 3,707.3

Angle	0	22.5	45	67.5	90
0	3704	3704	3704	3704	3704
5	3583	3569	3618	3612	3587
10	3053	3052	3161	3188	3044
15	2313	2342	2444	2465	2387
20	1449	1489	1554	1552	1518
25	758	784	803	803	782
30	375	407	411	407	402
35	166	164	169	143	162
40	5	4	5	4	4
45	3	3	4	3	5
50	5	3	3	4	3
55	3	3	3	3	2
60	1	0	0	1	2
65	0	0	0	0	0
70	0	0	2	0	1
75	0	0	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	2	0	0	0

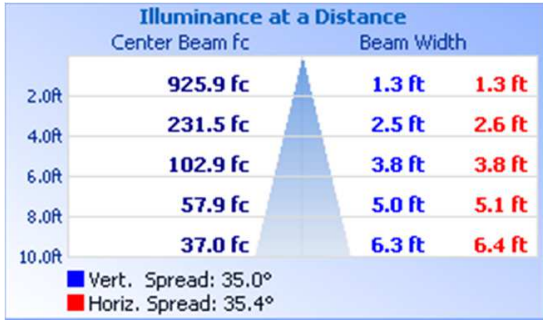


RESULTS OF TEST (cont'd)

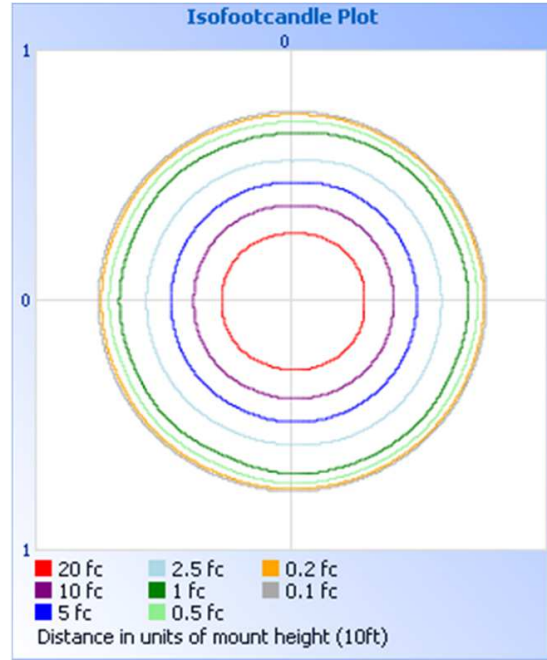
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	1320	93.1%
0-40	1411	99.6%
0-60	1416	99.9%
60-90	0.8	0.1%
0-90	1416.9	0.0%
90-180	0.1	0.0%
0-180	1416.9	100.0%

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	324.6	22.9%
10-20	631.3	44.6%
20-30	363.7	25.7%
30-40	91.5	6.5%
40-50	3.1	0.2%
50-60	2.0	0.1%
60-70	0.4	0.0%
70-80	0.2	0.0%
80-90	0.2	0.0%
90-100	0.1	0.0%

PICTURE (not to scale)



CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:



Ameet Alawi
Technician
Lighting Division

Attachment: None

Report Reviewed By:



Kenda Branch
Lighting Performance Team Lead
Lighting Division



SUMMARY

Model No.:	ARENA Q7 ZOOM 10°
Description:	LED PAR ZOOM

Criteria	Result
Total Lumen Output (Lumens)	1115.6
Total Power (W)	90.31
Luminaire Efficacy (LPW)	12.35
Power Factor	0.979

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
LSI High Speed Mirror Goniometer	6440T	000943	01/26/15	02/26/15
Elgar Power Supply	CW1251	000944	VBU	VBU
Yokogawa Power Analyzer	WT210	000945	11/26/14	11/26/15
Temp. & RH Meter	971	001178	12/22/14	12/22/15
Extech Instruments Stop Watch	N/A	001390	12/08/14	12/08/15
Tape Measure	33-430	001491	12/08/14	12/08/15

TEST METHODS

Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

Photometric and Electrical Measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

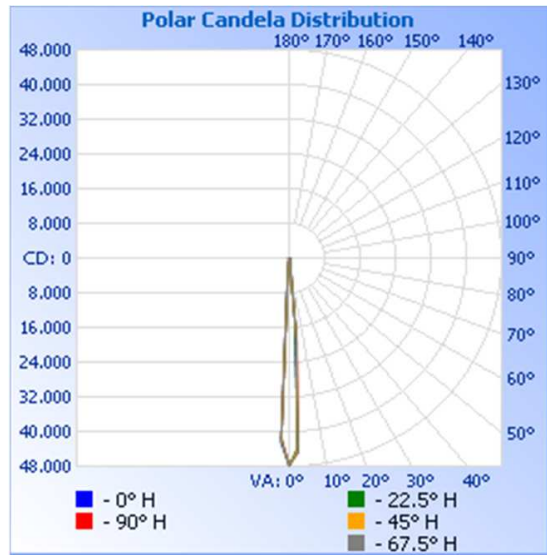
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
LAN1501290915-003	UP	120.00	768.3	90.31	0.979	1115.6	12.35

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value: 47,826.3

Angle	0	22.5	45	67.5	90
0	47826	47826	47826	47826	47826
5	14976	14953	18112	18671	19148
10	533	513	553	554	550
15	97	106	101	108	111
20	60	87	81	80	90
25	89	77	77	67	80
30	109	80	91	101	86
35	152	76	85	108	79
40	155	63	86	109	66
45	102	39	65	98	61
50	73	23	34	44	34
55	46	26	22	29	33
60	19	27	12	15	18
65	4	4	5	3	8
70	1	6	9	0	9
75	0	13	20	0	0
80	0	0	6	1	0
85	0	0	0	0	0
90	0	0	0	0	0

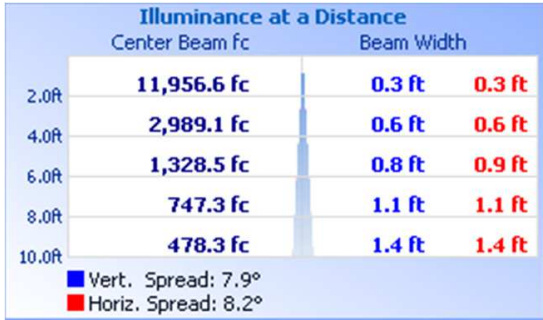


RESULTS OF TEST (cont'd)

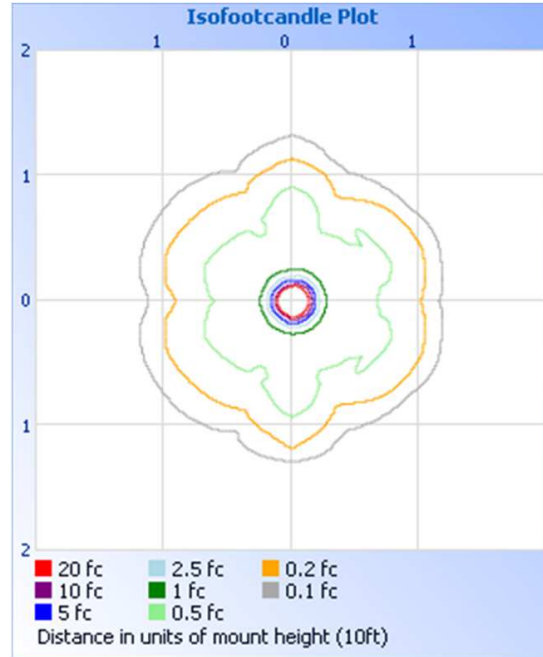
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	971.2	87.1%
0-40	1030	92.3%
0-60	1103	98.9%
60-90	12.4	1.1%
0-90	1115.6	0.5%
90-180	0	0.0%
0-180	1115.6	100.0%

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	893.5	80.1%
10-20	39.9	3.6%
20-30	37.9	3.4%
30-40	58.4	5.2%
40-50	48.6	4.4%
50-60	24.9	2.2%
60-70	6.3	0.6%
70-80	3.6	0.3%
80-90	2.5	0.2%

PICTURE (not to scale)



CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:



Ameet Alawi
Technician
Lighting Division

Attachment: None

Report Reviewed By:



Kenda Branch
Lighting Performance Team Lead
Lighting Division