



FOR THE SCOPE OF
ACCREDITATION UNDER NVLAP LAB
CODE 100402-0.

REPORT

3933 US ROUTE 11, CORTLAND, NEW YORK 13045

Project No. G102592916

Date: June 15, 2016

REPORT NO. 102592916CRT-001

TEST OF ONE LED HANDRAIL WITH ASYMMETRIC DISTRIBUTION AND 4000K HO LEDS

MODEL NO. LED RAIL ASY/4K/HO S3-SS-1-NA-NR-AS-2-3-2-1-4

LED MODEL NO. GROUPO MCI M7252231/C27

DRIVER MODEL NO. AC ELECTRONICSAC-A100VD24H4.1

RENDERED TO:

EFFICIENT-TEC INTERNATIONAL
9659 WENDELL RD
DALLAS TX, 75243

TESTS: 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 NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION The testing performed was authorized by signed quote number Qu-00694941.

STANDARDS USED:

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

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number LED RAIL ASY/4K/HO S3-SS-1-NA-NR-AS-2-3-2-1-4. The sample was received by Intertek on May 20, 2016 in undamaged condition and one sample was tested as received. The sample designation was CRT1605201027-001.

DATE OF TESTS: June 14, 2016

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SUMMARY:

MODEL NO. LED RAIL ASY/4K/HO S3-SS-1-NA-NR-AS-2-3-2-1-4
DESCRIPTION: LED Handrail with asymmetric distribution and 4000K HO LEDs

Criteria	Results
Light Output (Lumens)	469.5
Total Power (W)	18.26
Lumen Efficacy (Lm/W)	25.7
Power Factor ()	0.983

EQUIPMENT LIST

Equipment Used	Model No.	Control No.	Last Cal.	Cal. Due
LSI High Speed Mirror Goniometer	6440	---	6/2/2016	7/2/2016
Elgar AC Power Supply	CW1251	---	VBU	VBU
Sorenson DC Power Supply	XG 150-10	---	VBU	VBU
Yokogawa Power Analyzer	WT210	E464	5/2/2016	5/2/2017
Omega Thermometer	DPi8-C24	M263	5/2/2016	5/2/2017
M-D Building Products Digital Level	Smart Tool	L112	4/8/2016	4/8/2017
NIST Luminous Intensity Standard Source	NBS10322	N1427	12/12/2014	12/12/2016
NIST Luminous Intensity Standard Source	NBS10215	N1432	12/12/2014	12/12/2016
NIST Luminous Intensity Standard Source	960629-3	N1428	12/12/2014	12/12/2016
NIST Luminous Flux Standard Source	NBS10428	N1424	12/17/2014	12/17/2016

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 the SSL sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniometer equipment. The SSL sample was operated on the client provided driver at rated input volts in its designated orientation. The SSL sample was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.



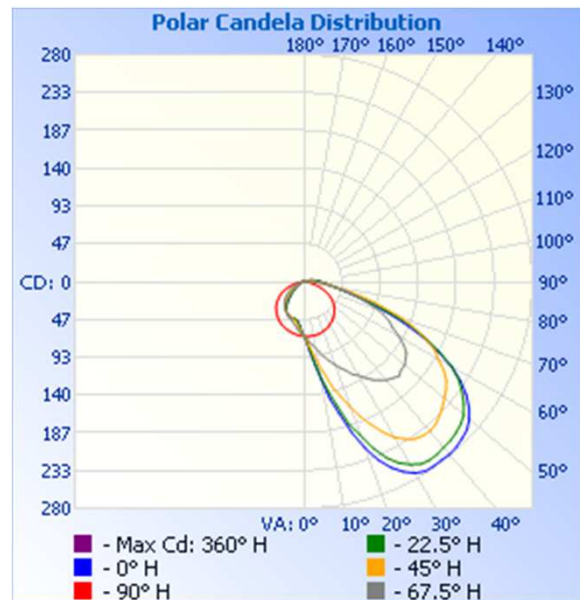
RESULTS:

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

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Light Output (Lumens)	Lumen Efficacy (lm/W)
CRT1605201027-001	Base Up	120.06	154.8	18.26	0.983	469.5	25.7

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	67	67	67	67	67
5	86	84	80	74	68
10	121	120	104	83	68
15	169	159	134	95	67
20	218	201	164	108	66
25	253	240	194	120	64
30	273	260	222	134	62
35	278	269	237	148	60
40	278	267	241	158	57
45	274	264	235	165	53
50	265	256	225	161	49
55	243	236	213	154	44
60	209	208	190	134	38
65	160	164	164	116	30
70	106	112	124	92	22
75	62	66	79	64	14
80	39	40	44	38	8
85	28	27	25	20	3
90	21	19	15	8	0
95	16	14	10	4	0
100	12	10	6	0	0
105	8	6	3	0	0
110	4	3	0	0	0
115	1	0	0	0	0

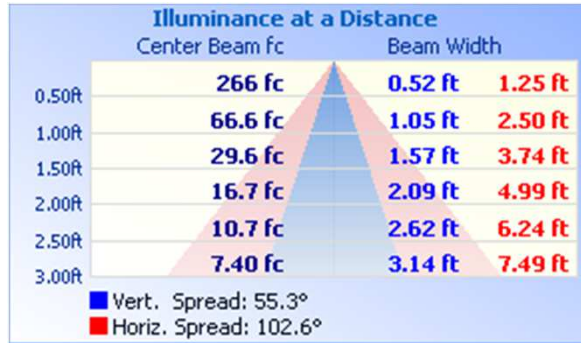


RESULTS:

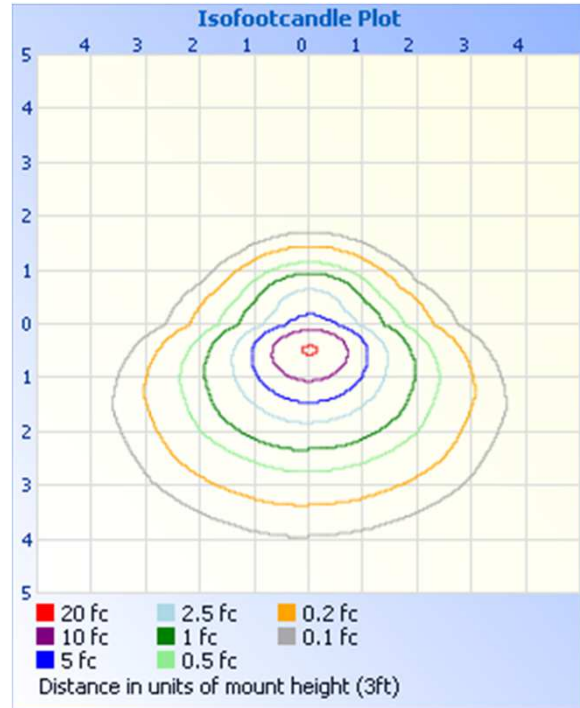
Illumination Plots

Mounting Height: 3ft

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	83.9	17.9
0-40	160.5	34.2
0-60	342.8	73.0
60-90	119.8	25.5
0-90	462.6	98.5
90-180	6.9	1.5
0-180	469.5	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	6.8	1.4
10-20	25.3	5.4
20-30	51.8	11.0
30-40	76.6	16.3
40-50	91.0	19.4
50-60	91.2	19.4
60-70	71.1	15.1
70-80	35.9	7.6
80-90	12.8	2.7
90-100	5.0	1.1
100-110	1.7	0.4
110-120	0.2	0.0



PRODUCT PICTURE:



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:

A handwritten signature in black ink, appearing to read "Gerald Gray". The signature is fluid and cursive.

Gerald Gray
Associate Engineer
Lighting Division

Report Reviewed By:

A handwritten signature in black ink, appearing to read "Jeffrey Davis". The signature is fluid and cursive.

Jeffrey Davis
Engineering Supervisor
Lighting Division

Attachments: IES File - CRT1605201027-001