



Les Industries Spectralux Inc. Spectralux Industries Inc.

2750 Sabourin, Saint-Laurent (Quebec) H4S 1M2 Canada
Tel.: (514) 332-0082 Fax: (514) 332-3590 www.spectralux.ca

ISO/IEC 17025
NVLAP[®]
NVLAP LAB CODE: 200899-0

Moving Mirror Goniophotometer Test Report

Standard(s): IESNA LM-15-03, IES LM-79-08, ANSI C82.77-2002

Customer Artemide Canada Ltd., 11105 Renaude-Lapointe, Montreal, Québec, Canada, H1J2T4

General Information		SSL Details		Driver Details	
Test Report	S1706161-R1	Description	(1) Bridgelux Array BXRC30E4000B72SE	Type	Commercial
Test Date	16 June 2017	Serial Number	SRIS 2765	Description	31SSL-CY1310
Report Date	17 July 2017	Photometric Method	Absolute	Manufacturer	Advance
Ambient	24.7°C	Lamp Lumens	-1	Catalog No.	XI050C105V052DNM1
Humidity	38.7 %	Test Position	Axial	Voltage	120.00 V
Lamp Type	SSL	Nominal Color	3000K	Power Factor	0.9000

Luminaire Data

General Information		Optics		Aperture (feet)	
Manufacturer	Artemide	Reflector	Spun Aluminum c/w Auxiliary Optics	X	-0.8958
Name	TAGORA 270 LED	Housing	Cylindrical Spun Aluminum Shape	Y	-0.8958
Catalog No.	MTA2_830DFH	Lens	Polycarbonate	Z	0.0000

Lamp Stabilization Time: 1 hour 15 minutes

Tested By: Jacques Dugas

Approved Signatory: Chrisnel Blot

Signature:



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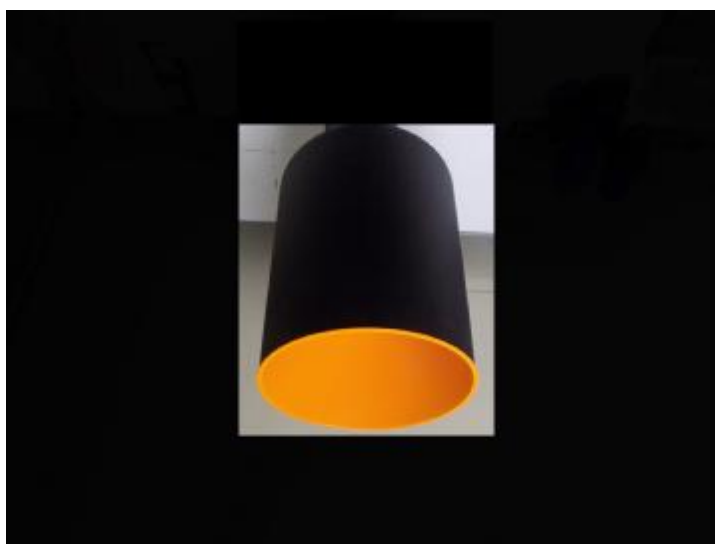
Luminaire Test Method

Precise installation and alignment of the luminaire to the rotation axis of the photometer is governed by a servomotor controlled via a microcontroller. A laser is used to validate the luminaire positioning. Before photometric measurements are taken, luminaire is operated long enough to reach stabilization and temperature equilibrium.

All movement commands issued to the photometer axes are mediated by the software to ensure the motion is within the limits of operation. The photometric detector used is a silicon detector corrected to closely match the spectral luminous efficiency photopic curve with a quality index less than 1.5%. Proper shielding is incorporated to the photometric test bench such that only the light from the unit under test is measured.

Luminous intensity measurements are performed at a distance great enough so that the inverse-square law applies. During each measurement the computer records the luminous intensity associated to the corresponding angles of radiation, as well as input electrical operational parameters and temperature measurements. Candela values are reported in IES format as per LM-63.

Equipment, reference standards are traceable to National Institute of Standards and Technology (NIST) and National Research Council of Canada (NRC).





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Electrical Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Power Supply	KIKUSUI	SPEC 77766A	1450001	N.P.C.R.	N.P.C.R.
Input Power Meter	Yokogawa	WT210	91L236539	2017/05/05	2018/05/05
Output Power Meter	N/A	N/A	N/A	N.P.C.R.	N.P.C.R.

Photometric Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Photometer	N/A	N/A	N/A	N.P.C.R.	N.P.C.R.
Photodetector	INPHORA	IPR-PDET 19	110802	2016/10/05	2017/10/05

Environment Equipment

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Temperature Humidity Sensor	Omega	HH311	051202970	2016/10/20	2017/10/20

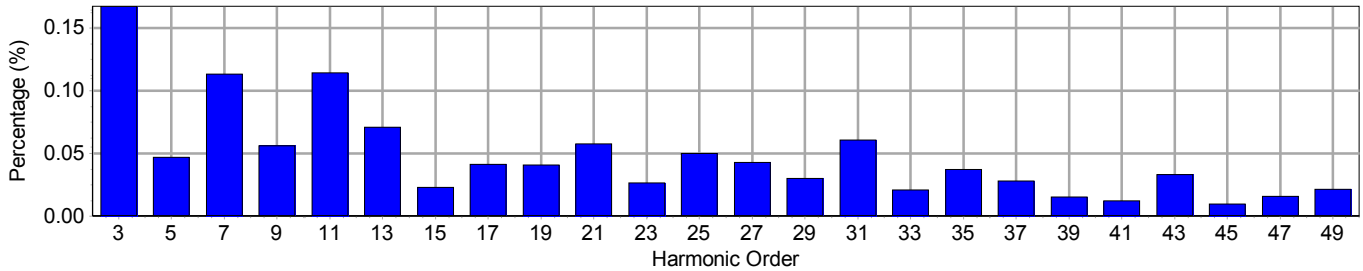


Electrical Measurements

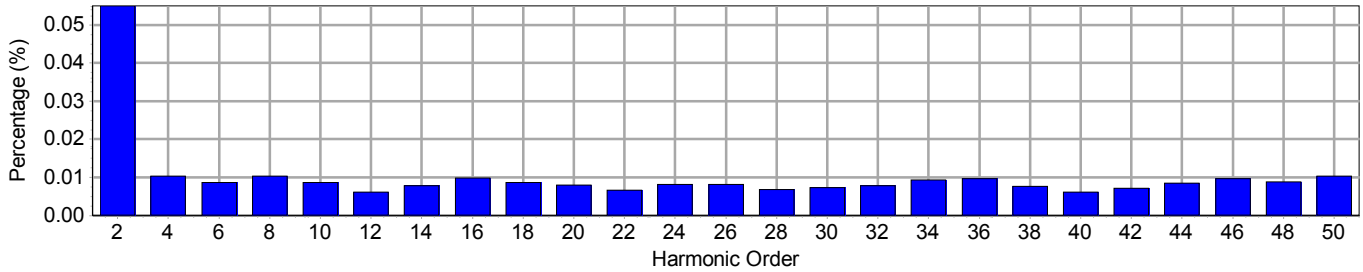
Input

Frequency	60 Hz	Active Power	35.68 W	THDV [ANSI]	0.30 %
Voltage	120.0 V(rms)	Apparent Power	35.89 VA	THDA [ANSI]	9.13 %
Current	0.2991 A(rms)	Power Factor	0.994	Max. Harmonic At	3rd order

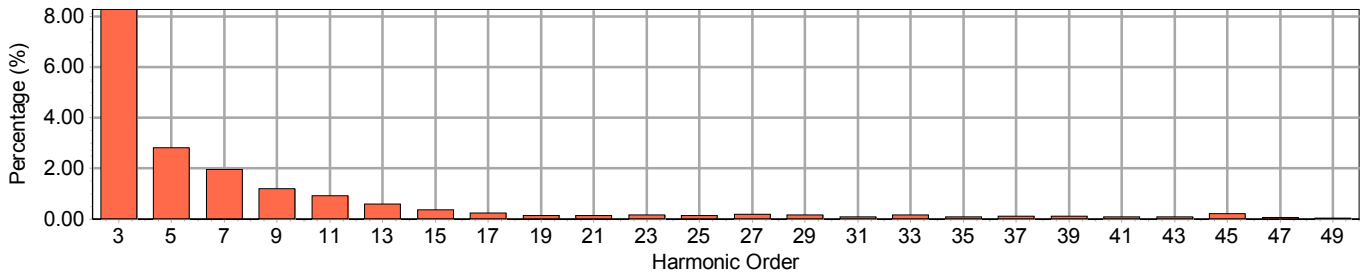
Input Voltage Harmonics (Odd)



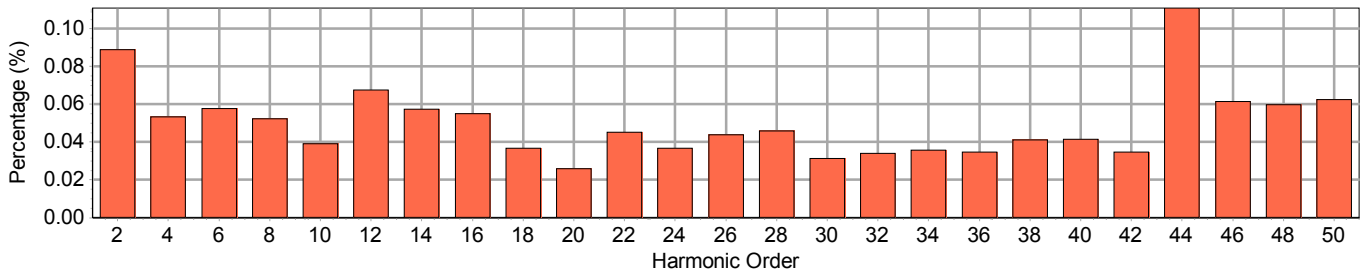
Input Voltage Harmonics (Even)



Input Current Harmonics (Odd)



Input Current Harmonics (Even)





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Harmonic Measurements

Odd Harmonics				Even Harmonics			
Harmonic Order	Frequency (HZ)	Voltage Harmonics (%)	Current Harmonics (%)	Harmonic Order	Frequency (HZ)	Voltage Harmonics (%)	Current Harmonics (%)
1	60	100.000	100.000	2	120	0.055	0.089
3	180	0.168	8.278	4	240	0.010	0.053
5	300	0.047	2.806	6	360	0.009	0.058
7	420	0.113	1.968	8	480	0.010	0.052
9	540	0.056	1.209	10	600	0.009	0.039
11	660	0.114	0.930	12	720	0.006	0.068
13	780	0.071	0.605	14	840	0.008	0.057
15	900	0.023	0.357	16	960	0.010	0.055
17	1020	0.041	0.252	18	1080	0.009	0.037
19	1140	0.041	0.151	20	1200	0.008	0.026
21	1260	0.058	0.137	22	1320	0.007	0.045
23	1380	0.027	0.173	24	1440	0.008	0.037
25	1500	0.050	0.127	26	1560	0.008	0.044
27	1620	0.043	0.200	28	1680	0.007	0.046
29	1740	0.030	0.167	30	1800	0.007	0.032
31	1860	0.060	0.086	32	1920	0.008	0.034
33	1980	0.021	0.155	34	2040	0.009	0.036
35	2100	0.037	0.086	36	2160	0.010	0.035
37	2220	0.028	0.115	38	2280	0.008	0.041
39	2340	0.015	0.102	40	2400	0.006	0.042
41	2460	0.012	0.083	42	2520	0.007	0.035
43	2580	0.033	0.095	44	2640	0.008	0.111
45	2700	0.010	0.206	46	2760	0.010	0.062
47	2820	0.016	0.062	48	2880	0.009	0.060
49	2940	0.021	0.043	50	3000	0.010	0.063



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Photometric Report: S1706161-R1

Prepared for: Artemide Canada Ltd. · Test Date: 16 June 2017

Luminaire: TAGORA 270 LED · Lumcat: MTA2_830DFH

Coefficients of Utilization - Zonal Cavity Method

RCR	0.9				0.8				0.7				0.5			0.1			0	
	RW	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0
0	122	122	122	122	119	119	119	119	116	116	116	116	111	111	111	102	102	102	100	100
1	115	112	109	106	113	110	107	105	110	108	105	103	104	102	100	96	95	94	92	92
2	109	103	98	94	107	101	97	93	104	100	96	92	96	93	90	91	88	86	85	85
3	103	95	90	85	101	94	89	84	99	93	88	84	90	86	82	85	82	80	78	78
4	97	89	82	77	95	87	81	77	94	86	81	76	84	79	76	80	77	74	72	72
5	92	82	76	71	90	81	75	71	89	80	75	70	79	74	70	75	72	68	67	67
6	87	77	70	65	86	76	70	65	84	75	69	65	74	68	65	71	67	64	62	62
7	83	72	65	61	81	71	65	61	80	71	65	60	69	64	60	67	63	59	58	58
8	78	68	61	57	77	67	61	56	76	66	60	56	65	60	56	63	59	56	54	54
9	74	64	57	53	73	63	57	53	72	63	57	53	62	56	52	60	55	52	51	51
10	71	60	54	49	70	60	53	49	69	59	53	49	58	53	49	57	52	49	48	48

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0 - 10	85	9.29	9.29
10 - 20	230	25.08	25.08
20 - 30	290	31.67	31.67
30 - 40	203	22.16	22.16
40 - 50	55	6.03	6.03
50 - 60	23	2.49	2.49
60 - 70	15	1.66	1.66
70 - 80	10	1.07	1.07
80 - 90	5	0.56	0.56
90 - 120	0	0.00	0.00
90 - 130	0	0.00	0.00
90 - 150	0	0.00	0.00
90 - 180	0	0.00	0.00
0 - 180	916	100.00	100.00

Average Luminance (Cd/m²)

Angle	0 Degree	45 Degree	90 Degree
45.0	1487	1487	1487
55.0	765	765	765
65.0	605	605	605
75.0	599	599	599
85.0	1029	1029	1029

Luminaire Luminous Flux: 916

Measured Input Power: 35.68 W

Total Luminaire Efficiency: N/A

Luminaire Luminous Efficacy: 25.7 lm/W

Luminaire Spacing Criterion (0 Degree): 0.9691

Luminaire Spacing Criterion (90 Degree): 0.9691

CIE Type: Direct



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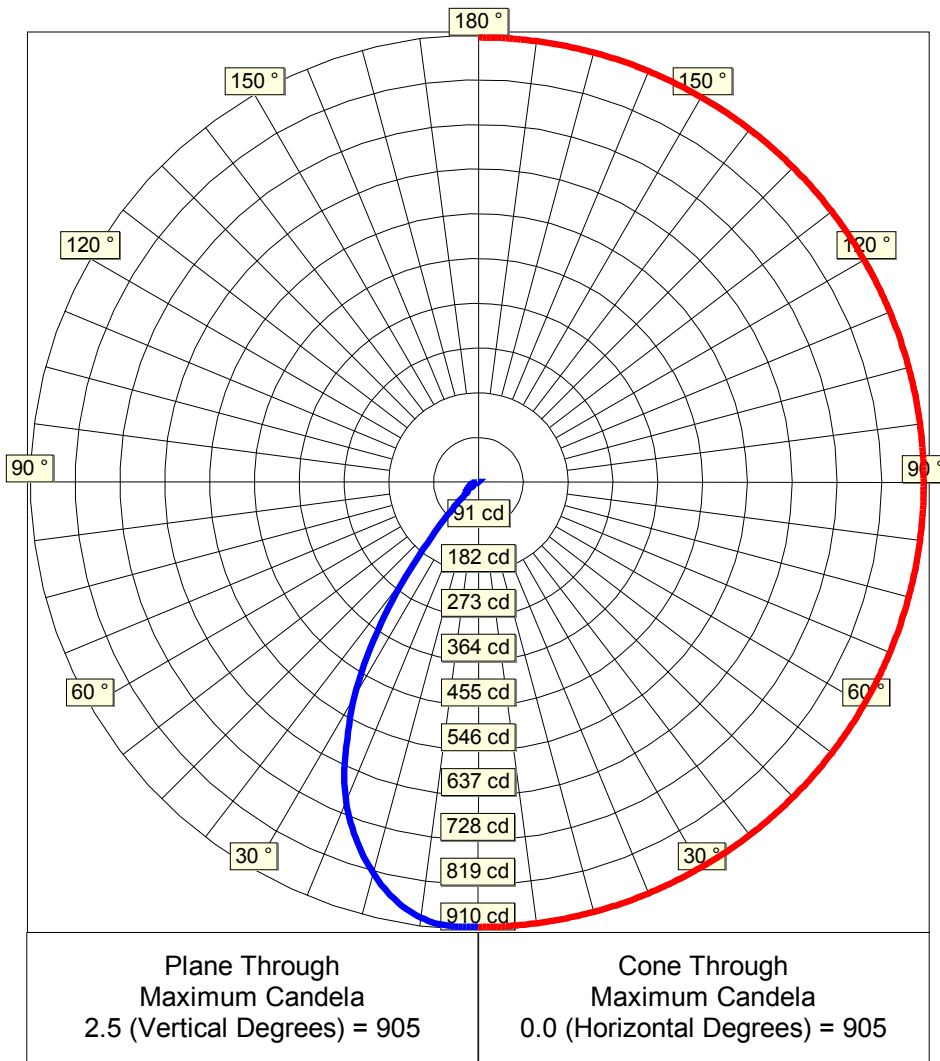
Photometric Report: S1706161-R1

Prepared for: Artemide Canada Ltd. · Test Date: 16 June 2017

Luminaire: TAGORA 270 LED · Lumcat: MTA2_830DFH

Luminous Intensity - Polar Curve for each Plane(1)

Plane Angles	Candela Values
0.0	904
2.5	905
5.0	903
7.5	893
10.0	877
12.5	853
15.0	824
17.5	789
20.0	749
22.5	702
25.0	644
27.5	572
30.0	503
32.5	419
35.0	331
37.5	243
40.0	162
42.5	103
45.0	62
47.5	38
50.0	32
52.5	29
55.0	26
57.5	22
60.0	19
62.5	17
65.0	15
67.5	13
70.0	12
72.5	10
75.0	9
77.5	8
80.0	7
82.5	6
85.0	5
87.5	4
90.0	0
92.5	0
95.0	0
97.5	0



Plane Through
Maximum Candela
2.5 (Vertical Degrees) = 905

Cone Through
Maximum Candela
0.0 (Horizontal Degrees) = 905

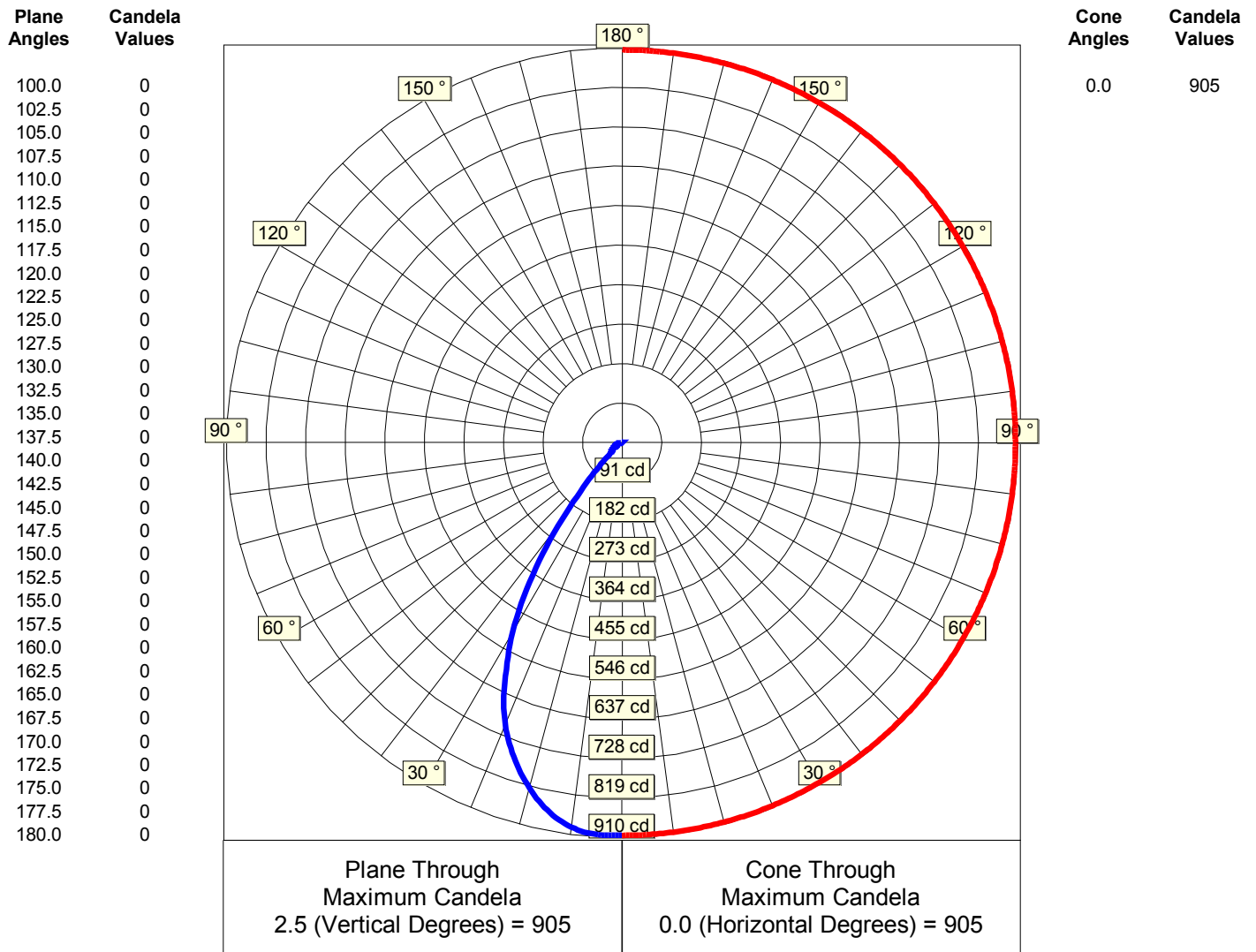


Photometric Report: S1706161-R1

Prepared for: Artemide Canada Ltd. · Test Date: 16 June 2017

Luminaire: TAGORA 270 LED · Lumcat: MTA2_830DFH

Luminous Intensity - Polar Curve for each Plane(2)





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IES File Headers

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IESNA:LM-63-2002
[ISSUEDATE] 16 June 2017
[TESTLAB] Spectra Lux Industries Inc.
[TEST] S1706161-R1
[MANUFAC] Artemide
[LUMCAT] MTA2_830DFH
[LUMINAIRE] TAGORA 270 LED
[LAMP] (1) Bridgelux Array BXRC30E4000B72SE c/w Advance Driver XI050C105V052DNM1 @ 120.00V
[_BURNING] Axial (916 Luminaire Lumens)
[_REFLECTOR] Spun Aluminum c/w Auxiliary Optics
[_LENS] Polycarbonate
[_HOUSING] Cylindrical Spun Aluminum Shape
[DISTRIBUTION] Direct Type - Downlight

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Candela Table

Lateral Angles

	0.0
	904
	905
	903
	893
	877
	853
	824
	789
	749
V	702
e	644
r	572
t	503
i	419
c	331
a	243
l	162
	103
	62
	38
A	32
n	29
g	26
l	22
e	19
s	17
	15
	13
	12
	10
	9
	8
	7
	6
	5
	4
	0



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Lateral Angles

	0.0	
	92.5	0
	95.0	0
	97.5	0
	100.0	0
	102.5	0
	105.0	0
	107.5	0
	110.0	0
	112.5	0
V	115.0	0
e	117.5	0
r	120.0	0
t	122.5	0
i	125.0	0
c	127.5	0
a	130.0	0
l	132.5	0
	135.0	0
	137.5	0
	140.0	0
A	142.5	0
n	145.0	0
g	147.5	0
l	150.0	0
e	152.5	0
s	155.0	0
	157.5	0
	160.0	0
	162.5	0
	165.0	0
	167.5	0
	170.0	0
	172.5	0
	175.0	0
	177.5	0
	180.0	0