

IES Report

RaceRail® | 107 | 120° FlyWing™ | 90 CRI | SO

107-RR-XX-4-48-XX-XX-XX-XX-X-X-Z-SO-359-G2-X-XX-X

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	107	110	113	114
Total Lumens, 4' rail length (1219mm)	2555	2635	2689	2716
Lumens per foot (305mm)	639	659	672	679
Input Power (W), 4' rail length (1219mm)	24.0	24.0	24.0	24.0
Watts per foot (305mm)	6.0	6.0	6.0	6.0
CRI	94	94	94	94

Due to the large number of options in Vode's product offering, most Vode IES reports are factored reports prepared from source reports. Source reports are the IES test reports prepared for Vode by an NVLAP accredited photometric test laboratory. Factored reports are based on data from the Vode source reports.

If the data above is in black, it is directly from a Vode source report. If it is in grey, it is factored from Vode source reports. Reference details on Vode source reports can be found on the [IES File Finder](#) page on [vode.com](#).



8165 E Kaiser Blvd.
 Anaheim, CA 92808
 www.lightlaboratory.com

Report No: L121911516



Report No: L121911516

Issue Date: 1/8/2020

Report Prepared For: Vode Lighting
 21684 8th Street East, Suite 700, Sonoma, CA 95476

Model Number: 107-RR-48-Z-SO-359-G2-AL

Test: Photometric/Colorimetric/Electrical Test

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Received in working and undamaged condition. No modifications were necessary.

Special Test Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 12/16/19

Date of Tests: 1/2/20 - 1/8/20

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S4	1/9/21
BK PRECISION	1747	PS-DC04	1/10/21
Fluke Digital Thermometer	52K/J	MT-TP05	1/10/21
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

General Information

Manufacturer:	Vode Lighting
Model Number:	107-RR-48-Z-SO-359-G2-AL
Driver Model Number:	MEAN WELL HLG-40H-36A

Test Summary

Total Lumens:	2689.35
Efficacy:	112.21
Color Redering Index:	93.7
Correlated Color Temperature:	3302
Input Voltage (VAC/60Hz):	120.02
Input Current (Amp):	0.2010
Input Power (W):	23.97
Input Power Factor:	0.9933
Current ATHD (%):	8.6%

Test Condition

Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	1:25

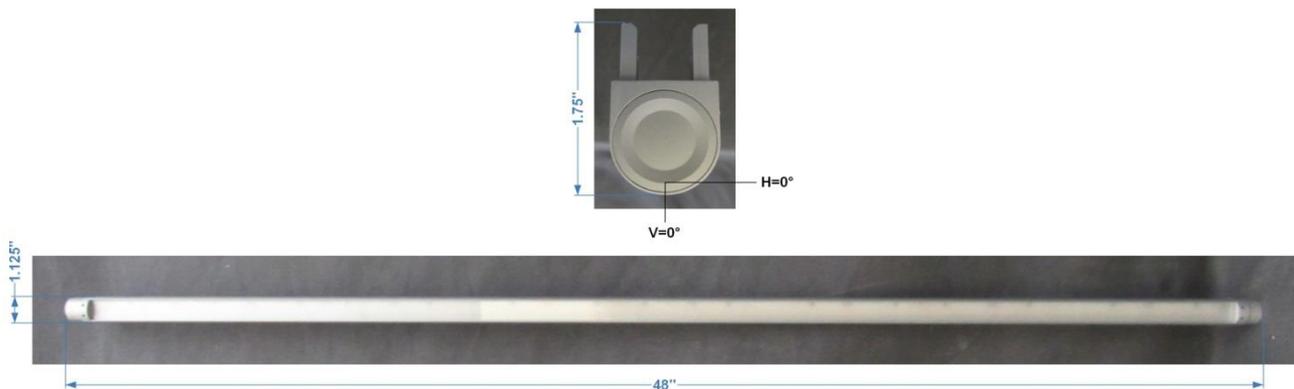
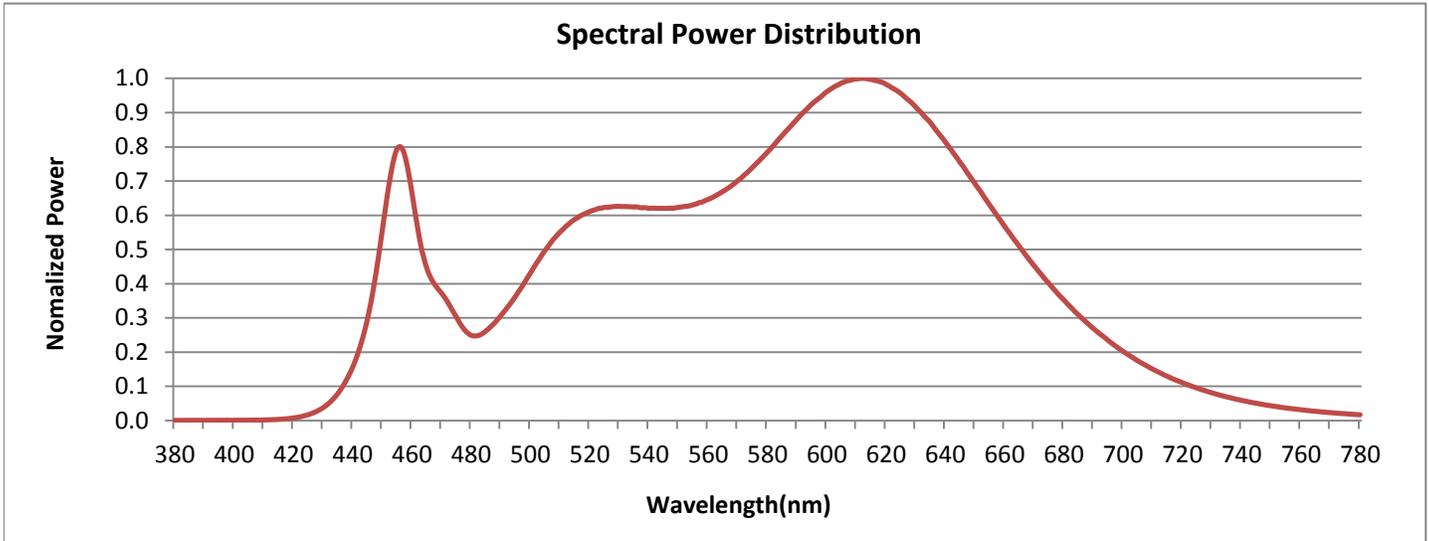


FIG. 1 LUMINAIRE

Colorimetry Test Results

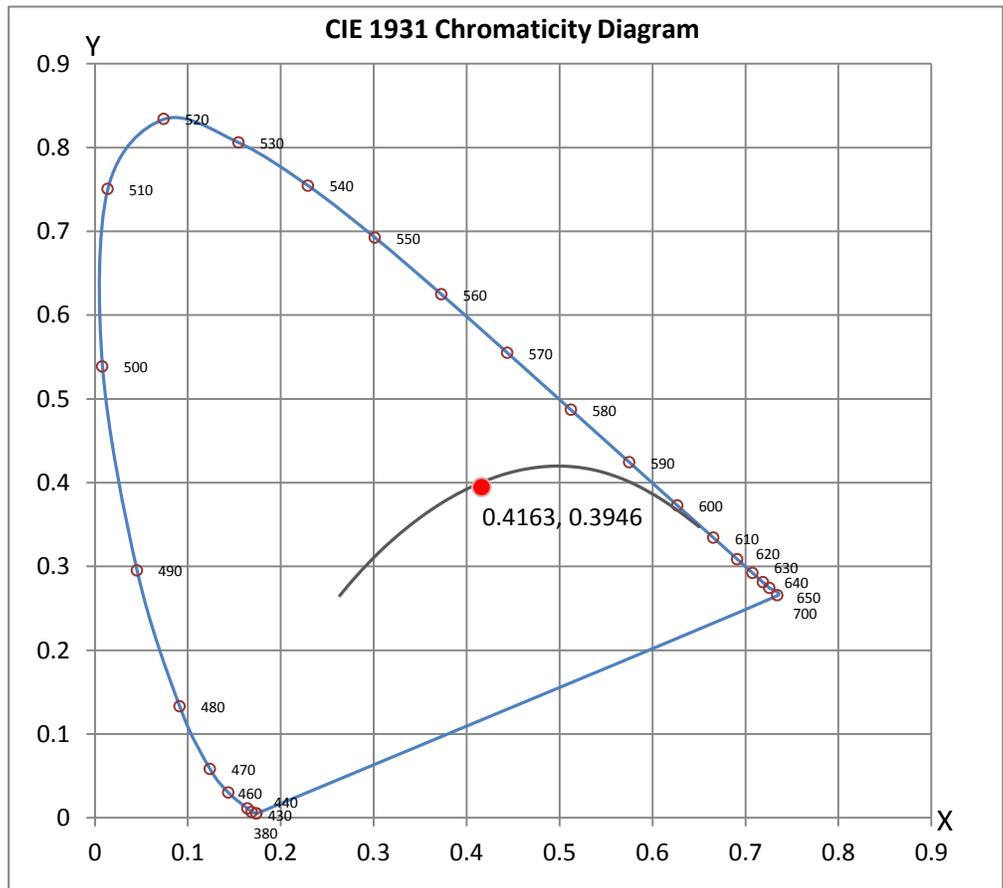


CRI & CCT

x	0.4163
y	0.3946
u'	0.2412
v'	0.5145
CRI	93.70
CCT	3302
Duv	-0.00057

R Values

R1	95.60
R2	98.81
R3	97.77
R4	95.91
R5	95.84
R6	95.87
R7	89.91
R8	79.61
R9	54.56
R10	96.97
R11	98.20
R12	78.02
R13	97.28
R14	99.59
R15	89.40



Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

Test Report Reviewed by:



Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 9*



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Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121911516.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L121911516
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUE DATE] 1/8/2020
[MANUFAC] Vode Lighting
[LUMCAT] 107-RR-48-Z-SO-359-G2-AL
[LUMINAIRE] RaceRail LED, 48", 3500K, 90 CRI, zipper board, 120° flying lens,
[MORE] standard output, clear anodized finish
[BALLASTCAT] MEAN WELL HLG-40H-36A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120.02VAC, 23.97W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2689
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	112
Total Luminaire Watts	23.97
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.64
Spacing Criterion (90-270)	1.20
Spacing Criterion (Diagonal)	1.56
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.07 ft
Luminous Width (90-270)	3.84 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	45287	40599	28778
55	41950	39027	27772
65	34097	33827	25805
75	16689	23304	20537
85	2194	3195	9314

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121911516.IES

CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0	827.93	827.93	827.93	827.93	827.93	827.93	827.93	827.93	827.93	827.93
5	835.64	835.85	835.56	835.31	834.72	834.01	833.25	832.42	831.37	830.24
10	862.97	862.97	861.71	859.91	857.10	853.87	850.02	845.66	840.97	836.27
15	901.53	900.98	898.64	894.57	888.70	881.62	873.28	864.31	854.25	843.86
20	937.57	936.52	933.00	927.35	918.80	908.53	896.25	881.79	866.15	849.81
25	957.52	956.64	952.79	946.12	936.61	924.33	909.32	891.60	871.31	849.18
30	954.42	953.16	949.64	943.15	933.93	921.56	905.72	886.65	864.10	838.70
35	925.84	925.12	921.98	916.66	908.19	897.21	882.29	863.85	841.17	814.64
40	873.36	872.99	870.68	866.53	860.24	851.07	838.49	821.64	799.98	774.12
45	800.44	799.81	798.34	795.83	791.26	784.30	774.37	760.33	741.47	717.58
50	708.06	707.81	707.31	705.84	703.87	699.34	692.22	681.45	666.11	645.53
55	601.44	601.52	601.86	601.86	601.35	599.34	595.19	587.65	576.08	559.53
60	484.17	484.38	485.47	486.56	487.69	487.81	486.43	482.16	474.40	462.08
65	360.19	360.57	362.08	364.38	367.07	369.04	369.92	368.91	364.93	357.34
70	234.04	234.50	236.97	240.49	244.93	249.21	252.60	254.66	254.32	251.14
75	107.97	108.68	111.82	116.94	123.85	131.44	138.65	144.97	149.12	150.76
80	21.12	21.25	22.26	23.97	26.91	31.10	37.01	44.68	53.14	60.90
85	4.78	4.78	4.82	4.95	5.11	5.24	5.45	5.83	6.20	6.96
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles **Horizontal Angles**

	50	55	60	65	70	75	80	85	90
0	827.93	827.93	827.93	827.93	827.93	827.93	827.93	827.93	827.93
5	828.98	827.97	826.84	825.88	824.91	824.41	824.07	823.57	822.99
10	831.28	826.42	822.36	818.67	814.85	811.92	810.33	809.20	807.98
15	833.25	823.19	813.18	804.33	797.04	791.13	786.56	784.09	782.92
20	832.33	815.15	799.01	784.05	771.85	761.96	754.67	750.39	748.88
25	825.92	801.78	779.10	757.69	740.08	725.83	715.65	709.70	707.64
30	810.62	780.99	752.41	725.08	702.57	684.42	671.68	664.14	661.20
35	783.63	751.15	717.74	685.97	660.16	638.78	623.53	614.72	611.83
40	742.77	709.07	674.07	640.08	612.08	589.37	573.11	563.97	560.62
45	688.36	655.00	619.33	586.64	558.18	535.80	520.21	511.41	508.64
50	618.92	588.57	556.30	524.95	499.68	479.39	465.35	457.43	454.75
55	537.15	511.12	483.62	456.97	435.38	418.20	406.76	400.43	398.16
60	445.11	424.86	403.32	382.41	365.60	352.69	344.10	339.49	338.06
65	346.11	331.90	317.36	303.07	291.62	282.78	276.96	273.64	272.60
70	245.48	237.64	229.34	221.17	214.46	209.23	205.70	203.78	203.11
75	150.17	147.87	144.81	141.45	138.48	135.96	134.29	133.20	132.86
80	66.56	69.62	70.79	70.92	70.54	69.87	69.32	68.86	68.57
85	8.26	10.65	13.87	17.60	19.87	20.71	20.79	20.58	20.29
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	318.24	N.A.	11.80
0-30	705.49	N.A.	26.20
0-40	1198.6	N.A.	44.60
0-60	2192.91	N.A.	81.50
0-80	2669.54	N.A.	99.30
0-90	2689.35	N.A.	100.00
10-90	2609.93	N.A.	97.00
20-40	880.36	N.A.	32.70
20-50	1405.69	N.A.	52.30
40-70	1324.98	N.A.	49.30
60-80	476.63	N.A.	17.70
70-80	145.96	N.A.	5.40
80-90	19.81	N.A.	0.70
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	2689.35	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

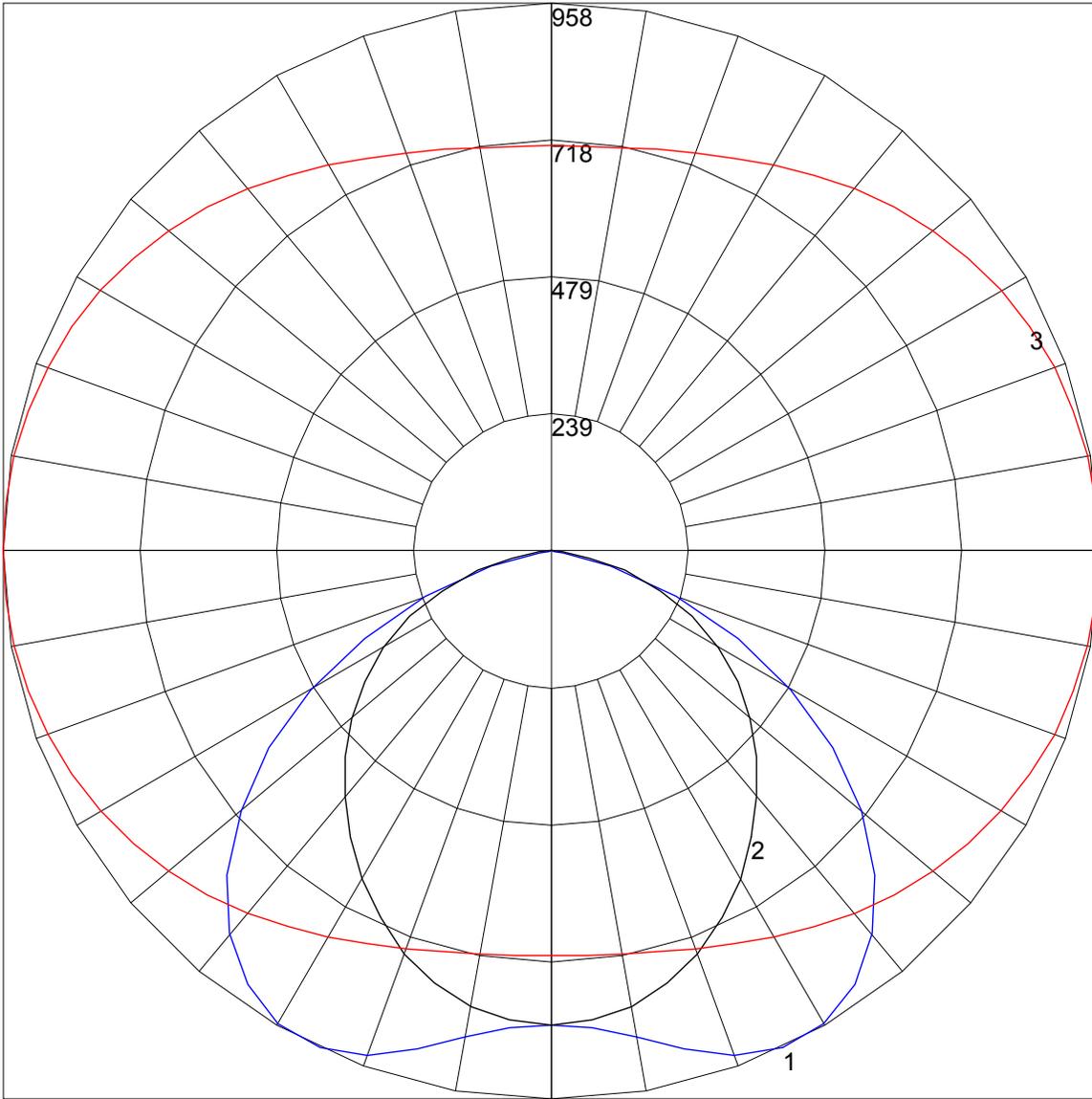
Zone	Lumens
0-10	79.42
10-20	238.82
20-30	387.26
30-40	493.10
40-50	525.33
50-60	468.99
60-70	330.66
70-80	145.96
80-90	19.81
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	95	98	95	92	94	92	90	91	89	87	85
2	99	91	85	79	97	90	83	78	86	81	76	83	78	75	80	76	73	71
3	91	80	72	66	88	79	71	65	76	69	64	73	67	63	70	66	62	60
4	83	71	62	55	81	70	61	55	67	60	54	65	59	54	63	57	53	51
5	76	63	54	48	74	62	54	47	60	52	47	58	51	46	56	50	46	44
6	70	57	48	41	68	56	47	41	54	46	41	52	46	40	51	45	40	38
7	65	51	42	36	63	50	42	36	49	41	36	47	41	36	46	40	35	33
8	60	47	38	32	59	46	38	32	45	37	32	43	37	32	42	36	31	30
9	56	43	34	29	55	42	34	29	41	34	29	40	33	28	39	33	28	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24

POLAR GRAPH



Maximum Candela = 957.52 Located At Horizontal Angle = 0, Vertical Angle = 25
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Vertical Plane Through Horizontal Angles (90 - 270)
3 - Horizontal Cone Through Vertical Angle (25) (Through Max. Cd.)