



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

Report No: L101701701



**Report No:** L101701701

**Issue Date:** 10/10/2017

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

**Model Number:** 107-BX-48-Z-SO-359-1

**Test:** Electrical and Photometric tests

**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.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 10/9/17

**Date of Tests:** 10/9/17 - 10/10/17

**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-S1	11/28/17
ITECH	IT6122	PS-DC03-S1	11/28/17
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/28/17
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

\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

**Test Summary**

<b>Manufacturer:</b>	Vode Lighting
<b>Model Number:</b>	107-BX-48-Z-SO-359-1
<b>Driver Model Number:</b>	MEAN WELL HLG-40H-36A
<b>Total Lumens:</b>	2058.78
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.2
<b>Input Power (W):</b>	24.12
<b>Input Power Factor:</b>	0.99
<b>Current ATHD @ 120V(%):</b>	10%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	85
<b>Color Rendering Index (CRI):</b>	96
<b>Correlated Color Temperature (K):</b>	3370
<b>Chromaticity Coordinate x:</b>	0.4117
<b>Chromaticity Coordinate y:</b>	0.3916
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	1:15
<b>Total Operating Time (Hours):</b>	2:05

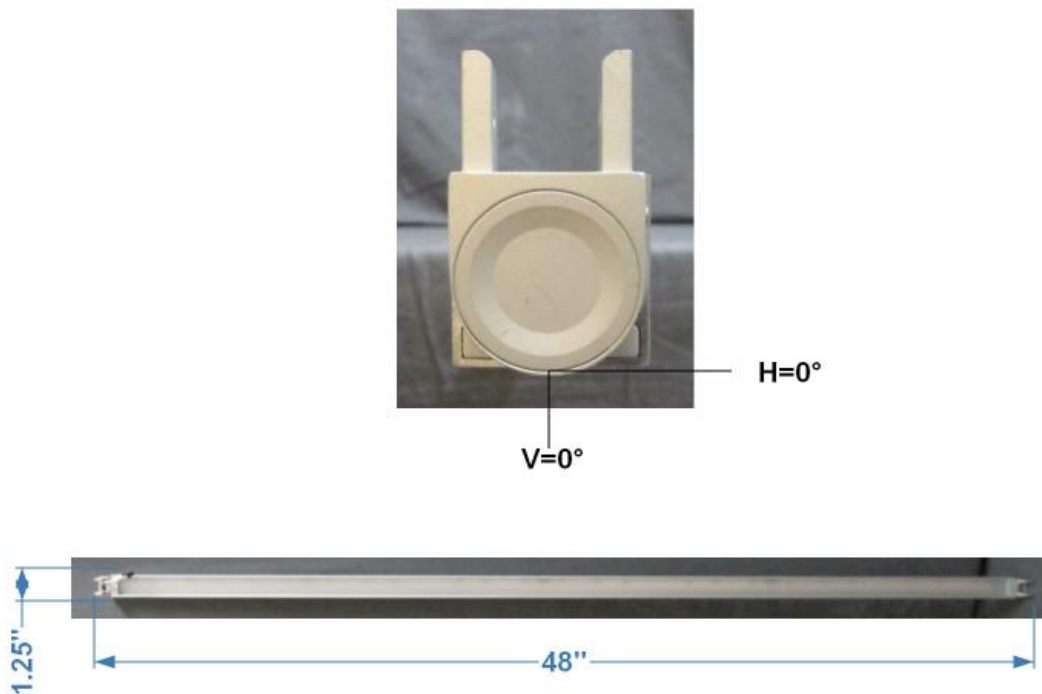
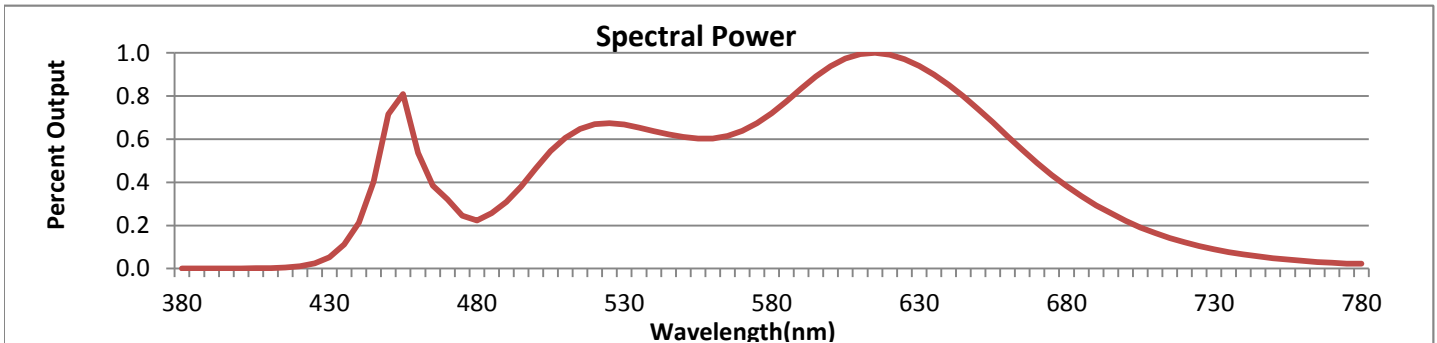


FIG. 1 LUMINAIRE

\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



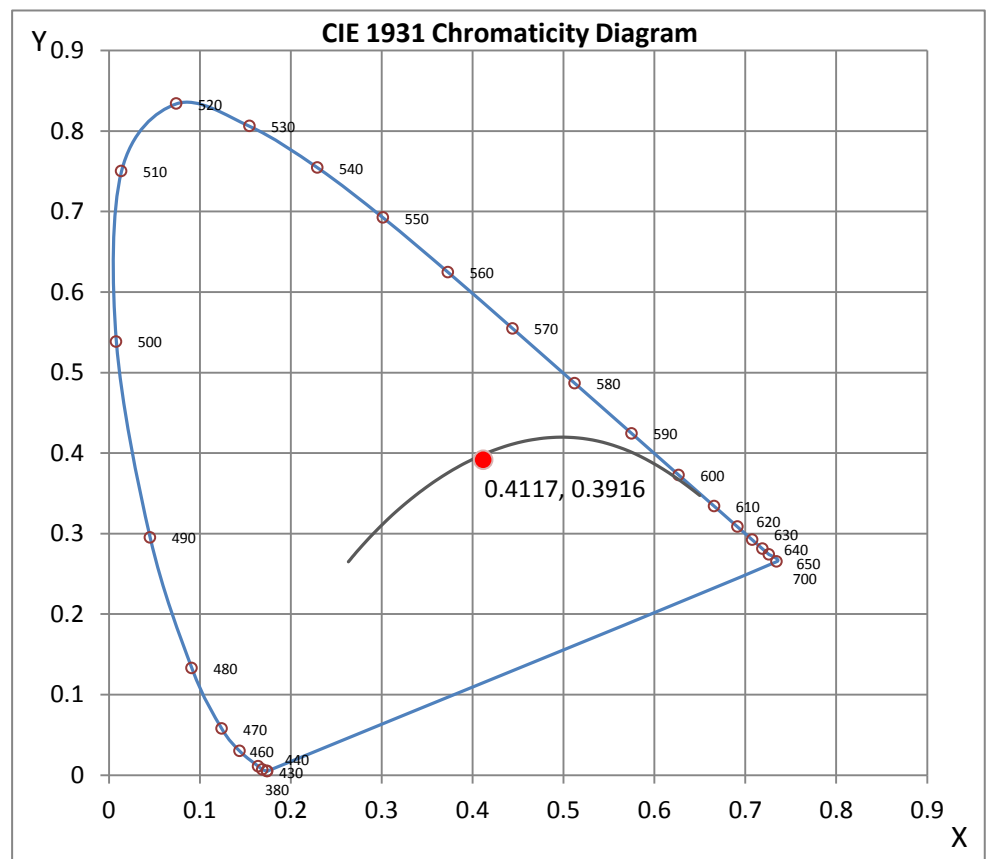
Wavelength	W/m <sup>2</sup> nm	440	0.2128	510	0.6058	580	0.7199	650	0.7391	720	0.1220
380	0.0009	450	0.7154	520	0.6696	590	0.8341	660	0.6140	730	0.0898
390	0.0009	460	0.5367	530	0.6676	600	0.9387	670	0.4904	740	0.0660
400	0.0012	470	0.3217	540	0.6375	610	0.9943	680	0.3826	750	0.0484
410	0.0024	480	0.2230	550	0.6098	620	0.9914	690	0.2926	760	0.0358
420	0.0105	490	0.3097	560	0.6031	630	0.9396	700	0.2211	770	0.0265
430	0.0531	500	0.4651	570	0.6386	640	0.8529	710	0.1650	780	0.0228

**CRI & CCT**

x	0.4117
y	0.3916
u'	0.2395
v'	0.5126
CRI	95.80
CCT	3370
Duv	-0.00096

**R Values**

R1	97.44
R2	98.79
R3	98.97
R4	95.55
R5	97.57
R6	94.31
R7	94.42
R8	88.97
R9	73.75
R10	98.11
R11	88.54
R12	82.65
R13	97.07
R14	98.48



\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

## 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 Released by:



Jeff Ahn  
Engineering Manager

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 : L101701701.IES**

## DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L101701701  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUE DATE] 10/10/2017  
[MANUFAC] Vode Lighting  
[LUMCAT] 07-BX-48-Z-SO-359-1  
[LUMINAIRE] BoxRail LED, 48", 3500K, 90 CRI, zipper board,  
[MORE] diffuse lens, standard output  
[BALLASTCAT] MEAN WELL HLG-40H-36A  
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
[INPUT] 120VAC, 24.12W  
[TEST PROCEDURE] IESNA:LM-79-08

## CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2059
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	85
Total Luminaire Watts	24.12
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.08
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.20
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.08 ft
Luminous Width (90-270)	3.83 ft
Luminous Height	0.00 ft

## LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	19358	23279	27002
55	14441	18541	23008
65	10796	14284	19018
75	8136	10713	15730
85	4430	6040	13289

**IES INDOOR REPORT  
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**CANDELA TABULATION**

	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>35</b>	<b>40</b>	<b>45</b>
<b>0</b>	994	994	994	994	994	994	994	994	994	994
<b>5</b>	986	986	986	986	987	987	987	987	987	987
<b>10</b>	961	961	961	962	962	963	963	964	965	966
<b>15</b>	917	917	918	919	920	922	923	925	927	930
<b>20</b>	855	856	857	859	861	864	867	871	875	878
<b>25</b>	777	777	779	782	786	790	795	801	807	814
<b>30</b>	685	686	688	692	697	703	711	719	727	736
<b>35</b>	586	587	590	595	601	609	618	628	639	650
<b>40</b>	485	486	490	495	502	512	522	534	547	559
<b>45</b>	390	391	395	400	408	417	428	441	455	469
<b>50</b>	307	308	311	316	323	332	342	354	368	382
<b>55</b>	236	236	239	243	250	257	267	278	290	303
<b>60</b>	177	178	180	183	188	195	202	211	222	233
<b>65</b>	130	130	132	134	138	143	148	155	164	172
<b>70</b>	91	92	92	94	96	100	104	109	115	121
<b>75</b>	60	60	61	62	63	65	67	71	75	79
<b>80</b>	34	34	34	35	35	36	37	39	41	44
<b>85</b>	11	11	11	11	12	12	13	13	14	15
<b>90</b>	0	0	0	0	0	0	0	0	0	0

**Vert. Horizontal Angles**

	<b>50</b>	<b>55</b>	<b>60</b>	<b>65</b>	<b>70</b>	<b>75</b>	<b>80</b>	<b>85</b>	<b>90</b>
<b>0</b>	994	994	994	994	994	994	994	994	994
<b>5</b>	988	988	988	988	988	988	989	989	989
<b>10</b>	967	968	968	969	970	970	971	971	971
<b>15</b>	932	934	936	937	939	940	941	941	942
<b>20</b>	883	886	890	893	895	897	899	900	900
<b>25</b>	820	825	831	835	840	843	845	847	847
<b>30</b>	745	753	760	767	773	777	780	782	783
<b>35</b>	661	671	680	689	696	702	706	709	710
<b>40</b>	572	584	595	605	613	620	625	628	629
<b>45</b>	483	496	507	518	527	534	539	543	544
<b>50</b>	396	410	422	433	441	449	454	457	458
<b>55</b>	316	329	341	351	360	367	372	375	376
<b>60</b>	245	256	267	277	285	291	295	298	299
<b>65</b>	182	192	201	210	217	223	226	228	229
<b>70</b>	129	137	144	151	157	162	165	167	168
<b>75</b>	84	90	96	101	106	110	113	115	116
<b>80</b>	47	50	54	58	62	65	68	70	70
<b>85</b>	17	18	20	23	26	28	30	32	33
<b>90</b>	0	0	0	0	0	0	0	0	0

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	354.98	N.A.	17.20
0-30	728.20	N.A.	35.40
0-40	1133.35	N.A.	55.00
0-60	1769.2	N.A.	85.90
0-80	2035.84	N.A.	98.90
0-90	2058.78	N.A.	100.00
10-90	1965.21	N.A.	95.50
20-40	778.37	N.A.	37.80
20-50	1140.04	N.A.	55.40
40-70	812.55	N.A.	39.50
60-80	266.64	N.A.	13.00
70-80	89.94	N.A.	4.40
80-90	22.94	N.A.	1.10
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	2058.78	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	93.57
10-20	261.42
20-30	373.22
30-40	405.15
40-50	361.67
50-60	274.18
60-70	176.70
70-80	89.94
80-90	22.94
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

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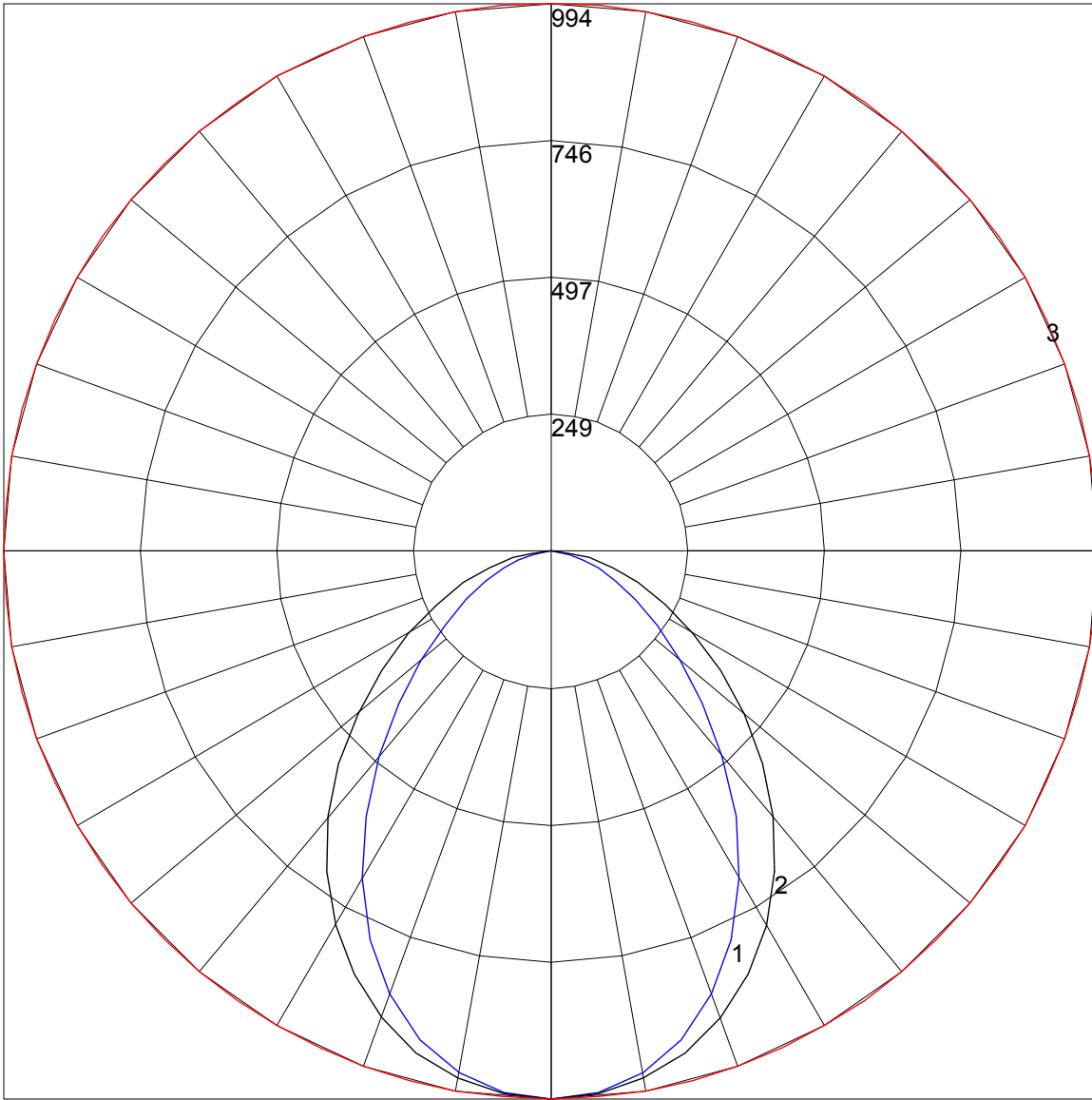
**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	88	86
2	101	94	88	83	99	92	86	82	89	84	80	85	81	78	82	79	76	74
3	93	84	76	70	91	82	75	70	79	73	69	77	72	67	74	70	66	64
4	86	75	67	61	84	74	66	60	71	65	60	69	63	59	67	62	58	56
5	80	68	59	53	78	67	59	53	65	58	53	63	57	52	61	56	51	49
6	74	62	53	47	72	61	53	47	59	52	47	57	51	46	56	50	46	44
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39
8	64	52	44	38	63	51	43	38	50	43	38	48	42	38	47	42	37	36
9	60	48	40	35	59	47	40	35	46	39	34	45	39	34	44	38	34	32
10	57	44	37	32	56	44	37	32	43	36	32	42	36	31	41	35	31	30



POLAR GRAPH



Maximum Candela = 994 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 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 (0) (Through Max. Cd.)