



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

Report No: L091700101



**Report No:** L091700101

**Issue Date:** 9/21/2017

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

**Model Number:** 107-BX-48-Z-SO-358-1

**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:** 9/15/17

**Date of Tests:** 9/15/17 - 9/21/17

**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-358-1
<b>Driver Model Number:</b>	MEAN WELL HLG-40H-36A
<b>Total Lumens:</b>	2357.74
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.2
<b>Input Power (W):</b>	24.11
<b>Input Power Factor:</b>	0.99
<b>Current ATHD @ 120V(%):</b>	10%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	98
<b>Color Rendering Index (CRI):</b>	85
<b>Correlated Color Temperature (K):</b>	3362
<b>Chromaticity Coordinate x:</b>	0.4126
<b>Chromaticity Coordinate y:</b>	0.3928
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:45
<b>Total Operating Time (Hours):</b>	1:45

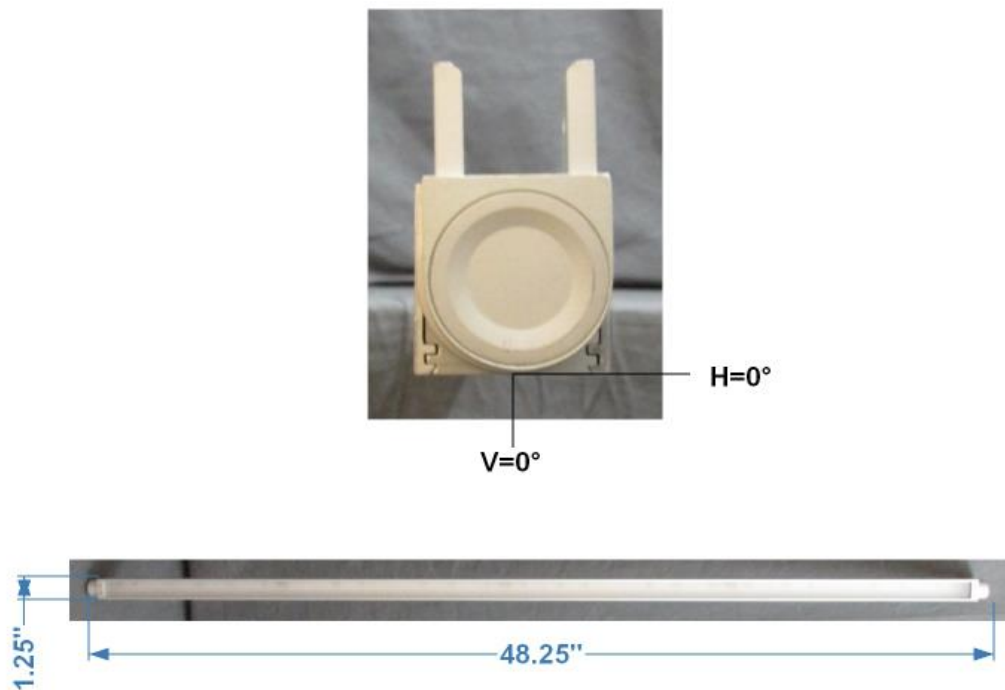
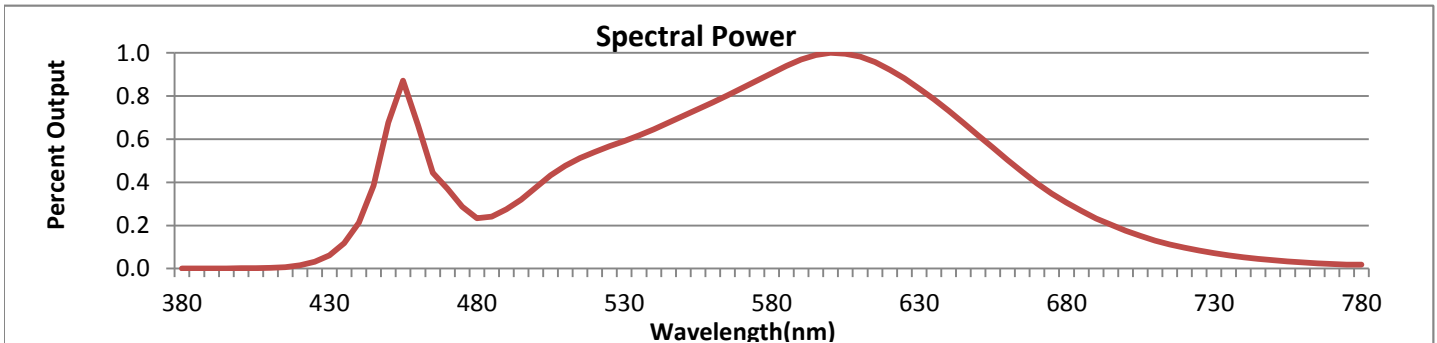


FIG. 1 LUMINAIRE

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



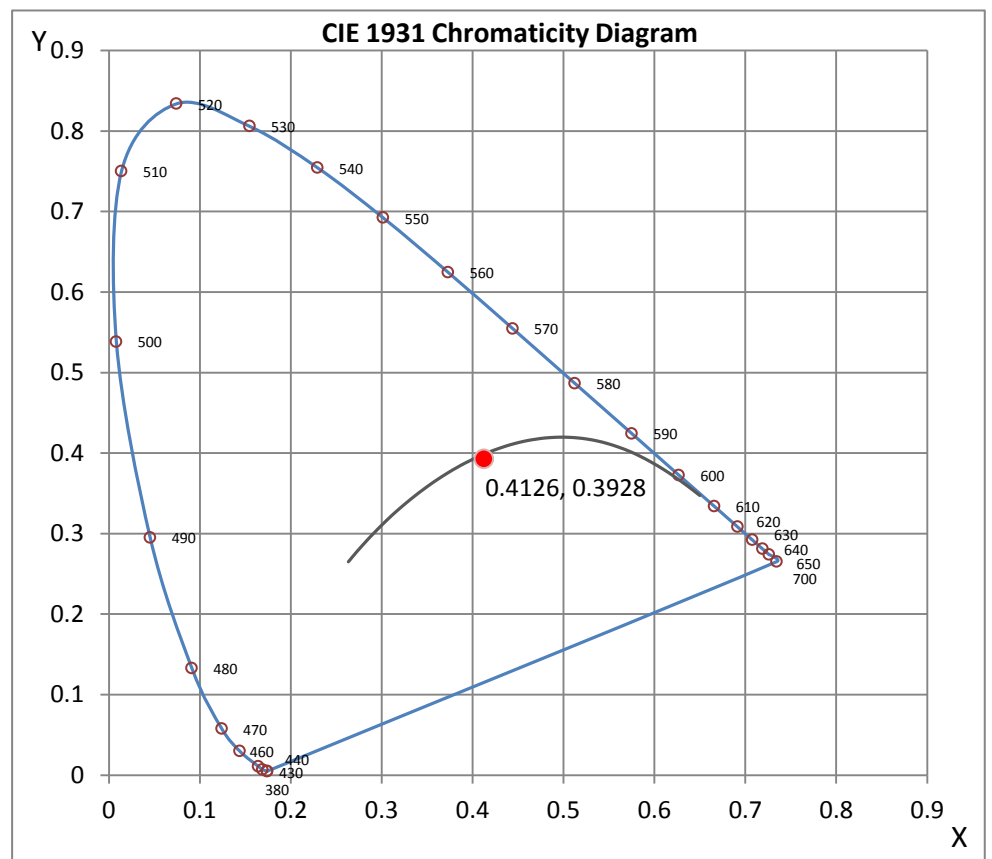
Wavelength	W/m <sup>2</sup> nm	440	0.2123	510	0.4768	580	0.9064	650	0.6181	720	0.0964
380	0.0009	450	0.6767	520	0.5405	590	0.9694	660	0.5036	730	0.0711
390	0.0009	460	0.6638	530	0.5914	600	1.0000	670	0.3956	740	0.0524
400	0.0013	470	0.3695	540	0.6463	610	0.9826	680	0.3063	750	0.0388
410	0.0033	480	0.2330	550	0.7080	620	0.9226	690	0.2325	760	0.0287
420	0.0149	490	0.2751	560	0.7705	630	0.8349	700	0.1749	770	0.0213
430	0.0617	500	0.3760	570	0.8373	640	0.7314	710	0.1303	780	0.0184

**CRI & CCT**

x	0.4126
y	0.3928
u'	0.2396
v'	0.5132
CRI	84.60
CCT	3362
Duv	-0.00063

**R Values**

R1	83.51
R2	91.97
R3	96.55
R4	82.15
R5	82.91
R6	88.58
R7	85.48
R8	65.57
R9	19.61
R10	80.38
R11	80.94
R12	65.18
R13	85.73
R14	98.40



\*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 : L091700101.IES**

## DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L091700101  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUEDATE] 9/21/2017  
[MANUFAC] Vode Lighting  
[LUMCAT] 107-BX-48-Z-SO-358-1  
[LUMINAIRE] BoxRail LED, 48", 3500K, 80 CRI, zipper board,  
[MORE] diffuse lens, standard output  
[BALLASTCAT] MEAN WELL HLG-40H-36A (700mA)  
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
[INPUT] 120VAC, 24.11W  
[TEST PROCEDURE] IESNA:LM-79-08

## CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2358
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	98
Total Luminaire Watts	24.11
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)	3.85 ft
Luminous Height	0.00 ft

## LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	22022	26466	30811
55	16436	21062	26236
65	12310	16275	21728
75	9443	12276	17807
85	5208	7211	15223

**IES INDOOR REPORT  
PHOTOMETRIC FILENAME : L091700101.IES**

**CANDELA TABULATION**

	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
<b>0</b>	1138	1138	1138	1138	1138	1138	1138	1138	1138	1138
<b>5</b>	1129	1129	1129	1129	1129	1129	1129	1130	1130	1130
<b>10</b>	1100	1100	1100	1100	1101	1102	1103	1104	1105	1106
<b>15</b>	1050	1050	1051	1052	1054	1055	1057	1060	1062	1065
<b>20</b>	979	979	981	983	986	989	993	997	1002	1006
<b>25</b>	888	889	891	894	899	904	910	917	924	931
<b>30</b>	783	784	787	791	797	805	813	823	833	843
<b>35</b>	670	671	674	680	687	696	707	719	731	744
<b>40</b>	554	555	559	565	574	585	597	611	626	640
<b>45</b>	446	447	451	457	466	477	490	504	520	536
<b>50</b>	350	351	355	360	369	379	391	405	421	437
<b>55</b>	270	270	273	278	285	294	305	318	332	346
<b>60</b>	203	203	206	210	215	223	231	242	254	267
<b>65</b>	149	149	151	154	158	163	170	178	187	197
<b>70</b>	105	105	106	108	111	114	119	125	131	139
<b>75</b>	70	70	70	71	73	75	78	81	85	91
<b>80</b>	39	39	40	40	41	42	43	45	47	50
<b>85</b>	13	13	13	13	14	14	15	16	17	18
<b>90</b>	0	0	0	0	0	0	0	0	0	0

**Vert. Horizontal Angles**

	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>
<b>0</b>	1138	1138	1138	1138	1138	1138	1138	1138	1138
<b>5</b>	1130	1131	1131	1131	1131	1131	1131	1132	1131
<b>10</b>	1107	1108	1109	1109	1110	1111	1111	1112	1112
<b>15</b>	1067	1069	1072	1073	1075	1077	1078	1078	1078
<b>20</b>	1011	1015	1019	1022	1025	1028	1030	1031	1031
<b>25</b>	938	945	951	957	962	966	968	970	971
<b>30</b>	853	862	871	879	885	891	895	897	898
<b>35</b>	757	769	780	790	798	805	810	813	814
<b>40</b>	655	669	682	693	703	711	717	720	721
<b>45</b>	552	568	581	594	604	613	619	623	624
<b>50</b>	454	469	484	496	506	515	521	524	526
<b>55</b>	362	377	391	403	413	421	426	430	431
<b>60</b>	280	293	306	318	327	334	339	342	343
<b>65</b>	209	220	231	241	249	255	259	262	263
<b>70</b>	147	156	165	173	180	186	189	192	192
<b>75</b>	96	103	109	116	121	126	130	131	132
<b>80</b>	54	58	62	67	71	75	78	80	80
<b>85</b>	19	21	23	26	29	32	35	37	38
<b>90</b>	0	0	0	0	0	0	0	0	0

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L091700101.IES**

**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	406.43	N.A.	17.20
0-30	833.72	N.A.	35.40
0-40	1297.61	N.A.	55.00
0-60	2025.56	N.A.	85.90
0-80	2331.24	N.A.	98.90
0-90	2357.74	N.A.	100.00
10-90	2250.64	N.A.	95.50
20-40	891.17	N.A.	37.80
20-50	1305.18	N.A.	55.40
40-70	930.46	N.A.	39.50
60-80	305.68	N.A.	13.00
70-80	103.16	N.A.	4.40
80-90	26.50	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	2357.74	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	107.10
10-20	299.33
20-30	427.29
30-40	463.88
40-50	414.01
50-60	313.94
60-70	202.51
70-80	103.16
80-90	26.50
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

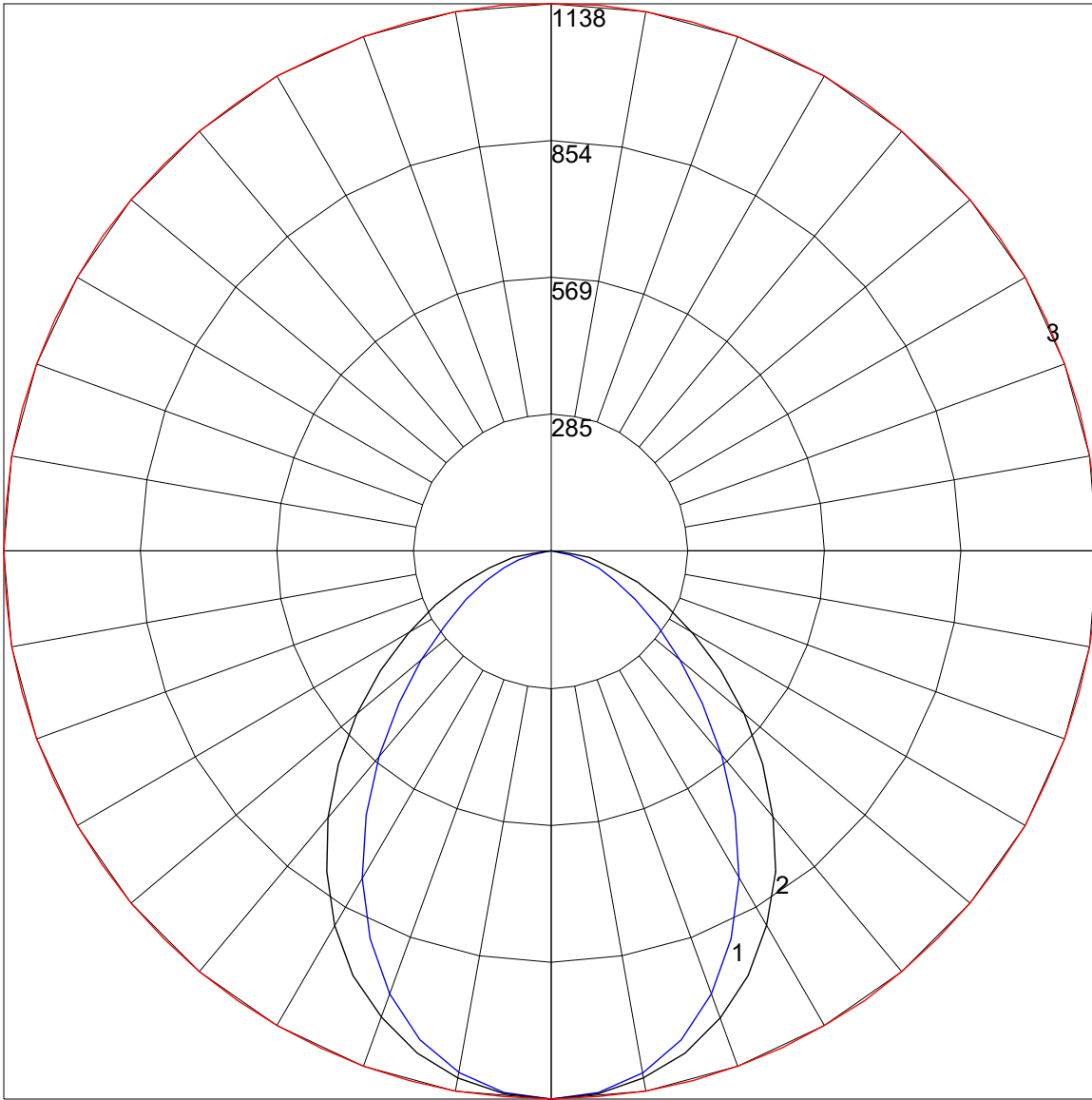
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	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	52	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	36	32	43	36	32	42	36	31	41	35	31	30



POLAR GRAPH



Maximum Candela = 1138 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.)