

**IES Report**

**ZipTwo® | 707 | 120° Symmetric | 90 CRI | SO**

707-Z2-4-48-XX-XX-X-0-Z-SO-359-S3-X-WH-0

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	98	101	103	105
Total Lumens, 4' rail length (1219mm)	2543	2624	2677	2731
Lumens per foot (305mm)	636	656	669	683
Input Power (W), 4' rail length (1219mm)	26.2	26.2	26.2	26.2
Watts per foot (305mm)	6.6	6.6	6.6	6.6
CRI	95	95	95	95

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: L091700106



**Report No:** L091700106

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

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

**Model Number:** 707-Z2-48-Z-SO-359-S3-AL

**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:** 9/18/17 - 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>	707-Z2-48-Z-SO-359-S3-AL
<b>Driver Model Number:</b>	MEAN WELL HLG-40H-36A
<b>Total Lumens:</b>	2677.14
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.22
<b>Input Power (W):</b>	26.16
<b>Input Power Factor:</b>	0.99
<b>Current ATHD @ 120V(%):</b>	10%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	102
<b>Color Rendering Index (CRI):</b>	95
<b>Correlated Color Temperature (K):</b>	3335
<b>Chromaticity Coordinate x:</b>	0.4134
<b>Chromaticity Coordinate y:</b>	0.3915
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:40
<b>Total Operating Time (Hours):</b>	1:25

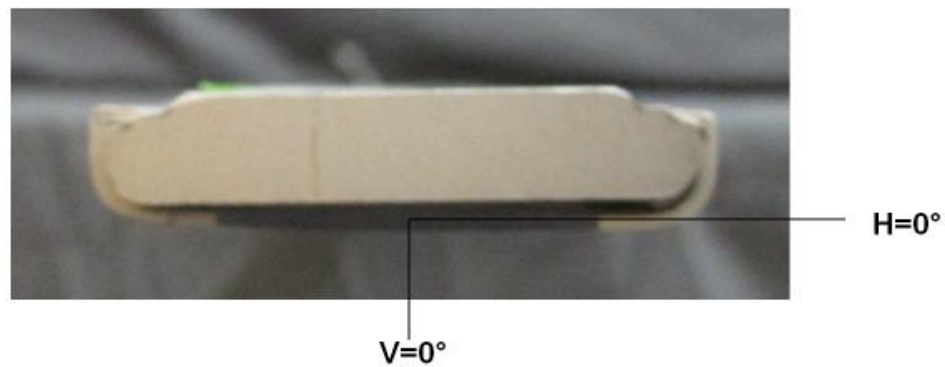
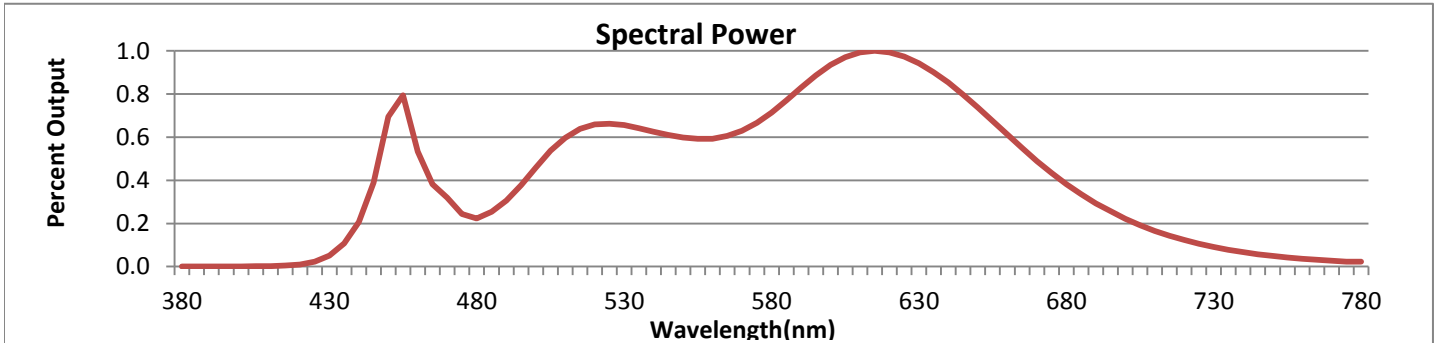


FIG. 1 LUMINAIRE

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



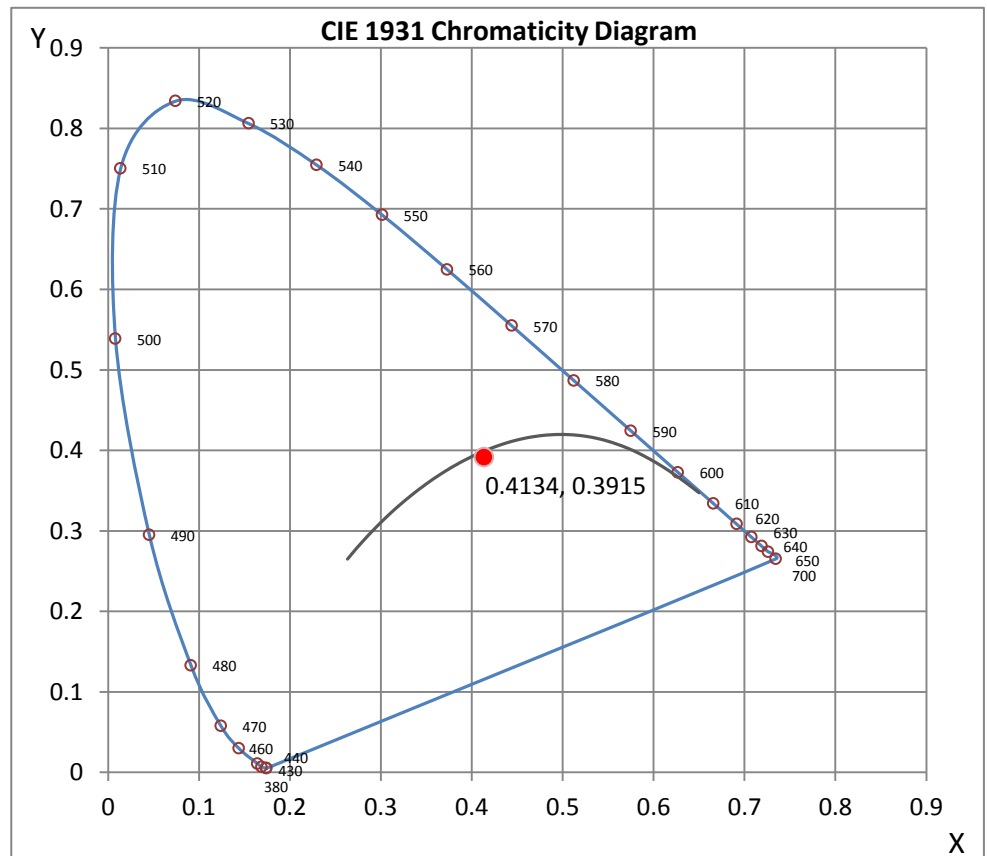
Wavelength	W/m <sup>2</sup> nm	440	0.2062	510	0.5972	580	0.7138	650	0.7386	720	0.1233
380	0.0009	450	0.6943	520	0.6593	590	0.8299	660	0.6132	730	0.0911
390	0.0008	460	0.5339	530	0.6564	600	0.9348	670	0.4894	740	0.0669
400	0.0012	470	0.3189	540	0.6256	610	0.9934	680	0.3823	750	0.0491
410	0.0024	480	0.2227	550	0.5984	620	0.9930	690	0.2933	760	0.0364
420	0.0101	490	0.3068	560	0.5928	630	0.9422	700	0.2216	770	0.0269
430	0.0511	500	0.4597	570	0.6302	640	0.8531	710	0.1659	780	0.0232

**CRI & CCT**

x	0.4134
y	0.3915
u'	0.2407
v'	0.5128
CRI	95.40
CCT	3335
Duv	-0.00134

**R Values**

R1	97.07
R2	98.36
R3	98.95
R4	95.31
R5	97.05
R6	93.61
R7	94.17
R8	88.99
R9	74.25
R10	97.06
R11	88.07
R12	83.21
R13	96.61
R14	98.64



\*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 : L091700106.IES**

## DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L091700106  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUEDATE] 9/21/2017  
[MANUFAC] Vode Lighting  
[LUMCAT] 707-Z2-48-Z-SO-359-S3-AL  
[LUMINAIRE] ZipTwo LED, 48", 3500K, 90 CRI, zipper board,  
[MORE] 120° white symmetric 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, 26.16W  
[TEST PROCEDURE] IESNA:LM-79-08

## CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2677
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	102
Total Luminaire Watts	26.16
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.58
Spacing Criterion (90-270)	1.14
Spacing Criterion (Diagonal)	1.52
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.06 ft
Luminous Width (90-270)	4.02 ft
Luminous Height	0.00 ft

## LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	51640	45461	30139
55	46172	41975	28527
65	34708	32809	26902
75	23255	21877	20844
85	13300	11766	10231

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L091700106.IES**

**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>	889	889	889	889	889	889	889	889	889	889
<b>5</b>	897	897	897	896	895	895	894	893	891	890
<b>10</b>	918	918	917	915	912	909	905	901	896	891
<b>15</b>	943	942	940	936	932	926	919	910	901	891
<b>20</b>	960	959	956	952	945	937	927	915	902	887
<b>25</b>	968	967	963	957	949	939	927	912	895	875
<b>30</b>	961	960	957	950	941	930	915	899	878	855
<b>35</b>	937	936	932	926	918	906	892	873	851	825
<b>40</b>	890	889	887	882	875	863	849	831	809	781
<b>45</b>	819	818	816	812	806	797	785	769	747	721
<b>50</b>	718	718	717	714	711	705	697	683	665	641
<b>55</b>	594	594	594	594	593	589	584	575	560	540
<b>60</b>	458	459	459	460	460	459	456	450	440	426
<b>65</b>	329	329	330	330	331	331	329	326	319	311
<b>70</b>	220	220	220	221	221	221	220	218	214	209
<b>75</b>	135	135	135	135	135	135	134	132	130	127
<b>80</b>	72	72	72	72	72	71	71	70	68	66
<b>85</b>	26	26	26	26	26	25	25	24	24	23
<b>90</b>	0	0	0	0	0	0	0	0	0	0

**Vert. Horizontal Angles**

<b>Angles</b>	<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>	889	889	889	889	889	889	889	889	889
<b>5</b>	888	887	886	885	884	883	883	882	882
<b>10</b>	886	881	876	872	868	864	862	861	860
<b>15</b>	881	871	860	850	842	835	829	826	825
<b>20</b>	871	854	838	822	808	795	786	780	778
<b>25</b>	854	832	809	786	766	748	734	726	723
<b>30</b>	830	802	773	744	718	695	677	667	663
<b>35</b>	796	764	730	695	665	638	617	605	601
<b>40</b>	750	715	678	640	607	578	556	543	538
<b>45</b>	689	653	616	578	545	517	495	483	478
<b>50</b>	611	578	543	509	479	455	436	425	421
<b>55</b>	516	488	460	433	410	392	378	370	367
<b>60</b>	408	389	370	353	339	328	319	314	313
<b>65</b>	300	290	280	272	265	260	257	255	255
<b>70</b>	203	199	195	192	191	190	190	191	190
<b>75</b>	125	122	121	120	120	120	121	121	121
<b>80</b>	65	64	63	62	62	62	62	61	61
<b>85</b>	22	22	21	21	21	20	20	20	20
<b>90</b>	0	0	0	0	0	0	0	0	0

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L091700106.IES**

**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	335.89	N.A.	12.50
0-30	732.54	N.A.	27.40
0-40	1230.11	N.A.	45.90
0-60	2207.41	N.A.	82.50
0-80	2646.43	N.A.	98.90
0-90	2677.14	N.A.	100.00
10-90	2592.2	N.A.	96.80
20-40	894.23	N.A.	33.40
20-50	1418.93	N.A.	53.00
40-70	1276.96	N.A.	47.70
60-80	439.01	N.A.	16.40
70-80	139.35	N.A.	5.20
80-90	30.72	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	2677.14	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	84.94
10-20	250.95
20-30	396.65
30-40	497.58
40-50	524.70
50-60	452.60
60-70	299.66
70-80	139.35
80-90	30.72
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

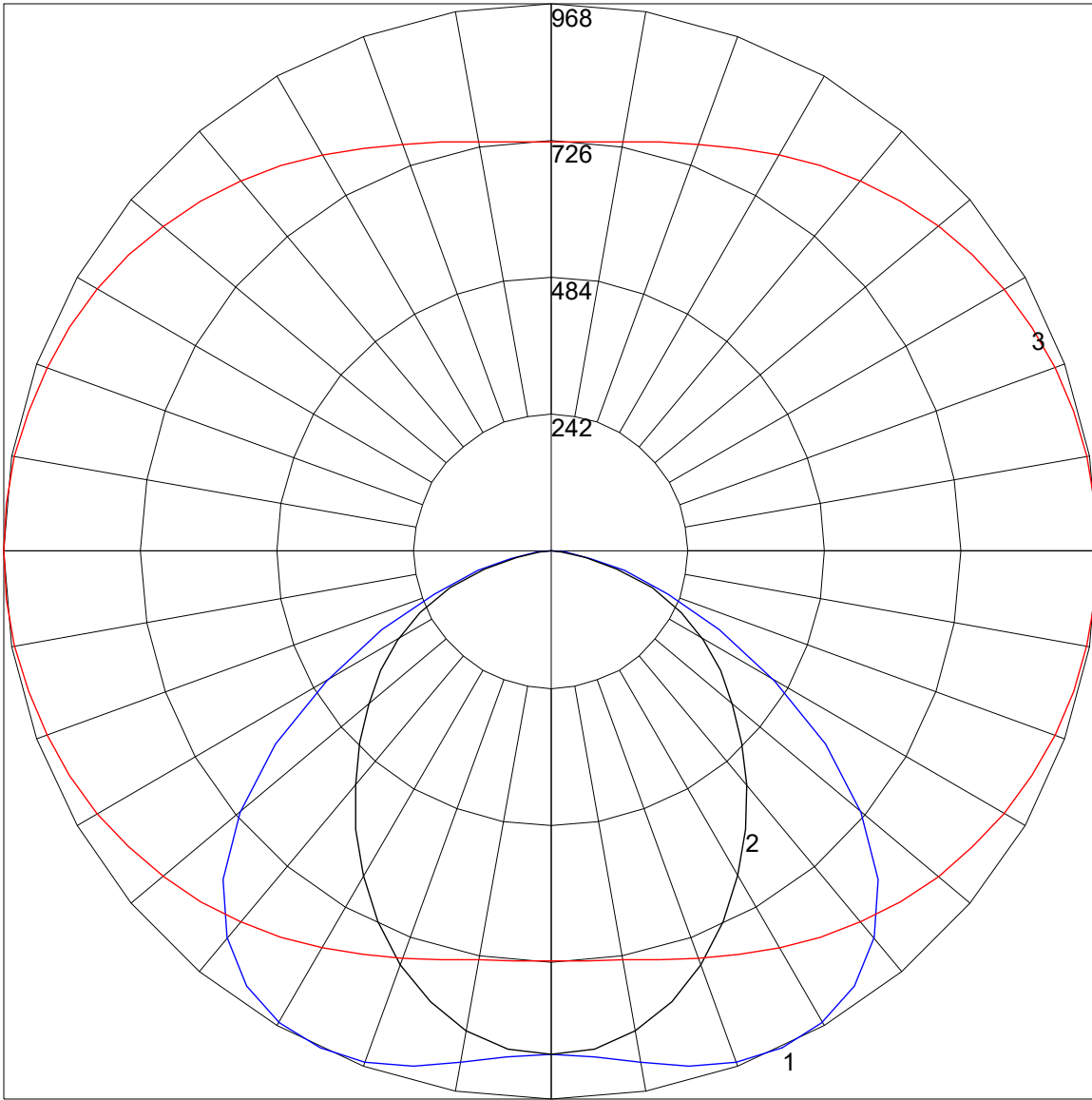


COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	96	98	95	92	94	92	90	91	89	87	85
2	100	92	85	80	97	90	84	79	86	81	77	83	79	75	80	77	73	71
3	91	81	73	66	89	79	72	66	76	70	65	73	68	63	71	66	62	60
4	83	71	63	56	81	70	62	56	68	61	55	65	59	54	63	58	54	51
5	77	64	55	48	74	63	54	48	61	53	48	59	52	47	57	51	47	44
6	71	57	49	42	69	56	48	42	55	47	42	53	46	41	51	45	41	39
7	65	52	43	37	64	51	43	37	50	42	37	48	41	36	47	41	36	34
8	61	47	39	33	59	47	39	33	45	38	33	44	37	33	43	37	32	30
9	57	43	35	30	55	43	35	30	42	34	29	41	34	29	40	33	29	27
10	53	40	32	27	52	39	32	27	38	31	27	37	31	26	37	31	26	25

POLAR GRAPH



Maximum Candela = 968 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.)