



8165 E Kaiser Blvd. Anaheim, CA 92808
p. 714.282.2270
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Test #: L07134908

Date: 8/5/2013



NVLAP LAB CODE 200927-0

Test Report: L07134908

Model Number: 8924-26-XX

Report Prepared For: AION LED
2325 3RD ST #330 SAN FRANCISCO, CA 94107

Test: Electrical and Photometric tests as required by the IESNA test standards.

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

Description of Sample: Client submitted the sample. Fixture catalog number is 8924-26-XX .
Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 7/16/13

Date of Tests: 8/2/13 - 8/5/13

Seasoning of Sample SSL: 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	01/04/14
Xitron Power Analysis System	2503AH	MT-EL01	01/09/14
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/14
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.

LM-79 Test Summary

Manufacturer:	AION LED
Model Number:	8924-26-XX
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	374.73
Input Voltage (VDC):	24.00
Input Current (Amp):	0.23
Input Power (W):	5.47
Input Power Factor:	N/A
Total Harmonic Distortion @ 120V(%):	N/A
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	68
Color Rendering Index (CRI):	97
Correlated Color Temperature (K):	2516
Chromaticity Coordinate x:	0.4716
Chromaticity Coordinate y:	0.4069
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:10
Off State Power(W):	0.00

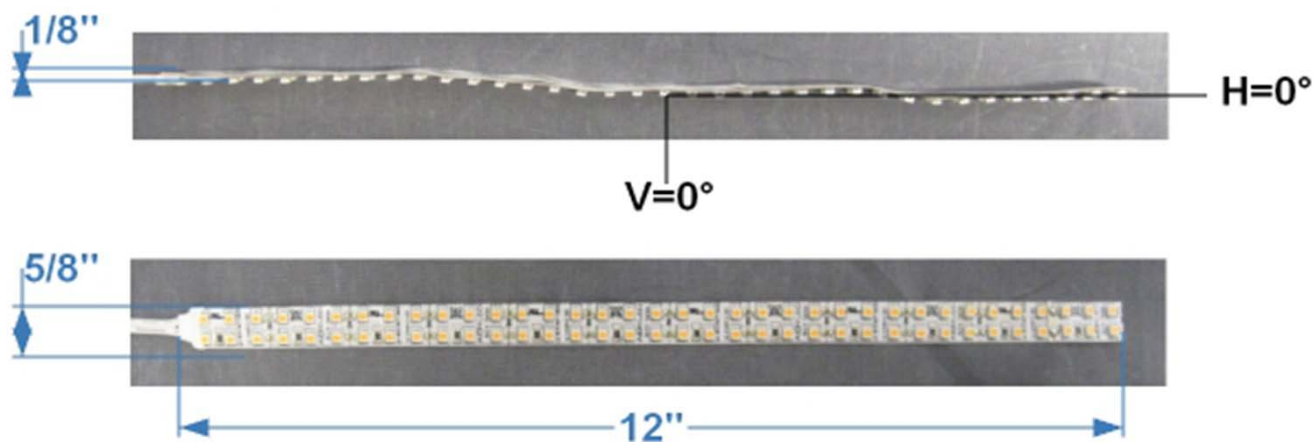
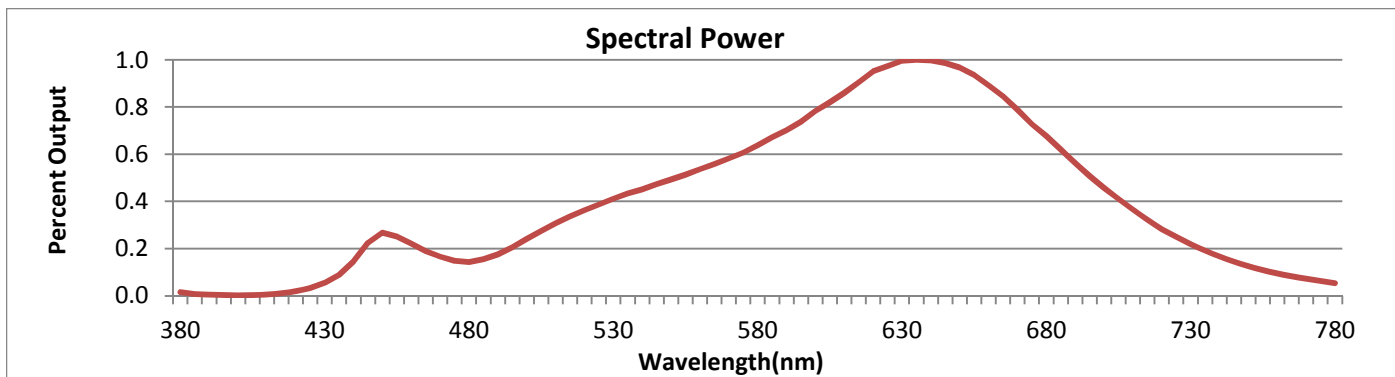


FIG1. LUMINAIRE



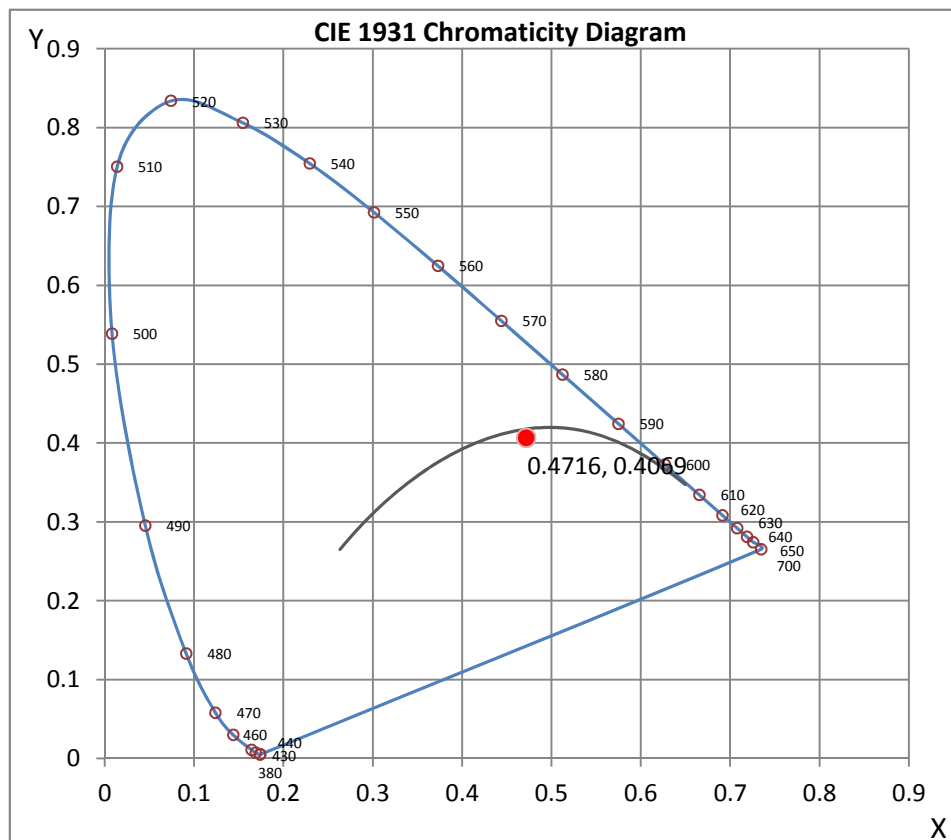
Wavelength	W/m ² nm	440	0.0056	510	0.0119	580	0.0246	650	0.0373	720	0.0108
380	0.0006	450	0.0103	520	0.0140	590	0.0271	660	0.0344	730	0.0085
390	0.0002	460	0.0086	530	0.0159	600	0.0302	670	0.0304	740	0.0065
400	0.0001	470	0.0064	540	0.0174	610	0.0332	680	0.0261	750	0.0049
410	0.0002	480	0.0055	550	0.0190	620	0.0367	690	0.0218	760	0.0036
420	0.0007	490	0.0068	560	0.0207	630	0.0384	700	0.0176	770	0.0028
430	0.0021	500	0.0093	570	0.0225	640	0.0385	710	0.0141	780	0.0021

CRI & CCT

x	0.4716
y	0.4069
u'	0.2718
v'	0.5277
CRI	96.50
CCT	2516
Duv	-0.00212

R Values

R1	98.03
R2	98.46
R3	96.69
R4	96.78
R5	97.69
R6	97.73
R7	95.20
R8	91.54
R9	82.26
R10	95.08
R11	96.63
R12	91.14
R13	98.50
R14	96.99





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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.

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*

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



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Photometric Test Report

IES INDOOR REPORT

PHOTOMETRIC FILENAME : L07134908.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L07134908
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 8/5/2013
[MANUFAC] AION LED
[LUMCAT] 8924-26-XX
[LUMINAIRE] 12"L. X 5/8"W. X 1/8"H. LED FLEX CIRCUIT LIGHT ENGINE ONLY
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[POWER SUPPLY] 24VDC CONSTANT VOLTAGE SOURCE
[INPUT] 24VDC, 5.47W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	375
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	69
Total Luminaire Watts	5.47
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.26
Spacing Criterion (90-270)	1.30
Spacing Criterion (Diagonal)	1.42
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.97 ft
Luminous Width (90-270)	0.03 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	44590	45510	45912
55	43580	44520	44926
65	41526	42593	42899
75	37152	38237	38380
85	28281	28748	28069

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L07134908.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>
0	125.50	125.50	125.50	125.50	125.50	125.50	125.50	125.50	125.50	125.50
5	122.72	123.17	123.59	124.01	124.02	124.39	124.95	125.54	125.71	125.42
10	121.30	121.77	122.21	122.58	122.61	122.95	123.53	124.08	124.18	123.96
15	118.95	119.38	119.78	120.17	120.21	120.63	121.14	121.66	121.69	121.48
20	115.65	116.03	116.42	116.80	116.83	117.21	117.76	118.29	118.27	118.10
25	111.29	111.69	112.06	112.46	112.52	112.84	113.32	113.91	113.76	113.67
30	106.20	106.53	106.94	107.27	107.33	107.71	108.11	108.46	108.40	108.39
35	100.00	100.28	100.65	100.99	101.09	101.40	101.82	102.04	102.04	101.96
40	93.17	93.42	93.78	94.08	94.25	94.51	94.84	94.96	95.03	95.07
45	85.32	85.51	85.88	86.10	86.27	86.54	86.79	86.93	87.01	87.08
50	76.92	77.07	77.39	77.62	77.81	78.01	78.22	78.33	78.42	78.54
55	67.64	67.79	68.06	68.23	68.45	68.63	68.78	68.85	69.01	69.10
60	57.81	57.93	58.18	58.32	58.53	58.68	58.78	58.89	59.01	59.15
65	47.49	47.60	47.76	47.92	48.10	48.19	48.30	48.42	48.57	48.71
70	36.64	36.74	36.86	36.97	37.11	37.18	37.32	37.45	37.57	37.67
75	26.02	26.11	26.20	26.28	26.38	26.44	26.54	26.63	26.72	26.78
80	15.02	15.08	15.12	15.16	15.23	15.28	15.32	15.37	15.41	15.42
85	6.67	6.69	6.71	6.74	6.78	6.79	6.80	6.80	6.78	6.78
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**

	<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>
0	125.50	125.50	125.50	125.50	125.50	125.50	125.50	125.50	125.50
5	125.26	125.35	125.45	125.69	126.00	126.16	126.21	126.30	126.38
10	123.80	123.91	124.01	124.25	124.56	124.72	124.75	124.88	124.96
15	121.36	121.49	121.59	121.84	122.11	122.28	122.34	122.43	122.50
20	117.95	118.15	118.19	118.43	118.70	118.83	118.87	118.98	119.02
25	113.60	113.71	113.77	114.04	114.28	114.43	114.45	114.54	114.58
30	108.33	108.46	108.57	108.83	109.02	109.15	109.16	109.24	109.30
35	102.01	102.15	102.28	102.50	102.70	102.77	102.80	102.89	102.92
40	95.15	95.23	95.36	95.61	95.74	95.81	95.83	95.91	95.92
45	87.16	87.26	87.43	87.62	87.73	87.76	87.78	87.85	87.85
50	78.60	78.74	78.96	79.07	79.15	79.16	79.19	79.25	79.21
55	69.19	69.39	69.51	69.60	69.64	69.66	69.68	69.73	69.73
60	59.27	59.43	59.54	59.60	59.59	59.59	59.64	59.66	59.65
65	48.80	48.93	48.99	49.01	49.02	49.02	49.06	49.06	49.06
70	37.78	37.84	37.85	37.87	37.88	37.87	37.90	37.89	37.90
75	26.83	26.86	26.87	26.88	26.89	26.88	26.90	26.88	26.88
80	15.45	15.45	15.46	15.46	15.45	15.42	15.42	15.42	15.41
85	6.78	6.75	6.73	6.72	6.69	6.66	6.64	6.62	6.62
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	46.13	N.A.	12.30
0-30	98.43	N.A.	26.30
0-40	162.21	N.A.	43.30
0-60	290.96	N.A.	77.60
0-80	366.89	N.A.	97.90
0-90	374.73	N.A.	100.00
10-90	362.84	N.A.	96.80
20-40	116.08	N.A.	31.00
20-50	183.18	N.A.	48.90
40-70	176.68	N.A.	47.10
60-80	75.94	N.A.	20.30
70-80	28.00	N.A.	7.50
80-90	7.84	N.A.	2.10
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	374.73	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	11.89
10-20	34.23
20-30	52.31
30-40	63.78
40-50	67.10
50-60	61.65
60-70	47.94
70-80	28.00
80-90	7.84
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

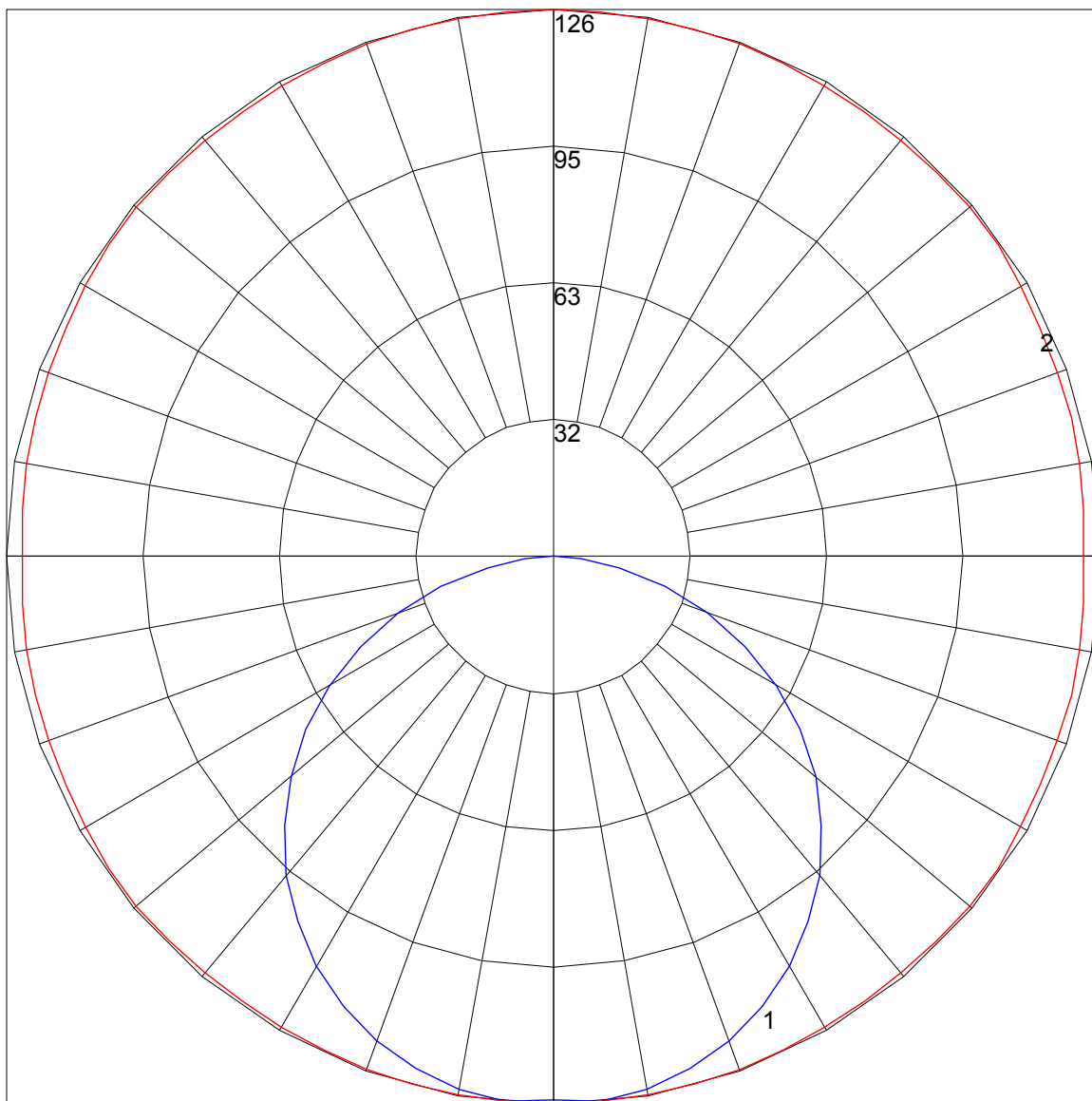
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	108	103	99	95	106	101	97	94	97	94	91	93	90	88	89	87	85	83
2	98	90	83	77	96	88	82	76	84	79	74	81	77	73	78	74	71	69
3	89	79	70	64	87	77	69	63	74	67	62	71	66	61	69	64	60	58
4	82	70	61	54	79	68	60	53	66	58	53	63	57	52	61	56	51	49
5	75	62	53	46	73	61	52	46	59	51	45	57	50	45	55	49	44	42
6	69	56	47	40	67	55	46	40	53	45	40	51	44	39	50	44	39	37
7	64	50	42	35	62	50	41	35	48	40	35	47	40	35	45	39	34	32
8	60	46	37	31	58	45	37	31	44	36	31	43	36	31	42	35	31	29
9	56	42	34	28	54	42	34	28	40	33	28	39	33	28	38	32	28	26
10	52	39	31	26	51	38	31	26	37	30	25	36	30	25	36	29	25	23

POLAR GRAPH



Maximum Candela = 126.38 Located At Horizontal Angle = 90, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (90 - 270) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)