

LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO

Report Number: P1219800

Luminaire Tested: HLC4FS1E-24P-3000K

Issue Date: 12/22/2025

Tested By:

Approved By:



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Test Information

Test Method: LM-79-2019
Report Number: P1219800
Test Lab: INNOVATION CENTER
Issue Date: 12/22/2025
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: HLC4FS1E-24P-3000K
Description: 4" Surface Mount LED Disk Light

Light Source:
Ballast/Driver: -

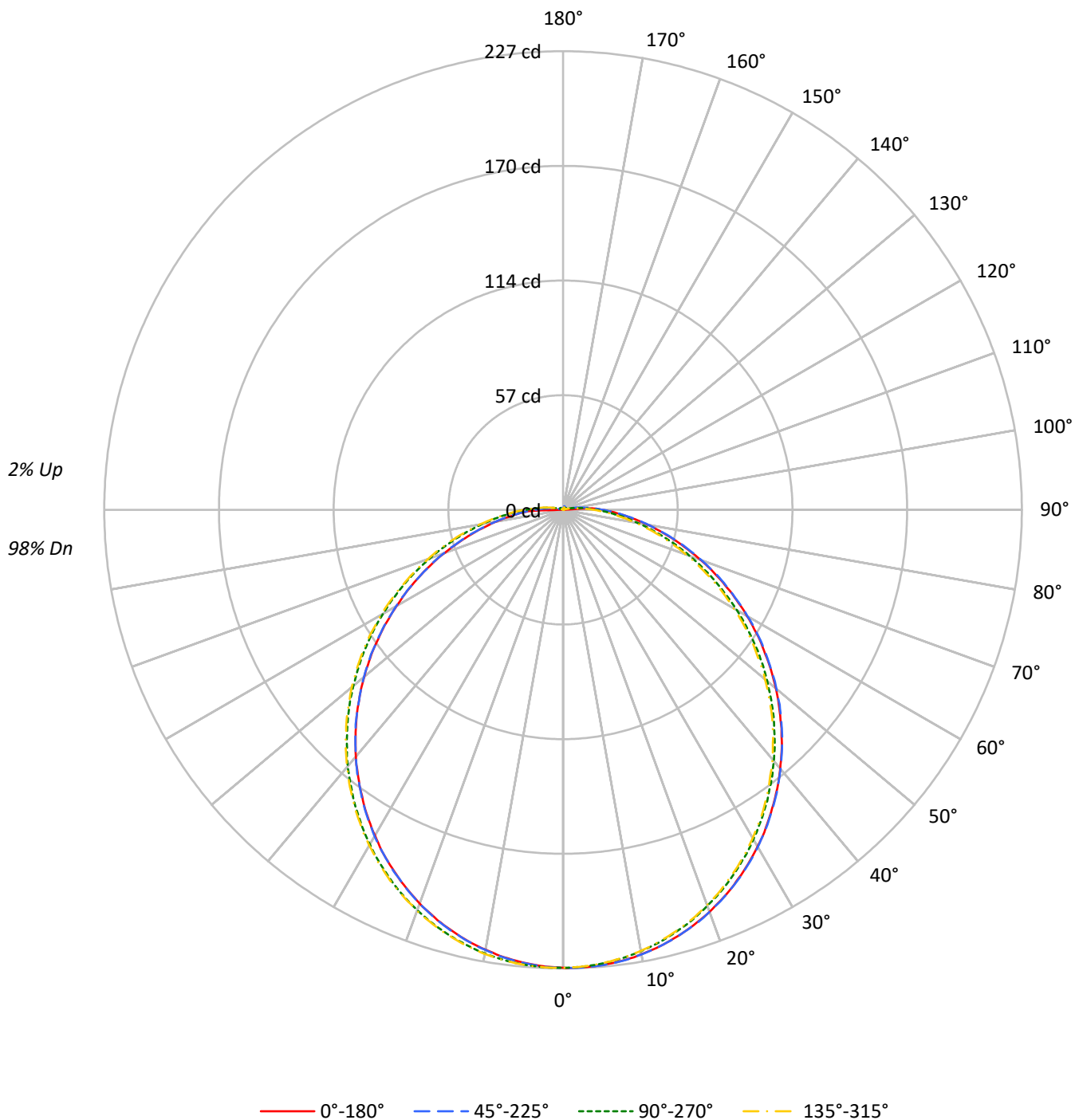
Summary

Lumens per Lamp: 660 (1 lamp)
Luminaire Lumens: 690.0 lumens
Efficiency: 104.5%
Efficacy: 70.4 lumens/watt
Spacing Criteria (0/90/45): 1.24 / 1.25 / 1.36
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

Input Watts (W): 9.8
Input Voltage (V): 122
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: >0.9
Total Harmonic Distortion (THDi): <20
Frequency (hertz): 60
Stabilization Time: HR
Operation Time: HR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P1219800
CATALOG NUMBER: HLC4FS1E-24P-3000K

Luminous Intensity Polar Plot



TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				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
RCR																				
0	124	124	124	124	121	121	121	121	115	115	115		109	109	109		104	104	104	102
1	112	106	101	97	109	104	99	95	99	95	92		94	91	88		90	88	85	83
2	101	92	85	78	98	90	83	77	86	80	75		82	77	73		78	74	71	68
3	92	81	72	65	89	79	71	64	75	68	62		72	66	61		69	64	60	57
4	84	71	62	55	82	70	61	54	67	59	53		64	57	52		61	56	51	49
5	77	64	54	47	75	62	53	46	60	52	46		57	50	45		55	49	44	42
6	72	57	48	41	69	56	47	41	54	46	40		52	45	39		50	44	39	37
7	66	52	43	36	64	51	42	36	49	41	35		47	40	35		46	39	34	32
8	62	47	38	32	60	46	38	32	45	37	32		43	36	31		42	36	31	29
9	58	43	35	29	56	43	34	29	41	34	28		40	33	28		39	32	28	26
10	54	40	32	26	53	39	31	26	38	31	26		37	30	26		36	30	25	23

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	28530	28530	28530	28530
5°	28563	28475	28424	28538
10°	28549	28344	28255	28497
15°	28481	28169	28038	28390
20°	28366	27937	27776	28232
25°	28175	27689	27425	28036
30°	27974	27364	27044	27785
35°	27716	27055	26625	27516
40°	27452	26663	26203	27222
45°	27195	26252	25700	26857
50°	26921	25824	25139	26529
55°	26615	25364	24530	26176
60°	26479	24994	23911	25850
65°	26354	24657	23376	25729
70°	26640	24543	22924	25720
75°	27716	24993	22951	26598
80°	30874	27323	24351	29497
85°	43030	37254	32200	41009

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°

Vertical Angle: 89°

Luminance: 161527 cd/sqm

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture	% Lamp
0°-10°	21.4	3.1	3.2
10°-20°	61.2	8.9	9.3
20°-30°	92.4	13.4	14.0
30°-40°	110.9	16.1	16.8
40°-50°	114.8	16.6	17.4
50°-60°	104.7	15.2	15.9
60°-70°	83.3	12.1	12.6
70°-80°	55.8	8.1	8.5
80°-90°	29.4	4.3	4.5
90°-100°	10.3	1.5	1.6
100°-110°	2.4	0.3	0.4
110°-120°	0.9	0.1	0.1
120°-130°	0.8	0.1	0.1
130°-140°	0.7	0.1	0.1
140°-150°	0.5	0.1	0.1
150°-160°	0.3	0.0	0.1
160°-170°	0.1	0.0	0.0
170°-180°	0.0	0.0	0.0
0°-30°	175.0	25.4	26.5
0°-40°	285.9	41.4	43.3
0°-60°	505.5	73.3	76.6
0°-90°	674.0	97.7	102.1
90°-120°	13.6	2.0	2.1
90°-150°	15.6	2.3	2.4
90°-180°	16.0	2.3	2.4
0°-180°	690.0	100.0	104.5

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	227	227	227	227	227	
5°	226	225	225	226	226	22
15°	219	216	215	218	219	62
25°	203	199	198	202	203	94
35°	180	176	173	179	180	113
45°	153	148	144	151	153	118
55°	121	116	112	119	121	109
65°	88	83	78	86	88	88
75°	57	51	47	55	57	60
85°	30	26	22	28	30	27
90°	20	17	0	18	20	11
95°	0	10	0	11	0	2
105°	0	2	0	3	0	0
115°	0	1	0	1	0	0
125°	0	0	0	0	0	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	226.7	226.7	226.7	226.7	226.7	226.7	226.7	226.7	226.7	226.7	226.7
1°	226.8	226.8	226.8	226.8	226.6	226.6	226.6	226.5	226.5	226.6	226.6
2°	226.7	226.7	226.8	226.8	226.4	226.4	226.4	226.3	226.3	226.3	226.4
3°	226.6	226.6	226.7	226.7	226.2	226.2	226.1	225.9	225.9	226.0	226.0
4°	226.4	226.4	226.5	226.6	225.8	225.9	225.7	225.5	225.5	225.6	225.6
5°	226.1	226.1	226.2	226.3	225.4	225.5	225.2	225.0	225.0	225.1	225.1
6°	225.8	225.7	225.9	226.0	224.8	225.0	224.7	224.3	224.4	224.4	224.5
7°	225.3	225.3	225.4	225.5	224.2	224.4	224.0	223.6	223.7	223.8	223.9
8°	224.8	224.7	224.9	225.0	223.5	223.8	223.4	222.8	223.0	223.0	223.1
9°	224.2	224.1	224.2	224.3	222.7	223.0	222.5	222.0	222.0	222.2	222.2
10°	223.4	223.4	223.5	223.6	221.8	222.1	221.7	221.0	221.1	221.2	221.2
11°	222.6	222.5	222.7	222.9	220.9	221.3	220.7	220.0	220.1	220.2	220.3
12°	221.8	221.7	221.8	222.1	219.9	220.3	219.6	218.9	219.1	219.1	219.1
13°	220.8	220.7	220.8	221.2	218.8	219.1	218.4	217.6	217.9	218.0	218.0
14°	219.7	219.7	219.8	220.1	217.5	218.0	217.2	216.3	216.5	216.7	216.6
15°	218.6	218.4	218.7	219.0	216.2	216.8	215.9	215.0	215.2	215.3	215.4
16°	217.4	217.2	217.4	217.9	214.9	215.4	214.5	213.7	213.8	214.0	214.0
17°	216.1	215.9	216.2	216.5	213.6	214.0	213.1	212.1	212.4	212.6	212.4
18°	214.7	214.7	214.9	215.2	212.0	212.6	211.6	210.5	210.6	211.0	210.9
19°	213.3	213.2	213.5	213.8	210.3	211.1	209.9	208.9	209.1	209.2	209.1
20°	211.8	211.7	211.8	212.4	208.6	209.3	208.2	207.2	207.4	207.5	207.4
21°	210.1	210.1	210.2	210.7	207.0	207.7	206.5	205.2	205.5	205.7	205.6
22°	208.5	208.3	208.6	209.1	205.3	205.9	204.8	203.4	203.6	203.9	203.8
23°	206.7	206.5	206.8	207.3	203.4	204.1	202.8	201.3	201.7	201.8	201.7
24°	205.0	204.7	205.0	205.5	201.4	202.0	200.7	199.4	199.7	200.0	199.6
25°	202.9	202.9	203.2	203.6	199.4	200.1	198.7	197.3	197.5	197.8	197.8
26°	201.0	200.9	201.3	201.8	197.3	197.9	196.7	195.2	195.4	195.6	195.5
27°	199.0	198.9	199.1	199.6	195.1	195.8	194.4	192.8	193.3	193.4	193.4
28°	196.8	196.8	197.1	197.6	193.1	193.7	192.3	190.6	191.1	191.3	191.1
29°	194.7	194.6	195.0	195.5	190.8	191.5	190.0	188.2	188.6	188.8	188.9
30°	192.5	192.3	192.8	193.3	188.3	189.3	187.7	185.9	186.1	186.3	186.5
31°	190.3	190.1	190.3	191.1	186.0	186.9	185.2	183.5	183.8	183.9	183.9
32°	188.0	187.8	188.1	188.7	183.5	184.3	182.7	181.0	181.2	181.4	181.5
33°	185.4	185.2	185.8	186.4	181.1	181.9	180.3	178.4	178.8	179.0	179.0
34°	183.0	182.8	183.1	184.0	178.5	179.2	177.8	175.9	176.2	176.3	176.3
35°	180.4	180.4	180.7	181.4	176.1	176.8	175.0	173.2	173.3	173.6	173.6
36°	177.9	177.9	178.2	178.9	173.2	174.3	172.4	170.1	170.7	170.9	170.8
37°	175.3	175.1	175.7	176.3	170.5	171.5	169.6	167.5	167.9	168.3	168.1
38°	172.8	172.5	172.8	173.8	167.9	168.7	166.6	164.8	165.1	165.3	165.4
39°	169.9	169.8	170.2	170.9	165.0	166.1	164.1	161.9	162.4	162.6	162.5
40°	167.1	166.9	167.4	168.3	162.3	163.2	161.2	158.9	159.5	159.6	159.5
41°	164.4	164.1	164.5	165.6	159.3	160.4	158.2	156.0	156.4	156.7	156.5
42°	161.6	161.4	161.8	162.8	156.6	157.5	155.2	153.0	153.3	153.7	153.6
43°	158.8	158.5	158.9	159.8	153.5	154.5	152.4	149.9	150.5	150.6	150.5
44°	155.6	155.4	156.1	156.9	150.4	151.5	149.2	147.0	147.4	147.4	147.7

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	152.8	152.5	153.0	154.1	147.5	148.4	146.4	144.0	144.4	144.5	144.4
46°	149.6	149.6	150.1	150.9	144.5	145.2	143.2	140.9	141.2	141.4	141.2
47°	146.6	146.4	147.1	148.0	141.2	142.2	140.0	137.5	137.9	138.3	137.9
48°	143.6	143.4	144.2	145.0	138.2	139.1	136.7	134.3	134.9	135.0	134.9
49°	140.6	140.4	140.8	142.0	134.9	136.0	133.7	131.3	131.6	131.6	131.6
50°	137.5	137.3	137.8	138.7	131.9	132.8	130.4	128.0	128.4	128.6	128.6
51°	134.2	134.0	134.8	135.7	128.7	129.5	127.5	124.8	125.2	125.2	125.2
52°	131.1	130.9	131.4	132.6	125.6	126.5	124.0	121.4	121.7	121.9	122.0
53°	128.0	127.8	128.2	129.1	122.3	123.3	120.5	118.2	118.7	119.1	119.0
54°	124.5	124.6	125.1	126.0	119.3	119.7	117.4	114.7	115.3	115.3	115.3
55°	121.3	121.1	121.9	122.8	115.6	116.8	114.2	111.5	111.8	112.2	112.1
56°	118.4	118.3	118.8	119.9	112.4	113.3	111.0	108.4	108.6	108.8	108.8
57°	115.2	115.0	115.5	116.4	109.0	109.8	107.6	105.0	105.3	105.6	105.5
58°	111.6	111.7	112.2	113.2	105.9	106.7	104.4	101.6	101.7	102.2	102.1
59°	108.4	108.2	109.0	109.9	102.6	103.6	101.0	98.2	98.5	98.5	98.5
60°	105.2	105.0	105.5	106.4	99.3	100.3	97.4	94.7	95.0	95.4	95.4
61°	101.9	101.7	102.2	103.5	95.9	96.7	94.3	91.6	91.6	91.9	91.9
62°	98.4	98.5	99.0	100.0	92.5	93.5	90.9	88.4	88.7	88.7	88.7
63°	95.3	95.1	95.6	96.8	89.2	90.1	87.7	85.0	85.1	85.5	85.4
64°	92.0	91.8	92.3	93.3	86.0	86.8	84.5	81.6	81.9	82.1	82.0
65°	88.5	88.6	89.1	90.0	82.8	83.7	81.0	78.3	78.5	78.8	78.5
66°	85.4	85.2	86.0	86.9	79.6	80.4	77.6	75.1	75.3	75.3	75.4
67°	82.1	82.0	82.8	83.7	76.2	76.9	74.4	71.7	71.9	72.2	72.0
68°	79.0	78.8	79.3	80.2	73.2	73.9	71.1	68.7	68.9	69.1	69.1
69°	75.6	75.4	76.2	77.1	69.8	70.4	68.3	65.3	65.7	65.7	66.0
70°	72.4	72.2	73.0	73.9	66.7	67.5	64.9	62.0	62.3	62.6	62.7
71°	69.2	69.1	69.8	70.8	63.7	64.6	61.9	59.2	59.3	59.4	59.5
72°	65.9	66.1	66.5	67.4	60.4	61.2	58.7	56.0	56.0	56.4	56.3
73°	62.9	63.1	63.5	64.4	57.6	58.2	55.6	52.9	53.1	53.2	53.5
74°	59.9	59.7	60.5	61.4	54.4	55.1	52.8	50.1	50.2	50.3	50.4
75°	57.0	56.9	57.3	58.2	51.4	52.3	49.9	47.1	47.2	47.5	47.6
76°	53.8	53.9	54.4	55.2	48.6	49.3	47.0	44.2	44.4	44.7	44.7
77°	50.9	50.8	51.5	52.3	45.8	46.5	44.1	41.4	41.5	41.8	41.8
78°	48.1	48.0	48.4	49.5	43.1	43.8	41.2	38.7	38.7	39.0	39.2
79°	45.3	45.2	45.6	46.7	40.4	40.9	38.7	36.2	36.1	36.2	36.5
80°	42.6	42.5	43.0	43.7	37.7	38.5	36.1	33.8	33.6	33.8	34.1
81°	39.8	39.7	40.3	41.1	35.3	35.8	33.7	31.2	31.2	31.4	31.7
82°	37.3	37.2	37.5	38.6	32.8	33.2	31.2	28.8	29.0	29.1	29.3
83°	34.8	34.6	35.1	35.8	30.6	31.1	28.8	26.6	26.5	26.5	26.9
84°	32.1	32.2	32.7	33.4	28.3	28.7	26.6	24.3	24.4	24.5	24.6
85°	29.8	29.6	30.3	31.1	25.8	26.4	24.5	22.3	22.3	22.5	22.6
86°	27.6	27.5	28.1	28.8	23.8	24.4	22.3	20.4	20.4	20.4	20.8
87°	25.5	25.4	25.7	26.5	21.9	22.3	20.6	18.7	18.4	18.7	19.0
88°	23.3	23.3	23.6	24.4	20.2	20.5	18.7	16.7	16.6	16.9	17.1
89°	21.3	21.1	21.7	22.4	18.4	18.7	17.0	15.1	4.8	15.1	15.5

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	19.5	19.3	19.8	20.6	16.7	17.0	15.3	13.6	0.0	13.6	13.8
91°	17.7	17.5	17.9	18.8	15.0	15.3	13.6	12.1	0.0	12.1	12.4
92°	16.1	15.8	16.2	16.9	13.4	13.7	12.3	10.9	0.0	10.8	11.1
93°	14.4	14.1	14.7	15.3	12.1	12.3	11.1	9.6	0.0	9.7	9.9
94°	4.2	12.7	13.2	13.9	10.8	11.0	9.7	8.5	0.0	8.5	8.8
95°	0.0	11.3	11.6	12.3	9.6	9.8	8.6	7.4	0.0	7.4	7.6
96°	0.0	10.1	10.4	11.0	8.4	8.7	7.6	6.4	0.0	6.4	6.8
97°	0.0	8.9	9.1	9.8	7.4	7.7	6.6	5.5	0.0	5.5	5.9
98°	0.0	7.7	8.1	8.6	6.5	6.7	5.6	4.7	0.0	4.8	5.2
99°	0.0	6.8	7.0	7.6	5.8	5.8	4.9	4.1	0.2	4.1	4.5
100°	0.0	5.9	6.1	6.6	5.1	5.1	4.2	3.3	0.3	3.6	3.8
101°	0.0	5.1	5.4	5.8	4.3	4.4	3.5	2.7	0.2	2.9	3.2
102°	0.0	4.3	4.7	5.1	3.7	3.8	2.9	2.1	0.3	2.4	2.6
103°	0.0	3.7	4.0	4.5	3.2	3.1	2.3	1.6	0.3	1.8	2.2
104°	0.0	3.0	3.4	3.9	2.7	2.5	1.9	1.3	0.3	1.4	1.8
105°	0.2	2.5	2.9	3.4	2.2	2.1	1.4	0.8	0.2	0.9	1.6
106°	0.2	1.9	2.4	2.9	1.9	1.7	1.2	0.6	0.3	0.6	1.2
107°	0.2	1.5	2.0	2.4	1.6	1.3	0.8	0.5	0.2	0.6	1.1
108°	0.2	1.2	1.7	2.0	1.4	1.1	0.6	0.4	0.2	0.5	1.0
109°	0.2	1.0	1.4	1.7	1.2	0.8	0.5	0.4	0.2	0.5	0.8
110°	0.3	0.8	1.2	1.5	1.2	0.8	0.5	0.3	0.2	0.5	0.9
111°	0.3	0.7	1.0	1.4	1.3	0.9	0.5	0.4	0.2	0.5	1.0
112°	0.3	0.6	1.0	1.2	1.2	0.9	0.5	0.4	0.2	0.5	1.0
113°	0.3	0.6	0.9	1.1	1.3	1.0	0.6	0.3	0.2	0.5	1.0
114°	0.3	0.6	1.0	1.3	1.4	0.9	0.6	0.4	0.2	0.6	1.1
115°	0.4	0.7	1.1	1.4	1.4	1.0	0.6	0.4	0.2	0.5	1.1
116°	0.3	0.8	1.2	1.4	1.6	1.1	0.6	0.4	0.2	0.6	1.1
117°	0.3	0.8	1.2	1.5	1.7	1.2	0.7	0.5	0.2	0.6	1.2
118°	0.3	0.8	1.3	1.5	1.6	1.2	0.8	0.5	0.2	0.6	1.2
119°	0.3	0.9	1.4	1.7	1.6	1.2	0.8	0.5	0.2	0.6	1.2
120°	0.3	1.0	1.5	1.7	1.0	1.3	0.8	0.5	0.2	0.6	1.2
121°	0.3	1.0	1.4	1.8	0.7	1.3	0.8	0.6	0.2	0.7	1.2
122°	0.3	1.0	1.4	1.9	0.3	1.3	0.8	0.5	0.2	0.6	1.3
123°	0.3	1.0	1.5	1.9	0.2	1.4	0.8	0.5	0.2	0.6	1.3
124°	0.3	1.0	1.4	2.0	0.2	1.3	0.8	0.4	0.2	0.6	1.3
125°	0.3	1.0	1.4	2.0	0.3	1.4	0.7	0.5	0.2	0.5	1.3
126°	0.3	1.0	1.4	2.0	0.3	1.4	0.8	0.5	0.1	0.6	1.3
127°	0.4	1.0	1.5	2.0	0.3	1.5	0.9	0.6	0.2	0.6	1.1
128°	0.3	1.0	1.4	2.0	0.2	1.4	1.0	0.6	0.2	0.6	1.2
129°	0.3	1.0	1.5	2.0	0.3	1.5	1.0	0.6	0.2	0.6	1.1
130°	0.3	0.9	1.4	2.0	0.3	1.5	1.0	0.6	0.2	0.5	1.1
131°	0.3	1.0	1.4	2.0	0.2	1.5	1.0	0.7	0.3	0.6	1.1
132°	0.2	0.9	1.4	2.0	0.3	1.6	1.0	0.6	0.2	0.5	1.1
133°	0.2	0.9	1.4	2.0	0.3	1.6	1.0	0.5	0.2	0.6	1.1
134°	0.3	0.9	1.4	2.0	0.2	1.6	1.1	0.7	0.3	0.5	1.1

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
135°	0.2	0.8	1.5	2.0	0.3	1.6	1.1	0.7	0.3	0.5	1.0
136°	0.3	0.8	1.5	2.0	0.3	1.7	1.1	0.7	0.2	0.5	1.1
137°	0.2	0.8	1.4	2.0	0.3	1.8	1.1	0.7	0.3	0.5	1.3
138°	0.3	0.7	1.4	2.0	0.3	1.8	1.1	0.7	0.3	0.4	1.2
139°	0.2	0.7	1.5	1.9	0.3	1.8	1.1	0.8	0.3	0.4	1.1
140°	0.2	0.7	1.6	2.0	0.3	1.9	1.2	0.7	0.3	0.3	0.9
141°	0.2	0.7	1.6	2.0	0.3	2.0	1.1	0.7	0.2	0.4	0.8
142°	0.2	0.7	1.5	2.0	0.3	2.6	1.1	0.8	0.2	0.4	0.8
143°	0.2	0.7	1.5	2.0	0.3	2.6	1.1	0.8	0.2	0.4	0.7
144°	0.2	0.7	1.5	2.0	0.3	2.3	1.2	0.7	0.2	0.3	0.7
145°	0.2	0.7	1.4	1.9	0.3	3.0	1.2	0.6	0.1	0.4	0.7
146°	0.3	0.7	1.4	1.9	0.3	2.8	1.2	0.8	0.1	0.4	0.8
147°	0.2	0.7	1.4	1.9	0.3	2.6	1.1	0.8	0.2	0.4	0.6
148°	0.2	0.7	1.4	1.9	0.3	2.6	1.2	0.6	0.3	0.4	0.8
149°	0.2	0.7	1.3	1.9	0.4	2.6	1.2	0.5	0.3	0.2	0.9
150°	0.2	0.8	1.3	2.0	0.3	2.3	1.2	0.6	0.4	0.3	0.9
151°	0.3	0.6	1.3	2.1	0.3	2.2	1.2	0.5	0.3	0.3	0.8
152°	0.2	0.7	1.4	2.9	0.4	2.1	1.1	0.4	0.3	0.3	0.7
153°	0.3	0.7	1.4	2.8	0.3	2.0	1.2	0.4	0.3	0.3	0.9
154°	0.3	0.7	1.9	2.0	0.3	1.9	1.1	0.4	0.4	0.2	0.9
155°	0.3	0.7	1.9	2.0	0.3	1.6	1.0	0.3	0.4	0.2	0.8
156°	0.3	0.7	1.7	2.3	0.3	1.4	1.1	0.3	0.4	0.2	0.6
157°	0.3	0.7	1.5	2.4	0.3	1.3	1.0	0.3	0.3	0.2	0.6
158°	0.3	0.7	1.6	2.3	0.3	1.3	1.0	0.4	0.3	0.2	0.5
159°	0.3	0.7	1.8	2.2	0.2	1.5	0.9	0.4	0.3	0.2	0.5
160°	0.3	0.6	1.8	2.0	0.3	1.8	0.8	0.4	0.4	0.2	0.5
161°	0.3	0.8	1.8	2.0	0.4	1.5	0.7	0.4	0.3	0.2	0.4
162°	0.3	0.6	1.7	2.0	0.3	0.7	0.4	0.5	0.3	0.2	0.4
163°	0.3	0.8	1.7	2.0	0.3	0.7	0.3	0.4	0.3	0.2	0.4
164°	0.2	0.6	1.6	1.9	0.3	0.6	0.2	0.5	0.2	0.2	0.4
165°	0.3	0.7	1.4	1.7	0.3	0.4	0.2	0.4	0.1	0.2	0.4
166°	0.3	0.7	1.2	1.4	0.3	0.2	0.2	0.5	0.2	0.2	0.3
167°	0.3	0.7	1.1	1.0	0.2	0.1	0.2	0.4	0.2	0.2	0.2
168°	0.3	0.6	1.0	0.8	0.2	0.3	0.4	0.3	0.2	0.2	0.2
169°	0.2	0.7	0.9	0.5	0.2	0.2	0.3	0.3	0.1	0.1	0.1
170°	0.3	0.6	0.7	0.4	0.1	0.2	0.4	0.2	0.2	0.1	0.1
171°	0.3	0.6	0.5	0.3	0.2	0.3	0.3	0.1	0.1	0.2	0.1
172°	0.2	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
173°	0.3	0.3	0.2	0.3	0.1	0.2	0.1	0.1	0.2	0.1	0.2
174°	0.2	0.2	0.2	0.2	0.0	0.1	0.2	0.1	0.1	0.2	0.1
175°	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
176°	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
177°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2
178°	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
179°	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



TEST NUMBER: P1219800
CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
180°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	226.7	226.7	226.7	226.7	226.7	226.7
1°	226.5	226.7	226.7	226.7	226.9	226.8
2°	226.3	226.7	226.5	226.7	226.8	226.7
3°	225.9	226.5	226.3	226.5	226.7	226.6
4°	225.5	226.2	226.1	226.3	226.6	226.4
5°	225.0	225.9	225.8	226.0	226.3	226.1
6°	224.4	225.5	225.3	225.6	225.9	225.8
7°	223.7	225.0	224.8	225.1	225.5	225.3
8°	222.9	224.4	224.2	224.5	225.1	224.8
9°	222.0	223.7	223.4	223.9	224.4	224.2
10°	221.1	223.0	222.7	223.2	223.7	223.4
11°	220.1	222.1	221.8	222.3	223.0	222.6
12°	219.0	221.1	220.9	221.4	222.1	221.8
13°	217.8	220.1	219.7	220.5	221.1	220.8
14°	216.5	219.1	218.6	219.3	220.1	219.7
15°	215.2	217.9	217.5	218.1	218.9	218.6
16°	213.8	216.6	216.1	217.0	217.8	217.4
17°	212.2	215.3	214.8	215.6	216.4	216.1
18°	210.6	214.0	213.4	214.2	215.1	214.7
19°	208.9	212.4	211.9	212.8	213.8	213.3
20°	207.2	210.8	210.1	211.2	212.3	211.8
21°	205.5	209.3	208.5	209.4	210.7	210.1
22°	203.4	207.5	206.8	207.8	209.0	208.5
23°	201.5	205.8	205.0	206.0	207.3	206.7
24°	199.4	203.9	203.0	204.3	205.4	205.0
25°	197.5	201.9	201.1	202.4	203.5	202.9
26°	195.3	199.8	199.2	200.3	201.6	201.0
27°	193.1	197.8	197.0	198.3	199.5	199.0
28°	190.8	195.7	194.8	196.3	197.5	196.8
29°	188.5	193.6	192.7	193.9	195.4	194.7
30°	186.2	191.2	190.4	191.8	193.2	192.5
31°	183.7	188.9	187.9	189.5	191.0	190.3
32°	181.1	186.6	185.6	187.2	188.5	188.0
33°	178.6	184.0	183.2	184.6	186.2	185.4
34°	175.9	181.6	180.8	182.2	183.5	183.0
35°	173.3	179.1	178.1	179.7	181.1	180.4
36°	170.6	176.5	175.5	177.0	178.6	177.9
37°	167.7	173.6	173.0	174.4	176.1	175.3
38°	165.0	171.1	170.0	171.8	173.6	172.8
39°	162.2	168.4	167.4	168.9	170.7	169.9
40°	159.1	165.7	164.6	166.1	168.0	167.1
41°	156.3	162.9	161.8	163.4	165.0	164.4
42°	153.1	159.7	158.7	160.6	162.2	161.6
43°	150.3	156.9	155.9	157.8	159.4	158.8
44°	147.2	153.8	153.0	154.6	156.6	155.6

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	144.2	150.9	149.8	151.7	153.8	152.8
46°	140.8	147.9	146.8	148.8	150.5	149.6
47°	137.7	144.9	143.8	145.6	147.6	146.6
48°	134.4	141.9	140.8	142.5	144.6	143.6
49°	131.3	138.5	137.5	139.5	141.6	140.6
50°	128.1	135.5	134.4	136.5	138.2	137.5
51°	125.0	132.0	131.3	133.0	135.2	134.2
52°	121.7	128.9	128.2	129.9	132.1	131.1
53°	118.4	125.8	124.7	126.8	128.7	128.0
54°	115.2	122.6	121.4	123.6	125.5	124.5
55°	111.6	119.3	118.7	120.1	122.3	121.3
56°	108.6	116.0	114.9	117.2	119.3	118.4
57°	105.1	112.8	111.6	113.9	115.8	115.2
58°	101.8	109.6	108.5	110.3	112.6	111.6
59°	98.4	106.3	105.2	107.1	109.4	108.4
60°	94.9	102.7	102.0	103.9	105.9	105.2
61°	91.8	99.5	98.5	100.7	102.6	101.9
62°	88.5	96.3	95.3	97.2	99.4	98.4
63°	85.3	92.8	92.1	93.9	96.2	95.3
64°	81.7	89.6	88.5	90.7	92.7	92.0
65°	78.5	86.4	85.3	87.2	89.5	88.5
66°	75.1	83.1	82.1	84.0	86.3	85.4
67°	72.0	79.8	78.7	80.8	83.1	82.1
68°	68.8	76.5	75.5	77.8	79.6	79.0
69°	65.7	73.3	72.3	74.3	76.5	75.6
70°	62.6	69.9	69.3	71.1	73.3	72.4
71°	59.3	66.9	66.3	68.1	70.2	69.2
72°	56.4	63.9	63.0	65.0	66.9	65.9
73°	53.3	60.6	60.1	61.8	63.8	62.9
74°	50.6	57.7	56.8	58.8	60.8	59.9
75°	47.5	54.7	53.8	55.9	57.6	57.0
76°	44.7	51.8	51.0	53.0	54.7	53.8
77°	42.0	49.0	48.2	49.8	51.7	50.9
78°	39.2	45.9	45.5	47.0	48.9	48.1
79°	36.8	43.3	42.6	44.4	45.9	45.3
80°	34.2	40.7	40.0	41.8	43.2	42.6
81°	31.8	37.9	37.5	39.0	40.6	39.8
82°	29.5	35.4	35.0	36.5	37.8	37.3
83°	27.2	33.1	32.5	34.0	35.3	34.8
84°	25.0	30.7	30.2	31.7	32.9	32.1
85°	23.0	28.4	28.1	29.2	30.6	29.8
86°	21.0	26.2	25.9	27.1	28.4	27.6
87°	19.3	24.1	23.7	25.0	26.1	25.5
88°	17.4	22.2	21.8	23.0	24.0	23.3
89°	15.8	20.4	20.0	21.0	22.0	21.3

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	14.2	18.5	18.3	19.2	20.1	19.5
91°	12.6	16.9	16.5	17.5	18.4	17.7
92°	11.3	15.3	14.9	15.9	16.6	16.1
93°	10.2	13.7	13.5	14.3	15.0	14.4
94°	9.0	12.2	12.1	12.9	13.5	4.2
95°	7.9	10.9	10.8	11.5	12.0	0.0
96°	6.9	9.8	9.6	10.3	10.8	0.0
97°	6.2	8.7	8.5	9.2	9.6	0.0
98°	5.4	7.6	7.5	8.0	8.5	0.0
99°	4.7	6.6	6.6	7.1	7.4	0.0
100°	4.1	5.9	5.7	6.2	6.5	0.0
101°	3.5	5.2	5.1	5.3	5.7	0.0
102°	3.0	4.6	4.4	4.7	5.0	0.0
103°	2.5	3.9	3.8	4.0	4.2	0.0
104°	2.1	3.5	3.2	3.4	3.6	0.0
105°	1.9	2.9	2.7	2.9	2.9	0.2
106°	1.6	2.4	2.3	2.4	2.3	0.2
107°	1.4	2.1	1.9	2.0	1.7	0.2
108°	1.2	1.8	1.7	1.7	1.3	0.2
109°	1.2	1.6	1.5	1.3	1.0	0.2
110°	1.1	1.5	1.2	1.1	0.7	0.3
111°	1.3	1.4	1.1	0.9	0.6	0.3
112°	1.4	1.3	0.9	0.8	0.4	0.3
113°	1.5	1.3	1.0	0.7	0.4	0.3
114°	1.6	1.4	1.1	0.6	0.3	0.3
115°	1.6	1.4	1.1	0.7	0.3	0.4
116°	1.7	1.5	1.3	0.6	0.2	0.3
117°	1.7	1.6	1.3	0.7	0.3	0.3
118°	1.8	1.6	1.4	0.6	0.1	0.3
119°	1.8	1.6	1.3	0.8	0.3	0.3
120°	1.8	1.7	1.4	0.8	0.3	0.3
121°	1.8	0.4	1.4	0.8	0.3	0.3
122°	1.8	0.4	1.4	0.8	0.3	0.3
123°	1.8	0.1	1.4	0.8	0.2	0.3
124°	1.7	0.2	1.4	0.8	0.3	0.3
125°	1.6	0.1	1.4	0.9	0.3	0.3
126°	1.5	0.2	1.4	0.9	0.2	0.3
127°	1.5	0.1	1.3	0.8	0.3	0.4
128°	1.5	0.1	1.3	0.8	0.2	0.3
129°	1.5	0.1	1.3	0.8	0.2	0.3
130°	1.4	0.1	1.3	0.9	0.2	0.3
131°	1.3	0.1	1.3	0.9	0.2	0.3
132°	1.2	0.1	1.2	0.8	0.2	0.2
133°	1.3	0.2	1.2	0.9	0.2	0.2
134°	1.3	0.1	1.3	0.7	0.2	0.3

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
135°	1.2	0.2	1.2	0.9	0.2	0.2
136°	1.1	0.2	1.2	0.8	0.2	0.3
137°	1.1	0.2	1.3	0.8	0.2	0.2
138°	1.1	0.1	1.3	0.8	0.2	0.3
139°	1.1	0.2	1.2	0.8	0.2	0.2
140°	1.1	0.2	1.3	0.8	0.1	0.2
141°	1.1	0.2	1.2	0.8	0.2	0.2
142°	1.0	0.2	1.3	0.8	0.2	0.2
143°	0.9	0.2	1.3	0.8	0.1	0.2
144°	0.9	0.2	1.4	0.9	0.2	0.2
145°	0.9	0.2	2.0	0.9	0.2	0.2
146°	0.9	0.2	2.3	0.7	0.2	0.3
147°	0.9	0.1	1.4	0.7	0.2	0.2
148°	0.8	0.1	1.2	0.6	0.2	0.2
149°	0.7	0.1	1.2	0.3	0.2	0.2
150°	0.7	0.2	1.2	0.3	0.2	0.2
151°	0.8	0.1	1.2	0.2	0.2	0.3
152°	0.7	0.2	1.3	0.3	0.2	0.2
153°	0.7	0.1	1.2	0.4	0.1	0.3
154°	0.6	0.1	0.9	0.4	0.2	0.3
155°	0.5	0.2	0.8	0.5	0.1	0.3
156°	0.4	0.2	0.7	0.4	0.1	0.3
157°	0.5	0.1	0.9	0.4	0.1	0.3
158°	0.5	0.2	0.6	0.5	0.1	0.3
159°	0.5	0.2	0.5	0.5	0.1	0.3
160°	0.5	0.2	0.3	0.5	0.1	0.3
161°	0.4	0.2	0.1	0.4	0.1	0.3
162°	0.3	0.2	0.1	0.3	0.2	0.3
163°	0.3	0.1	0.1	0.3	0.2	0.3
164°	0.3	0.1	0.2	0.3	0.1	0.2
165°	0.3	0.1	0.3	0.2	0.2	0.3
166°	0.3	0.1	0.3	0.2	0.2	0.3
167°	0.2	0.1	0.3	0.1	0.2	0.3
168°	0.2	0.2	0.3	0.2	0.2	0.3
169°	0.2	0.1	0.2	0.1	0.2	0.2
170°	0.1	0.1	0.1	0.2	0.2	0.3
171°	0.1	0.1	0.1	0.1	0.2	0.3
172°	0.2	0.1	0.1	0.1	0.1	0.2
173°	0.1	0.2	0.2	0.1	0.1	0.3
174°	0.1	0.0	0.1	0.1	0.1	0.2
175°	0.2	0.1	0.1	0.1	0.2	0.2
176°	0.2	0.1	0.1	0.1	0.1	0.1
177°	0.0	0.1	0.1	0.1	0.1	0.1
178°	0.1	0.1	0.1	0.1	0.1	0.2
179°	0.1	0.2	0.1	0.1	0.1	0.1

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TEST NUMBER: P1219800
CATALOG NUMBER: HLC4FS1E-24P-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
180°	0.1	0.1	0.1	0.1	0.1	0.1

TEST NUMBER: P1219800

CATALOG NUMBER: HLC4FS1E-24P-3000K

CIE UGR TABLE:

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room Dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	23.4	25.1	23.8	25.4	25.8	23.3	24.9	23.7	25.2	25.6
	3H	25.5	27.0	25.9	27.4	27.8	25.3	26.7	25.7	27.1	27.5
	4H	26.4	27.8	26.9	28.2	28.7	26.1	27.5	26.6	27.9	28.3
	6H	27.3	28.6	27.8	29.0	29.5	26.9	28.2	27.4	28.6	29.1
	8H	27.7	29.0	28.2	29.4	29.8	27.3	28.5	27.7	29.0	29.4
	12H	28.1	29.3	28.6	29.8	30.3	27.7	28.9	28.1	29.3	29.8
4H	2H	24.1	25.5	24.6	25.9	26.3	23.9	25.3	24.4	25.7	26.2
	3H	26.5	27.6	26.9	28.1	28.5	26.2	27.4	26.7	27.8	28.3
	4H	27.5	28.6	28.0	29.1	29.6	27.2	28.3	27.7	28.8	29.3
	6H	28.6	29.5	29.1	30.0	30.5	28.2	29.2	28.7	29.7	30.2
	8H	29.1	30.0	29.6	30.5	31.0	28.7	29.6	29.2	30.1	30.6
	12H	29.6	30.4	30.1	31.0	31.5	29.2	30.0	29.7	30.5	31.0
8H	4H	28.0	28.9	28.5	29.4	29.9	27.7	28.6	28.2	29.1	29.6
	6H	29.2	30.0	29.8	30.5	31.0	28.9	29.6	29.4	30.2	30.7
	8H	29.9	30.6	30.4	31.1	31.6	29.5	30.2	30.0	30.7	31.3
	12H	30.6	31.2	31.1	31.7	32.3	30.2	30.8	30.7	31.3	31.9
12H	4H	28.1	28.9	28.6	29.4	29.9	27.8	28.6	28.3	29.1	29.6
	6H	29.4	30.1	29.9	30.6	31.2	29.0	29.7	29.6	30.2	30.8
	8H	30.1	30.7	30.7	31.3	31.9	29.7	30.3	30.3	30.9	31.5

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