

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO COMMERCIAL

Report Number: P584062

Luminaire Tested: **HC820D010-HM80520930-81WWBB**

Issue Date: 10/21/2021

**Test Information**

Test Method: LM-41-14  
Report Number: P584062  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2109-368-17)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 10/21/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: HC820D010-HM80520930-81WWBB  
Description: HALO COMMERCIAL 8" ROUND, NEW CONSTRUCTION FRAME, WITH 8" WALLWASH DISTRIBUTION, WHITE BAFFLE TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1631.0 lumens  
Efficiency: N/A  
Efficacy: 81.6 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.07 / 1.16  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

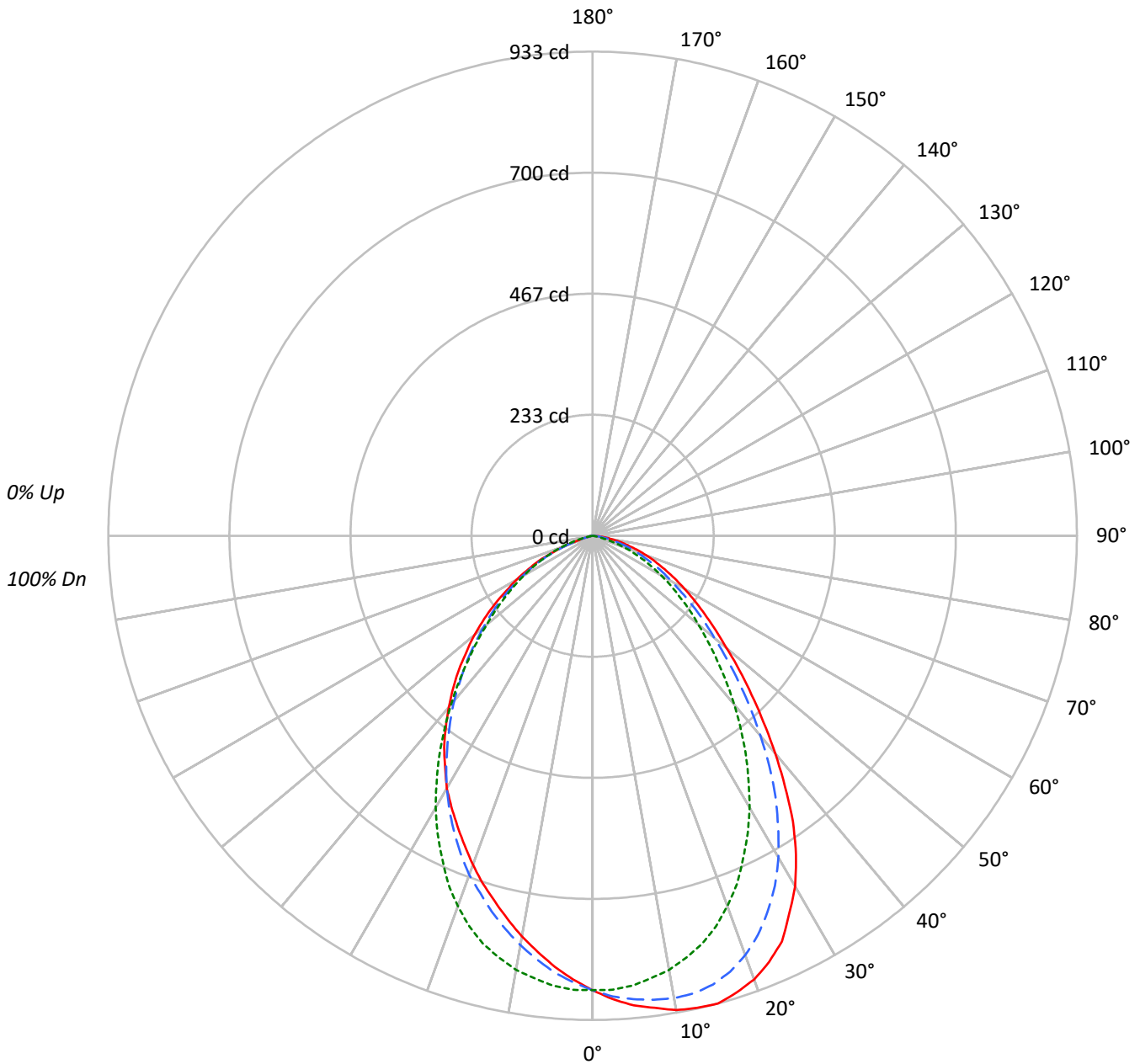
Input Watts (W): 20  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20									20									20									20									
RC	80									50									30									10									0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	111	107	104	101	108	105	102	99	101	98	96	97	95	93	93	92	90	88																			
2	103	96	90	86	100	94	89	85	91	86	83	88	84	81	85	82	79	77																			
3	95	86	79	74	93	85	78	73	82	76	72	79	74	71	77	73	69	67																			
4	88	78	70	64	86	76	69	64	74	68	63	72	66	62	70	65	61	59																			
5	82	70	63	57	80	69	62	56	67	61	56	65	60	55	64	59	55	53																			
6	76	64	56	51	74	63	56	50	62	55	50	60	54	50	58	53	49	47																			
7	71	59	51	45	69	58	51	45	57	50	45	55	49	45	54	49	44	43																			
8	66	54	46	41	65	53	46	41	52	46	41	51	45	41	50	44	40	39																			
9	62	50	43	37	61	50	42	37	48	42	37	47	41	37	46	41	37	35																			
10	59	47	39	34	57	46	39	34	45	39	34	44	38	34	43	38	34	32																			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	27000	27000	27000
5°	28119	26942	25810
10°	29058	26600	24549
15°	29792	25993	23276
20°	29852	24913	22121
25°	29346	23337	20976
30°	27777	21531	19997
35°	25327	19364	18773
40°	22023	17072	17333
45°	18891	14783	15865
50°	16138	12746	14258
55°	14145	10973	12387
60°	12587	9368	10410
65°	11178	7639	8303
70°	9909	5671	4724
75°	8268	2955	1406
80°	6499	923	231
85°	4635	460	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	82.5	5.1
10°-20°	231.3	14.2
20°-30°	327.3	20.1
30°-40°	342.4	21.0
40°-50°	285.6	17.5
50°-60°	202.5	12.4
60°-70°	116.6	7.2
70°-80°	37.5	2.3
80°-90°	5.2	0.3
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	641.1	39.3
0°-40°	983.5	60.3
0°-60°	1471.7	90.2
0°-90°	1631.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1631.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	876	876	876	876	876	
5°	908	896	870	844	834	87
15°	933	895	814	750	729	262
25°	862	798	686	631	616	394
35°	673	614	514	487	499	417
45°	433	398	339	343	364	336
55°	263	236	204	215	230	238
65°	153	128	105	105	114	153
75°	69	51	25	12	12	75
85°	13	6	1	0	0	16
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6
2.5°	893.9	892.6	891.3	892.6	891.3	892.6	891.3	891.3	890.0	888.7	888.7
5°	908.4	907.1	907.1	907.1	905.8	904.5	904.5	903.2	900.6	899.3	896.5
7.5°	917.6	918.9	918.9	918.9	916.2	916.2	913.6	911.0	908.4	905.8	901.9
10°	928.0	928.0	926.7	925.4	922.8	921.5	920.2	917.6	913.6	908.4	904.5
12.5°	931.9	931.9	930.6	928.0	926.7	925.4	924.1	920.2	914.9	908.4	903.2
15°	933.2	930.6	929.3	928.0	925.4	921.5	921.5	916.2	909.7	901.9	895.2
17.5°	922.8	924.1	921.5	918.9	914.9	912.3	908.4	904.5	896.5	887.4	880.8
20°	909.7	908.4	907.1	903.2	897.8	896.5	892.6	886.1	879.5	869.1	859.9
22.5°	888.7	887.4	884.8	882.2	876.9	874.3	870.4	862.5	853.4	842.9	832.5
25°	862.5	859.9	856.0	850.8	846.9	844.2	839.0	831.2	820.7	808.8	798.4
27.5°	820.7	824.6	822.0	814.2	810.3	804.9	803.6	793.2	784.0	772.2	760.5
30°	780.1	780.1	776.2	772.2	765.7	761.8	756.5	748.7	739.6	725.2	715.9
32.5°	729.1	727.8	722.6	721.3	715.9	708.1	706.8	696.3	687.2	676.7	664.9
35°	672.8	670.2	664.9	661.0	658.4	654.5	650.6	641.4	632.3	621.7	613.8
37.5°	608.6	608.6	607.3	600.8	598.2	595.5	591.6	582.5	577.2	566.8	558.8
40°	547.1	545.8	541.8	540.5	537.9	534.0	531.4	526.2	518.3	510.5	502.6
42.5°	486.9	488.2	483.0	484.3	479.1	476.5	475.2	467.2	463.3	455.5	448.9
45°	433.2	431.9	429.3	428.0	425.4	422.8	420.2	416.2	409.7	401.9	397.9
47.5°	383.6	379.5	379.5	378.2	376.9	371.7	370.4	366.5	362.5	354.7	349.5
50°	336.4	336.4	336.4	335.1	331.2	329.9	327.2	323.3	319.4	314.2	306.3
52.5°	298.5	298.5	298.5	297.2	291.8	290.5	289.2	284.0	278.8	274.8	269.6
55°	263.1	264.4	263.1	260.5	256.5	256.5	252.6	250.0	244.8	240.9	235.6
57.5°	233.0	233.0	230.4	229.1	226.5	225.2	222.5	219.9	213.4	209.5	202.8
60°	204.1	202.8	202.8	200.2	197.6	195.0	193.7	189.8	187.2	180.6	175.4
62.5°	178.0	178.0	175.4	175.4	170.2	170.2	168.8	164.9	161.0	154.5	151.9
65°	153.2	153.2	151.9	150.5	146.6	145.3	144.0	140.1	136.2	132.1	128.2
67.5°	130.8	130.8	128.2	126.9	124.3	123.0	120.4	117.8	113.8	109.9	106.0
70°	109.9	108.6	107.3	106.0	103.4	102.1	99.5	96.8	92.9	90.3	86.4
72.5°	89.0	89.0	87.7	85.1	83.8	82.5	81.2	78.5	74.6	70.7	68.1
75°	69.4	69.4	69.4	66.8	64.2	62.9	62.9	60.2	57.6	53.7	51.1
77.5°	53.7	52.4	51.1	51.1	48.5	47.2	45.9	44.4	40.5	39.2	36.6
80°	36.6	37.9	36.6	35.3	34.0	32.7	32.7	30.1	28.8	26.1	23.5
82.5°	24.8	23.5	23.5	22.2	22.2	20.9	20.9	18.3	17.0	15.7	14.4
85°	13.1	13.1	11.8	11.8	11.8	10.5	10.5	9.2	9.2	7.8	6.5
87.5°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	2.6	2.6	2.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6
2.5°	887.4	884.8	883.5	883.5	882.2	880.8	879.5	878.2	875.6	875.6	873.0
5°	893.9	891.3	890.0	886.1	883.5	883.5	878.2	876.9	873.0	870.4	867.8
7.5°	899.3	893.9	890.0	886.1	883.5	880.8	875.6	870.4	865.2	859.9	857.3
10°	899.3	893.9	887.4	880.8	878.2	875.6	869.1	861.2	854.7	849.5	842.9
12.5°	896.5	888.7	880.8	875.6	870.4	866.5	858.6	850.8	842.9	832.5	827.2
15°	888.7	878.2	870.4	861.2	857.3	850.8	844.2	832.5	823.3	814.2	807.5
17.5°	873.0	859.9	850.8	841.6	835.1	831.2	820.7	810.3	799.7	789.2	781.4
20°	849.5	837.7	827.2	815.5	810.3	804.9	791.8	781.4	770.9	759.2	751.3
22.5°	820.7	808.8	794.5	785.3	777.5	770.9	759.2	747.4	736.9	726.5	715.9
25°	785.3	773.5	760.5	746.1	740.9	734.3	721.3	709.4	697.6	685.9	676.7
27.5°	747.4	731.7	721.3	705.5	700.2	693.7	679.3	666.2	655.8	646.6	636.2
30°	701.5	689.8	675.4	661.0	655.8	649.2	637.5	625.6	615.2	604.7	594.2
32.5°	651.9	640.1	625.6	615.2	607.3	602.1	590.3	579.9	569.4	558.8	549.7
35°	599.5	586.4	575.9	565.5	558.8	552.3	540.5	531.4	523.5	514.4	505.2
37.5°	545.8	536.6	526.2	514.4	507.9	502.6	493.5	483.0	476.5	468.5	462.0
40°	493.5	483.0	473.9	463.3	458.1	454.2	445.0	437.2	430.6	424.1	420.2
42.5°	439.8	430.6	421.5	414.9	411.0	407.1	400.5	391.4	387.5	380.8	376.9
45°	390.1	382.1	375.6	366.5	363.8	361.2	353.4	346.8	342.9	339.0	336.4
47.5°	342.9	337.7	329.9	324.6	320.7	318.1	312.9	307.6	303.7	301.1	298.5
50°	302.4	295.9	290.5	285.3	282.7	278.8	273.5	270.9	268.3	265.7	265.7
52.5°	264.4	257.8	252.6	248.7	246.1	243.5	239.5	238.2	235.6	235.6	234.3
55°	229.1	225.2	219.9	214.7	213.4	212.1	209.5	206.8	205.5	204.1	205.5
57.5°	198.9	195.0	189.8	185.8	184.5	183.2	181.9	179.3	178.0	178.0	178.0
60°	171.5	167.5	163.6	159.7	159.7	157.1	155.8	154.5	153.2	151.9	151.9
62.5°	146.6	142.7	138.8	136.2	134.9	133.4	130.8	129.5	128.2	128.2	126.9
65°	124.3	119.1	117.8	113.8	112.5	111.2	109.9	107.3	106.0	104.7	103.4
67.5°	102.1	99.5	95.5	92.9	91.6	90.3	89.0	86.4	85.1	83.8	81.2
70°	82.5	79.8	77.2	74.6	73.3	72.0	69.4	66.8	65.5	62.9	58.9
72.5°	64.2	61.5	58.9	56.3	55.0	53.7	51.1	48.5	45.9	43.1	40.5
75°	48.5	45.9	41.8	39.2	37.9	37.9	34.0	31.4	28.8	24.8	22.2
77.5°	34.0	30.1	28.8	26.1	24.8	22.2	19.6	17.0	14.4	13.1	10.5
80°	22.2	19.6	17.0	15.7	14.4	13.1	11.8	9.2	6.5	5.2	3.9
82.5°	13.1	11.8	10.5	9.2	7.8	6.5	5.2	5.2	3.9	2.6	1.3
85°	6.5	5.2	3.9	3.9	2.6	2.6	2.6	1.3	1.3	1.3	1.3
87.5°	2.6	1.3	1.3	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6
2.5°	871.7	870.4	869.1	867.8	867.8	865.2	865.2	863.9	861.2	859.9	859.9
5°	863.9	859.9	857.3	856.0	854.7	850.8	849.5	846.9	844.2	841.6	840.3
7.5°	852.1	845.5	842.9	841.6	837.7	833.8	831.2	827.2	823.3	819.4	818.1
10°	837.7	831.2	824.6	822.0	818.1	815.5	810.3	804.9	801.0	797.1	793.2
12.5°	819.4	811.6	804.9	802.3	798.4	793.2	785.3	782.7	776.2	773.5	768.3
15°	798.4	789.2	782.7	778.8	774.9	767.0	761.8	756.5	750.0	747.4	742.2
17.5°	772.2	761.8	755.2	751.3	748.7	742.2	734.3	727.8	721.3	718.5	714.6
20°	740.9	734.3	725.2	721.3	718.5	710.7	702.8	700.2	695.0	689.8	685.9
22.5°	705.5	698.9	689.8	685.9	684.5	678.0	671.5	667.5	663.6	659.7	655.8
25°	668.9	661.0	653.2	650.6	647.9	642.7	637.5	634.9	630.8	628.2	625.6
27.5°	629.5	621.7	615.2	611.2	608.6	604.7	602.1	599.5	596.9	594.2	592.9
30°	587.7	579.9	574.6	572.0	569.4	568.1	564.2	562.9	561.6	558.8	560.1
32.5°	545.8	539.2	534.0	530.1	530.1	527.5	526.2	526.2	524.8	524.8	524.8
35°	500.0	496.1	492.2	490.9	489.5	488.2	486.9	488.2	486.9	488.2	489.5
37.5°	458.1	454.2	451.5	450.2	448.9	450.2	448.9	448.9	450.2	452.8	454.2
40°	414.9	412.3	409.7	411.0	409.7	409.7	409.7	413.6	414.9	416.2	417.5
42.5°	374.3	371.7	370.4	370.4	371.7	370.4	373.0	374.3	376.9	380.8	383.6
45°	335.1	333.8	333.8	335.1	333.8	336.4	336.4	339.0	342.9	345.5	348.2
47.5°	298.5	298.5	298.5	299.8	299.8	301.1	303.7	305.0	307.6	310.2	312.9
50°	264.4	265.7	267.0	267.0	267.0	269.6	272.2	273.5	274.8	276.2	280.1
52.5°	234.3	235.6	235.6	236.9	238.2	239.5	240.9	243.5	244.8	247.4	248.7
55°	205.5	205.5	208.2	209.5	209.5	209.5	212.1	212.1	214.7	216.0	218.6
57.5°	178.0	179.3	179.3	180.6	180.6	181.9	183.2	184.5	185.8	187.2	188.5
60°	151.9	151.9	151.9	153.2	154.5	155.8	154.5	157.1	157.1	159.7	161.0
62.5°	126.9	128.2	128.2	128.2	128.2	128.2	128.2	129.5	130.8	132.1	133.4
65°	103.4	103.4	103.4	102.1	103.4	102.1	103.4	104.7	104.7	106.0	107.3
67.5°	79.8	79.8	77.2	77.2	78.5	78.5	78.5	78.5	77.2	79.8	79.8
70°	57.6	56.3	55.0	53.7	53.7	52.4	52.4	51.1	51.1	51.1	51.1
72.5°	37.9	35.3	32.7	31.4	30.1	30.1	27.5	26.1	27.5	27.5	27.5
75°	19.6	17.0	15.7	14.4	13.1	13.1	11.8	11.8	11.8	11.8	11.8
77.5°	7.8	6.5	5.2	5.2	3.9	3.9	3.9	3.9	3.9	3.9	3.9
80°	2.6	2.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
85°	1.3	0.0	0.0	1.3	0.0	1.3	1.3	1.3	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0





TEST NUMBER: P584062

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**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	875.6	875.6	875.6	875.6	875.6	875.6	875.6	875.6
2.5°	858.6	858.6	857.3	858.6	856.0	857.3	856.0	856.0
5°	839.0	836.4	836.4	836.4	835.1	835.1	833.8	833.8
7.5°	815.5	814.2	812.9	811.6	810.3	808.8	808.8	808.8
10°	791.8	789.2	789.2	787.9	785.3	784.0	784.0	784.0
12.5°	764.4	763.1	761.8	761.8	756.5	757.9	756.5	756.5
15°	738.2	736.9	736.9	733.0	730.4	730.4	730.4	729.1
17.5°	710.7	709.4	708.1	705.5	702.8	702.8	701.5	702.8
20°	681.9	680.6	678.0	678.0	676.7	675.4	672.8	674.1
22.5°	653.2	650.6	649.2	649.2	647.9	647.9	645.3	645.3
25°	623.0	621.7	620.4	621.7	619.1	619.1	616.5	616.5
27.5°	591.6	590.3	590.3	590.3	589.0	590.3	589.0	589.0
30°	560.1	560.1	558.8	558.8	560.1	558.8	560.1	561.6
32.5°	526.2	526.2	527.5	527.5	528.8	528.8	528.8	528.8
35°	490.9	493.5	493.5	494.8	496.1	497.4	497.4	498.7
37.5°	458.1	459.4	460.7	462.0	464.6	464.6	464.6	464.6
40°	422.8	424.1	426.7	425.4	430.6	431.9	430.6	430.6
42.5°	386.2	388.8	390.1	392.7	394.0	396.6	397.9	397.9
45°	352.1	353.4	356.0	358.6	359.9	363.8	363.8	363.8
47.5°	316.8	319.4	320.7	323.3	324.6	328.5	329.9	328.5
50°	282.7	285.3	287.9	287.9	291.8	293.1	295.9	297.2
52.5°	250.0	251.3	253.9	255.2	257.8	260.5	261.8	263.1
55°	218.6	219.9	222.5	222.5	226.5	227.8	230.4	230.4
57.5°	189.8	191.1	193.7	192.4	195.0	197.6	197.6	196.3
60°	162.3	162.3	162.3	164.9	166.2	167.5	168.8	168.8
62.5°	133.4	136.2	137.5	137.5	138.8	140.1	140.1	138.8
65°	107.3	109.9	111.2	111.2	112.5	112.5	112.5	113.8
67.5°	81.2	81.2	81.2	82.5	81.2	81.2	81.2	81.2
70°	51.1	51.1	51.1	51.1	49.8	51.1	51.1	52.4
72.5°	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
75°	11.8	11.8	11.8	13.1	11.8	11.8	11.8	11.8
77.5°	5.2	3.9	5.2	5.2	3.9	3.9	3.9	3.9
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
85°	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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— 0°-180°    - - 45°-225°    - - - - 90°-270°















(END OF REPORT)