

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



Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P646678

Luminaire Tested: S123RDRP-S340D840-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

**Test Information**

Test Method: LM-79-2024  
Report Number: P646678  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2301-905-2)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/20/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S123RDRP-S340D840-X4F0-XX-UDD-G-W  
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC  
STANDARD LIGHT ENGINE  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: -

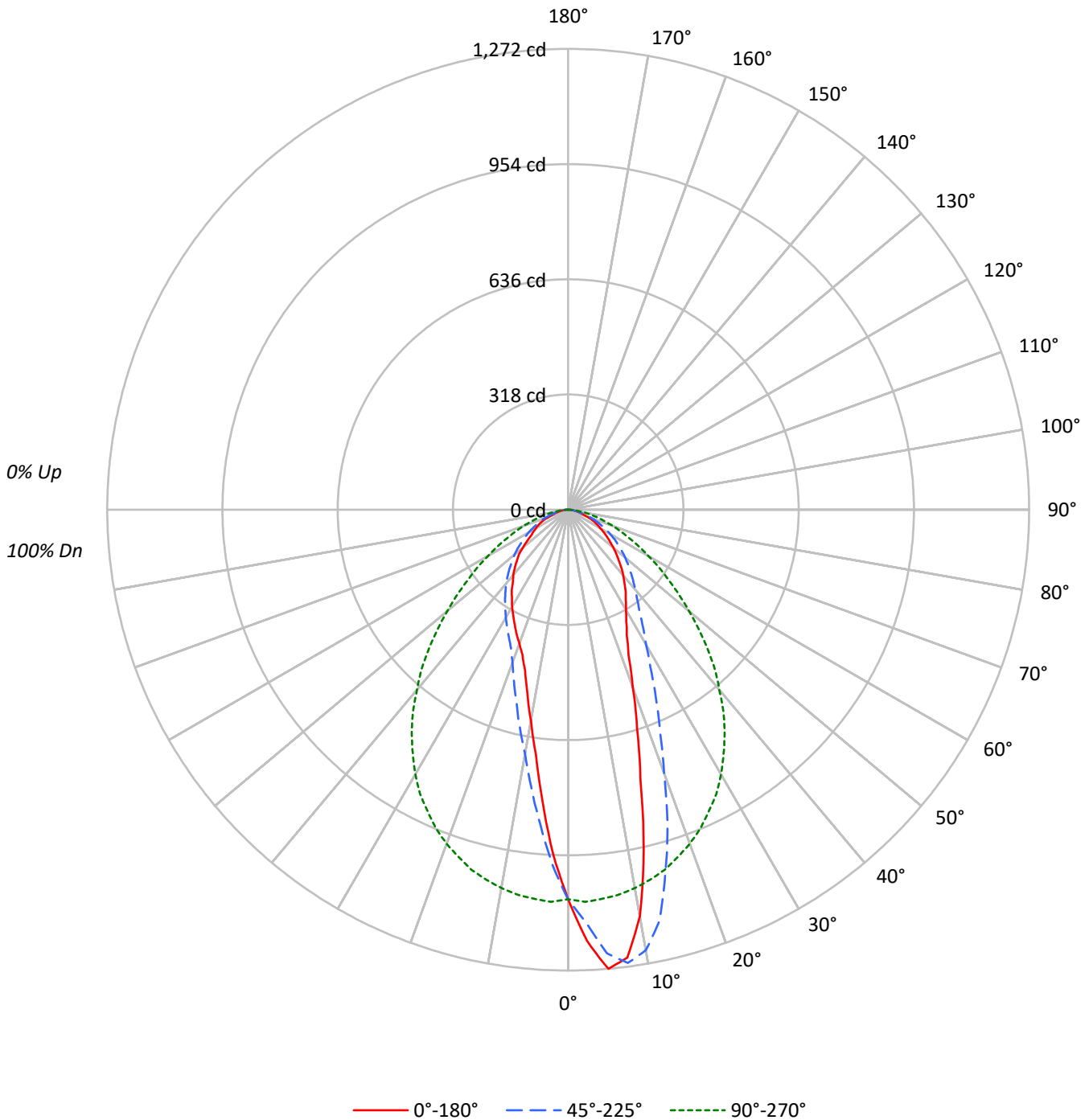
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1424.8 lumens  
Efficiency: N/A  
Efficacy: 119.7 lumens/watt  
Spacing Criteria (0/90/45): 0.55 / 1.17 / 0.79  
Luminous Opening: Rectangular (W 4' x L: 0.22' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 11.9  
Input Voltage (V): 120  
Input Current (Ain): 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: 24 FT

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### Luminous Intensity Polar Plot





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**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	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					100			
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89					87				
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78					76				
3	94	85	78	73	92	84	77	72	81	75	71	78	74	70	76	72	69					67				
4	88	77	69	64	85	76	69	63	73	67	62	71	66	62	69	65	61					59				
5	82	70	62	56	80	69	62	56	67	61	56	65	60	55	63	58	54					53				
6	76	64	56	51	74	63	56	50	62	55	50	60	54	50	59	53	49					47				
7	71	59	51	46	70	58	51	46	57	50	45	56	50	45	54	49	45					43				
8	67	55	47	42	65	54	47	42	53	46	41	52	46	41	51	45	41					39				
9	63	51	43	38	62	50	43	38	49	43	38	48	42	38	47	42	38					36				
10	60	47	40	36	58	47	40	35	46	40	35	45	39	35	44	39	35					33				

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

	0°	45°	90°	135°	180°
0°	12958	12958	12958	12958	12958
5°	15386	14864	13040	10576	9786
10°	13941	15105	12974	8372	7246
15°	9598	12937	12837	6876	5732
20°	6677	9922	12580	5761	5038
25°	5088	7615	12205	5146	4643
30°	4430	5987	11736	4785	4301
35°	4067	5039	11072	4463	3989
40°	3710	4522	10202	4189	3704
45°	3352	4141	9265	3892	3418
50°	3042	3843	8158	3620	3067
55°	2752	3529	7096	3307	2630
60°	2465	3210	6162	3029	2487
65°	2275	2854	5306	2691	2352
70°	1850	2438	4629	2438	1909
75°	1620	1969	3920	2034	1685
80°	1471	1651	3213	1714	1589
85°	1341	1396	2433	1521	1465

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 80°  
 Vertical Angle: 45°  
 Luminance: 9776 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	98.0	6.9
10°-20°	226.8	15.9
20°-30°	260.2	18.3
30°-40°	256.3	18.0
40°-50°	225.9	15.9
50°-60°	173.8	12.2
60°-70°	114.3	8.0
70°-80°	55.5	3.9
80°-90°	14.0	1.0
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°	585.0	41.1
0°-40°	841.2	59.0
0°-60°	1241.0	87.1
0°-90°	1424.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1424.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1075	1075	1075	1075	1075	
5°	1272	1229	1078	874	809	116
15°	769	1037	1029	551	460	217
25°	383	573	918	387	349	181
35°	276	343	753	303	271	172
45°	197	243	544	228	201	153
55°	131	168	338	157	125	117
65°	80	100	186	94	82	78
75°	35	42	84	44	36	38
85°	10	10	18	11	11	11
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	22.5°	30°	40°	45°	50°	60°	67.5°	70°
0°	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4
2.5°	1191.8	1184.3	1182.1	1179.5	1175.1	1159.2	1141.1	1142.9	1140.7	1127.0	1119.5
5°	1272.1	1273.0	1270.8	1269.0	1261.5	1242.1	1228.9	1220.9	1204.2	1178.6	1170.7
7.5°	1247.4	1261.5	1264.2	1267.2	1271.2	1266.8	1261.9	1258.9	1245.2	1217.4	1204.6
10°	1139.4	1138.5	1154.4	1167.1	1201.5	1225.8	1234.6	1247.4	1258.9	1239.5	1225.3
12.5°	963.0	964.3	1016.3	1016.3	1060.9	1122.6	1162.3	1189.2	1238.6	1239.9	1231.5
15°	769.4	791.0	837.3	847.0	904.4	987.2	1037.1	1092.6	1188.3	1218.3	1216.5
17.5°	631.9	641.1	685.6	698.4	749.1	843.1	911.8	978.9	1112.9	1176.0	1187.4
20°	520.7	529.1	561.3	571.0	622.2	711.7	773.8	846.1	1021.6	1118.2	1138.5
22.5°	434.8	451.1	472.7	487.7	516.8	608.0	661.4	730.6	915.8	1053.4	1077.2
25°	382.7	390.2	408.7	415.8	451.1	511.5	572.8	633.6	821.9	972.3	1014.1
27.5°	347.5	349.7	363.3	369.5	390.7	446.7	490.8	547.2	726.2	888.9	937.9
30°	318.4	322.3	332.9	334.2	352.7	392.4	430.3	482.4	642.4	808.2	858.5
32.5°	295.9	298.1	306.9	309.5	321.4	352.7	383.6	421.5	564.8	724.0	781.8
35°	276.5	276.9	283.5	287.0	297.6	323.6	342.6	374.4	502.7	654.3	705.0
37.5°	254.4	257.5	262.4	265.4	274.7	295.9	313.1	337.8	445.3	588.2	635.4
40°	235.9	238.5	244.3	245.6	254.0	273.4	287.5	309.5	396.0	524.7	572.8
42.5°	217.4	219.1	224.9	227.5	236.8	252.2	265.0	282.2	356.7	468.3	515.4
45°	196.7	201.1	207.2	208.6	217.4	233.3	243.0	258.8	321.4	419.3	461.2
47.5°	179.5	181.7	187.0	189.2	199.3	213.4	223.6	237.2	291.0	374.8	415.8
50°	162.3	163.1	168.0	171.1	179.0	195.3	205.0	217.4	263.2	338.6	367.3
52.5°	145.9	148.2	153.0	155.2	160.5	177.3	186.1	198.9	236.8	301.6	330.3
55°	131.0	132.3	135.8	138.5	144.6	159.2	168.0	179.0	213.9	267.6	292.8
57.5°	116.8	118.6	121.3	123.5	129.2	142.0	150.8	161.8	192.2	236.8	256.2
60°	102.3	104.5	107.6	108.5	113.8	125.2	133.2	142.9	170.2	208.1	225.3
62.5°	91.7	92.2	94.8	96.1	99.2	108.5	116.8	126.1	150.4	180.3	194.5
65°	79.8	81.1	82.5	83.3	86.0	93.9	100.1	107.1	131.0	157.0	166.7
67.5°	67.5	68.8	71.0	71.9	74.1	79.4	84.7	91.7	111.6	133.6	142.4
70°	52.5	52.5	56.0	57.8	61.3	65.3	69.2	75.4	92.6	111.6	118.2
72.5°	42.8	43.2	43.7	43.7	46.7	53.4	55.6	59.5	73.2	91.3	97.0
75°	34.8	35.3	35.7	36.2	36.6	38.8	42.3	45.9	56.0	69.2	74.5
77.5°	27.8	28.2	28.7	28.7	29.5	30.4	31.3	33.1	40.1	49.8	54.2
80°	21.2	21.6	22.0	22.0	22.5	23.4	23.8	24.7	26.9	33.5	35.7
82.5°	15.4	15.4	15.4	15.9	16.3	16.3	17.2	17.2	18.5	20.3	21.6
85°	9.7	9.7	10.1	10.1	10.1	10.6	10.1	10.6	11.0	11.5	12.3
87.5°	4.4	4.0	4.4	4.4	4.4	4.9	4.9	4.9	4.9	5.3	5.3
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):**

	80°	90°	100°	110°	112.5°	120°	130°	135°	140°	150°	157.5°
0°	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4	1075.4
2.5°	1098.8	1083.4	1057.4	1041.0	1034.9	1015.9	997.8	982.8	975.3	974.5	960.8
5°	1120.4	1078.1	1024.3	979.3	968.7	935.7	892.9	874.4	850.1	840.4	829.0
7.5°	1138.0	1071.9	992.5	924.6	904.8	855.0	800.3	776.0	757.5	728.4	711.2
10°	1150.4	1060.4	953.7	866.0	837.8	779.6	713.4	684.3	667.1	633.6	619.9
12.5°	1155.2	1045.9	914.9	805.1	780.4	711.2	646.4	616.4	590.8	560.4	547.2
15°	1153.5	1029.1	875.2	749.1	718.3	648.2	579.4	551.2	527.4	496.9	479.7
17.5°	1141.6	1005.3	832.0	694.9	665.4	593.1	523.4	497.4	476.2	446.7	433.4
20°	1121.7	981.1	794.1	645.5	612.0	542.8	477.1	449.3	430.8	414.9	405.2
22.5°	1094.4	952.4	747.8	596.6	567.5	497.8	434.8	412.3	401.2	388.5	381.4
25°	1052.9	918.0	705.9	555.6	526.5	457.2	402.1	387.1	376.1	367.7	360.2
27.5°	1008.4	884.9	664.0	514.1	486.8	420.6	376.6	365.1	355.4	344.8	338.2
30°	956.8	843.5	624.4	477.5	451.1	391.1	354.5	343.9	336.0	324.5	317.9
32.5°	896.0	798.1	587.3	442.3	417.6	365.5	334.2	322.8	316.1	305.1	298.5
35°	832.9	752.7	546.8	409.6	387.1	343.0	314.4	303.4	296.3	285.3	278.7
37.5°	771.2	704.2	510.6	381.0	360.7	320.6	293.7	284.4	277.8	266.3	258.4
40°	705.9	648.6	475.3	354.1	335.1	300.7	274.7	266.3	257.5	247.4	239.4
42.5°	637.6	599.7	442.7	330.3	312.6	281.3	255.7	246.9	239.4	227.5	224.0
45°	573.7	543.7	408.3	305.1	291.0	261.9	237.2	228.4	220.0	209.9	206.4
47.5°	516.8	489.0	377.0	283.1	269.0	243.0	218.7	209.4	203.3	195.3	190.0
50°	458.1	435.2	342.6	261.5	248.2	222.7	199.3	193.1	186.1	176.4	172.4
52.5°	403.5	385.8	314.4	240.7	228.4	205.5	181.7	175.5	168.9	160.5	154.8
55°	355.4	337.8	282.2	217.4	208.1	186.5	165.3	157.4	152.1	142.4	135.4
57.5°	306.0	297.6	251.3	198.0	189.2	167.6	148.6	142.4	135.8	125.2	118.2
60°	265.4	255.7	222.7	176.8	168.4	150.4	131.8	125.7	119.5	109.4	106.3
62.5°	227.1	220.0	194.9	157.0	149.9	132.3	116.0	110.2	104.1	97.4	95.2
65°	192.2	186.1	167.1	136.7	131.0	115.5	100.5	94.4	90.4	87.3	85.1
67.5°	159.6	156.1	141.5	117.7	113.3	99.7	86.4	81.6	79.4	75.8	74.1
70°	130.1	131.4	118.2	100.5	95.7	84.7	73.2	69.2	66.6	63.5	60.0
72.5°	106.3	105.8	97.9	82.0	78.5	69.7	60.8	58.2	55.1	48.9	45.0
75°	82.5	84.2	76.7	67.9	64.4	55.6	47.2	43.7	40.6	38.4	37.0
77.5°	63.1	63.9	60.4	52.0	48.9	41.4	34.8	33.1	31.7	30.4	30.0
80°	45.0	46.3	42.8	37.5	34.8	28.7	25.1	24.7	24.3	23.4	22.9
82.5°	29.1	30.9	29.1	23.4	22.0	19.0	18.1	18.1	17.6	17.2	16.8
85°	15.9	17.6	16.8	13.7	12.8	11.9	11.5	11.0	11.0	11.0	11.0
87.5°	6.2	8.4	7.1	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
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):**

	160°	170°	180°
0°	1075.4	1075.4	1075.4
2.5°	957.7	953.3	951.5
5°	825.9	812.2	809.1
7.5°	705.9	700.2	681.2
10°	617.7	600.1	592.2
12.5°	538.4	522.1	519.4
15°	474.9	463.4	459.5
17.5°	433.0	425.1	420.2
20°	402.1	396.4	392.9
22.5°	378.8	374.4	371.7
25°	358.0	351.4	349.2
27.5°	336.9	331.1	328.9
30°	317.0	312.2	309.1
32.5°	296.3	290.6	288.8
35°	276.5	272.9	271.2
37.5°	257.1	252.7	250.0
40°	239.0	236.8	235.5
42.5°	222.7	218.7	218.3
45°	205.5	201.5	200.6
47.5°	189.2	185.6	185.2
50°	172.0	167.1	163.6
52.5°	151.2	146.8	143.7
55°	132.7	127.9	125.2
57.5°	117.3	115.1	113.8
60°	105.4	104.1	103.2
62.5°	94.8	93.5	93.5
65°	85.1	83.8	82.5
67.5°	73.2	70.5	70.1
70°	58.6	54.7	54.2
72.5°	44.5	44.1	43.2
75°	37.0	36.2	36.2
77.5°	30.0	29.1	29.1
80°	22.9	22.5	22.9
82.5°	16.8	16.8	16.3
85°	11.0	10.6	10.6
87.5°	5.3	5.3	5.3
90°	0.0	0.0	0.0



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**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	13.60	15.06	13.97	15.37	15.69	18.69	20.15	19.06	20.46	20.78
	3H	14.94	16.24	15.31	16.57	16.93	19.97	21.27	20.35	21.60	21.97
	4H	15.33	16.55	15.73	16.90	17.28	20.42	21.64	20.82	21.99	22.37
	6H	15.64	16.76	16.05	17.13	17.53	20.71	21.84	21.12	22.20	22.60
	8H	15.74	16.81	16.17	17.20	17.60	20.79	21.86	21.22	22.25	22.65
	12H	15.81	16.83	16.24	17.21	17.64	20.83	21.85	21.26	22.23	22.66
4H	2H	14.45	15.67	14.85	16.02	16.40	18.73	19.95	19.13	20.30	20.68
	3H	15.92	16.93	16.34	17.34	17.74	20.22	21.23	20.63	21.63	22.04
	4H	16.39	17.30	16.82	17.71	18.15	20.78	21.69	21.21	22.10	22.54
	6H	16.78	17.56	17.23	18.01	18.47	21.22	22.01	21.68	22.45	22.91
	8H	16.90	17.64	17.37	18.08	18.55	21.34	22.07	21.80	22.52	22.99
	12H	17.00	17.66	17.49	18.14	18.61	21.41	22.07	21.90	22.55	23.02
8H	4H	16.78	17.51	17.24	17.96	18.42	20.79	21.52	21.25	21.97	22.43
	6H	17.25	17.85	17.74	18.34	18.82	21.27	21.88	21.77	22.37	22.85
	8H	17.43	17.97	17.94	18.48	18.97	21.44	21.98	21.95	22.49	22.98
	12H	17.59	18.06	18.10	18.56	19.12	21.57	22.04	22.08	22.54	23.10
12H	4H	16.82	17.48	17.31	17.96	18.43	20.76	21.42	21.25	21.90	22.37
	6H	17.31	17.85	17.83	18.36	18.85	21.25	21.79	21.76	22.30	22.79
	8H	17.54	18.02	18.05	18.51	19.08	21.44	21.92	21.96	22.41	22.98