

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: P646641

Luminaire Tested: S123DRP-S560D835-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

**Test Information**

Test Method: LM-79-2024  
Report Number: P646641  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2301-905-1)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/20/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S123DRP-S560D835-X4F0-XX-UDD-G-W  
Description: DEFINE 3 DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC  
STANDARD LIGHT ENGINE  
Light Source: 3500K CCT, 80 CRI LEDS  
Ballast/Driver: -

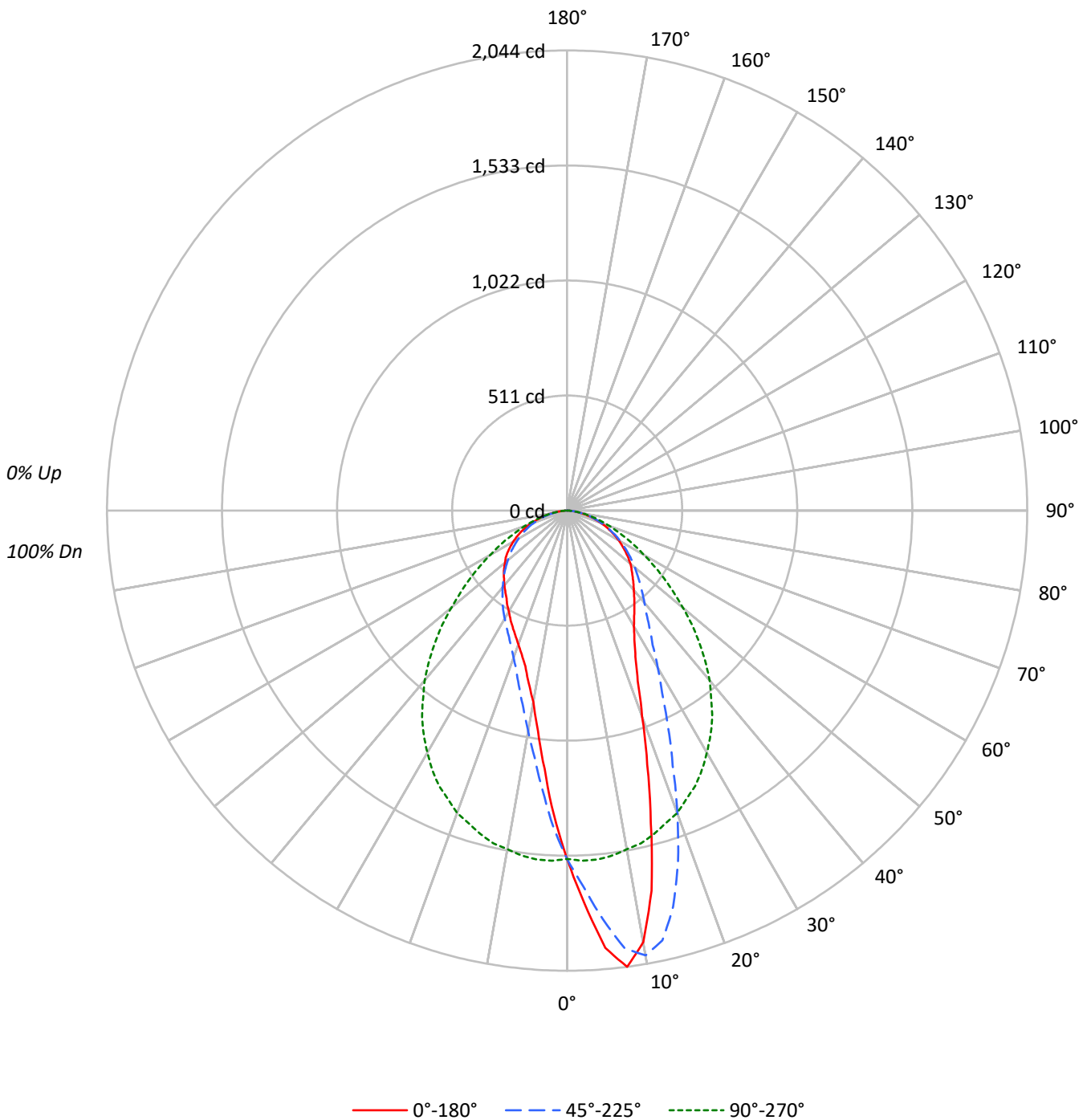
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2486.2 lumens  
Efficiency: N/A  
Efficacy: 133.7 lumens/watt  
Spacing Criteria (0/90/45): 0.65 / 1.19 / 0.89  
Luminous Opening: Rectangular (W 4' x L: 0.22' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 18.6  
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	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100
1	110	106	102	98	107	103	100	97	99	96	94	95	93	91	92	90	88	86				86
2	101	94	88	82	99	92	86	82	88	84	80	85	81	78	82	79	76	74				74
3	93	84	76	70	91	82	75	70	79	73	69	77	72	67	74	70	66	64				64
4	86	75	67	61	84	74	67	61	72	65	60	69	64	59	67	62	58	56				56
5	80	68	60	54	78	67	59	54	65	58	53	63	57	52	61	56	52	50				50
6	74	62	54	48	73	61	53	48	60	53	47	58	52	47	56	51	47	45				45
7	70	57	49	43	68	56	49	43	55	48	43	53	47	43	52	47	42	40				40
8	65	53	45	39	64	52	44	39	51	44	39	49	43	39	48	43	39	37				37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	36	45	40	35	34				34
10	58	45	38	33	57	45	38	33	44	37	33	43	37	33	42	37	33	31				31

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

	0°	45°	90°	135°	180°
0°	18644	18644	18644	18644	18644
5°	23578	22051	18810	15085	13930
10°	23808	24546	18685	12185	10560
15°	17932	22714	18559	10211	8930
20°	12494	18368	18322	8903	8111
25°	9527	14090	17917	8162	7609
30°	8242	11199	17273	7712	7203
35°	7647	9379	16529	7350	6918
40°	7240	8391	15484	7014	6822
45°	6998	7794	14157	6717	6779
50°	6878	7363	12586	6461	6743
55°	6621	6953	11041	6229	6773
60°	6386	6576	9516	6005	6661
65°	5999	6161	8208	5753	6532
70°	5538	5718	6982	5439	6148
75°	5014	5182	5982	4981	5614
80°	4136	4434	4732	4337	4732
85°	3276	3567	3470	3774	3774

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 80°  
 Vertical Angle: 45°  
 Luminance: 16163 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	146.3	5.9
10°-20°	364.0	14.6
20°-30°	430.8	17.3
30°-40°	433.0	17.4
40°-50°	397.1	16.0
50°-60°	327.8	13.2
60°-70°	231.9	9.3
70°-80°	123.9	5.0
80°-90°	31.4	1.3
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°	941.1	37.9
0°-40°	1374.1	55.3
0°-60°	2099.0	84.4
0°-90°	2486.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2486.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1547	1547	1547	1547	1547	
5°	1949	1823	1555	1247	1152	186
15°	1438	1821	1488	819	716	397
25°	717	1060	1348	614	572	338
35°	520	638	1124	500	470	327
45°	411	457	831	394	398	318
55°	315	331	526	296	322	282
65°	210	216	288	202	229	209
75°	108	111	128	107	121	113
85°	24	26	25	27	27	28
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°	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3
2.5°	1744.1	1740.5	1722.5	1711.1	1713.9	1688.1	1672.3	1659.4	1650.7	1629.9	1619.2
5°	1949.4	1959.5	1948.0	1942.3	1912.8	1866.2	1823.1	1813.7	1773.5	1724.0	1706.7
7.5°	2044.2	2050.0	2042.8	2042.8	2033.5	1991.8	1961.6	1938.0	1869.0	1805.1	1775.7
10°	1945.9	1958.8	1986.8	1999.7	2018.4	2012.6	2006.2	1996.8	1950.2	1876.2	1842.5
12.5°	1729.7	1745.5	1801.5	1809.4	1873.3	1935.1	1955.2	1978.2	1982.5	1920.0	1883.4
15°	1437.5	1481.3	1532.3	1556.7	1637.8	1767.8	1820.9	1883.4	1957.3	1931.5	1902.8
17.5°	1184.0	1200.5	1255.1	1306.8	1387.9	1538.0	1636.4	1729.7	1888.4	1914.3	1896.3
20°	974.4	989.4	1061.2	1057.7	1165.4	1334.1	1432.5	1540.2	1774.2	1858.3	1854.7
22.5°	818.6	842.2	882.5	904.7	982.3	1132.3	1225.7	1359.9	1644.3	1777.1	1791.5
25°	716.6	733.8	758.2	777.6	837.9	961.4	1059.8	1170.4	1480.6	1670.8	1706.7
27.5°	646.9	654.1	678.5	690.0	730.2	836.5	912.6	1013.9	1329.1	1551.7	1601.9
30°	592.4	597.4	618.9	622.5	654.1	731.0	804.9	887.5	1181.2	1428.9	1486.3
32.5°	554.3	557.9	574.4	575.9	599.6	655.6	707.3	784.8	1041.1	1297.5	1368.6
35°	519.9	522.0	534.2	537.8	552.9	595.2	637.6	697.2	929.8	1179.0	1257.3
37.5°	489.7	492.6	499.7	504.1	516.3	550.0	578.7	628.3	822.9	1055.5	1142.4
40°	460.3	465.3	470.3	470.3	484.0	509.8	533.5	574.4	731.0	947.8	1024.6
42.5°	435.1	440.2	442.3	443.0	450.2	473.9	494.0	522.0	661.3	852.3	927.7
45°	410.7	412.9	415.0	416.5	421.5	442.3	457.4	484.0	595.2	764.0	837.2
47.5°	388.5	388.5	389.9	392.0	395.6	410.7	423.6	443.0	538.5	685.0	745.3
50°	366.9	366.9	364.8	366.2	368.3	379.8	392.8	408.6	485.4	612.5	666.3
52.5°	341.1	341.1	341.8	339.6	341.8	351.8	361.9	377.7	440.2	545.7	591.7
55°	315.2	318.1	315.9	314.5	317.4	323.8	331.0	344.7	397.8	492.6	529.2
57.5°	289.4	290.8	290.1	292.2	290.8	296.5	303.0	312.3	359.7	433.0	467.4
60°	265.0	265.0	263.5	265.0	265.0	267.8	272.9	282.2	321.0	382.0	410.7
62.5°	237.7	238.4	239.1	238.4	237.7	241.3	245.6	252.0	287.2	332.4	354.0
65°	210.4	211.1	213.3	212.5	211.8	215.4	216.1	223.3	249.9	288.6	304.4
67.5°	186.0	184.5	185.3	186.7	187.4	188.1	189.6	196.7	215.4	247.0	259.9
70°	157.2	158.7	158.0	160.1	158.7	160.8	162.3	167.3	185.3	206.1	214.7
72.5°	131.4	132.1	132.1	134.3	133.6	135.7	137.1	139.3	152.2	170.9	174.5
75°	107.7	107.7	109.1	109.9	109.9	109.9	111.3	112.7	123.5	135.0	138.6
77.5°	81.9	85.4	84.7	85.4	86.2	88.3	86.9	89.8	96.2	102.7	104.8
80°	59.6	59.6	60.3	61.0	62.5	63.9	63.9	66.8	69.6	73.2	75.4
82.5°	38.1	38.8	40.9	41.6	42.4	44.5	44.5	44.5	48.1	49.5	49.5
85°	23.7	22.3	23.7	24.4	25.1	25.8	25.8	27.3	28.0	28.7	28.7
87.5°	11.5	11.5	11.5	11.5	12.2	12.2	12.2	12.2	12.9	12.9	12.9
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°	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3
2.5°	1583.2	1556.7	1517.2	1484.9	1486.3	1456.9	1435.3	1407.3	1398.7	1390.1	1378.6
5°	1616.3	1555.2	1473.4	1408.1	1387.9	1339.1	1277.4	1247.2	1229.3	1197.7	1185.5
7.5°	1657.2	1545.2	1420.3	1318.3	1296.0	1214.9	1141.7	1105.8	1072.0	1049.8	1022.5
10°	1683.8	1527.2	1366.4	1231.4	1209.9	1117.2	1021.8	995.9	953.5	926.3	900.4
12.5°	1703.9	1513.6	1311.1	1153.9	1118.7	1028.9	932.7	897.5	866.7	827.2	808.5
15°	1721.8	1487.8	1254.4	1072.7	1036.1	939.2	850.1	818.6	790.5	756.1	739.6
17.5°	1715.4	1456.2	1191.9	1000.9	964.3	868.8	783.4	747.5	728.8	698.6	687.2
20°	1707.5	1428.9	1133.0	932.7	892.5	803.5	720.2	694.3	675.7	656.3	646.2
22.5°	1682.3	1385.8	1073.5	870.2	832.2	743.2	672.1	650.5	636.2	622.5	613.9
25°	1640.0	1347.7	1015.3	807.8	777.6	694.3	634.0	613.9	604.6	590.9	583.0
27.5°	1587.6	1297.5	957.1	756.8	722.3	648.4	596.7	583.8	573.7	562.9	555.0
30°	1521.5	1241.5	900.4	707.3	675.7	610.3	565.8	554.3	545.0	534.2	524.9
32.5°	1437.5	1184.7	847.3	661.3	634.7	578.0	537.1	527.7	519.9	506.9	501.9
35°	1343.4	1123.7	794.9	617.5	592.4	542.8	509.1	499.7	491.8	481.1	476.8
37.5°	1247.9	1051.2	743.2	580.2	557.9	513.4	481.1	471.7	464.6	455.2	453.1
40°	1146.7	984.4	692.2	542.1	522.7	484.7	453.1	445.9	438.7	433.0	431.5
42.5°	1044.7	907.6	647.7	510.5	489.7	454.5	425.8	417.9	413.6	410.7	411.4
45°	948.5	830.8	601.7	473.9	459.5	427.2	400.7	394.2	390.6	388.5	391.3
47.5°	844.4	752.5	558.6	443.0	428.7	399.9	374.8	369.1	367.6	366.9	371.9
50°	752.5	671.4	512.0	411.4	399.2	369.8	349.7	344.7	343.2	345.4	352.6
52.5°	665.6	596.0	469.6	382.0	369.8	343.2	324.5	321.0	320.2	325.3	332.4
55°	579.4	525.6	423.6	349.7	337.5	314.5	300.1	296.5	295.8	305.9	312.3
57.5°	506.2	457.4	380.6	318.8	309.5	287.9	275.0	272.1	274.3	283.6	290.1
60°	434.4	394.9	341.1	285.8	278.6	259.9	249.9	249.2	251.3	262.1	268.5
62.5°	369.8	339.6	298.7	255.6	250.6	234.1	224.7	226.2	228.3	239.1	244.8
65°	314.5	287.9	257.1	225.5	219.0	207.5	201.0	201.8	206.1	215.4	221.2
67.5°	260.6	239.1	221.9	196.7	191.7	181.7	176.6	179.5	181.7	191.0	196.7
70°	215.4	198.2	185.3	166.6	163.0	154.4	150.8	154.4	156.5	164.4	171.6
72.5°	173.0	162.3	152.2	138.6	135.0	129.2	128.5	130.0	133.6	141.5	144.3
75°	134.3	128.5	119.9	111.3	109.1	106.3	105.5	107.0	110.6	114.9	117.8
77.5°	102.0	96.9	90.5	86.9	84.0	82.6	83.3	85.4	86.9	91.2	93.3
80°	74.0	68.2	66.8	61.8	61.0	60.3	61.8	62.5	64.6	67.5	68.9
82.5°	48.8	44.5	43.1	42.4	41.6	40.9	43.1	43.8	45.2	47.4	48.1
85°	26.6	25.1	25.1	24.4	25.1	26.6	26.6	27.3	27.3	28.0	27.3
87.5°	12.2	10.8	11.5	11.5	11.5	12.2	12.2	12.9	12.9	12.9	12.2
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°	1547.3	1547.3	1547.3
2.5°	1377.9	1372.9	1352.8
5°	1174.7	1157.5	1151.7
7.5°	1019.6	1018.2	988.0
10°	888.2	890.4	863.1
12.5°	805.6	787.7	785.5
15°	735.3	718.7	715.9
17.5°	682.8	672.8	669.9
20°	643.4	637.6	632.6
22.5°	611.8	604.6	600.3
25°	580.2	573.7	572.3
27.5°	552.9	545.0	545.0
30°	524.9	519.9	517.7
32.5°	499.7	495.4	495.4
35°	475.3	473.2	470.3
37.5°	453.1	453.1	451.6
40°	431.5	433.7	433.7
42.5°	412.9	415.0	415.0
45°	392.8	396.4	397.8
47.5°	372.7	378.4	379.8
50°	354.7	359.0	359.7
52.5°	335.3	340.3	343.9
55°	315.2	320.2	322.4
57.5°	293.7	298.7	299.4
60°	270.0	275.0	276.4
62.5°	248.4	251.3	252.7
65°	221.9	226.2	229.1
67.5°	197.5	201.0	201.0
70°	170.9	172.3	174.5
72.5°	145.8	146.5	146.5
75°	118.5	119.9	120.6
77.5°	93.3	94.1	94.1
80°	68.9	68.2	68.2
82.5°	48.1	46.0	46.0
85°	27.3	26.6	27.3
87.5°	12.2	12.2	12.2
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	17.65	19.16	18.02	19.48	19.79	20.11	21.62	20.47	21.93	22.24
	3H	19.35	20.70	19.72	21.03	21.39	21.32	22.68	21.70	23.00	23.37
	4H	19.95	21.22	20.35	21.57	21.95	21.74	23.01	22.14	23.36	23.74
	6H	20.35	21.53	20.76	21.89	22.29	22.01	23.19	22.43	23.56	23.95
	8H	20.45	21.57	20.88	21.96	22.36	22.08	23.20	22.51	23.59	23.99
	12H	20.51	21.58	20.94	21.96	22.39	22.12	23.19	22.55	23.57	24.00
4H	2H	18.30	19.57	18.70	19.92	20.30	20.33	21.60	20.73	21.95	22.33
	3H	20.19	21.24	20.60	21.64	22.05	21.81	22.87	22.22	23.27	23.67
	4H	20.91	21.86	21.34	22.28	22.71	22.38	23.33	22.81	23.74	24.18
	6H	21.42	22.25	21.88	22.69	23.15	22.77	23.60	23.23	24.04	24.50
	8H	21.56	22.33	22.02	22.77	23.24	22.88	23.65	23.34	24.09	24.56
	12H	21.64	22.33	22.12	22.81	23.28	22.94	23.63	23.42	24.11	24.58
8H	4H	21.23	22.01	21.70	22.45	22.92	22.54	23.32	23.00	23.76	24.23
	6H	21.85	22.49	22.34	22.98	23.45	23.03	23.67	23.53	24.16	24.64
	8H	22.04	22.62	22.56	23.13	23.61	23.20	23.77	23.71	24.28	24.77
	12H	22.19	22.69	22.70	23.18	23.75	23.31	23.82	23.82	24.31	24.88
12H	4H	21.26	21.96	21.75	22.43	22.91	22.55	23.24	23.03	23.72	24.19
	6H	21.90	22.47	22.41	22.98	23.47	23.05	23.63	23.57	24.14	24.62
	8H	22.15	22.65	22.66	23.15	23.71	23.26	23.77	23.77	24.26	24.83