

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: P646624

Luminaire Tested: S123DRP-S1165D840-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

Test Information

Test Method: LM-79-2024
Report Number: P646624
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-S1165D840-X4F0-XX-UDD-G-W
Description: DEFINE 3 DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC
STANDARD LIGHT ENGINE
Light Source: 4000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

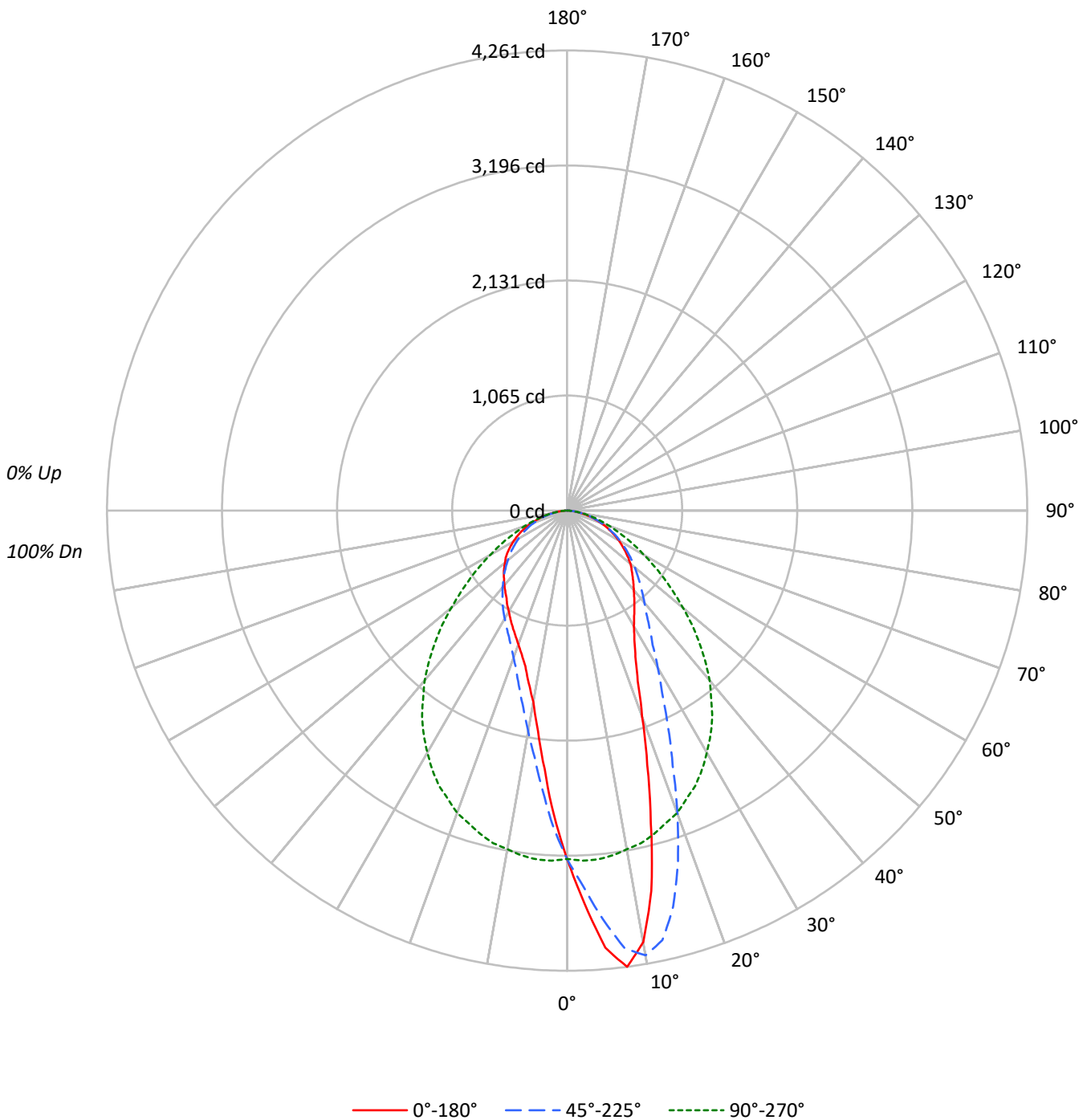
Lumens per Lamp: N/A
Luminaire Lumens: 5182.3 lumens
Efficiency: N/A
Efficacy: 129.2 lumens/watt
Spacing Criteria (0/90/45): 0.65 / 1.19 / 0.89
Luminous Opening: Rectangular (W 4' x L: 0.22' x H: 0')
CIE Type: Direct

Input Watts (W): 40.1
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

TEST NUMBER: P646624

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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	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°	38863	38863	38863	38863	38863
5°	49149	45963	39211	31445	29037
10°	49627	51165	38950	25399	22011
15°	37378	47347	38685	21284	18614
20°	26042	38287	38190	18558	16908
25°	19858	29370	37349	17013	15859
30°	17180	23344	36005	16077	15014
35°	15939	19550	34454	15323	14420
40°	15090	17491	32276	14620	14219
45°	14588	16246	29508	14002	14130
50°	14336	15347	26232	13467	14055
55°	13804	14495	23015	12984	14117
60°	13310	13705	19838	12517	13885
65°	12502	12844	17112	11992	13611
70°	11548	11918	14553	11337	12813
75°	10451	10801	12472	10382	11704
80°	8618	9243	9867	9034	9867
85°	6829	7452	7244	7866	7866

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°
 Vertical Angle: 45°
 Luminance: 33690 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	304.9	5.9
10°-20°	758.7	14.6
20°-30°	898.1	17.3
30°-40°	902.5	17.4
40°-50°	827.7	16.0
50°-60°	683.2	13.2
60°-70°	483.4	9.3
70°-80°	258.2	5.0
80°-90°	65.5	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°	1961.7	37.9
0°-40°	2864.3	55.3
0°-60°	4375.2	84.4
0°-90°	5182.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5182.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	3225	3225	3225	3225	3225	
5°	4064	3800	3242	2600	2401	387
15°	2996	3796	3101	1706	1492	828
25°	1494	2209	2809	1280	1193	705
35°	1084	1329	2342	1042	980	681
45°	856	953	1732	822	829	663
55°	657	690	1096	618	672	588
65°	438	450	600	421	477	436
75°	224	232	268	223	251	236
85°	49	54	52	57	57	58
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°	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4
2.5°	3635.5	3628.0	3590.6	3566.6	3572.6	3518.7	3485.8	3458.9	3440.9	3397.5	3375.1
5°	4063.5	4084.5	4060.5	4048.6	3987.2	3889.9	3800.1	3780.7	3696.9	3593.6	3557.7
7.5°	4261.1	4273.1	4258.1	4258.1	4238.7	4151.8	4089.0	4039.6	3895.9	3762.7	3701.3
10°	4056.1	4083.0	4141.4	4168.3	4207.2	4195.3	4181.8	4162.3	4065.0	3910.9	3840.5
12.5°	3605.6	3638.5	3755.2	3771.7	3904.9	4033.6	4075.5	4123.4	4132.4	4002.2	3925.8
15°	2996.4	3087.7	3194.0	3244.8	3414.0	3684.9	3795.6	3925.8	4080.0	4026.1	3966.3
17.5°	2468.1	2502.5	2616.2	2724.0	2893.1	3205.9	3411.0	3605.6	3936.3	3990.2	3952.8
20°	2031.0	2062.5	2212.1	2204.6	2429.1	2780.9	2985.9	3210.4	3698.3	3873.5	3866.0
22.5°	1706.2	1755.6	1839.4	1885.8	2047.5	2360.3	2554.9	2834.8	3427.4	3704.3	3734.3
25°	1493.7	1529.6	1580.5	1620.9	1746.6	2004.1	2209.1	2439.6	3086.2	3482.8	3557.7
27.5°	1348.5	1363.5	1414.4	1438.3	1522.1	1743.7	1902.3	2113.3	2770.4	3234.4	3339.1
30°	1234.8	1245.3	1290.2	1297.6	1363.5	1523.6	1677.8	1849.9	2462.1	2978.4	3098.2
32.5°	1155.5	1162.9	1197.4	1200.4	1249.7	1366.5	1474.3	1635.9	2170.2	2704.5	2852.7
35°	1083.6	1088.1	1113.5	1121.0	1152.5	1240.8	1329.1	1453.3	1938.2	2457.6	2620.7
37.5°	1020.7	1026.7	1041.7	1050.7	1076.1	1146.5	1206.3	1309.6	1715.2	2200.1	2381.3
40°	959.4	969.9	980.3	980.3	1008.8	1062.7	1112.0	1197.4	1523.6	1975.6	2135.8
42.5°	907.0	917.5	922.0	923.5	938.4	987.8	1029.7	1088.1	1378.5	1776.6	1933.7
45°	856.1	860.6	865.1	868.1	878.6	922.0	953.4	1008.8	1240.8	1592.5	1745.2
47.5°	809.7	809.7	812.7	817.2	824.7	856.1	883.1	923.5	1122.5	1427.9	1553.6
50°	764.8	764.8	760.3	763.3	767.8	791.8	818.7	851.6	1011.8	1276.7	1388.9
52.5°	710.9	710.9	712.4	707.9	712.4	733.4	754.3	787.3	917.5	1137.5	1233.3
55°	657.1	663.0	658.5	655.6	661.5	675.0	690.0	718.4	829.2	1026.7	1103.1
57.5°	603.2	606.2	604.7	609.2	606.2	618.1	631.6	651.1	749.8	902.5	974.4
60°	552.3	552.3	549.3	552.3	552.3	558.3	568.7	588.2	669.0	796.2	856.1
62.5°	495.4	496.9	498.4	496.9	495.4	502.9	511.9	525.3	598.7	693.0	737.9
65°	438.5	440.0	444.5	443.0	441.5	449.0	450.5	465.5	520.9	601.7	634.6
67.5°	387.6	384.7	386.1	389.1	390.6	392.1	395.1	410.1	449.0	514.9	541.8
70°	327.8	330.8	329.3	333.8	330.8	335.3	338.3	348.7	386.1	429.6	447.5
72.5°	273.9	275.4	275.4	279.9	278.4	282.9	285.9	290.4	317.3	356.2	363.7
75°	224.5	224.5	227.5	229.0	229.0	229.0	232.0	235.0	257.4	281.4	288.9
77.5°	170.6	178.1	176.6	178.1	179.6	184.1	181.1	187.1	200.6	214.0	218.5
80°	124.2	124.2	125.7	127.2	130.2	133.2	133.2	139.2	145.2	152.7	157.2
82.5°	79.3	80.8	85.3	86.8	88.3	92.8	92.8	92.8	100.3	103.3	103.3
85°	49.4	46.4	49.4	50.9	52.4	53.9	53.9	56.9	58.4	59.9	59.9
87.5°	23.9	23.9	23.9	23.9	25.4	25.4	25.4	25.4	26.9	26.9	26.9
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°	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4	3225.4
2.5°	3300.2	3244.8	3162.5	3095.2	3098.2	3036.8	2991.9	2933.5	2915.6	2897.6	2873.7
5°	3369.1	3241.9	3071.2	2935.0	2893.1	2791.3	2662.6	2599.8	2562.4	2496.5	2471.1
7.5°	3454.4	3220.9	2960.5	2747.9	2701.5	2532.4	2379.8	2304.9	2234.6	2188.2	2131.3
10°	3509.8	3183.5	2848.2	2566.8	2521.9	2328.9	2129.8	2075.9	1987.6	1930.7	1876.9
12.5°	3551.7	3155.0	2733.0	2405.2	2331.9	2144.8	1944.2	1870.9	1806.5	1724.2	1685.3
15°	3589.1	3101.2	2614.7	2236.1	2159.7	1957.7	1772.1	1706.2	1647.9	1576.0	1541.6
17.5°	3575.6	3035.3	2484.5	2086.4	2010.1	1811.0	1632.9	1558.1	1519.2	1456.3	1432.3
20°	3559.2	2978.4	2361.8	1944.2	1860.4	1674.8	1501.2	1447.3	1408.4	1368.0	1347.0
22.5°	3506.8	2888.6	2237.6	1814.0	1734.7	1549.1	1400.9	1356.0	1326.1	1297.6	1279.7
25°	3418.5	2809.3	2116.3	1683.8	1620.9	1447.3	1321.6	1279.7	1260.2	1231.8	1215.3
27.5°	3309.2	2704.5	1995.1	1577.5	1505.7	1351.5	1243.8	1216.8	1195.9	1173.4	1156.9
30°	3171.5	2587.8	1876.9	1474.3	1408.4	1272.2	1179.4	1155.5	1136.0	1113.5	1094.1
32.5°	2996.4	2469.6	1766.1	1378.5	1323.1	1204.8	1119.5	1100.1	1083.6	1056.7	1046.2
35°	2800.3	2342.3	1656.8	1287.2	1234.8	1131.5	1061.2	1041.7	1025.2	1002.8	993.8
37.5°	2601.3	2191.2	1549.1	1209.3	1162.9	1070.1	1002.8	983.3	968.4	948.9	944.4
40°	2390.2	2052.0	1442.8	1130.0	1089.6	1010.3	944.4	929.5	914.5	902.5	899.5
42.5°	2177.7	1891.8	1350.0	1064.2	1020.7	947.4	887.5	871.1	862.1	856.1	857.6
45°	1977.1	1731.7	1254.2	987.8	957.9	890.5	835.2	821.7	814.2	809.7	815.7
47.5°	1760.1	1568.5	1164.4	923.5	893.5	833.7	781.3	769.3	766.3	764.8	775.3
50°	1568.5	1399.4	1067.1	857.6	832.2	770.8	728.9	718.4	715.4	719.9	734.9
52.5°	1387.4	1242.3	978.8	796.2	770.8	715.4	676.5	669.0	667.5	678.0	693.0
55°	1207.8	1095.6	883.1	728.9	703.4	655.6	625.6	618.1	616.6	637.6	651.1
57.5°	1055.2	953.4	793.3	664.5	645.1	600.2	573.2	567.2	571.7	591.2	604.7
60°	905.5	823.2	710.9	595.7	580.7	541.8	520.9	519.4	523.8	546.3	559.8
62.5°	770.8	707.9	622.6	532.8	522.3	487.9	468.5	471.5	476.0	498.4	510.4
65°	655.6	600.2	535.8	470.0	456.5	432.5	419.1	420.6	429.6	449.0	461.0
67.5°	543.3	498.4	462.5	410.1	399.6	378.7	368.2	374.2	378.7	398.1	410.1
70°	449.0	413.1	386.1	347.2	339.8	321.8	314.3	321.8	326.3	342.7	357.7
72.5°	360.7	338.3	317.3	288.9	281.4	269.4	267.9	270.9	278.4	294.9	300.8
75°	279.9	267.9	249.9	232.0	227.5	221.5	220.0	223.0	230.5	239.5	245.5
77.5°	212.5	202.1	188.6	181.1	175.1	172.1	173.6	178.1	181.1	190.1	194.6
80°	154.2	142.2	139.2	128.7	127.2	125.7	128.7	130.2	134.7	140.7	143.7
82.5°	101.8	92.8	89.8	88.3	86.8	85.3	89.8	91.3	94.3	98.8	100.3
85°	55.4	52.4	52.4	50.9	52.4	55.4	55.4	56.9	56.9	58.4	56.9
87.5°	25.4	22.5	23.9	23.9	23.9	25.4	25.4	26.9	26.9	26.9	25.4
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°	3225.4	3225.4	3225.4
2.5°	2872.2	2861.7	2819.8
5°	2448.6	2412.7	2400.7
7.5°	2125.3	2122.3	2059.5
10°	1851.4	1855.9	1799.0
12.5°	1679.3	1641.9	1637.4
15°	1532.6	1498.2	1492.2
17.5°	1423.4	1402.4	1396.4
20°	1341.0	1329.1	1318.6
22.5°	1275.2	1260.2	1251.2
25°	1209.3	1195.9	1192.9
27.5°	1152.5	1136.0	1136.0
30°	1094.1	1083.6	1079.1
32.5°	1041.7	1032.7	1032.7
35°	990.8	986.3	980.3
37.5°	944.4	944.4	941.4
40°	899.5	904.0	904.0
42.5°	860.6	865.1	865.1
45°	818.7	826.2	829.2
47.5°	776.8	788.8	791.8
50°	739.4	748.4	749.8
52.5°	699.0	709.4	716.9
55°	657.1	667.5	672.0
57.5°	612.2	622.6	624.1
60°	562.8	573.2	576.2
62.5°	517.9	523.8	526.8
65°	462.5	471.5	477.4
67.5°	411.6	419.1	419.1
70°	356.2	359.2	363.7
72.5°	303.8	305.3	305.3
75°	247.0	249.9	251.4
77.5°	194.6	196.1	196.1
80°	143.7	142.2	142.2
82.5°	100.3	95.8	95.8
85°	56.9	55.4	56.9
87.5°	25.4	25.4	25.4
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	20.21	21.71	20.57	22.03	22.34	22.66	24.17	23.02	24.48	24.80
	3H	21.90	23.25	22.28	23.58	23.94	23.87	25.23	24.25	25.56	25.92
	4H	22.50	23.77	22.90	24.12	24.50	24.29	25.57	24.69	25.91	26.29
	6H	22.90	24.08	23.32	24.45	24.84	24.57	25.74	24.98	26.11	26.50
	8H	23.01	24.13	23.43	24.52	24.92	24.63	25.75	25.06	26.14	26.54
	12H	23.06	24.13	23.49	24.52	24.94	24.67	25.74	25.10	26.12	26.55
4H	2H	20.85	22.13	21.25	22.47	22.85	22.88	24.15	23.28	24.50	24.88
	3H	22.74	23.80	23.15	24.20	24.60	24.36	25.42	24.77	25.82	26.22
	4H	23.46	24.41	23.89	24.83	25.27	24.93	25.88	25.36	26.30	26.74
	6H	23.97	24.80	24.43	25.24	25.70	25.32	26.15	25.78	26.59	27.05
	8H	24.11	24.88	24.57	25.33	25.79	25.43	26.20	25.89	26.65	27.11
	12H	24.19	24.89	24.68	25.37	25.84	25.49	26.18	25.98	26.66	27.13
8H	4H	23.78	24.56	24.25	25.00	25.47	25.09	25.87	25.56	26.31	26.78
	6H	24.40	25.04	24.90	25.53	26.01	25.59	26.23	26.08	26.72	27.19
	8H	24.60	25.17	25.11	25.68	26.17	25.75	26.32	26.26	26.83	27.32
	12H	24.74	25.24	25.25	25.74	26.30	25.87	26.37	26.38	26.86	27.43
12H	4H	23.82	24.51	24.30	24.99	25.46	25.10	25.79	25.58	26.27	26.74
	6H	24.45	25.02	24.96	25.53	26.02	25.60	26.18	26.12	26.69	27.18
	8H	24.70	25.21	25.21	25.70	26.26	25.81	26.32	26.32	26.81	27.38