

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: P646642

Luminaire Tested: S123DRP-S560D840-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

Test Information

Test Method: LM-79-2024
Report Number: P646642
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-S560D840-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

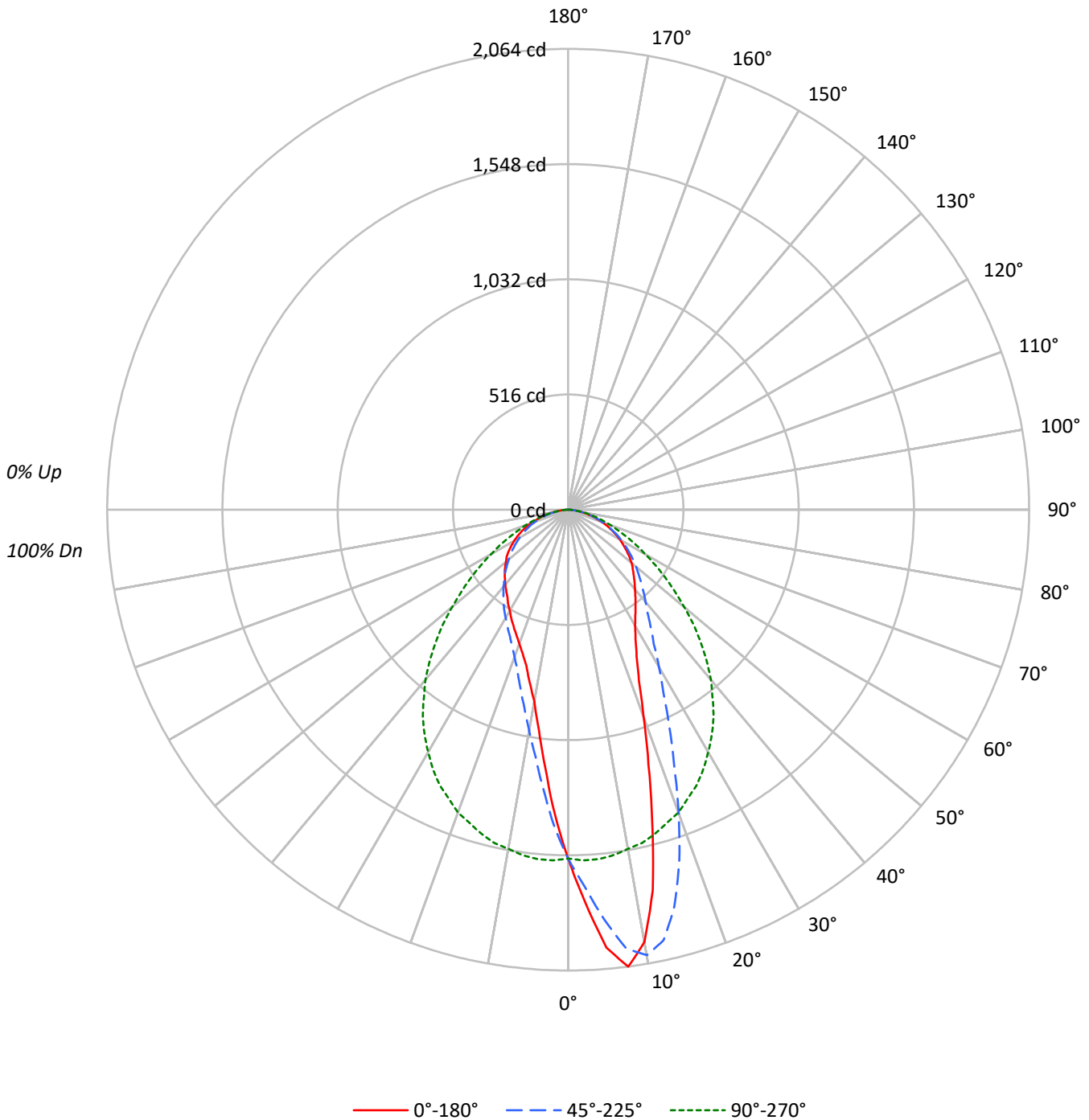
Lumens per Lamp: N/A
Luminaire Lumens: 2510.7 lumens
Efficiency: N/A
Efficacy: 135.0 lumens/watt
Spacing Criteria (0/90/45): 0.65 / 1.19 / 0.89
Luminous Opening: Rectangular (W 4' x L: 0.22' x H: 0')
CIE Type: Direct

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	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°	18828	18828	18828	18828	18828
5°	23812	22268	18997	15234	14068
10°	24042	24788	18870	12305	10664
15°	18109	22939	18741	10311	9018
20°	12617	18549	18503	8991	8191
25°	9621	14229	18094	8243	7683
30°	8323	11309	17443	7789	7274
35°	7722	9471	16692	7424	6985
40°	7311	8475	15636	7083	6889
45°	7068	7871	14297	6784	6845
50°	6945	7434	12709	6525	6810
55°	6687	7023	11151	6292	6840
60°	6449	6639	9610	6063	6728
65°	6059	6224	8291	5810	6595
70°	5594	5774	7049	5492	6207
75°	5065	5233	6043	5028	5670
80°	4177	4476	4781	4378	4781
85°	3304	3608	3512	3816	3816

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°
 Vertical Angle: 45°
 Luminance: 16323 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	147.7	5.9
10°-20°	367.6	14.6
20°-30°	435.1	17.3
30°-40°	437.3	17.4
40°-50°	401.0	16.0
50°-60°	331.0	13.2
60°-70°	234.2	9.3
70°-80°	125.1	5.0
80°-90°	31.7	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°	950.4	37.9
0°-40°	1387.7	55.3
0°-60°	2119.6	84.4
0°-90°	2510.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2510.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1563	1563	1563	1563	1563	
5°	1969	1841	1571	1260	1163	188
15°	1452	1839	1502	827	723	401
25°	724	1070	1361	620	578	342
35°	525	644	1135	505	475	330
45°	415	462	839	398	402	321
55°	318	334	531	300	326	285
65°	212	218	291	204	231	211
75°	109	112	130	108	122	114
85°	24	26	25	28	28	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°	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6
2.5°	1761.3	1757.7	1739.5	1727.9	1730.8	1704.7	1688.8	1675.7	1667.0	1646.0	1635.1
5°	1968.7	1978.8	1967.2	1961.4	1931.7	1884.6	1841.1	1831.6	1791.0	1741.0	1723.6
7.5°	2064.4	2070.2	2062.9	2062.9	2053.5	2011.5	1981.0	1957.1	1887.5	1822.9	1793.2
10°	1965.0	1978.1	2006.4	2019.4	2038.3	2032.5	2026.0	2016.5	1969.4	1894.7	1860.6
12.5°	1746.8	1762.7	1819.3	1827.3	1891.8	1954.2	1974.5	1997.7	2002.0	1938.9	1902.0
15°	1451.7	1495.9	1547.4	1572.0	1654.0	1785.2	1838.9	1902.0	1976.7	1950.5	1921.5
17.5°	1195.7	1212.4	1267.5	1319.7	1401.6	1553.2	1652.5	1746.8	1907.0	1933.1	1915.0
20°	984.0	999.2	1071.7	1068.1	1176.9	1347.3	1446.6	1555.4	1791.7	1876.6	1873.0
22.5°	826.6	850.6	891.2	913.6	992.0	1143.5	1237.8	1373.4	1660.5	1794.6	1809.2
25°	723.7	741.1	765.7	785.3	846.2	970.9	1070.3	1181.9	1495.2	1687.3	1723.6
27.5°	653.3	660.6	685.2	696.8	737.4	844.8	921.6	1023.9	1342.2	1567.0	1617.7
30°	598.2	603.3	625.0	628.7	660.6	738.2	812.8	896.2	1192.8	1443.0	1501.0
32.5°	559.8	563.4	580.1	581.5	605.5	662.0	714.2	792.5	1051.4	1310.3	1382.1
35°	525.0	527.2	539.5	543.1	558.3	601.1	643.9	704.1	939.0	1190.6	1269.7
37.5°	494.5	497.4	504.7	509.0	521.4	555.4	584.4	634.5	831.0	1065.9	1153.7
40°	464.8	469.9	474.9	474.9	488.7	514.8	538.8	580.1	738.2	957.1	1034.7
42.5°	439.4	444.5	446.7	447.4	454.6	478.6	498.9	527.2	667.8	860.7	936.8
45°	414.8	416.9	419.1	420.6	425.6	446.7	461.9	488.7	601.1	771.5	845.5
47.5°	392.3	392.3	393.7	395.9	399.5	414.8	427.8	447.4	543.8	691.8	752.7
50°	370.5	370.5	368.4	369.8	372.0	383.6	396.6	412.6	490.2	618.5	672.9
52.5°	344.4	344.4	345.2	343.0	345.2	355.3	365.5	381.4	444.5	551.1	597.5
55°	318.3	321.2	319.0	317.6	320.5	327.0	334.3	348.1	401.7	497.4	534.4
57.5°	292.2	293.7	292.9	295.1	293.7	299.5	306.0	315.4	363.3	437.2	472.0
60°	267.6	267.6	266.1	267.6	267.6	270.5	275.5	285.0	324.1	385.8	414.8
62.5°	240.0	240.7	241.5	240.7	240.0	243.6	248.0	254.5	290.0	335.7	357.5
65°	212.5	213.2	215.4	214.6	213.9	217.5	218.3	225.5	252.3	291.5	307.4
67.5°	187.8	186.4	187.1	188.5	189.3	190.0	191.4	198.7	217.5	249.4	262.5
70°	158.8	160.2	159.5	161.7	160.2	162.4	163.9	169.0	187.1	208.1	216.8
72.5°	132.7	133.4	133.4	135.6	134.9	137.0	138.5	140.7	153.7	172.6	176.2
75°	108.8	108.8	110.2	110.9	110.9	110.9	112.4	113.8	124.7	136.3	139.9
77.5°	82.7	86.3	85.6	86.3	87.0	89.2	87.7	90.6	97.2	103.7	105.9
80°	60.2	60.2	60.9	61.6	63.1	64.5	64.5	67.4	70.3	74.0	76.1
82.5°	38.4	39.2	41.3	42.1	42.8	45.0	45.0	45.0	48.6	50.0	50.0
85°	23.9	22.5	23.9	24.7	25.4	26.1	26.1	27.6	28.3	29.0	29.0
87.5°	11.6	11.6	11.6	11.6	12.3	12.3	12.3	12.3	13.1	13.1	13.1
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°	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6	1562.6
2.5°	1598.9	1572.0	1532.2	1499.5	1501.0	1471.2	1449.5	1421.2	1412.5	1403.8	1392.2
5°	1632.2	1570.6	1487.9	1421.9	1401.6	1352.3	1290.0	1259.5	1241.4	1209.5	1197.2
7.5°	1673.6	1560.4	1434.3	1331.3	1308.8	1226.9	1152.9	1116.7	1082.6	1060.1	1032.6
10°	1700.4	1542.3	1379.9	1243.6	1221.8	1128.3	1031.8	1005.7	962.9	935.4	909.3
12.5°	1720.7	1528.5	1324.1	1165.3	1129.7	1039.1	941.9	906.4	875.2	835.3	816.5
15°	1738.8	1502.4	1266.8	1083.3	1046.3	948.4	858.5	826.6	798.3	763.5	746.9
17.5°	1732.3	1470.5	1203.7	1010.8	973.8	877.4	791.1	754.8	736.0	705.5	693.9
20°	1724.3	1443.0	1144.2	941.9	901.3	811.4	727.3	701.2	682.3	662.8	652.6
22.5°	1698.9	1399.5	1084.0	878.8	840.4	750.5	678.7	657.0	642.4	628.7	620.0
25°	1656.2	1361.0	1025.3	815.7	785.3	701.2	640.3	620.0	610.5	596.8	588.8
27.5°	1603.2	1310.3	966.6	764.3	729.5	654.8	602.6	589.5	579.4	568.5	560.5
30°	1536.5	1253.7	909.3	714.2	682.3	616.3	571.4	559.8	550.4	539.5	530.1
32.5°	1451.7	1196.4	855.6	667.8	641.0	583.7	542.4	533.0	525.0	511.9	506.9
35°	1356.7	1134.8	802.7	623.6	598.2	548.2	514.1	504.7	496.7	485.8	481.5
37.5°	1260.2	1061.6	750.5	585.9	563.4	518.5	485.8	476.4	469.1	459.7	457.5
40°	1158.0	994.1	699.0	547.5	527.9	489.4	457.5	450.3	443.0	437.2	435.8
42.5°	1055.0	916.5	654.0	515.6	494.5	459.0	430.0	422.0	417.7	414.8	415.5
45°	957.9	839.0	607.6	478.6	464.1	431.4	404.6	398.1	394.5	392.3	395.2
47.5°	852.7	759.9	564.1	447.4	432.9	403.9	378.5	372.7	371.3	370.5	375.6
50°	759.9	678.0	517.0	415.5	403.2	373.4	353.1	348.1	346.6	348.8	356.0
52.5°	672.2	601.8	474.2	385.8	373.4	346.6	327.7	324.1	323.4	328.5	335.7
55°	585.2	530.8	427.8	353.1	340.8	317.6	303.1	299.5	298.7	308.9	315.4
57.5°	511.2	461.9	384.3	321.9	312.5	290.8	277.7	274.8	277.0	286.4	292.9
60°	438.7	398.8	344.4	288.6	281.3	262.5	252.3	251.6	253.8	264.7	271.2
62.5°	373.4	343.0	301.6	258.1	253.1	236.4	227.0	228.4	230.6	241.5	247.3
65°	317.6	290.8	259.6	227.7	221.2	209.6	203.0	203.8	208.1	217.5	223.3
67.5°	263.2	241.5	224.1	198.7	193.6	183.5	178.4	181.3	183.5	192.9	198.7
70°	217.5	200.1	187.1	168.2	164.6	155.9	152.3	155.9	158.1	166.1	173.3
72.5°	174.8	163.9	153.7	139.9	136.3	130.5	129.8	131.2	134.9	142.8	145.7
75°	135.6	129.8	121.1	112.4	110.2	107.3	106.6	108.0	111.7	116.0	118.9
77.5°	103.0	97.9	91.4	87.7	84.8	83.4	84.1	86.3	87.7	92.1	94.3
80°	74.7	68.9	67.4	62.4	61.6	60.9	62.4	63.1	65.3	68.2	69.6
82.5°	49.3	45.0	43.5	42.8	42.1	41.3	43.5	44.2	45.7	47.9	48.6
85°	26.8	25.4	25.4	24.7	25.4	26.8	26.8	27.6	27.6	28.3	27.6
87.5°	12.3	10.9	11.6	11.6	11.6	12.3	12.3	13.1	13.1	13.1	12.3
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):

	160°	170°	180°
0°	1562.6	1562.6	1562.6
2.5°	1391.5	1386.4	1366.1
5°	1186.3	1168.9	1163.1
7.5°	1029.7	1028.2	997.8
10°	897.0	899.1	871.6
12.5°	813.6	795.4	793.3
15°	742.5	725.8	722.9
17.5°	689.6	679.4	676.5
20°	649.7	643.9	638.8
22.5°	617.8	610.5	606.2
25°	585.9	579.4	577.9
27.5°	558.3	550.4	550.4
30°	530.1	525.0	522.8
32.5°	504.7	500.3	500.3
35°	480.0	477.8	474.9
37.5°	457.5	457.5	456.1
40°	435.8	438.0	438.0
42.5°	416.9	419.1	419.1
45°	396.6	400.3	401.7
47.5°	376.3	382.1	383.6
50°	358.2	362.6	363.3
52.5°	338.6	343.7	347.3
55°	318.3	323.4	325.6
57.5°	296.6	301.6	302.4
60°	272.6	277.7	279.2
62.5°	250.9	253.8	255.2
65°	224.1	228.4	231.3
67.5°	199.4	203.0	203.0
70°	172.6	174.0	176.2
72.5°	147.2	147.9	147.9
75°	119.6	121.1	121.8
77.5°	94.3	95.0	95.0
80°	69.6	68.9	68.9
82.5°	48.6	46.4	46.4
85°	27.6	26.8	27.6
87.5°	12.3	12.3	12.3
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	17.69	19.20	18.05	19.51	19.82	20.14	21.65	20.51	21.96	22.28
	3H	19.38	20.73	19.76	21.06	21.42	21.35	22.71	21.73	23.04	23.40
	4H	19.98	21.25	20.38	21.60	21.98	21.78	23.05	22.18	23.40	23.78
	6H	20.39	21.56	20.80	21.93	22.32	22.05	23.22	22.46	23.59	23.98
	8H	20.49	21.61	20.91	22.00	22.40	22.12	23.24	22.54	23.63	24.03
	12H	20.54	21.62	20.97	22.00	22.43	22.15	23.22	22.58	23.60	24.03
4H	2H	18.34	19.61	18.73	19.96	20.33	20.36	21.63	20.76	21.98	22.36
	3H	20.22	21.28	20.63	21.68	22.08	21.84	22.90	22.26	23.30	23.70
	4H	20.94	21.89	21.37	22.31	22.75	22.41	23.36	22.84	23.78	24.22
	6H	21.45	22.28	21.91	22.73	23.18	22.80	23.63	23.26	24.08	24.54
	8H	21.59	22.36	22.05	22.81	23.28	22.91	23.68	23.37	24.13	24.60
	12H	21.68	22.37	22.16	22.85	23.32	22.97	23.67	23.46	24.15	24.62
8H	4H	21.27	22.04	21.73	22.48	22.95	22.57	23.35	23.04	23.79	24.26
	6H	21.88	22.52	22.38	23.01	23.49	23.07	23.71	23.56	24.20	24.68
	8H	22.08	22.65	22.59	23.16	23.65	23.23	23.80	23.74	24.31	24.80
	12H	22.22	22.73	22.73	23.22	23.78	23.35	23.85	23.86	24.35	24.91
12H	4H	21.30	21.99	21.78	22.47	22.94	22.58	23.27	23.06	23.75	24.22
	6H	21.93	22.51	22.45	23.02	23.50	23.09	23.66	23.60	24.17	24.66
	8H	22.18	22.69	22.69	23.18	23.75	23.30	23.80	23.81	24.29	24.86