

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: P646647

Luminaire Tested: S123DRP-S560D940-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

Test Information

Test Method: LM-79-2024
Report Number: P646647
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-S560D940-X4F0-XX-UDD-G-W
Description: DEFINE 3 DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC
STANDARD LIGHT ENGINE
Light Source: 4000K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

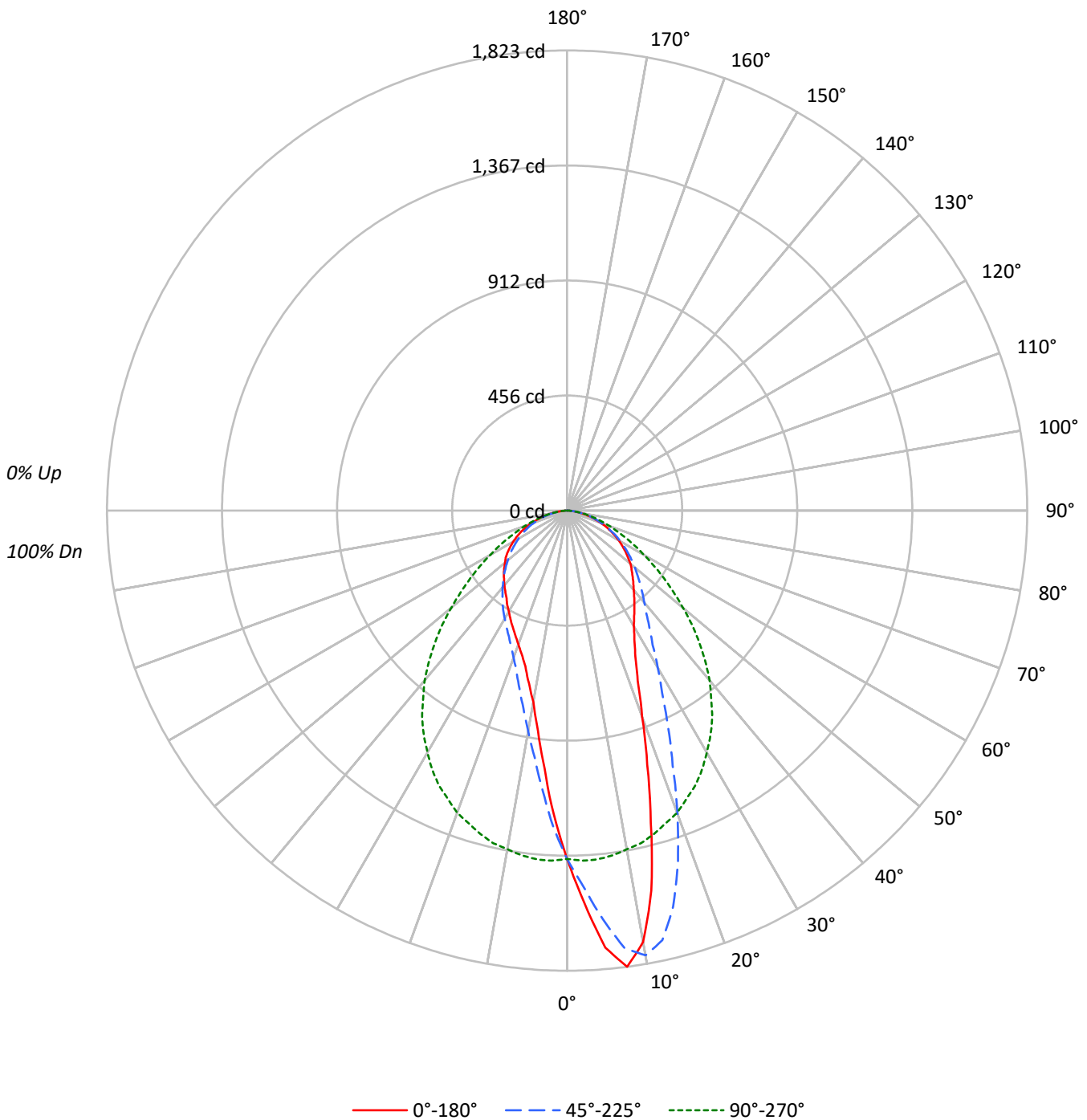
Lumens per Lamp: N/A
Luminaire Lumens: 2216.9 lumens
Efficiency: N/A
Efficacy: 119.2 lumens/watt
Spacing Criteria (0/90/45): 0.65 / 1.19 / 0.89
Luminous Opening: Rectangular (W 4' x L: 0.22' x H: 0')
CIE Type: Direct

Input Watts (W): 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

TEST NUMBER: P646647

CATALOG NUMBER: S123DRP-S560D940-X4F0-XX-UDD-G-W

Luminous Intensity Polar Plot





TEST NUMBER: P646647

CATALOG NUMBER: S123DRP-S560D940-X4F0-XX-UDD-G-W

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°	16625	16625	16625	16625	16625
5°	21025	19663	16774	13452	12422
10°	21229	21887	16663	10866	9416
15°	15989	20254	16548	9105	7964
20°	11140	16378	16337	7938	7233
25°	8495	12564	15978	7278	6784
30°	7349	9985	15402	6877	6422
35°	6819	8364	14739	6554	6169
40°	6455	7482	13807	6254	6082
45°	6240	6951	12623	5990	6044
50°	6133	6565	11223	5760	6013
55°	5905	6201	9846	5554	6040
60°	5694	5863	8485	5355	5940
65°	5349	5494	7319	5129	5822
70°	4939	5098	6225	4851	5482
75°	4469	4618	5335	4441	5009
80°	3685	3955	4219	3865	4219
85°	2917	3180	3097	3359	3359

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°
 Vertical Angle: 45°
 Luminance: 14413 cd/sqm



TEST NUMBER: P646647

CATALOG NUMBER: S123DRP-S560D940-X4F0-XX-UDD-G-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	130.5	5.9
10°-20°	324.6	14.6
20°-30°	384.2	17.3
30°-40°	386.1	17.4
40°-50°	354.1	16.0
50°-60°	292.3	13.2
60°-70°	206.8	9.3
70°-80°	110.4	5.0
80°-90°	28.0	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°	839.2	37.9
0°-40°	1225.3	55.3
0°-60°	1871.6	84.4
0°-90°	2216.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2216.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1380	1380	1380	1380	1380	
5°	1738	1626	1387	1112	1027	166
15°	1282	1624	1327	730	638	354
25°	639	945	1202	547	510	302
35°	464	569	1002	446	419	291
45°	366	408	741	352	355	284
55°	281	295	469	264	288	252
65°	188	193	257	180	204	186
75°	96	99	115	95	108	101
85°	21	23	22	24	24	25
90°	0	0	0	0	0	



TEST NUMBER: P646647

CATALOG NUMBER: S123DRP-S560D940-X4F0-XX-UDD-G-W

CANDELA DISTRIBUTION (FULL):

	0°	10°	20°	22.5°	30°	40°	45°	50°	60°	67.5°	70°
0°	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8
2.5°	1555.2	1552.0	1536.0	1525.8	1528.3	1505.3	1491.2	1479.7	1472.0	1453.4	1443.8
5°	1738.3	1747.3	1737.1	1731.9	1705.7	1664.1	1625.7	1617.3	1581.5	1537.3	1521.9
7.5°	1822.9	1828.0	1821.6	1821.6	1813.3	1776.1	1749.2	1728.1	1666.6	1609.6	1583.4
10°	1735.1	1746.7	1771.6	1783.2	1799.8	1794.7	1788.9	1780.6	1739.0	1673.0	1642.9
12.5°	1542.4	1556.5	1606.4	1613.5	1670.5	1725.5	1743.5	1763.9	1767.8	1712.1	1679.4
15°	1281.8	1320.9	1366.3	1388.1	1460.5	1576.3	1623.7	1679.4	1745.4	1722.3	1696.7
17.5°	1055.8	1070.5	1119.2	1165.3	1237.6	1371.5	1459.2	1542.4	1683.9	1707.0	1691.0
20°	868.8	882.3	946.3	943.1	1039.2	1189.6	1277.3	1373.4	1582.1	1657.0	1653.8
22.5°	729.9	751.0	786.9	806.7	875.9	1009.7	1092.9	1212.7	1466.2	1584.7	1597.5
25°	639.0	654.4	676.1	693.4	747.2	857.3	945.0	1043.6	1320.2	1489.9	1521.9
27.5°	576.9	583.3	605.1	615.3	651.2	745.9	813.8	904.1	1185.1	1383.6	1428.4
30°	528.2	532.7	551.9	555.1	583.3	651.8	717.7	791.4	1053.2	1274.1	1325.4
32.5°	494.3	497.5	512.2	513.5	534.6	584.6	630.7	699.8	928.4	1157.0	1220.4
35°	463.6	465.5	476.4	479.6	493.0	530.8	568.6	621.7	829.2	1051.3	1121.1
37.5°	436.7	439.2	445.6	449.5	460.4	490.4	516.1	560.2	733.8	941.2	1018.7
40°	410.4	414.9	419.4	419.4	431.5	454.6	475.7	512.2	651.8	845.2	913.7
42.5°	388.0	392.5	394.4	395.0	401.5	422.6	440.5	465.5	589.7	760.0	827.2
45°	366.2	368.2	370.1	371.4	375.8	394.4	407.9	431.5	530.8	681.2	746.6
47.5°	346.4	346.4	347.7	349.6	352.8	366.2	377.8	395.0	480.2	610.8	664.6
50°	327.2	327.2	325.3	326.5	328.5	338.7	350.2	364.3	432.8	546.2	594.2
52.5°	304.1	304.1	304.8	302.8	304.8	313.7	322.7	336.8	392.5	486.6	527.6
55°	281.1	283.6	281.7	280.4	283.0	288.8	295.2	307.3	354.7	439.2	471.9
57.5°	258.0	259.3	258.7	260.6	259.3	264.4	270.2	278.5	320.8	386.1	416.8
60°	236.3	236.3	235.0	236.3	236.3	238.8	243.3	251.6	286.2	340.6	366.2
62.5°	211.9	212.6	213.2	212.6	211.9	215.1	219.0	224.7	256.1	296.4	315.7
65°	187.6	188.2	190.2	189.5	188.9	192.1	192.7	199.1	222.8	257.4	271.5
67.5°	165.8	164.5	165.2	166.5	167.1	167.8	169.0	175.4	192.1	220.3	231.8
70°	140.2	141.5	140.9	142.8	141.5	143.4	144.7	149.2	165.2	183.8	191.4
72.5°	117.2	117.8	117.8	119.7	119.1	121.0	122.3	124.2	135.7	152.4	155.6
75°	96.0	96.0	97.3	98.0	98.0	98.0	99.2	100.5	110.1	120.4	123.6
77.5°	73.0	76.2	75.6	76.2	76.8	78.8	77.5	80.0	85.8	91.6	93.5
80°	53.1	53.1	53.8	54.4	55.7	57.0	57.0	59.5	62.1	65.3	67.2
82.5°	33.9	34.6	36.5	37.1	37.8	39.7	39.7	39.7	42.9	44.2	44.2
85°	21.1	19.8	21.1	21.8	22.4	23.0	23.0	24.3	25.0	25.6	25.6
87.5°	10.2	10.2	10.2	10.2	10.9	10.9	10.9	10.9	11.5	11.5	11.5
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: P646647

CATALOG NUMBER: S123DRP-S560D940-X4F0-XX-UDD-G-W

CANDELA DISTRIBUTION (continued):

	80°	90°	100°	110°	112.5°	120°	130°	135°	140°	150°	157.5°
0°	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8
2.5°	1411.8	1388.1	1352.9	1324.1	1325.4	1299.1	1279.9	1254.9	1247.2	1239.6	1229.3
5°	1441.3	1386.8	1313.8	1255.6	1237.6	1194.1	1139.0	1112.2	1096.1	1068.0	1057.1
7.5°	1477.7	1377.9	1266.5	1175.5	1155.7	1083.3	1018.0	986.0	955.9	936.1	911.7
10°	1501.4	1361.9	1218.4	1098.1	1078.9	996.3	911.1	888.1	850.3	826.0	802.9
12.5°	1519.4	1349.7	1169.1	1028.9	997.5	917.5	831.7	800.3	772.8	737.6	720.9
15°	1535.4	1326.6	1118.6	956.6	923.9	837.5	758.1	729.9	704.9	674.2	659.5
17.5°	1529.6	1298.5	1062.9	892.5	859.9	774.7	698.5	666.5	649.9	623.0	612.7
20°	1522.6	1274.1	1010.3	831.7	795.9	716.5	642.2	619.1	602.5	585.2	576.2
22.5°	1500.2	1235.7	957.2	776.0	742.1	662.7	599.3	580.1	567.3	555.1	547.4
25°	1462.4	1201.8	905.3	720.3	693.4	619.1	565.4	547.4	539.1	526.9	519.9
27.5°	1415.6	1157.0	853.5	674.8	644.1	578.2	532.1	520.5	511.6	502.0	494.9
30°	1356.7	1107.0	802.9	630.7	602.5	544.2	504.5	494.3	486.0	476.4	468.0
32.5°	1281.8	1056.4	755.5	589.7	566.0	515.4	478.9	470.6	463.6	452.0	447.6
35°	1197.9	1002.0	708.8	550.6	528.2	484.0	454.0	445.6	438.6	429.0	425.1
37.5°	1112.8	937.4	662.7	517.3	497.5	457.8	429.0	420.7	414.3	405.9	404.0
40°	1022.5	877.8	617.2	483.4	466.1	432.2	404.0	397.6	391.2	386.1	384.8
42.5°	931.6	809.3	577.5	455.2	436.7	405.3	379.7	372.6	368.8	366.2	366.9
45°	845.8	740.8	536.5	422.6	409.8	381.0	357.3	351.5	348.3	346.4	348.9
47.5°	753.0	671.0	498.1	395.0	382.2	356.6	334.2	329.1	327.8	327.2	331.7
50°	671.0	598.7	456.5	366.9	356.0	329.7	311.8	307.3	306.1	308.0	314.4
52.5°	593.5	531.4	418.7	340.6	329.7	306.1	289.4	286.2	285.6	290.0	296.4
55°	516.7	468.7	377.8	311.8	300.9	280.4	267.6	264.4	263.8	272.8	278.5
57.5°	451.4	407.9	339.3	284.3	276.0	256.7	245.2	242.7	244.6	252.9	258.7
60°	387.4	352.1	304.1	254.8	248.4	231.8	222.8	222.2	224.1	233.7	239.5
62.5°	329.7	302.8	266.4	227.9	223.5	208.7	200.4	201.7	203.6	213.2	218.3
65°	280.4	256.7	229.2	201.0	195.3	185.0	179.3	179.9	183.8	192.1	197.2
67.5°	232.4	213.2	197.8	175.4	171.0	162.0	157.5	160.1	162.0	170.3	175.4
70°	192.1	176.7	165.2	148.5	145.3	137.7	134.5	137.7	139.6	146.6	153.0
72.5°	154.3	144.7	135.7	123.6	120.4	115.2	114.6	115.9	119.1	126.1	128.7
75°	119.7	114.6	106.9	99.2	97.3	94.8	94.1	95.4	98.6	102.4	105.0
77.5°	90.9	86.4	80.7	77.5	74.9	73.6	74.3	76.2	77.5	81.3	83.2
80°	65.9	60.8	59.5	55.1	54.4	53.8	55.1	55.7	57.6	60.2	61.5
82.5°	43.5	39.7	38.4	37.8	37.1	36.5	38.4	39.1	40.3	42.3	42.9
85°	23.7	22.4	22.4	21.8	22.4	23.7	23.7	24.3	24.3	25.0	24.3
87.5°	10.9	9.6	10.2	10.2	10.2	10.9	10.9	11.5	11.5	11.5	10.9
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: P646647

CATALOG NUMBER: S123DRP-S560D940-X4F0-XX-UDD-G-W

CANDELA DISTRIBUTION (continued):

	160°	170°	180°
0°	1379.8	1379.8	1379.8
2.5°	1228.7	1224.2	1206.3
5°	1047.5	1032.1	1027.0
7.5°	909.2	907.9	881.0
10°	792.0	793.9	769.6
12.5°	718.4	702.4	700.5
15°	655.6	640.9	638.4
17.5°	608.9	599.9	597.4
20°	573.7	568.6	564.1
22.5°	545.5	539.1	535.3
25°	517.3	511.6	510.3
27.5°	493.0	486.0	486.0
30°	468.0	463.6	461.6
32.5°	445.6	441.8	441.8
35°	423.9	421.9	419.4
37.5°	404.0	404.0	402.7
40°	384.8	386.7	386.7
42.5°	368.2	370.1	370.1
45°	350.2	353.4	354.7
47.5°	332.3	337.4	338.7
50°	316.3	320.1	320.8
52.5°	299.0	303.5	306.7
55°	281.1	285.6	287.5
57.5°	261.9	266.4	267.0
60°	240.7	245.2	246.5
62.5°	221.5	224.1	225.4
65°	197.8	201.7	204.2
67.5°	176.1	179.3	179.3
70°	152.4	153.7	155.6
72.5°	130.0	130.6	130.6
75°	105.6	106.9	107.6
77.5°	83.2	83.9	83.9
80°	61.5	60.8	60.8
82.5°	42.9	41.0	41.0
85°	24.3	23.7	24.3
87.5°	10.9	10.9	10.9
90°	0.0	0.0	0.0



TEST NUMBER: P646647
 CATALOG NUMBER: S123DRP-S560D940-X4F0-XX-UDD-G-W

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	17.26	18.76	17.62	19.08	19.39	19.71	21.22	20.07	21.53	21.85
	3H	18.95	20.30	19.33	20.63	20.99	20.92	22.28	21.30	22.61	22.97
	4H	19.55	20.82	19.95	21.17	21.55	21.34	22.62	21.74	22.96	23.34
	6H	19.95	21.13	20.37	21.50	21.89	21.62	22.79	22.03	23.16	23.55
	8H	20.06	21.18	20.48	21.56	21.97	21.68	22.80	22.11	23.19	23.59
	12H	20.11	21.18	20.54	21.57	21.99	21.72	22.79	22.15	23.17	23.60
4H	2H	17.90	19.18	18.30	19.52	19.90	19.93	21.20	20.33	21.55	21.93
	3H	19.79	20.85	20.20	21.25	21.65	21.41	22.47	21.82	22.87	23.27
	4H	20.51	21.46	20.94	21.88	22.32	21.98	22.93	22.41	23.35	23.79
	6H	21.02	21.85	21.48	22.29	22.75	22.37	23.20	22.83	23.64	24.10
	8H	21.16	21.93	21.62	22.38	22.84	22.48	23.25	22.94	23.70	24.16
	12H	21.24	21.94	21.73	22.41	22.89	22.54	23.23	23.02	23.71	24.18
8H	4H	20.83	21.61	21.30	22.05	22.52	22.14	22.92	22.61	23.36	23.83
	6H	21.45	22.09	21.95	22.58	23.06	22.64	23.28	23.13	23.77	24.24
	8H	21.65	22.22	22.16	22.73	23.22	22.80	23.37	23.31	23.88	24.37
	12H	21.79	22.29	22.30	22.79	23.35	22.92	23.42	23.43	23.91	24.48
12H	4H	20.87	21.56	21.35	22.04	22.51	22.15	22.84	22.63	23.32	23.79
	6H	21.50	22.07	22.01	22.58	23.07	22.65	23.23	23.17	23.74	24.23
	8H	21.75	22.26	22.26	22.75	23.31	22.86	23.37	23.37	23.86	24.43