

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: P646690

Luminaire Tested: S123RDRP-S560D930-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

**Test Information**

Test Method: LM-79-2024  
Report Number: P646690  
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-S560D930-X4F0-XX-UDD-G-W  
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC  
STANDARD LIGHT ENGINE  
Light Source: 3000K CCT, 90 CRI LEDS  
Ballast/Driver: -

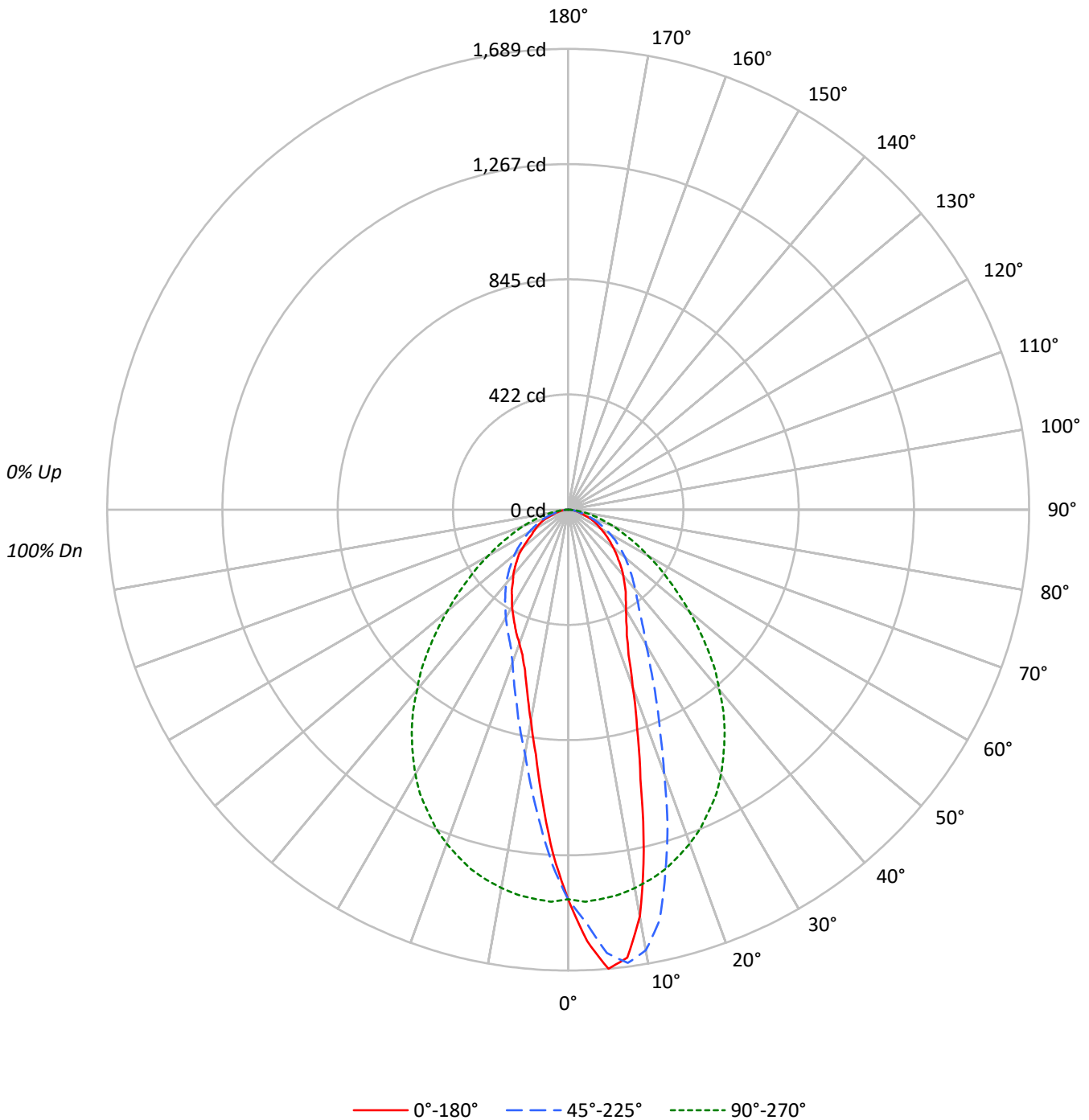
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1891.6 lumens  
Efficiency: N/A  
Efficacy: 101.7 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): 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: P646690

CATALOG NUMBER: S123RDRP-S560D930-X4F0-XX-UDD-G-W

### Luminous Intensity Polar Plot



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CATALOG NUMBER: S123RDRP-S560D930-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	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°	17204	17204	17204	17204	17204
5°	20428	19733	17312	14041	12993
10°	18508	20054	17226	11116	9619
15°	12742	17176	17044	9129	7609
20°	8865	13174	16701	7649	6688
25°	6755	10109	16204	6834	6163
30°	5881	7950	15581	6353	5710
35°	5398	6691	14699	5925	5295
40°	4926	6004	13544	5562	4917
45°	4449	5497	12300	5167	4539
50°	4038	5102	10831	4806	4071
55°	3653	4685	9420	4390	3493
60°	3273	4261	8181	4020	3301
65°	3022	3789	7042	3572	3122
70°	2455	3238	6148	3238	2537
75°	2151	2616	5205	2700	2235
80°	1950	2193	4267	2276	2109
85°	1783	1866	3235	2018	1935

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 80°  
 Vertical Angle: 45°  
 Luminance: 12978 cd/sqm



TEST NUMBER: P646690

CATALOG NUMBER: S123RDRP-S560D930-X4F0-XX-UDD-G-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	130.1	6.9
10°-20°	301.1	15.9
20°-30°	345.4	18.3
30°-40°	340.2	18.0
40°-50°	299.9	15.9
50°-60°	230.8	12.2
60°-70°	151.8	8.0
70°-80°	73.7	3.9
80°-90°	18.6	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°	776.6	41.1
0°-40°	1116.9	59.0
0°-60°	1647.6	87.1
0°-90°	1891.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1891.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1428	1428	1428	1428	1428	
5°	1689	1632	1431	1161	1074	154
15°	1022	1377	1366	732	610	288
25°	508	760	1219	514	464	240
35°	367	455	999	403	360	229
45°	261	323	722	303	266	203
55°	174	223	448	209	166	156
65°	106	133	247	125	110	104
75°	46	56	112	58	48	50
85°	13	14	23	15	14	15
90°	0	0	0	0	0	



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CATALOG NUMBER: S123RDRP-S560D930-X4F0-XX-UDD-G-W

**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	22.5°	30°	40°	45°	50°	60°	67.5°	70°
0°	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8
2.5°	1582.4	1572.4	1569.5	1566.0	1560.1	1539.0	1515.0	1517.4	1514.4	1496.3	1486.3
5°	1688.9	1690.1	1687.1	1684.8	1674.8	1649.1	1631.5	1621.0	1598.7	1564.8	1554.3
7.5°	1656.1	1674.8	1678.4	1682.5	1687.7	1681.9	1675.4	1671.3	1653.2	1616.3	1599.3
10°	1512.7	1511.5	1532.6	1549.6	1595.2	1627.4	1639.1	1656.1	1671.3	1645.6	1626.8
12.5°	1278.5	1280.3	1349.4	1349.4	1408.5	1490.4	1543.1	1578.8	1644.4	1646.2	1635.0
15°	1021.5	1050.2	1111.7	1124.6	1200.7	1310.7	1376.9	1450.6	1577.7	1617.5	1615.1
17.5°	838.9	851.2	910.3	927.3	994.6	1119.3	1210.6	1299.6	1477.6	1561.3	1576.5
20°	691.4	702.5	745.2	758.1	826.0	944.8	1027.4	1123.4	1356.4	1484.6	1511.5
22.5°	577.2	598.9	627.6	647.5	686.1	807.3	878.1	970.0	1215.9	1398.5	1430.1
25°	508.1	518.1	542.7	552.0	598.9	679.1	760.4	841.2	1091.2	1290.8	1346.4
27.5°	461.3	464.2	482.4	490.6	518.7	593.0	651.6	726.5	964.2	1180.2	1245.2
30°	422.7	427.9	442.0	443.7	468.3	521.0	571.4	640.4	852.9	1073.0	1139.8
32.5°	392.8	395.7	407.4	411.0	426.8	468.3	509.3	559.6	749.9	961.2	1037.9
35°	367.0	367.6	376.4	381.1	395.1	429.7	454.9	497.0	667.4	868.7	936.1
37.5°	337.8	341.9	348.3	352.4	364.7	392.8	415.6	448.4	591.3	780.9	843.6
40°	313.2	316.7	324.3	326.1	337.2	363.0	381.7	411.0	525.7	696.6	760.4
42.5°	288.6	290.9	298.6	302.1	314.4	334.9	351.8	374.7	473.6	621.7	684.3
45°	261.1	266.9	275.1	276.9	288.6	309.7	322.6	343.6	426.8	556.7	612.3
47.5°	238.3	241.2	248.2	251.1	264.6	283.3	296.8	314.9	386.4	497.6	552.0
50°	215.4	216.6	223.0	227.1	237.7	259.3	272.2	288.6	349.5	449.6	487.6
52.5°	193.8	196.7	203.1	206.1	213.1	235.3	247.0	264.0	314.4	400.4	438.5
55°	173.9	175.6	180.3	183.8	192.0	211.3	223.0	237.7	283.9	355.3	388.7
57.5°	155.1	157.5	161.0	163.9	171.5	188.5	200.2	214.8	255.2	314.4	340.1
60°	135.8	138.7	142.8	144.0	151.0	166.3	176.8	189.7	226.0	276.3	299.1
62.5°	121.8	122.3	125.9	127.6	131.7	144.0	155.1	167.4	199.6	239.4	258.2
65°	106.0	107.7	109.5	110.6	114.2	124.7	132.9	142.3	173.9	208.4	221.3
67.5°	89.6	91.3	94.3	95.4	98.3	105.4	112.4	121.8	148.1	177.4	189.1
70°	69.7	69.7	74.3	76.7	81.4	86.6	91.9	100.1	122.9	148.1	156.9
72.5°	56.8	57.4	58.0	58.0	62.1	70.8	73.8	79.0	97.2	121.2	128.8
75°	46.2	46.8	47.4	48.0	48.6	51.5	56.2	60.9	74.3	91.9	98.9
77.5°	36.9	37.5	38.1	38.1	39.2	40.4	41.6	43.9	53.3	66.2	72.0
80°	28.1	28.7	29.3	29.3	29.9	31.0	31.6	32.8	35.7	44.5	47.4
82.5°	20.5	20.5	20.5	21.1	21.7	21.7	22.8	22.8	24.6	26.9	28.7
85°	12.9	12.9	13.5	13.5	13.5	14.0	13.5	14.0	14.6	15.2	16.4
87.5°	5.9	5.3	5.9	5.9	5.9	6.4	6.4	6.4	6.4	7.0	7.0
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: P646690

CATALOG NUMBER: S123RDRP-S560D930-X4F0-XX-UDD-G-W

**CANDELA DISTRIBUTION (continued):**

	80°	90°	100°	110°	112.5°	120°	130°	135°	140°	150°	157.5°
0°	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8	1427.8
2.5°	1458.8	1438.3	1403.8	1382.1	1373.9	1348.8	1324.8	1304.9	1294.9	1293.7	1275.6
5°	1487.5	1431.3	1359.9	1300.2	1286.1	1242.2	1185.4	1160.9	1128.7	1115.8	1100.6
7.5°	1510.9	1423.1	1317.7	1227.6	1201.3	1135.1	1062.5	1030.3	1005.7	967.1	944.3
10°	1527.3	1407.9	1266.2	1149.7	1112.3	1035.0	947.2	908.5	885.7	841.2	823.1
12.5°	1533.8	1388.6	1214.7	1069.0	1036.2	944.3	858.2	818.4	784.4	744.1	726.5
15°	1531.4	1366.3	1162.0	994.6	953.6	860.5	769.2	731.8	700.1	659.8	636.9
17.5°	1515.6	1334.7	1104.7	922.6	883.4	787.4	694.9	660.3	632.2	593.0	575.5
20°	1489.3	1302.5	1054.3	857.0	812.5	720.6	633.4	596.5	571.9	550.9	538.0
22.5°	1453.0	1264.5	992.8	792.1	753.4	660.9	577.2	547.4	532.7	515.7	506.4
25°	1397.9	1218.8	937.2	737.6	699.0	607.1	533.9	514.0	499.4	488.2	478.3
27.5°	1338.8	1174.9	881.6	682.6	646.3	558.5	499.9	484.7	471.8	457.8	449.0
30°	1270.3	1119.9	828.9	634.0	598.9	519.3	470.7	456.6	446.1	430.9	422.1
32.5°	1189.5	1059.6	779.8	587.2	554.4	485.3	443.7	428.5	419.7	405.1	396.3
35°	1105.8	999.3	725.9	543.8	514.0	455.4	417.4	402.8	393.4	378.8	370.0
37.5°	1023.9	934.9	677.9	505.8	478.9	425.6	389.9	377.6	368.8	353.6	343.0
40°	937.2	861.1	631.1	470.1	444.9	399.2	364.7	353.6	341.9	328.4	317.9
42.5°	846.5	796.2	587.7	438.5	415.1	373.5	339.5	327.8	317.9	302.1	297.4
45°	761.6	721.8	542.1	405.1	386.4	347.7	314.9	303.2	292.1	278.7	274.0
47.5°	686.1	649.2	500.5	375.8	357.1	322.6	290.4	278.1	269.9	259.3	252.3
50°	608.2	577.8	454.9	347.1	329.6	295.6	264.6	256.4	247.0	234.2	228.9
52.5°	535.6	512.2	417.4	319.6	303.2	272.8	241.2	233.0	224.2	213.1	205.5
55°	471.8	448.4	374.7	288.6	276.3	247.6	219.5	209.0	202.0	189.1	179.7
57.5°	406.3	395.1	333.7	262.8	251.1	222.5	197.3	189.1	180.3	166.3	156.9
60°	352.4	339.5	295.6	234.7	223.6	199.6	175.0	166.8	158.6	145.2	141.1
62.5°	301.5	292.1	258.7	208.4	199.0	175.6	154.0	146.4	138.2	129.4	126.4
65°	255.2	247.0	221.9	181.5	173.9	153.4	133.5	125.3	120.0	115.9	113.0
67.5°	211.9	207.2	187.9	156.3	150.4	132.3	114.7	108.3	105.4	100.7	98.3
70°	172.7	174.5	156.9	133.5	127.0	112.4	97.2	91.9	88.4	84.3	79.6
72.5°	141.1	140.5	130.0	108.9	104.2	92.5	80.8	77.3	73.2	65.0	59.7
75°	109.5	111.8	101.9	90.2	85.5	73.8	62.6	58.0	53.9	50.9	49.2
77.5°	83.7	84.9	80.2	69.1	65.0	55.0	46.2	43.9	42.1	40.4	39.8
80°	59.7	61.5	56.8	49.8	46.2	38.1	33.4	32.8	32.2	31.0	30.4
82.5°	38.6	41.0	38.6	31.0	29.3	25.2	24.0	24.0	23.4	22.8	22.2
85°	21.1	23.4	22.2	18.1	17.0	15.8	15.2	14.6	14.6	14.6	14.6
87.5°	8.2	11.1	9.4	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
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: P646690

CATALOG NUMBER: S123RDRP-S560D930-X4F0-XX-UDD-G-W

**CANDELA DISTRIBUTION (continued):**

	160°	170°	180°
0°	1427.8	1427.8	1427.8
2.5°	1271.5	1265.6	1263.3
5°	1096.5	1078.3	1074.2
7.5°	937.2	929.6	904.5
10°	820.2	796.7	786.2
12.5°	714.8	693.1	689.6
15°	630.5	615.3	610.0
17.5°	574.9	564.3	557.9
20°	533.9	526.3	521.6
22.5°	502.9	497.0	493.5
25°	475.3	466.6	463.6
27.5°	447.3	439.6	436.7
30°	420.9	414.5	410.4
32.5°	393.4	385.8	383.4
35°	367.0	362.4	360.0
37.5°	341.3	335.4	331.9
40°	317.3	314.4	312.6
42.5°	295.6	290.4	289.8
45°	272.8	267.5	266.4
47.5°	251.1	246.5	245.9
50°	228.3	221.9	217.2
52.5°	200.8	194.9	190.8
55°	176.2	169.8	166.3
57.5°	155.7	152.8	151.0
60°	139.9	138.2	137.0
62.5°	125.9	124.1	124.1
65°	113.0	111.2	109.5
67.5°	97.2	93.7	93.1
70°	77.9	72.6	72.0
72.5°	59.1	58.5	57.4
75°	49.2	48.0	48.0
77.5°	39.8	38.6	38.6
80°	30.4	29.9	30.4
82.5°	22.2	22.2	21.7
85°	14.6	14.0	14.0
87.5°	7.0	7.0	7.0
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	14.58	16.04	14.95	16.35	16.67	19.68	21.13	20.04	21.45	21.76
	3H	15.92	17.22	16.30	17.55	17.91	20.96	22.26	21.34	22.59	22.95
	4H	16.32	17.54	16.72	17.89	18.27	21.40	22.62	21.80	22.97	23.35
	6H	16.62	17.75	17.04	18.12	18.51	21.70	22.82	22.11	23.19	23.58
	8H	16.72	17.79	17.15	18.18	18.59	21.77	22.84	22.20	23.23	23.64
	12H	16.79	17.82	17.22	18.20	18.63	21.81	22.84	22.24	23.22	23.65
4H	2H	15.44	16.66	15.84	17.00	17.38	19.72	20.94	20.12	21.29	21.67
	3H	16.91	17.92	17.32	18.32	18.72	21.21	22.22	21.62	22.62	23.02
	4H	17.37	18.28	17.80	18.70	19.14	21.76	22.67	22.20	23.09	23.53
	6H	17.76	18.55	18.22	18.99	19.45	22.20	22.99	22.66	23.43	23.90
	8H	17.89	18.62	18.35	19.07	19.54	22.32	23.06	22.79	23.50	23.97
	12H	17.99	18.64	18.47	19.12	19.60	22.40	23.05	22.88	23.53	24.01
8H	4H	17.76	18.49	18.22	18.94	19.41	21.77	22.51	22.24	22.95	23.42
	6H	18.23	18.83	18.73	19.33	19.81	22.26	22.86	22.76	23.36	23.83
	8H	18.41	18.96	18.93	19.47	19.96	22.42	22.96	22.94	23.47	23.96
	12H	18.57	19.05	19.08	19.54	20.11	22.55	23.03	23.06	23.52	24.09
12H	4H	17.81	18.46	18.29	18.94	19.41	21.75	22.40	22.23	22.88	23.35
	6H	18.29	18.84	18.81	19.35	19.84	22.23	22.78	22.75	23.29	23.78
	8H	18.53	19.01	19.04	19.50	20.07	22.43	22.91	22.94	23.40	23.97