

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: P646687

Luminaire Tested: S123RDRP-S560D840-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

**Test Information**

Test Method: LM-79-2024  
Report Number: P646687  
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-S560D840-X4F0-XX-UDD-G-W  
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC  
STANDARD LIGHT ENGINE  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: -

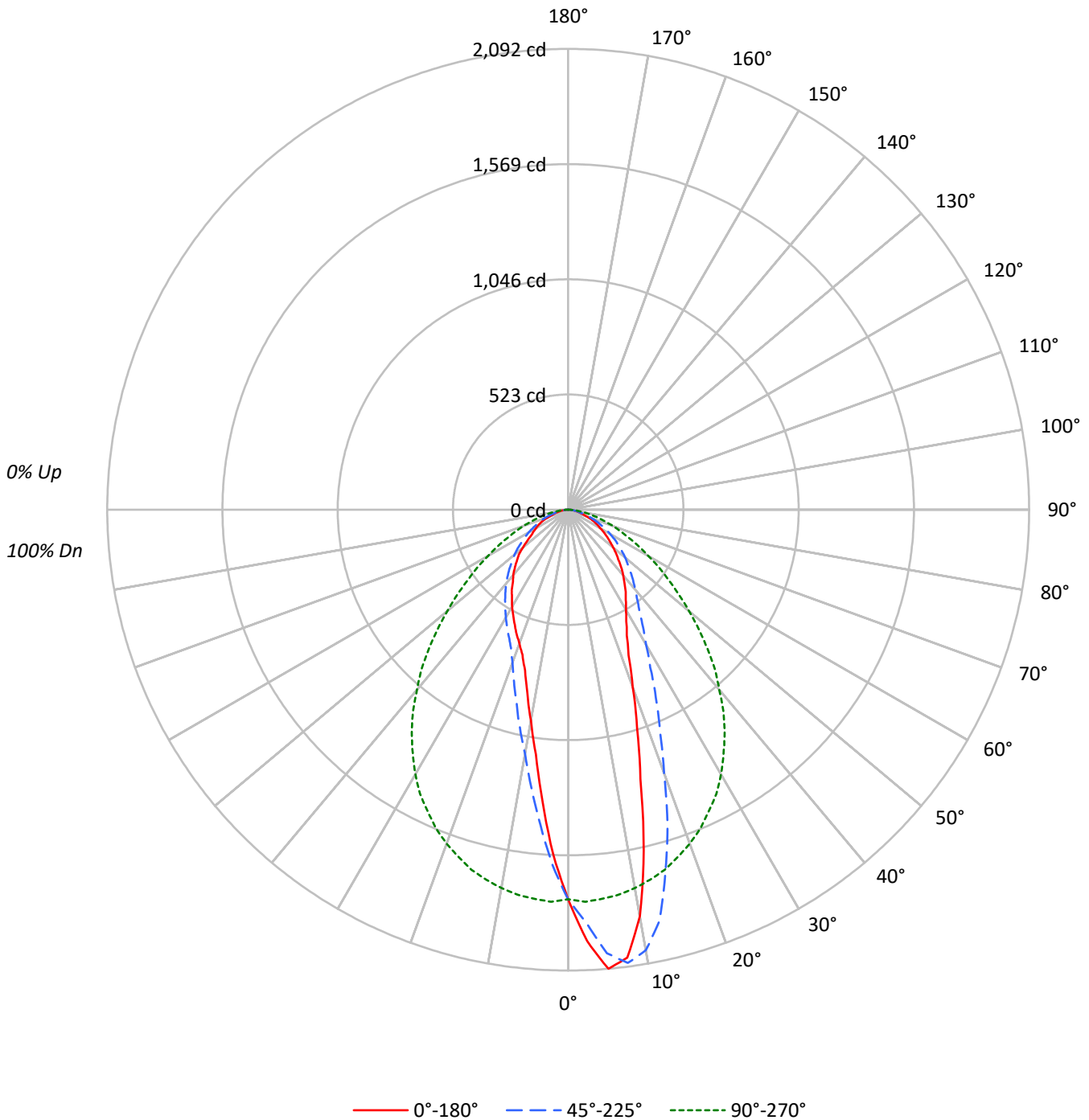
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2343.0 lumens  
Efficiency: N/A  
Efficacy: 126.0 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

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CATALOG NUMBER: S123RDRP-S560D840-X4F0-XX-UDD-G-W

### 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	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°	21309	21309	21309	21309	21309
5°	25302	24443	21444	17392	16094
10°	22925	24841	21337	13769	11914
15°	15784	21275	21111	11307	9426
20°	10981	16318	20688	9475	8285
25°	8368	12522	20071	8463	7635
30°	7284	9846	19299	7869	7072
35°	6687	8287	18207	7338	6559
40°	6101	7437	16777	6889	6090
45°	5511	6808	15236	6400	5622
50°	5001	6321	13416	5953	5042
55°	4525	5804	11667	5439	4325
60°	4053	5278	10136	4981	4089
65°	3741	4693	8724	4425	3866
70°	3040	4009	7613	4009	3142
75°	2668	3240	6448	3343	2770
80°	2415	2720	5280	2817	2616
85°	2212	2309	4009	2502	2406

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 80°  
 Vertical Angle: 45°  
 Luminance: 16076 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	161.2	6.9
10°-20°	372.9	15.9
20°-30°	427.8	18.3
30°-40°	421.4	18.0
40°-50°	371.5	15.9
50°-60°	285.9	12.2
60°-70°	188.0	8.0
70°-80°	91.3	3.9
80°-90°	23.0	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°	962.0	41.1
0°-40°	1383.4	59.0
0°-60°	2040.7	87.1
0°-90°	2343.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2343.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1768	1768	1768	1768	1768	
5°	2092	2021	1773	1438	1331	191
15°	1265	1706	1692	906	756	357
25°	629	942	1510	637	574	297
35°	455	563	1238	499	446	283
45°	323	400	894	376	330	251
55°	215	276	555	259	206	193
65°	131	165	306	155	136	129
75°	57	70	138	72	60	62
85°	16	17	29	18	17	18
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°	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5
2.5°	1960.0	1947.6	1944.0	1939.7	1932.4	1906.3	1876.6	1879.5	1875.9	1853.4	1841.1
5°	2091.9	2093.4	2089.8	2086.9	2074.5	2042.6	2020.9	2007.8	1980.3	1938.2	1925.2
7.5°	2051.3	2074.5	2078.9	2084.0	2090.5	2083.2	2075.3	2070.2	2047.7	2002.0	1981.0
10°	1873.7	1872.2	1898.3	1919.4	1975.9	2015.8	2030.3	2051.3	2070.2	2038.3	2015.1
12.5°	1583.6	1585.8	1671.4	1671.4	1744.6	1846.1	1911.4	1955.6	2036.8	2039.0	2025.2
15°	1265.3	1300.8	1377.0	1392.9	1487.2	1623.5	1705.5	1796.8	1954.2	2003.5	2000.6
17.5°	1039.1	1054.3	1127.5	1148.6	1232.0	1386.4	1499.5	1609.7	1830.2	1933.9	1952.7
20°	856.4	870.1	923.1	939.0	1023.1	1170.3	1272.6	1391.5	1680.1	1838.9	1872.2
22.5°	715.0	741.8	777.3	802.0	849.8	999.9	1087.7	1201.5	1506.1	1732.3	1771.4
25°	629.4	641.7	672.2	683.8	741.8	841.1	941.9	1042.0	1351.6	1598.9	1667.8
27.5°	571.4	575.0	597.5	607.6	642.4	734.5	807.0	899.9	1194.3	1461.8	1542.3
30°	523.5	530.1	547.5	549.6	580.1	645.3	707.7	793.3	1056.5	1329.1	1411.8
32.5°	486.5	490.2	504.7	509.0	528.6	580.1	630.8	693.2	928.9	1190.6	1285.6
35°	454.6	455.4	466.2	472.0	489.4	532.2	563.4	615.6	826.6	1076.1	1159.5
37.5°	418.4	423.5	431.4	436.5	451.7	486.5	514.8	555.4	732.4	967.3	1044.9
40°	387.9	392.3	401.7	403.9	417.7	449.6	472.8	509.0	651.1	862.9	941.9
42.5°	357.5	360.4	369.8	374.2	389.4	414.8	435.8	464.1	586.6	770.1	847.7
45°	323.4	330.7	340.8	343.0	357.5	383.6	399.5	425.6	528.6	689.6	758.5
47.5°	295.1	298.7	307.4	311.1	327.7	351.0	367.6	390.1	478.6	616.3	683.8
50°	266.8	268.3	276.3	281.3	294.4	321.2	337.2	357.5	432.9	556.9	604.0
52.5°	240.0	243.6	251.6	255.2	263.9	291.5	306.0	327.0	389.4	496.0	543.1
55°	215.4	217.5	223.3	227.7	237.8	261.8	276.3	294.4	351.7	440.1	481.5
57.5°	192.2	195.1	199.4	203.0	212.5	233.5	248.0	266.1	316.1	389.4	421.3
60°	168.2	171.9	176.9	178.4	187.1	205.9	219.0	234.9	279.9	342.3	370.5
62.5°	150.8	151.5	155.9	158.1	163.1	178.4	192.2	207.4	247.3	296.6	319.8
65°	131.2	133.4	135.6	137.0	141.4	154.4	164.6	176.2	215.4	258.1	274.1
67.5°	110.9	113.1	116.7	118.2	121.8	130.5	139.2	150.8	183.5	219.7	234.2
70°	86.3	86.3	92.1	95.0	100.8	107.3	113.8	124.0	152.3	183.5	194.3
72.5°	70.3	71.1	71.8	71.8	76.9	87.7	91.4	97.9	120.4	150.1	159.5
75°	57.3	58.0	58.7	59.5	60.2	63.8	69.6	75.4	92.1	113.8	122.5
77.5°	45.7	46.4	47.1	47.1	48.6	50.0	51.5	54.4	66.0	81.9	89.2
80°	34.8	35.5	36.3	36.3	37.0	38.4	39.2	40.6	44.2	55.1	58.7
82.5°	25.4	25.4	25.4	26.1	26.8	26.8	28.3	28.3	30.5	33.4	35.5
85°	16.0	16.0	16.7	16.7	16.7	17.4	16.7	17.4	18.1	18.9	20.3
87.5°	7.3	6.5	7.3	7.3	7.3	8.0	8.0	8.0	8.0	8.7	8.7
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°	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5	1768.5
2.5°	1807.0	1781.6	1738.8	1712.0	1701.8	1670.7	1640.9	1616.3	1603.9	1602.5	1580.0
5°	1842.5	1772.9	1684.4	1610.5	1593.1	1538.7	1468.3	1437.9	1398.0	1382.1	1363.2
7.5°	1871.5	1762.7	1632.2	1520.6	1487.9	1406.0	1316.1	1276.2	1245.7	1197.9	1169.6
10°	1891.8	1743.9	1568.4	1424.1	1377.7	1282.0	1173.2	1125.4	1097.1	1042.0	1019.5
12.5°	1899.8	1720.0	1504.6	1324.1	1283.4	1169.6	1063.0	1013.7	971.6	921.6	899.9
15°	1896.9	1692.4	1439.3	1232.0	1181.2	1065.9	952.8	906.4	867.2	817.2	788.9
17.5°	1877.3	1653.3	1368.3	1142.8	1094.2	975.3	860.7	817.9	783.1	734.5	712.8
20°	1844.7	1613.4	1305.9	1061.6	1006.5	892.6	784.6	738.9	708.4	682.3	666.4
22.5°	1799.7	1566.2	1229.8	981.1	933.2	818.6	715.0	678.0	659.9	638.8	627.2
25°	1731.6	1509.7	1160.9	913.6	865.8	751.9	661.3	636.6	618.5	604.7	592.4
27.5°	1658.3	1455.3	1092.0	845.5	800.5	691.8	619.2	600.4	584.4	567.0	556.2
30°	1573.5	1387.1	1026.8	785.3	741.8	643.2	583.0	565.6	552.5	533.7	522.8
32.5°	1473.4	1312.4	965.8	727.3	686.7	601.1	549.6	530.8	519.9	501.8	490.9
35°	1369.7	1237.8	899.1	673.6	636.6	564.1	517.0	498.9	487.3	469.1	458.3
37.5°	1268.2	1158.0	839.7	626.5	593.1	527.2	482.9	467.7	456.8	438.0	424.9
40°	1160.9	1066.6	781.7	582.3	551.1	494.5	451.7	438.0	423.5	406.8	393.7
42.5°	1048.5	986.2	728.0	543.1	514.1	462.6	420.6	406.1	393.7	374.2	368.4
45°	943.4	894.1	671.5	501.8	478.6	430.7	390.1	375.6	361.8	345.2	339.4
47.5°	849.8	804.1	620.0	465.5	442.3	399.5	359.7	344.4	334.3	321.2	312.5
50°	753.4	715.7	563.4	430.0	408.2	366.2	327.7	317.6	306.0	290.0	283.5
52.5°	663.5	634.5	517.0	395.9	375.6	337.9	298.7	288.6	277.7	263.9	254.5
55°	584.4	555.4	464.1	357.5	342.3	306.7	271.9	258.9	250.2	234.2	222.6
57.5°	503.2	489.4	413.3	325.6	311.1	275.5	244.4	234.2	223.3	205.9	194.3
60°	436.5	420.6	366.2	290.8	277.0	247.3	216.8	206.7	196.5	179.8	174.8
62.5°	373.4	361.8	320.5	258.1	246.5	217.5	190.7	181.3	171.1	160.2	156.6
65°	316.1	306.0	274.8	224.8	215.4	190.0	165.3	155.2	148.6	143.6	139.9
67.5°	262.5	256.7	232.8	193.6	186.4	163.9	142.1	134.1	130.5	124.7	121.8
70°	213.9	216.1	194.3	165.3	157.3	139.2	120.4	113.8	109.5	104.4	98.6
72.5°	174.8	174.0	161.0	134.9	129.1	114.6	100.1	95.7	90.6	80.5	74.0
75°	135.6	138.5	126.2	111.7	105.9	91.4	77.6	71.8	66.7	63.1	60.9
77.5°	103.7	105.1	99.3	85.6	80.5	68.2	57.3	54.4	52.2	50.0	49.3
80°	74.0	76.1	70.3	61.6	57.3	47.1	41.3	40.6	39.9	38.4	37.7
82.5°	47.9	50.8	47.9	38.4	36.3	31.2	29.7	29.7	29.0	28.3	27.6
85°	26.1	29.0	27.6	22.5	21.0	19.6	18.9	18.1	18.1	18.1	18.1
87.5°	10.2	13.8	11.6	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
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°	1768.5	1768.5	1768.5
2.5°	1574.9	1567.7	1564.8
5°	1358.1	1335.7	1330.6
7.5°	1160.9	1151.5	1120.3
10°	1015.9	986.9	973.8
12.5°	885.4	858.5	854.2
15°	780.9	762.1	755.6
17.5°	712.1	699.0	691.0
20°	661.3	651.9	646.1
22.5°	622.9	615.6	611.3
25°	588.8	577.9	574.3
27.5°	554.0	544.6	540.9
30°	521.4	513.4	508.3
32.5°	487.3	477.8	474.9
35°	454.6	448.8	445.9
37.5°	422.7	415.5	411.1
40°	393.0	389.4	387.2
42.5°	366.2	359.7	358.9
45°	337.9	331.4	329.9
47.5°	311.1	305.3	304.5
50°	282.8	274.8	269.0
52.5°	248.7	241.5	236.4
55°	218.3	210.3	205.9
57.5°	192.9	189.3	187.1
60°	173.3	171.1	169.7
62.5°	155.9	153.7	153.7
65°	139.9	137.8	135.6
67.5°	120.4	116.0	115.3
70°	96.4	89.9	89.2
72.5°	73.2	72.5	71.1
75°	60.9	59.5	59.5
77.5°	49.3	47.9	47.9
80°	37.7	37.0	37.7
82.5°	27.6	27.6	26.8
85°	18.1	17.4	17.4
87.5°	8.7	8.7	8.7
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	15.33	16.78	15.69	17.10	17.41	20.42	21.88	20.79	22.19	22.51
	3H	16.66	17.96	17.04	18.29	18.66	21.70	23.00	22.08	23.33	23.69
	4H	17.06	18.28	17.46	18.63	19.01	22.14	23.36	22.55	23.71	24.09
	6H	17.37	18.49	17.78	18.86	19.25	22.44	23.56	22.85	23.93	24.33
	8H	17.47	18.54	17.89	18.93	19.33	22.52	23.59	22.94	23.98	24.38
	12H	17.54	18.56	17.97	18.94	19.37	22.56	23.58	22.99	23.96	24.39
4H	2H	16.18	17.40	16.58	17.75	18.13	20.46	21.68	20.86	22.03	22.41
	3H	17.65	18.66	18.06	19.06	19.46	21.95	22.96	22.36	23.36	23.76
	4H	18.11	19.02	18.55	19.44	19.88	22.51	23.41	22.94	23.83	24.27
	6H	18.50	19.29	18.96	19.73	20.20	22.95	23.73	23.41	24.18	24.64
	8H	18.63	19.37	19.10	19.81	20.28	23.07	23.80	23.53	24.25	24.72
	12H	18.73	19.39	19.21	19.87	20.34	23.14	23.80	23.63	24.28	24.75
8H	4H	18.50	19.24	18.97	19.68	20.15	22.51	23.25	22.98	23.69	24.16
	6H	18.97	19.58	19.47	20.07	20.55	23.00	23.61	23.50	24.10	24.58
	8H	19.16	19.70	19.67	20.21	20.70	23.16	23.71	23.68	24.22	24.71
	12H	19.32	19.79	19.83	20.29	20.85	23.29	23.77	23.81	24.27	24.83
12H	4H	18.55	19.20	19.03	19.68	20.16	22.49	23.15	22.97	23.62	24.10
	6H	19.04	19.58	19.55	20.09	20.58	22.98	23.52	23.49	24.03	24.52
	8H	19.27	19.75	19.78	20.24	20.81	23.17	23.65	23.68	24.14	24.71