



## Photometric Test Report

### Relevant Standards

- IES LM-79-2008
- ANSI C82.77-2002
- UL1598-2008/ UL1993-2012

### Prepared For

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### Catalog Number

SCLH200-UM-30-DD

### Project Number

4788086873

### Report Number

4788086873-12

### Test Date

2017-09-12~ 2017-09-15

### Issue Date

2017-10-10

Prepared By

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Approved By

Duff Yang

The results contained in this report pertain only to the tested sample.

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## 1.0 Test Summary

DLC Technical Requirements v4.2

Requirement Category	Test Method	Requirements	Test value	Results (Fail/Pass)
Minimum Light Output (lm)	IES LM-79-2008	10000	28971.00	Pass
Minimum Lamp Output (lm)	IES LM-79-2008	N/A	N/A	N/A
Spacing Criteria (0-180°)	IES LM-79-2008	N/A	N/A	N/A
Spacing Criteria (90-270°)	IES LM-79-2008	N/A	N/A	N/A
Zonal Lumen Requirement (20°-50°)	IES LM-79-2008	≥30%	50.7%	Pass
Zonal Lumen Requirement 2	IES LM-79-2008	N/A	N/A	N/A
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	130	143.20	Pass
Minimum Lamp Efficacy (lm/ft)	IES LM-79-2008	N/A	N/A	N/A
Allowable CCTs* (K)	IES LM-79-2008	≤5700	5312	Pass
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	≥70	84.13	Pass
L70 Lumen maintenance (hours)	IES LM-80-2015 IES TM-21-2011	≥50000	≥50000	Pass
L90 Lumen maintenance (hours)	IES LM-80-2015 IES TM-21-2011	≥36000	≥36000	Pass
Power Factor	ANSI C82.77-2002	≥0.9	0.9966	Pass
Total Harmonic Distortion (A%)	ANSI C82.77-2002	≤20%	8.2%	Pass
In-Situ Temperature Measurement Test for LED (°C)	UL1598-2008/ UL1993-2012	N/A	N/A	N/A
In-Situ Temperature Measurement Test for Driver (°C)	UL1598-2008/ UL1993-2012	N/A	N/A	N/A
Minimum Luminaire Warranty (years)	N/A	5	5	Pass

\*Defined by ANSI C78.377-2011‡

SCLH200-UM-30-DD

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## 2.0 Test List

Test Item	Test	Test Date	Model Number	Tests Conducted By
1	Integrating Sphere Test for the Lower CCT	2017-09-15	SCLH200-UM-30-DD	Wu Elvis
2	Goniophotometer Test	2017-09-12	SCLH200-UM-30-DD	Wu Elvis
3	THD and PF Test	2017-09-15	SCLH200-UM-30-DD	Wu Elvis

### Remark (if any)

1. UL test equipment information is recorded on Meter Use in UL's Aurora database.



### 3.0 Production Description

**Luminaire Description:** High-Bay Luminaires

**Model Number:** SCLH200-UM-30-DD

**Rated Voltage:** 120~277V

**Frequency:** 50/60 Hz

**LED Package:** SPMWHT541M

**Family Model and Variation:** SCLH200-UM-30-YD SCLH200-UM-30-DD SCLH200-UM-30-ND

#### Photos of Luminaire Characteristics





#### 4.0 LM-79 Measurement and Test Results

Model No.	SCLH200-UM-30-DD	Sample ID.	1149510-3
Operate time (Min.)	90	Stabilization time (Min.)	45

#### Test Method

1. The sample was tested according to the IES LM-79-2008.

2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C. The reference standard lamp is rated current 2.6A omnidirectional Incandescent lamp and was calibrated by china seprei laboratory.

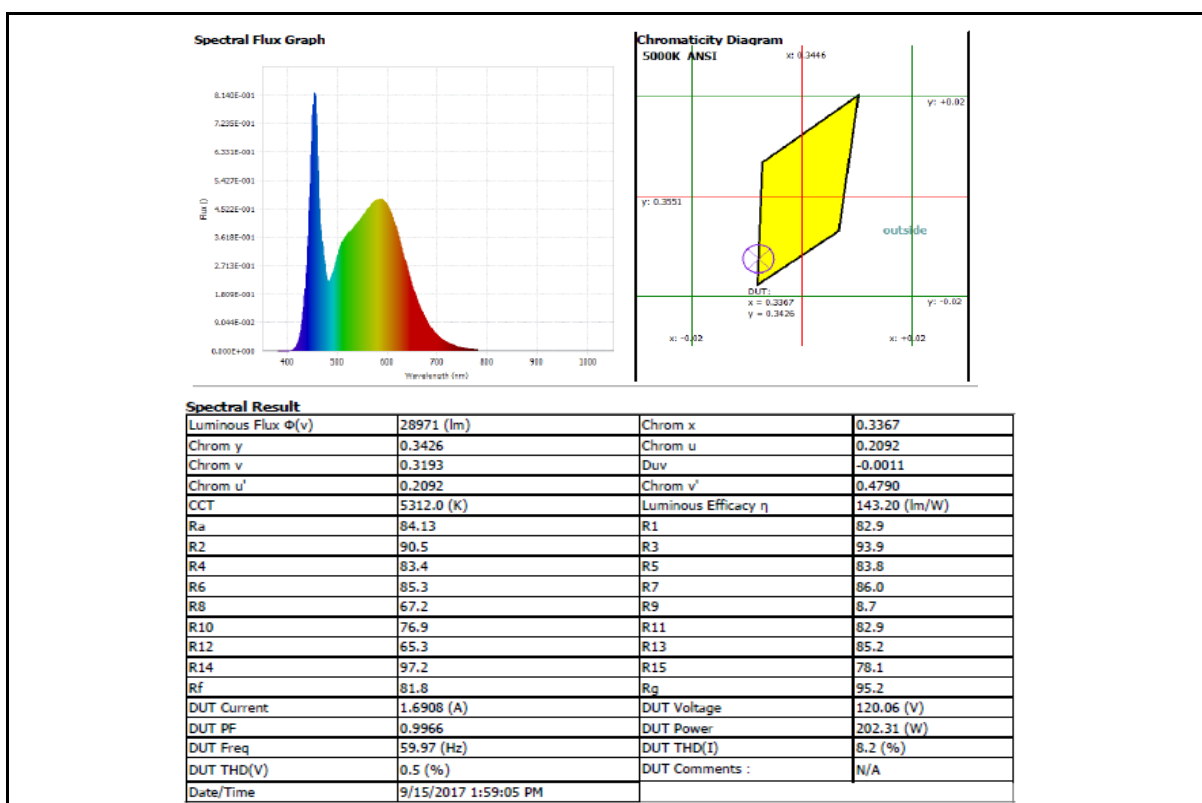
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

#### Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.2	120.06	60	1.6908	202.31	0.9966	Horizontal

#### Test Results

CCT (K)	CRI (Ra)	Duv	Luminous Flux (lm)	Luminous Efficacy (lm/W)
5312	84.13	-0.0011	28971	143.20





### 5.0 LM-79 Measurement and Test Results

<b>Model No.</b>	SCLH200-UM-30-DD	<b>Sample ID.</b>	1149510-3
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	45

#### Test Method

1.The sample was tested according to the IES LM-79-2008.  
 2.Photometric paramters were measured using a type C goniophotometer and software.  
 3.The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample.The reference standard lamp is rated current 3.865A omni-directional Incandescent lamp and was calibrated by china seprei laboratory.  
 4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 0.5° vertical intervals and 22.5° horizontal intervals..Photometric distance was more than five times of the largest dimension of the test SSL product.

#### Goniophotometer Test Conditions

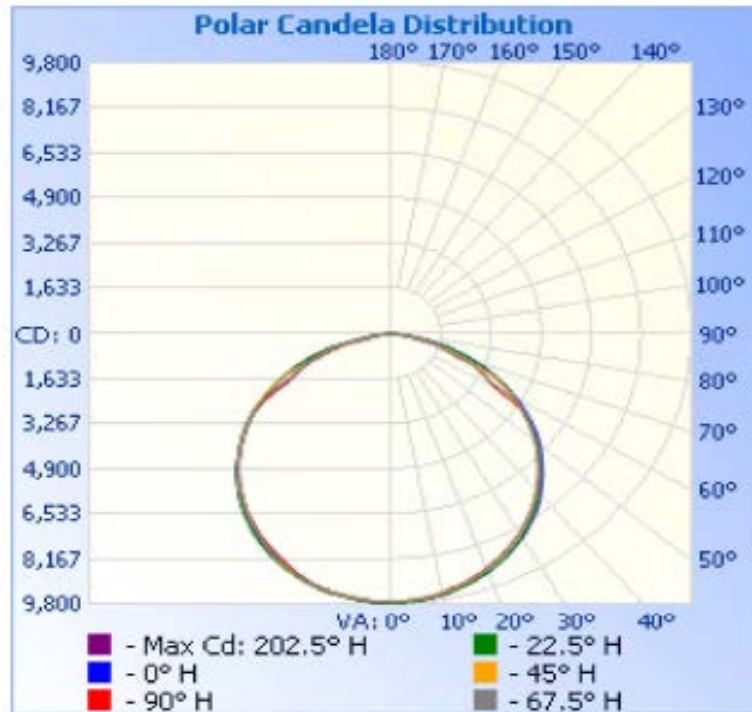
Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.8	120.02	60	1.6943	202.83	0.9975	Horizontal

#### Test Result

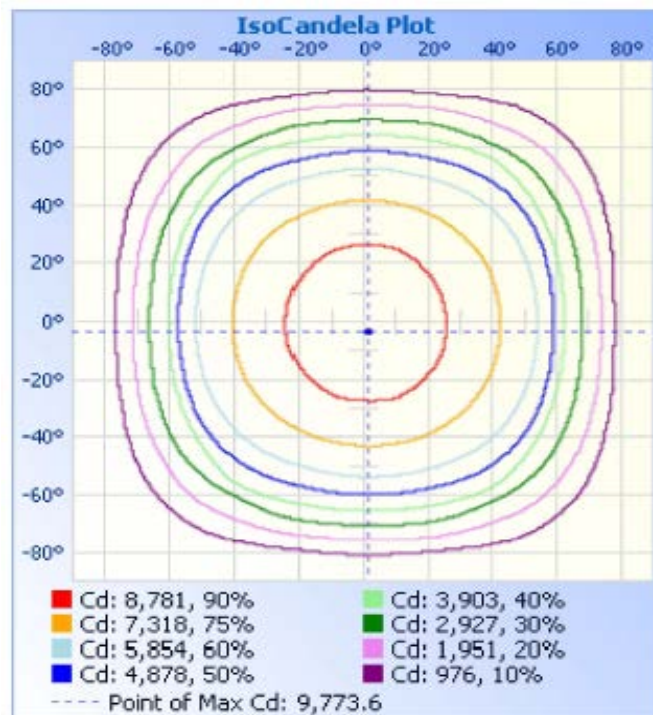
Flux (lm)	Zonal Lumen Requirement (20°-50°)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)
		Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
28656.70	> 30%	154.7	160.8	116.2	118.7	141.28



5.2 Goniophotometer Test (Cont'd)  
Light Distribution Curve



IsoCandela Plot





## 5.2 Goniophotometer Test (Cont'd)

### Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	7,666.6	26.8%
0-40	12,684.7	44.3%
0-60	22,942.2	80.1%
60-90	5,714.6	19.9%
70-100	2,146.4	7.5%
90-120	0	0%
0-90	28,656.7	100%
90-180	0	0%
0-180	28,656.7	100%

### Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	232.6	0.8%	90-95	0	0%
5-10	691.1	2.4%	95-100	0	0%
10-15	1,129.2	3.9%	100-105	0	0%
15-20	1,533.1	5.4%	105-110	0	0%
20-25	1,889.7	6.6%	110-115	0	0%
25-30	2,190.9	7.6%	115-120	0	0%
30-35	2,427.8	8.5%	120-125	0	0%
35-40	2,590.3	9.0%	125-130	0	0%
40-45	2,671.0	9.3%	130-135	0	0%
45-50	2,663.0	9.3%	135-140	0	0%
50-55	2,563.7	8.9%	140-145	0	0%
55-60	2,359.7	8.2%	145-150	0	0%
60-65	1,988.3	6.9%	150-155	0	0%
65-70	1,579.9	5.5%	155-160	0	0%
70-75	1,139.8	4.0%	160-165	0	0%
75-80	668.6	2.3%	165-170	0	0%
80-85	286.3	1.0%	170-175	0	0%
85-90	51.7	0.2%	175-180	0	0%





5.2 Goniophotometer Test (Cont'd)  
Intensity Data(cd)

Candela Table - Type C																	
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	9734	9766	9725	9735	9726	9757	9730	9752	9734	9766	9725	9735	9726	9757	9730	9752	9734
1	9745	9770	9707	9745	9732	9752	9734	9753	9736	9774	9715	9734	9744	9758	9748	9747	9745
2	9726	9772	9715	9718	9707	9760	9741	9738	9732	9751	9718	9733	9721	9755	9746	9740	9726
3	9726	9749	9707	9715	9704	9751	9733	9734	9741	9757	9716	9741	9738	9741	9729	9746	9726
4	9726	9751	9700	9702	9700	9725	9724	9727	9720	9762	9711	9726	9726	9742	9704	9726	9726
5	9701	9741	9668	9685	9676	9710	9708	9720	9698	9737	9686	9713	9720	9736	9718	9720	9701
6	9695	9717	9657	9684	9660	9690	9689	9703	9686	9730	9695	9715	9694	9723	9697	9713	9695
7	9679	9702	9636	9647	9625	9682	9665	9695	9672	9715	9671	9676	9690	9700	9695	9682	9679
8	9652	9683	9637	9628	9605	9659	9659	9672	9648	9683	9642	9691	9677	9684	9658	9668	9652
9	9628	9650	9600	9603	9586	9635	9626	9656	9626	9666	9637	9645	9654	9656	9656	9628	9628
10	9616	9621	9575	9578	9543	9610	9605	9628	9603	9653	9620	9634	9629	9631	9623	9599	9616
11	9593	9595	9540	9538	9503	9562	9559	9594	9577	9626	9569	9608	9591	9603	9609	9585	9593
12	9544	9549	9492	9510	9448	9512	9525	9567	9536	9604	9553	9574	9561	9572	9578	9555	9544
13	9502	9523	9467	9468	9430	9486	9478	9523	9514	9565	9526	9540	9519	9547	9532	9524	9502
14	9469	9485	9418	9407	9373	9424	9459	9498	9466	9542	9484	9497	9482	9508	9497	9496	9469
15	9443	9446	9360	9353	9336	9394	9406	9458	9452	9490	9459	9448	9436	9451	9446	9452	9443
16	9392	9403	9332	9320	9290	9347	9367	9413	9402	9447	9411	9412	9377	9408	9425	9419	9392
17	9343	9358	9282	9268	9227	9304	9325	9361	9356	9411	9383	9365	9321	9343	9360	9374	9343
18	9306	9315	9234	9216	9173	9237	9280	9318	9318	9364	9322	9297	9252	9282	9320	9330	9306
19	9254	9275	9178	9156	9125	9170	9196	9270	9279	9322	9267	9248	9211	9217	9260	9279	9254
20	9204	9216	9113	9095	9062	9119	9154	9217	9208	9260	9224	9188	9114	9165	9194	9224	9204
21	9154	9158	9051	9022	9003	9051	9088	9162	9168	9208	9168	9107	9058	9097	9120	9176	9154
22	9092	9088	8993	8967	8931	8976	9031	9108	9104	9156	9092	9048	8987	9039	9077	9119	9092
23	9025	9032	8928	8884	8887	8915	8947	9034	9051	9093	9030	8977	8904	8952	9001	9051	9025
24	8972	8944	8868	8828	8821	8844	8879	8983	8985	9031	8966	8920	8846	8878	8925	8984	8972
25	8919	8889	8796	8751	8728	8762	8812	8908	8921	8976	8871	8878	8777	8826	8842	8925	8919
26	8844	8816	8712	8690	8660	8695	8747	8843	8857	8902	8801	8770	8703	8747	8749	8860	8844
27	8765	8759	8639	8611	8586	8605	8660	8776	8779	8838	8734	8717	8638	8683	8674	8785	8765
28	8682	8680	8557	8531	8531	8541	8566	8712	8705	8752	8639	8628	8580	8604	8598	8712	8682
29	8612	8592	8477	8432	8452	8453	8493	8629	8643	8693	8567	8550	8490	8514	8519	8635	8612
30	8554	8509	8385	8360	8374	8378	8397	8540	8541	8604	8462	8462	8436	8451	8413	8557	8554
31	8464	8411	8309	8277	8285	8300	8320	8458	8480	8516	8397	8406	8363	8364	8350	8462	8464
32	8375	8336	8223	8200	8191	8197	8244	8365	8371	8441	8302	8315	8258	8280	8248	8380	8375
33	8265	8243	8124	8110	8114	8110	8139	8269	8302	8342	8222	8238	8184	8204	8176	8278	8265
34	8200	8140	8025	8013	8019	8039	8044	8196	8198	8255	8142	8143	8094	8123	8072	8173	8200
35	8106	8053	7933	7913	7915	7927	7924	8082	8135	8154	8038	8050	8005	8022	7979	8089	8106
36	8003	7958	7836	7810	7820	7840	7858	7990	8028	8061	7951	7958	7926	7930	7879	7974	8003
37	7910	7840	7731	7721	7721	7744	7739	7864	7925	7957	7858	7855	7830	7832	7789	7865	7910
38	7799	7717	7634	7595	7609	7633	7653	7777	7820	7844	7754	7767	7723	7734	7683	7750	7799
39	7694	7619	7515	7496	7508	7534	7536	7677	7720	7744	7649	7664	7627	7615	7588	7648	7694
40	7573	7492	7418	7390	7399	7397	7424	7552	7615	7636	7536	7558	7532	7524	7484	7527	7573
41	7454	7375	7305	7299	7274	7311	7317	7440	7489	7510	7445	7462	7430	7424	7374	7410	7454
42	7340	7253	7201	7178	7153	7194	7201	7295	7367	7404	7336	7349	7327	7324	7255	7298	7340
43	7224	7119	7066	7065	7062	7081	7095	7199	7254	7271	7220	7236	7220	7192	7152	7159	7224
44	7103	7018	6951	6925	6930	6957	6973	7051	7154	7151	7107	7115	7111	7073	7018	7055	7103
45	6974	6896	6833	6800	6826	6834	6846	6923	7033	7042	6974	7003	6993	6974	6884	6905	6974
46	6850	6751	6721	6689	6666	6710	6713	6783	6910	6887	6874	6874	6860	6838	6767	6784	6850
47	6726	6626	6580	6546	6552	6572	6585	6655	6758	6752	6758	6744	6743	6726	6655	6654	6726
48	6582	6496	6434	6414	6429	6434	6438	6529	6618	6623	6609	6632	6607	6582	6524	6511	6582
49	6458	6355	6304	6288	6300	6298	6320	6378	6505	6492	6482	6501	6472	6451	6399	6363	6458
50	6329	6212	6168	6150	6177	6150	6185	6238	6358	6338	6349	6377	6356	6335	6237	6230	6329
51	6177	6068	6012	6002	6024	6018	6018	6096	6212	6200	6211	6244	6215	6179	6120	6083	6177
52	6055	5912	5862	5851	5890	5880	5883	5953	6061	6048	6084	6106	6086	6041	5984	5946	6055
53	5895	5762	5734	5705	5737	5743	5741	5781	5921	5900	5943	5966	5946	5903	5845	5804	5895
54	5736	5613	5564	5553	5582	5566	5593	5633	5765	5759	5780	5796	5816	5762	5695	5640	5736



55	5572	5456	5421	5404	5454	5426	5443	5490	5614	5596	5631	5663	5688	5610	5561	5495	5572
56	5408	5283	5263	5257	5274	5279	5290	5336	5455	5439	5492	5526	5520	5470	5412	5345	5408
57	5258	5129	5113	5096	5114	5108	5123	5154	5306	5286	5321	5362	5311	5306	5240	5188	5258
58	5087	4961	4946	4932	4958	4948	4978	5020	5141	5114	5178	5207	5048	5146	5099	5038	5087
59	4918	4805	4781	4780	4261	4786	4821	4846	4982	4965	5009	4990	4791	4950	4925	4877	4918
60	4742	4626	4618	4448	3937	4399	4661	4684	4799	4783	4858	4727	4489	4681	4760	4710	4742
61	4567	4461	4458	3956	3772	3922	4498	4510	4643	4621	4681	4482	4095	4430	4618	4531	4567
62	4383	4284	4291	3620	3638	3643	4307	4323	4451	4448	4521	4159	3790	4101	4429	4354	4383
63	4230	4114	4105	3446	3494	3494	4141	4159	4271	4280	4338	3785	3617	3739	4276	4202	4230
64	4032	3939	3921	3293	3358	3362	3970	3987	4102	4090	4163	3506	3496	3458	4096	4025	4032
65	3867	3763	3737	3148	3227	3229	3766	3810	3918	3930	3962	3351	3376	3299	3884	3851	3867
66	3681	3583	3478	3013	3091	3094	3403	3625	3737	3745	3691	3228	3245	3170	3632	3677	3681
67	3491	3392	3030	2886	2945	2958	2966	3440	3549	3565	3418	3106	3089	3031	3383	3501	3491
68	3300	3214	2709	2747	2589	2810	2742	3258	3360	3386	3085	2975	2866	2897	3055	3326	3300
69	3111	3031	2544	2569	2227	2590	2610	3072	3172	3196	2751	2784	2652	2718	2694	3141	3111
70	2921	2845	2391	2140	2136	2146	2468	2883	2981	3014	2546	2556	2426	2522	2486	2955	2921
71	2730	2663	2245	1959	2049	2003	2332	2701	2789	2829	2417	2321	2221	2302	2351	2774	2730
72	2542	2470	2105	1875	1963	1917	2195	2512	2599	2641	2287	2093	2121	2068	2217	2593	2542
73	2348	2286	1952	1788	1838	1826	2044	2325	2405	2451	2146	1952	2036	1940	2077	2412	2348
74	2143	2095	1717	1677	1658	1713	1705	2140	2209	2258	1942	1872	1946	1852	1896	2221	2143
75	1956	1905	1430	1511	1426	1539	1486	1951	2011	2070	1716	1774	1836	1764	1705	2037	1956
76	1759	1697	1329	1295	1105	1322	1385	1677	1820	1847	1494	1677	1569	1657	1482	1814	1759
77	1575	1369	1228	988	898	1018	1286	1353	1627	1580	1373	1457	1136	1417	1362	1559	1575
78	1388	1152	1109	792	816	812	1158	1198	1439	1280	1273	1032	885	1004	1268	1254	1388
79	1205	998	935	715	754	732	978	1062	1258	1104	1169	748	758	745	1172	1079	1205
80	1029	865	669	650	688	668	714	930	1076	973	992	665	704	667	964	940	1029
81	860	701	517	589	630	605	536	705	902	829	644	607	645	610	602	796	860
82	699	527	455	536	556	547	468	580	740	634	461	555	594	558	472	630	699
83	548	440	396	439	426	441	404	494	590	527	405	507	542	506	417	520	548
84	413	322	348	314	243	317	350	370	451	444	353	462	497	462	366	438	413
85	291	190	250	102	84	113	257	215	328	291	310	376	322	380	318	257	291
86	190	146	86	73	77	74	123	160	222	155	262	140	88	121	268	164	190
87	109	98	56	70	76	72	59	116	134	113	93	68	72	68	69	128	109
88	46	33	54	69	77	72	56	49	64	81	55	65	70	66	53	82	46
89	11	31	51	67	73	70	54	33	18	31	51	63	70	64	51	33	11
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



## 6.0 THD and PF Test

### Test Method

1. The samples were tested according to the ANSI C82.77-2002.
2. The ambient temperature condition was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

### Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD
25.2	277.04	60	0.74620	199.01	0.9626	15.70%



\*\*\*\*\* END OF REPORT. THIS PAGE INTENTIONALLY LEFT BLANK \*\*\*\*\*