

LED TEST SYSTEM PLED-6000



PLED6000 Features:

- ❖ **128** bin-sorting is based on the results of the electrical or colorimetric characteristics.
- ❖ For colorimetric characteristics, PLED6000 can measure: λ_p · λ_D · **.x · y · z · Purity · FWHM · CCT · IV · luminous flux (Sphere required), CRI, etc.**
- ❖ Polarity can be switched automatically or you can assign the polarity you want.
- ❖ Polarity check is available to figure out the Zener direction which packaged in LED for protection.

There are two operating modes in the electrical testing:

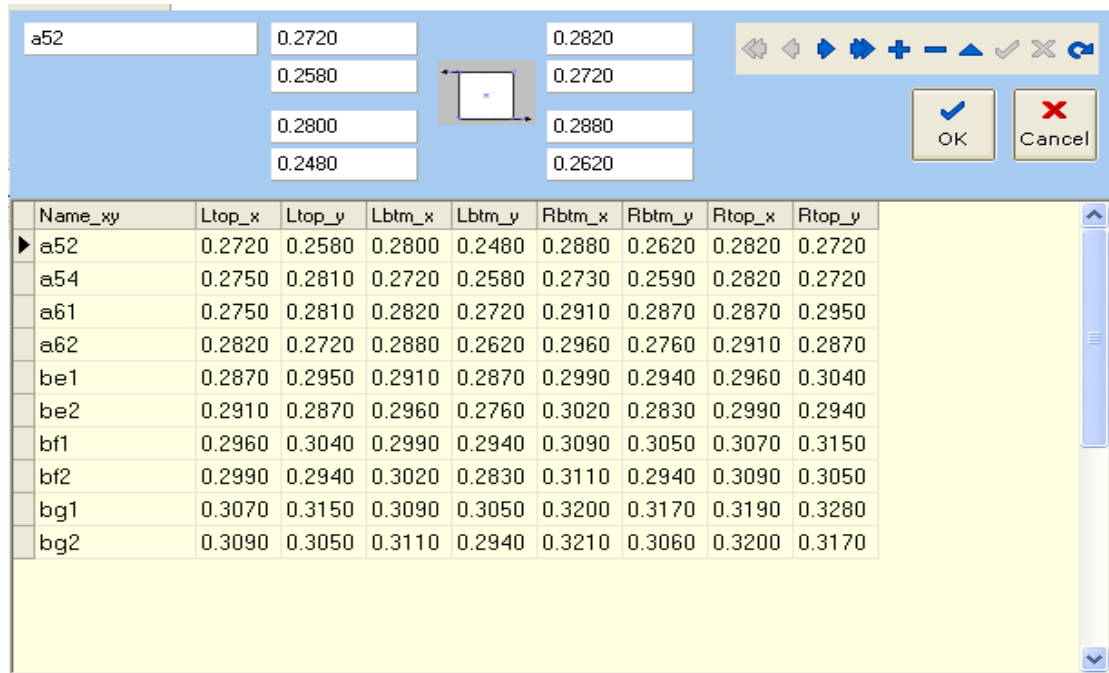
- Programmable testing mode: The maximum number of the testing sequences is **24**. Users can arrange their testing sequences in the order they choose. The tested items include VF, IF, VBR, IR, VFD, DVR and DIR, etc.
 - Regular programmable mode: It is mainly used for fast production. The tested items include six VF measurements (three VFD measurements), one VR, two IR, and two DVR.
 - Multiple language user interface
- ❖ Multiple languages in operating interface. Currently, we employ **Traditional Chinese** and **English** operation interface for users.

Automatically binning settings

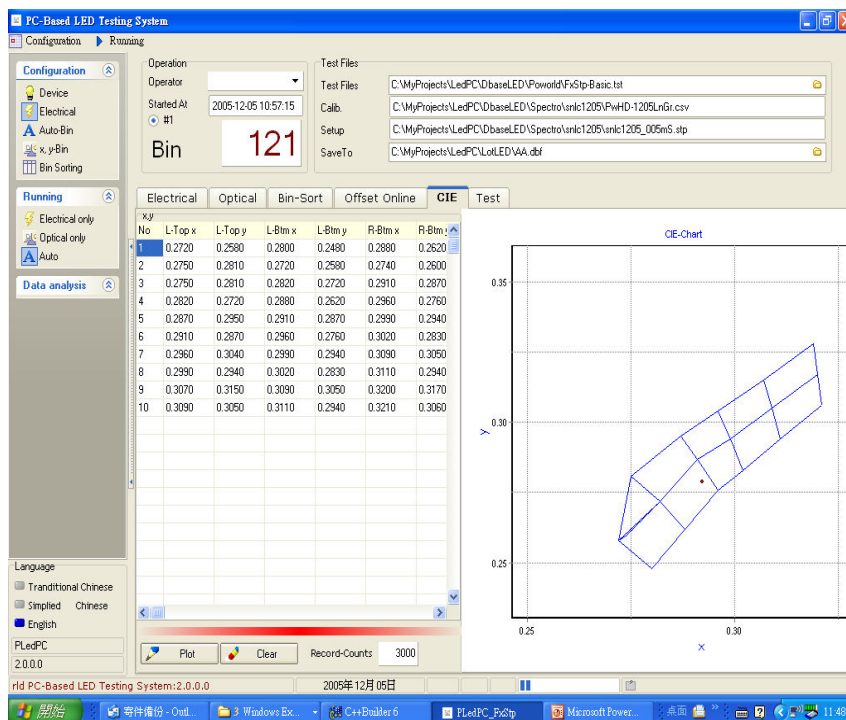
The screenshot shows the 'Auto-Bin' configuration window. On the left, a tree structure lists various testing parameters and their values. A callout box highlights this structure with the text: "Tree structure helps users to understand". The central panel shows 'IV(mcd)' selected as the primary parameter, with a value of 500.0000 and a bin width of 150.0000. The 'Bin' field is set to 5. On the right, a table displays the resulting bin ranges for 'IV(mcd)'. At the bottom, a 'Bin' configuration dialog is visible, showing 'xy' with 4 bins, 'VF(V)' with 4 bins, and 'IV(mcd)' with 5 bins, resulting in a total of 80 bins.

No	L-Top x	L-Top y	L-Btm x	L-Btm y	R-Btm x	R-Btm y	R-Top x	R-Top y
1	0.3000	0.3300	0.3050	0.3100	0.3150	0.3200	0.3100	0.3400
2	0.3050	0.3100	0.3110	0.2870	0.3200	0.2980	0.3150	0.3200
3	0.3150	0.3200	0.3200	0.3000	0.3300	0.3100	0.3250	0.3300
4	0.3100	0.3400	0.3150	0.3200	0.3250	0.3300	0.3200	0.3500

- * Adopt the tree structure chart shows the three-layer structure bins, which allow easy operation on settings.

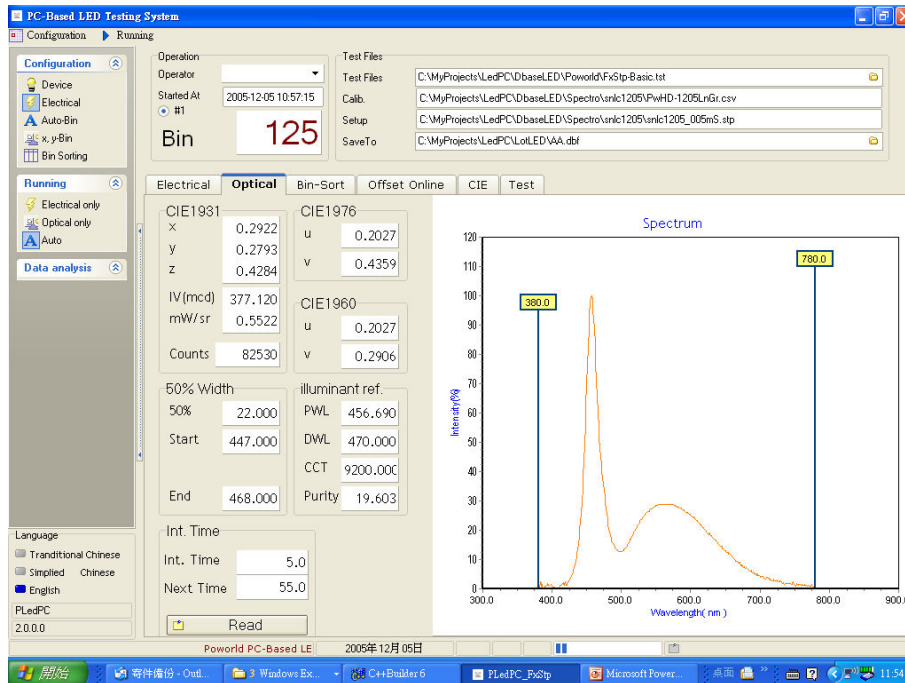


LED x,y reading with dynamic placement analysis.



* Allows users to set (x,y) coordinates of color block for analysis.

LED instant spectrogram and optics tested data display



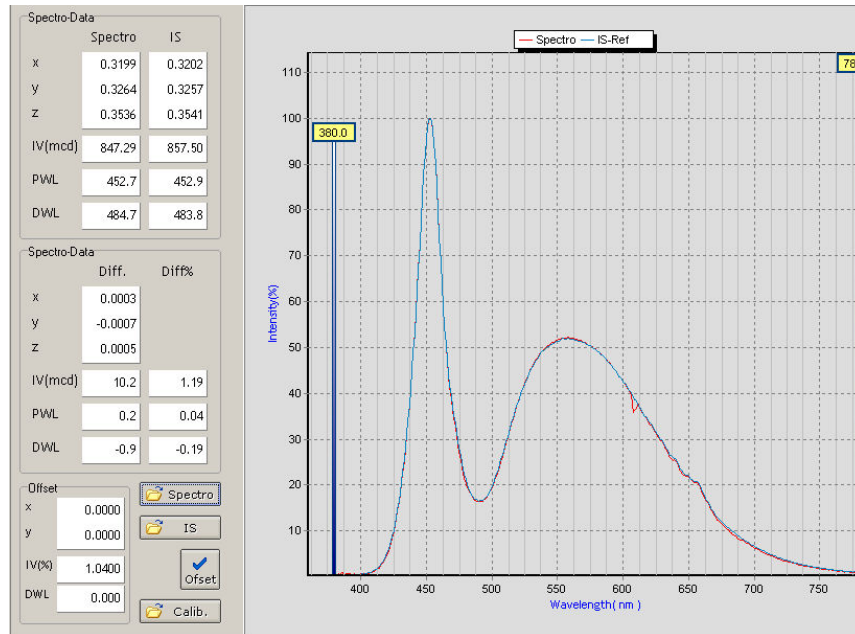
- * Allows users to clearly see each of these LEDs during testing at the instant optical information, and to be with each of the test results back to the computer-database for the benefit of users do further analysis.

LED color temperature and comparison table

No	x	y	IS-CCT	PLED-CCT	Diff
1	0.2979	0.2899	8197.00	8209.00	-12.00
2	0.2876	0.2660	10670.00	10680.00	-10.00
3	0.3008	0.2838	8122.00	8120.00	2.00
4	0.3017	0.2931	7770.00	7774.00	-4.00
5	0.2947	0.2835	8736.00	8730.00	6.00
6	0.2917	0.2691	9843.00	9850.00	-7.00
7	0.3129	0.3221	6548.00	6554.00	-6.00
8	0.2978	0.2969	7994.00	8005.00	-11.00
9	0.3255	0.3288	5837.00	5840.00	-3.00
10	0.3322	0.3432	5510.00	5514.00	-4.00
11	0.2798	0.2582	12980.00	13020.00	-40.00
12	0.3199	0.3132	6208.00	6204.00	4.00
13	0.3153	0.3088	6523.00	6522.00	1.00
14	0.3186	0.3181	6248.00	6257.00	-9.00
15	0.3231	0.3294	5957.00	5960.00	-3.00

- * PLED6000 color temperature calculation and comparison with IS tester.
 Note: The same group of x,y value, calculates every color temperature value through IS CAS140B and PLED6000 separately.

LED spectrum comparison



✂ Each PLED6000 would be verified with our IS-CAS140B, such as: each spectrometry range, (x,y) chromaticity coordinates, light intensity and the correlation of various optical testing, so as to ensure that each tester maintains a perfect accuracy before shipment.

Multiple reports for analysis

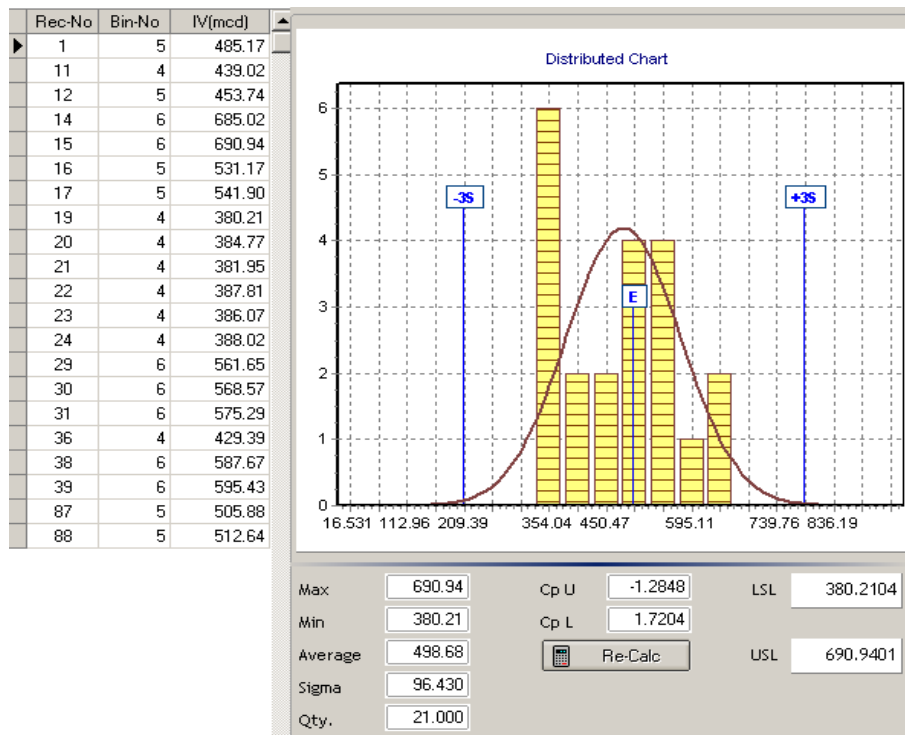
Rec-No	Bin-No	Polarity	P-Diode[uA]	VF[V]	LED ON	xVal	yVal	PWL[nm]	DV
1	5	0.0000	0.2133	3.4321	0.0000	0.2955	0.2731	452.29	
2	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
3	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
4	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
5	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
6	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
7	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
8	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
9	18	0.0000	0.0004	3.3634	0.0000	0.3143	0.2791	381.84	
10	18	0.0000	0.0003	3.3592	0.0000	0.3565	0.2826	450.30	
11	4	0.0000	0.1916	3.3616	0.0000	0.2939	0.2749	454.28	
12	5	0.0000	0.1985	3.3613	0.0000	0.2953	0.2771	454.28	
13	18	0.0000	0.0004	3.4510	0.0000	0.3094	0.2567	412.56	
14	6	0.0000	0.3083	3.4501	0.0000	0.2930	0.2745	451.30	
15	6	0.0000	0.3111	3.4446	0.0000	0.2923	0.2734	451.30	
16	5	0.0000	0.2351	3.4053	0.0000	0.2910	0.2700	452.29	
17	5	0.0000	0.2402	3.4053	0.0000	0.2919	0.2713	452.29	
18	18	0.0000	0.0003	3.1773	0.0000	0.3339	0.3100	759.31	
19	4	0.0000	0.1643	3.1767	0.0000	0.2846	0.2620	453.29	
20	4	0.0000	0.1664	3.1733	0.0000	0.2847	0.2625	453.29	
21	4	0.0000	0.1651	3.1761	0.0000	0.2844	0.2617	453.29	
22	4	0.0000	0.1678	3.1755	0.0000	0.2841	0.2613	453.29	
23	4	0.0000	0.1670	3.1730	0.0000	0.2834	0.2606	453.29	
24	4	0.0000	0.1679	3.1755	0.0000	0.2835	0.2607	453.29	
25	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	

※ Raw Data reading :

You can specify a specific tested item export, the exported format in A4 statements or Excel CSV two kinds of file formats.

Box	Counts	%	Box	Counts	%	Box	Counts	%	Box	Counts	%
0	----		32	----		64	----		96	----	
1	----		33	----		65	----		97	----	
2	----		34	----		66	----		98	----	
3	----		35	----		67	----		99	----	
4	8	5.16	36	----		68	----		100	----	
5	6	3.87	37	----		69	----		101	----	
6	7	4.52	38	----		70	----		102	----	
7	----		39	----		71	----		103	----	
8	----		40	----		72	----		104	----	
9	----		41	----		73	----		105	----	
10	----		42	----		74	----		106	----	
11	----		43	----		75	----		107	----	
12	----		44	----		76	----		108	----	
13	----		45	----		77	----		109	----	
14	----		46	----		78	----		110	----	
15	124	80.00	47	----		79	----		111	----	
16	----		48	----		80	----		112	----	
17	----		49	----		81	----		113	----	
18	10	6.45	50	----		82	----		114	----	
19	----		51	----		83	----		115	----	
20	----		52	----		84	----		116	----	
21	----		53	----		85	----		117	----	
22	----		54	----		86	----		118	----	
23	----		55	----		87	----		119	----	
24	----		56	----		88	----		120	----	
25	----		57	----		89	----		121	----	
26	----		58	----		90	----		122	----	
27	----		59	----		91	----		123	----	
28	----		60	----		92	----		124	----	
29	----		61	----		93	----		125	----	
30	----		62	----		94	----		126	----	
31	----		63	----		95	----		127	----	

※ The production report shows each bin quantity and percentage for analysis.



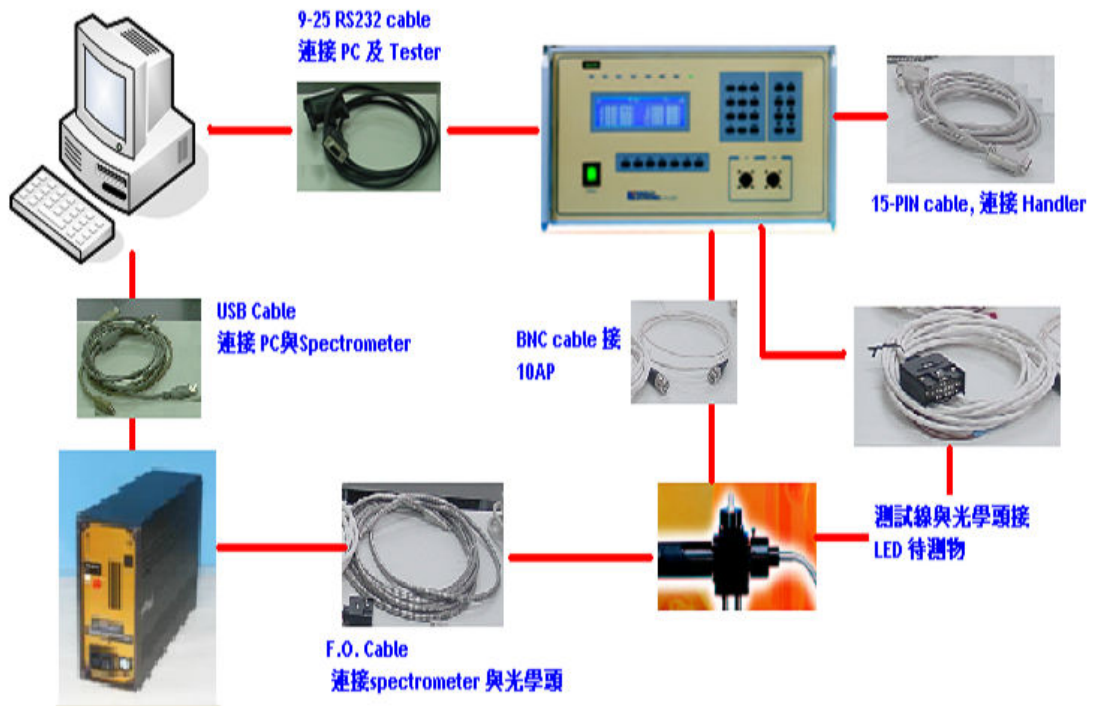
* Normal Distribution report – allows users select their own analysis of various parameters

of the test results; Easy analysis process defect.

LED CRI(Color Rendering Index) calculation

No	IS	PLED	Diff
1	86.17	84.71	1.46
2	82.45	80.71	1.74
3	82.54	80.73	1.81
4	81.86	79.69	2.17
5	84.78	83.1	1.68

PLED6000 Structure



Required of equipment and accessories

PLED 6000 electrical tester

VF : 10V maximum

IF : 1A maximum, 1uA minimum

VR : 20V maximum

IR : 8000uA maximum,

※ Please refer to the PLED6000 specification sheet in details.



Optical Head

Contain fiber and human visual filter 10AP Detector



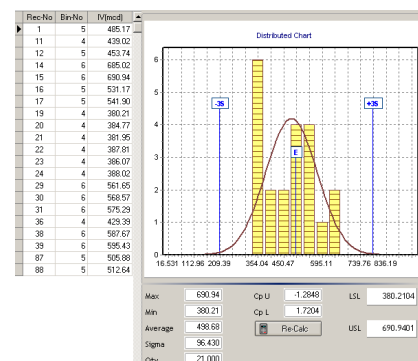
Spectrometer

PDA-512 spectrometer of CDI Corporation with 380 – 900nm.



Online software

Responsible for controlling every testing sequence, receiving and analyzing all test data and classifying .



3U Industrial Personal Computer

LCD monitor : 17"

OS : Microsoft Windows 2000 ◦

CPU : Celeron 2.4G ◦

Memory : 256MB ◦

HD : 80G ◦

CD-ROM



9 Pin to 25 Pin RS232 cable

※ Communicate between Computer and Tester



USB cables

※ Communicate between Computer and Spectrometer.



15-Pin Cables

※ Interfacing between PLED6000 and mechanism.



Test Cables

※ Connect between Tester and DUT.



BNC cables

※ Connect between Tester and Optical 10AP Detector.

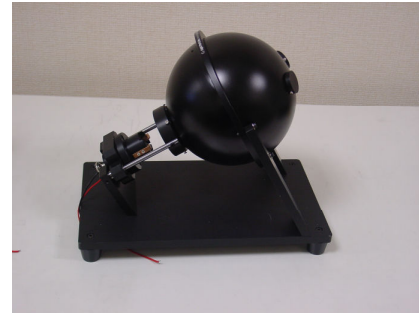


Optical Sphere (Optional)

Dimensions : 5 、 10 、 15 cm ; Customized.

Hole : The standard is 1 I/P hole, 2 O/P hole.

Aperture: The size of I/P aperture is determined in Accordance with the sphere dimensions.



Jigs (Optional)

Based on different LED packaging,
match different jig.



Rack (Optional)

※ Test equipment will be placed integration in the rack.

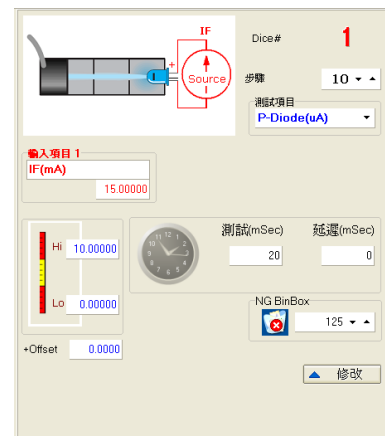
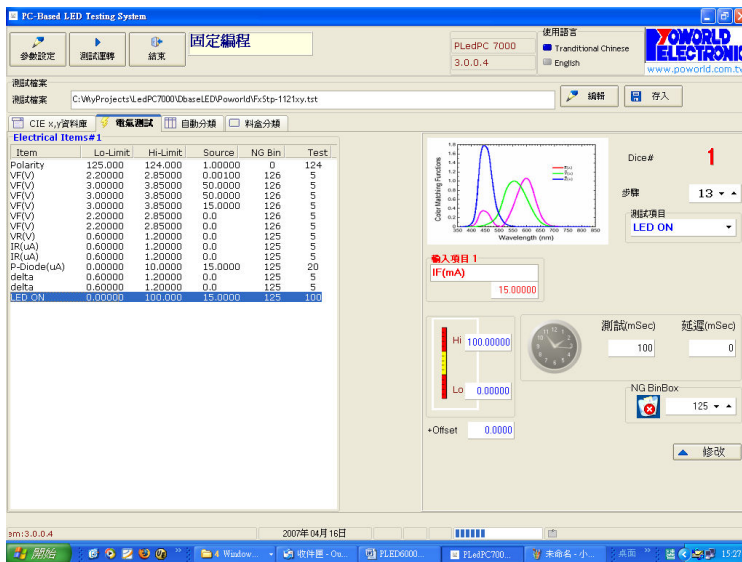
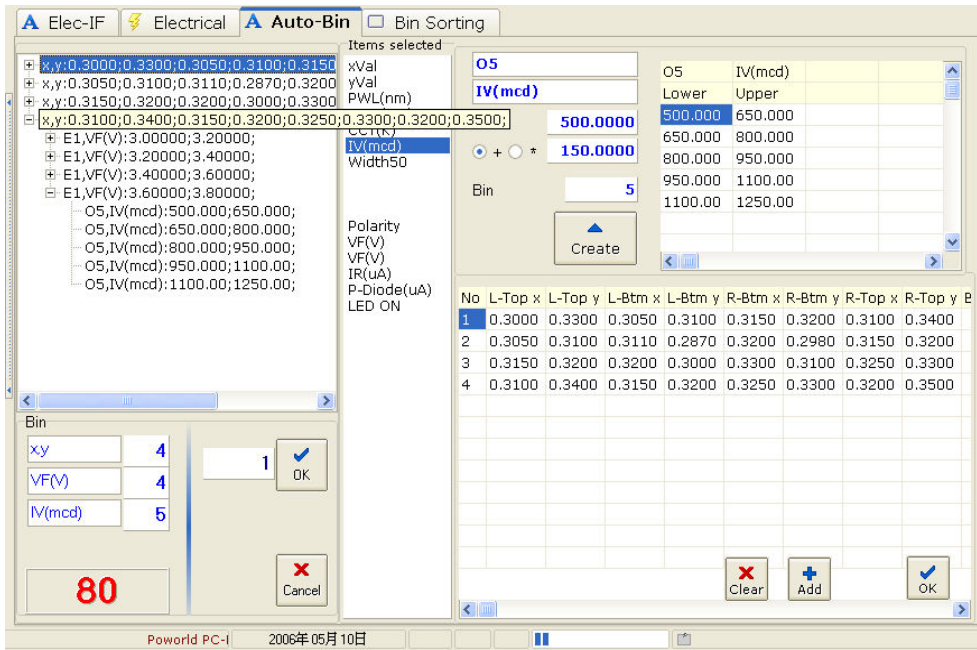


The advantage description

Operation is simple and easy

What is the difference of 5 minutes and 30 minutes

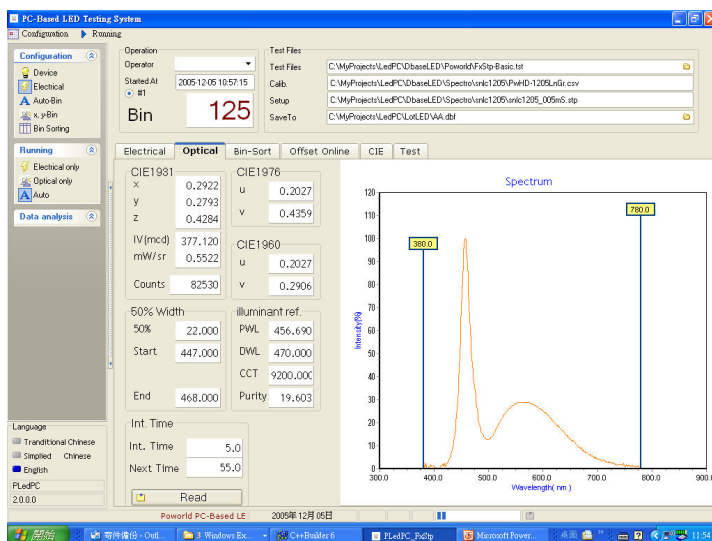
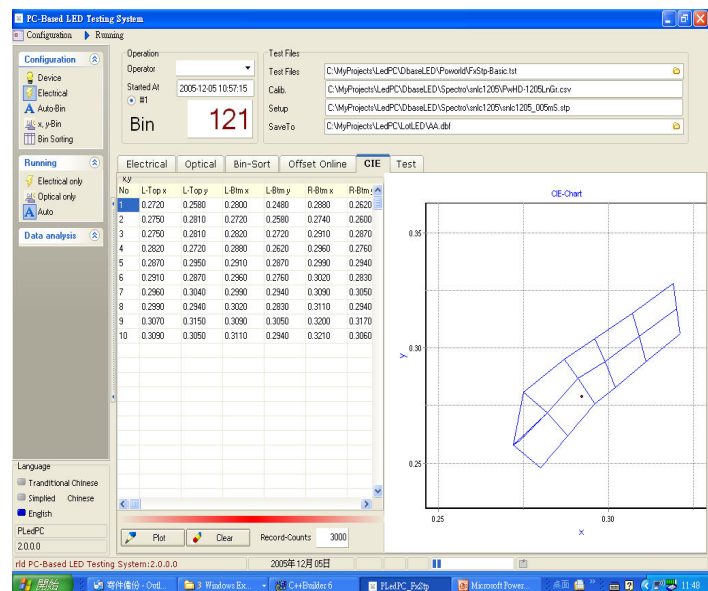
This is the operation screen for setting below.



Tree Bin-automatic operation, set graphic images. The simple extent goes far beyond the operation of the other competitors, customers' response, a test program, PLED6000 as long as five minutes to complete creation; other competitors will need more than 30 minutes.

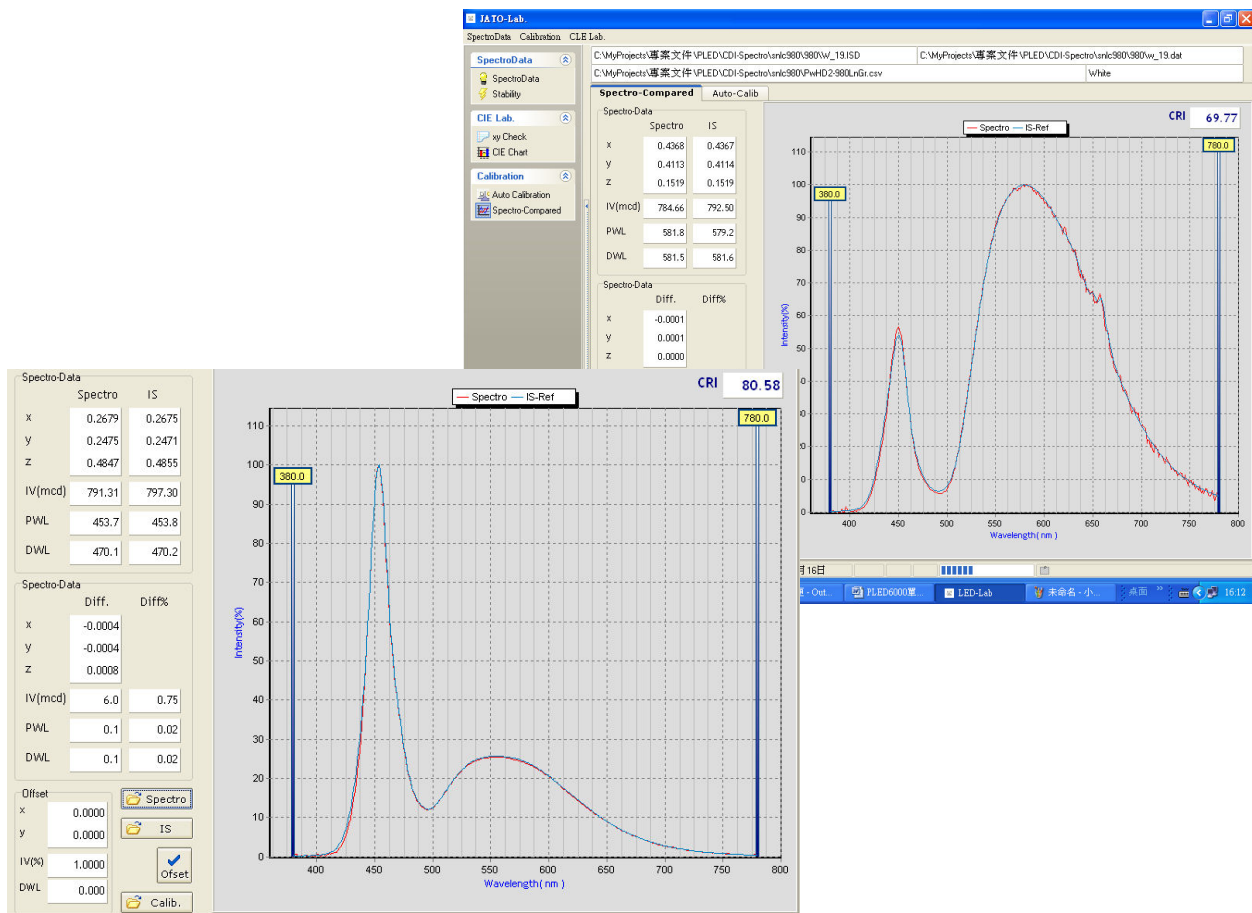
Measurement data integrity and instant

Immediately provide complete measurement information: test reading includes CCT and CRI information; immediately spectrum, CIE (x, y) coordinate placement, (x, y) blocks number and percentage information. Open-format for tested item classification: as a test reading in the parameter even if the CCT, CRI can be the Bin conditions. VF and mcd act as the first layer or x, y, as the first layer can be. As well, the software can directly adjust their offset when dynamic operations, including the value of the VF reading.



Accuracy, speed and stability

We take these positive below about that PLED6000's measurement accuracy.



As shown in the above screens, the IS spectrum is blue and PLED6000 is red. The CCT and CRI reading values are all very close the reading value of IS (please refer to the previous comparison table). According to current knowledge, though many rival testers have marked that can read the CCT and CRI values, but the nature of the majority is for reference only. In case PLED6000 has the settings of the polarity discrimination, four VF measurements (containing an IF = 1uA testing), the reading of IR, and mcd, and all information of CIE chromaticity values, as well as offering the spectrogram and instant spectral placement, it is able to reach the performance of 7.5 to 8K PPH when linked to the local handler. Furthermore, IF = 1uA in VF testing, IR and mcd readings for the sake of testing stability, all the test time required 25 mSec above. In fact, if users demand on the measurement stability could take loose, the overall test time can be shortened, PPH can be further increased.

PLED6000 Electrical characteristics

Parameter	Source Range	Measure Range	Accuracy
VR	0.001~0.010 mA 0.010~0.100 mA 0.100~1.000 mA 1.000~10.00 mA	0.000~20.00 V	±(0.5% +0.005V)
IR	1.000~20.00 V	1.000~10.00 μA 10.00~100.0 μA 100.0~1000 μA 1000 ~8000 μA	±(1.0% +0.2uA) ±(1.0% +0.2uA) ±(1.0% +0.2uA) ±(1.0% +2.0uA)
VF	0.001~0.100 mA 0.100~1.000 mA 1.000~10.00 mA 10.00~100.0 mA 100.0~1000 mA	0.000~10.00 V	±(0.5% +0.005V)
IF	1.000~10.00 V	0.001~0.100 mA 0.100~1.000 mA 1.000~10.00 mA 10.00~100.0 mA 100.0~1000 mA	±(1.0%+0.01mA) ±(1.0%+0.05mA) ±(1.0%+ 0.1mA) ±(1.0%+ 0.5mA) ±(1.0%+ 1.0mA)
VFD (Thyristor Judgment)	0.001~0.100 mA 0.100~1.000 mA 1.00 ~10.00 mA 10.00~100.0 mA 100.0~1000 mA	0.000~10.00 V	±(0.5% +0.005V)

Colorimetric characteristics

WV range 380-780nm (380-1100nm optional)

Accuracy	
λd (DWL)	±3.0 nm
x,y	±0.005
IV	±5%
Repeatability	
λd (DWL)	±0.5 nm
x,y	±0.002
IV	±2%

