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1 Overview

After loading the correction database, the cabinet database management software could analyze the brightness of individual cabinet according to the original measurement data stored in the database, and conduct analog simulation of the overall brightness distribution before the adjustment made according to the correction coefficients of one or more cabinets. If the simulation map is unreasonable, the software may be used to adjust the coefficients. In addition, the cabinet database management software can also be used to delete or export the database of a cabinet from the correction database and merger several correction databases.

2 Operation Instructions

Click "Load Database" \rightarrow "Add Files" to load one or more correction databases, or click "Add Folders" to load more databases at one time. After loading the databases, the basic information in the selected database could be viewed.

Click "Export Gun Values" to save the light gun values to the computer. The light gun values include brightness and the coordinates of color of each cabinet measured with the light gun. Click "Export Report" to save the correction report to the computer, which includes the basic correction information and the brightness distribution diagram, maximum and minimum brightness values and uniformities of three random cabinets before the correction.



NovaCLB-CabSolver V1.0	
Load Database + Language(语言	•
Add Files Add Folders	Information Brightness Analysis Simulate and Adjust coefficients Delete/Export Merge Cabinet Name Modify Coefficients
20140526-1. mdb	Selected
042402.mdb 0424test01.mdb	 The database is full; Start time:2014/5/26 20:18:31; End time:2014/5/26 21:34:27; Software version:2.0.1405.28002; Total numbers:12, successful numbers:12; Resolutions: (1) 128*128: 12; Resolutions: (1) 128*128: 12; Path: E:\校正\中文\猫体校正\数据库\20140526-1.mdbo
Group Mode: O Time Type Resolution	Export Gun Values Export Report

Fig 2-1 Basic information of correction database

2.1 Brightness Analysis before Correction

The brightness analysis before correction is conducted over individual cabinet according to the original measurement data in the database. Select the number of the cabinet to be viewed to see the red, green and blue maximum, minimum and average values, uniformity and brightness column diagram of the cabinet. The narrower the peak waveform in the column diagram is, the better the brightness uniformity will be.

Click "Export Brightness" to save the brightness value of each LED light of the cabinet to .xls file so as to draw 3D diagram in excel directly to view the brightness distribution.



PNovaCLB-CabSolver V1.0					-	
Load Database 👻 Language(语言)	•					
Cabinet List	Information Brightness Analy	ysis Simulate and	Adjust coefficients	Delete/Export Mer	ge	
Last Month	E	<u> </u>				
20140526-1.mdb						1
Last Three Months	flease select one (cabinet: 2			•	
042402.mdb	Color	Maximum	Minimum	Average	Uniformity	^
U424testU1.mdb	Red		53, 5771	78, 7761	0.0491	_
	Green	299.8574	196. 5321	257.5413	0.0405	=
	Blue	36.1458	21.2482	30.2985	0.0606	-
	-Brightness Distributi	ion				
	Red	C Green	🔘 Blue			
	+ Led					
	640			di.		
	040					
	480					
	320					
	160			d III III III III		
	160				Brightnes	SS
	0 12	24 35	47 59	71 83	94 106	
4 III >	Tips:the narrower	the peak waveform i	s, the more consist	ent the brightness w	ill be!	
Group Mode: () Time						
🔘 Туре					Export Brightness	
Resolution						
l						

Fig. 2-1 Brightness analysis diagram before correction

2.2 Simulate and Adjust Coefficients

The simulate diagram is produced through certain calculation according to the correction coefficients of the cabinet. What the simulate diagram is simulating is the matching condition of the cabinet before the correction, and we could deem the simulate diagram as the simulate diagram for the brightness of the cabinet.

Observe the simulation diagram; if the luminance difference between cabinets is great or the luminance difference of the cabinet itself is great, i.e., the simulate diagram is unreasonable, the correction coefficients shall be adjusted using the software, including the adjustment of original/target values, adjustment of brightness distribution correction, adjustment of edge correction factor and the trimming of all coefficients.





Fig. 2-2 Generation principle of simulate diagram

The generation principle of simulate diagram is indicated in the above figure. If the brightness distribution of the simulate diagram is non-uniform, such as the cabinet has obvious bright or dark portions, the reasons may be found in two aspects:

(1) The brightness distribution of the cabinet itself has large difference.

After the cabinet is lightened, if the portions with large brightness difference could match with the tendencies on the simulate diagram, it means that the cabinet has been successfully corrected; otherwise, it means that the cabinet has large brightness distribution difference itself, and shall be corrected again, or the target value or original value shall be adjusted through the management software to produce the new correction coefficients. If only one cabinet has non-uniform brightness distribution, it could be selected by clicking the right button to adjust its brightness distribution correction, the overall brightness and the edge correction factor and then produce the new correction coefficients.

(2) Issues encountered during correction.

In case of failure of the correction coefficient, the correction shall be conducted again with

NovaCLB-Cabinet.

2.2.1 Simulation

Set the items in the following figure and then click "Simulation".



Fig. 2-3 Simulate

2.2.2 Adjustment of Original/Target Values

If the brightness distribution of the simulate diagram is obviously non-uniform, and the brightness distribution could not be corrected by adjusting the brightness distribution, edge



correction factor, and overall brightness and darkness of individual cabinet, it may be that the correction target could not be achieved, and the target value could be changed with the software. In another condition, if the correction effect of the original target is undesirable, the correction target value could also be changed.

If the original brightness value of each cabinet is measured with light gun, which means that the original value could not be changed during the calibration cabinet by cabinet. If all cabinets are using the same original value, the original value could be changed, and the target value could be changed manually, or with auxiliary tools and color gamut diagram. Tick "Color Temperature" to change white color.



Fig. 2-4 Simulate and adjust coefficients

After the adjustment, click "Simulate". If the effect of the simulate diagram is good, click "Save" to produce the new correction coefficients to overwrite the original database. Therefore, the user

shall backup the original database in advance.

2.2.3 Brightness Modify

This function could be used to adjust the brightness distribution correction of individual cabinet

through the replacement of its parameters and public parameters.

Right-click the cabinet to be corrected, select "Brightness modify" or click the "Brightness modify"

tab on the right side, and then select the cabinet ID.



Fig. 2-5 Brightness modify

Set the items. The color of the screen shall be same as the adjustment color so as to show the correction effect of the color. Click "Simulate" to switch to the self-parameters and public parameters.

2.2.4 Edge Modify

Under this functional page, the public edge factor could be generated and the edge correction

factor of individual cabinet could be adjusted.

Right-click the cabinet to be subject to the edge correction adjustment, and click "Edge modify".





Cabinet List	Information Brightness A	nalysis Simulate ar	nd Adjust coefficients Delet	te/Export Merge
Last Month 20140526-1.mdb Last Three Months 042402.mdb 0424test01.mdb	Paint ID: Yse Splice: Order Color: Red Display: Gray	 No Random Green False Color 	Blue Primary Color	Public parameters in database: Color Top Bottom Left Right Red 0.984406 0.995723 0.985291 0.91387 Green 0.980286 0.979676 0.983813
	1	11	12	Blue 0.988537 0.994543 0.971316 0.985034 ▼ Tips: ∵ means there are no public parameters! Parameters! Public Itself 1 Quarter of the second
	13		2 ≡	Color Top Bottom Left Right Image: Color C
4 111	3	4	5	Tips: 1. please backup database! 2. Just save current cabinet and color when select 'itself!
Group Mode: Time Type 				

Fig. 2-6 Edge modify

1) Generate Public Edge Factors

If the public edge factors have not been generated, tick "Public" and then click "Auto Compute".



abinet LIST	Information	Brightness A	nalysis Simulate a	nd Adjust coefficients D	elete/Export Mer	ge				
Last Month	Paint ID:	Yse	O No							
Last Three Months	Splice:	Order	Random		Public p	arameters i	n database:			
042402.mdb	Color:	Red	Green	O Blue	Color	Тор	Bottom	Left	Right	*
0424test01.mdb	Display:	Gray	False Color	Primary Color	Red	-	2	1473	121	=
					Green		2	23	323	
					Blue		-	23	-	+
	2				<u>Tips: ≌ n</u>	neans there	e are no publ	ic paramet	ers!	
					Paramet	ers:	Public	⊚ It	self	
								Auto	Compute	
	4		5		Color	Top	Bottom	Left	Right	-
					Red	-	-	-		
					Green		2	- 2	1.22	III
					Blue	-	-		-	-
					St	elect 'itself!	ulation	S Export p	ave arameters	
Group Mode: Time Type Resolution										
< III → Group Mode:										
< III → Group Mode:	Compute e	dge correct	ion factor automa	tically			×			
<, Group Mode:	Compute e	dge correct	tion factor automa Please check the co	tically	Green I E		×			
<, Group Mode:	Compute en Cabinet Nai	dge correct mes F	tion factor automa Please check the co	tically Ior. V Red V C	Green V E	- E -	×			
< <u>m</u> , Group Mode:	Compute e	dge correct	tion factor automa Please check the co	tically lor. V Red V C	Green V E	Blue Simulate	×			
(, Group Mode: @ Time © Type © Resolution	Cabinet Nat Cabinet Nat 2 3 4	dge correct	tion factor automa Please check the co Color Top	tically lor: Bottom	Green V E Compute	Blue Simulate Right				
k, Group Mode:	Cabinet Nat Cabinet Nat 2 3 4 5	dge correct	tion factor automa Please check the co Color Top Red 1.0879;	tically lor: Red Bottom 20 1.047697 1.	Green V E Compute Left 113887	Blue Simulate Right 1.130604				
< III → Group Mode:	Cabinet Nat Cabinet Nat 2 3 4 5 6	dge correct	tion factor automa Please check the co Color Top Red 1.0879 Green 1.0039	tically lor: ♥ Red ♥ 0 Bottom 20 1.047697 1. 32 1.002447 1. 5 4.005447 1.	Sreen ♥ E Compute Left 113887 020574 110677	Blue Simulate Right 1.130604 1.031580 1.1400700				

Simulation Image Paint ID Yes No TI AM Random Splice: Order Color: Green Blue Red Gray False Color Primary Color Display: **B** Cancel

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The public edge correction factor generated automatically will be shown in the form on the lower right corner. Click "Export Parameters" to save the public edge correction factors to the computer, click "Save" to overwrite the edge correction factors in the original database, and all cabinets will use the new public edge correction factors.

The edge correction factor of individual cabinet could be changed manually, see 2) Adjust the Edge Correction Factor of Individual Cabinet for detailed operation.

2) Adjust the Edge Correction Factor of Individual Cabinet

After adjusting the edge correction factor of the corresponding cabinet manually, click "Simulate" to check the simulate effect. If the effect is desired, then click "Save" and click the "Switch Itself to Public" to switch to the public edge correction factors.



Fig. 2-8 Adjust the edge correction factor of individual cabinet

2.2.5 Coefficients Trim

Adjust the whole cabinet to uniform the brightness of all cabinets.

Right-click the cabinet to be subject to brightness adjustment, click "Coefficients trim" or the "Coefficients trim" tab on the right side, and then select the number of the cabinet to be adjusted. After setting the adjustment ratio, click "Save" to generate new correction coefficients and overwrite the original coefficients.







Fig. 2-9 Adjustment of individual whole cabinet

2.3 Delete/Export

Search a cabinet database from the database, and then delete or export it according to the need.





Fig. 2-10 Delete/export a cabinet

2.4 Database Merge

Press "Ctrl" or "Shift", select two or more databases with mouse, tick the merge mode, and click

"Merge".

If the "Merge Coefficients Only" mode is selected, the merged database could be used for simulating, uploading and adjusting the brightness of individual cabinet. If the "Merge Coefficients and Measures" mode is selected, the merged database could not be used for brightness distribution correction, but the other coefficients could be adjusted.

Notes:

1)

Several (more than 2) databases containing cabinets with same name could not

be merged, and the software will warn in such case.



2) Two databases containing several (more than 2) cabinets with same name cannot be merged, and the software will warn in such case.
3) If only two databases contain only two cabinets with the same name, they could be merged, but the software will prompt the user to change the name of a cabinet or delete a cabinet.



Fig. 2-11 Database merge

2.5 Cabinet Name

Modify name of the cabinet that been selected.



NovaCLB-CabSolver V1.3	
Load Database 👻 Language(语言)) •
Cabinet List	Information Brightness Analysis Simulate and Adjust coefficients Delete/Export Merge Cabinet Name Modify Coefficients
One Years Earlier 3.29T3.mdb	Proiect or database file F:3.29T3.mdb
	Oriainal Name Modified Name Modify
	O°
< >	
Group Mode: 💿 Time 🔿 Type	
Resolution	



2.6 Modify Coefficients

After cabinet calibration, if there are obviously bright points found, adjust the light point coefficient.

Specific operation procedure is as follows:

1) Select cabinets with bright point and read the maximum value and minimum value of the average coefficient and main component coefficient.

You can select a single cabinet or select "All cabinets".



NovaCLB-CabSolver V1.3	ARABAN W TA	
Load Database 👻 Language(语言)) •	
Cabinet List	Information Brightness Analysis Simulate and Adjust coefficients Delete/Export Merge Cabinet Name Modify Coefficients	nts
One Years Earlier 3.29T3.mdb	Data Select Cabinet: 075 Select all Data Sel	The minim
	LEDs Search R-G N/A G-G N/A B-G N/A	R-R
	R-R interval 100.01 120.02 R-B N/A G-B N/A B-B N/A	B-B
	G-G interval 100 115 Result	
	B-B interval 115 120 Number Cabinet Name Col Row R-R F	R-G R-B (
	Column: 0 🗘 Row: 0 🔄 Search Auxiliary image	
	New database path: Creat File path:	
	Coefficient adjust(Effective interval is [0 2456]) Adjust options:	
۲	✓ Red brightness ✓ Red chromaticity	
Group Mode: 💿 Time	✓ Green brightness ✓ Green chromaticity Tin:	
 Type Resolution 	Blue brightness Blue chromaticity	

Fig. 2-13 Select cabinet

2) LEDS search

You can conduct area-based search according to the area where the bright point is located or manually enter the coordinates of the light point.

Area-based search: NovaiCare regards the 95%~100% area of the maximum calibration coefficient of brightness for each color. You can manually enter the brightness area of each color. Manually enter the coordinates of the light point for search: manually enter the coordinates of the bright point.

After setting the area or coordinates, click Search and NovaiCare will show search results. Click Auxiliary image to open simulated image (only for single cabinet). You can view the position of the selected point on the cabinet.



NovaStar Tech Co., Ltd.

Cabinet List	Information Brightness Analysis Simulate and Adjust coeffic	cients Dele	ete/Export N	1erge Cabinet	Name	Modif	y Coeffic	ients							
One Years Earlier 3.29T3.mdb	Data Select	The average coefficients					ר ר	The minimun and maximum of the bright cofficients:							
	Read Data	R-R	1764.51	G-R 58.07	В	R 18	.20		R-R	Маж 225	imum a	I	Minimur 1477	n	
	LEDs Search	R-G	62.63	G-G 1735.30	B	-G 26	.30		6.6	202	-		1634		
	R-R interval 2146.05 2259	R-B	20.95	G-B 22.59	В	8 18	09.39		B-B	218	2		1559		
	G-G interval 1920.90 2022	Result													
	B-B interval 2072.90 2182		Number	Cabinet Name	Col	Row	R-R	R-G	R-B	G-R	G-G	G-B	B-R	B-G	B-B
	Input the LED position manually		1	075	68	0	1850	71	21	62	1945	23	19	30	1834
	Column: 0 💠 Row: 0 🜩	V	2	075	28	1	1663	70	21	55	1927	22	17	29	1786
			3	075	85	3	1779	70	22	59	1944	24	18	30	1899
	Search Auxiliary image		4	075	85	4	1797	71	21	59	1954	23	19	30	1822
	New database nath:		5	075	1	8	2038	70	21	67	1931	23	21	29	1847
	Creat	×	6	075	69	9	1766	63	25	58	1/46	27	18	26	2182
	File path:	×	/	075	83	10	1752	70	21	58	1944	22	18	30	1/80
			0	075	67	10	1720	72	21	50	1940	20	10	20	1706
			10	075	1	10	2157	68	21	71	1930	22	22	29	1718
	Coefficient adjust(Effective interval is [0 2456])		11	075	51	19	1655	70	20	54	1942	21	17	20	1872
	Adjust options:		12	075	6	23	1742	70	22	57	1929	24	18	29	1926
	Red brightness Red chromaticity	V	13	075	36	27	1756	69	21	58	1923	23	18	29	1804 -
	Green brightness Green chromaticity	•			_			_						_	
	Blue brightness Diue chromaticity	Tip: R-R: disp	: Red coeffic	ient when displ	ay red;l	R-0: 0	Freen co	efficier	nt when	display	red;R-E	9: Blue	e coeffici	ient wh	ien
	R-R 1764.51 G-R 58.07 B-R 18.20	arspray rea, O-R: Red coefficient when display green;O-G: Green coefficient when display green;O-B: Blue coefficient when display creen:													
4	R-G 62.63 G-G 1735.30 B-G 26.30 R-B 20.95 G-B 22.59 B-B 1809.39	B- disp	R: Red coe lav blue.	ficient when dis	play bli	Je;B-G:	: Green	coeffi	cient wh	en disp	lay blue	;B-B: I	Blue coe	efficien	t when
Group Mode: 💿 Time 🔿 Type	Save coefficient														
Becolution															

Fig. 2-14 Search LEDS

Click Auxiliary image

to open auxiliary image (only for single cabinet). You can view the position of

the selected Pixel points on the cabinet.





Fig. 2-15 Auxiliary image

Select the Pixel points that you want to exclude from the cabinet, then click the right mouse

button and click exclude selected points to exclude the selected Pixel points.











Fig. 2-17 After exclude selected points

3) Set a new directory to store database. The database adopts original name.



Fig. 2-18 Set new database path

4) Coefficient adjustment

Select an option to adjust. By default, all options are selected.

Manually adjust the selected options.

After the adjustment, click Save coefficient. The coefficient will be saved under the directory set in





step 3).

Coefficient adjust(Effective interval is [0 2456]) Adjust options:												
🖉 Red brightness 🛛 📝 Red chromaticity												
🖉 Green brightness 🛛 📝 Green chromaticity												
🗸 Bl	🖉 Blue brightness 🛛 📝 Blue chromaticity											
Adjus	t targets:											
R-R	1764.51	G-R 58.	07	B-R	18.20							
R-G	62.63	G-G 173	5.30	B-G	26.30							
R-B 20.95 G-B 22.59 B-B 1809.39												
				Save	coefficient							



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