(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 246 908 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
02.10.2019 Bulletin 2019/40

(21) Application number: **15794447.1**

(22) Date of filing: **16.07.2015**

(51) Int Cl.:
G09G 3/32 *(2016.01)*

(86) International application number:
PCT/CN2015/084175

(87) International publication number:
WO 2016/112668 (21.07.2016 Gazette 2016/29)

(54) METHOD AND DEVICE FOR CORRECTING HUE ERROR OF OLED DISPLAY PANEL AND DISPLAY DEVICE

VERFAHREN UND VORRICHTUNG ZUR KORREKTUR VON FARBTONABWEICHUNG EINER OLED-ANZEIGETAFEL UND ANZEIGEVORRICHTUNG

PROCÉDÉ ET DISPOSITIF DE CORRECTION D'ERREUR DE TEINTE DE PANNEAU D'AFFICHAGE À DELO ET DISPOSITIF D'AFFICHAGE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **15.01.2015 CN 201510020929**

(43) Date of publication of application:
22.11.2017 Bulletin 2017/47

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EP 3 246 908 B1

Description

TECHNICAL FIELD

[0001] The present invention relates to a method and device for correcting a color shift of an organic light-emitting diode (OLED) display panel, and a display device.

BACKGROUND

[0002] Along with the development of display technology, the requirements of consumers on audio-video products are higher and higher. As for display manufacturers, the production of displays with high resolution and high image quality is the developing direction. OLED has been widely applied in displays due to the characteristics of self-luminescence, high brightness, wide viewing angle, rapid response, the capability of forming red, green and blue (RGB) full-color components, etc. Currently, the application of OLED display panels has entered the practical stage. Automobile audios and mobile phones on the market have employed the OLED display panels. In the future, the OLED display panel will be widely applied in light and thin displays such as mobile products, notebook computers, monitors and wall hung TVs. Moreover, the full-color development will enhance the competitiveness of OLED products.

[0003] Along with the full-color technical development of OLEDs, the currently common full-color technology includes fine-metal-mask (FMM) vacuum vaporization method, white + color filter (W + CF) method, blue + color conversion (Blue + CCM) method, etc. Wherein, FMM is the mainstream technology of the current small and medium size OLED display products. But the OLED display product has a relatively serious problem: the lifetime of organic materials of an emission layer (EML) in an OLED device is different along with the degree of attenuation of time, and hence images displayed by the display will have the problem of color shift. OLED display products manufactured by the FMM method are particularly more obvious, and the lifetime attenuation of RGB organic materials of the OLED display product is different. The attenuation rate of blue (B) organic materials is the rapidest ($LT(R) \geq LT(G) >> LT(B)$). As illustrated in FIG. 1, the lifetime attenuation of B
organic materials is relatively rapid and the lifetime attenuation of red (R) organic materials is relatively slow. Therefore, in images displayed by the OLED display product after long-term use, the brightness of B is lower and the brightness of R is higher, and hence the color shift phenomenon tends to occur. As illustrated in FIG. 2, the color of the images displayed by the OLED display product will shift along the direction represented by an arrow. In addition, the brightness of the OLED device is quickly reduced in the early stage service. As illustrated in FIG. 1, along with the rise of the use time, the attenuation of the brightness of RGB luminescent devices will be more and more moderate, but the attenuation of the brightness of the RGB luminescent devices in the early stage service is relatively rapid and nonuniform. In this case, the images displayed by the OLED display product tend to encounter afterimage problems.

[0004] US 2008/224966 A1 discloses a method for controlling and compensating aging in an LED device including measuring a performance change in light output of the LED device. The LED device is controlled with a first compensation algorithm derived from the measured performance change, during a first period, to effect a luminance change over time in the light output of the LED device.

SUMMARY

[0005] It is an object of the present invention to provide a method as well as a device for correcting a color shift of an OLED display panel, which may solve one or more problems set forth above and other problems in the art. Also, it is an object of the present invention to provide an OLED display device, which comprises the OLED display panel processed by the method.

[0006] The object is achieved by the features of the respective independent claims. Further embodiments are defined in the corresponding dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Simple description will be given below to the accompanying drawings of the embodiments to provide a more clear understanding of the technical proposals of the embodiments of the present invention. Obviously, the drawings described below only involve some embodiments of the present invention but are not intended to limit the present invention.

FIG. 1 is a schematic diagram illustrating the attenuation of the brightness of the three primary colors (red, green and blue, RGB) in the prior art;

FIG. 2 is a schematic diagram illustrating a color shift of a display image of an OLED display product in the prior art;

FIG. 3 is a flowchart illustrating the process of performing the ageing treatment on an OLED display panel in one embodiment of the present invention;

FIG. 4 is a schematic diagram illustrating the attenuation of the brightness of the three primary colors (red, green and blue, RGB) after the ageing treatments of the OLED display panel in one embodiment of the present invention; and correcting a color shift of an OLED display panel, which comprises: an ageing treatment unit, a test unit and a processing unit, in which the ageing treatment unit is configured to perform ageing treatments on monochromatic luminescent devices in the OLED display panel; the test

unit is configured to perform a luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment, and obtain corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices; and the processing unit is configured to perform an ageing treatment on the monochromatic luminescent devices with rapidest luminescent lifetime attenuation rate again when differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are greater than a preset threshold, until the differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are less than the preset threshold.

[0008] In one embodiment of the present invention, the ageing treatment unit is configured to input a different preset voltage into the monochromatic luminescent devices in the OLED display panel respectively, and allow the monochromatic luminescent devices to emit light for a preset duration and subsequently be cooled to room temperature, in which the preset voltage is determined by materials of emitting layers of the monochromatic luminescent devices.

[0009] In one embodiment of the present invention, the test unit is configured to input voltage for luminescent lifetime attenuation tests into the monochromatic luminescent devices after the ageing treatment in sequence, allow the monochromatic luminescent devices to emit light for a preset duration, and obtain a corresponding luminescent lifetime attenuation curve of the monochromatic luminescent devices.

[0010] In one embodiment of the present invention, the ageing treatment unit is configured as: the preset voltage inputted in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel is greater than the voltage inputted in the process of performing a luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment.

[0011] In one embodiment of the present invention, the ageing treatment unit is configured as: differences between cathode voltages and anode voltages loaded to the monochromatic luminescent devices in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel are greater than differences between cathode voltages and anode voltages loaded to the monochromatic luminescent devices in the process of performing a luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment.

[0012] In one embodiment of the present invention, in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel, the cathode voltages loaded to the monochromatic luminescent devices are the same and the anode voltages loaded to the monochromatic luminescent devices are the same.

[0013] In one embodiment of the present invention, in the process of performing the ageing treatment by inputting the preset voltage into the monochromatic luminescent devices in the OLED display panel, the preset duration of light emitting of the monochromatic luminescent devices are the same.

[0014] The embodiment of the present invention further provides an OLED display device, which comprises the OLED display panel processed by the above method.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Simple description will be given below to the accompanying drawings of the embodiments to provide a more clear understanding of the technical proposals of the embodiments of the present invention. Obviously, the drawings described below only involve some embodiments of the present invention but are not intended to limit the present invention.

FIG. 1 is a schematic diagram illustrating the attenuation of the brightness of the three primary colors (red, green and blue, RGB) in the prior art;

FIG. 2 is a schematic diagram illustrating a color shift of a display image of an OLED display product in the prior art;

FIG. 3 is a flowchart illustrating the process of performing the ageing treatment on an OLED display panel in one embodiment of the present invention;

FIG. 4 is a schematic diagram illustrating the attenuation of the brightness of the three primary colors (red, green and blue, RGB) after the ageing treatments of the OLED display panel in one embodiment of the present invention; and

FIG. 5 is a schematic structural view of a device for correcting a color shift of an OLED display panel, provided by one embodiment of the present invention.

DETAILED DESCRIPTION

[0016] For more clear understanding of the objectives, technical proposals and advantages of the embodiments of the present invention, clear and complete description will be given below to the technical proposals of the embodiments of the present invention with reference to the accompanying drawings of the embodiments of the present invention. Obviously, the preferred embodiments are only partial embodiments of the present invention but not all the embodiments. All the other embodiments obtained by those skilled in the art without creative efforts on the basis of the embodiments of the present invention illustrated shall fall within the scope of protection of the present invention.

[0017] The inventors have noted that the problem to be solved by those skilled in the art is how to solve the problems of afterimage in the early stage service and

color shift of display images after long-term use of OLED display products.

[0018] Detailed description will be given below to the preferred embodiments of the method and the device for correcting a color shift of the OLED display panel, and the display device, provided by the embodiment of the present invention, with reference to the accompanying drawings.

[0019] The embodiment of the present invention provides a method for correcting a color shift of an OLED display panel, which, as illustrated in FIG. 3, may specifically comprise the following steps:

S101: performing ageing treatment on monochromatic luminescent devices in the OLED display panel;

S102: performing a luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment respectively, and obtaining corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices;

S103: determining whether differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are greater than a preset threshold, executing step S104 if so, and ending the process if not; and

S104: performing an ageing treatment on the monochromatic luminescent devices with rapidest luminescent lifetime attenuation rate again when differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are greater than the preset threshold, until differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are less than the preset threshold.

[0020] In the method for correcting a color shift of the OLED display panel provided by the embodiment of the present invention, the monochromatic luminescent devices in the OLED display panel are subjected to ageing treatments; luminescent lifetime attenuation tests are performed on the monochromatic luminescent devices after the ageing treatments respectively, and corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices are obtained; and the monochromatic luminescent device with rapidest luminescent lifetime attenuation rate is subjected to ageing treatments again when differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are greater than the preset threshold, until differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are less than the preset threshold. In the OLED display panel processed by the processing method, as the early stage service life of the monochromatic luminescent devices is rapidly consumed, the problem of afterimage of the OLED display panel in the early stage service is solved. Meanwhile, the lifetime attenuation rates of the processed monochromatic luminescent devices are moderate and become consistent. Therefore, as the relative brightness of the monochromatic luminescent devices become consistent along with the rise of the use time, the color shift phenomenon of display images of the OLED display product after long-term use can be effectively avoided.

[0021] It should be noted that the method for correcting a color shift of the OLED display panel provided by the embodiment of the present invention can be applied in full-color OLED display panels comprising monochromatic luminescent devices of various colors. No limitation will be given to the color of the monochromatic luminescent devices. For the convenience of description, description is given in the following embodiments by taking the case that the OLED display panel only comprises monochromatic luminescent devices of red, green and blue (RGB) colors as an example.

[0022] For instance, the method for correcting a color shift of the OLED display panel provided by the embodiment of the present invention is adopted to process the OLED display panel. In the processed OLED display panel, the lifetime attenuation rates of the RGB monochromatic luminescent devices are shown in FIG. 4. It can be seen from FIG. 4 that: in the OLED display panel after the ageing treatment, the luminescent lifetime attenuation rates of the RGB luminescent devices become consistent. Therefore, the relative brightness of the monochromatic luminescent devices becomes consistent along with the rise of the use time, so that the color shift phenomenon of display images of the OLED display product after long-term use can be avoided, and hence the quality of images displayed by the display panel can be guaranteed.

[0023] In specific implementation, in the method provided by the embodiment of the present invention, the implementation of the step S101 may, for instance, includes the following steps: inputting different preset voltages into the monochromatic luminescent devices in the OLED display panel respectively via the ageing treatment unit, and allowing the monochromatic luminescent devices to emit light for a preset duration and subsequently be cooled to room temperature. The preset voltage may control the current flowing across the monochromatic luminescent devices and hence control the luminous intensity of the monochromatic luminescent devices.

[0024] The process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel may be achieved by means of performing the ageing treatment on all the monochromatic luminescent devices at the same time or may also be achieved by means of performing the ageing treatment on each luminescent device of various colors in sequence. No limitation will be given here.

[0025] For instance, in the process of performing the ageing treatment on the monochromatic luminescent devices, because the emitting layers of the monochromatic luminescent devices are made from different materials,

the preset voltage for driving the monochromatic luminescent devices to emit light and heat is also different. For instance, the case that the driving voltage of the monochromatic luminescent devices is different from each other in the case of same relative brightness may be determined according to IVL performance curve data of the monochromatic luminescent devices, measured before ageing treatment. Therefore, appropriate input voltage in the process of ageing treatment may be selected for the monochromatic luminescent devices by the comparison of the IVL performance curves of the monochromatic luminescent devices before and after the ageing treatment, so as to ensure that the attenuation of the relative brightness of the monochromatic luminescent devices after the ageing treatment is not too rapid. For instance, through experimental data, the preset voltage of R luminescent devices may be 7.25V; the preset voltage of green (G) luminescent devices may be 8.5V; and the preset voltage of B luminescent devices may be 7.5V. That is to say, the preset voltages for the ageing treatment of the monochromatic luminescent devices are different. The preset voltages for the ageing treatment of the monochromatic luminescent devices may be determined by the materials of the emitting layers of the monochromatic luminescent devices.

[0026] Therefore, in the process of performing the ageing treatment on the monochromatic luminescent devices, preset voltages for driving the monochromatic luminescent devices to emit light and heat must be inputted into corresponding luminescent devices of different colors respectively, so that high current, which may reach 100mA-600mA, is produced in the monochromatic luminescent devices of the OLED display panel. Therefore, the monochromatic luminescent devices are driven to emit light and heat for a preset duration, and hence the current ageing of the monochromatic luminescent devices can be achieved. As the monochromatic luminescent devices subjected to ageing treatments are driven to emit light and heat by high current, the monochromatic luminescent devices subjected to current ageing must be naturally cooled to room temperature, so as to avoid the influence on the subsequent luminescent lifetime attenuation test performed on the monochromatic devices subjected to ageing treatment.

[0027] In the method provided by the embodiment of the present invention, in the process of performing ageing treatment by inputting the preset voltages into the monochromatic luminescent devices in the OLED display panel, the preset duration of the light emitting of the monochromatic luminescent devices may be same or may also be different. No limitation will be given here. In the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel, the preset duration of the light emitting of the monochromatic luminescent devices may be set to be same. The preset duration thereof may, for instance, be set to about 30 min. The monochromatic luminescent devices in the OLED display panel are controlled to be subjected to ageing treatments at the same time, so that the rapid ageing of the OLED display panel can be conveniently achieved.

[0028] In the method provided by the embodiment of the present invention, the implementation of the step S102 may be implemented by, for instance, the following implementation: inputting voltage for luminescent lifetime attenuation tests into the monochromatic luminescent devices after the ageing treatment in sequence, allowing the monochromatic luminescent devices to emit light for a preset duration, and obtaining a corresponding luminescent lifetime attenuation curve of the monochromatic luminescent devices. That is to say, voltage for driving the monochromatic luminescent devices to emit light is inputted and is generally 0-4V; luminescent lifetime attenuation tests are performed on the monochromatic luminescent devices in the OLED display panel in sequence via corresponding luminescent lifetime attenuation test equipment in the environment of constant temperature and humidity; the test duration is, for instance, generally at least 240 hours; and finally, the luminescent lifetime attenuation curves of the monochromatic luminescent devices after the ageing treatment are obtained and provide a more intuitive determining condition for determining whether the luminescent lifetime attenuation rates of the monochromatic luminescent devices in the OLED display panel after the ageing treatment become consistent.

[0029] The lifetime attenuation and the brightness attenuation of the monochromatic luminescent devices in the OLED display product in the early stage service are relatively rapid. The attenuation rate is slower along with the rise of the use time. In the method provided by the embodiment of the present invention, the monochromatic luminescent devices in the OLED display panel are subjected to rapid ageing treatment to obtain the OLED display panel in which the attenuation rates of the monochromatic luminescent devices in the OLED display panel in the later use are reduced and become consistent. For instance, the voltage higher than the normal emission driving voltage of the OLED display panel may be inputted, so that high current is produced in the monochromatic luminescent devices of the OLED display panel, and hence the monochromatic luminescent devices are driven to emit light and heat. Therefore, the early stage service life of the monochromatic luminescent devices is rapidly consumed, and hence the ageing treatments can be completed. In the process of performing lifetime attenuation test on the monochromatic luminescent devices in the OLED display panel after the ageing treatment, the lifetime attenuation rate of the monochromatic luminescent devices under normal luminescent state must be tested. Thus, the inputted voltage is the voltage for driving the monochromatic luminescent devices to normally emit light. Therefore, the preset voltage inputted in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel is greater than the voltage inputted in the process

of performing a luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment.

[0030] In the method provided by the embodiment of the present invention, in order to rapidly consume the early stage service life of the monochromatic luminescent devices in the OLED display panel and obtain the OLED display panel in which the attenuation rates of the monochromatic luminescent devices are reduced and become consistent, for instance, differences between cathode voltages and anode voltages loaded to the monochromatic luminescent devices in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel may be greater than differences between cathode voltages and anode voltages loaded to the monochromatic luminescent devices in the process of driving the monochromatic luminescent devices to normally emit light. Thus, high current may be produced in the monochromatic luminescent devices of the OLED display panel, so that the monochromatic luminescent devices are driven to emit light and heat, and hence the early stage service life of the monochromatic luminescent devices can be rapidly consumed. In the process of performing lifetime attenuation test on the monochromatic luminescent devices in the OLED display panel after the ageing treatment, the lifetime attenuation rate of the monochromatic luminescent devices under normal luminescent state must be tested, and hence the difference between the cathode voltage and the anode voltage loaded to the monochromatic luminescent devices is the difference between the cathode voltage and the anode voltage loaded to the monochromatic luminescent devices in the process of driving the monochromatic luminescent devices to normally emit light. Therefore, differences between cathode voltages and anode voltages loaded to the monochromatic luminescent devices in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel are greater than differences between cathode voltages and anode voltages loaded to the monochromatic luminescent devices in the process of performing luminescent lifetime attenuation tests on the monochromatic luminescent devices after the ageing treatment.

[0031] In the method provided by the embodiment of the present invention, in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel, for instance, the cathode voltages loaded to the monochromatic luminescent devices are the same and the anode voltages loaded to the monochromatic luminescent devices are the same. Thus, a voltage is loaded to cathodes and anodes of the monochromatic luminescent devices, so that high current is produced in the monochromatic luminescent devices, and hence the rapid current ageing of the monochromatic luminescent devices can be achieved. As same voltage is loaded to the cathodes of the monochromatic luminescent devices and same voltage is loaded to the anodes of the monochromatic luminescent devices, the monochromatic luminescent devices in the OLED display panel can be conveniently controlled to be processed at the same time, and hence the rapid ageing of the OLED display panel can be conveniently achieved.

[0032] Description is given below to the specific implementation of the application of the method provided by the embodiment of the present invention in actual products with reference to a preferred embodiment. The steps thereof are specifically as follows:

1. Inputting a first voltage 0-4V into the monochromatic luminescent devices of the OLED display panel consisting of red, green and blue (RGB) monochromatic luminescent devices in sequence, setting the cathode voltage of the monochromatic luminescent devices to -8V and the anode voltage to 3V, measuring relative brightness attenuation curves of the red, green and blue monochromatic luminescent devices in sequence, and obtaining different luminescent lifetime attenuation rates of the monochromatic luminescent devices.
2. Inputting a second voltage higher than the first voltage (0-4V) into the red, green and blue (RGB) monochromatic luminescent devices respectively, in which the second voltage inputted into red (R) monochromatic luminescent devices is 7.25V; the second voltage inputted into green (G) monochromatic luminescent devices is 8.5V; and the second voltage inputted into blue (B) monochromatic luminescent devices is 7.5V; setting the cathode voltage of the monochromatic luminescent devices to -10V and the anode voltage to 6V; producing high current in the monochromatic luminescent devices; performing current ageing treatments on the monochromatic luminescent devices for 30 min; and subsequently cooling the monochromatic luminescent devices to room temperature.
3. Inputting a first voltage 0-4V into each red, green and blue (RGB) monochromatic luminescent device in sequence, setting the cathode voltage of the monochromatic luminescent devices to -8V and the anode voltage to 3V, and measuring the relative brightness attenuation curves of the red, green and blue (RGB) monochromatic luminescent devices after the ageing treatment in sequence, as a result, the luminescent lifetime attenuation of the monochromatic luminescent devices will become consistent as compared to the luminescent lifetime attenuation before ageing treatment.
4. Determining whether differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are greater than the preset threshold compared with the luminescent lifetime attenuation of the monochromatic luminescent devices after the ageing treatment. For instance, the blue (B) monochromatic luminescent devices are subjected to ageing treatments again when the lu-

minescent lifetime attenuation rate of the red (R) monochromatic luminescent devices is determined to be the lowest, the difference between the luminescent lifetime attenuation rate of the red (R) monochromatic luminescent devices and the luminescent lifetime attenuation rate of the blue (B) monochromatic luminescent devices being greater than the preset threshold, the difference between the luminescent lifetime attenuation rate of the red (R) monochromatic luminescent devices and the luminescent lifetime attenuation rate of the green (G) monochromatic luminescent devices being less than the preset threshold. The OLED display panel, in which the luminescent lifetime attenuation of the monochromatic luminescent devices is determined to become consistent when the difference between the luminescent lifetime attenuation rate of the blue (B) monochromatic luminescent devices after second ageing treatment and the luminescent lifetime attenuation rate of the red (R) monochromatic luminescent devices is determined to be less than the preset threshold, can be finally obtained.

[0033] Based on the same inventive concept, the embodiment of the present invention further provides a device for correcting a color shift of an OLED display panel. As illustrated in FIG. 5, the device may comprise: an ageing treatment unit 01, a test unit 02 and a processing unit 03.

[0034] The ageing treatment unit 01 is configured to perform an ageing treatment on the monochromatic luminescent devices in the OLED display panel. For instance, the ageing treatment unit 01 includes a loading platform, a driving chip, a plurality of pressure terminals, a power supply, etc. The driving chip is connected with the power supply. The pressure terminals are connected with the driving chip and correspond to driving voltage input ends of the OLED display panel to be tested. Driving signals may be applied to the driving chip, so that a preset voltage is outputted to the pressure terminals and hence applied to the monochromatic luminescent devices of the OLED display panel to be tested. The test unit 02 is configured to perform a luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment respectively and obtain corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices. For instance, the test unit 02 includes an optical detection apparatus (e.g., a camera) so as to acquire the brightness of the monochromatic luminescent devices, and may also include a memory and/or a computing device (e.g., a central processing unit (CPU)) so as to store and/or compare and calculate the variation of the brightness respectively.

[0035] The processing unit 03 is configured to perform ageing treatments on the monochromatic luminescent device with rapidest luminescent lifetime attenuation rate again when the difference between the luminescent lifetime attenuation rates of the monochromatic luminescent devices is greater than a preset threshold, until the difference between the luminescent lifetime attenuation rates of the monochromatic luminescent devices is less than the preset threshold. The processing unit 03, for instance, includes a loading platform, a driving chip, a plurality of pressure terminals, a power supply, etc. The structure of the processing unit 03 may be the same with that of the ageing treatment unit 01, but the voltage applied in the process of operation is different.

[0036] In the device for correcting a color shift of the OLED display panel provided by the embodiment of the present invention, the monochromatic luminescent devices in the OLED display panel are subjected to ageing treatments via the ageing treatment unit 01; luminescent lifetime attenuation tests are performed on the monochromatic luminescent devices after the ageing treatment respectively via the test unit 02, and corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices are obtained; and the monochromatic luminescent devices with rapidest luminescent lifetime attenuation rate are subjected to ageing treatment again via the processing unit 03 when the differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are determined to be greater than the preset threshold, until the differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are less than the preset threshold. In the OLED display panel processed by the above device, the early stage service life of the monochromatic luminescent devices is rapidly consumed, so that the problem of afterimage of the OLED display panel in the early stage service can be solved. Meanwhile, the lifetime attenuation rates of the processed monochromatic luminescent devices are moderate and become consistent. Therefore, when the OLED display panel is applied in corresponding OLED display product, as the lifetime attenuation rates of the monochromatic luminescent devices become consistent, the relative brightness of the monochromatic luminescent devices becomes consistent along with the rise of the use time, and hence the color shift phenomenon of display images of the OLED display product after long-term use can be effectively avoided.

[0037] In the device provided by the embodiment of the present invention, the ageing treatment unit 01 is configured to input different preset voltages into the monochromatic luminescent devices in the OLED display panel respectively, and allow the monochromatic luminescent devices to emit light for a preset duration and subsequently be cooled to room temperature. The preset voltage is determined by materials of emitting layers of the monochromatic luminescent devices. That is to say, the preset voltage for the ageing treatment of the monochromatic luminescent devices is determined by the materials of the emitting layers of the monochromatic luminescent devices; corresponding preset voltage is inputted; and the monochromatic luminescent devices in the OLED display panel are subjected to ageing treat-

ment via the ageing treatment unit 01.

[0038] In the device provided by the embodiment of the present invention, the test unit 02 is configured to input voltage for luminescent lifetime attenuation tests into the monochromatic luminescent devices after the ageing treatment in sequence, allow the monochromatic luminescent devices to emit light for a preset duration, and obtain a corresponding luminescent lifetime attenuation curve of the monochromatic luminescent devices. The process of performing a luminescent lifetime attenuation test on the monochromatic luminescent devices via the test unit 02 in sequence and obtaining the luminescent lifetime attenuation rate of the monochromatic luminescent devices provides a determinant condition for determining whether the luminescent lifetime attenuation of the monochromatic luminescent devices in the OLED display panel after the ageing treatment become consistent.

[0039] In the device provided by the embodiment of the present invention, as the monochromatic luminescent devices in the OLED display panel must be subjected to rapid ageing to consume the early stage service life of the monochromatic luminescent devices, the preset voltage inputted in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel via the ageing treatment unit 01 is greater than the voltage inputted in the process of performing luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment via the test unit 02. Thus, high current higher than the current for driving the monochromatic luminescent devices to normally emit light may be produced in the monochromatic luminescent devices, so that the monochromatic luminescent devices are driven to emit light and heat. Therefore, the lifetime of the monochromatic luminescent devices can be rapidly consumed, and hence the rapid ageing treatment of the monochromatic luminescent devices can be achieved.

[0040] In the device provided by the embodiment of the present invention, in order to consume the early stage service life of the monochromatic luminescent devices by the rapid ageing of the monochromatic luminescent devices in the OLED display panel, a difference between a cathode voltage and an anode voltage loaded to the monochromatic luminescent devices by the ageing treatment unit 01 in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel is greater than a difference between a cathode voltage and an anode voltage loaded to the monochromatic luminescent devices by the test unit 02 in the process of performing luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment. Thus, high current higher than the current for driving the monochromatic luminescent devices to normally emit light may be produced in the monochromatic luminescent devices, so that the monochromatic luminescent devices are driven to emit light and heat. Therefore, the lifetime of the monochromatic luminescent devices can be rapidly consumed, and hence the rapid ageing treatment of the monochromatic luminescent devices can be achieved.

[0041] In the device provided by the embodiment of the present invention, in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel, the cathode voltage loaded to the monochromatic luminescent devices by the ageing treatment unit 01 is same and the anode voltage loaded to the monochromatic luminescent devices is same. Thus, voltage is loaded to cathodes and anodes of the monochromatic luminescent devices, so that high current is produced in the monochromatic luminescent devices, and hence the rapid current ageing of the monochromatic luminescent devices can be achieved. As same voltage is loaded to the cathodes of the monochromatic luminescent devices and same voltage is loaded to the anodes of the monochromatic luminescent devices, the ageing treatment of the monochromatic luminescent devices in the OLED display panel can be conveniently achieved at the same time, and hence the rapid ageing treatment of the OLED display panel can be achieved.

[0042] In the device provided by the embodiment of the present invention, in the process of performing ageing treatment by inputting preset voltage into the monochromatic luminescent devices in the OLED display panel via the ageing treatment unit 01, for instance, the preset duration of the light emitting of the monochromatic luminescent devices may be set to be same, so that the ageing treatment can be conveniently performed on the monochromatic luminescent devices in the OLED display panel at the same time, and hence the rapid ageing treatment of the OLED display panel can be achieved.

[0043] On the basis of the same inventive concept, the embodiment of the present invention provides an OLED display device, which comprises the OLED display panel processed by the method for correcting the color shift of the OLED display panel, provided by the embodiment of the present invention. The display device may be applied in any product or component with display function such as a mobile phone, a tablet PC, a TV, a display, a notebook computer, a digital picture frame and a navigator. As the principle of the display device for solving the problem is similar to that of the OLED display panel processed by the method for correcting the color shift of the OLED display panel, provided by the embodiment of the present invention, the embodiments of the display device may refer to the embodiments of the OLED display panel processed by the method for correcting the color shift of the OLED display panel, provided by the embodiment of the present invention. No further description will be given here.

[0044] In the method and device for correcting the color shift of the OLED display panel, and the display device, provided by the embodiment of the present invention, the monochromatic luminescent devices in the OLED display panel are subjected to ageing treatment; luminescent life-

time attenuation test is performed on the monochromatic luminescent devices after the ageing treatment respectively, and corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices are obtained; and the monochromatic luminescent devices with rapidest luminescent lifetime attenuation rate are subjected to ageing treatment again when the differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are greater than the preset threshold, until the differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices are less than the preset threshold. In the OLED display panel processed by the processing method, as the early stage service life of the monochromatic luminescent devices is rapidly consumed, the problem of afterimage of the OLED display panel in the early stage service is solved. Meanwhile, the lifetime attenuation rate of the processed monochromatic luminescent devices is moderate and becomes consistent. Therefore, when the OLED display panel is applied in corresponding OLED display product, as the lifetime attenuation rate of the monochromatic luminescent devices becomes consistent, the relative brightness of the monochromatic luminescent devices becomes consistent along with the rise of the use time, and hence the color shift phenomenon of display images of the OLED display product after long-term use can be effectively avoided.

[0045] The foregoing is only the preferred embodiments of the present invention and not intended to limit the scope of protection of the present invention. The scope of protection of the present invention should be defined by the appended claims.

[0046] The application claims priority to the Chinese patent application No. 201510020929.5, filed on January 15, 2015.

Claims

1. A method for correcting a color shift of an organic light-emitting diode (OLED) display panel, comprising:

    performing an ageing treatment (S101) on monochromatic luminescent devices of different colors in the OLED display panel;
    performing a luminescent lifetime attenuation test (S102) on the monochromatic luminescent devices of different colors after the ageing treatment respectively, and obtaining corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices of different colors, wherein the luminescent lifetime attenuation rate of each monochromatic luminescent device is the rate of attenuation with respect to time of the brightness of the light emitted by the monochromatic luminescent device;
    determining (S103) whether differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices of different colors are greater than a preset threshold, and, if so,
    performing an ageing treatment (S104) on the monochromatic luminescent devices with rapidest luminescent lifetime attenuation rate again until determining that differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices of different colors are less than the preset threshold,
    wherein performing the ageing treatment (S101) on the monochromatic luminescent devices of different colors in the OLED display panel includes:

        inputting different preset voltages into the monochromatic luminescent devices of different colors in the OLED display panel respectively, and allowing the monochromatic luminescent devices of different colors to emit light for a preset duration and subsequently be cooled to room temperature, wherein the different preset voltages are respectively determined by a material of an emitting layer of the monochromatic luminescent devices of different colors;
        wherein performing the luminescent lifetime attenuation test (S102) on the monochromatic luminescent devices of different colors after the ageing treatment respectively includes:

            inputting a voltage for the luminescent lifetime attenuation test into the monochromatic luminescent devices of different colors after the ageing treatment respectively, allowing the monochromatic luminescent devices of different colors to emit light for a second preset duration, measuring the brightnesses of the respective lights emitted by the monochromatic luminescent devices of different colours in the second preset duration and obtaining the corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices of different colors;
            wherein each of the preset voltages inputted in the process of performing the ageing treatment on the monochromatic luminescent devices of different colors in the OLED display panel is greater than the voltage inputted in the process of performing the luminescent lifetime attenuation test on monochromatic luminescent devices of different colors after the ageing treatment.

2. The method according to claim 1, wherein the absolute value of a difference between a cathode voltage and an anode voltage loaded to the monochromatic luminescent devices in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel is greater than the absolute value of a difference between a cathode voltage and an anode voltage loaded to the monochromatic luminescent devices in the process of performing the luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment.

3. The method according to any one of claims 1 or 2, wherein in the process of performing the ageing treatment by inputting preset voltages into the monochromatic luminescent devices in the OLED display panel, the preset durations of light emitting of the monochromatic luminescent devices are the same.

4. A device for correcting a color shift of an organic light-emitting diode (OLED) display panel, comprising: an ageing treatment unit (01), a test unit (02) and a processing unit (03), in which
the ageing treatment unit (01) is configured to perform an ageing treatment on monochromatic luminescent devices of different colors in the OLED display panel;
the test unit (02) is configured to perform a luminescent lifetime attenuation test on the monochromatic luminescent devices of different colors after the ageing treatment, and obtain corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices of different colors, wherein the luminescent lifetime attenuation rate of each monochromatic luminescent device is the rate of attenuation with respect to time of the brightness of the light emitted by the monochromatic luminescent device; and
the processing unit (03) is configured to perform an ageing treatment on the monochromatic luminescent devices with rapidest luminescent lifetime attenuation rate again when it is determined that differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices of different colors are greater than a preset threshold, until it is determined that the differences between the luminescent lifetime attenuation rates of the monochromatic luminescent devices of different colors are less than the preset threshold;
wherein the ageing treatment unit (01) is configured to input different preset voltages into the monochromatic luminescent devices of different colors in the OLED display panel respectively, and allow the monochromatic luminescent devices of different colors to emit light for a preset duration and subsequently be cooled to room temperature, wherein the different preset voltages are respectively determined by a material of an emitting layer of the monochromatic luminescent of different colors;
the test unit (02) is configured to input a voltage for the luminescent lifetime attenuation test into the monochromatic luminescent devices of different colors after the ageing treatment respectively, allow each of the monochromatic luminescent devices of different colors to emit light for a second preset duration, measure the brightnesses of the respective lights emitted by the monochromatic luminescent devices of different colours in the second preset duration and obtain the corresponding luminescent lifetime attenuation rates of the monochromatic luminescent devices of different colors; wherein each of the preset voltages inputted in the process of performing the ageing treatment on the monochromatic luminescent devices of different colors in the OLED display panel is greater than the voltage inputted in the process of performing the luminescent lifetime attenuation test on the monochromatic luminescent devices of different colors after the ageing treatment.

5. The device according to claim 4, wherein the absolute value of a difference between a cathode voltage and an anode voltage loaded to the monochromatic luminescent devices in the process of performing the ageing treatment on the monochromatic luminescent devices in the OLED display panel is greater than the absolute value of a difference between a cathode voltage and an anode voltage loaded to the monochromatic luminescent devices in the process of performing a luminescent lifetime attenuation test on the monochromatic luminescent devices after the ageing treatment.

6. The device according to any one of claims 4 or 5, wherein in the process of performing the ageing treatment by inputting the preset voltages into the monochromatic luminescent devices in the OLED display panel, the preset durations of light emitting of all the monochromatic luminescent devices are the same.

7. A system comprising the device of claim 4 and an organic light-emitting diode (OLED) display device comprising an OLED display panel including monochromatic luminescent devices of different colors.

Patentansprüche

1. Verfahren zum Korrigieren einer Farbverschiebung eines Anzeigepanels mit organischen Licht aussendenden Dioden (OLED) bzw. OLED-Anzeigepanels, aufweisend:

Durchführen einer Alterungsbehandlung (S101) auf einfarbigen Leuchteinheiten verschiedener

Farbe in dem OLED-Anzeigepanel;
Durchführen eines Leucht-Lebensdauer-Abschwächungstests (S102) jeweils auf den einfarbigen Leuchteinheiten verschiedener Farbe nach der Alterungsbehandlung und Erhalten entsprechender Leucht-Lebensdauer-Abschwächungsraten der einfarbigen Leuchteinheiten verschiedener Farbe, wobei die Leucht-Lebensdauer-Abschwächungsrate jeder einfarbigen Leuchteinheit die Abschwächungsrate über der Zeit der Helligkeit des Lichts, das durch die einfarbige Leuchteinheit ausgesendet wurde, ist;
Bestimmen (S103), ob Differenzen zwischen den Leucht-Lebensdauer-Abschwächungsraten der einfarbigen Leuchteinheiten verschiedener Farben größer als eine voreingestellte Schwelle sind; und, wenn dem so ist,
erneutes Durchführen einer Alterungsbehandlung (S104) auf den einfarbigen Leuchteinheiten mit schnellster Leucht-Lebensdauer-Abschwächungsrate, bis bestimmt wird, dass Differenzen zwischen den Leucht-Lebensdauer-Abschwächungsraten der einfarbigen Leuchteinheit verschiedener Farben kleiner als die vorbestimmte Schwelle sind,
wobei Durchführen der Alterungsbehandlung (S101) auf den einfarbigen Leuchteinheiten verschiedener Farbe in dem OLED-Anzeigepanel aufweist:

Anlegen unterschiedlicher voreingestellter Spannungen, jeweils an die einfarbigen Leuchteinheiten verschiedener Farbe in dem OLED-Anzeigepanel, und Ermöglichen, dass die einfarbigen Leuchteinheiten verschiedener Farben Licht für eine voreingestellte Dauer aussenden und nachfolgend auf Raumtemperatur abgekühlt werden, wobei die unterschiedlichen voreingestellten Spannungen jeweils bestimmt sind durch ein Material einer Aussendungsschicht der einfarbigen Leuchteinheiten verschiedener Farben;
wobei Durchführen des Leucht-Lebensdauer-Abschwächungstests (S102) auf den einfarbigen Leuchteinheiten unterschiedlicher Farben nach der Alterungsbehandlung jeweils aufweist:

Anlegen einer Spannung für den Leucht-Lebensdauer-Abschwächungstest jeweils an die einfarbigen Leuchteinheiten verschiedener Farben nach der Alterungsbehandlung, Ermöglichen, dass die einfarbigen Leuchteinheiten verschiedener Farben Licht für eine zweite voreingestellte Dauer aussenden, Messen der Helligkeit des jeweiligen Lichts, das durch die einfarbigen Leuchteinheiten verschiedener Farben in der zweiten vorbestimmten Dauer ausgesendet wurde, und Erhalten der zugehörigen Leucht-Lebensdauer-Abschwächungsraten der einfarbigen Leuchteinheiten verschiedener Farben;
wobei jede der voreingestellten Spannungen, die in dem Vorgang des Durchführens der Alterungsbehandlung an den einfarbigen Leuchteinheiten unterschiedlicher Farbe in dem OLED-Anzeigepanel angelegt wurden, größer als die Spannung sind, die in dem Vorgang des Durchführens des Leucht-Lebensdauer-Abschwächungstests auf den einfarbigen Leuchteinheiten unterschiedlicher Farbe nach der Alterungsbehandlung angelegt worden ist.

2. Verfahren gemäß Anspruch 1, wobei der Absolutwert einer Differenz zwischen einer Kathodenspannung und einer Anodenspannung, die an die einfarbigen Leuchteinheiten in dem Vorgang des Durchführens der Alterungsbehandlung auf den einfarbigen Leuchteinheiten in dem OLED-Anzeigepanel angelegt wurden, größer ist als der Absolutwert einer Differenz zwischen einer Kathodenspannung und einer Anodenspannung, die an den einfarbigen Leuchteinheiten in dem Vorgang des Durchführens des Leucht-Lebensdauer-Abschwächungstests auf den einfarbigen Leuchteinheiten nach der Alterungsbehandlung angelegt wurde.

3. Verfahren gemäß einem der Ansprüche 1 oder 2, wobei in dem Vorgang des Durchführens der Alterungsbehandlung durch Anlegen voreingestellter Spannungen an die einfarbigen Leuchteinheiten in dem OLED-Anzeigepanel die voreingestellten Dauern des Lichtaussendens der einfarbigen Leuchteinheit gleich sind.

4. Vorrichtung zum Korrigieren einer Farbverschiebung eines Anzeigepanels mit organischem Licht aussendenden Dioden (OLED) bzw. OLED-Anzeigepanel, aufweisend:

eine Alterungsbehandlungseinheit (01), eine Testeinheit (02) und einer Verarbeitungseinheit (03), wobei
die Alterungsbehandlungseinheit (01) konfiguriert ist, eine Alterungsbehandlung auf einfarbigen Leuchteinheiten verschiedener Farben in dem OLED-Anzeigepanel durchzuführen;
die Testeinheit (02) konfiguriert ist, einen

Leucht-Lebensdauer-Abschwächungstest auf den einfarbigen Leuchteinheiten verschiedener Farben nach der Alterungsbehandlung durchzuführen und entsprechende Leucht-Lebensdauer-Abschwächungsrate der einfarbigen Leuchteinheiten verschiedener Farben zu erhalten, wobei die Leucht-Lebensdauer-Abschwächungsrate einer jeden einfarbigen Leuchteinheit die Abschwächungsrate über der Zeit der Helligkeit des Lichts, das durch die einfarbige Leuchteinheit ausgesendet wurde, ist; und

die Verarbeitungseinheit (03) konfiguriert ist, eine Alterungsbehandlung der einfarbigen Leuchteinheiten mit schnellster Leucht-Lebensdauer-Abschwächungsrate erneut durchzuführen, wenn festgestellt worden ist, dass Differenzen zwischen den Leucht-Lebensdauer-Abschwächungsraten der einfarbigen Leuchteinheiten verschiedener Farben größer sind als eine voreingestellte Schwelle, bis festgestellt wird, dass die Differenzen zwischen den Leucht-Lebensdauer-Abschwächungsraten der einfarbigen Leuchteinheiten verschiedener Farben kleiner als die vorbestimmte Schwelle ist;

wobei die Alterungsbehandlungseinheit (01) konfiguriert ist, jeweils verschiedene voreingestellte Spannungen an die einfarbige Leuchteinheiten verschiedener Farben in dem OLED-Anzeigepanel anzulegen, und zu ermöglichen, dass die einfarbigen Leuchteinheiten verschiedener Farben Licht für eine vorbestimmte Dauer aussenden und danach auf Raumtemperatur abgekühlt zu werden, wobei die verschiedenen voreingestellten Spannungen jeweils durch ein Material einer Aussendungsschicht der einfarbigen Leuchteinheiten verschiedener Farben bestimmt werden;

die Testeinheit (02) konfiguriert ist, eine Spannung für den Leucht-Lebensdauer-Abschwächungstest an die einfarbigen Leuchteinheiten jeweils nach der Alterungsbehandlung anzulegen, um zu ermöglichen, dass jede der einfarbigen Leuchteinheiten unterschiedlicher Farben Licht für eine zweite voreingestellte Dauer aussendet, die Helligkeit des jeweiligen Lichts, das durch die einfarbigen Leuchteinheiten verschiedener Farben in der zweiten voreingestellten Dauer ausgesendet wurde, zu messen und die entsprechenden Leucht-Lebensdauer-Abschwächungsraten der einfarbigen Leuchteinheiten verschiedener Farben zu erhalten;

wobei jede der voreingestellten Spannungen, die in dem Vorgang des Durchführens der Alterungsbehandlung an die einfarbigen Leuchteinheiten unterschiedlicher Farbe in dem OLED-Anzeigepanel angelegt wurden, größer ist als die Spannung, die in dem Vorgang des Durchführens des Leucht-Lebensdauer-Abschwächungstests an die einfarbigen Leuchteinheiten unterschiedlicher Farben nach der Alterungsbehandlung angelegt wurde.

5. Vorrichtung gemäß Anspruch 4, wobei der Absolutwert einer Differenz zwischen einer Kathodenspannung und einer Anodenspannung, die an den einfarbigen Leuchteinheiten in dem Vorgang des Durchführens der Alterungsbehandlung auf dem einfarbigen Leuchteinheiten in dem OLED-Anzeigepanel angelegt wurde, größer ist als der Absolutwert einer Differenz zwischen einer Kathodenspannung und einer Anodenspannung, die an die einfarbigen Leuchteinheiten in dem Vorgang des Durchführens eines Leucht-Lebensdauer-Abschwächungstests auf den einfarbigen Leuchteinheiten nach der Alterungsbehandlung angelegt wurde.

6. Vorrichtung gemäß einem der Ansprüche 4 oder 5, wobei in dem Vorgang des Durchführens der Alterungsbehandlung durch Anlegen der voreingestellten Spannungen an die einfarbigen Leuchteinheiten in dem OLED-Anzeigepanel die voreingestellten Dauern des Lichtaussendens aller einfarbigen Leuchteinheiten gleich sind.

7. System mit der Vorrichtung gemäß Anspruch 4 und eine Anzeigenvorrichtung mit organischem Licht aussendenden Dioden (OLED) bzw. OLED-Anzeigevorrichtung, aufweisend ein OLED-Anzeigepanel mit einfarbigen Leuchteinheiten unterschiedlicher Farben.

Revendications

1. Procédé pour corriger une distorsion chromatique d'un panneau d'affichage à diodes électroluminescentes organiques (OLED), comprenant :

la réalisation d'un traitement de vieillissement (S101) sur des dispositifs luminescents monochromes de différentes couleurs dans le panneau d'affichage à OLED ;

la réalisation d'un test d'atténuation de durée de vie en termes de luminescence (S102) respectivement sur les dispositifs luminescents monochromes de différentes couleurs après le traitement de vieillissement, et l'obtention de vitesses d'atténuation de durée de vie en termes de luminescence correspondantes des dispositifs luminescents monochromes de différentes couleurs, dans lequel la vitesse d'atténuation de durée de vie en termes de luminescence de chaque dispositif luminescent monochrome est la vitesse d'atténuation en fonction du temps de la luminosité de la lumière qui est émise par le dis-

positif luminescent monochrome ;
la détermination (S103) de si oui ou non des différences entre les vitesses d'atténuation de durée de vie en termes de luminescence des dispositifs luminescents monochromes de différentes couleurs sont supérieures à un seuil prédéfini, et s'il en est ainsi,
la réalisation à nouveau d'un traitement de vieillissement (S104) sur les dispositifs luminescents monochromes selon une vitesse d'atténuation de durée de vie en termes de luminescence la plus rapide jusqu'à la détermination du fait que des différences entre les vitesses d'atténuation de durée de vie en termes de luminescence des dispositifs luminescents monochromes de différentes couleurs sont inférieures au seuil prédéfini ; dans lequel :
la réalisation du traitement de vieillissement (S101) sur les dispositifs luminescents monochromes de différentes couleurs dans le panneau d'affichage à OLED inclut :
l'entrée de différentes tensions prédéfinies respectivement à l'intérieur des dispositifs luminescents monochromes de différentes couleurs dans le panneau d'affichage à OLED, et le fait de permettre que les dispositifs luminescents monochromes de différentes couleurs émettent une lumière pendant une durée prédéfinie et qu'ils soient subséquemment refroidis jusqu'à la température ambiante, dans lequel les différentes tensions prédéfinies sont respectivement déterminées par un matériau d'une couche d'émission des dispositifs luminescents monochromes de différentes couleurs ; dans lequel :
la réalisation du test d'atténuation de durée de vie en termes de luminescence (S102) respectivement sur les dispositifs luminescents monochromes de différentes couleurs après le traitement de vieillissement inclut :
l'entrée d'une tension pour le test d'atténuation de durée de vie en termes de luminescence respectivement à l'intérieur des dispositifs luminescents monochromes de différentes couleurs après le traitement de vieillissement, le fait de permettre que les dispositifs luminescents monochromes de différentes couleurs émettent une lumière pendant une seconde durée prédéfinie, la mesure de la luminosité des lumières respectives qui sont émises par les dispositifs luminescents monochromes de différentes couleurs pendant la seconde durée prédéfinie et l'obtention des vitesses d'atténuation de durée de vie en termes de luminescence correspondantes des dispositifs luminescents monochromes de différentes couleurs ; dans lequel :
chacune des tensions prédéfinies qui sont entrées au niveau du processus de réalisation du traitement de vieillissement sur les dispositifs luminescents monochromes de différentes couleurs dans le panneau d'affichage à OLED est supérieure à la tension qui est entrée au niveau du processus de réalisation du test d'atténuation de durée de vie en termes de luminescence sur les dispositifs luminescents monochromes de différentes couleurs après le traitement de vieillissement.

2. Procédé selon la revendication 1, dans lequel la valeur absolue d'une différence entre une tension de cathode et une tension d'anode qui sont chargées sur les dispositifs luminescents monochromes au niveau du processus de réalisation du traitement de vieillissement sur les dispositifs luminescents monochromes dans le panneau d'affichage à OLED est supérieure à la valeur absolue d'une différence entre une tension de cathode et une tension d'anode qui sont chargées sur les dispositifs luminescents monochromes au niveau du processus de réalisation du test d'atténuation de durée de vie en termes de luminescence sur les dispositifs luminescents monochromes après le traitement de vieillissement.

3. Procédé selon l'une quelconque des revendications 1 ou 2, dans lequel, au niveau du processus de réalisation du traitement de vieillissement en entrant des tensions prédéfinies à l'intérieur des dispositifs luminescents monochromes dans le panneau d'affichage à OLED, les durées prédéfinies d'émission de lumière des dispositifs luminescents monochromes sont les mêmes.

4. Dispositif pour corriger une distorsion chromatique d'un panneau d'affichage à diodes électroluminescentes organiques (OLED), comprenant : une unité de traitement de vieillissement (01), une unité de test (02) et une unité de traitement (03), dans lequel :

l'unité de traitement de vieillissement (01) est configurée de manière à ce qu'elle réalise un traitement de vieillissement sur les dispositifs luminescents monochromes de différentes couleurs dans le panneau d'affichage à OLED ;
l'unité de test (02) est configurée de manière à ce qu'elle réalise un test d'atténuation de durée de vie en termes de luminescence sur les dispositifs luminescents monochromes de différentes couleurs après le traitement de vieillissement, et de manière à ce qu'elle obtienne des vitesses d'atténuation de durée de vie en termes de luminescence correspondantes des dispositifs luminescents monochromes de différentes couleurs, dans lequel la vitesse d'atténuation de durée de vie en termes de luminescence de chaque dispositif luminescent monochrome est la vitesse d'atténuation en fonction du temps de la luminosité de la lumière qui est émise par le dis-

positif luminescent monochrome ; et
l'unité de traitement (03) est configurée de manière à ce qu'elle réalise un traitement de vieillissement sur les dispositifs luminescents monochromes selon une vitesse d'atténuation de durée de vie en termes de luminescence la plus rapide lorsqu'il est déterminé que des différences entre les vitesses d'atténuation de durée de vie en termes de luminescence des dispositifs luminescents monochromes de différentes couleurs sont supérieures à un seuil prédéfini jusqu'à ce qu'il soit déterminé que les différences entre les vitesses d'atténuation de durée de vie en termes de luminescence des dispositifs luminescents monochromes de différentes couleurs sont inférieures au seuil prédéfini ; dans lequel :

l'unité de traitement de vieillissement (01) est configurée de manière à ce qu'elle entre différentes tensions prédéfinies respectivement à l'intérieur des dispositifs luminescents monochromes de différentes couleurs dans le panneau d'affichage à OLED, et de manière à ce qu'elle permette que les dispositifs luminescents monochromes de différentes couleurs émettent une lumière pendant une durée prédéfinie et qu'ils soient subséquemment refroidis jusqu'à la température ambiante, dans lequel les différentes tensions prédéfinies sont respectivement déterminées par un matériau d'une couche d'émission des dispositifs luminescents monochromes de différentes couleurs ;
l'unité de test (02) est configurée de manière à ce qu'elle entre une tension pour le test d'atténuation de durée de vie en termes de luminescence respectivement à l'intérieur des dispositifs luminescents monochromes de différentes couleurs après le traitement de vieillissement, de manière à ce qu'elle permette que chacun des dispositifs luminescents monochromes de différentes couleurs émette une lumière pendant une seconde durée prédéfinie, de manière à ce qu'elle mesure la luminosité des lumières respectives qui sont émises par les dispositifs luminescents monochromes de différentes couleurs pendant la seconde durée prédéfinie et de manière à ce qu'elle obtienne les vitesses d'atténuation de durée de vie en termes de luminescence correspondantes des dispositifs luminescents monochromes de différentes couleurs ; dans lequel :
chacune des tensions prédéfinies qui sont entrées au niveau du processus de réalisation du traitement de vieillissement sur les dispositifs luminescents monochromes de différentes couleurs dans le panneau d'affichage à OLED est supérieure à la tension qui est entrée au niveau du processus de réalisation du test d'atténuation de durée de vie en termes de luminescence sur les dispositifs luminescents monochromes de différentes couleurs après le traitement de vieillissement.

5. Dispositif selon la revendication 4, dans lequel la valeur absolue d'une différence entre une tension de cathode et une tension d'anode qui sont chargées sur les dispositifs luminescents monochromes au niveau du processus de réalisation du traitement de vieillissement sur les dispositifs luminescents monochromes dans le panneau d'affichage à OLED est supérieure à la valeur absolue d'une différence entre une tension de cathode et une tension d'anode qui sont chargées sur les dispositifs luminescents monochromes au niveau du processus de réalisation d'un test d'atténuation de durée de vie en termes de luminescence sur les dispositifs luminescents monochromes après le traitement de vieillissement.

6. Dispositif selon l'une quelconque des revendications 4 ou 5, dans lequel, au niveau du processus de réalisation du traitement de vieillissement en entrant les tensions prédéfinies à l'intérieur des dispositifs luminescents monochromes dans le panneau d'affichage à OLED, les durées prédéfinies d'émission de lumière de tous les dispositifs luminescents monochromes sont les mêmes.

7. Système comprenant le dispositif selon la revendication 4 et un dispositif d'affichage à diodes électroluminescentes organiques (OLED) comprenant un panneau d'affichage à OLED qui inclut des dispositifs luminescents monochromes de différentes couleurs.

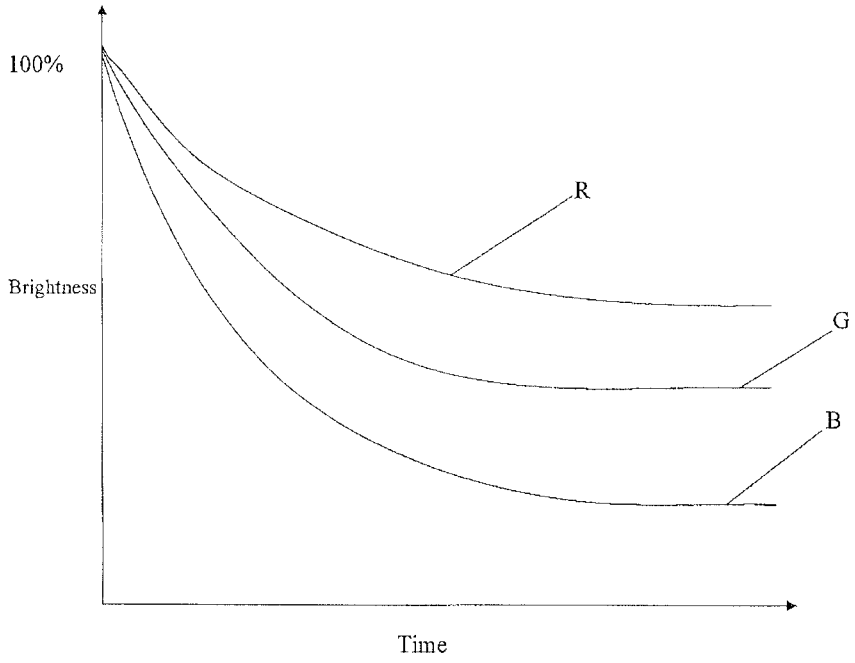
100%
Brightness
R
G
B
Time

FIG. 1

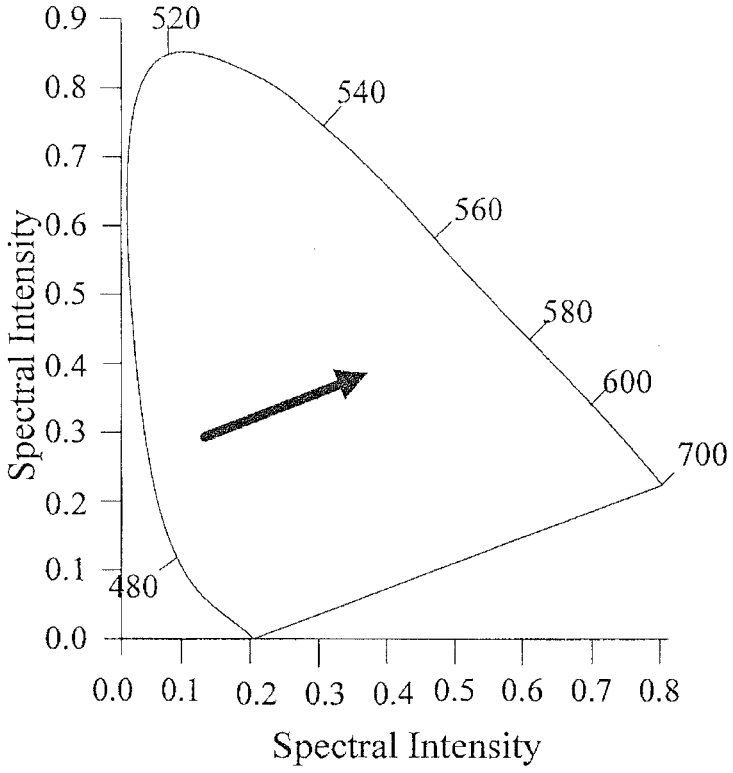
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Spectral Intensity
520
540
560
580
600
700
480
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8
Spectral Intensity

FIG. 2

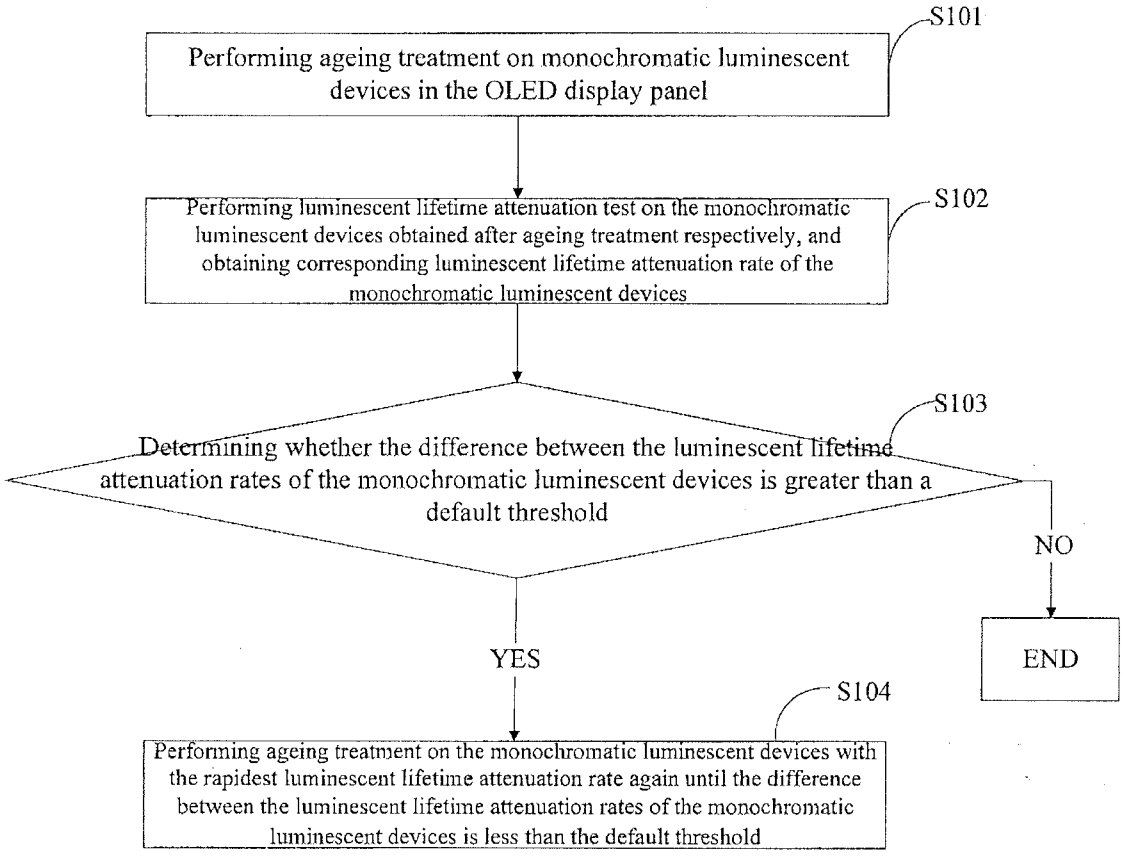
S101
Performing ageing treatment on monochromatic luminescent devices in the OLED display panel
S102
Performing luminescent lifetime attenuation test on the monochromatic luminescent devices obtained after ageing treatment respectively, and obtaining corresponding luminescent lifetime attenuation rate of the monochromatic luminescent devices
S103
Determining whether the difference between the luminescent lifetime attenuation rates of the monochromatic luminescent devices is greater than a default threshold
NO
END
YES
S104
Performing ageing treatment on the monochromatic luminescent devices with the rapidest luminescent lifetime attenuation rate again until the difference between the luminescent lifetime attenuation rates of the monochromatic luminescent devices is less than the default threshold

FIG. 3

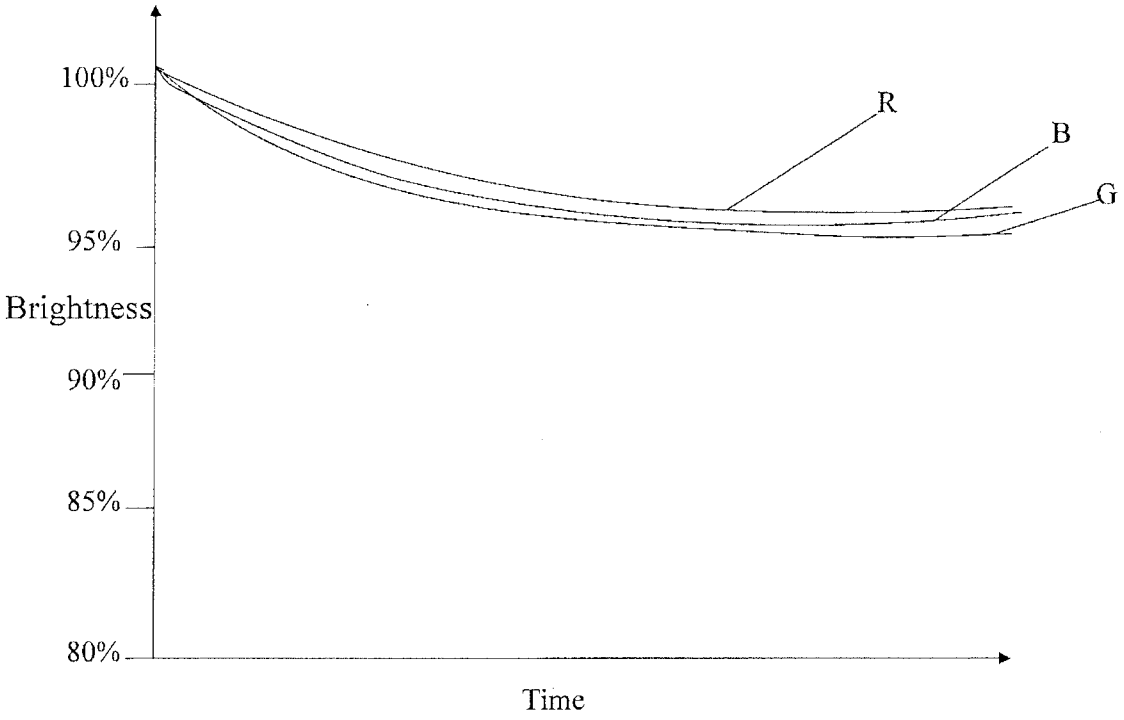
100%
95%
Brightness
90%
85%
80%
R
B
G
Time

FIG. 4

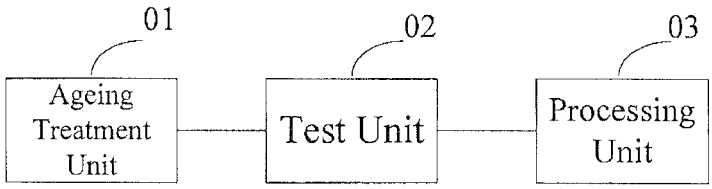

FIG. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 2008224966 A1 **[0004]**
- CN 201510020929 **[0046]**

专利名称(译)	OLED显示面板的色相误差校正方法，装置及显示装置		
公开(公告)号	EP3246908B1	公开(公告)日	2019-10-02
申请号	EP2015794447	申请日	2015-07-16
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IPC分类号	G09G3/32 G09G3/3208		
优先权	201510020929.5 2015-01-15 CN		
其他公开文献	EP3246908A4 EP3246908A1		
外部链接	Espacenet		

摘要(译)

公开了一种用于校正OLED显示面板的色偏的方法和设备以及一种显示设备。该方法包括：对OLED显示面板中的单色发光器件进行时效处理；老化处理后，分别对单色发光器件进行发光寿命衰减测试，得到相应的单色发光器件的发光寿命衰减率；当所述单色发光器件的发光寿命衰减率之间的差异大于预设阈值时，对所述发光寿命衰减率最快的单色发光器件再次进行时效处理，直至所述单色发光器件的发光寿命衰减率之间的差异。小于预设阈值。该方法有效地校正了长期使用后OLED显示产品的显示图像的色偏现象。

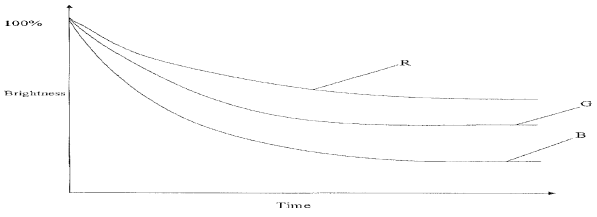

FIG. 1

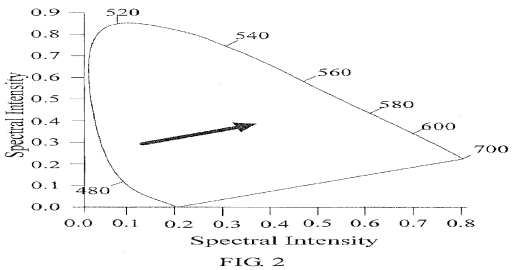

FIG. 2