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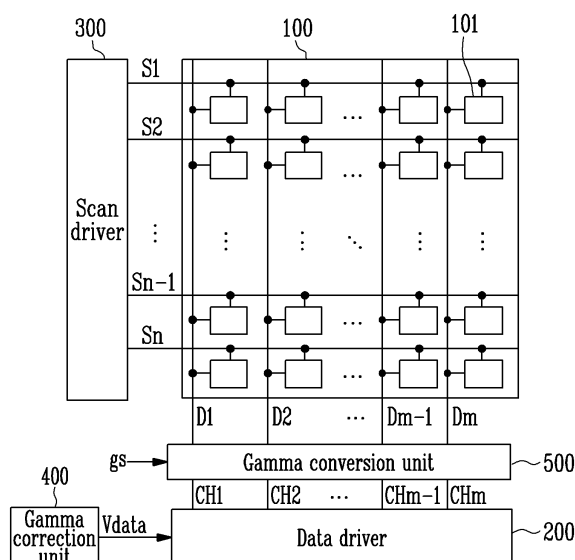
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(54) **Organic light emitting display and method for driving the same background**

(57) In an organic light emitting display, a gamma can be applied according to color regardless of the sequence of data output from a data driver (200), even if a separate gamma by color is used.

FIG. 1A



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Description

1. Field of the Invention

[0001] Embodiments of the present invention relate to an organic light emitting display and a method for driving the same.

2. Discussion of Related Art

[0002] Recently, various flat panel displays having a lighter weight and a smaller volume than that of a cathode ray tube, have been developed. The flat panel displays include a liquid crystal display, a field emission display, a plasma display panel, an organic light emitting display, etc.

[0003] Among others, an organic light emitting display has various advantages such as an excellent color reproducibility, a slimness, etc. so that its applications are rapidly expanding to a PDA, an MP3, etc. in addition to a cellular phone.

[0004] The organic light emitting display displays an image using an organic light emitting diode (OLED) whose brightness is determined corresponding to the amount of input current.

[0005] The organic light emitting diode includes red, green, or blue light emitting layer located between an anode electrode and a cathode electrode and has brightness determined according to the amount of current flowing between the anode electrode and the cathode electrode.

[0006] At this time, the red, green and blue light emitting layer are formed of different materials, respectively, and thus a separate gamma is applied to each of them.

SUMMARY OF THE INVENTION

[0007] It is an aspect of embodiments according to the present invention to provide a driver circuit for an organic light emitting display in which gamma can be applied in accordance with color regardless of the sequence of data output from a data driver, even if a separate gamma by color is used, an organic light emitting display comprising such a driver circuit. Accordingly, a first aspect of the invention provides a driver circuit as set forth in claim 1. Preferred embodiments are subject of the dependent claims 2 through 14. A second aspect of the invention provides an organic light emitting display comprising the driver circuit of the first inventive aspect as set forth in claim 15.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The accompanying drawings, together with the specification illustrate exemplary embodiments of the present invention, and, together with the description, serve to explain the principles of the present invention.

[0009] FIG. 1A is a structure view of an organic light

emitting display according to an embodiment of the present invention;

[0010] FIG. 1B is a structure view of an organic light emitting display according to an embodiment of the present invention;

[0011] FIG. 2 is a structure view showing an arrangement of pixels of a pixel unit of the organic light emitting display of FIG. 1;

[0012] FIG. 3 is a circuit diagram showing a gamma correction unit employed in the organic light emitting display according to an embodiment of the present invention;

[0013] FIG. 4 is a circuit diagram showing a first embodiment of a gamma conversion unit employed in the organic light emitting display according to an embodiment of the present invention;

[0014] FIG. 5 is a circuit diagram showing a second embodiment of a gamma conversion unit employed in the organic light emitting display according to an embodiment of the present invention; and

[0015] FIG. 6 is a circuit diagram showing a third embodiment of a gamma conversion unit employed in the organic light emitting display according to an embodiment of the present invention.

DETAILED DESCRIPTION

[0016] Hereinafter, exemplary embodiments according to the present invention will be described with reference to the accompanying drawings.

[0017] FIG. 1A and 1B are a structure view of an organic light emitting display according to an embodiment of the present invention. Referring to FIG. 1A and 1B, the organic light emitting display includes a pixel unit 100, a data driver 200, a scan driver 300, a gamma correction unit 400, and a gamma conversion unit 500. and the data driver 200 and the gamma conversion unit 500 are positioned above the pixel unit 100 or below the pixel unit 100.

[0018] The pixel unit 100 includes a plurality of pixels 101, each of which includes an organic light emitting diode(not shown) emitting light in accordance with the flow of current. Also, the pixel unit 100 includes n scan lines S1, S2, ..., Sn-1, and Sn formed in a row direction and transferring scan signals, and m data lines D1, D2, ..., Dm-1, and Dm formed in a column direction and transferring data signals.

[0019] Also, the pixel unit 100 is driven by receiving first power and second power. Therefore, the pixel unit 100 emits light to display an image by current flowing in an organic light emitting diode by the scan signals, the data signals, the light emitting signals, the first power, and the second power. The plurality of pixels also include red, green and blue sub-pixels.

[0020] The data driver 200 generates data signals using image signals (R, G, and B data) having red, green, and blue components. The data driver 200 is coupled to the data lines D1, D2, ... Dm-1, and Dm in the pixel unit 100 via output channels outputting data signals to apply

the data signals to the pixel unit 100. As for the output channels of the data driver to output the data signals, 1st, 4th, 7th, 10th, etc. output channels are applied with red gamma, 2nd, 5th, 8th, 11th, etc. output channels are applied with green gamma, and 3rd, 6th, 9th, 12th, etc. output channels are applied with blue gamma.

[0021] The scan driver 300 generates scan signals and is coupled to the scan lines S1, S2, ... Sn-1, and Sn to transfer the scan signals to a specific row of the pixel unit 100. A pixel 101 having received a scan signal receives a data signal output from the data driver 200, so that the pixel 101 receives voltage corresponding to the data signal.

[0022] The gamma correction unit 400 adjusts the voltage ratio of a data signal to a gray scale. Also, a separate gamma is employed for each of red, green, and blue because of different light emitting efficiencies of red, green, and blue light emitting layers. For example, as for expressing gray scales from 0 to 63, the voltage of a data signal corresponding to a 30 gray scale is set to 3.0V in red, 3.1 V in green, and 3.2V in blue because of different efficiencies of red, green, and blue.

[0023] The gamma conversion unit 500 allows a red gamma to be applied to red data signals transferred to a red pixel, a green gamma to be applied to green data signals transferred to a green pixel, and a blue gamma to be applied to blue data signals transferred to a blue pixel. That is, a data signal applied with the red gamma is transferred to the red pixel of the pixel unit, a data signal applied with the green gamma is transferred to the green pixel thereof, and a data signal applied with the blue gamma is transferred to the blue pixel thereof, regardless of the output channels of the data driver 200, outputting the data signals. The gamma conversion unit 500 operates according to gamma conversion signals gs.

[0024] FIG. 2 is a structure view showing an arrangement of pixels of a pixel unit of the organic light emitting display of FIG. 1A and 1B. Referring to FIG. 2, one pixel 101 of the pixel unit 100 includes three sub-pixels, which include red, green, and blue sub-pixels 101R, 101G, and 101B. The respective sub-pixels 101R, 101G, and 101B are coupled to the data lines to receive the data signals.

[0025] Also, the red, green, and blue sub-pixels 101R, 101G, and 101B are positioned in each pixel 101 in order from left to right.

[0026] The data driver 200 is coupled to the pixel unit 100 and may output data signals in two manners: a first case in which red, green, and blue data signals are output by the sequence of 1st, 2nd, 3rd, etc. output channels of the data driver 200, and a second case in which blue, green, and red data signals are output by the sequence of 1st, 2nd, 3rd, etc. output channels of the data driver 200. One of the two cases as above is selected according to whether the data driver 200 is positioned above the pixel unit 100 or below the pixel unit 100, or whether the pixel unit 100 is a front light-emitting type or a rear light-emitting type. Thus, known data drivers may only be used for either type of pixel units.

[0027] In the first case, a first output channel is coupled with a pixel applied with a red gamma, receiving a red data signal, and expressing red. A second output channel is coupled with a pixel applied with a green gamma, receiving a green data signal, and expressing green. A third output channel is coupled with a pixel applied with a blue gamma, receiving a blue data signal, and expressing blue. In the second case, a first output channel is coupled with a pixel applied with a red gamma, receiving a blue data signal, and expressing blue. A second output channel is coupled with a pixel applied with a green gamma, receiving a green data signal, and expressing green. A third output channel is coupled with a pixel applied with a blue gamma, receiving a red data signal, and expressing red.

[0028] Therefore, in the first case, the pixels expressing red, green and blue are applied with a red, green and blue gamma, thereby displaying brightness proper for each color. In the second case, however, the pixels expressing red, green and blue are applied with a blue, green and red gamma, and thus the brightness proper for each color is not expressed.

[0029] In order to solve the problem, the gamma conversion unit 500 is coupled between the data driver 20 and the pixel unit 10, thereby allowing a data signal applied with a red gamma to be transferred to the pixel expressing red, allowing a data applied with green gamma to be transferred to the pixel expressing green, and allowing a data signal applied with blue gamma to be transferred to the pixel expressing blue.

[0030] FIG. 3 is a circuit diagram showing a gamma correction unit employed in an organic light emitting display according to an embodiment of the present invention. Referring to FIG. 3, there are three gamma correction units 400 to be applied to red, green and blue data signals.

[0031] Each gamma correction unit 400 includes a register unit 60, a ladder resistor 61, an amplitude control register 62, a curve control register 63, a first selector 64 to sixth selector 69, and a gray scale voltage amplifier 70.

[0032] The register unit 60 stores a proper resistor set value for red if the gamma correction unit 400 is a red gamma correction unit, stores a proper resistor set value for green if the gamma correction unit 400 is a green gamma correction unit, and stores a proper resistor set value for blue if the gamma correction unit 400 is a blue gamma correction unit. In other words, when the gamma correction unit 400 is coupled to the red pixel to perform gamma correction, the register unit 60 stores a register set value proper for the red pixel. When the gamma correction unit 400 is coupled to the green pixel to perform gamma correction, the register unit 60 stores a register set value proper for the green pixel. When the gamma correction unit 400 is coupled to the blue pixel to perform gamma correction, the register unit 60 stores a register set value proper for the blue pixel.

[0033] Among the register values stored in the register unit 60, the upper 10 bits are input to the amplitude control

register 62 and the lower 16 bits are input to the curve control register 63, respectively, thereby being selected as a register set value.

[0034] The ladder resistor 61 has a configuration in which a plurality of variable resistors are coupled to each other in series between the uppermost level voltage V_{HI} and the lowermost level voltage V_{LO}, and a plurality of gray scale voltages are generated through the ladder resistor 61.

[0035] The amplitude control register 62 outputs 3-bit register set values to the first selector 64, and 7-bit register set values to the second selector 65. At this time, the number of selectable gray scales may be increased by increasing the number of the set bits, and a different gray scale voltage may be selected by changing the register set values.

[0036] The curve control register 63 outputs 4-bit register set values to the third selector 66 to the sixth selector 69, respectively. At this time, the register set values may be changed, and the selectable gray voltage may be controlled according to the register set values.

[0037] The amplitude control register 62 is input with the upper 10 bits register signals, and the curve control register 63 is input with the lower 16 bits register signals.

[0038] The first selector 64 selects a gray scale voltage corresponding to a 3-bit register set value in the amplitude control register 62, among a plurality of gray scale voltages distributed through the ladder resistor 61, and outputs the gray scale voltage as the uppermost gray scale voltage.

[0039] The second selector 65 selects a gray scale voltage corresponding to a 7-bit register set value in the amplitude control register 62, among a plurality of gray scale voltages distributed through the ladder resistor 61, and outputs the gray scale voltage as the lowermost gray scale voltage.

[0040] The third selector 66 distributes a voltage between the gray scale voltage output from the first selector 64 and the gray scale voltage output from the second selector 65 into a plurality of gray scale voltages through a plurality of resistance columns and selects a gray scale voltage corresponding to a 4-bit register set value to be output.

[0041] The fourth selector 67 distributes a voltage between the gray scale voltage output from the first selector 64 and the gray scale voltage output from the third selector 66 into a plurality of gray scale voltages through a plurality of resistance columns and selects a gray scale voltage corresponding to a 4-bit register set value to be output.

[0042] The fifth selector 68 selects and outputs a gray scale voltage corresponding to a 4-bit register set value among gray scale voltages between the first selector 64 and the fourth selector 67.

[0043] The sixth selector 69 selects and outputs a gray scale voltage corresponding to a 4-bit register set value among gray scale voltages between the first selector 64 and the fifth selector 68. A curve of an intermediate gray

scale can be adjusted according to the register set values of the curve control register 63 through the operations as above, making it possible to adjust gamma properties with ease according to respective properties of light emitting elements. In order to allow the gamma curve property to become convex downwardly, a potential difference between gray scales is set to increase as a lower gray scale is represented. To the contrary, in order to allow the gamma curve property to become convex upwardly, the resistance value of each ladder resistor 61 is set to allow a potential difference between gray scales to be reduced as a lower gray scale is represented.

[0044] The gray scale voltage amplifier 70 outputs a plurality of gray scale voltages each corresponding to a plurality of gray scales to be displayed on the pixel unit 100. In FIG. 2, the output of the gray scale voltages corresponding to 64 gray scales has been represented.

[0045] FIG. 4 is a circuit diagram showing a first embodiment of a gamma conversion unit employed in the organic light emitting display according to an embodiment of the present invention. Referring to FIG. 4, a gamma conversion unit 500 includes a first transistor M1, a second transistor M2, a third transistor M3, and a fourth transistor M4. It is illustrated that the first transistor M1 and the fourth transistor M4 are implemented as PMOS transistors, and the second transistor M2 and the third transistor M3 are implemented as NMOS transistors. However, if the first transistor M1 and the fourth transistor M4 are implemented as NMOS transistors, the second transistor M2 and the third transistor M3 may be implemented as PMOS transistors.

[0046] A source of the first transistor M1 is coupled to a first channel of a data driver 200, and a drain thereof is coupled to a first data line D1. A gate thereof is coupled to a gamma conversion signal line GS.

[0047] A source of the second transistor M2 is coupled to the first channel of the data driver 200, and a drain thereof is coupled to a third data line D3. A gate thereof is coupled to the gamma conversion signal line GS.

[0048] A source of the third transistor M3 is coupled to a third channel CH3 of the data driver 200, and a drain thereof is coupled to the first data line D1. A gate thereof is coupled to the gamma conversion signal line GS.

[0049] A source of the fourth transistor M4 is coupled to the third channel CH3 of the data driver 200, and a drain thereof is coupled to the third data line D3. A gate thereof is coupled to the gamma conversion signal line GS.

[0050] A second channel CH2 of the data driver 200 is directly coupled to a second data line D2.

[0051] If a gamma conversion signal in a low state is transferred through the gamma conversion signal line GS, the first transistor M1 and the fourth transistor M4 turn on, and the second transistor M2 and the third transistor M3 turn off. In other words, the first channel CH1 of the data driver 200 is coupled to the first data line D1, the second channel CH2 of the data driver 200 is coupled to the second data line D2, and the third channel CH3 of the data driver 200 is coupled to the third data line D3.

[0052] If a gamma conversion signal in a high state is transferred through the gamma conversion signal line GS, the first transistor M1 and the fourth transistor M4 turn off, and the second transistor M2 and the third transistor M3 turn on. In other words, the first channel CH1 of the data driver 200 is coupled to the third data line D3, the second channel CH2 of the data driver 200 is coupled to the second data line D2, and the third channel CH3 of the data driver 200 is coupled to the first data line D1.

[0053] Therefore, if the gamma conversion signal transferred through the gamma conversion signal line GS is in a low state, red data is transferred to the first data line D1, green data is transferred to the second data line D2, and blue data is transferred to the third data line D3. If the gamma conversion signal transferred through the gamma conversion signal line GS is in a high state, blue data is transferred to the first data line D1, green data is transferred to the second data line D2, and red data is transferred to the third data line D3.

[0054] Through the operations as above, a red sub-pixel 101R of the pixel unit 100 receives a data signal applied with the red gamma, a green sub-pixel 101G thereof receives a data signal applied with the green gamma, and a blue sub-pixel 101B thereof receives a data signal applied with the blue gamma.

[0055] FIG. 5 is a circuit diagram showing a second embodiment of a gamma conversion unit employed in the organic light emitting display according to an embodiment of the present invention. Referring to FIG. 5, a gamma conversion unit 500 includes a first transistor M1, a second transistor M2, a third transistor M3, a fourth transistor M4, and a fifth transistor M5. Also, the first transistor M1, the third transistor M3, and the fifth transistor M5 are implemented as PMOS transistors, and the second transistor M2 and the fourth transistor M4 are implemented as NMOS transistors. Also, if the first transistor M1, the third transistor M3, and the fifth transistor M5 are implemented as NMOS transistors, the second transistor M2 and the fourth transistor M4 may be implemented as PMOS transistors.

[0056] A source of the first transistor M1 is coupled to a first channel CH1 of a data driver 200, and a drain thereof is coupled to a first node N1. A gate thereof is coupled to a gamma conversion signal line GS 1.

[0057] A source of the second transistor M2 is coupled to a third channel CH3 of the data driver 200, and a drain thereof is coupled to a second node N2. A gate thereof is coupled to the gamma conversion signal line GS 1.

[0058] A source of the third transistor M3 is coupled to the first node N1, and a drain thereof is coupled to a first data line D1. A gate thereof is coupled to a second gamma conversion signal line GS2.

[0059] A source of the fourth transistor M4 is coupled to the second node N2, and a drain thereof is coupled to a third data line D3. A gate thereof is coupled to the second gamma conversion signal line GS2.

[0060] A source of the fifth transistor M5 is coupled to the first node N1, and a drain thereof is coupled to the

second node N2. A gate thereof is coupled to a third gamma conversion signal line GS3.

[0061] A second channel CH2 of the data driver 200 is directly coupled to a second data line D2.

[0062] If red, green, and blue data are output from the first channel CH1, the second channel CH2, and the channel CH3, and red, green, and blue pixels are coupled to the first data line D1, the second data line D2, and the third data line D3, the transistors operate as follows.

[0063] First, if a first gamma conversion signal and a second gamma conversion signal are in a low state, and a third gamma conversion signal is in a high state, the first transistor and the third transistor turn on, and the second transistor, the fourth transistor, and the fifth transistor turn off. In such a state, the red data output from the first channel CH1 is transferred to the first data line D1. Then, the red data is transferred to the red pixel.

[0064] If a first gamma conversion signal, a second gamma conversion signal, and a third gamma conversion signal are in a high state, the first transistor M1, the third transistor M3, and the fifth transistor M5 turn off, and the second transistor M2 and the fourth transistor M4 turn on. In such a state, the blue data output from the third channel CH3 is transferred to the third data line D3. Then, the blue data is transferred to the blue pixel.

[0065] At this time, the second channel CH2 is directly coupled to the second data line D2, so that the green data is transferred to the green pixel.

[0066] If blue, green, and red data are output from the first channel CH1, the second channel CH2, and the channel CH3, and red, green, and blue pixels are coupled to the first data line D1, the second data line D2, and the third data line D3, the transistors operate as follows.

[0067] First, if a first gamma conversion signal and a third gamma conversion signal are in a low state, and a second gamma conversion signal is in a high state, the first transistor M1, the fourth transistor M4, and the fifth transistor M5 turn on, and the second transistor M2 and the third transistor M3 turn off. In such a state, the blue data output from the first channel CH1 is transferred to the third data line D3 via the first transistor M1, the fifth transistor M5, and the fourth transistor M4. Then, the blue data is thereby transferred to the blue pixel.

[0068] If a first gamma conversion signal is in a high state, and a second gamma conversion signal and a third gamma conversion signal are in a low state, the second transistor M2, the third transistor M3, and the fifth transistor M5 turn on, and the first transistor M1 and the fourth transistor M4 turn off. In such a state, the red data output from the third channel CH3 is transferred to the first data line D1 via the second transistor M2, the fifth transistor M5, and the third transistor M3. Then, the red data is thereby transferred to the red pixel.

[0069] At this time, the second channel CH2 is directly coupled to the second data line D2, so that the green data is transferred to the green pixel.

[0070] Through the operations as above, a red sub-pixel 101R of the pixel unit 100 receives a data signal

applied with the red gamma, a green sub-pixel 101G thereof receives a data signal applied with the green gamma, and a blue sub-pixel 101B thereof receives a data signal applied with the blue gamma.

[0071] FIG. 6 is a circuit diagram showing a third embodiment of a gamma conversion unit employed in the organic light emitting display according to an embodiment of the present invention. Referring to FIG. 6, a gamma conversion unit 500 includes a first transistor M1, a second transistor M2, a third transistor M3, and a fourth transistor M4. Although it is illustrated that the first transistor M1 to the fourth transistor M4 are implemented as PMOS transistors, the first transistor M1 to the fourth transistor M4 may also be implemented as NMOS transistors.

[0072] A source of the first transistor M1 is coupled to a first channel CH1 of a data driver 200, and a drain thereof is coupled to a first data line D1. A gate thereof is coupled to a second gamma conversion signal line GS2.

[0073] A source of the second transistor M2 is coupled to the first channel CH1 of the data driver 200, and a drain thereof is coupled to a third data line D3. A gate thereof is coupled to a first gamma conversion signal line GS1.

[0074] A source of the third transistor M3 is coupled to a third channel CH3 of the data driver 200, and a drain thereof is coupled to the first data line D1. A gate thereof is coupled to the first gamma conversion signal line GS1.

[0075] A source of the fourth transistor M4 is coupled to the third channel CH3 of the data driver 200, and a drain thereof is coupled to the third data line D3. A gate thereof is coupled to the second gamma conversion signal line GS2.

[0076] A second channel CH2 of the data driver 200 is directly coupled to a second data line D2.

[0077] If a gamma conversion signal in a low state is transferred through the second gamma conversion signal line GS2, the first transistor M1 and the fourth transistor M4 turn on. If a gamma conversion signal in a high state is transferred through the first gamma conversion signal line GS1, the second transistor M2 and the third transistor M3 turn off. In other words, the first channel CH1 of the data driver 200 is coupled to the first data line D1, the second channel CH2 of the data driver 200 is coupled to the second data line D2, and the third channel CH3 of the data driver 200 is coupled to the third data line D3.

[0078] If a gamma conversion signal in a high state is transferred through the second gamma conversion signal line GS2, the first transistor M1 and the fourth transistor M4 turn off, and if a gamma conversion signal in a low state is transferred through the first gamma conversion signal line GS1, the second transistor M2 and the third transistor M3 turn on. In other words, the first channel CH1 of the data driver 200 is coupled to the third data line D3, the second channel CH2 of the data driver 200 is coupled to the second data line D2, and the third chan-

nel CH3 of the data driver 200 is coupled to the first data line D1.

[0079] Therefore, if the gamma conversion signal transferred through the second gamma conversion signal line GS2 is in a low state and the gamma conversion signal transferred through the first gamma conversion signal line GS1 is in a high state, a red data is transferred to the first data line D1, a green data is transferred to the second data line D2, and a blue data is transferred to the third data line D3. If the gamma conversion signal transferred through the second gamma conversion signal line GS2 is in a high state and the gamma conversion signal transferred through the first gamma conversion signal line GS1 is in a low state, a blue data is transferred to the first data line D1, a green data is transferred to the second data line D2, and a red data is transferred to the third data line D3.

[0080] Through the operations as above, a red sub-pixel 101R of the pixel unit 100 receives a data signal applied with the red gamma, a green sub-pixel 101G thereof receives a data signal applied with the green gamma, and a blue sub-pixel 101B thereof receives a data signal applied with the blue gamma.

Claims

1. A driver circuit for an organic light emitting display including a display region (100) comprising a plurality of pixels (101), each pixel (101) comprising at least two sub-pixels (R, G, B) having different colors, the driver circuit comprising:

a data driver (200) adapted to sequentially receive video data (Vdata) and to output data signals to a plurality of signal lines (CH1...CHm); and

a data signal switch having a plurality of inputs connected to the signal lines (CH1...CHm) and a control input, the data signal switch being adapted to transmit the data signals to a plurality of outputs grouped into a plurality of output groups each of which comprising as many outputs as the number of sub-pixels (R, G, B) in each pixel (101) and to switch the data signals between two of the outputs of each output group in accordance with a data switching signal received at the control input.

2. The driver circuit of claim 1, further comprising a gamma correction unit for providing red, green and blue gamma data to the data driver, wherein the data driver is configured to receive red, green and blue image data, and to apply the red, green and blue gamma data, respectively, to the red, green and blue image data to generate the data signals.
3. The driver circuit of one of the claims 1 or 2, wherein

- the at least two sub-pixels (R, G, B) comprise red, green and blue sub-pixels, and wherein the data signal switch is configured to switch the data signals applied to the red and blue sub-pixels in accordance with the data switching signal.
4. The driver circuit of one of the preceding claims, wherein the data signal switch comprises a plurality of switch units, each switch unit comprising a first switch and a second switch each having a first terminal coupled to a first input of the data signal switch and a third switch and a fourth switch each having a first terminal coupled to a second input of the data signal switch, and wherein the first and third switches each have a second terminal coupled to a first output of a corresponding one of the output groups and the second and fourth switches each have a second terminal coupled to a second output of the corresponding one of the output groups.
 5. The driver circuit of claim 4, wherein the first, second, third and fourth switches are configured to receive the data switching signal and to switch the data signal from the first input and the data signal from the second input between the first and second outputs of the corresponding one of the output groups.
 6. The driver circuit of one of the claims 4 or 5, wherein the first and fourth switches comprise first type transistors and the second and third switches comprise second type transistors.
 7. The driver circuit of one of the claims 1 through 3, wherein the data signal switch comprises a plurality of switch units, each switch unit comprising first and third switches coupled in series between a first output of a corresponding output group and a corresponding first input of the data signal switch, second and fourth switches coupled in series between a second output of the corresponding output group and a corresponding second input of the data signal switch, and a fifth switch having a first terminal coupled between the first and third switches and a second terminal coupled between the second and fourth switches.
 8. The driver circuit of claim 7, wherein the data switching signal comprises a first data switching signal to be applied to the first and second switches, a second data switching signal to be applied to the third and fourth switches, and a third data switching signal to be applied to the fifth switch.
 9. The driver circuit of one of the claims 7 or 8, wherein the first, third and fifth switches are first type transistors and the second and fourth switches are second type transistors.
 10. The driver circuit of one of the claims 8 or 9, wherein when the first data switching signal has a low level, the second data switching signal has a high level and the third data switching signal has a low level, the data signal from the first signal line is applied to the second data line.
 11. The driver circuit of one of the claims 8 through 10, wherein when the first data switching signal has a high level, the second data switching signal has a low level and the third data switching signal has a low level, the data signal from the second signal line is applied to the first data line.
 12. The driver circuit of one of the claims 1 through 3, wherein the data signal switch comprises a plurality of switch units, each switch unit comprising a first switch coupled between a corresponding first input and a first output of a corresponding output group, a second switch coupled between the corresponding first input and a second output of the corresponding output group, a third switch coupled between a corresponding second input and the first output, and a fourth switch coupled between the corresponding second input and the second output of the corresponding output group, wherein the data switching signal comprises a first data switching signal to be applied to the second and third switches and a second data switching signal to be applied to the first and fourth switches.
 13. The driver circuit of claim 12, wherein the first data selection signal and the second data selection signal are configured such that the second data selection signal is at a high level when the first data selection signal is at a low level and the second data selection signal is at a low level when the first data selection signal is at a high level.
 14. The driver circuit of claim 13, wherein the first, second, third and fourth switches comprise P-type transistors.
 15. An organic light emitting display comprising a display region (100), a scan driver (300), a gamma conversion unit (500), and a driver circuit according to one of the preceding claims.

FIG. 1A

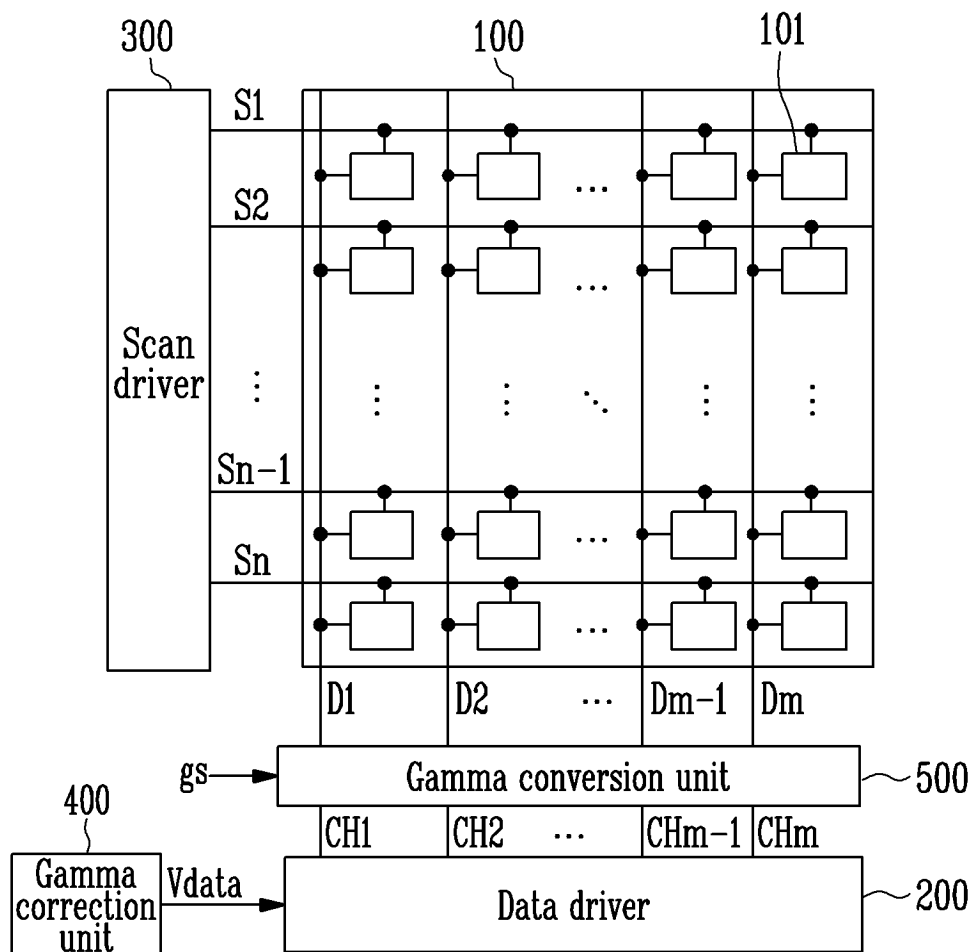


FIG. 1B

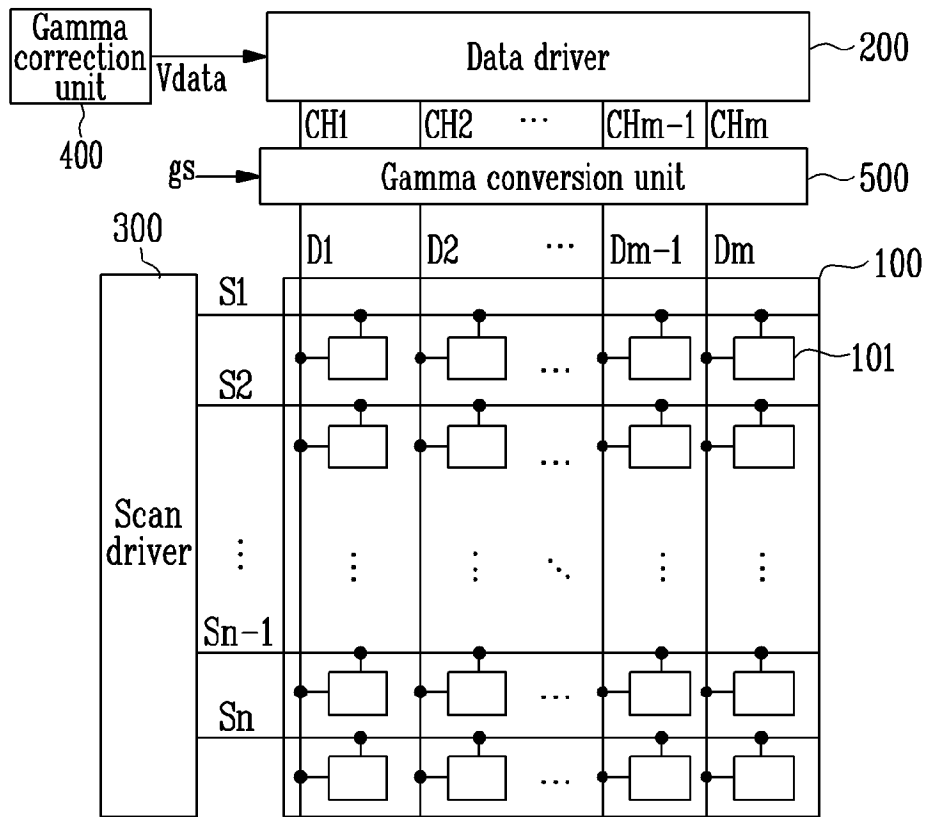


FIG. 2

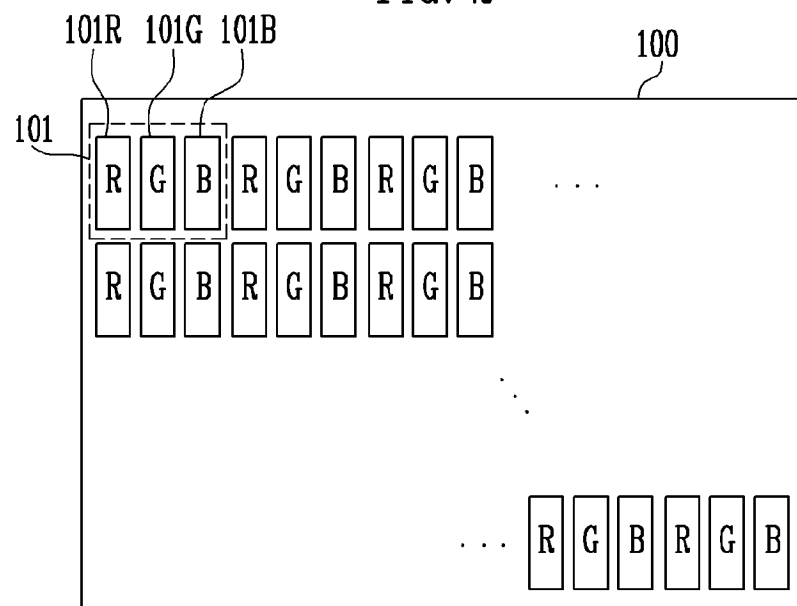


FIG. 3

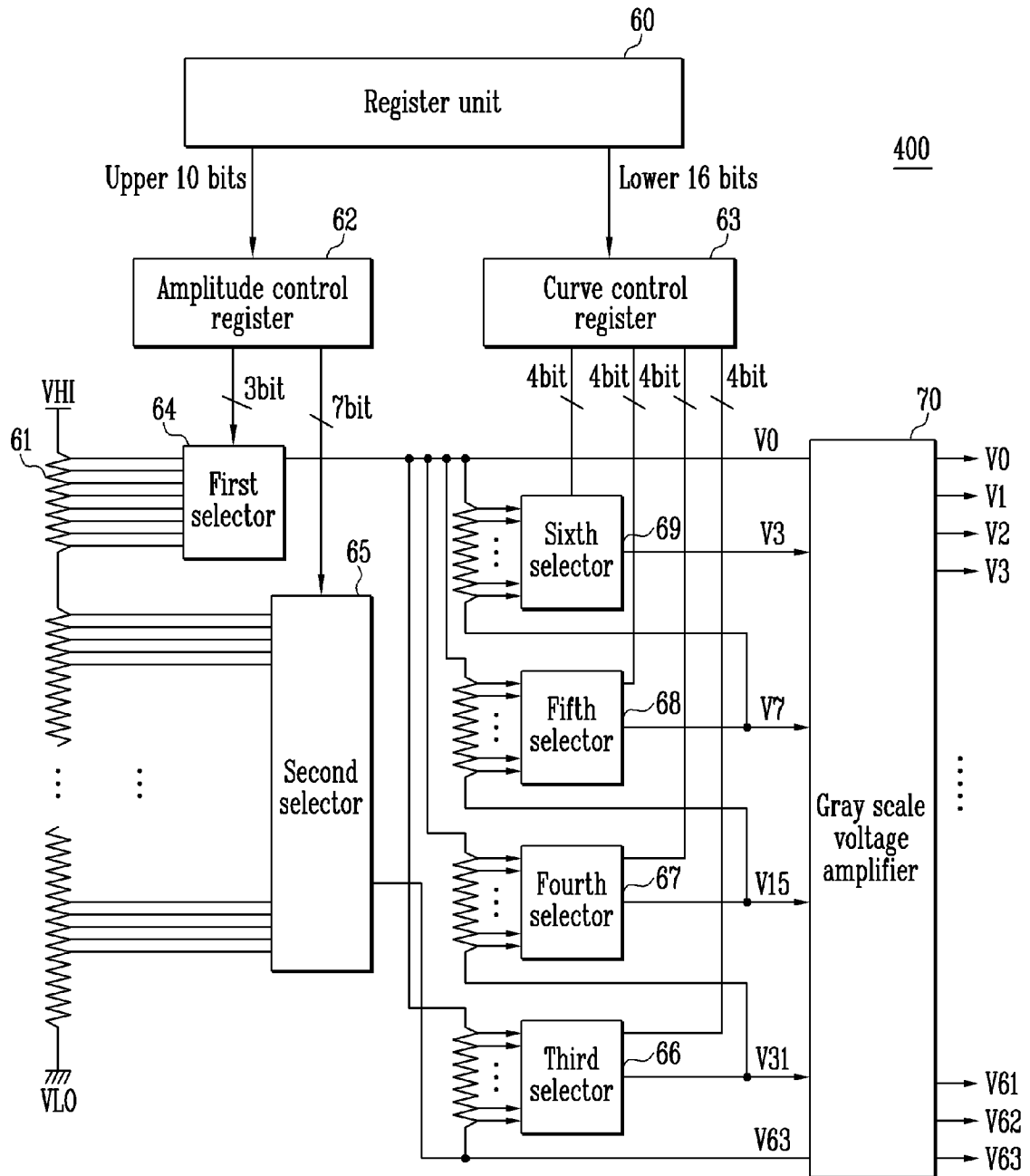


FIG. 4

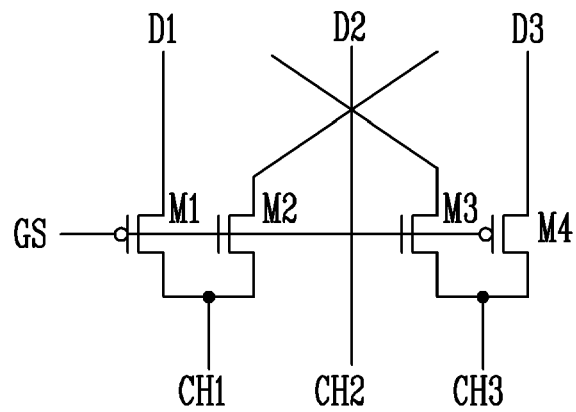


FIG. 5

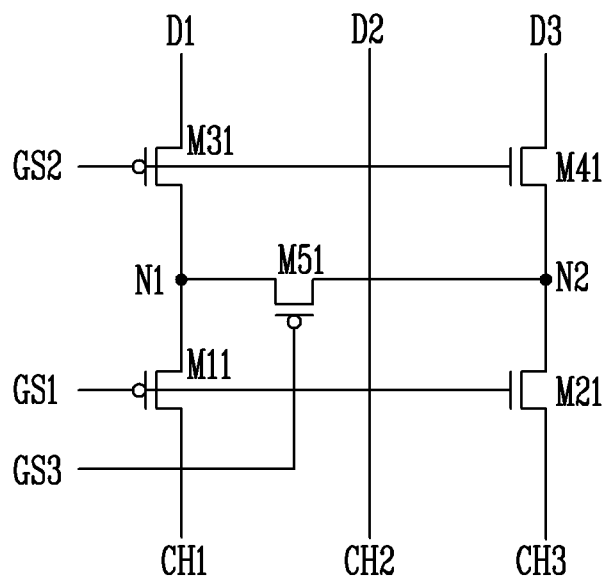
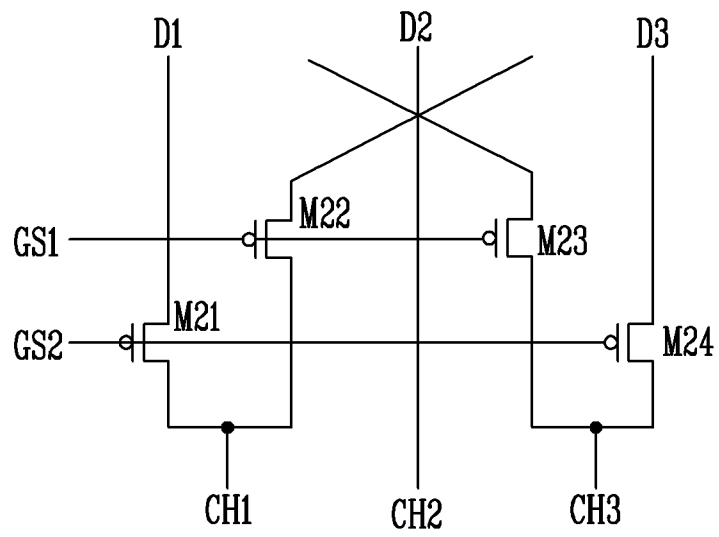


FIG. 6





EUROPEAN SEARCH REPORT

Application Number
EP 09 16 5170

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The present search report has been drawn up for all claims				
Place of search Munich		Date of completion of the search 28 August 2009	Examiner Harke, Michael	
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document				

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EPO FORM 1503 03.02 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 28 August 2009	Examiner Harke, Michael
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

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ON EUROPEAN PATENT APPLICATION NO.**

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The members are as contained in the European Patent Office EDP file on
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28-08-2009

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	有机发光显示器和用于驱动相同背景的方法		
公开(公告)号	EP2144224A1	公开(公告)日	2010-01-13
申请号	EP2009165170	申请日	2009-07-10
[标]申请(专利权)人(译)	三星显示有限公司		
申请(专利权)人(译)	三星移动显示器有限公司.		
当前申请(专利权)人(译)	三星DISPLAY CO. , LTD.		
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IPC分类号	G09G3/32		
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外部链接	Espacenet		

摘要(译)

在有机发光显示器中，无论从数据驱动器（200）输出的数据序列如何，都可以根据颜色应用伽马，即使使用单独的颜色伽玛也是如此。

FIG. 1A

