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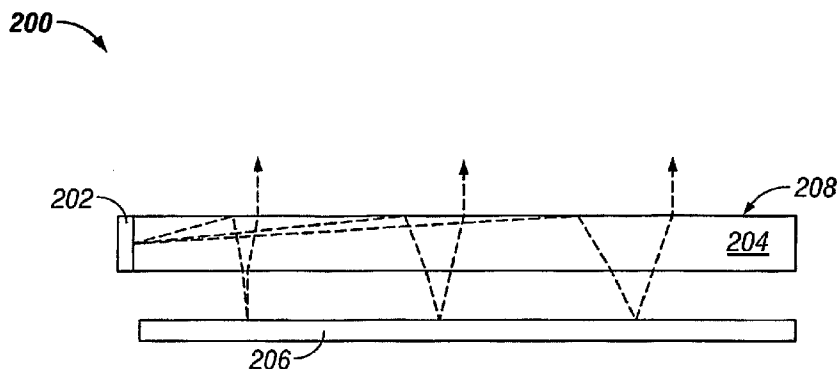
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(54) Title: LINEAR SOLID STATE ILLUMINATOR



(57) Abstract: An illuminator for a display (206) is provided that includes a light guide plate (204) to substantially cover a viewable portion of the display (206), and a thin film light emitting source (202). Light from the thin film light emitting source (202) is directed into an edge of the light guide plate (204) to provide light for the viewable portion of the display (206).



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What is claimed is:

1. A display device comprising:
  - a plurality of interferometric modulators;
  - a light guide plate disposed to substantially cover a viewable portion of the display device comprising said interferometric modulators; and
  - a thin film light-emitting source,wherein light from the thin film light-emitting source is directed into an edge of the light guide plate to provide light for the viewable portion of the display device comprising said interferometric modulators.
2. The display device of Claim 1, wherein the thin film light-emitting source is bonded directly to the edge of the light guide plate.
3. The display device of Claim 1, wherein the thin film light-emitting source comprises an organic light-emitting diode (OLED).
4. The display device of Claim 1, wherein the thin film light-emitting source comprises an electroluminescent (EL) thin film light source.
5. The display device of Claim 1, wherein the thin film light-emitting source comprises an organic light-emitting diode (OLED) or an electroluminescent (EL) thin film light source.
6. The display device of Claim 3, wherein the organic light-emitting diode (OLED) consists of a single pixel.
7. The display device of Claim 6, wherein a first dimension of the pixel is substantially equal to a thickness of the light guide plate and a second dimension of the pixel is substantially equal to a length of the edge of the light guide plate.
8. The display device of Claim 6, wherein the pixel comprises a white pixel.
9. The display device of Claim 8, wherein the white pixel is created by a plurality of separate wavelength emissions that are matched to a plurality of specific reflectivities of subpixels that make up each pixel of a color display.
10. The display device of Claim 6, wherein the pixel comprises a pixel having emissions substantially centered around a specific wavelength matched to a specific reflectivity of a monochrome display.

11. The display device of Claim 3, further comprising an angle-matching component to direct the light from the organic light-emitting diode (OLED) into the edge of the light guide plate.

12. The display device of Claim 11, wherein at least a portion of the angle-matching component has a substantially parabolic or elliptical shape for collimating the light from the organic light-emitting diode (OLED) into the edge of the light guide plate.

13. The display device of Claim 12, wherein the angle-matching component is molded directly into the light guide plate.

14. The display device of Claim 13, wherein the organic light-emitting diode (OLED) is bonded directly to the surface of the light guide plate.

15. The display device of Claim 1, wherein the light guide plate comprises a plurality of facets molded into the surface of the light guide plate so that the light from the thin film light-emitting source exits from the light guide plate in a substantially uniform fashion over the viewable portion of the display.

16. The display device of Claim 1, wherein a thickness of the light guide plate is tapered along one edge of the light guide plate.

17. The display device of Claim 1, wherein the illuminator is implemented within a front lighting system or a back lighting system of a display.

20. The display device of Claim 1, further comprising:  
a processor that is in electrical communication with the interferometric modulator display, the processor being configured to process image data; and  
a memory device in electrical communication with the processor.

21. The display device of Claim 20, further comprising:  
a first controller configured to send at least one signal to the interferometric modulator display; and  
a second controller configured to send at least a portion of the image data to the first controller.

22. The display device of Claim 20, further comprising an image source module configured to send the image data to the processor.

23. The display device of Claim 22, wherein the image source module

comprises at least one of a receiver, transceiver, and transmitter.

24. The display device of Claim 20, further comprising an input device configured to receive input data and to communicate the input data to the processor.

25. A display device comprising:  
a means for interferometrically modulating light;  
a means for guiding light substantially covering a viewable portion of the display device comprising said interferometric modulating means; and  
a thin film means for emitting light,  
wherein light from the thin film light-emitting means is directed into an edge of the light guiding means for providing light to the viewable portion of the display device comprising said interferometric modulating means.

26. The display device of Claim 25, wherein the light guiding means comprises a light guide plate.

27. The display device of Claim 25, wherein the thin film light-emitting means is bonded directly to the edge of the light guiding means.

28. The display device of Claim 25, wherein the thin film light-emitting means comprises an organic light-emitting means.

29. The display device of Claim 28, wherein the organic light-emitting means consists of a single pixel means.

30. The display device of Claim 29, wherein a first dimension of the pixel means is substantially equal to a thickness of the light guiding means and a second dimension of the pixel means is substantially equal to a length of the edge of the light guide means.

31. The display device of Claim 29, wherein the pixel means comprises a white pixel means.

32. The display device of Claim 28, further comprising an angle-matching component means for directing the light from the organic light-emitting means into the edge of the light guiding means.

33. The display device of Claim 32, wherein at least a portion of the

angle-matching component means has a substantially parabolic or elliptical shape for collimating the light from the organic light-emitting means into the edge of the light guiding means.

34. The display device of Claim 33, wherein the angle-matching component means is molded directly into the light guiding means.

35. The display device of Claim 34, wherein the organic light-emitting means is bonded directly to the surface of the light guiding means.

36. The display device of Claim 25, wherein the light guiding means comprises a plurality of facet means molded into the surface of the light guiding means so that the light from the thin film light-emitting means exits from the light guiding means in a substantially uniform fashion over the viewable portion of the display device.

37. The display device of Claim 25, wherein a thickness of the light guide means is tapered along one edge of the light guide means.

38. A method of manufacturing display device, the method comprising:  
providing a plurality of interferometric modulators;  
providing a light guide plate, the light guide plate configured to substantially cover a viewable portion of the display device comprising said interferometric modulators; and  
coupling a thin film light-emitting source to the light guide plate,  
wherein light from the thin film light-emitting source is directed into an edge of the light guide plate to provide light to the viewable portion of the display comprising said interferometric modulators.

39. The method of Claim 38, wherein the thin film light-emitting source comprises an organic light-emitting diode (OLED).

40. The method of Claim 38, wherein coupling a thin film light-emitting source to the light guide plate comprises bonding the thin film light-emitting source directly to an edge of the light guide plate.