Claim Chart

Patent #	Patent Date	Title	Priority date
US8290318	**Oct 16, 2012**	**Light trapping optical cover**	**Apr 21, 2009**

Manufacturer: Samsung Electronics, 85 Challenger Road, Ridgefield Park, NJ 07660.
Website: www.samsung.com/us

Analyzed Product: 27-inch Curved QLED Gaming Monitor, Model CFG73 (MFD. March 2018)

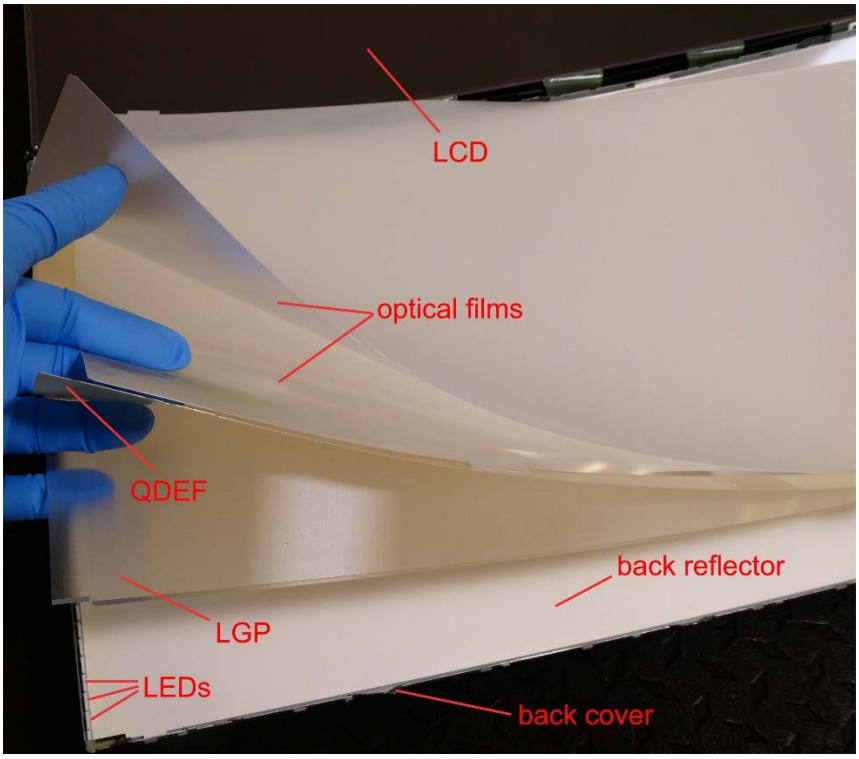
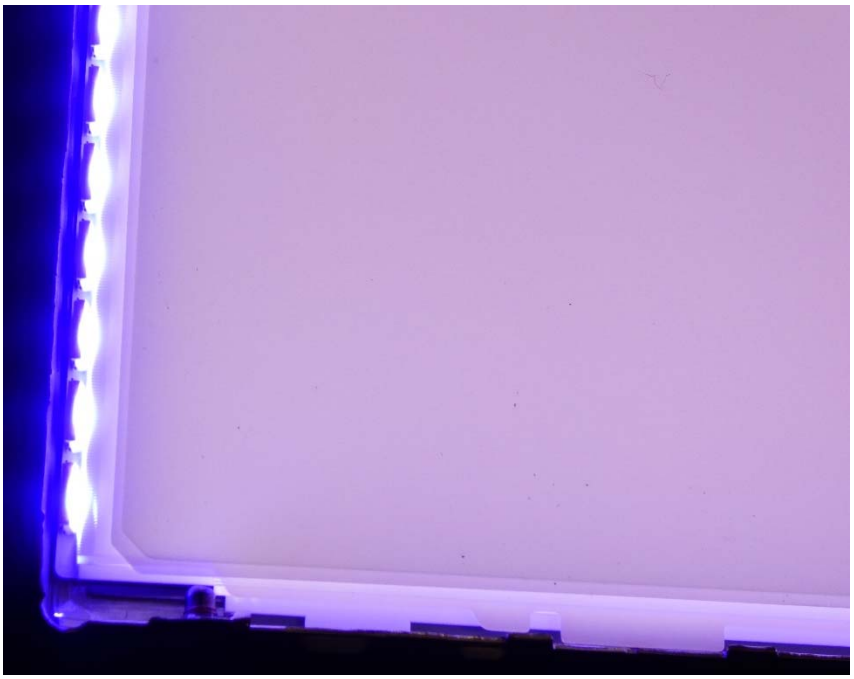
Any separation of claim elements in these charts is not intended to modify the claim language itself, nor does it suggest that the claims should be construed in any particular manner. These charts do not suggest how any claim term should be construed. These charts are preliminary, and are subject to change. These charts are not intended to represent the entire scope of use, or all possible theories of use. No waiver of work product or attorney-client privilege is intended by any disclosure in these charts.

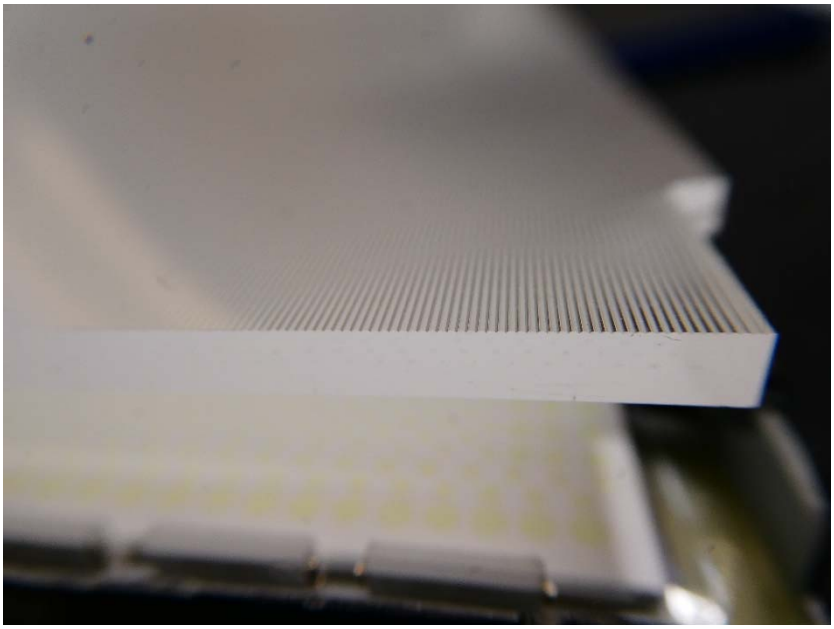
Claim 1	Product Feature
An optical cover for light harvesting devices, comprising:	The CFG73 Monitor uses an optical cover, specifically, a backlight including various light-management optical sheets (including, for example, a light guiding plate (LGP)) covering light harvesting devices (plastic sheets incorporating quantum dot materials) within a backlighting/LCD panel assembly. The quantum dot materials are used to absorb blue light emitted from the backlight and re-emit the absorbed energy in other spectral bands of light (e.g., red and/or green colors)[1].  Retail box of monitor

[1] Samsung Display, Quantum Dots: Solution for a Wider Color Gamut (White Paper, retrieved Jan 17, 2019): https://pid.samsungdisplay.com/en/learning-center/white-papers/quantum-dot-technology

Claim 1	Product Feature
	 Front **view of monitor**  Rear view  SN label

Claim 1	Product Feature
	 Back view with cover removed  Backlight unit under LCD panel The LCD/backlighting panel assembly incorporates a liquid crystal display (LCD), optical films, a Quantum Dot Enhancement Film (QDEF), an LGP, and a back reflector (a plastic sheet with diffuse, highly reflective coating). The LCD/backlighting panel assembly is illuminated using multiple light-emitting diodes (LEDs) which provide a lighting source. The LEDs are placed along an edge of the visible area of the display and emit light in the blue spectrum.

Claim 1	Product Feature
	 Internal structure of LCD/backlighting panel assembly  Backlight in illuminated state (blue LEDs are turned on)
a layer of optically transparent material including a broad-area light input surface and an opposing broad-area light output surface extending	The LCD/backlighting panel assembly includes a layer of optically transparent material (LGP). The LGP is formed by a plastic sheet made from a highly transparent material (such as optical-grade acrylic). The

Claim 1	Product Feature
generally parallel to said light input surface and configured for a substantially unimpeded transversal light passage;	LGP includes two opposing broad-area surfaces extending parallel to each other. In operation, the LGP receives light from LEDs on one of its edges and outputs that light from the broadarea surfaces. Accordingly, both of the surfaces are light output surfaces. Furthermore, a significant portion of the light leaving the LGP is further trapped (confined) within the backlighting/LCD panel assembly such that the light travels back and forth through the layer of optically transparent material (LGP) and the light harvesting device (e.g., the QDEF). In the process, the light is received on and output from both broad-area surfaces of the LGP. Thus, both of the broad-area surfaces are also light input surfaces. The LGP transmits light incident onto its broad-area surfaces in either direction and without appreciable attenuation. Thus, the LGP is configured for a substantially unimpeded transversal light passage.  Close-up view of the LGP
said layer further including a plurality of light deflecting elements distributed along the prevailing plane of said layer and having a cumulative aperture substantially smaller than the area of each of said surfaces;	The LGP (layer of optically transparent material) contains a large number of light deflecting elements (microstructures) that, as shown below, can be seen under a microscope. These light deflecting elements are formed in the back surface[2] of the LGP and distributed along the prevailing plane of the LGP (the LGP is planar and defines a plane in space). The individual light deflecting elements (microstructures) are relatively small and also spaced apart from each other such that their cumulative aperture (a space through which light passes when entering the microstructures) is substantially smaller than the area of each of the broad-area surfaces (front and back surfaces) defining the LGP.

[2] The terms “front” and “back” are used to describe various elements within the analyzed device assembly when the device assembly is oriented with its viewable side facing the viewer.

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