ULTRA SLIM BORDER LCD PANEL

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Recommended Citation
INC, HP, "ULTRA SLIM BORDER LCD PANEL", Technical Disclosure Commons, (July 08, 2020)
https://www.tdcommons.org/dpubs_series/3405

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Ultra slim border LCD panel

Abstract
Customer wants to increase screen to body ratio to enjoy user experience, because LCM border has its limitation, if we try to narrow down panel border, some issues like light leakage or peeling will be happened. Normally we can use 2D cover glass to reduce border but will increase thickness. This invention discloses a new design that use LCD top glass edge shape from rectangle to curve. When light incidence in glass, light will be bending to active area. So, we can magnify active area and reduce border to achieve increasing screen to ratio target.

Background
In the conventional laptop design, we can see top/left/right/bottom border from plastic bezel. The propose is needed to fix LCD panel as fig.1 shows.

![Figure 1. Drawing of current system design](image)

Customer wants to increase screen to body ratio to enjoy user experience, because LCM border has its limitation, if we try to narrow down panel border, some issues like light leakage or peeling cause from short tape will be happened. (fig.2) Normally we can use 2D cover glass to reduce border but will increase thickness. (fig3)
Invention Description

In this invention, we modify LCD top glass edge shape from rectangle to curve. When light incidence in glass, light will bending to AA area. We can let round curve $R < (w^2 + H^2)^{1/2}$. (fig.4) Because we don’t need to add one cover glass on panel, just using top glass edge shape modify to curve and top glass thickness can thick than bottom glass for special curve design. By using this design, we can let user see narrow border and no potential issues like light leakage or peeling. (fig. 5)
**Figure 4.** Drawing of new top glass of panel with edge round curve design

**Figure 5.** Drawing of new design can narrow down border

**Advantages**

- Provide ultra-narrow border solution without light leakage and peeling issue
- Keep current thickness
- Provide non-touch/CG with slim border benefit