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## Portelligent Teardowns: Trim LCD Displays Enable Highly Functional Ultra-thin Cell Phones

***A recent teardown completed at Portelligent reveals techniques used to trim the Sony Ericsson W880i QVGA display to an ultra-thin 1.6mm, enabling a full suite of features in a phone only 10mm thick.***

*Austin, USA — Sept. 13, 2007* – As recently reported in EE Times “Under the Hood”, Portelligent product teardown analysis of the Sony Ericsson W880i, featuring W-CDMA connectivity, two cameras and multimedia playback, indicates a 40-percent reduction in display module thickness when compared to the module found in last year’s Sony Ericsson K800i. The 1.6mm-thick TFT-LCD display in the W880i is a key contributor to squeezing in the same features found in the K800i while significantly reducing the overall phone thickness from 23mm to 10mm.

This development may dampen the appeal of new primary display technologies such as emissive organic OLEDs--which eliminate backlights and reduce optical film count—and have been frequently touted as one path to achieve the next wave of ultra-thin cell phones. When compared to the trimmed-down LCD in the W880i, OLED modules have lost their lead in the thinness race. With constant iterative whittling, the LCD incumbent may stay slim enough to remain the technology of choice.

In order to achieve such a significant thickness reduction in one year with a technology that has been around as long as the cell phone, the module maker of the W880i display had to address all layers of the module. Beginning with the thickest layer typically found in an LCD display, the glass found in the W880i display is just 0.42mm thick, one of the thinnest ever encountered during a Portelligent teardown and nearly 59 percent thinner than the glass found in the K800i display module. “The glass was so thin that it cracked during a recent reexamination of the module components despite careful handling,” said Jeff Brown, Principal Analyst at Portelligent. “Glass durability is being pushed to the

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limits and further reductions in thickness will have to come from other components in the module," added Brown.

Other techniques to reduce the thickness of the module included eliminating a non-primary diffuser and two non-optical protective layers, applying an ultra-thin reflective layer to one of the polarizing films, and stacking the layers flush with the LCD frame.

The ultra-thin display module found in the W880i provides a secondary benefit that contributes to the overall phone thickness of only 10mm. System designers were able to place the battery directly behind the display, adding reinforcement to the backside of the display and allowing the elimination of a 1mm thick plastic display backing plate found in the K800i.

For more information about display trends in cell phones found in the recently released Strategic Trends Analysis Report – Trends in Cell Phone Displays: 2007, contact Emilio Martinez at Portelligent ([emartinez@teardown.com](mailto:emartinez@teardown.com); Tel 1-512-338-3600). In Europe, contact Niels Kellerhoff ([niels@teardown.com](mailto:niels@teardown.com); Tel. +49-(0)211-467-998).

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Portelligent, Inc., located in Austin, Texas, USA, offers reports and analyses, based on a rigorous "product-teardown" methodology, to the electronics, wireless, semiconductor, and financial sectors.

For additional information about Portelligent's product teardown analyses and other analytical offerings, in the U.S. contact Emilio Martinez ([emartinez@teardown.com](mailto:emartinez@teardown.com); Tel. 1-512-338-3600 ext. 221). In Europe, contact Niels Kellerhoff ([niels@teardown.com](mailto:niels@teardown.com); Tel. +49-(0)211-467-998).

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