



The NeoKeys™ Interface: Engineering Information

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The NeoKeys Interface is Ready Now

- The NeoKeys interface consists of a modular set of LCD assemblies and physical keys and flex circuits
- Implementation in handsets is a quick, low-cost and high-quality process



Manufacturing Roadmap

- A manufacturer simply:
 - 1) Replaces the current keypad in its phones with the NeoKeys interface modular assembly – only the keypad assembly changes
 - 2) Adds a set of connections for the LCD assemblies on the main printed circuit board, and
 - 3) Installs a set of software drivers for the LCDs.



A Prototype Mobile Phone

- The prototype mobile phone we show in the next slides demonstrates:
 - working LCD and physical key/flex circuit assembly for the NeoKeys interface inside an actual mobile phone
 - the NeoKeys interface fits in standard mobile phone size dimensions
 - The modular LCD/key assembly structure and layout



The Prototype with Displays Active



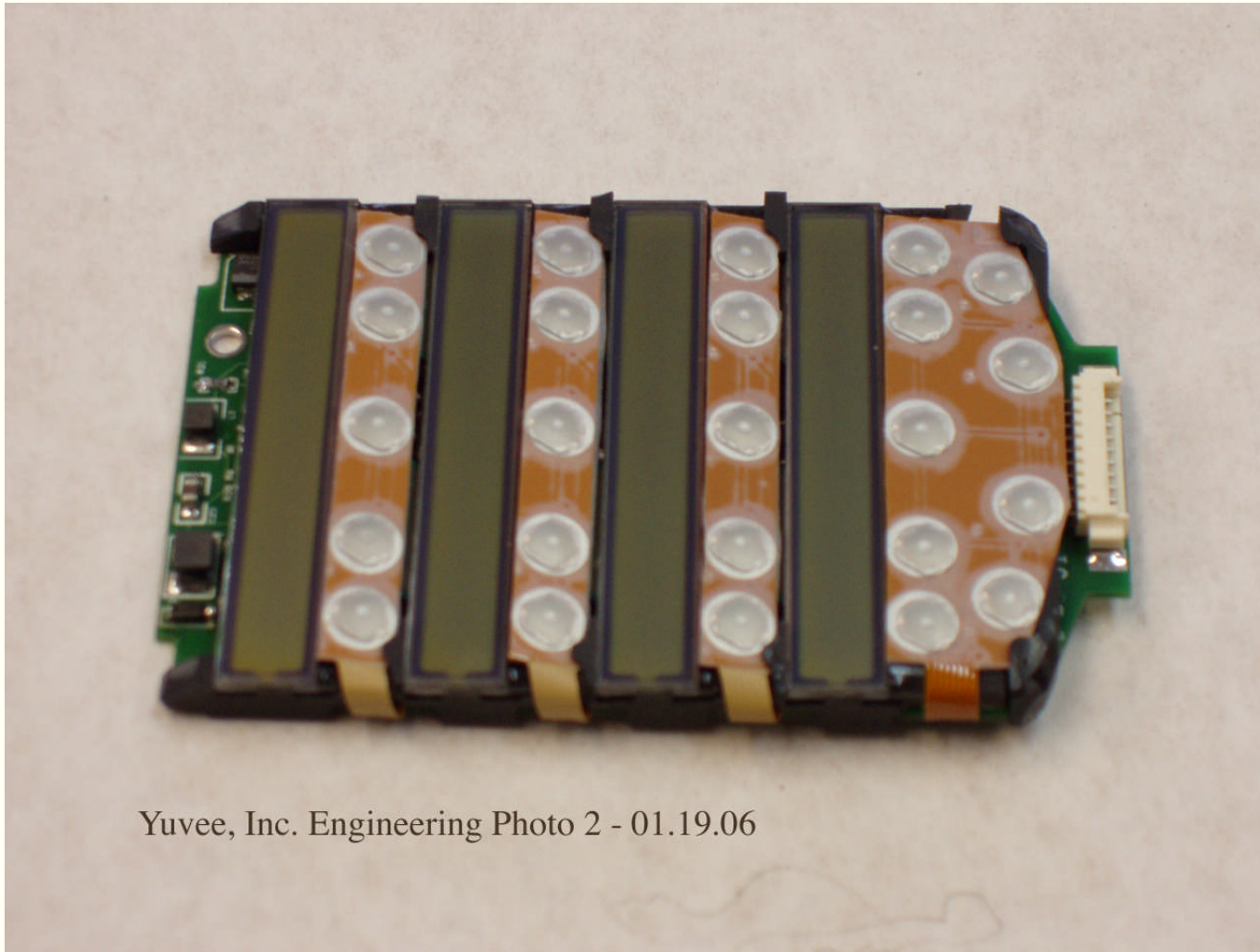


The Displays in Voicemail Mode





Example Interior PCB/LCD/FlexCircuit Layout

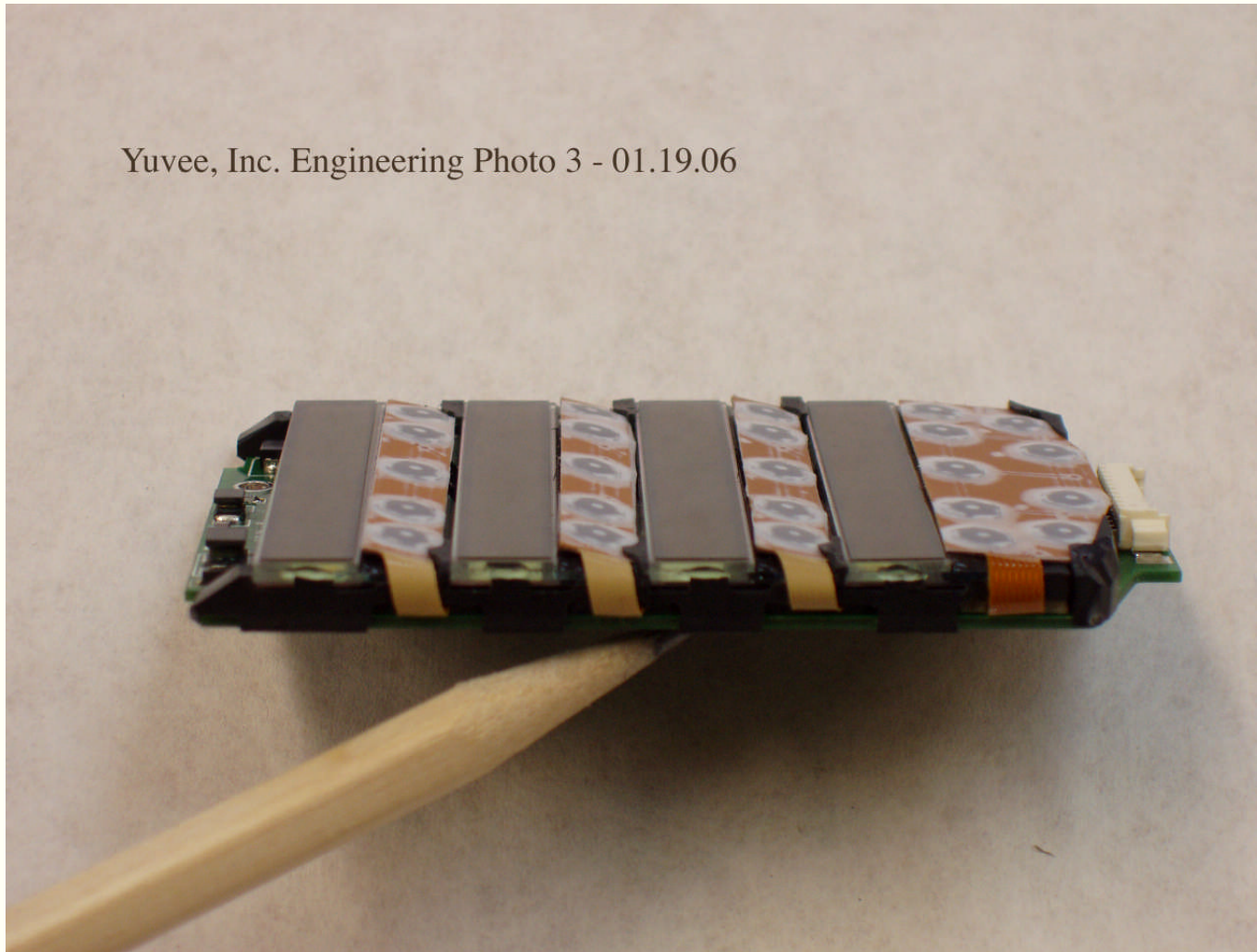


Yuvee, Inc. Engineering Photo 2 - 01.19.06



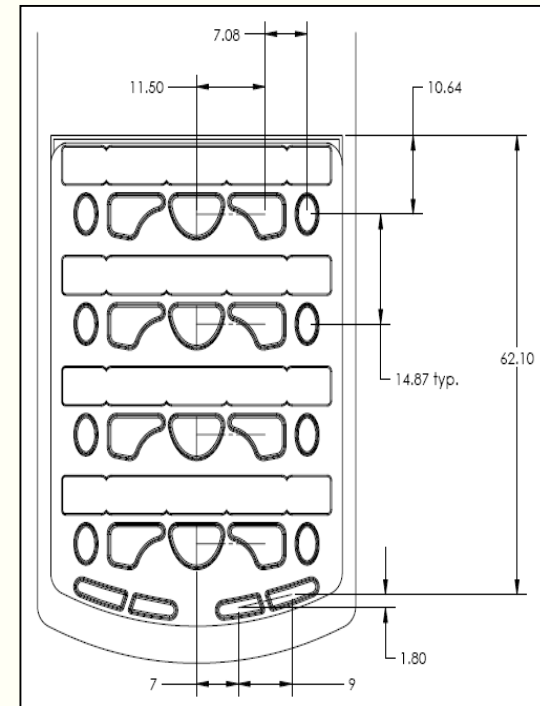
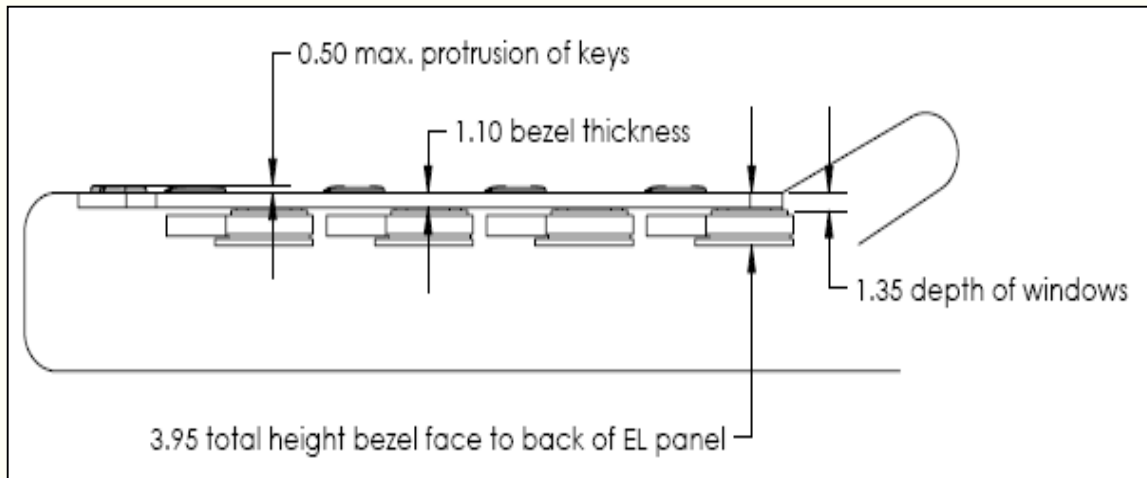
Side View of PCB with framing for LCDs

Yuvee, Inc. Engineering Photo 3 - 01.19.06





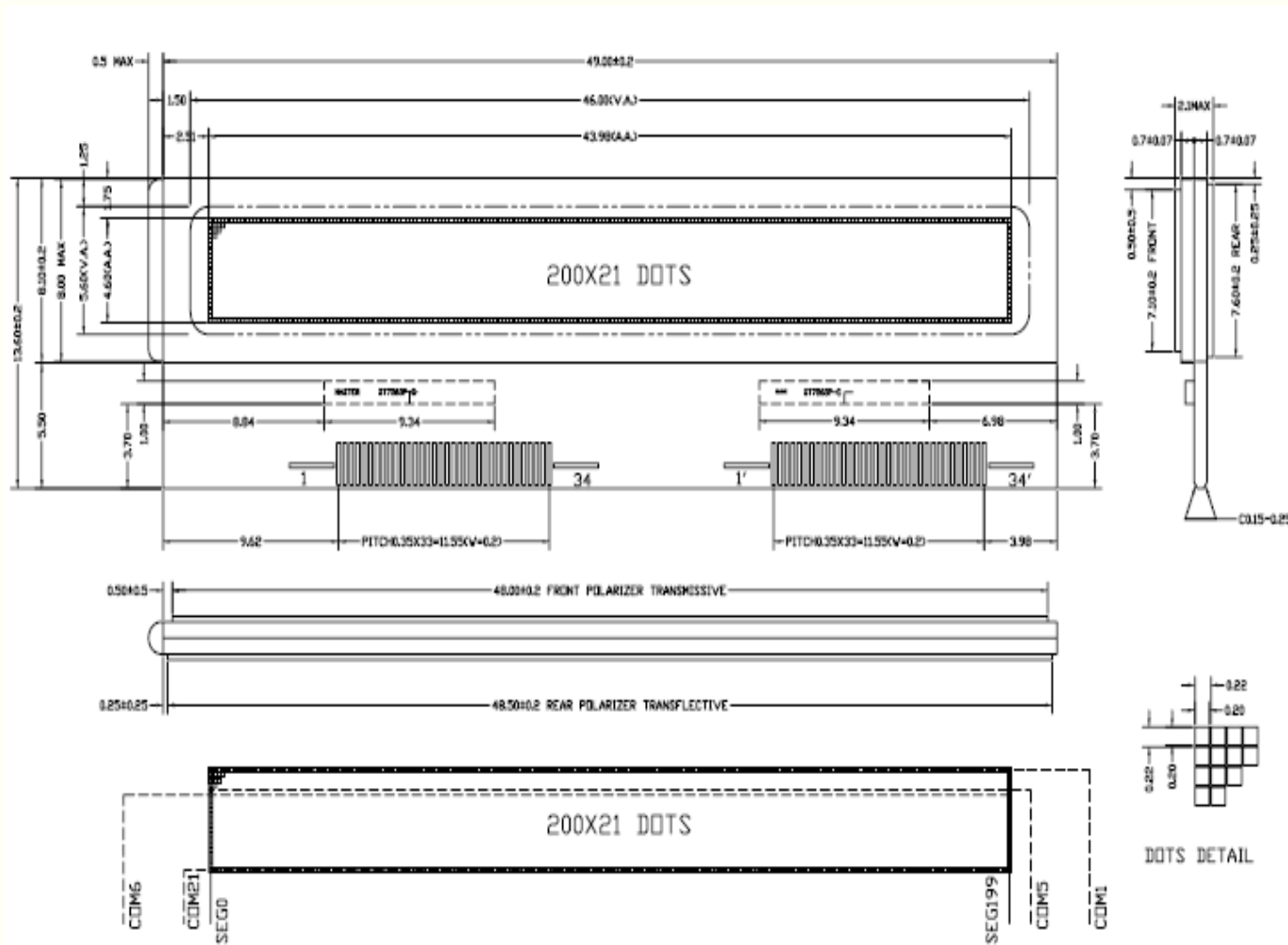
Example Diagrams for NeoKeys Interface





LCD Design Information

(Many other LCD designs are available)





General Notes on The Prototype

- This is an engineering prototype. It is NOT intended to demonstrate a final look and feel, finished handset.
- Screen size, text size and font and clarity of display will be optimized in a final product for visibility based on final LCD size and specifications.
- Size, shape, color and layout of the keys and final exterior finish of the handset will be selected for each handset line.



How Does It Affect Battery Life?

- Very little, if at all.
- The power consumption of the 4 **LCD** solution in our prototype is in the range of 150-250 milliamps at about 3 volts, giving about .5 to .6 watts running all 4 LCDs, with most of the power draw at the chip level already present in mobile phones.
 - These LCDs use white E/L backlighting.
- An **OLED** display solution (using 4 OLEDs similar in size to the 4 LCD solution or 1 large OLED with approximately 50% inactive where the active viewing area is underneath the physical keys) is estimated in the range of 20-25 milliamps at 3 volts.
- The NeoKeys interface does not require the lighted keys used on most cell phones, *providing a power saving and hardware simplification.*
- Display technologies are improving rapidly on size, power, resolution and other specifications. Improvements on the specifications illustrated in this paper should be expected for actual implementations.



What are the Chipset Requirements?

- The existing chipsets used in most current mobile phones should be more than adequate for the NeoKeys Interface.



Can Yuvee Provide Implementation Services?

- Yes.
- Contact us for engineering and software services related to reviewing and implementing the NeoKeys interface.



Patent Protection

- Keypad Patents
 - US Pat. 6,703,963. Australia Pat. 2002326972.
 - Other US and Foreign Patents pending under PCT and Specific Country filings worldwide.
- We license the issued and pending patents.
- US Patent Counsel: Leydig, Voit & Mayer