Product Design Specifications

EWH Pulse Oximeter

Version:3.0
Date: 2/25/09
Last Modified by: Jonathan Meyer

Team

Bogdan Dzyubak
Joe Helfenberger
Jonathan Meyer
Matt Parlato

Clients

Amit J. Nimunkar
Dept. of Biomedical Engineering
608.698.7413
ajnimunkar@wisc.edu

Jonathan M. Baran
Dept. of Biomedical Engineering
608.263.4660
baran@wisc.edu

Advisor

John G. Webster
Dept. of Biomedical Engineering
2148 Engineering Centers Building
1550 Engineering Drive
Madison, WI 53706
608.263.1574
webster@engr.wisc.edu

Function

The purpose of this project is to develop a low-cost pulse oximeter for use in developing countries. It will be integrated with an innovative medical technology platform which uses a laptop to record and display patient data. The oximeter must be rugged, durable, and inexpensive.

Design requirements

1. Physical and Operational Characteristics

c. *Accuracy and Reliability*:

- The probe must facilitate precision in increments of 1% SpO_2.
- The pulse oximeter must be accurate to within 5% (Fourtney).

f. *Operating Environment*:

- The device must be operable in 100% humidity.
- The device must operate in a temperature range of 0°C to 38°C.
- The device must be able to be dropped from 1.5 m onto concrete without breaking.

h. *Size and weight*:

- Size: the probe should be smaller than 4 cm × 4 cm × 3 cm.
- Weight: the probe should be lighter than 100 g (Princeton Tec).

j. *Materials*:

- Must be mass-producible.

2. Production Characteristics

a. *Quantity*: Mass produced.

b. *Target Product Cost*: under $8. Though this is our target cost, our prototype can be above this specification.

3. Power and Data Transfer

- The device must interface with a central processing unit via a serial connection for both power and data transmission.
- The device must run on 4V and 100 mA.

3. Miscellaneous

a. Sterilization:

- The device must withstand sterilization with isopropyl alcohol (Fourtney).

References

Fortney, L., M.D. Personal Interview. Feb. 12, 2009.

Princeton Tec. "Quad." Accessed Feb. 25, 2008, at
http://www.princetontec.com/?q=node/66