

Project Design Specifications

Project #42 – Medical Device Cart

Function: The purpose of the medical device cart is to provide a work area that houses all components for monitoring an electroencephalogram (EEG). The cart should be compact and facilitate easy work flow. It should also be designed with ergonomic standards in mind to ensure the comfort and safety of the users.

Client requirements:

- Cart should conform closely to the measurements of a current medium size device cart
- Issue of cable management should be addressed
- Cart must be comfortable and have ergonomic design in mind

Design requirements:

1. Physical and Operational Characteristics

a. *Performance requirements:* Device must have room for a monitor, computer, printer, amplifier, camera, photic and power supply. Device must be maneuverable and easy to transport.

b. *Safety:* Device must have regulatory power supply. Non-regulated safety considerations include sharp corners and dangling cords.

c. *Accuracy and Reliability:* N/A

d. *Life in Service:* Cart should be able to withstand 10 years of usage. Cart should also be designed with future considerations in mind to prolong life.

e. *Shelf Life:* N/A

f. *Operating Environment:* Device will be used in a medical setting. As such, it must be easy to clean. Materials should comply with safety standards for a medical environment.

g. *Ergonomics:* Two points of concern are keyboard height and ease of mobility. Keyboard and surface top should be appropriate for use while sitting or standing. It also must be easy to push and rotate. Customers need to view the monitor from various angles.

h. *Size*: Cart should not differ greatly from existing medium size device cart.

i. *Weight*: Should be kept to a minimum for shipping (ideally 50-75 lbs) and should be easy to push or pull.

j. *Materials*: Any material that can be used in a medical setting and reduces weight.

k. *Aesthetics, Appearance, and Finish*: Must be aesthetically pleasing to customers. A unique image will help build product identification.

2. Production Characteristics

a. *Quantity*: 1

b. *Target Product Cost*: Total cost of cart: \$800-\$1500

3. Miscellaneous

a. *Standards and Specifications*: Cart must meet The Health and Safety (Display Screen Equipment) Regulations of 1992. It also must meet IEC 60601-1 [Medical Electrical Equipment – Part 1] and in particular clause 24 which requires that the device will not overturn if tilted through an angle of 10 degrees. Additionally the cart must comply with the Association for the Advancement of Medical Instrumentation (AAMI) and Food and Drug Administration (FDA) Human Factors regulations.

d. *Competition*: Several other companies produce similar carts intended to assist in various medical procedures. Some customers purchase EEG systems from Viasys, but prefer carts designed by other companies.