Patent findings:

* Most of the electrodes needs to be pre-soaked with saline so we Develop a sponge electrodes that does not require the user to pour saline on the electrode
* Most disposable stimulating devices are just patented but not currently in market.

The average head and skin impedance were about 1500 to 4000 ohms (DC).

Price estimation

Design 1:

|  |  |
| --- | --- |
| Name | Description / Price |
| circuit | |  |  | | --- | --- | | Constant current design : about 20$ (for a high voltage amplifier according to jack this accounts for the cost of the hv jfets needed to step up the voltage) | 20$ | | Pulsed current design: we were thinking of using a buck converter to produce a pulsed current ;https://www.mouser.com/ProductDetail/Texas-Instruments/TLV61046ADBVR?qs=sGAEpiMZZMve4%2fbfQkoj%252bHyzrpFTNtXSPiPDZ6SoEDc%3d | 1 dollar per boost converter | |
| Mounting headgear | |  |  | | --- | --- | | Polycarbonate/ABS blend flexible headgear: we found a similar material to the one described on aliexpress : for about 3 dollars, <https://bit.ly/2PZkaNH> | About a dollar per sheet | | Bamboo wood: the wood is bendable and it can be cut thin enough, but the manufacturing of curved bamboo may be cost prohibitive despite low material cost :<https://www.ebay.com/i/153027549437?chn=ps> | 60$ for 32 square feet | | paper/this flexible plastic sheet : this design could be used for a laser cuttable headgear | Very cheap can be bought at staples | |
| Electrode | |  |  | | --- | --- | | Sponge Electrode with Ampoule Cased electrode with saline. With a snap saline wets the sponge. | $5/$6 | | Manually soaked sponge: this is similar to the sponge used in the 1x1 devices, but it has the problem of having to add saline. | $4 0.6 watts | |

Power analysis:

Current: 1.5 - 4mA

Frequency: 1 - 5 kHz

Duration: 10 - 40 minutes

Voltage: 10 - 40V

Wattage: 0.015 - 0.16 W

Wattage of a typical coin cell

n : 0.2A \* 3V for CR2032 battery =

Block diagram