Photosense Assembly Review

Blue Team
# Table of Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Product Description</td>
</tr>
<tr>
<td>4</td>
<td>Product Contract</td>
</tr>
<tr>
<td>5</td>
<td>Storyboard - Passenger in a Car</td>
</tr>
<tr>
<td>6</td>
<td>Storyboard - Watching content on other phones</td>
</tr>
<tr>
<td>7</td>
<td>User Feedback &amp; Survey Results</td>
</tr>
<tr>
<td>8</td>
<td>Electronics Assembly</td>
</tr>
<tr>
<td>9</td>
<td>Electronics Assembly - Sensors</td>
</tr>
<tr>
<td>10</td>
<td>Electronics Assembly - Sensor Array</td>
</tr>
<tr>
<td>11</td>
<td>Electronics Assembly - Processor</td>
</tr>
<tr>
<td>12</td>
<td>Electronics Assembly - PCB</td>
</tr>
<tr>
<td>13</td>
<td>Assembly - CAD Images</td>
</tr>
<tr>
<td>14</td>
<td>Left Temple</td>
</tr>
<tr>
<td>15</td>
<td>Right Temple</td>
</tr>
<tr>
<td>16</td>
<td>Rims</td>
</tr>
<tr>
<td>17</td>
<td>General Design</td>
</tr>
<tr>
<td>18</td>
<td>Hinges</td>
</tr>
<tr>
<td>19</td>
<td>Test Plans</td>
</tr>
</tbody>
</table>
## Product Description

<table>
<thead>
<tr>
<th>Description</th>
<th>A pair of glasses whose lenses will automatically darken when it senses flashing lights with frequencies in between 3 and 30 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User persona</strong></td>
<td>People with photosensitive epilepsy → 16 y/o girl named Sarah, diagnosed with photosensitive epilepsy when she was 7 y/o, avid video game player</td>
</tr>
<tr>
<td><strong>Value proposition</strong></td>
<td>The glasses shield the user from flashing lights, therefore preventing epileptic seizures. The product could be used anytime the user is anticipating the presence of flashing lights.</td>
</tr>
<tr>
<td><strong>Market:</strong></td>
<td>Photosensitivity prevention market. Expect to capture 1.0% of 3.5 billion USD and growing market, currently 35 Million USD</td>
</tr>
</tbody>
</table>
User Feedback & Survey Results

Customization
- 1 respondent knew what frequency ranges they were sensitive to (6 Hz and 20 Hz)
- Major triggers include sunlight, strobe lights, and bright lights
  - ~30% are sensitive to sunlight in some form

Age
- Most people diagnosed before 20 y/o
  - User = children (with parents/insurance as purchaser) or adults who have lived with PE since childhood

Style
- “I don’t want to wear blackout or welding glasses because I’m a 14 year old girl and it’s not fashionable”

Benchmarking
- FL-41 Lenses
- VNS therapy
- Polarized glasses
- Transition contact lenses
- Medication
- Eyelids

Would you be interested in lenses which black-out in response to certain triggers to prevent your epileptic seizures?

- Yes 86.4%
Electronics Assembly

**Li Ion Battery**
3.7 V
105 mAh each

**Microprocessor**
ATSAMD21 (ARM Cortex-M0+)
Dev Board: Feather M0 Basic Proto
48-QFN 7x7
32-bit 48MHz 256KB

**PCB**
house microprocessor
sensor peripherals
simple battery logic

**Button**
Active/Deactivate glasses

**Photodiode Array**
3 photodiodes.
1 active all the time and 2 when needed

**Light Valve Lenses**
Shut off when voltage applied

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**Diagram:**
- Power button
- Voltage regulator
- Microprocessor
- Batteries
- Battery charger
- Lenses
- Photodiodes
Electronics Assembly - Sensors
Electronics Assembly - Sensor Array
Electronics Assembly - Processor

Dev Board
Testing outside glasses

Microprocessor
Testing inside the glasses

Feather M0

Same processor the Feather M0 has
Electronics Assembly - PCB
Assembly - CAD Images
Left Temple
Right Temple
Rims
General Design
Hinges
Test Plans
THANK YOU!

Blue Team