Scope Statement

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| Project Name | Cellphone High-Fidelity Audio Interface | Date | February 12, 2024 |
| Project Number | 001 | Project Manager | Mark Thomas |

| Business Need / Project Objectives |
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| Implement a High-Fidelity Audio Interface for smartphones. |
| Develop an Audio Interface that also serves as a power supply for the smartphone. |
| Design an elegant enclosure to protect the internal electronics. |

| Project Description and How it Meets the Business Need |
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| The project should allow users to connect their smartphone charging cable to the prototype |
| and start listening to High-Fidelity audio over their preferred set of speakers/headphones; |
| all while charging their phone. |

| Project Benefits |
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| 1. Allows reproducing High-Fidelity audio from a smartphone without extra adapters. |
| 2. Provides power to the smartphone allowing for unrestricted listening sessions. |
| 3. Provides a visual indicator to state the current conversion quality. |

| Project Requirements |
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| 1. The Audio Interface is compatible with the USB Audio Class 2.0 standard |
| 2. The Audio Interface can reproduce sound data with qualities up to 24 bits / 96 KHz. |
| 3. The Audio interface is compatible with iOS, and Android. |

| Project Deliverables |
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| 1. Audio Interface Prototype. |
| 2. Design Documentation. |
| 3. |

| Project Does Not Include |
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| 1. A power amplifier to connect external speakers directly. |
| 2. An equalizer to pre-filter the analog output. |
| 3. Fast Charging capabilities. |

| Success / Acceptance Criteria |
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| 1. The Audio Interface can be recognized as an Audio device by the smartphone. |
| 2. The DAC can reproduce audio coming from digital qualities up to 24 bits/96 KHz. |
| 3. An LED glows with a color representing the current audio quality being reproduced. |

| Estimated Project Schedule | |
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| Milestones | Estimated Date of Completion |
| 1. Project Start | March 1, 2024 |
| 2. Schematic Design | April 15, 2024 |
| 3. PCB and enclosure Design | June 30, 2024 |
| 4. Project Assembly and programming | September 30, 2024 |
| 5. Prototype testing and reworks | November 15, 2024 |
| 6. Project Completion | December 5, 2024 |
| Total Estimated Length of Project | 9 Months |

| Human Resource Requirements | | |
| --- | --- | --- |
| Personnel Type / Role | Quantity | Estimated Length of Time |
| 1. Electronics Hardware Designer | 1 | 9 months |
| 2. Embedded Programmer | 1 | 5 months |
| 3. Mechanical Hardware Designer | 1 | 2 months |
| 4. Product Tester | 1 | 1 month |
| 5. |  |  |
| 6. |  |  |

| Estimated Cost of Project | |  |
| --- | --- | --- |
| Expense Type | Description | Estimated Cost |
| Labor | Design and construction of the prototype |  |
| Internal | Design and assembly of the prototype | 0 CAD |
| External | 3D printing of the enclosure and PCB manufacturing | 15 CAD |
| Software | Required programming cable | 10 CAD |
| Hardware | Components & PCB | 40 CAD |
| Other | Soldering supplies | 5 CAD |
| Total Estimated Cost of Project | | 70 CAD |

| Project Constraints |
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| 1. The prototype needs to be completed by November 2024 to allow time for testing. |
| 2. The overall device cost should not exceed 70 CAD. |
| 3. No licenses should be required for the project to work with smartphone devices. |

| Project Assumptions |
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| 1. Once programmed at assembly, the prototype does not need an extra MCU to work. |
| 2. Using a USB Audio Class 2.0 device avoids compatibility issues with different OS. |
| 3. An external power supply will provide raw 5V lines to the prototype. |

| Decision | | | | |
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|  |  | Approved |  | Rejected |
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|  |  | Approved with modifications |  | Deferred |
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| *Required Modifications* | | | | |
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| *Additional Comments* | | | | |
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Approver’s Printed Name

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Signature

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