

Music Visualization Project

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Iteration 1

- The first iteration of this project will be to get a PCB and Microcontroller to control a screen and take the following data and display it
 - Album Cover
 - Song and album title
 - Live waveform with each frequency
 - Time elapsed and time left in the song

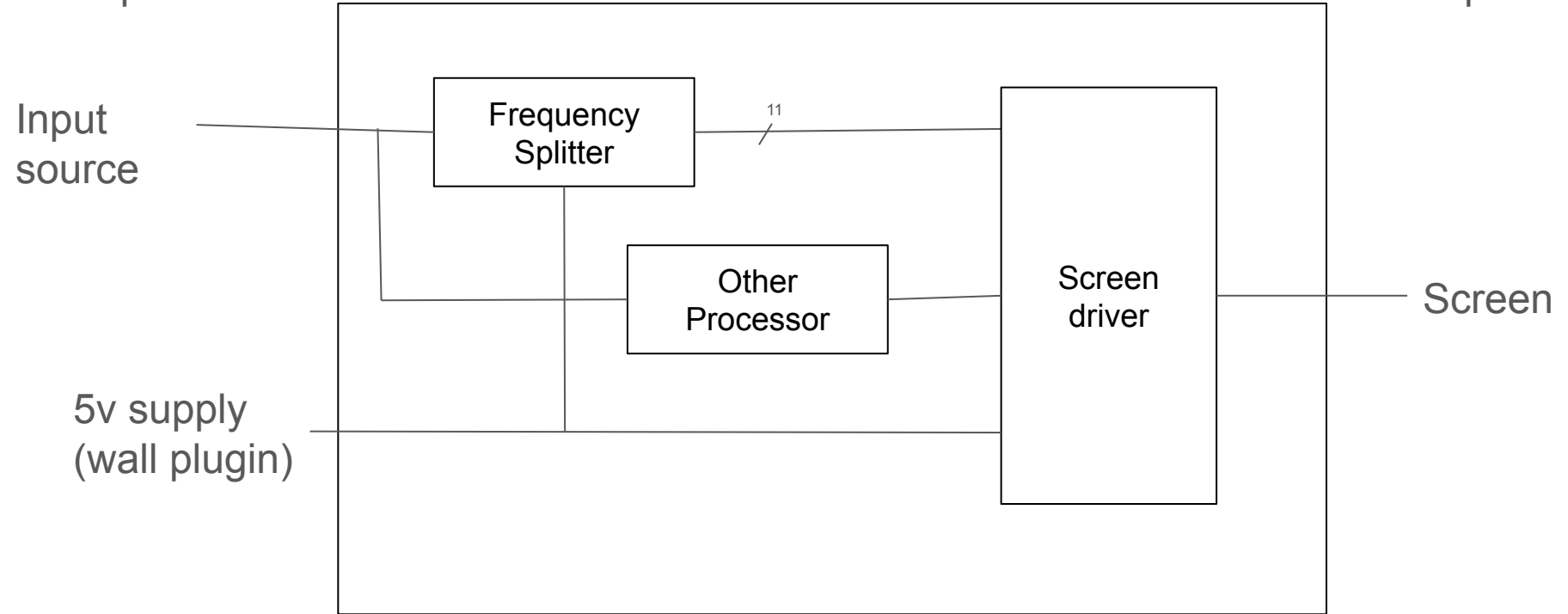
- Similar to this maybe

https://www.amazon.com/Vastarry-Fluorescent-Spectrum-Indicator-Analyzer/dp/B0B5DMBWVL?dib=eyJ2IjoiMSJ9.NqJXScFHH6nLAOJC8DZY2QR0iQUDZBo81QOLaJ7j6QV1k8B2znB_3qhV3jt8j5QvpCEb26CE_q4_I5DUeoMCKxVW6LIfDaXzdeyWy-e7TFOjTliaMCTikF3KhPyLrl_gOkuzQkZUhoHakig910AjGuey3nYySqzndO8qqG5uto-51LHyTCPGRT99g_pSloniJyMJI3w70HARiog9sAMzxJI1Ze1FLh-NbAcMLNCGFgAvx0UMFQA1tHIYu1xuA3_Zq9xxR5CZfQTcve1iRQFzsFIS6d9du8eCKvsDoQkS2a8.p_YSNtru70_YeNB010EbcjwKI3LU1Srwg7yf5oFiJM0&dib_tag=se&keywords=audio+visualizer&qid=1731897428&sr=8-7

Iteration 1 Block Diagram

inputs:

outputs:

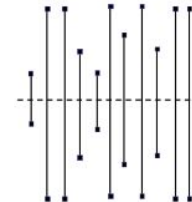


Input Source Concerns

- I don't want to put my PCB in the audio chain because i don't want to deal with maintaining the level of quality present on IEMs
 - If I have to I could figure out how to keep it in the chain because that way I am 100% sure I can access all the necessary signals; except album cover which I really want to find out how to get.
- The iPhone is not capable of playing audio over bluetooth at the same time as aux
 - I think the next step should be to find out what data is available over bluetooth for a 'device' at the same time as aux is being used.

Module: Frequency Splitter

- Outputs 11 different 6bit integers every x cycles or something where each int represents a frequency: first iteration of frequency splits
 - 20-60Hz
 - 60-150Hz
 - 150-250Hz
 - 250-500Hz
 - 500-1250Hz
 - 1250-2500Hz
 - 2500Hz-4000Hz
 - 4000Hz- 5000Hz
 - 5000-8000Hz
 - 8000 to 15000Hz
 - 15000 to 25000Hz
- Each split represents one bar on the final waveform : example below where each line represents the amount of a certain frequency



Module: Other Processor

- This will take other data from the aux that is available and cool to display
 - Ex. album title, song name, elapsed time, etc

Lightning port transfer

- From an Iphone
 - <https://developer.apple.com/documentation/externalaccessory>

Screen Driver

- Specs will be dependent on what screen is chosen