uPIHat Requirements and Specifications

Mechanical Specifications

Requirement	Specification(s)	Acceptance Test Criteria
With the addition of the MicroHat, the final weight of the Pi and MicroHat should not exceed 10kg	Weight of the microHAT should be taken into account when considering that the total weight should not exceed 10kg	Use a Scale to weigh the Pi including the Hat
MicroHat board needs to conform to the basic add-on board requirements	Make sure that after the integration of the subsystems, the board still conforms to the basic add-on board requirements	Check the basic add-on board requirements and compare it to your board

Electrical Specifications

Requirement	Specification(s)	Acceptance Test Criteria
R1.2, R2.2: The input signal from the mic should not exceed 1V.	**S1.2, S2.2:** use a mic that's output voltage is below 1V.	Test output signal from power regulator using LTspice
Microphone, op-amp requires 2V power supply.	Buck switching regulator should output 2V given a 3V input	Simulate input/output voltages on LTSpice.
Since we are using the 5V GPIO header we need to make sure it is safe to do so	Add a safety diode according to the design guide of the PI	Check the datasheet for the op-amp and power regulator to ensure that 5V will not damage the respective subsystem

Functional Specifications

Requirement	Specification(s)	Acceptance Test Criteria
R1.1, R2.1, R3.1: The status LED's and/or buzzer should show if desired frequency is met.	**S3.1** Use 3 different coloured LED's and a buzzer	Select known frequency signals stored in the Pi from the op-amp and check to see whether LED lights up and buzzer goes off
R3.2: Users could choose six notes that they would like to practice.	**S3.2** a text file that can be edited on the Pi which will contain six frequencies that the user wants.	Press the buttons to change the different frequencies and note the change in the LED that lights up
R1.3, R2.3, R3.3: Users can choose which of the six predefined notes they would like to practice.	**S1.1, S2.3, S3.3** Use 6 push buttons configured in a matrix	Simulate a text file to be processed in the Pi and switch between them using the buttons