D.5. POWER CONSUMPTION

Gimme Fast project is consisting of 4 submodules; communication, transportation, image acquisition and image reconstruction. All these submodules are consuming electrical power and Revolusys Inc. has been tried to find the most effective solution for the power consumption. The first attempt for the solution was to minimize the power required for the circuitries constructed for communication submodule.

The first circuitry constructed by the company was consuming 0.36 W (9 V, 0.04 A). The op-amps utilized at this stage of the project are LM741 op-amps. In the comparator circuitry, the op-amps are changed to LM358 op-amps and with help of other simple alterations, the power consumption is minimized to 0.108 W (6 V, 0.009 A).

For the transportation submodule, it is measured that the vehicle is consuming approximately 2.67 W (8.9 V,0.3 A).

In image acquisition and image reconstruction submodules, two Raspberry Pi general purpose computers are utilized. Each one is consuming 260 mA at 5V (which is about 1.3 W-1.4 W). Total power consumption for these submodules is 2.8 W.

The project is physically separated into three parts; transportation vehicle, receiver and transmitter terminals. Therefore 3 power supplies will be utilized at each physical part. For terminals, Lithium Ion power banks are considered to be used. Power banks will have 10000 mAh capacity at 5 V which is powering the PI’s for 38 hours.

For the power supply at the vehicle part, two Li-ion cells will be utilized. Two Li-ion cells will have 2500 mAh at 9 V.