

ABSTRACT

It can't be denied that human dependence on technology today is enormous. Where technology continues to grow rapidly in accordance with the humans needs of technology. One of the fastest growing technology in this era is the mobile phone/smartphone. Of course, humans with high mobility is dependent on smartphones. The smartphones he uses must have a good performance all the time.

Therefore, we need a device that can maintain a good smartphone performance at all times. Surely the battery life that is owned must have sufficient energy supply. In order for a smartphone to work with good performance, every time technology requires energy recharge to recharge the power. Therefore, in this final project, I will make a simulation of a charger device that can receive energy sources in the form of AC or DC. This simulation uses LTSpice XVII software.

The method used in this simulation is to use a transformer to reduce the AC voltage and Rectifier to change the output voltage to DC. And the topology used for this Switching Power Supply is Topolgi Buck Converter. For the Quick Charger on the simulation, it uses a logic block that is determined by the Karnaugh Map method or commonly called K-Map.

This research has the final result, where when the battery voltage capacity is low, that is below 3.9V, the charger will fill with a high voltage of 9V, and when the battery voltage capacity is between 3.9V and 4.1V or 50% the battery capacity, the charger will charge 7V , and when the battery voltage capacity is above 4.1V or has been stated enough then the charger will charge with a 5V voltage. For output from Transformer and Rectifier rectification is 12V will be used to be the supply voltage on the charger.

Keywords: *Quick charger, Switching Power Supply, Buck Switching Regulator, Karnaugh Map*