

Phone Charger - Lab Report

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Abstract—This report is a summary of the procedure and observations found during the making of a 5V DC Phone Charger

1 INTRODUCTION

The raw signal from the wall is a 220V 50Hz AC signal. To be able to charge a phone, we need to convert this into a 5V DC signal. This is achieved by using a number of different circuit elements. The procedure and corresponding output wave signals at each step are described below.

2 INITIAL SIGNAL

The raw signal is a 220V 50 Hz signal, which is converted into a 12-0-12 step down transformer. The wave signal is shown in 1

3 RECTIFIER

A four Si diode rectifier is used to rectify the 12V 50Hz AC signal. 2 shows the output at this stage.

4 FILTER (CAPACITOR)

The capacitor acts as a low pass filter and only allows the signal with lower frequencies to pass. This creates a noisy DC signal of around 18V shown in 3

5 REGULATOR

This is the final element of the charger and works to convert the noisy 18V signal into a clean 5 DC signal as seen in 4. The output in the multimeter can be seen in 5

6 FIGURES

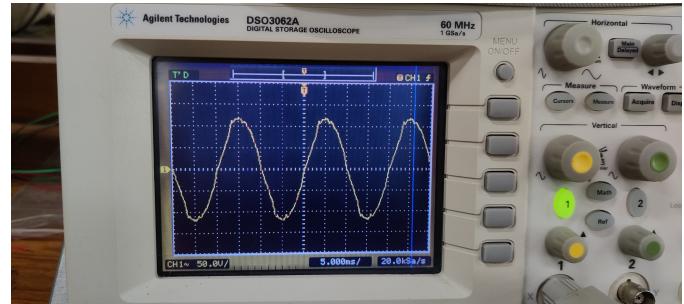


Fig. 1: Sine wave at the transformer

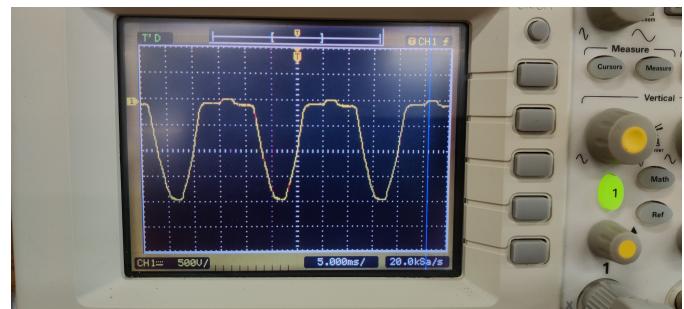


Fig. 2: Rectifier output

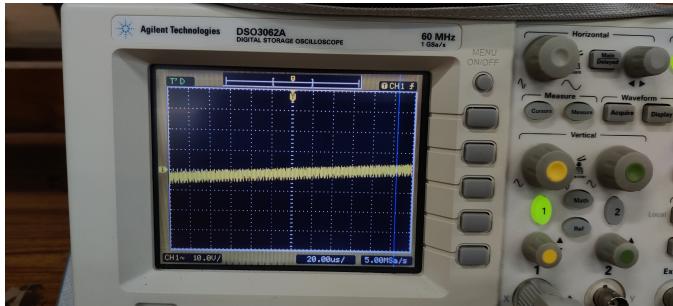


Fig. 3: Output across the low pass filter ie. capacitor

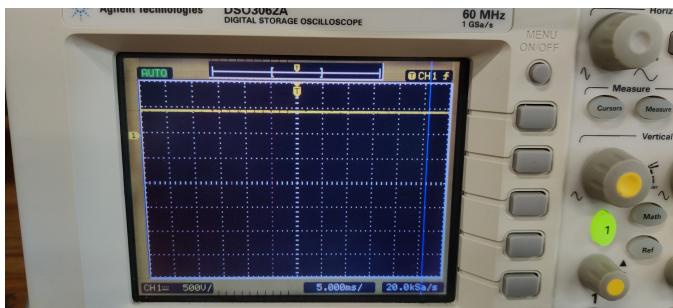


Fig. 4: Final 5V DC output

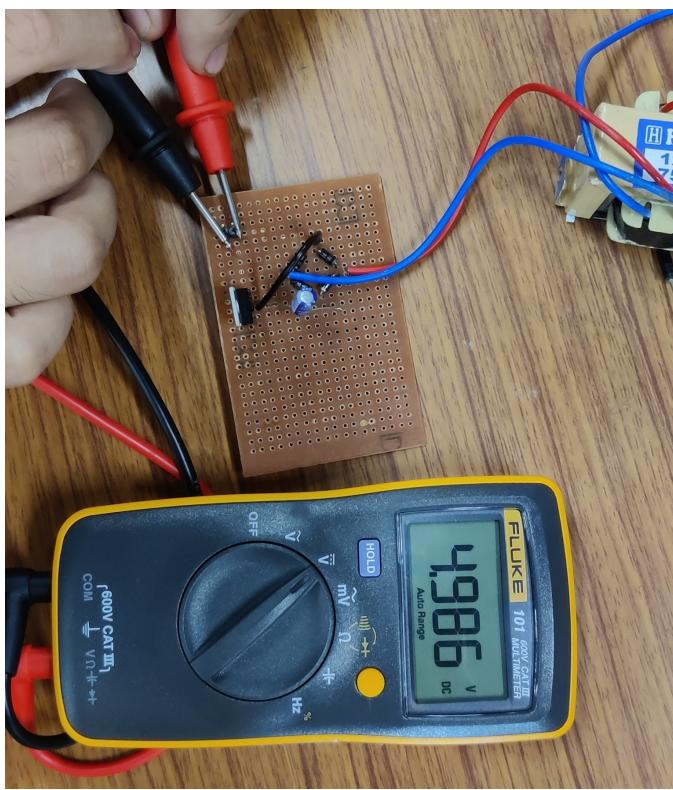


Fig. 5: Output shown using the multimeter