Rodin Coil Over Unity Energy Amplifier

A coreless Rodin Coil Over Unity Energy Amplifier is under study in our lab. The signal generator used is **Tektronix AFG1062, 60Mhz , 300MS/s.** The power from the generator is low and hence an amplifier is included to amplify the voltage and current. The voltage output from the amplifier is low and reaches maximum 45V rms.

Fig. 1: A Properly Wound and Correctly Energized Rodin Coil
The opposal winding's counter diagonal direction is incorrect

The Rodin Coil Over Unity Energy Amplifier boosts the voltage by twenty times, which is extremely large. On the input side, a small 2168 Hz frequency is multiplied up to 20 times. The tuning frequency is highly dependent on the load. The current that comes into the coil on the input side and the current that leaves the coil at the output (before the capacitor) are almost equal. Thus at this point we can say that there is high potential for further study of the circuit for its tremendous increase (step up) in the voltage level and hence probably on the power.

Here are some of the measured results:

The signal generator voltage V_{pp}= 5V and the frequency f=2168Hz

The waveforms of the input and output voltage are sine waves with almost no distortions and harmonics. After checking the wave form and voltage at the output, a full wave bridge rectifier is employed to rectify the voltage at the output of the Rodin Coil Over Unity Energy Amplifier. This converts the input AC signal to a DC signal. A filter capacitor is also connected at the output of the rectifier and it performed well.

A load was connected to test the performance of the Rodin Coil Over Unity Energy Amplifier in terms of quantitative analysis. Two load configurations are tested as follows:

12 parallel LED bulbs each one with 7W rating: The parallel connection of 12 LED bulbs is investigated. The bulbs are close to full illumination. The current and voltage at input and at the output and the current and voltage of individual bulb is recorded. The tuning frequency for this circuit is nearly 641Hz.

Fig. 2: 12 LED lights in parallel are the load

For each setup three (3) different types of measurements are carried out. They are:

A) Digital Oscilloscope,

B) Analog meters

C) Thermal imaging.

A. Using Digital Oscilloscope

Digital oscilloscope is used to measure the voltage and current at both input and output. The oscilloscope used was **Tektronix MDO3034 Mixed Domain Oscilloscope 350Mhz, 205GS/s**. The graphical representations of measurements from the oscilloscope are shown below.

The input side voltage and current are shown in the figure below.

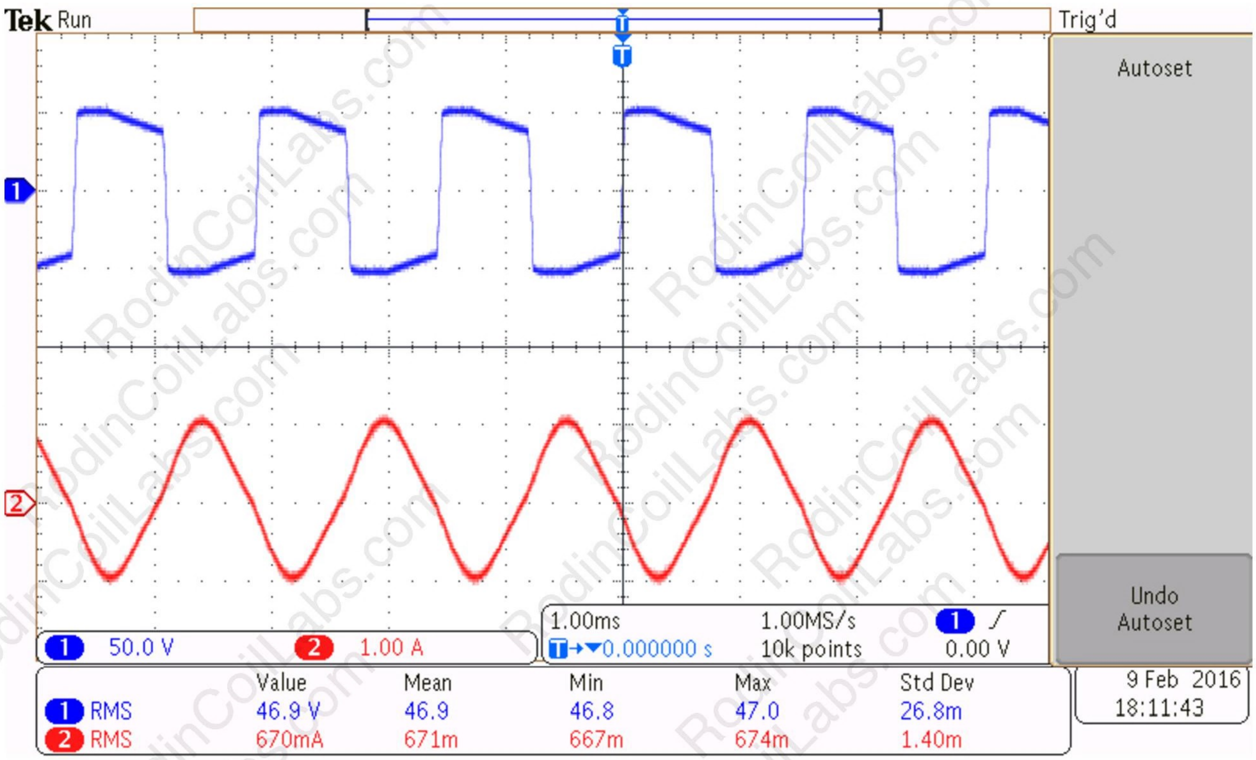

Figure 3: Input voltage (Blue) and input current (Red)

The load voltage and current are shown below.

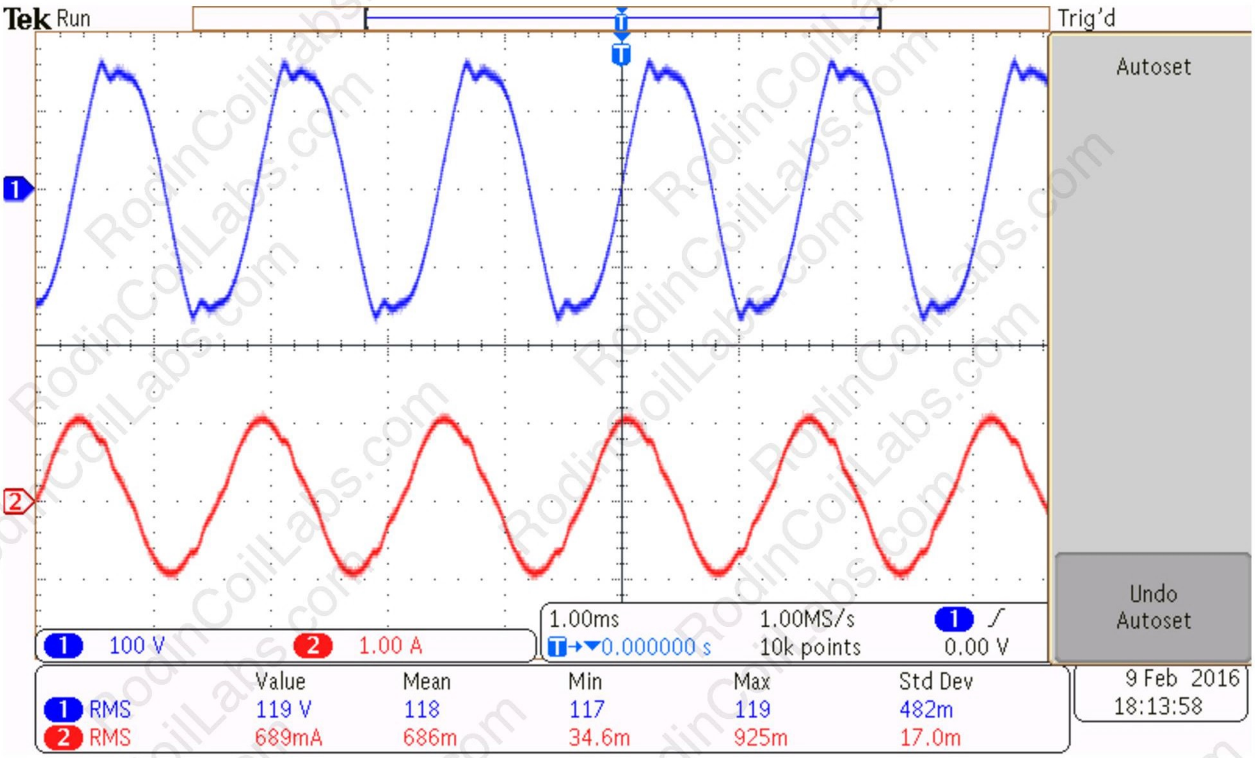

Figure 4: Output voltage (Blue) and current (Red)

The output load current and input current are shown in the figure below

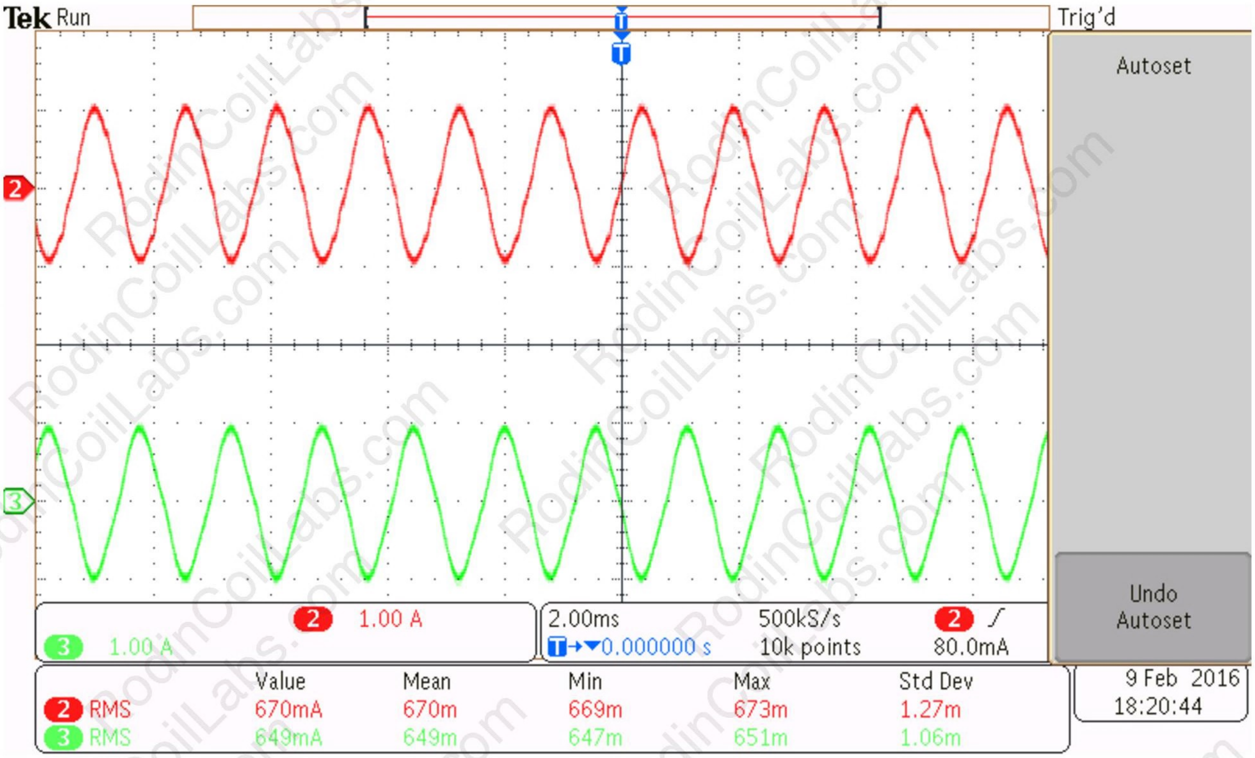

Figure 5: Input current (red) and output current (green)

The table below shows the results from the measurements and the power calculated from these measurements.

	Input at the Toroid	Output to Load
Voltage (V)	46.9	119
Current (mA)	670	689
Power (W)	31.42	82

$$Gain = \frac{P_{load}}{P_{in}}$$

Where, P_{load} is power at the load and P_{in} is load at input.

$$Gain = \frac{82W}{31.42W} = 2.61$$

The above circuit arrangement has a gain of 2.41 which is equivalent to 261% efficiency.

B. Using Analog Measurements

For verification of the data obtained from the digital oscilloscope analogue instruments are used to measure the voltage and current at the input and output of the setup. The results show a remarkable agreement.

The signal generator used is shown in the figure with the peak to peak voltage of 5V and frequency of 641Hz.

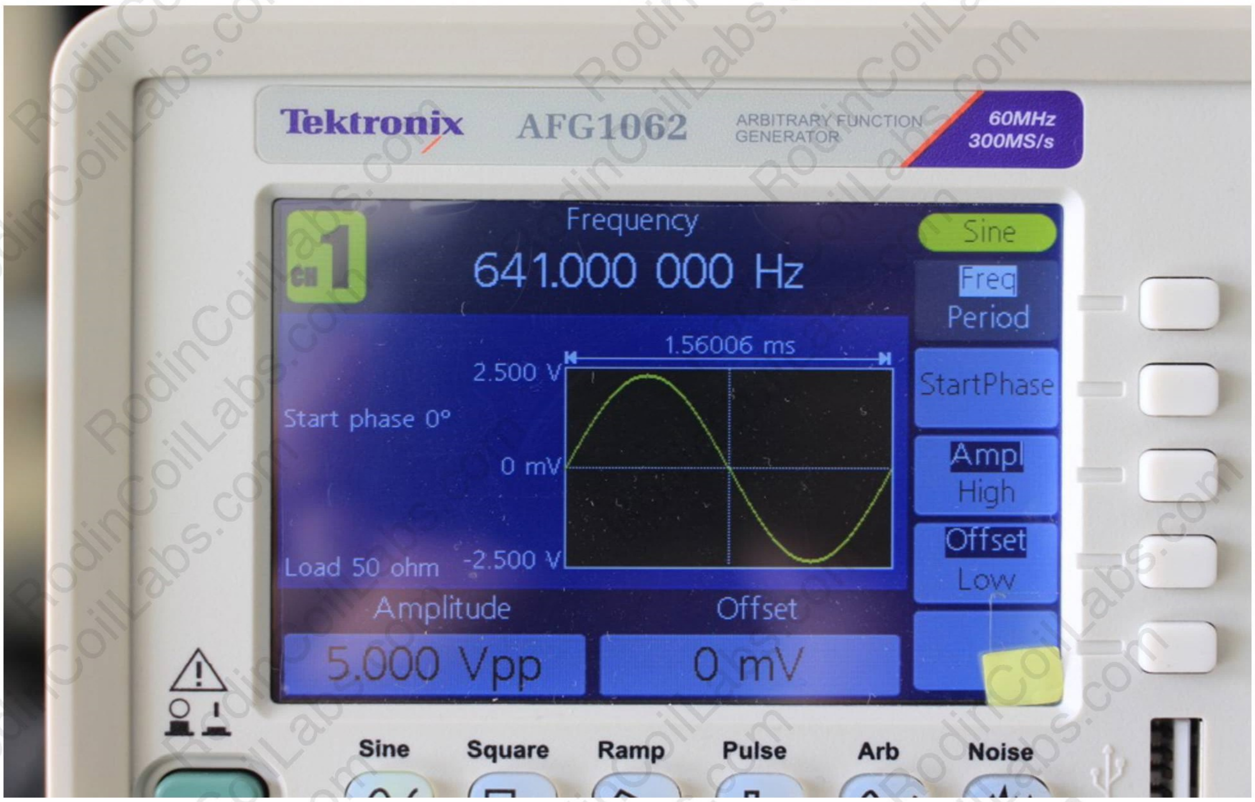

Figure 6: Signal generator display panel

Figure 7: LEDs load

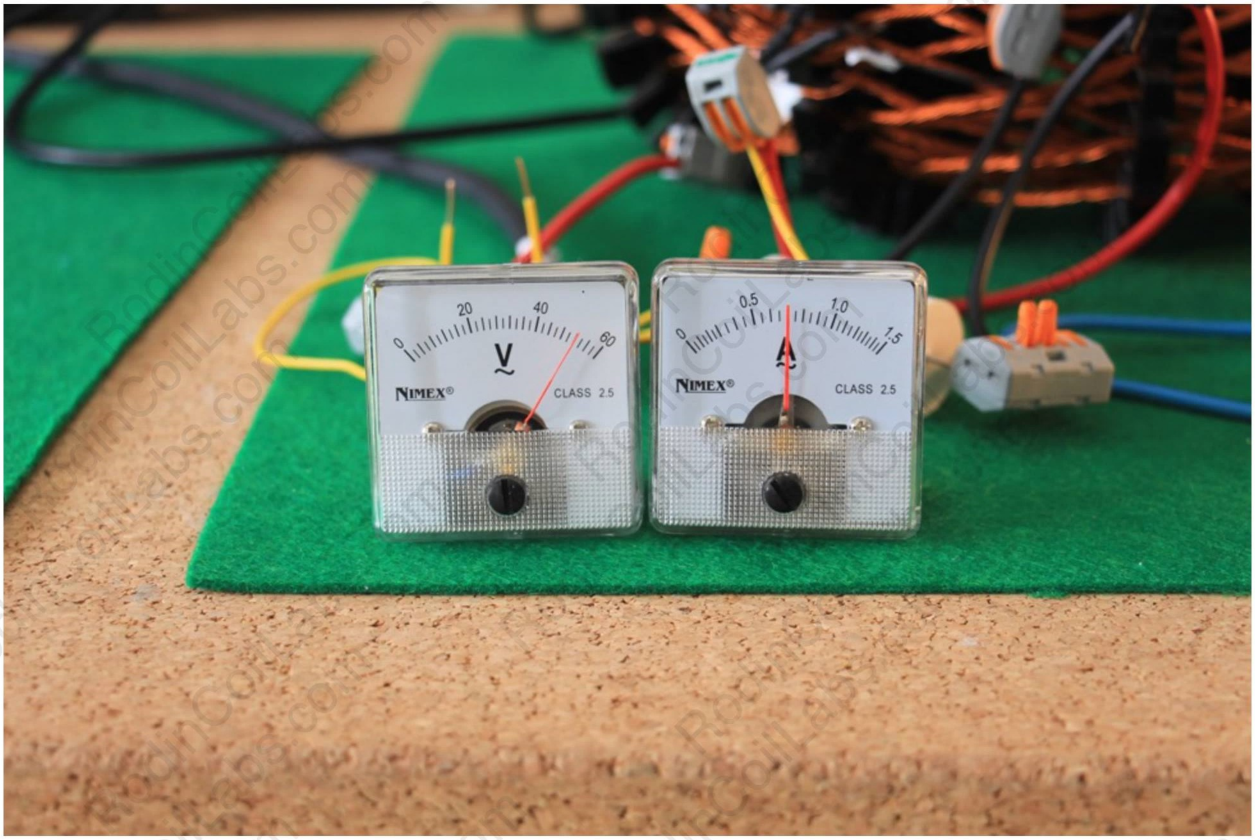

Figure 8: Input Voltage and current

Figure 9: Output Voltage and current

C. Thermal Camera

Thermal camera is used to take the image of different sections of the setup to see the thermal effects and also to compare the results with those obtained by measurements. The thermal camera used is FLUKE thermal imager **FLUKE Ti200, IR Fusion Technology.** The results are presented in the form of figures as shown below.

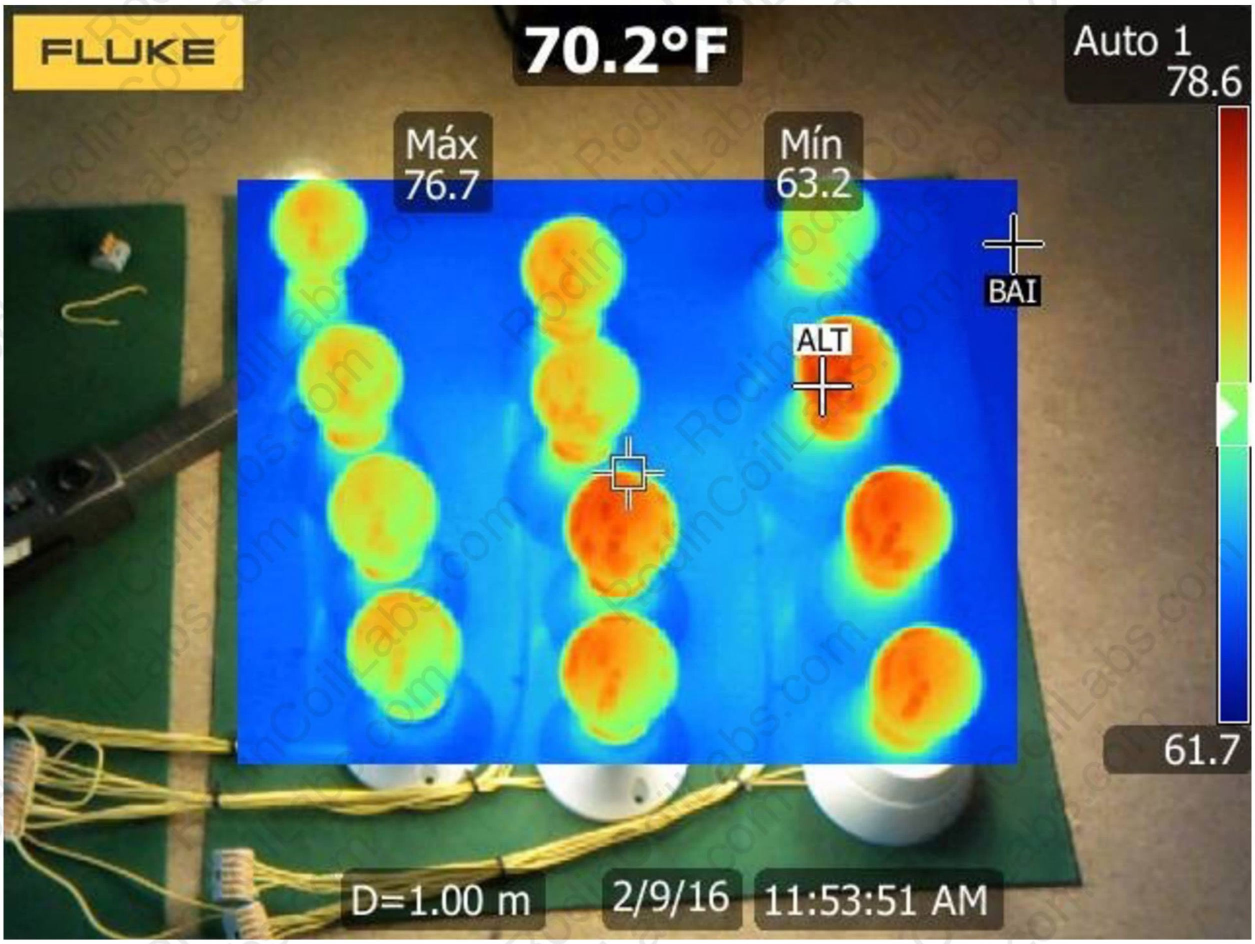

Figure 10: thermal image of the LED bulbs

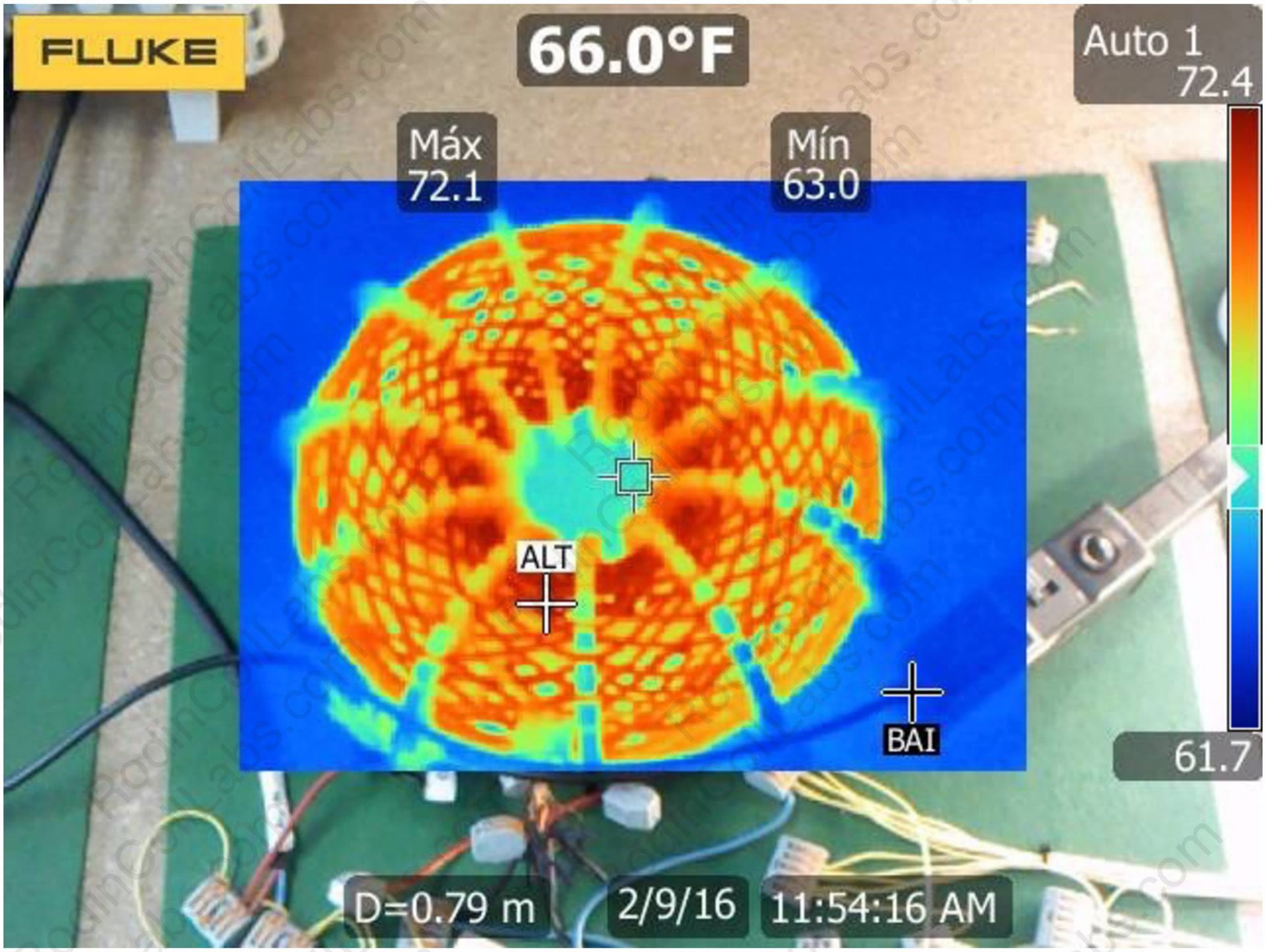

Figure 11: thermal image of The Rodin Coil Over Unity Energy Amplifier

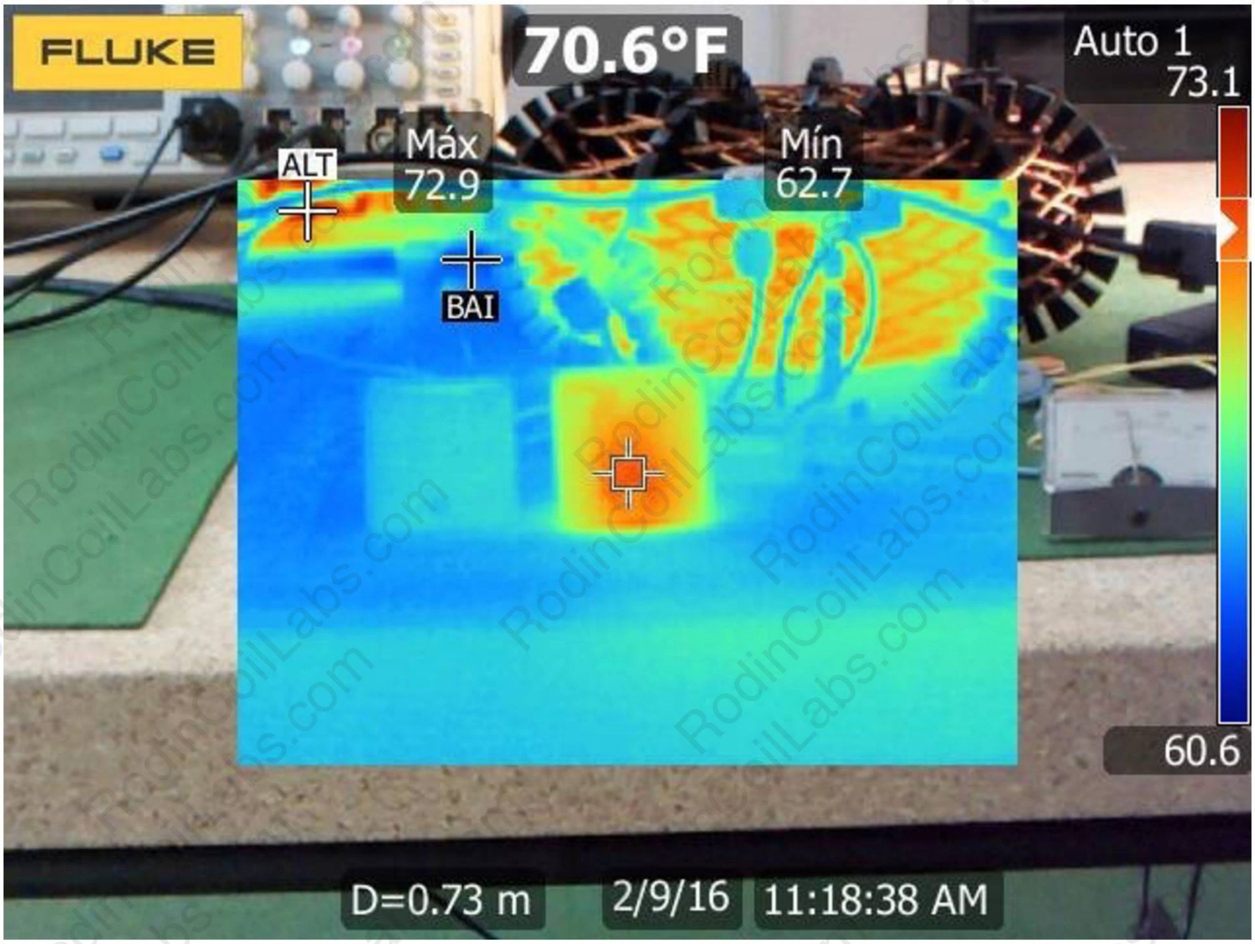

Figure 12: thermal image of the input ammeter (A)

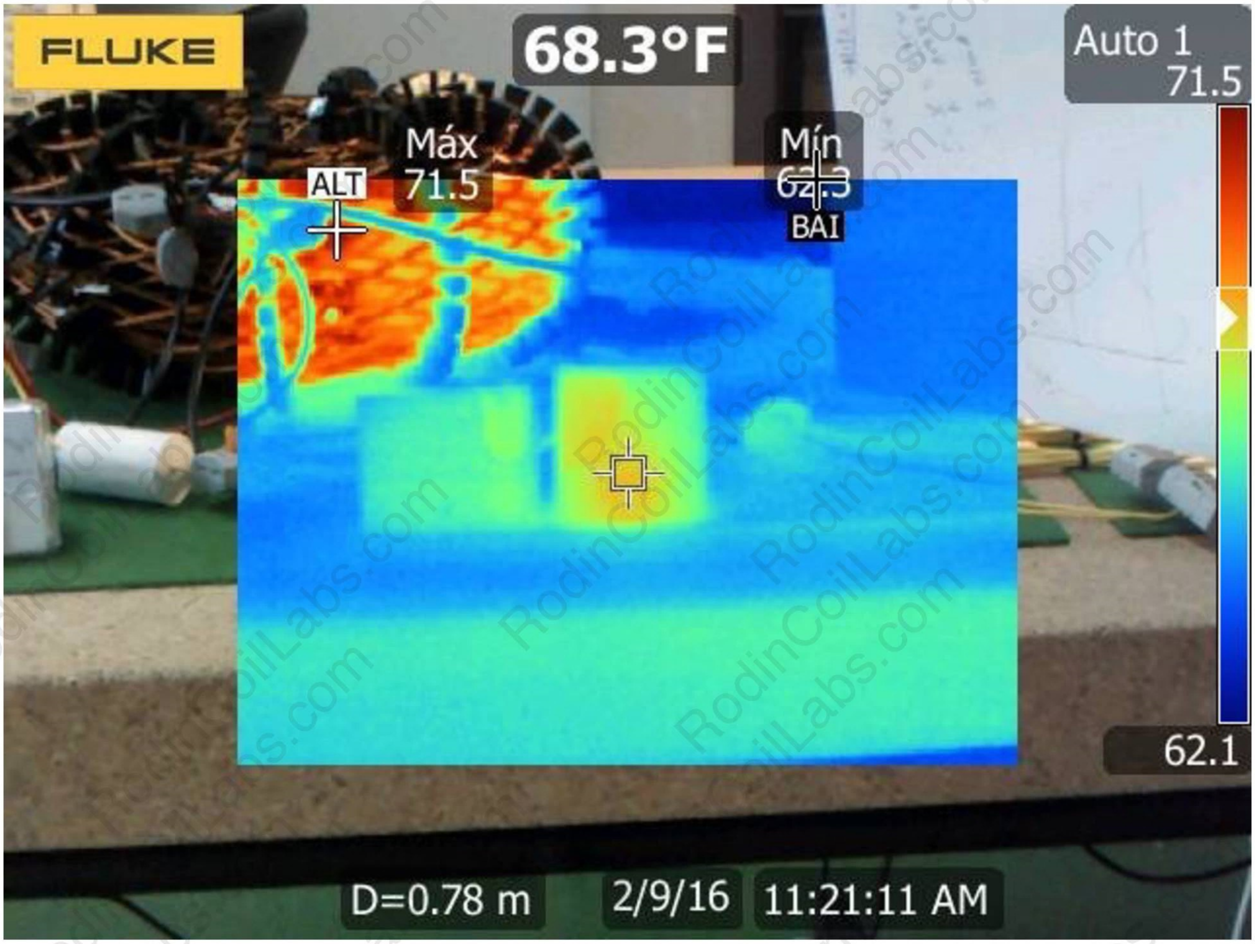

Figure 13: thermal image of the output ammeter (A)

From the thermal image of the input ammeter and output ammeter it can be clearly seen and hence confirm that there is higher temperature in the input ammeter than the output ammeter which justifies the measurements from the oscilloscope and analogue ammeter, which are showing slightly higher current in the input side than the output side.

A. Using Digital Oscilloscope

The input side voltage and current are shown in the figure below.

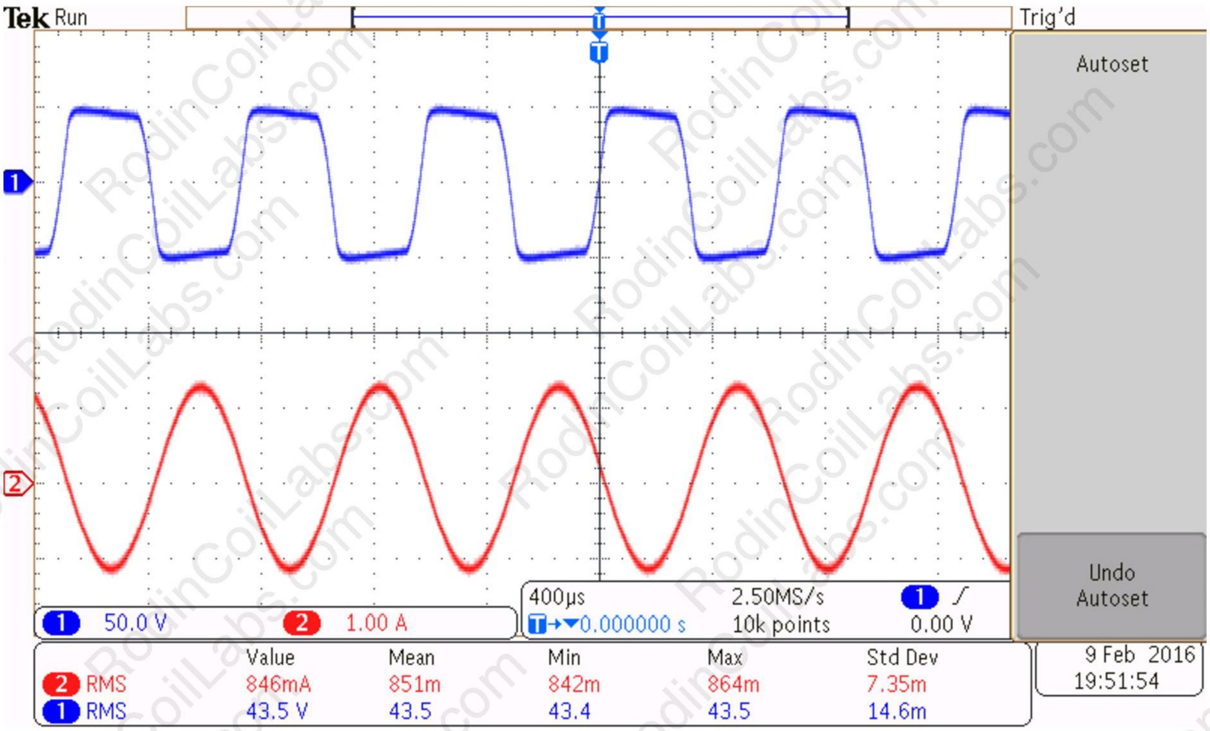

Figure 15: Input Voltage (blue) and current (red)

The load voltage is higher than the capacity of the oscilloscope and hence we have used digital multimeter (**FLUKE 3000FC**) to measure it the voltage. This CAT II cable is able to carry voltage levels below 300V which can be shown in the figure below. As a result the voltage on the output terminals is measured using digital multimeter.

Figure 16: Input voltage for Oscilloscope

The measurement of the output using digital multimeter is used as shown below.

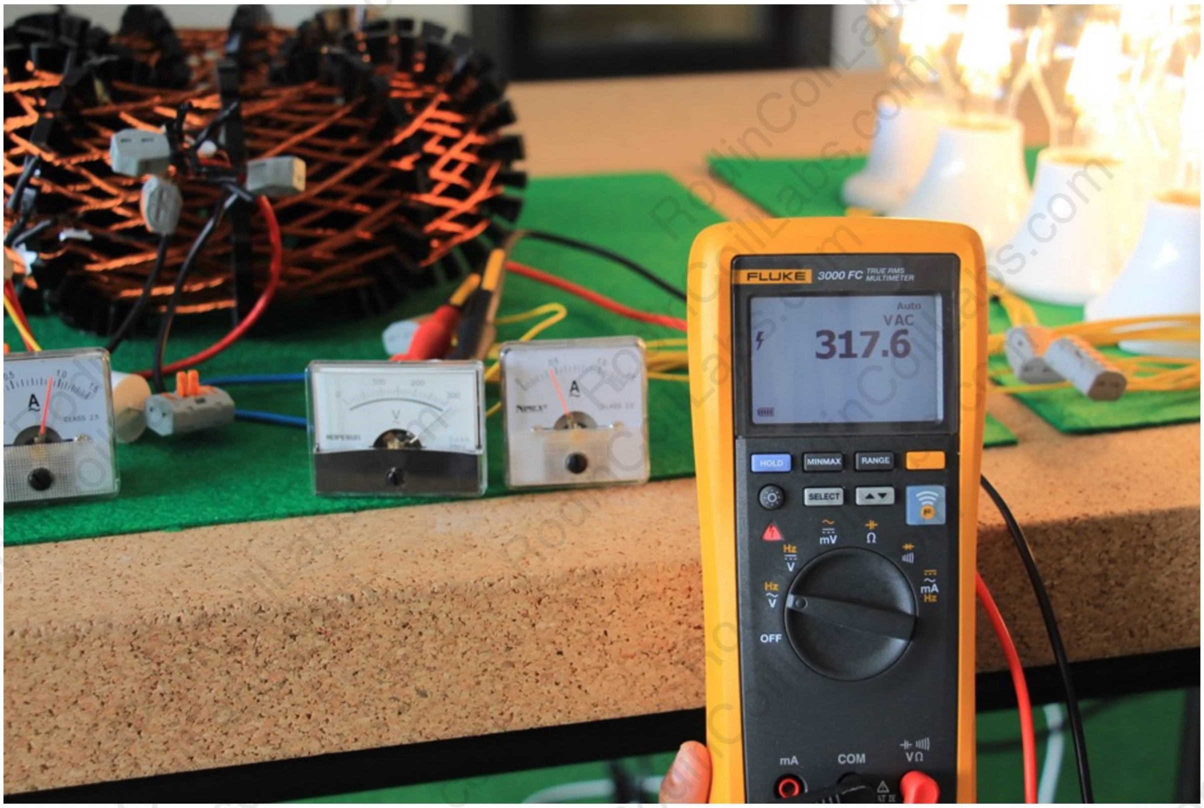

Figure 17: Output voltage

The input current and input currents are shown in the figure below

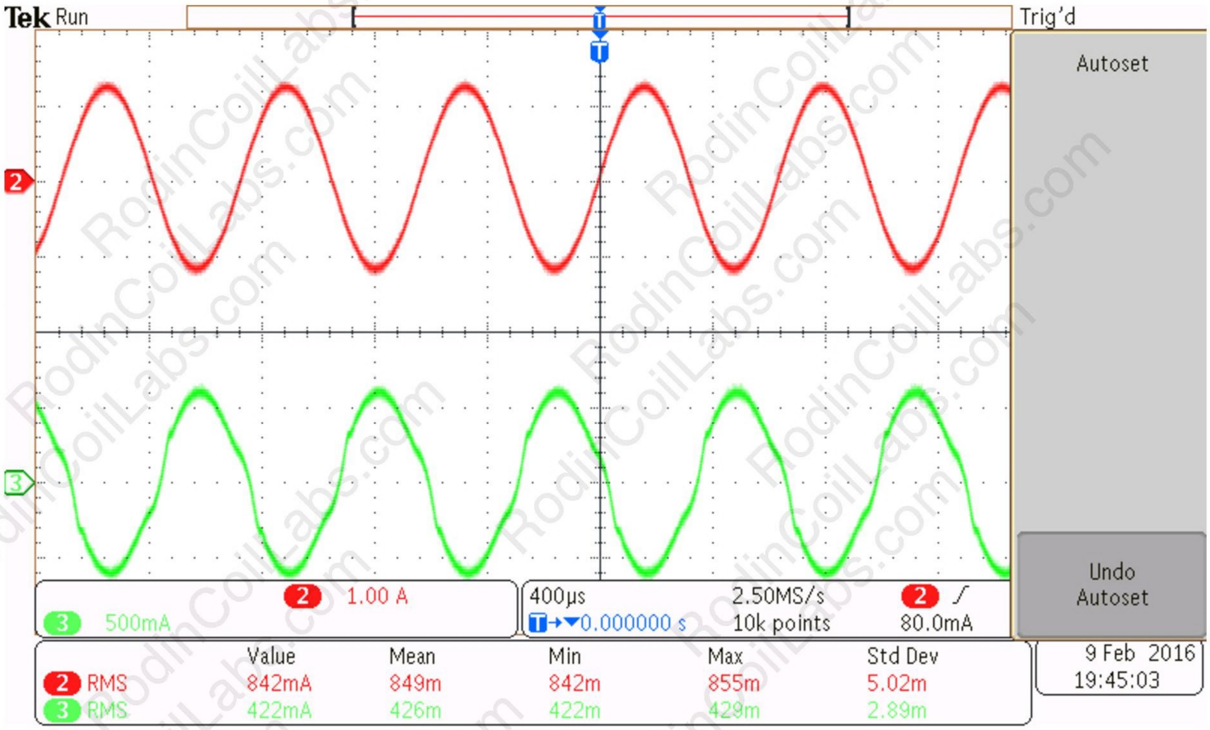

Figure 18: Input current (red) and Output current (green)

	Input at the Toroid	Load
Voltage (V)	43.5	317.6
Current (mA)	846	422
Power (W)	36.8	134.03

$$Gain = \frac{P_{load}}{P_{in}}$$

$$Gain = \frac{134.03W}{36.8W} = 3.64$$

The above circuit arrangement has a gain of 3.64 which is equivalent to 364% efficiency.

B. Analog Multimeters

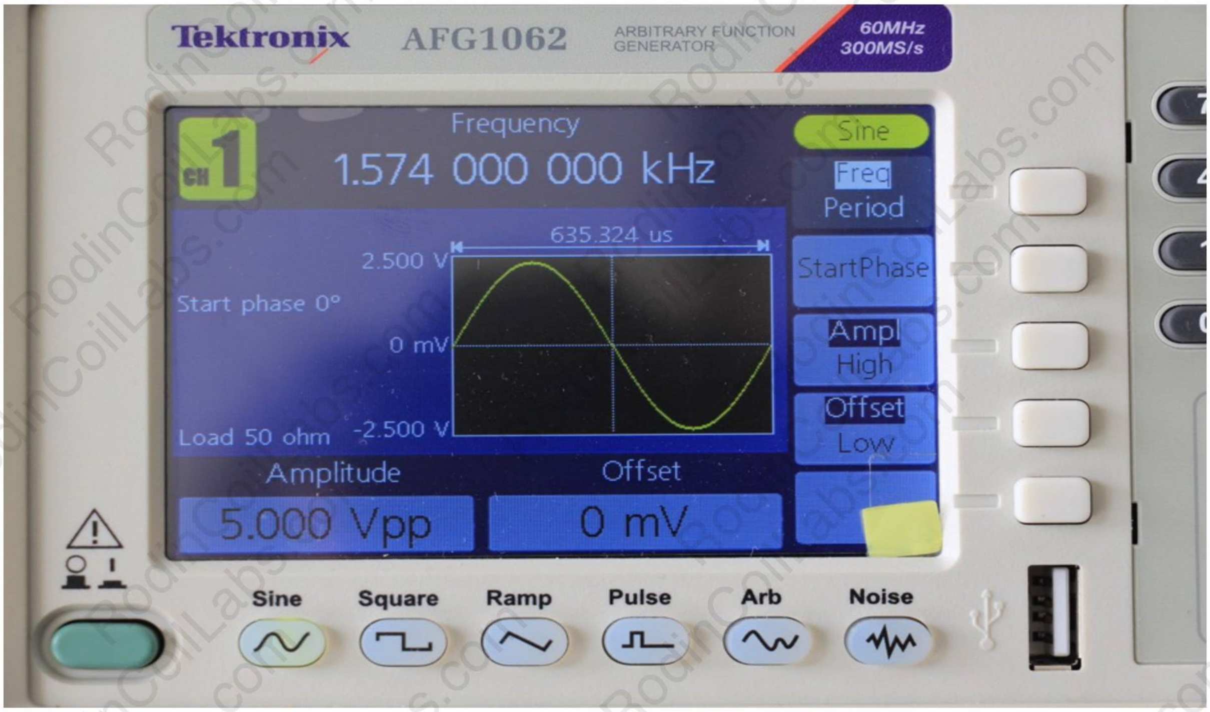

Figure 19: Signal generator display panel

Figure 20: LEDs load

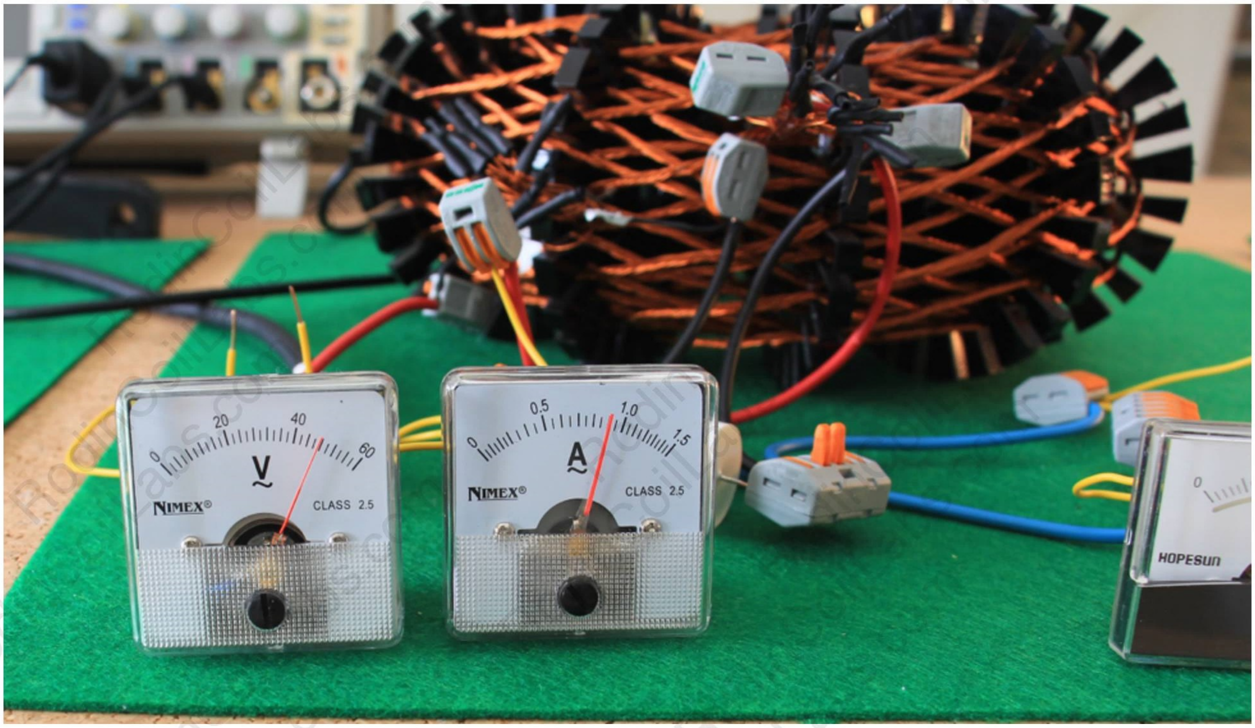

Figure 21: Input Voltage and current

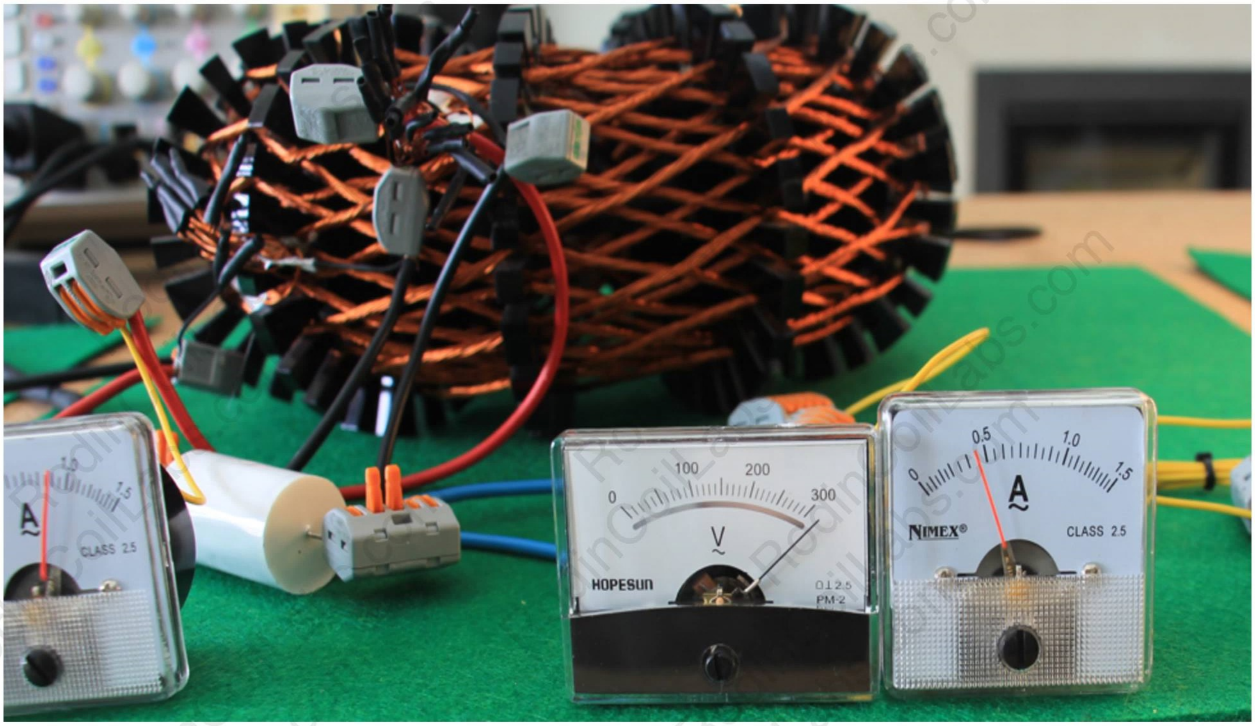

Figure 22: Output Voltage and current

From the output side voltage and current measurement we can see that the voltage is higher than the voltage range of the analog meter. This is also the case for the oscilloscope, where the CAT II cable is able to carry voltage levels below 300V which can be shown in the figure below. As a result the voltage on the output terminals is measured using digital multimeter.

Figure 23: Input voltage for Oscilloscope

The measurement of the output using digital multimeter is used as shown below.

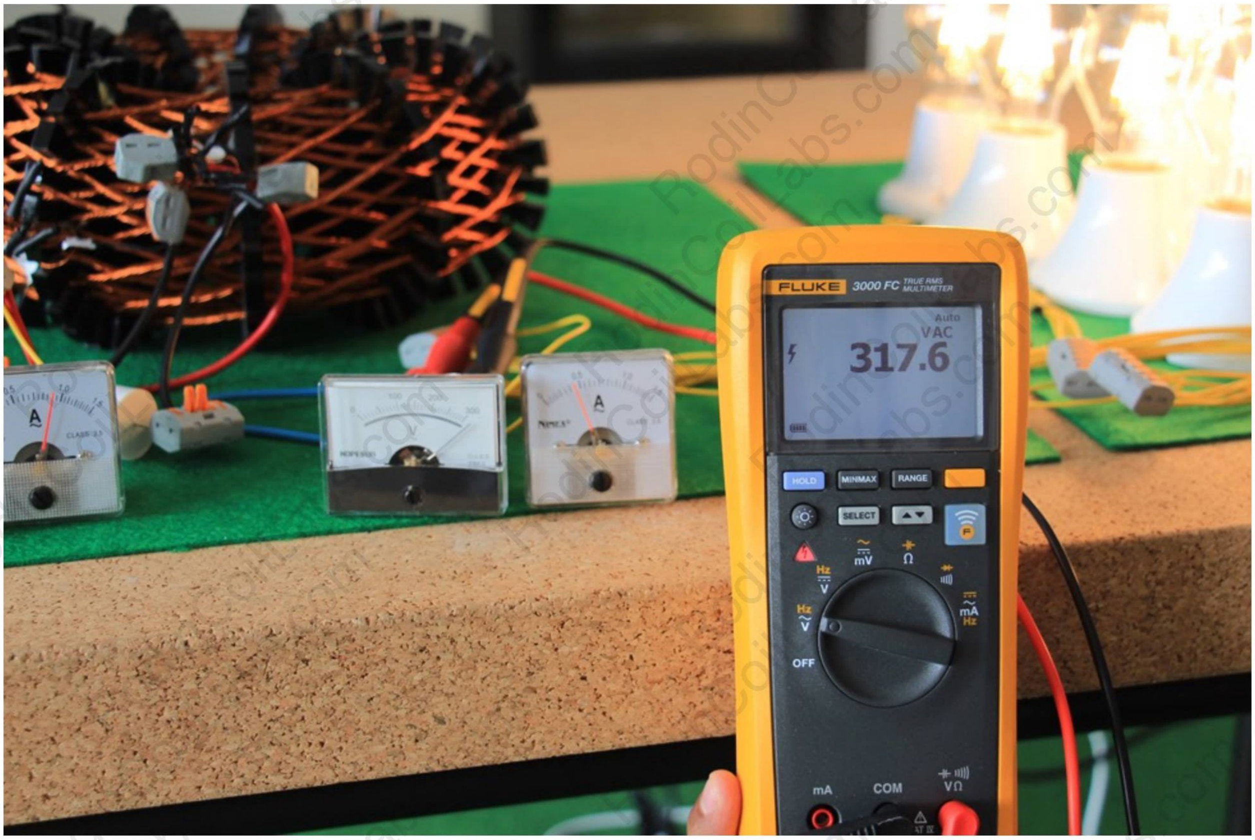

Figure 24: Output voltage

C. Fluke thermal Camera

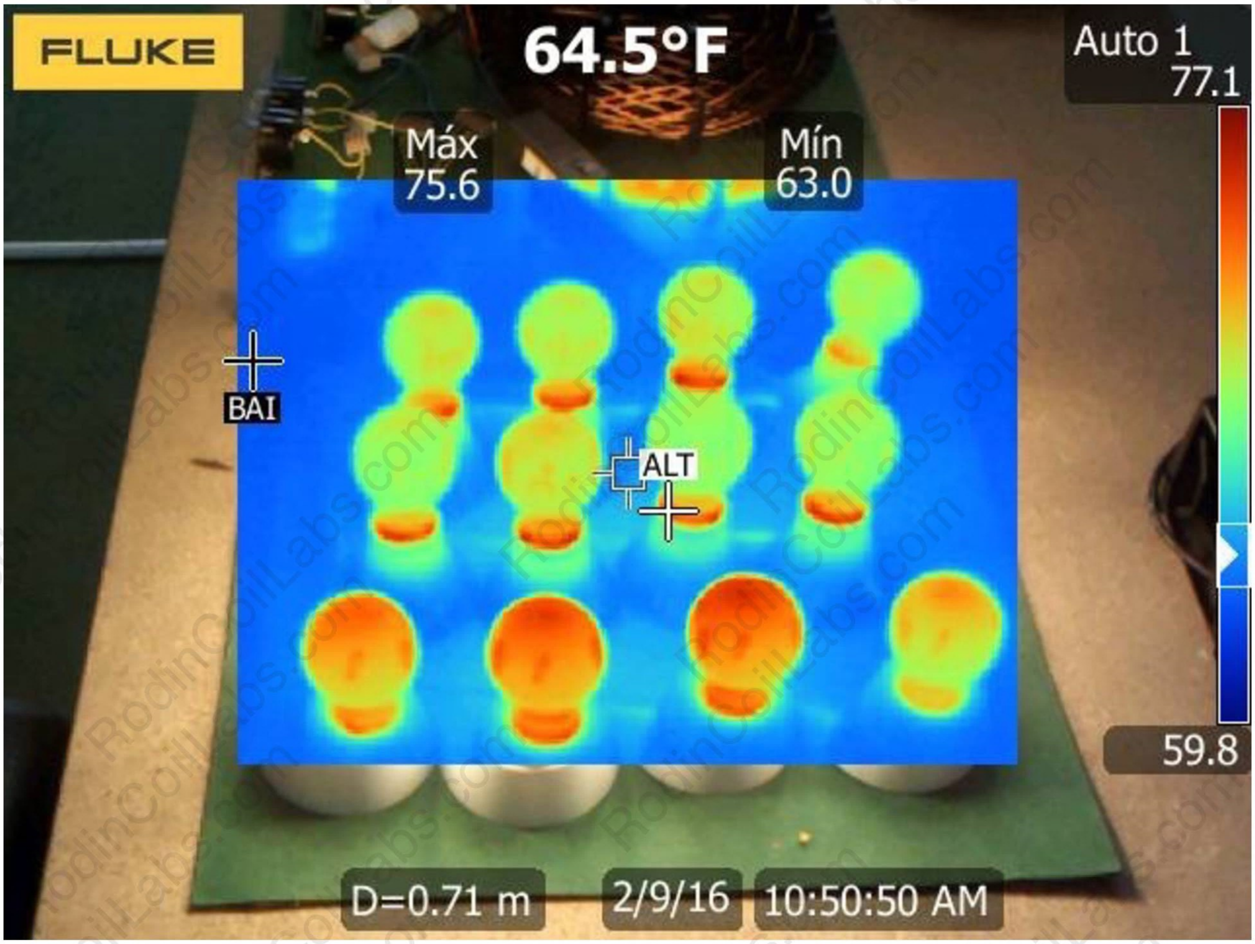

Figure 25: thermal image of the LED bulbs

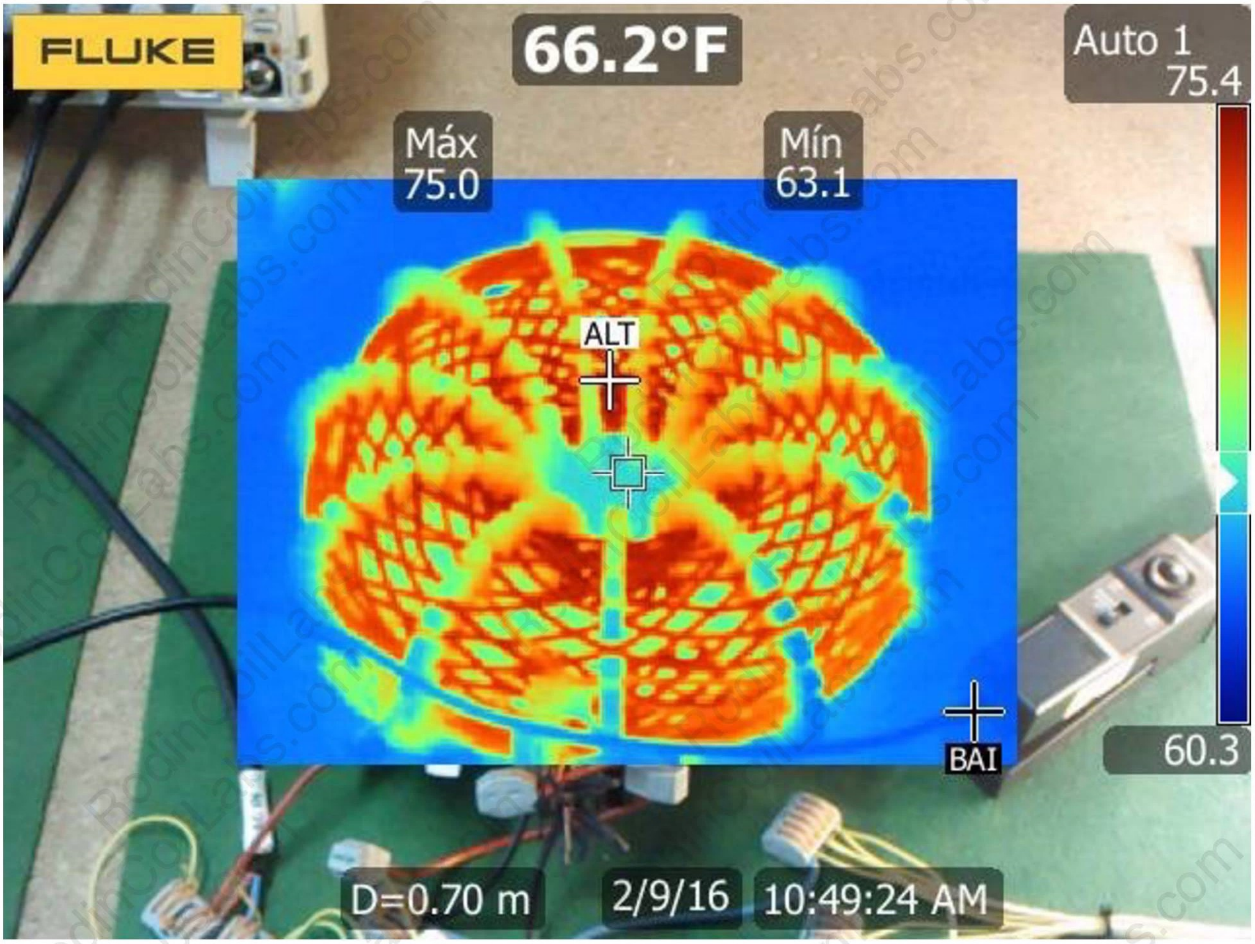
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Figure 26: thermal image of the toroid coil (transformer)

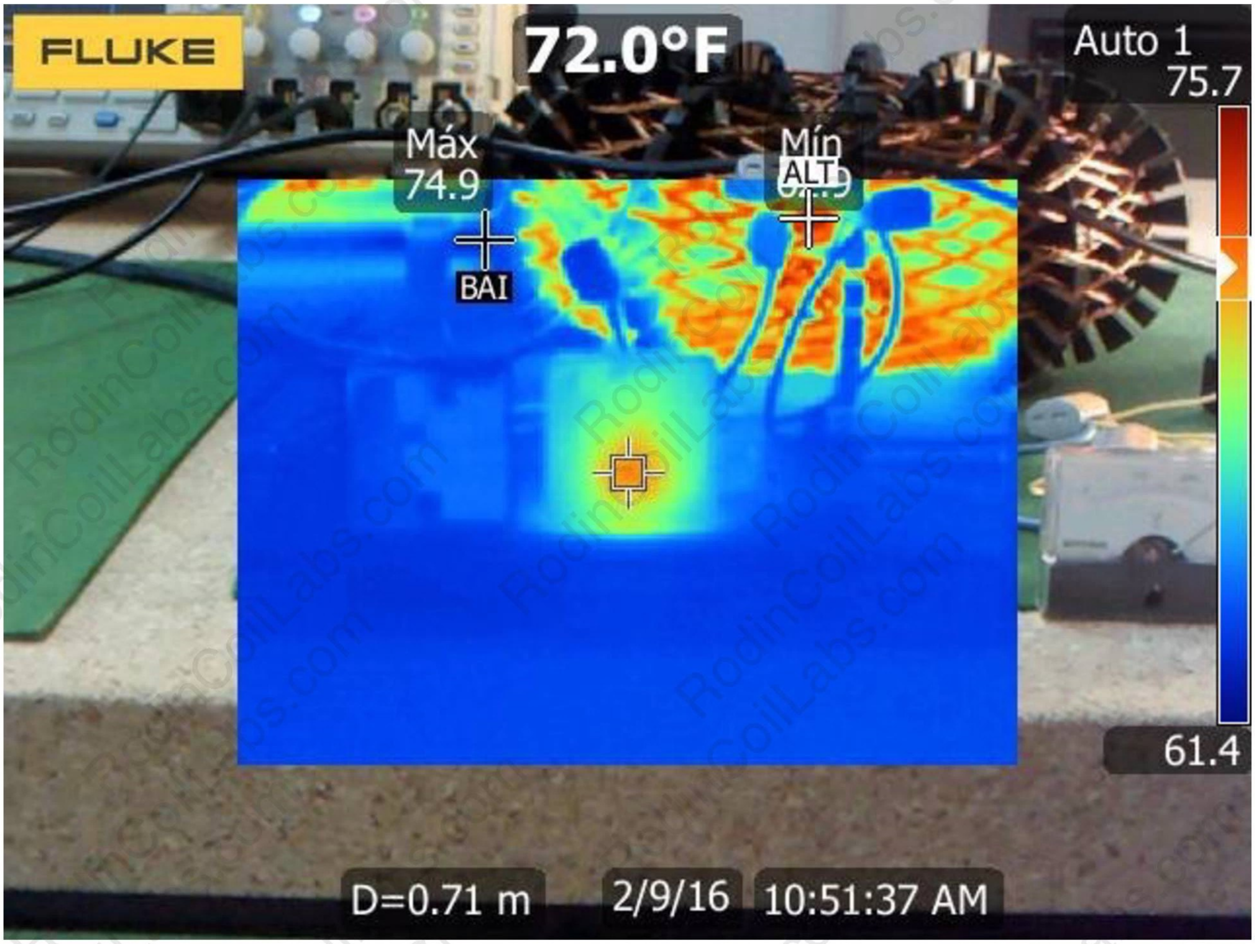


Figure 27: thermal image of the input ammeter

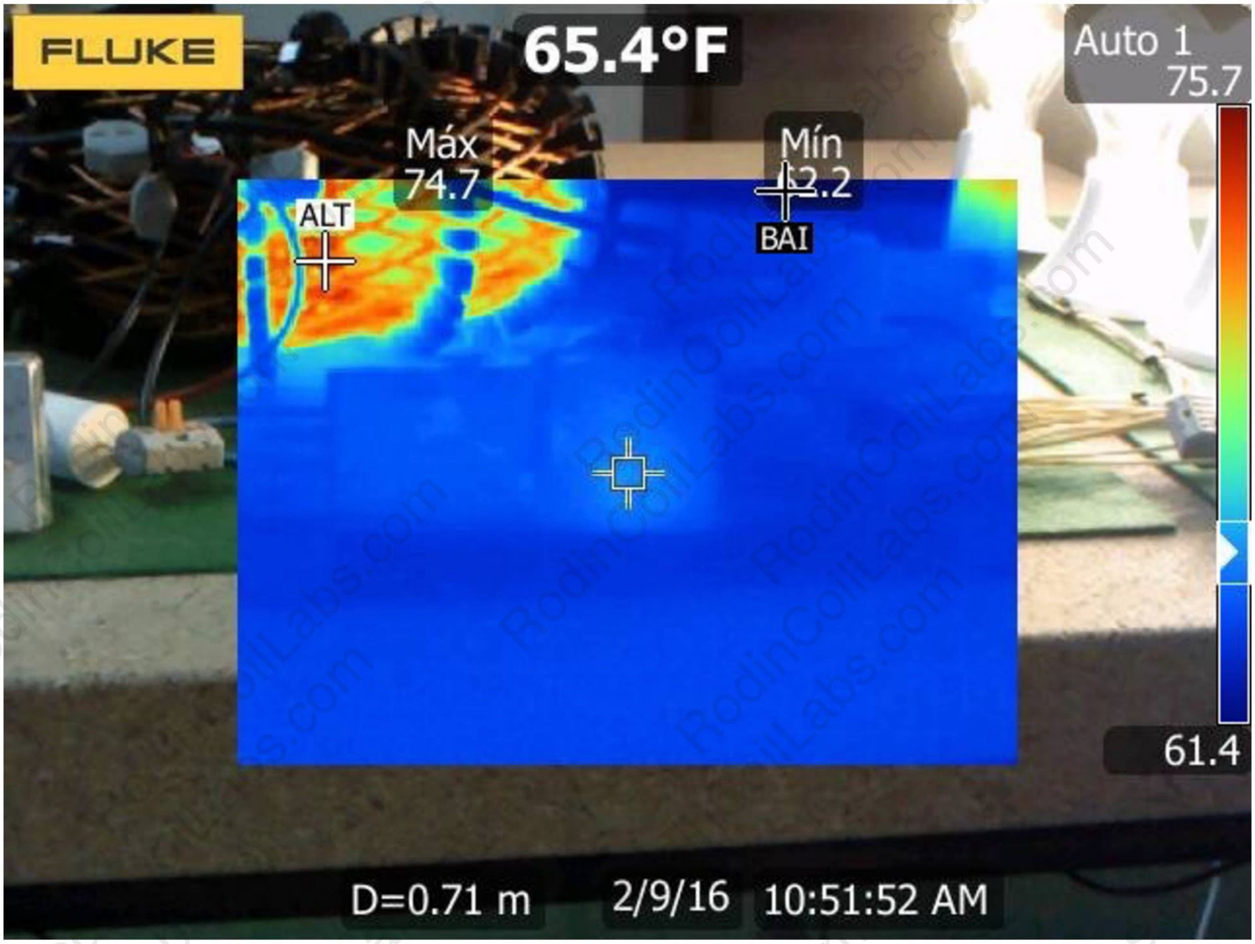


Figure 28: thermal image of the output ammeter

Similar to the previous one it can be seen from the thermal images of the ammeters of the input and output currents, the input current ammeter is at much higher temperature than the output current which justifies the measurements from the oscilloscope and analog ammeters.

A fluke current probe is also used to measure the magnetic field across the Rodin coil to have an idea about the possibilities of utilizing the field. Here is some observation.

A. When the input to the coils is zero (input if OFF) the fluke reads 0.1A.

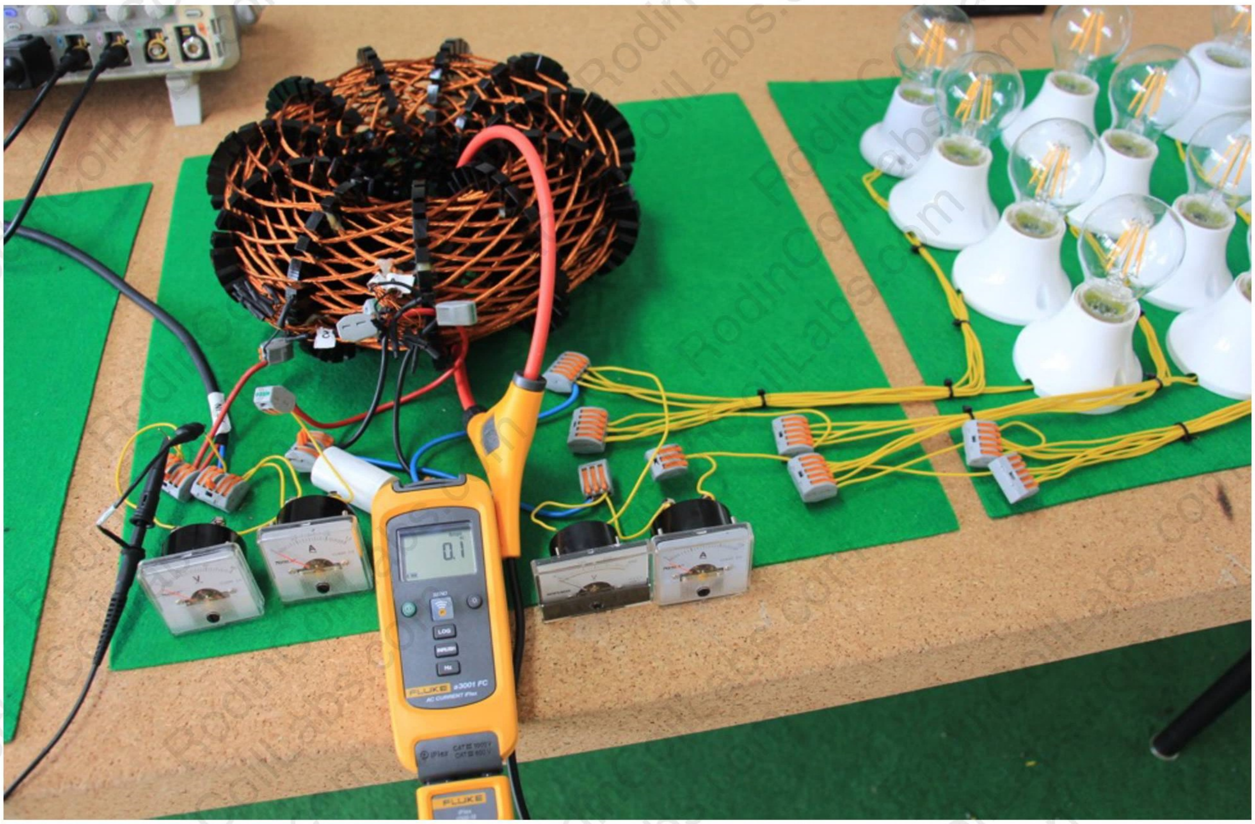


Figure 29: reading of the current coil when input OFF

B. When the input is connected to the coil (input ON)

Figure.1: Current coil reading when the Input is ON

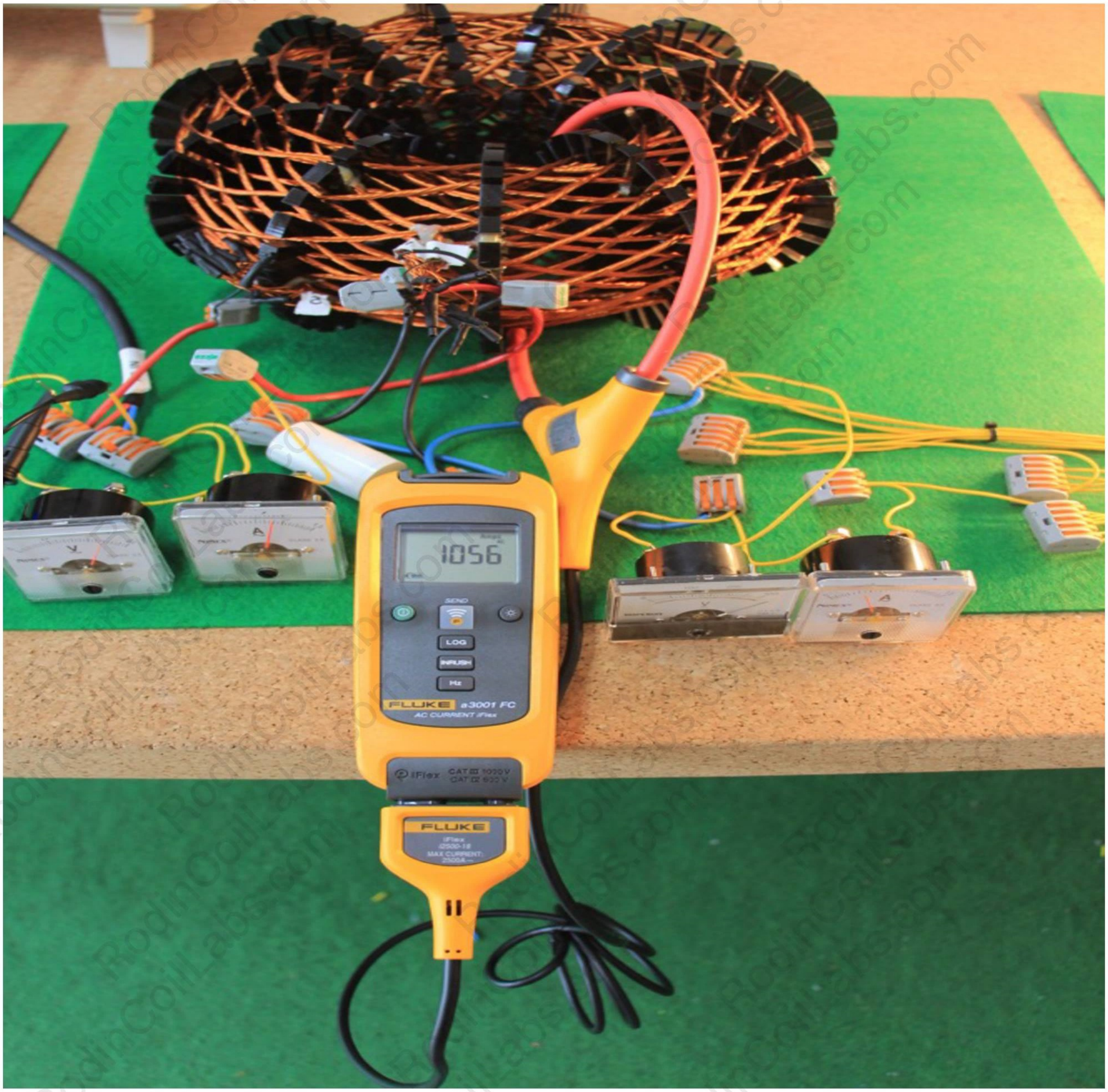
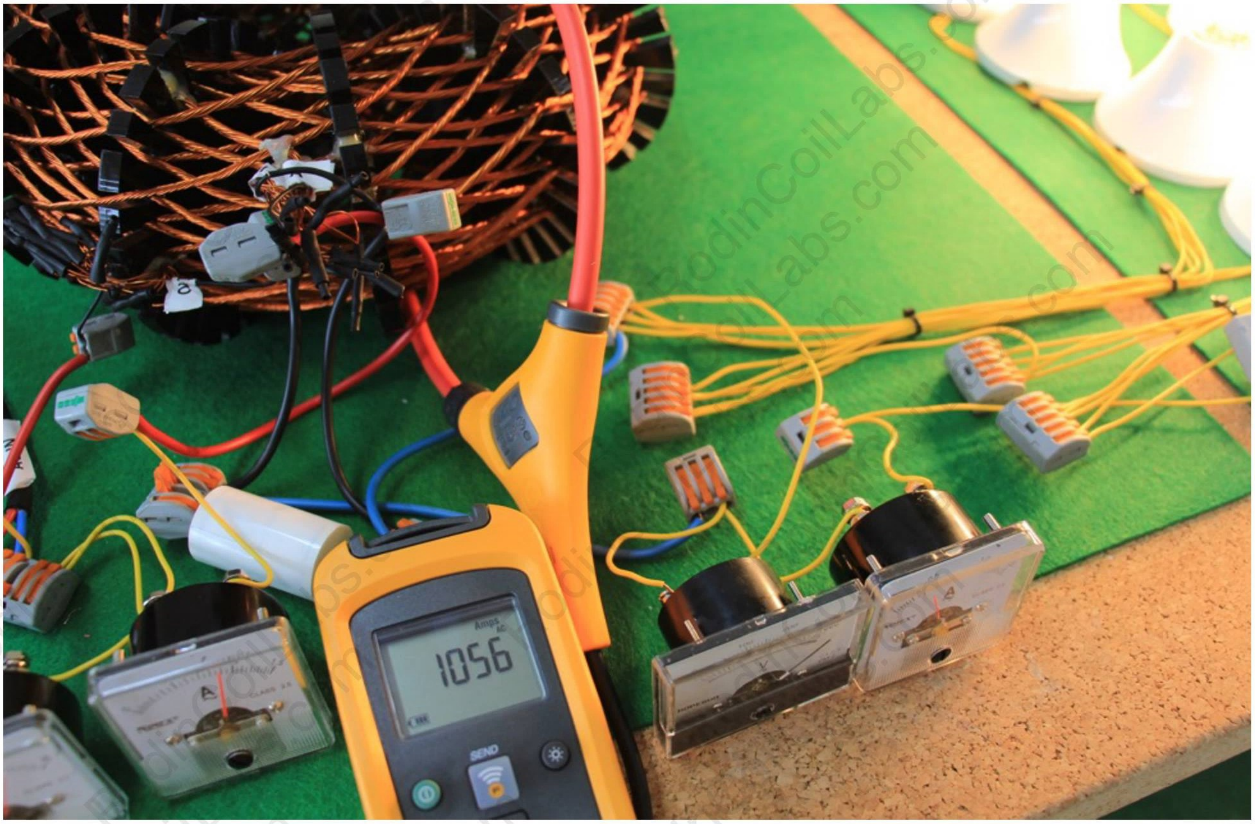


Figure 30: Current coil reading when the Input is ON (closer view of reading)

Application:



The Rodin coil has special characteristics which is different from ordinary transformer. In case of ordinary they are unable to generate power greater than the input power. But in this coil the output power is higher than the input power. This makes it an attractive device for exploration in different application. Some of the applications tried here are

A. Lighting application: In the lab a LEDs light bulbs are tested in different arrangements and hence it has been proven that the output power is much higher than the input power. Depending on the configuration up to 364% efficiency is achieved. With more studies there is a possibility to increase the efficiency.

B. Battery charging: The output signal from the coil can be rectified and feed to an inverter and then be used as a source for home appliance. In the lab we have rectified and feed it to an inverter, though it needs further studies but is encouraging.

C. More applications can be explored with time

Conclusions:

The analysis of the coil using three different measuring techniques has shown results which are in good agreement to each other which shows the procedure followed is correct and the results are accurate. For example the digital and analog measurements are matched to each other. In case of thermal imaging, as is known the thermal heat developed in a current carrying conductor is directly proportional to the square of the current flowing through it. In case of parallel loads, as can be shown from thermal images in figures 12 and 13, the ammeters temperatures (70.6ºF input and 68.3ºF output) are very close to each other. This confirms the current measured on the input and output side in case of parallel loads using the analog and digital measurements. In case of parallel series combination the current on the output side is lower than the current on the input side. The thermal images in figure 27 and 28, with temperatures of 72ºF and 65º4ºF respectively which confirms the observations.

The experimental setup has clearly shown that the output power is higher than the input power. This was tested in a LED loads and have shown to be more efficient up to 261% for parallel loads and up to 364% times in case of series parallel combination load.

More over from these two experiments the connection of parallel loads is better in terms of matching and stability. The brightness is better; the output voltage is less than that of series parallel combination load. At this point it seems that the better choice is parallel connection of the loads even though it is less efficient than series parallel connection.