

The receiver

- The receiver is in a form of a full-bridge rectifier (Fig. 12).
- It can converse AC signals into DC, and is capable of coupling its frequency to that of the transmitter (Fig.13).
- Frequency matching can largely improve the efficient in power receiving.
- Remarkably, the power transmitted can also be tuned by the capacitor used in the circuit. A capacitance of $0.3\ \mu\text{F}$ generates maximum power (Fig. 14).
- Reduction of the voltage at the receiver end helps to increase the current for loading.

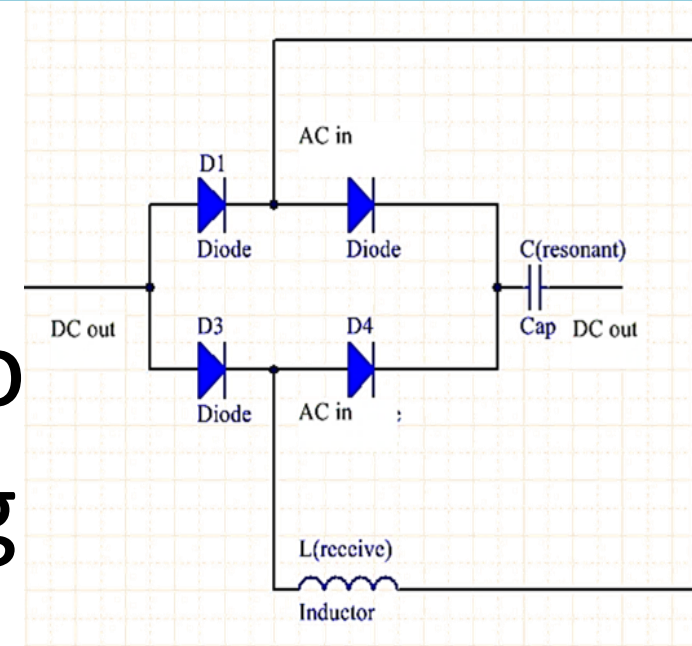


Fig. 12. The receiver circuit.

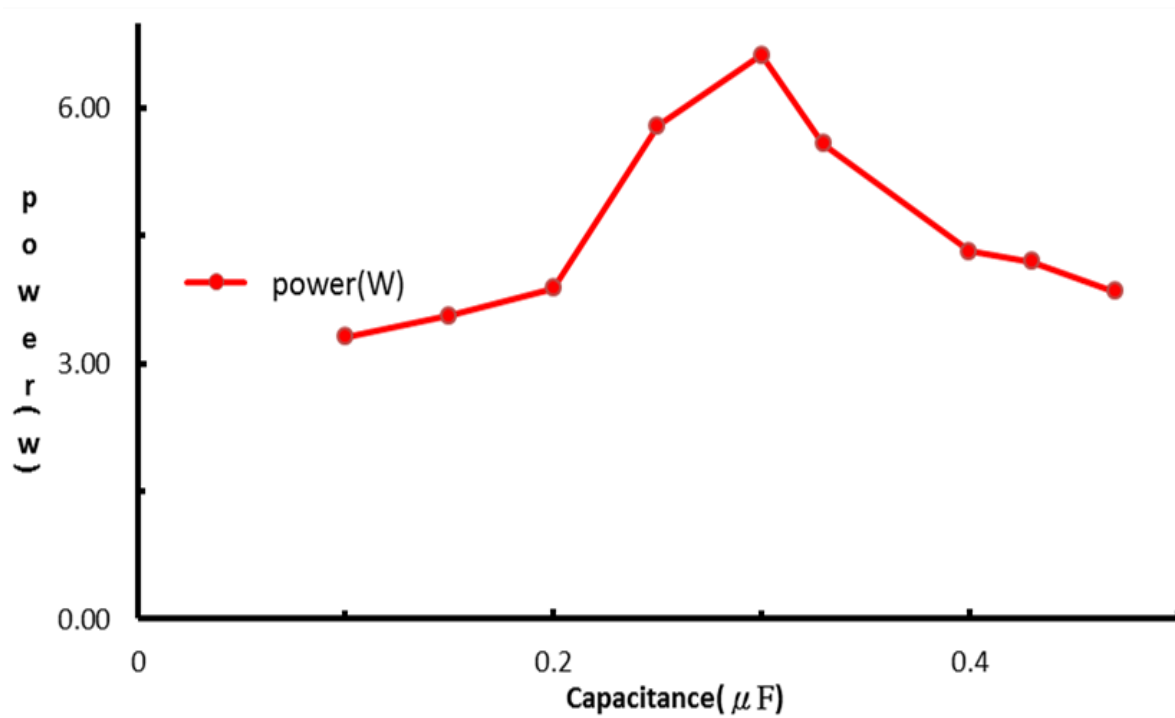


Fig. 13. Capacitance vs power.

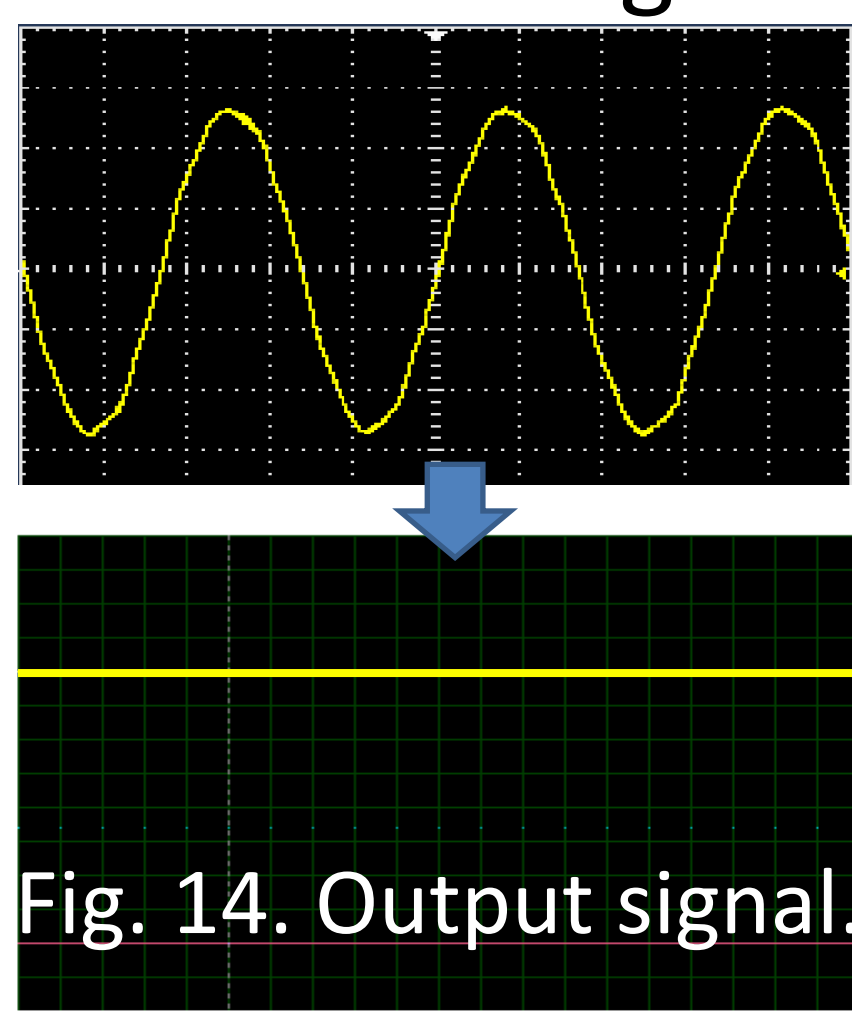
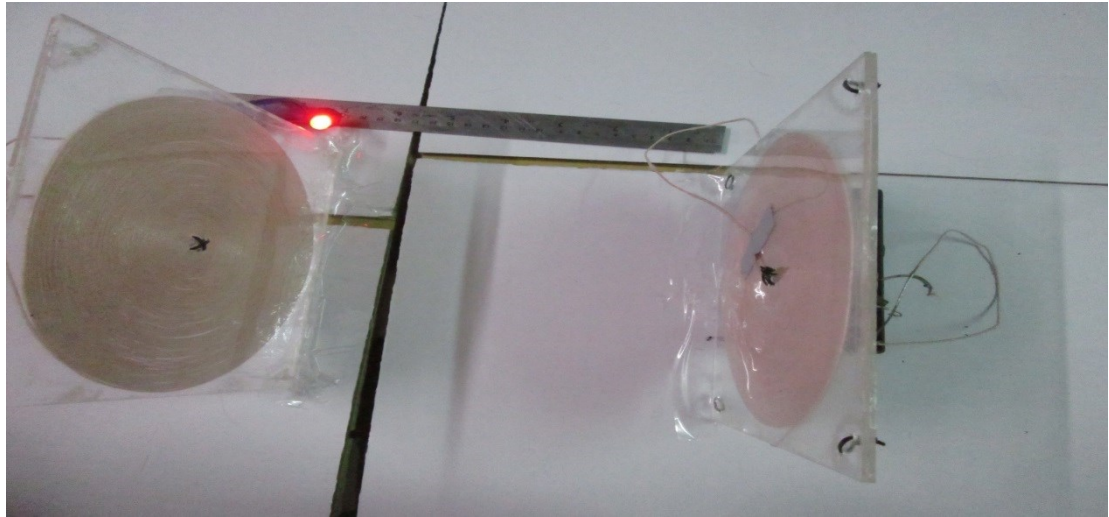
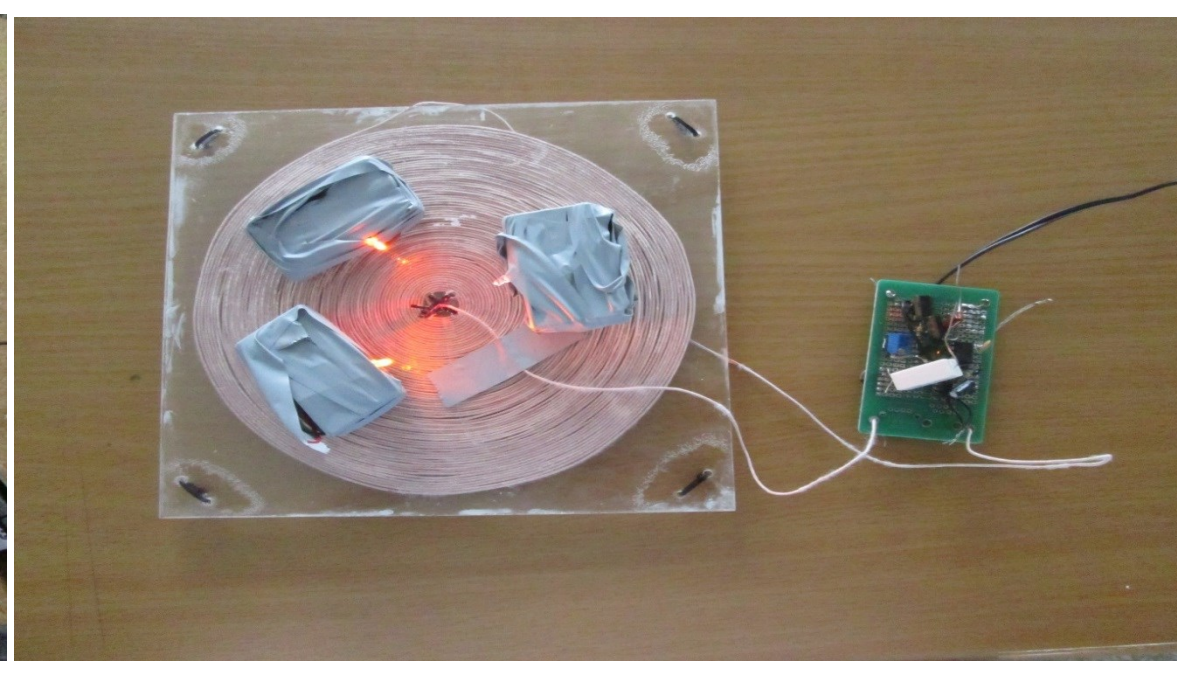
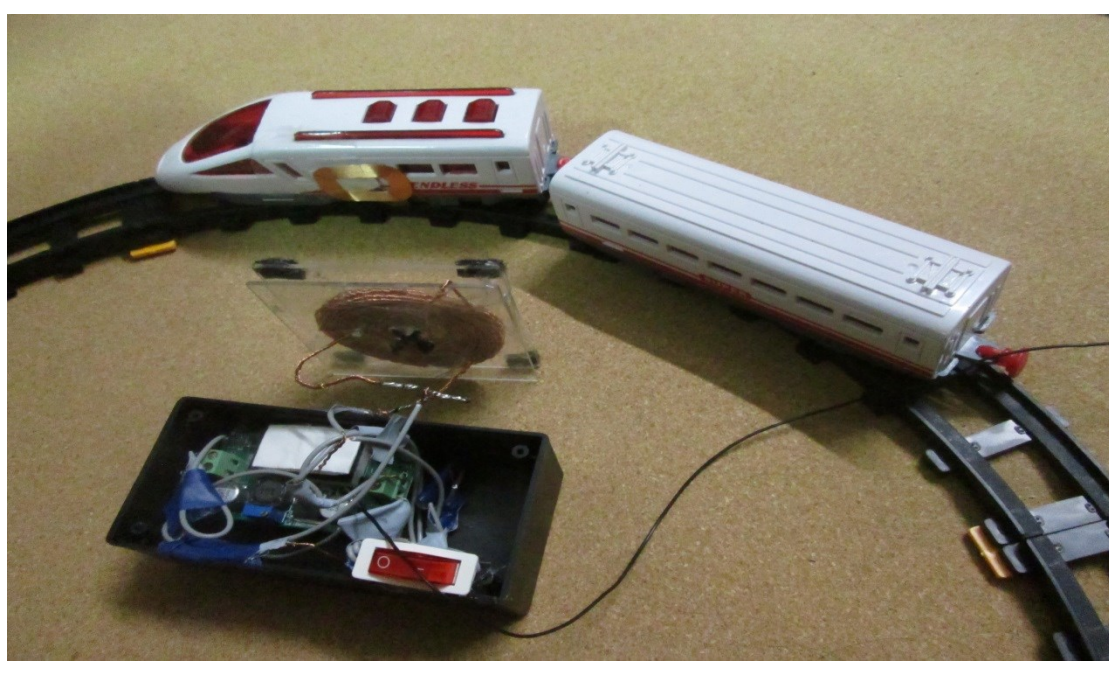


Fig. 14. Output signal.

Practical applications

1. Transmission distance of the induction power can be as far as 20 cm.
2. It is capable of supply the power needed to drive a modeled train.
3. Charging of a battery at 2.5 V with 100 hmA is feasible.
4. Capable of lighting up 8 LEDs in series.



Conclusions

The transmission efficiency of a wireless charger can be greatly improved, when it is coupled to:

1. Customized automatic on-and-off switching circuit, which repeatedly couples and decouples the charger to the DC source at a customized frequency for a continuous supply of induction current.
2. An DC-to-AC inverter circuit, which is capable in frequency matching to that of the power amplifier.
3. A self-adhesive multicore receiver coil was used to avoid skin effect.
4. A full-bridge rectifier circuit that converts AC power back to DC at the receiver side.
5. A total transmit power of 29 W at 69% efficiency can be achieved.

References

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