
ECE 3251 – Electromechanical Energy Conversion

Lab #7: Transformer Verification

Laboratory Goals

The purpose of this lab is to use the basic principles of transformer operation to verify the transformer project design meets specifications.

Lab Procedures:

For this lab, you must come up with a procedure to verify the design parameters for the transformer project. For your lab report, explain how you determined give your values and explain any discrepancies. The ratings you were originally given were:

- Rated Power 75 VA
- Rated primary voltage 120 V
- Rated Secondary voltage 35 V
- Core material T&S EI-1 1/4 M6 material 0.35 mm thickness.

You will need to verify the specs below:

- Optimal Efficiency = 91.7%
- Voltage regulation = 3.5%
- Number of core laminations = 90
- Number of turns on primary = 364
- Number of turns on secondary = 110
- Primary wire gauge AWG = 21
- Secondary wire gauge AWG = 17

Grading

- Formal report: Organization, neatness, clear writing, proper formatting of graphs, figures, tables, etc. (15 points)
- Lab Participation: Contributions from each lab partner are fairly distributed and documented (10 points)
- Introduction: What is the purpose of this lab? (5 points)
- Procedures: Brief account of the steps to obtain results (25 points)
- Results: Measurements and calculations for each lab step (30 points)
 - Core dimensions including number of laminations (6 points)
 - Wire parameters, including number of turns on the primary and secondary, wire gauge, and wire length. (8 points)
 - Determination of efficiency and voltage regulation. (16 points)
- Conclusions: Analysis and explanation of data (15 points)