**EE 464**

**STATIC POWER CONVERSION-I**

**Spring 2022-2023**

**Homework 2**

**Complete Simulation Report**

Mehmet Emre Doğan – 2374825

Metehan Küçükler –

Table of Contents

[Introduction 2](#_Toc133778205)

[Magnetic Design 2](#_Toc133778206)

[Complete Simulations 2](#_Toc133778207)

[Conclusion 2](#_Toc133778208)

# Introduction

This report explains the design decisions for the hardware project. Furthermore, it presents the details of the Magnetic Design of the Isolated Power Supply and the simulation results for the selected topology.

# Magnetic Design

1. The duty range of the converter is selected as [0.278 – 0.336]. According to the duty range determination, the turns raio is calculated via the MATLAB code below.

clearvars

syms d turnsRatio

v\_o = 48

d\_min = 0.278; v\_d\_minduty = 18;

d\_max = 0.366; v\_d\_maxduty = 12

turnsRatio\_minduty = ( (d\_min/(1-d\_min)) \* (v\_d\_minduty/v\_o) )^-1

turnsRatio\_maxduty = ( (d\_max/(1-d\_max)) \* (v\_d\_maxduty/v\_o) )^-1

According to the code above, the transformer turns ratio (Ns/Np) is calculated as 6.93.

# Complete Simulations

# Conclusion