### Purdue University Purdue e-Pubs

Purdue Undergraduate Research Conference

2019 Purdue Undergraduate Research Conference

### Immunity Tests of a Class-D Audio Amplifier.

Raghul Prakash prakasr@purdue.edu

Siddharth Inani sinani@purdue.edu

Yuichiro Suzuki suzuki0@purdue.edu

Krister Ulvog aulvog@purdue.edu

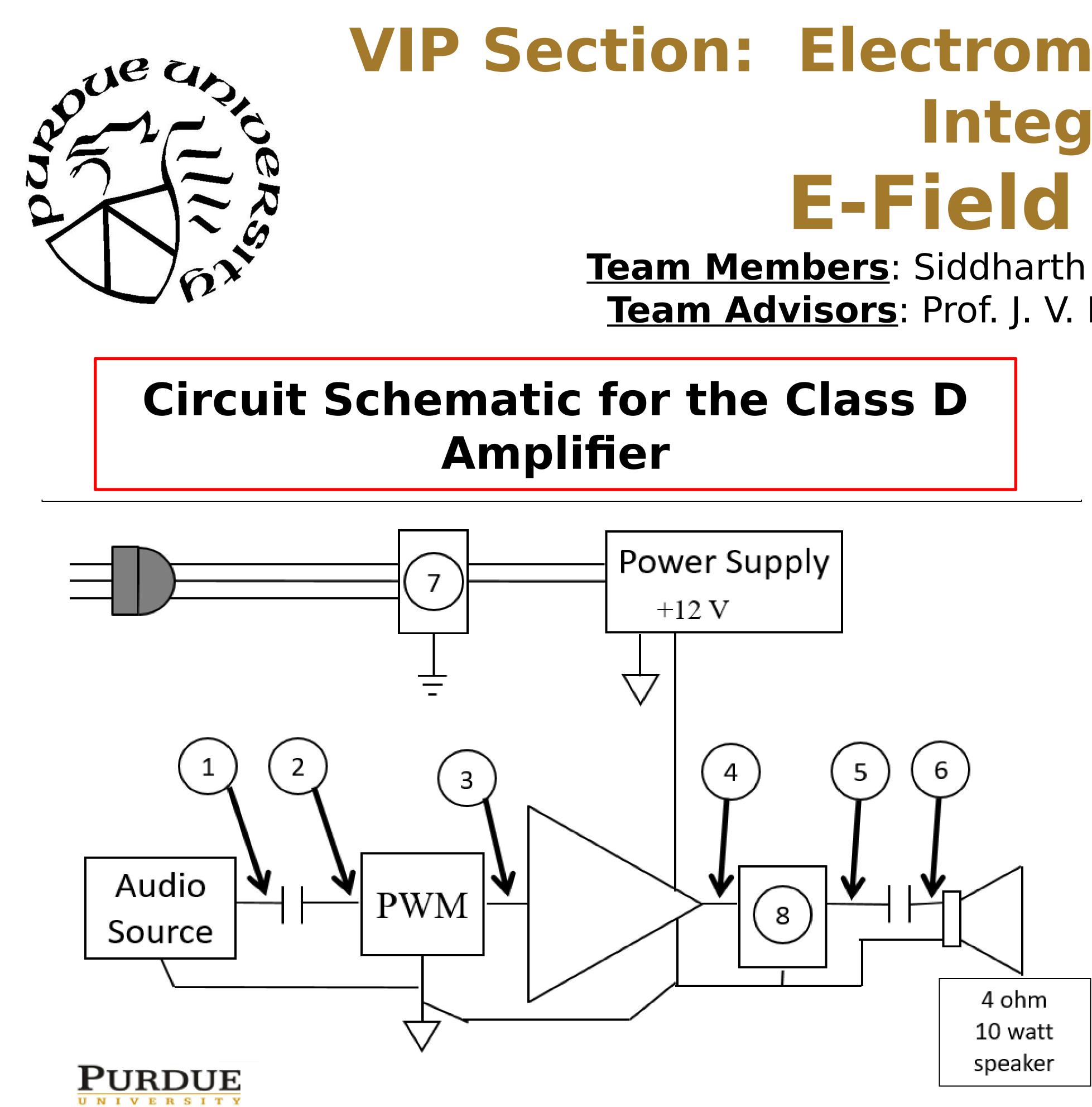
Fiyi Ogunkoya oogunkoy@purdue.edu

Follow this and additional works at: https://docs.lib.purdue.edu/purc

### **Recommended** Citation

Prakash, Raghul; Inani, Siddharth; Suzuki, Yuichiro; Ulvog, Krister; and Ogunkoya, Fiyi, "Immunity Tests of a Class-D Audio Amplifier." (2019). *Purdue Undergraduate Research Conference*. 18. https://docs.lib.purdue.edu/purc/2019/Posters/18

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact epubs@purdue.edu for additional information.



## Proposal

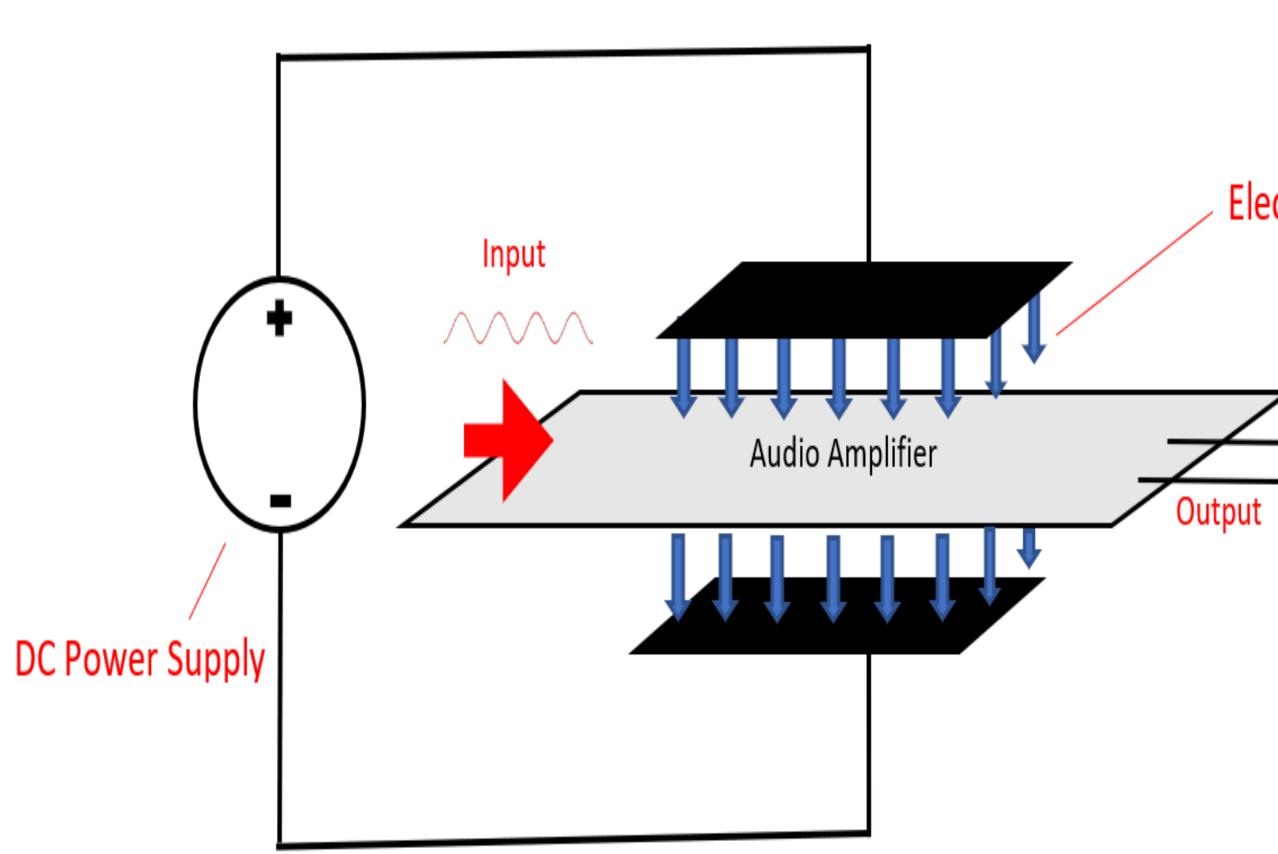
The project tests the noise immunity of a Class-D Audio Amplifier that we built which uses the Texas Instruments **TPA3122D2** integrated circuit and its output signal performance and integrity when exposed to a controlled electric field source is analyzed. This study was conducted to determine the best PCB layout practices for digital switching circuits that operate at high frequencies which would lead to better EMC design practices.

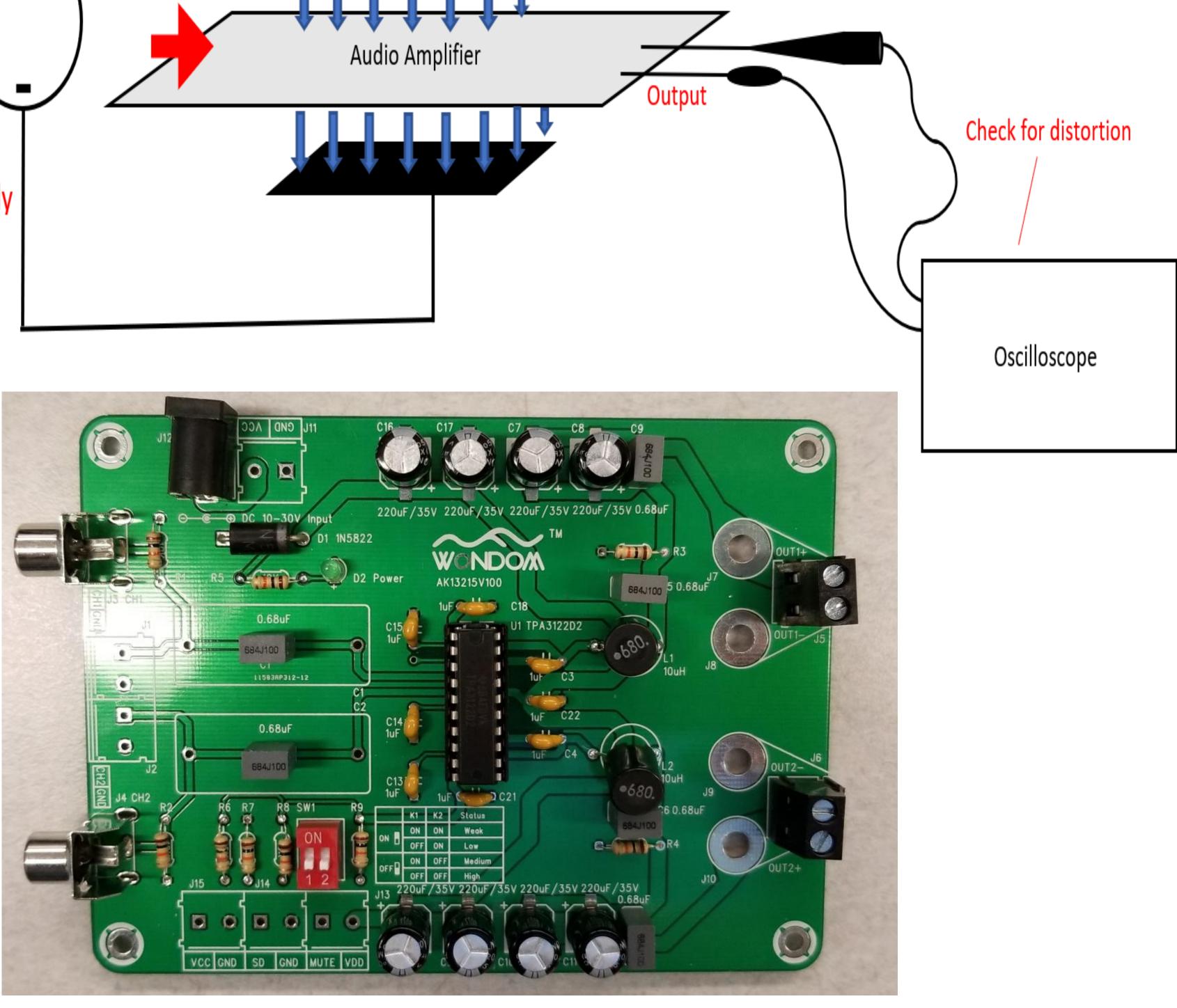
# VIP Section: Electromagnetic Compatibility (EMC)/Signal Integrity (Spring 2018) **E-Field Immunity Testing**

**Team Members**: Siddharth Inani, Raghul Prakash, Krister Ulvog, Yuichiro Suzuki Team Advisors: Prof. J. V. Krogmeier, Prof. Barrett Robinson; Mr. Don Heirman

## **EXPERIMENT**

A high intensity E-field near-field capacitor was designed and constructed and applied to the IC on the printed circuit board of the amplifier. E-Field intensities and output signal distortion were measured using calibrated near-field probes, a spectrum analyzer, and an oscilloscope. It was found that the output waveform was distorted when the Efield source was of high frequency but at relatively low frequencies the coupling capacitor that we added at Stage 1 was able to shunt out the noise





## **Electric Field**