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## X band Class-E amplifier design

*Bryan Pratte and Robert O'Connell*

The goal of this research is to design and implement an X band Class-E amplifier. This amplifier will be centered on an ideal switch but, specific characteristics of the chosen transistor will be taken into account. The steps taken that compose the design of this amplifier are as follows. The first step is to use standard equations, which describe the behavior of ideal Class-E amplifiers, to solve for lumped element circuit parameters. Once ideal parameters have been found the next step is to simulate the ideal model adding in non-ideal transistor parameters and tuning circuit parameters to compensate for the non-ideal transistor. The lumped element circuit will then undergo a necessary impedance transformation stage to match the output of the amplifier to a standard 50 ohm load. The final step in this design process is to transform the lumped element circuit into a micro-strip equivalent circuit. After the design has been completed microwave simulation software will be used to verify the operation of the micro-strip circuit.