

Design of a Class-E Switching-Mode Power Amplifier

Background

Power Amplifier are usually the last active component of a wireless transmitter. During the last years switching-mode power amplifier (SMPA) based polar/digital radio transmitter have shown great potential for efficient amplification of amplitude modulated (AM) signals. Class-E amplifier are well known and used due to their high efficiency and simple realisation.

Class-E amplifier uses the amplifier as a switch:

- 1) Switch is closed – AC current flows into the switch
- 2) Switch is open – Current flows into the load and causes a voltage

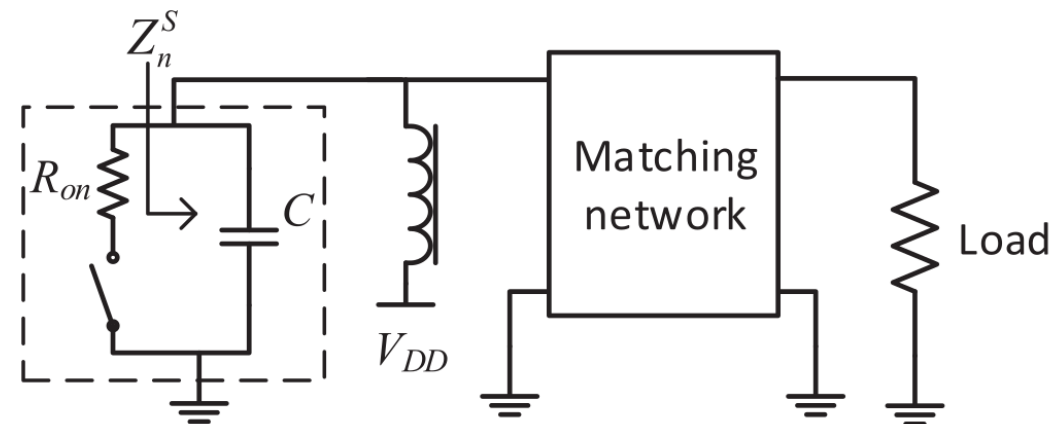
The described Class-E amplifier should be designed at a centre frequency of 3.5 GHz for possible 5G-Applications.

Tasks

Following tasks should be done during the Bachelor / Master Thesis:

- Literature research Class-E Power Amplifier (PA).
- Design a Class-E Power Amplifier in ADS Circuit Designer or with Cadence Virtuoso on the transistor level.
- Focus of the PA design will be on a high efficiency approach.
- Evaluate your results.

During the Bachelor / Master Thesis you will get some experience in circuit design with common design software which is also used in industry and research.



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