



SUPER – Stuttgart University Program for Experiencing Research Project Information

Institute's Information

Name of Institute Institute of Robust Power Semiconductor Systems

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Duration of Project/Number of Students

June/July _____

June/July/August X

Number of Students 1-2

Name of Project Performance analysis of fully integrated transmit and receive RF frontends

used in ultra-high data rate wireless communication links

Beneficial Skills & Knowledge

Background in electrical engineering, telecommunication systems

Basic knowledge in radio frequency (RF) electronics, metrology

Description of Work

The ILH conducts research in high data rate microwave communication systems based on wide-bandgap semiconductor technologies.

The ILH is recommended by the International Telecommunication Union (ITU) standard ITU-R F.2323-0 for successfully transmitting Digital Video Broadcasting – Cable (DVB-C) at 220 GHz reaching 15 Gbit/s with error-free transmission in 2011 and holds the record of data transmission at 71-76 GHz (E-Band). The team is involved in the demonstration of the feasibility of the RF link in E-Band between a satellite and a ground-station and it is planning multiple terrestrial transmission experiments in E-Band as well as H-Band. The goal is to develop technical solutions for communication networks in the context of beyond-5G technologies also complying with the newly established IEEE 802.15.3d standard for switched point-to-point links range between 252 GHz and 325 GHz. The focus of the thesis is to perform long range measurements, demonstrations and performance analysis of RF links for THz and/or satellite communication systems. The specific project description and definition of objectives will be defined together with the student, depending on the student's preferences and competences.

During the work, which is in the field of the latest developments of RF electronic circuits, the students will work on state-of-the-art measurement equipment and methods to gain valuable experience and knowledge to advance their engineering career.

