Simulation and design of 28 GHz Random-LOS setup for vehicular applications

Background
RanLOS is a small spinoff-company from Chalmers founded in 2016. The company is developing a measurement method, based on the Random Line-of-Sight (Random-LOS) environment, for testing wireless communication to vehicles. The Random-LOS environment can be used to evaluate the wireless performance of connected and self-driving vehicles. The idea is to create an easy, cheap and repeatable measurement method for testing antennas on vehicles. This can be done using a reflector with a linear array feed. There exist a design for frequencies up to 6 GHz, see the figure.

The master’s thesis would be done in close collaboration with the antenna group at the Department of Electrical Engineering at Chalmers. The examiner will be Jian Yang.

Scope
In the Master thesis the possibilities of scaling the design up to 28 GHz will be investigated. The idea is that there will be a dominating Line-of-Sight contribution to the self-driving vehicles, which needs to be tested, see the video in the following link https://www.ericsson.com/en/news/2017/6/best-5g-trial--techxlr8-awards.

The goal of the project is to find a design for the reflector and feed for a Random-LOS setup for vehicular applications at 28 GHz. The project will thereby consist of:

- Simulations to scale up the existing Random-LOS reflector to 28 GHz with a 30 cm quiet zone
- Looking into what possible feed arrays that could be used for 28 GHz

Profile
A student from the Electrical Engineering or Engineering Physics program (or similar), preferably from the master program Wireless, Photonics and Space Engineering.

- Know Matlab programming
- Preferably taken the course Antenna engineering at the department of Electrical Engineering
- It is an advantage if you have experience in using CST
- Self-motivated and meticulous in your problem solving approach

Duration
- Period: 1 semester, 30 ECTS points
- Starting date: January 2018
- Number of students: Suitable for 1-2 students

Application
- Attach your resume and cover letter stating your interests within the given area and your thoughts and credentials
- Selection will be ongoing during the application period. Application deadline 22nd of December 2017!
- Email the application to Madeleine Schilliger Kildal: madeleine.kildal@ranlos.com

In case of questions, please contact:
Madeleine Schilliger Kildal at madeleine.kildal@ranlos.com
www.ranlos.com