Smartare Elektroniksystem
ELECTRONIC COMPONENTS & SYSTEMS

Project abstract

140 GHz micromachined gap waveguide based LOS MIMO antenna array

Objective

The goal of this project is to realize wideband and high gain MIMO antenna module for 140 GHz which will be fabricated by low cost MEMS technology for use in backhauling links.

Abstract

With the advent of new developments such as massive MIMO and 5G, the telecom sector is expected to see an exponential growth in data traffic in the wireless networks. As a result, the backhauling links connecting several base stations within a cellular network need to coupe with multiple Gbps connectivity. Thus, the capacity of the backhauling links will be one the key determining factors in successful deployment and roll out of 5G systems. In this continuation of a successful pre-study we will further optimize our novel integrated planar antenna solutions to be used in upcoming backhauling links at 140 GHz. We will demonstrate a planar low profile (less than 5 mm thickness) and low-cost micromachined slot array antenna for such applications. The fabrication of these antennas will be done by electroplating thin metal layers on a special polymer material (Ostemer) in the form of a molded replica of a micromachined structure.

At the end, a successful outcome of the project will enable the following:

i) Cost effective and mass producible integrated planar antenna array modules suitable for applications above 100 GHz for LOS MIMO backhauling links.

ii) In depth knowledge on different performance limits and system gain of a LOS MIMO system due to the achievable electrical performance of the proposed integrated antenna.

iii) After the completion of the project, **gap waveguide based *LOS MIMO Antenna Array*** technology is expected to reach TRL 5 and we expect to have identified several new patenting opportunities.

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