



D-band Radio solution Enabling up to 100 Gbps Reconfigurable Approach for Meshed beyond 5G networks



Dream project will bring wireless systems to the speed of the optical systems

The vision

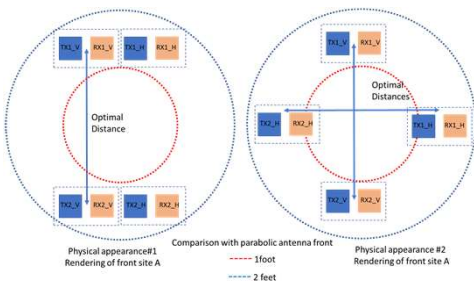
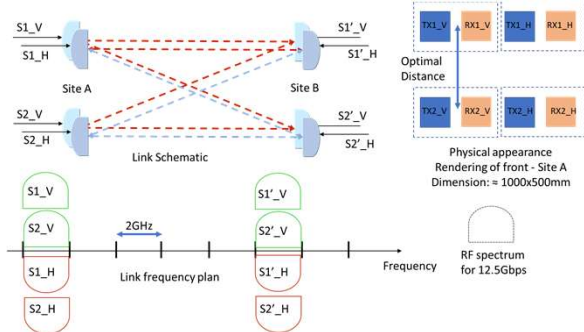
Exploitation of the radio spectrum in D-band (130-174.8 GHz) with beam steering functionality enables wireless links with data rate exceeding current V band and E band wireless backhaul solutions by at least a factor of 10 and brings wireless systems to the speed of optical systems.

Technical objectives

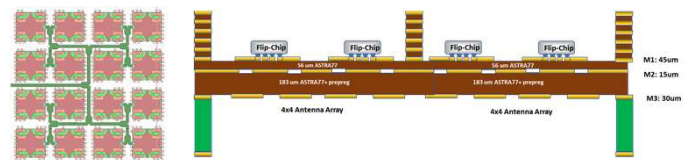
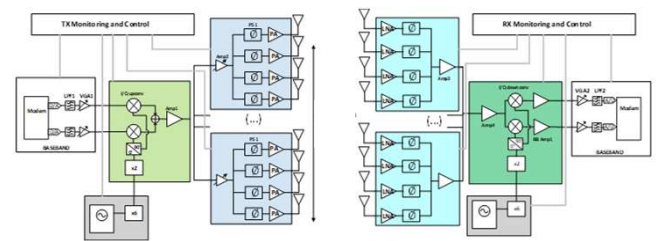
- Capacity between two nodes up to 100 Gb/s
- Network and frequency plan allowing at least 3 connections per node
- Hop length up to 300 m
- Availability > 99.9%
- Beam steering capabilities, with +/- 45° steerability
- Use of D-band (130-175 GHz), according to ECC recommendations
- Adaptive code and modulation (ACM)
- Gross system gain up to 140 dB

Approach

- 4x4 MIMO (only 1 stream will be demonstrated)
- 2-GHz channels, with flexible FDD
- Up to 256-QAM modulation (ACM) -> 12.5 Gbps in each direction
- Up to 256 antenna elements (a sub-array will be demonstrated)
- Integrated on state-of-the-art STMicroelectronics 55-nm BiCMOS technology
- Modular and scalable arrangement. A multi-chip solution will be implemented, to make it scalable and minimize risk.
- State-of-the-art PCB materials to minimize loss at D-band frequencies

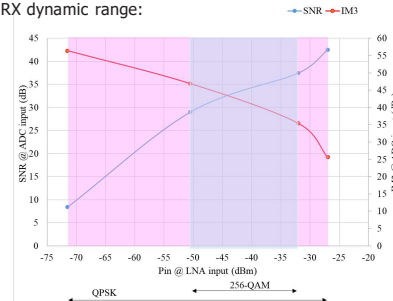


Transceiver architecture



Key specs:

- Output 1-dB compression point @ PA output: +5 dBm
- Antenna element gain: 4.5 dBi
- Average EIRP @ QPSK: around 50 dBm
- Receiver noise figure: <14.5 dB
- Expected RX dynamic range:



Info & contacts

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