NOMA SDR on OAI

China Telecom Technology Innovation Center
CTTIC (China Telecom Technology Innovation Center)
- Focus on the R&D of wireless technologies, which will benefit our future network deployment.
- Include 3GPP standardization work, National projects, China Telecom’s internal projects, etc.

Simulation and verification platform in CTTIC
- Build simulation and verification platform to evaluate the significance of technology to China Telecom
- Include software platform (system & link level), and SDR platform
What we have done based on OAI

- By learning the multi-thread structure and coding skill in OAI, we can accelerate the efficiency of our simulation platform.
- With the practical channel and real-time processing, SDR platform can give us deeper and more accurate understanding of the new technologies.
  - NOMA SDR
  - eLWA SDR
NOMA can increase system throughput and the number of connected users.

- LTE R14 MUST WI is based on NOMA.
- 5G NR will also introduce NOMA, and NR NOMA SI has been started from March 2017.

NOMA system level simulation

**NOMA Tx and Rx procedure**

Cell average gain

Cell edge gain

- 10 UEs
- 20 UEs
SIC receiver is needed for near UE, which bring a challenge on processing delay.
So UE multiple-thread is introduced to control the processing delay.

For high order MCS, inner decoding multi-thread is also needed.
In our real-time SDR demo, NOMA shows a 40% gain over traditional orthogonal multiple access technology.
Plan

➢ To better evaluate new wireless technologies, based on our software simulation and OAI SDR platforms

- eLWA demo
- Further speed up software simulation
- Implement LDPC, polar code and other 5G features into software platform/OAI
Thanks!

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