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# Views on NCR in Rel-19

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# Motivation on NCR

- Coverage is a fundamental aspect of cellular network deployments. Mobile operators rely on different types of network nodes to provide continuous coverage in their deployments. Deployment of regular base station is one option but it may not be always possible (e.g., no availability of backhaul) or economically viable.
- A network-controlled repeater is an enhancement over conventional RF repeaters with the capability to receive and process side control information from the network. For example, side control information could allow a network-controlled repeater to perform its amplify-and-forward operation in a more efficient manner. Potential benefits could include mitigation of unnecessary noise amplification, transmissions and receptions with better spatial directivity, and simplified network integration. Based on the work in Rel-18, the functionality of NCR can be further enhanced in Rel-19.

# Motivation on NCR

- In Rel-18, the basic functionality of NCR has been specified, however, due to the limited time, some of the features in Rel-18 can be further enhanced in Rel-19. For example, power control of NCR has been discussed for both DL and UL power control in the SI phase, normative work can be considered as part of Rel-19 scope. Meanwhile, the Out-of-band control should be considered to enable flexible scheduling and extend the deployment of NCR.
- Some other new features can also be considered to extend the usage of NCR in Rel-19:
  - NCR can be considered movable in some cases, e.g., vehicle or high-speed train
  - The additional measurement of UEs can be used as a reference for the selection policy of turn on/off NCR
  - Coverage enhancement can be further considered when UEs are taken as the NCR to forward the signal from another device

# Proposals on NCR

**Proposal: The following objectives are proposed for discussion on Rel-19 NCR.**

- Specify the side control information
  - Frequency-selective RB-level beam scheduling
  - Multiple beams over the same T-F resource
- Specify control signaling （out of band）
  - L1/L2 layer signaling
    - Beam information, Timing information, UL-DL TDD Configuration, On-OFF reporting
    - Specific SSB design
  - Higher layer signalling
    - RRC and MAC CE parameters
- Specify the mobility management, e.g. Intra-CU handover
- Specify the power control
  - DL power control
  - UL power control
- Specify the measurement-assisted NCR
  - Select to turn on/off NCR based on additional measurement
- Specify the terminal-based NCR
  - UE performs as NCR

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# Thanks