

**3GPP TSG RAN Meeting #96**

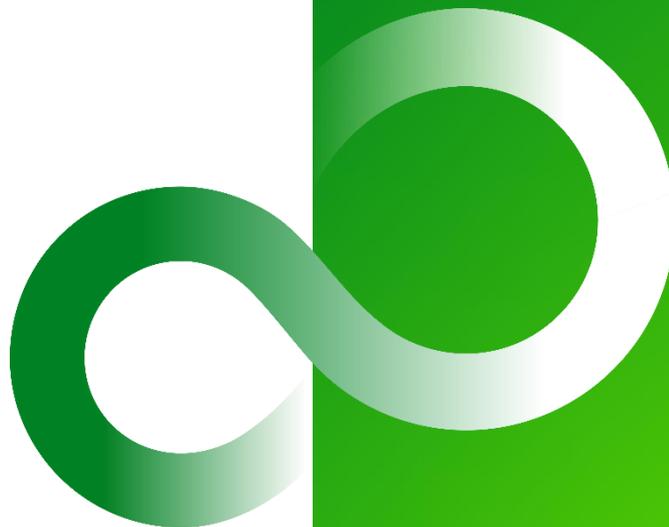
**RP-221387**

**FUJITSU**

**Budapest, Hungary, June 6-9, 2022**

## **Clarification of inband operation for network controlled repeaters**

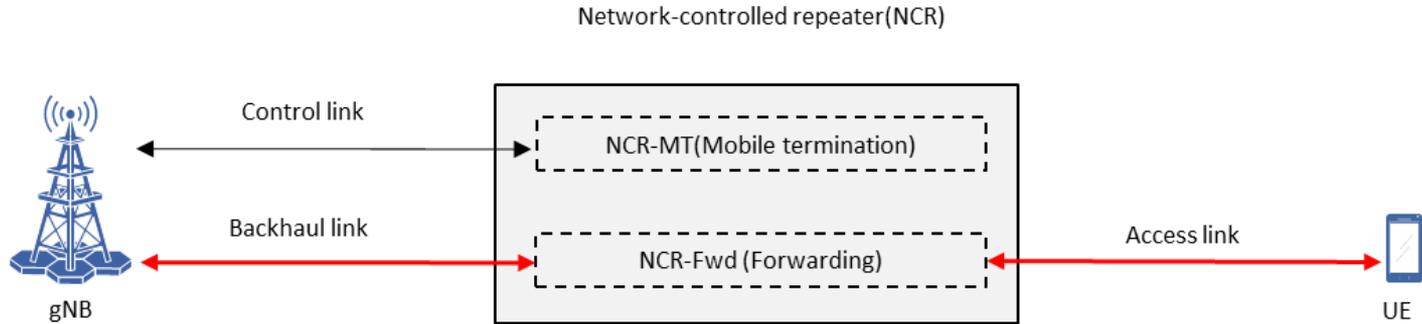
TDoc Type: Discussion  
For: Discussion  
Agenda item: 9.2.7  
Source: Fujitsu Limited



## Agreements in RAN1#109-e meeting

### Agreement

Capture the following model of network-controlled repeater in TR 38.867.



- The NCR-MT is defined as a function entity to communicate with a gNB via Control link (C-link) to enable the information exchanges (e.g. side control information). The C-link is based on NR Uu interface.
  - Note: Side control information is at least for the control of NCR-Fwd
- The NCR-Fwd is defined as a function entity to perform the amplify-and-forwarding of UL/DL RF signal between gNB and UE via backhaul link and access link. The behavior of the NCR-Fwd will be controlled according to the received side control information from gNB.

# Unclear description on the latest SID and RAN1 agreements

## ○ Description in the latest WID ([RP-213700](#))

The study on NR network-controlled repeaters is to focus on the following scenarios and assumptions:

- Network-controlled repeaters are **inband** RF repeaters used for extension of network coverage on FR1 and FR2 bands, while during the study FR2 deployments may be prioritized for both outdoor and O2I scenarios.
- For only single hop stationary network-controlled repeaters
- Network-controlled repeaters are transparent to UEs
- Network-controlled repeater can maintain the gNB-repeater link and repeater-UE link simultaneously

NOTE1: Cost efficiency is a key consideration point for network-controlled repeaters.

## ○ **Agreement**

Capture the following assumption of network-controlled repeater in TR 38.867.

- At least one of the NCR-MT's carrier(s) should be within the set of carriers forwarded by the NCR-Fwd in same frequency range.
  - The NCR-MT and NCR-Fwd operating in the same carrier is prioritized for the study.

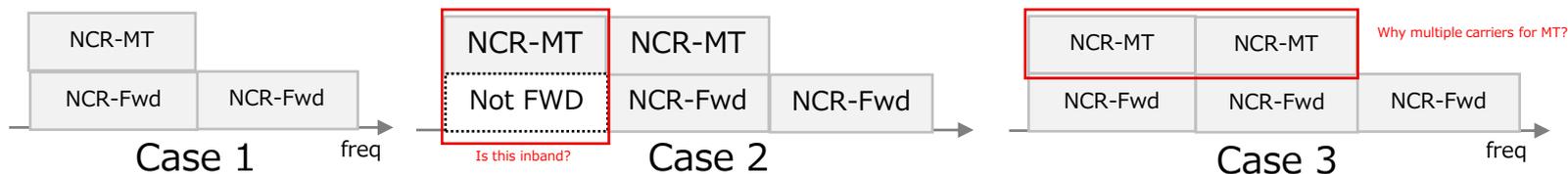
## ○ **Conclusion**

Legacy UE mechanism is sufficient to achieve DL/UL timing for NCR-MT

# Unclear description on the latest SID

## ○ The following aspects are not crystal-clear from the SID:

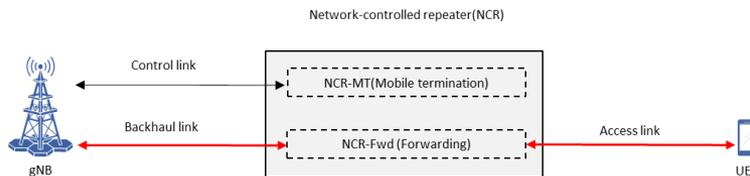
- What “inband” in the SID specifically mean?
  - According to the RAN1 agreement in the previous slide, the following 3 cases can be considered.
  - However, it is not clear if the following 3 cases (esp. case 2) are “inband” operation.
- What is the scenario in which NCR-MT has/requires more than one carrier?
  - This is not clearly included in the scope.



## ○ Potential discrepancy with agreements:

- Can “NCR-MT achieve DL/UL timing by reusing legacy UE mechanism” for all possible “in-band” operations?

→ This ambiguity may cause inefficient discussion in the future RAN1 meeting



- RAN to discuss and clarify:
  - if the scenario where NCR-MT has more than one carriers is included in the scope of this SI.
  - what “inband” specifically mean, especially the scenario where one of carrier(s) of NCR-MT are not within the set of carriers forwarded by the NCR-Fwd.
- Update the SID according to the discussion results.

**Thank you**

