

**3GPP TSG RAN Rel-19 workshop  
Taipei, June 15 - June 16, 2023**

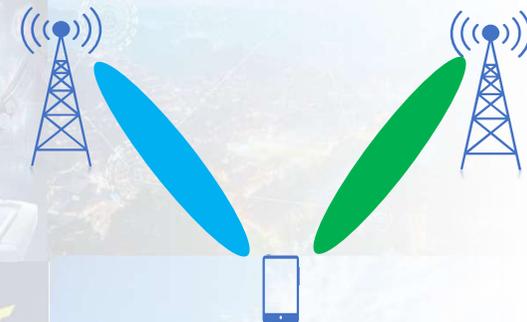
**RWS-230076**

**Agenda Item: 5**  
**Source: Spreadtrum Communications**  
**Title: Views on Rel-19 MIMO enhancement**  
**Document for: Discussion and decision**

# R19 MIMO

## Motivation on enhancements for mTRP

- For S-DCI based NCJT and CJT, ideal backhaul is always assumed.
- In Rel-18 MIMO, CSI enhancement for CJT has been specified with the following assumptions.
  - ✓ Targeting FR1
  - ✓ Up to 4 TRPs
  - ✓ Assuming ideal backhaul and synchronization
  - ✓ The same number of antenna ports across TRPs
- In Rel-19, some of the above assumptions can be relaxed to support more realistic assumptions and more divergent deployments.

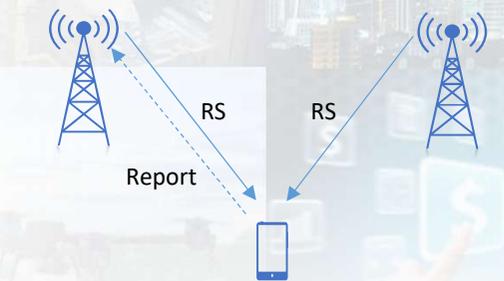


Multi-TRP transmission

# R19 MIMO

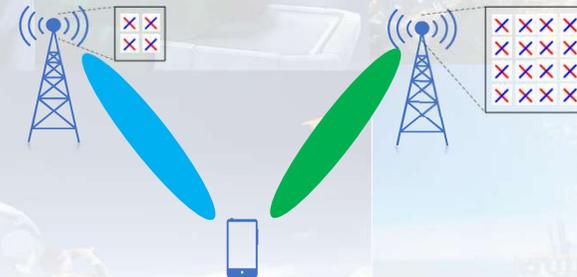
## Potential enhancements for mTRP

- Study, and if justified, specify UE assisted antenna calibration across TRPs for non-ideal synchronization
  - ✓ UE reporting of inter-TRP synchronization error measured via legacy DL reference signal



UE assisted antenna calibration across TRPs

- Study, and if justified, specify CSI enhancement to support different antenna port layouts across TRPs
  - ✓ Rel-18 Type-II codebook refinement for CJT and its associated CSI reporting



Multi-TRP with different antenna port layouts across TRPs

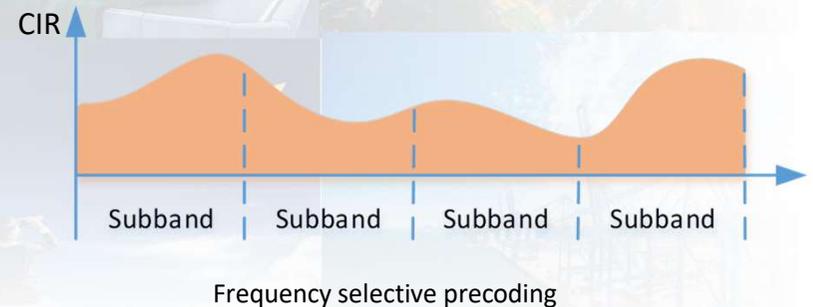
# R19 MIMO

## Motivation on UL enhancement

- UL performance is getting more important to better support CPE/FWA/vehicle/industrial devices
- In Rel-18 MIMO, several UL related enhancements have been discussed, such as simultaneous multi-panel UL transmission and 8 Tx UL operation.
- Frequency-selective precoding is one of the potential enhancements to further improve UL performance.

## Potential UL enhancements

- Study, and if justified, specify frequency-selective precoding



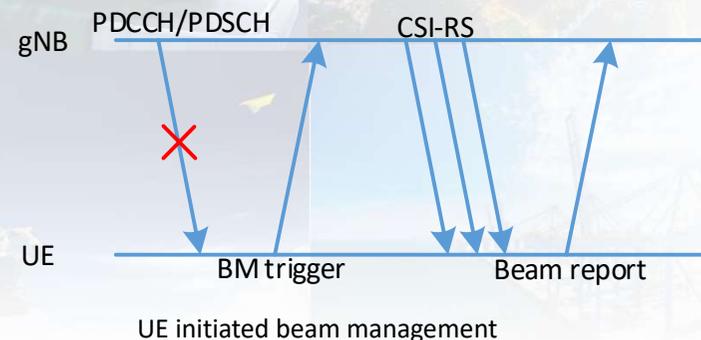
# R19 MIMO

## Motivation on latency reduction for beam management

- Overhead and latency of beam measurement/reporting procedure will become a critical issue when the number of beams is large or the UE moves with high speed.
- Latency reduction of beam measurement and reporting was discussed in Rel-17, but no progress was achieved due to low priority.
- UE initiated beam management can be considered as a candidate solution to reduce latency.

## Potential enhancements for beam management

- Study, and if justified, specify UE initiated beam management



# R19 MIMO

## Summary of potential MIMO enhancements in R19

- Study, and if justified, specify UE assisted antenna calibration across TRPs for non-ideal synchronization
  - ✓ UE reporting of inter-TRP synchronization error measured via legacy DL reference signal
- Study, and if justified, specify CSI enhancement to support different antenna port layouts across TRPs
  - ✓ Rel-18 Type-II codebook refinement for CJT and its associated CSI reporting
- Study, and if justified, specify frequency-selective precoding
- Study, and if justified, specify UE initiated beam management

# Thanks

