

Agenda Item: 9.1.1.2

Document for: Discussion and decision

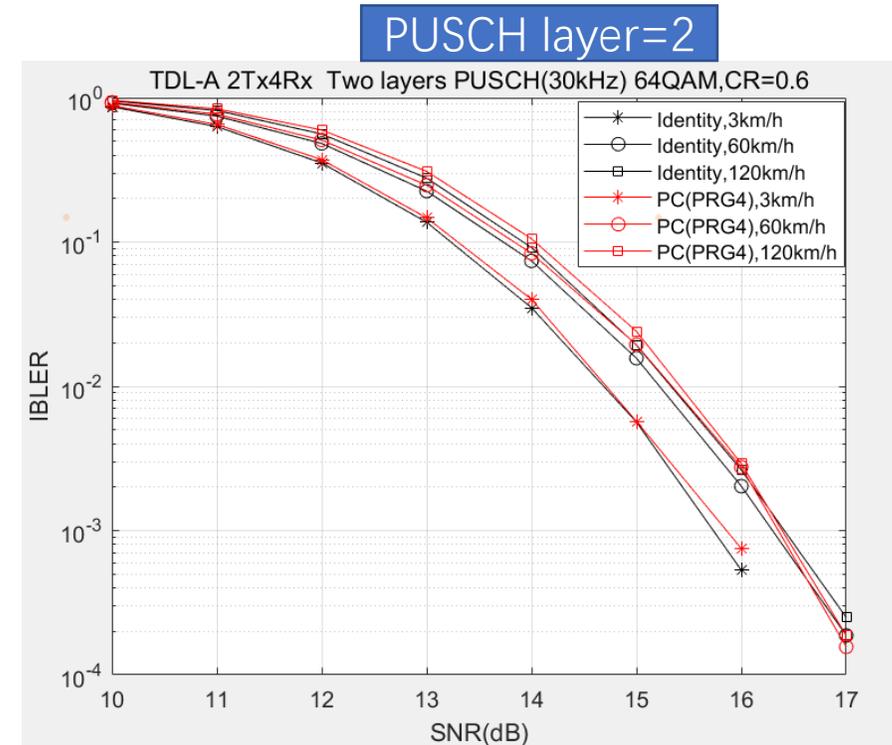
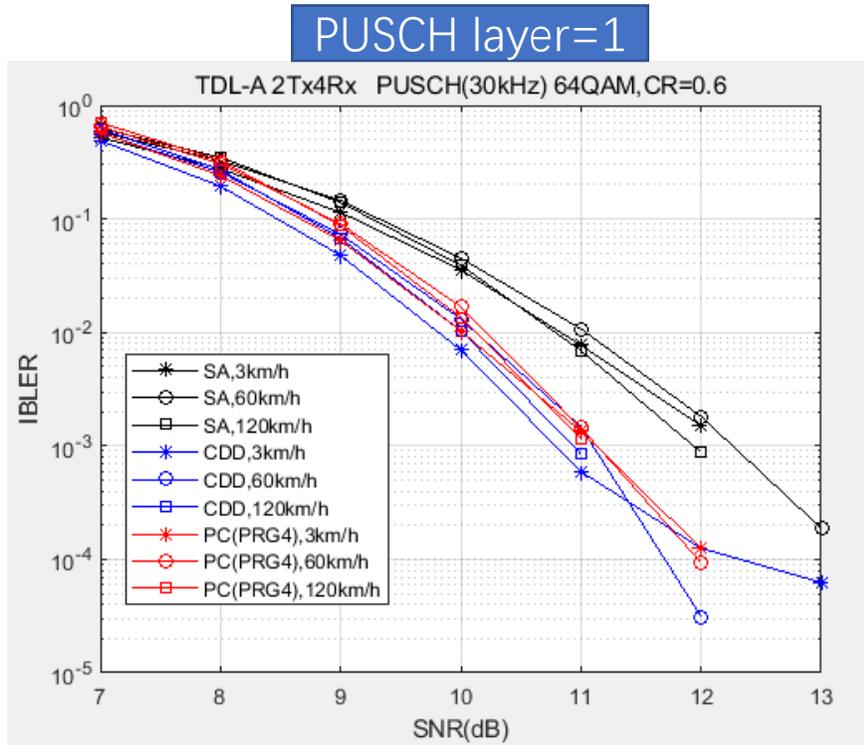
Views on Rel-19 MIMO evolution - Definition of PRG for PUSCH

vivo, Deutsche Telekom, Spreadtrum, Lenovo

Proposal

- Define PRG (precoding granularity) for PUSCH transmission as it is defined for PDSCH.

2Tx

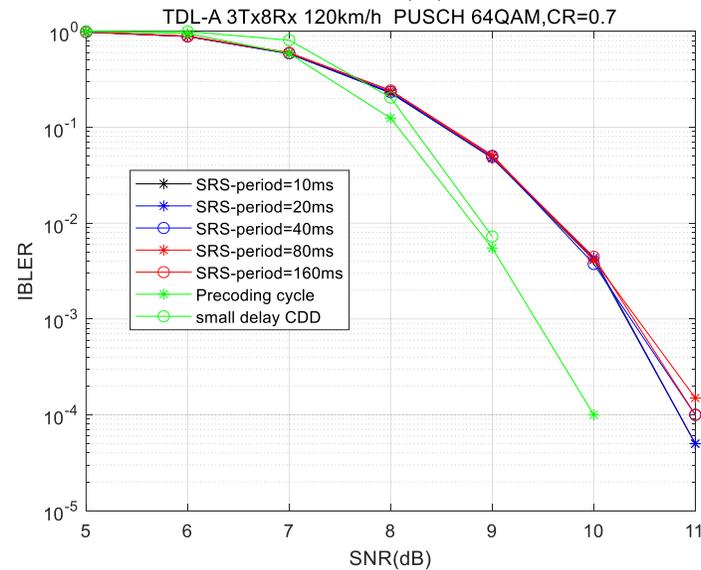
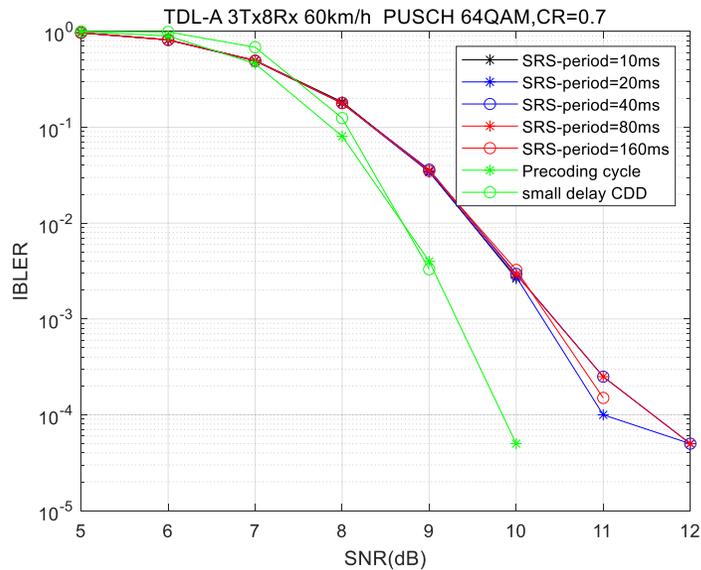
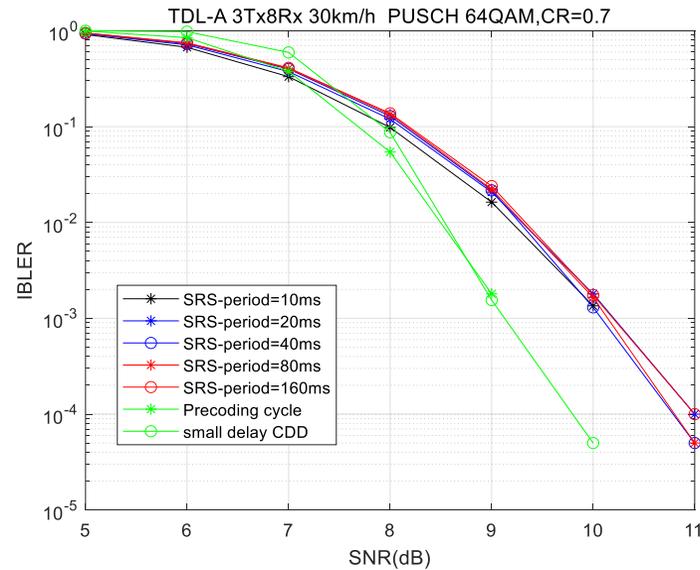
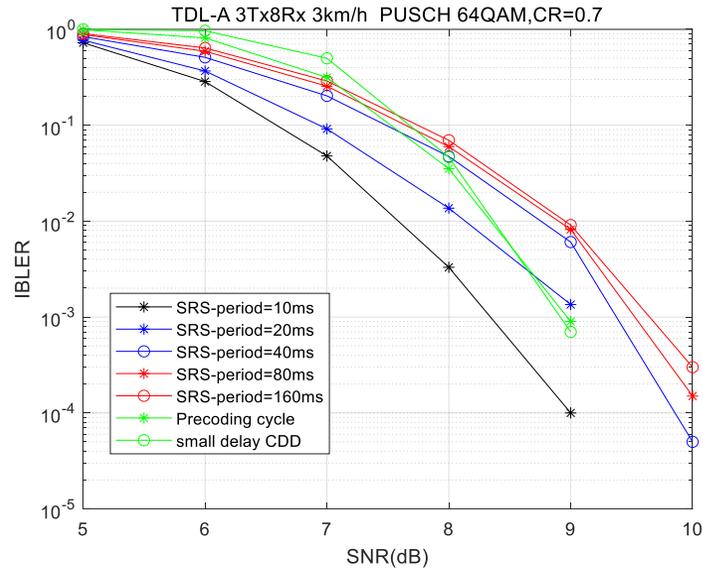


Observations:

- For 1 layer PUSCH, open-loop sub-band precoder cycling performs similar to CDD
- For 2 layers PUSCH, open-loop sub-band precoder cycling has no gain over identity matrix precoder

Benefit of open-loop sub-band precoder cycling over CDD when configured with 2Tx UL MIMO is no additional 1 port SRS is required. And, overall SRS periodicity can be long even for moderate to high speed which saves SRS overhead and no need for full power modes.

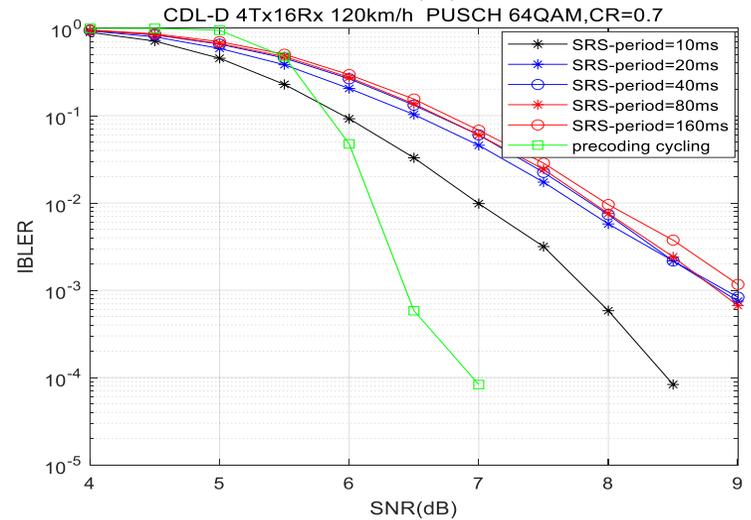
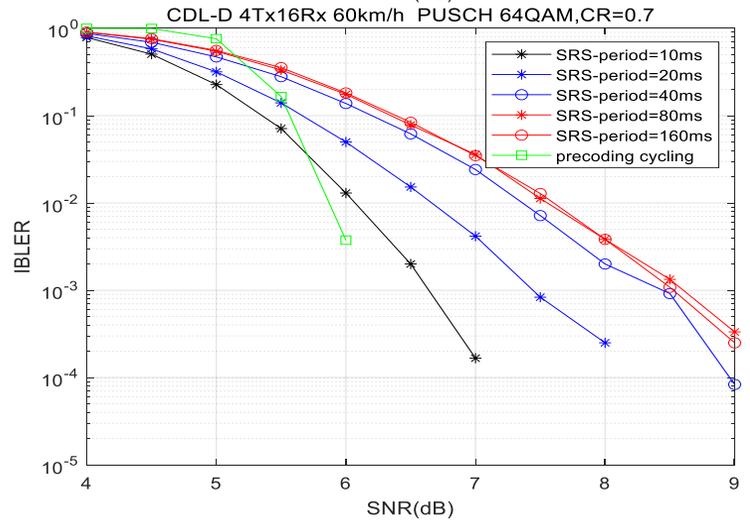
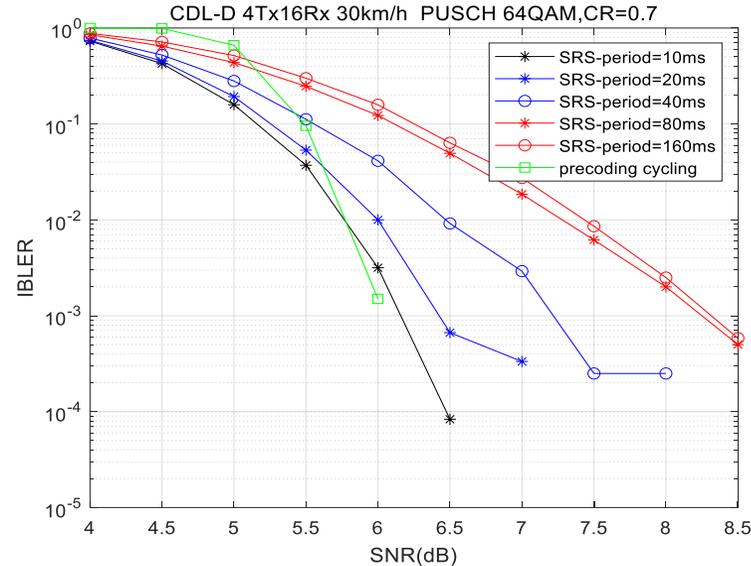
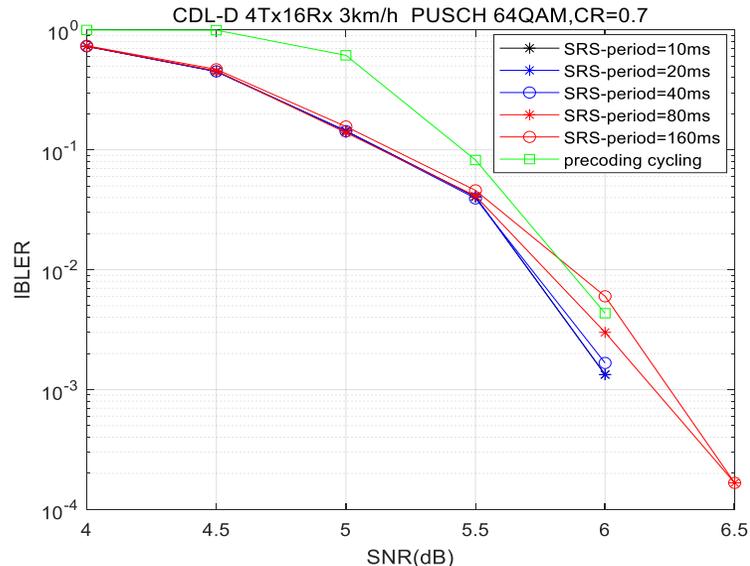
3Tx



- Observations:

For PUSCH layer =1, open-loop sub-band precoder cycling has similar performance with small delay CDD between 3 Tx, but which has better performance (diversity gain) than wideband PMI in case of velocity ≥ 30 km/h, is not sensitive to SRS periodicity.

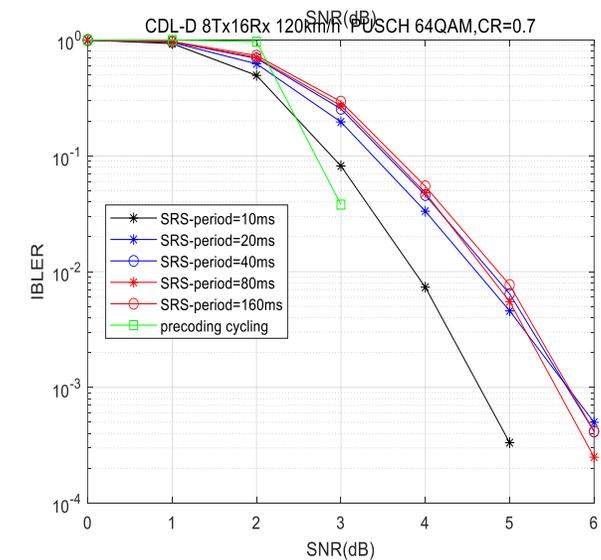
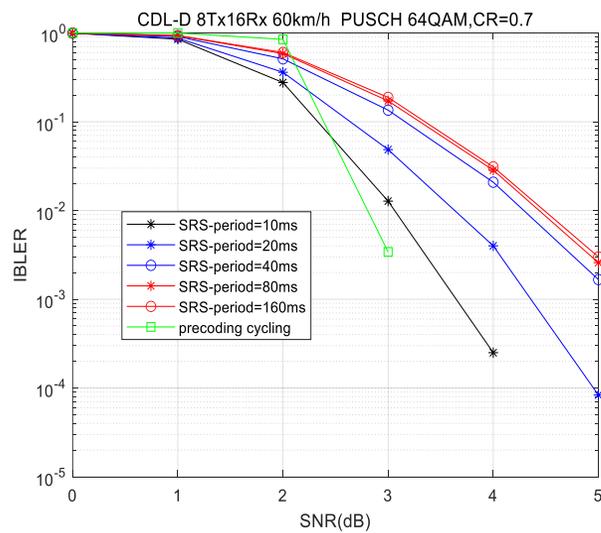
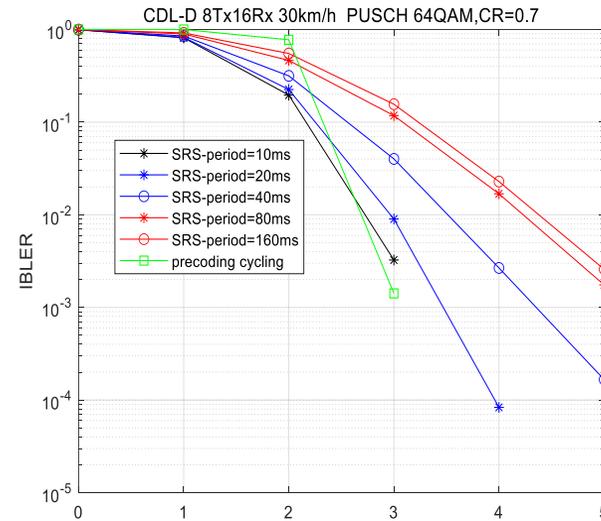
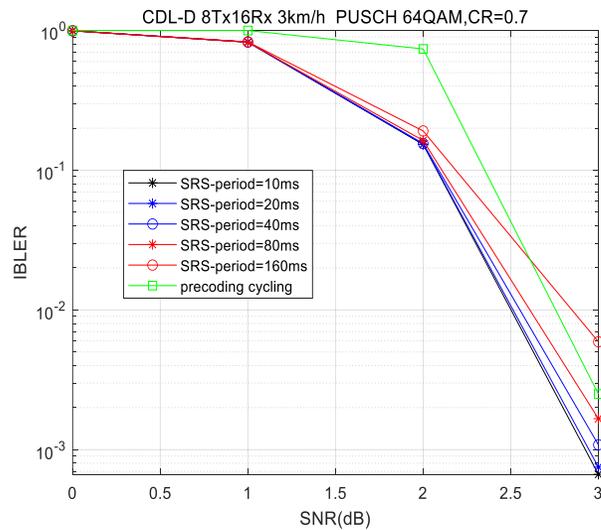
4Tx



Observations:

- For PUSCH layer =1, open-loop sub-band precoder cycling performs better in moderate to high speed scenario
- Performance of open-loop precoder cycling is not sensitive to SRS periodicity, hence saves SRS overhead especially

8Tx



- Observations:
 - For PUSCH layer =1, open-loop sub-band precoder cycling performs better in moderate to high speed scenario
 - Performance of open-loop precoder cycling is not sensitive to SRS periodicity, hence saves SRS overhead especially