3GPP TSG RAN#102
Edinburgh, Scotland, December 11-15, 2023

RP-233149

Views on candidate RRM/Demod topics for Rel-19

Agenda: 9.1.4.3
Source: Samsung
Document for : Discussion and decision

Agenda

I. RRM area

- FR2 RRM enhancement

FR2 RRM enhancement [RAN4/RAN2]

Justification

- FR2 RRM enhancement:
  - Existing FR2 L3 measurement requirements are specified based on the assumption with Tx/Rx beam sweeping at UE side. The measurement delay in FR2 is much longer than FR1.
  - In previous releases, optimization of RRM requirements with reduced beam scaling factor was specified under specific deployment scenario i.e. FR2 HST deployment.
  - It's desirable to further study and enhance FR2 RRM delay requirements with identified specific scenarios and precondition.

Potential objectives

- Phase I: Study phase
  - Study the suitable scenarios and or pre-conditions to decrease the measurement delay in FR2 with reduced beam scaling factor [RAN4]
    - Example scenarios for study: Low mobility scenario, Fixed indoor scenario and/or multi-TRP scenario with pre-diction on candidate beam directions

  Note: Check point at RAN#106 or RAN#105 for phase I.
- Phase II: Specify enhanced FR2 measurement requirements pending on phase I conclusion
  - Specify the measurement delay in FR2 with reduced beam scaling factor under the identified scenarios [RAN4]
  - Specify necessary NW assistant signaling and UE capability signaling [RAN4, RAN2]

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Agenda

II. Demod area

- MMSE-IRC receiver for uplink

MMSE-IRC receiver for uplink [RAN4]

Justification

- In existing NR specification, several advanced receivers are specified on DL side to handle different type of interference:

Rel-15	Rel-17	Rel-18
R-ML for inter-stream interference under SU-MIMO	MMSE-IRC for Inter-cell MMSE-IRC for inter-user CRS-IM for CRS interference	Advanced receiver for MU-MIMO

- Existing BS requirements are specified under noise limited condition only.
- Uplink inter-cell interference scenario is typical scenario for FR1 NR deployment.
- MMSE-IRC receiver is already widely implemented by Infra-vendors.
- Requirements need to be introduced to verify receiver performance with proper processing for inter-cell interference suppression .

Potential objectives

- Specify advanced receiver for suppressing uplink inter-cell interference (FR1 only) [RAN4]
  - Define PUSCH demodulation requirements
  - Reference receiver: MMSE-IRC with DMRS based interference covariance estimation
    - Note: use the DMRS for served target UE's PUSCH.
  - Reuse LTE interference profiles as starting point
  - Focus on slot-based transmission and aligned SCS among cells

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