**3GPP TSG-RAN WG4 Meeting #104bis-eR4-221xxxx**

Electronic Meeting, October 10 – 19, 2022

**Title:** **WF on FeMIMO RRM requirements for inter-cell beam management**

**Source:** **Huawei, HiSilicon**

**Agenda item: 4.5.1**

**Document for: Approval**

# Introduction

This contribution is to capture the agreements for the email discussion for Rel-17 FeMIMO RRM in RAN4 #104bis-e meeting.

# Way-forward

## Sub-topic 2-1: Sharing factor

**Issue 2-1-1 Sharing factor design**

* Proposals:
  + Proposal 1(Intel, Huawei, vivo, Apple):
    - Remove the bracket in the corresponding CR.
  + Proposal 2(Ericsson, MTK):
    - RAN4 to agree following sharing factor for CDP
* For FR1:
  + PCDP= Ntotal\_CDP / Noutside\_MG\_CDP
* For FR2:
  + if Navailable,SSB\_CDP\_SMTC\_MG = 0,
    - If measurement occasions of SSB CDP is also used for L3 measurements which are measured outside gap, then PCDP = Psharing SMTC \* Psharing SSB \* Ntotal\_CDP / Noutside\_MG\_CDP
    - Else, PCDP = Psharing SSB \* Ntotal\_CDP / Noutside\_MG\_CDP
    - Where, Psharing SSB = N, where N is the number overlapping SSB from different cells.
  + If Navailable,SSB\_CDP\_SMTC\_MG ≠ 0
    - PCDP = Psharing SSB \* Ntotal / Navailable,SSB\_CDP\_SMTC\_MG
    - RAN4 to agree following sharing factor for SC
* For FR1:
  + PSC= Ntotal\_SC / Noutside\_MG\_SC
* For FR2:
  + if Navailable,SSB\_SC\_SMTC\_MG = 0,
    - If measurement occasions of SSB CDP is also used for L3 measurements which are measured outside gap, then PSC = Psharing SMTC \* Psharing SSB \* Ntotal\_SC / Noutside\_MG\_SC
    - Else, PSC = Psharing SSB \* Ntotal\_SC / Noutside\_MG\_SC
    - Where, Psharing SSB = N, where N is the number overlapping SSB from different cells.
  + If Navailable,SSB\_SC\_SMTC\_MG ≠ 0
    - PSC = Psharing SSB \* Ntotal\_SC / Navailable,SSB\_SC\_SMTC\_MG

Collect companies’ view in 2nd round

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| **Company** | **Comments** |
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## Sub-topic 2-2: Scheduling Restriction

**Issue 2-2-1 Scheduling restriction for dynamic TDD**

* Proposals:
  + Proposal 1(Apple, Ericsson):
    - RAN4 need not discuss the scheduling restriction for dynamic TDD as its already captured in RAN1 specification.
  + Proposal 2(vivo):
    - Do not introduce scheduling restriction for dynamic TDD when L1-RSRP measurement on cell with different PCI overlaps with serving cell UL slots. Clarify longer L1 measurement delay is expected for this case.
  + Proposal 3(MTK, ZTE, Samsung):
    - Introduce scheduling restriction for dynamic TDD on serving cell UL symbols which fully or partially (because of TA) overlaps with the SSB for L1-RSRP measurement on cell with different PCI.
  + Proposal 3a(Samsung, ZTE):
    - Introduce scheduling restriction for dynamic TDD when L1-RSRP measurement on the cell with different PCI. It is enough to add the scheduling restriction on 1 symbol before SSB and one symbol after SSB.
  + Proposal 3b(ZTE,Samsung):
    - For the scheduling restriction due to L1-RSRP measurement on cell with different PCI, reusing the scheduling restriction due to L1-RSRP measurement on serving cell is fine. Whether the adjacent symbol before and after SSB should be restricted, which should be aligned with the specification for L1-RSRP measurement on serving cell.

Collect companies’ view in 2nd round

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| **Company** | **Comments** |
| Apple | Options 3, 3a, 3b are in favor of introducing scheduling restriction.  RAN1 spec 38.213:    In RAN1 spec, there is no additional 1 symbol scheduling restriction due to TA. Hence we think option 3a would be the best option and we support it.  Could MTK please clarify with option 3 what would be the scheduling restriction taking into account TA? Isn’t 1 symbol before and after SSB sufficient? |
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**Issue 2-2-2: Whether to define scheduling restriction for non-serving cell**

* Agreements
  + Not to define scheduling restriction for non-serving cell

## Sub-topic 2-3: Applicability of ICBM feature

**Issue 2-3-1 Applicability of ICBM feature**

* Proposals:
  + Proposal 1(Apple, MTK, Ericsson, Samusng, Intel, Huawei):
    - RAN4 not extend ICBM requirements for concurrent R17 Wis in Release 17. It can be postponed to further release.
  + Proposal 2(vivo, CMCC):
    - Confirm that R17 requirements for inter-cell L1 measurements can be applicable to FR1 HST. The square brackets related to FR1 HST should be removed.
    - Confirm that R17 requirements for inter-cell L1 measurements can be applicable to FR2 HST, with the assumption that only one active UE panel is used.
    - Clarify in TS 38.133 that there is no R17 requirements when inter-cell L1 measurements and R17 enhance gap related features are configured simultaneously to one UE.

Collect companies’ view in 2nd round

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| **Company** | **Comments** |
| Apple | Support option 1.  We need further discussion on extending ICBM to R17 HST for FR1 and FR2 and don’t support it at this stage. |
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## Sub-topic 2-4: SSB and PDCCH/PDSCH are overlapped on the same RE

**Issue 2-4-1: Whether any clarification or update is needed in RAN4 spec when SSB and PDCCH/PDSCH are overlapped on the same RE**

* Agreements
  + Whether to define the requirement of overlap between SSB and PDCCH/PDSCH in the same RE should wait for RAN1 conclusion.

## Sub-topic 2-5: Measurement restriction

**Issue 2-5-1 Measurement restriction for SSB based L1-RSRP**

* Proposals:
  + Proposal 1(Huawei):
    - The measurement restrictions are applied between SC SSB for RLM/BFD/CBD and CDP SSB for L1-RSRP.
    - The measurement restrictions are applied between CDP SSB for BFD/CBD and SC SSB for L1-RSRP.
  + Proposal 2(Ericsson, Intel):
    - Further study the possibility of sharing under some scenarios

Collect companies’ view in 2nd round

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| **Company** | **Comments** |
| Apple | We support option 1. |
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## Sub-topic 2-6: Applicability of FR 2-2

**Issue 2-6-1 Applicability of FR 2-2**

* Agreements
  + FR 2-2 is not applicable to R17 inter cell beam management.