3GPP TSG-RAN WG2 Meeting #109-e R2-200xxxx

Electronic Meeting, 24th February – 6th March 2020

Agenda: 6.16.2

Source: Ericsson

Title: [AT109e][110][EMIMO] RRC CR (Ericsson)

Document for: Discussion, Decision

# Introduction

This document attempts to collects views as to help progress of eMIMO in RAN2-109-e according to below instructions:

* [AT109e][110][EMIMO] RRC CR (Ericsson)

Initial scope: Continue the discussion on RRC aspects, based on [R2-2001671](file:///C:\Data\3GPP\Extracts\R2-2001671%20-%20Summary%20of%20%5bNR%20eMIMO%5d%20RRC%20aspects_v3.docx)

Initial intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email)
    - Set of proposals that need further (online) discussion

Initial intermediate deadline (for companies' feedback): Tuesday 2020-02-25 20:00 CET

Initial intermediate deadline (for rapporteur's summary): Wednesday 2020-02-26 01:30 CET

Second phase scope: Continue the discussion on RRC aspects which are still open after the discussion on [R2-2001677](file:///C:\Data\3GPP\RAN2\Inbox\R2-2001677.zip)

Second phase intended outcome:

* + - Set of proposals with full consensus (aim to agree to those over email) and corresponding updated CR
    - Set of proposals that need further (online) discussion

Second intermediate deadline (for companies' feedback): Friday 2020-02-28 12:00 CET

Second intermediate deadline (for rapporteur's summary and updated CR): Monday 2020-03-02 12:00 CET

Final scope: Discuss the updated CR

Final intended outcome: Agreed 38.331 CR

Final deadline for companies' feedback: Wednesday 2020-03-04 12:00 CET

Final deadline for rapporteur's version for agreement: Thursday 2020-03-05 12:00 CET

# Agreements

Agreements:

1. Given the above analysis we propose to keep the three modes for ULFPTX. Inform RAN1 of this decision and ask if this is fine for them
2. BDFactor is signalled per cell. Ask RAN1 for confirmation
3. Agree the current RRC running CR implementation i.e. have only rsrp-ThresholdSSBBFR which is used for beam selection for MAC CE and rename rsrp-ThresholdSSBBFR to rsrp-ThresholdBFR. (MAC CR needs to be aligned)
4. The current RRC running CR implementation for max number of detection resource limitation as show above.

Agreements:

1. Agree to implement two LTE CRS pattern lists corresponding to each CORESETPoolIndex as indicated in above changes and merge the changes to the running RRC CR for NR eMIMO. Can reconsider this if we find an issue.
2. Agree the existing RepetitionSchemeConfig IE (i.e. SEQUENCE) in the running CR as baseline for repetition scheme configuration, with additional restriction in the field description. Also ask RAN1 for confirmation that fdm-tdm and slotBased are mutually exclusive
3. enableDefaultBeamPlForPUSCH0\_0, enableDefaultBeamPlForPUCCH, enableDefaultBeamPlForSRS, and PLRS-update parameter are kept in the RRC for now. Can consider to remove them later if not really needed

# 2 Open issues

**Proposal 1 Move the configuration of repetition schemes from BPW-DownlinkDedicated to PDCCH-Config i.e. implement this change in running RRC CR.**

The repetition configuration is essentially configuration of PDCCH which is why it has been proposed to be moved under PDCCH-Config. This is considered as normal ASN1 review type of clean up. However, different views were expressed thus we would like to ask what are seen as issues for this proposal.

**Q1: Companies are asked to indicate issues on why the repetition scheme configuration should not be moved under PDCCH-Config?**

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| Company | Yes/No | Comments if companies replied no |
| Huawei |  | No issue. |
| CATT |  | It seems the repetition parameters mainly apply to PDSCH. So is it more suitable to have in under PDSCH-Config? |
| Nokia, Nokia Shanghai Bell |  | PDSCH-Config seems more suitable place if put somewhere: The repetition schemes do not concern PDCCH at all. |
| Qualcomm |  | Still unclear why should move to PDCCH-Config. The *RepetitionSchemeConfig* should be used for PDSCH. |
| Samsung |  | We also think PDSCH-Config is suitable place, same view with Nokia. |
| Apple |  | Repetition scheme configuration should be in PDSCH-Config. |
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Conclusion based on replies is to move repetition scheme configuration in PDSCH-Config.

**Proposal Discuss and agree the value range for coresetPoolIndex-r16 in ControlResourceSet.**

Current value range is INTEGER(1..1) and the other proposal is to have both values explicitly configured with INTEGER(0..1).

**Q2: Companies are asked to provide preference on the value range and to comment on possible issues of the choices. Especially, if we explicitly configure INTEGER(0..1) do we need restriction that if 0 is configured 1 has to be configured as well in addition to rules on absence for legacy compatibility?**

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| Company | Preferred value range | Comments to Q2 |

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| Huawei | Can take any starting point now but some more technical discussions would be useful | The argument in favour of (0..1) is that "it fits better with RAN1 specification" which at first glance looks true but this may actually be hiding problems; - does it mean that 0 or 1 must be configured for all CORESETs when configuring one CORESET with 1? - if yes, can the network configure '0' for all CORESETs, so that it does not need to reconfigure them later? If yes, is that also well covered by RAN1 specification. |
| CATT | (0..1) | Double checked a bit. This aligns better with RAN1 spec. |
| Nokia, Nokia Shanghai Bell | INTEGER (0..1) | We don’t understand the arguments about RAN1 specification: what RAN1 agreed is that CORESET pool index may be either 0 (legacy) or 1. They refere to these value directly, so it’s exceedingly strange not to allow explicit configuration to both 0 and 1.  Leaving behaviour for absence of the field often causes issues when extending the fields or when new behaviour is defined. We don’t really see anby need to limit to INTEGER (1..1), which, while legal ASN.1, is rather strange construct.  As for Huawei question: This is not really a problem: We often have legacy compatibility rules, and we don’t restrict configurations if they work according to RAN1 specs. To also quote RAN1 specifications: “*If a UE is configured by higher layer parameter PDCCH-Config that contains two different values of CORESETPoolIndex in ControlResourceSet, the UE may expect to receive multiple PDCCHs scheduling fully/partially/non-overlapped PDSCHs in time and frequency domain.*” --> This clearly requires the ability to configure the index = 0 as well. |
| Qualcomm | INTEGER(0..1). | Value of 0 or 1 is much clearer. |
| Samsung | INTEGER (0..1) | Generally we don’t use INTEGER (1..1) in ASN.1 and agree with Nokia’s view. |
| Apple | INTEGER (0..1) | Agree with Nokia. |
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Conclusion based on replies is to use explicit indexing and thus INTEGER (0..1).

**From Question 10:**

**Issue1:**

**Should capture that dataScramblingIdentityPDSCH2 can only be configured if PDCCH-Config in the same BWP-DownlinkDedicated includes at least one ControlResourceSet configured with coresetPoolIndex (could also capture that it is deleted by the UE if this is no more the case).**

**Q3: Companies are provide views whether they agree with the Issue1 and also comment if there are other open issues related *dataScramblingIdentityPDSCH2***

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| Company | Replies for Q3 |
| Huawei | This is our understanding now and we think that configuration constraints are usually captured in RAN2 specifications. |
| CATT | Yes this is also our understanding. |
| Nokia, Nokia Shanghai Bell | The 2nd scrambling ID is only used with coresetPoolIndex = 1, and that should be captured in the CR. It is not used with coresetPoolIndex = 0. To quote RAN1 specifications:  *n\_"ID" ∈{0,1,…,1023} equals - the higher-layer parameter dataScramblingIdentityPDSCH if the codeword is scheduled using a CORESET with CORESETPoolIndex equal to 0; - the higher-layer parameter AdditionaldataScramblingIdentityPDSCH if the codeword is scheduled using a CORESET with CORESETPoolIndex equal to 1; if the higher-layer parameters dataScramblingIdentityPDSCH and AdditionaldataScramblingIdentityPDSCH are configured together with the higher-layer parameter CORESETPoolIndex containing two different values, and the RNTI equals the C-RNTI, MCS-C-RNTI, or CS-RNTI, and the transmission is not scheduled using DCI format 1\_0 in a common search space;* |
| Qualcomm | Same view with Nokia. The dataScramblingIdentityPDSCH2 is only used if with coresetPoolIndex is configured with 1, It is not used with coresetPoolIndex is 0. |
| Samsung | Agree with Nokia. No strong view whether we capture this restriction on RAN2 specification or we can just follow RAN1 specification. |
| Apple | Same view as Nokia.dataScramblingIdentityPDSCH2 is only used when coresetPoolIndex is set to 1.  It’s better to be clarified in the field description. |
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**From Question 10:**

**Issue2:**

**There are several structures with Need R for SetupRelease, we do not understand how this can work**

**Q4: Companies are provide views what should be the correct Need code.**

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| Company | Replies for Q4 |
| Huawei | We raised this now but things can be left as they are now and it would be up to ASN.1 review to handle that. |
| Nokia, Nokia Shanghai Bell | SetupRelease must always use Need M for the wrapper. Fields inside the SetupRelease can still be Need R if necessary, though. |
| Samsung | Agree with Nokia. |
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**Q5: Companies are asked review the RRC CR email discussion WF document R2-2001104** **give their views if any of the aspects captured in current RRC CR but not lifted here ARE NOT OK to be agreed as baseline for ASN1 review. New open issues should be indicated here as well.**

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| Company | Open issue name | Comments on Question 5 |
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# 4 Conclusions

List of conclusions is are captured in updated RRC CR in addition to first online agreements:

* to move repetition scheme configuration in PDSCH-Config.
* to use explicit indexing and thus INTEGER (0..1).
* clarify in field description that dataScramblingIdentityPDSCH2 is used only when coresetPoolIndex is set to 1
* correct need code to M for setuprelease

# 5 References

1. R2-2001104, Proposals for [108#36][NR eMIMO] Running RRC CR (Ericsson) Ericsson Limited, RAN2#109-e, Electronic Meeting, February 2020
2. R2-2001109, Running RRC CR for Introduction of NR eMIMO Ericsson, RAN2#109-e, Electronic Meeting, February 2020