**3GPP TSG-RAN WG4 Meeting #** **107 R4-230xxxx**

**Incheon, KR, May 22 – May 26, 2023**

**Agenda item:** 8.29.7

**Source:** Moderator (ZTE)

**Title:** Email discussion summary for [107][227] NR\_netcon\_repeater

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion (e.g. list of treated agenda items) and provide some guidelines for email discussion if necessary.*

*List of candidate target of email discussion for 1st round and 2nd round*

* 1st round: TBA
* 2nd round: TBA

It is appreciated that the delegates for this topic put their contact information in the table below.

Contact information

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| --- | --- | --- |
| **Company** | **Name** | **Email address** |
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Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)

The e-mail discussion covers RRM part for NCR-MT in Rel-18. All contributions submitted are divided into the following Topics:

1. Study of RRM function and RRM core requirements

# Topic #1: Study of RRM function and RRM core requirements

## Companies’ contributions summary

(Cat A CRs are not listed)

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **[R4-2307404](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307404.zip)** | CATT | Discussion on RRM core requirements for NR Network-controlled Repeaters |
| **[R4-2307462](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307462.zip)** | Dell Technologies | Discussion on NCR RRM requirements |
| **[R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)** | Nokia, Nokia Shanghai Bell | On NCR RRM Requirements |
| **[R4-2308706](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308706.zip)** | Huawei, HiSilicon | Discussion on RRM requirements for NR network-controlled repeaters |
| **[R4-2309192](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309192.zip)** | ZTE Corporation | Further discussion on RRM requirements for NCR-MT |
| **[R4-2309643](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309643.zip)** | Ericsson | Further analysis of RRM requirements for network controlled repeater |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if appli cable) based on companies’ contributions.*

### Sub-topic 1 Adaptive beamforming fro NCR-Fwd access link

*Sub-topic description:*

*Open issues and candidate options before e-meeting:*

**Issue 1-1:** adaptive beamforming for NCR-Fwd access link

* Proposals
	+ Proposal 1: not to define the RRM requirement for NCR-Fwd access link. [ZTE, [R4-2309192](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309192.zip)]
	+ Proposal 2: RAN4 not to define RRM requirement for NCR-Fwd access link for beam configuration and switching latency.[CATT, [R4-2307404](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307404.zip)]
	+ Proposal 3: The RRM requirements for adaptive beamforming on NCR-Fwd access link shall not be defined. [Dell.[R4-2307462](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307462.zip)]
	+ Proposal 4: There is no need to define RRM requirement for NCR-Fwd access link for beam configuration and switching latency. [Huawei,[R4-2308706](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308706.zip)]
	+ Proposal 5: Do not define RRM requirement for NCR-Fwd access link for beam configuration and switching latency. [Ericsson,[R4-2309643](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309643.zip)]
	+ [Observation 1: To avoid any impacts on the quality of data transmission to/from the access UEs, it is important that NCR node is strictly following the access link beam configuration/switching procedure.](#_Toc135067150) [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
	+ [Proposal 6: RAN4 to define core requirements on the application latency of aperiodic and semi-persistent access link beam indication.](#_Toc135067151) [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
	+ [Observation 7: The latency in the access beam application can be detected by the EIPR measurements of the NCR-Fwd access link.](#_Toc135067152) [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
* Recommended WF
* Further discuss the following two options:
* Option 1: not to define the requirement for NCR-Fwd access link (ZTE,CATT, Dell, Huawei, Ericsson )
* Option 2: to define the requirement for NCR-Fwd access link (Nokia)

### Sub-topic 2 BFD/BFR/RLM for NCR-MT

**Issue 2-1:**  LA NCR-MT

* Proposals/Observations
	+ Proposal 1: to reuse the existing IAB-MT RLM/BFD/BFR requirement in TS38.174 clause 12.3 as baseline and further consider the DRX configuration for NCR-MT. [ZTE [R4-2309192](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309192.zip)]
	+ Proposal 2: For LA NCR\_MT, RAN4 should analyze applicability of the requirements for BFD and BFR described in Clause 12.3.2 in TS 38.174 and the applicability of the requirements for RLM described in Clause 12.3.1 in TS 38.174. [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
* Recommended WF
	+ Further discuss the applicability of BFD/BFR/RLM requirement of IAB-MT for NCR-MT

**Issue 2-2:**  WA NCR-MT

* Proposals/Observations
	+ Proposal 1: not to define the RLM requirement for WA NCR-MT, [ZTE [R4-2309192](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309192.zip)]
	+ Proposal 2: RAN4 to define RLM requirements for WA NCR-MT. [CATT, [R4-2307404](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307404.zip)]
	+ Proposal 3: It is not necessary to define BFD/BFR/RLM requirements for WA NCR-MT. [Dell.[R4-2307462](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307462.zip)]
	+ Proposal 4: There is no need to define RLM requirements for WA NCR-MT. [Huawei,[R4-2308706](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308706.zip)]
	+ Proposal 5: Do not specify requirements for RLM for WA NCR class on the C-link. [Ericsson,[R4-2309643](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309643.zip)]
	+ The C-link of a WA NCR is expected to be very stable due to unobstructed LOS deployment with its serving base station. Hence, it is very unlikely to suffer radio link failure. [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
	+ Proposal 6: Do not define RLM requirements for WA NCR-MT C-link. [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
* Recommended WF:
* Further discuss the following two options:
* Option 1: not to define RLM requirement for WA NCR-MT (ZTE, Dell, Huawei, Ericsson and Nokia)
* Option 2: to define RLM requirement for WA NCR-MT (CATT)

### Sub-topic 3 Others

**Issue 3-1:** RRC re-establishment

* Proposals/Observations
	+ Observation 1: NCR and IAB nodes have similar deployment characteristics in terms of their location, and Release-18 NCR is intended for static deployments. [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
	+ Proposal 1: For the RRC Re-establishment procedure in LA NCR-MT, use the requirements for the RRC Re-establishment for IAB-MT as described in Clause 12.1.1.1 of 3GPP TS 38.174. [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
* Recommended WF
	+ No need for further discussion based on the previous agreement reached.
	+ Moderator note:

Issue 1-3-1: RRC re-establishment [RAN4#106 WF R4-2303257 ]

* Agreement
	+ Define the RRC re-establishment requirement for NCR-MT in Rel-18 and reuse the existing IAB-MT RRM requirement from TS38.174 clause 12.1.1.1 as baseline

Issue 1-1: RRC re-establishment [RAN4#106bis WF R4-2306360 ]

* Agreements
	+ Define the RRC re-establishment requirement for LA NCR-MT only in Rel-18

**Issue 3-2:**  Initial transmit timing requirement

* Proposals/Observations
	+ Proposal 1: Determine if the initial transmit timing requirements for IAB-MT as described in Clause 12.2.1 can be applied to the LA NCR-MT initial transmit timing requirements. [Nokia, [R4-2308038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308038.zip)]
* Recommended WF
	+ No need for further discussion based on the previous agreement reached.
	+ Moderator note:

Issue 1-4-1:  Initial transmit timing requirement Te [RAN4#106 WF R4-2303257 ]

* · Agreement
	+ To define initial transmit timing requirement Te for NCR-MT and to reuse the requirement in clause 12.2.1 of Rel-16 TS 38.174.
	+ No RRM requirements need to be specified for the transmit timings of backhaul and access link of NCR-Fwd;

Issue 2-1: Initial transmit timing requirement Te [RAN4#106bis WF R4-2306360 ]

* Agreements
	+ Define Te requirement for WA and LA NCR-MT

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

Sub-topic 1

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Company A | Issue 1-1: |
| Company B |  |

Sub-topic 2

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Company A | Issue 2-1:Issue 2-2: |
| Company B |  |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
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| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

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|  | **Status summary**  |
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## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
|  | WF on … | YYY |  |
|  | LS on … | ZZZ | To: RAN\_X; Cc: RAN\_Y |
|  |  |  |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-22xxxxx |  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
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Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics incl. existing and new tdocs.
2. For the Recommendation column please include one of the following:
	1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
	2. Other documents: Agreeable, Revised, Noted
3. For new LS documents, please include information on To/Cc WGs in the comments column
4. Do not include hyper-links in the documents

## 2nd round

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-22xxxxx |  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-22xxxxx |  | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-22xxxxx |  | LS on … | ZZZ | Agreeable, Revised, Noted |  |
|  |  |  |  |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics.
2. For the Recommendation column please include one of the following:
	1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
	2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents

# Annex

Contact information

|  |  |  |
| --- | --- | --- |
| **Company** | **Name** | **Email address** |
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Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)