**3GPP TSG-RAN WG4 Meeting # 97-e R4-200XXXX**

**Electronic Meeting, 20 – 30 Apr., 2020**

**Agenda item:** 12.5

**Source:** Moderator (MediaTek inc.)

**Title:** Email discussion summary for [97e][230] NR\_MG\_enh

**Document for:** Information

# Introduction

This document is the email discussion summary for [97e][230] NR\_MG\_enh with the following topics covered

* Topic 1: Work plan (AI 12.5.1)

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

* 1st round: Decide on the scope, priority, options and tentative agreement to be discussed in the 2nd round. Conclude issues with strict consensus, if any.
* 2nd round: Conclude the issues identified in the 1st round.

# Topic #1: Work plan (AI 12.5.1)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2014224 | Apple | 1. 3GPP RAN4#97e (Nov., 2020)
* Discuss and approve work plan for core part.
1. 3GPP RAN4#98e (Feb., 2021)
* Pre-configured MG pattern(s)
	+ Initial discussion on the mechanisms of activation/deactivation of MG following a DCI or timer based BWP switch.
	+ Initial discussion on applicability of pre-configured MG pattern(s).
* Multiple concurrent and independent MG patterns
	+ Initial discussion on maximum number of concurrent and independent MG patterns active at any time.
	+ Initial discussion on applicability of multiple concurrent and independent gap patterns.
* Network Controlled Small Gap (NCSG) specification
	+ Initial discussion on NCSG design, including VIL, ML and VIRP, for different numerologies in FR1 and FR2.
1. 3GPP RAN4#98bis-e (Apr., 2021)
* Pre-configured MG pattern(s)
	+ Further discussion on the mechanisms of activation/deactivation of MG following a DCI or timer based BWP switch.
	+ Further discussion on applicability of pre-configured MG pattern(s).
	+ Initial discussion on potential RRM impact.
* Multiple concurrent and independent MG patterns
	+ Further discussion on maximum number of concurrent and independent MG patterns active at any time.
	+ Further discussion on applicability of multiple concurrent and independent gap patterns.
	+ Initial discussion on potential RRM impact.
* Network Controlled Small Gap (NCSG) specification
	+ Further discussion on NCSG design, including VIL, ML and VIRP, for different numerologies in FR1 and FR2.
	+ Initial discussion on potential RRM impact.
1. 3GPP RAN4#99e (May., 2021)
* Pre-configured MG pattern(s)
	+ Further discussion on the mechanisms of activation/deactivation of MG following a DCI or timer based BWP switch.
	+ Further discussion on applicability of pre-configured MG pattern(s).
	+ Conclusion on RRM impact.
	+ Initial discussion on CR for corresponding RRM requirement.
* Multiple concurrent and independent MG patterns
	+ Further discussion on maximum number of concurrent and independent MG patterns active at any time.
	+ Further discussion on applicability of multiple concurrent and independent gap patterns.
	+ Conclusion on RRM impact.
	+ Initial discussion on CR for corresponding RRM requirement.
* Network Controlled Small Gap (NCSG) specification
	+ Further discussion on NCSG design, including VIL, ML and VIRP, for different numerologies in FR1 and FR2.
	+ Conclusion on RRM impact.
	+ Initial discussion on CR for corresponding RRM requirement.
1. 3GPP RAN4#100 (Aug., 2021)
* Pre-configured MG pattern(s)
	+ Further discuss and agree on the mechanisms of activation/deactivation of MG following a DCI or timer based BWP switch.
	+ Further discuss and agree on applicability of pre-configured MG pattern(s).
	+ Further discuss and agree on CR for corresponding RRM requirement.
* Multiple concurrent and independent MG patterns
	+ Further discuss and agree on maximum number of concurrent and independent MG patterns active at any time.
	+ Further discuss and agree on applicability of multiple concurrent and independent gap patterns.
	+ Further discuss and agree on CR for corresponding RRM requirement.
* Network Controlled Small Gap (NCSG) specification
	+ Further discuss and agree on NCSG design, including VIL, ML and VIRP, for different numerologies in FR1 and FR2.
	+ Further discuss and agree on CR for corresponding RRM requirement.
 |
| R4-2014628 | MediaTek inc. | 1. 3GPP RAN4 #97e meeting (November, 2020, Core part)
	* Discussions on :
		+ the work plan
	* Agreements on:
		+ Consensus on the work plan
2. 3GPP RAN4 #98e meeting (January, 2021, 1TU, Core part)
	* Discussions on :
		+ Initial discussion on RRM requirements of each objective
	* Agreements on:
		+ Technical aspects of RRM requirements of each objective
3. 3GPP RAN4 #98b-e meeting (April, 2021, 1TU, Core part)
	* Discussions on:
		+ Further discussion on RRM requirements of each objective
	* Agreements on:
		+ Remaining technical aspects of RRM requirements of each objective
4. 3GPP RAN4 #99e meeting (May, 2021, 1TU, Core part)
	* Discussions on:
		+ Further discussion on RRM requirements of each objective
	* Agreements on
		+ Initial draft CR(s) on TS38.133 and TS36.133
		+ LS to RAN2 on required signalling
5. 3GPP RAN4 #100e meeting (August, 2021, 1TU, Core part)
	* Discussion on:
		+ Further discussion on RRM requirements of each objective
	* Agreements on
		+ Finalization on RRM requirement of each objective
		+ CR(s) on TS38.133, TS36.133
6. 3GPP RAN4 #100bis meeting (October, 2021, 1TU, Performance part)
	* Discussions on:
		+ Initial discussion on test cases design for agreed RRM core requirements.
	* Agreements on
		+ Work split on CR responsible companies
7. 3GPP RAN4 #101 meeting (November, 2021, 1TU, Performance part)
	* Discussions on:
		+ Further discussion on test cases design for agreed RRM core requirements.
	* Agreements on:
		+ Initial draft CR(s) on test cases in TS38.133
8. 3GPP RAN4 #102 meeting (February, 2022, 1TU, Performance part)
	* Discussion on:
		+ Further discussion on test cases
	* Agreements on:
		+ Finalization on test cases design
		+ Agree CR(s) on test cases in TS38.133

**Proposal 1**: RAN4 to agree on the RRM workplan for “R17 NR and MR-DC measurement gap enhancements WI” as presented in this contribution. |

## Open issues summary

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

### Sub-topic 1-1 Work plan

*Sub-topic description:*

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

**Issue 1-1: Workplan proposals**

* Proposals
	+ Option 1: R4-2014224
	+ Option 2: R4-2014628
* Recommended WF
	+ Collect view in the 1st round. Rapporteur to revise the WP in the 2nd round according to received comments.
	+ Note: Discuss the WP is based on current RAN plenary schedule. The WP can be further updated if RAN Plenary extends the Rel-17 timeline.

**Issue 1-2: Whether the WP shall cover both core and performance parts**

* Proposals
	+ Option 1: Yes
	+ Option 2: No
* Recommended WF
	+ Collect views from companies

## Companies views’ collection for 1st round

### Open issues

**Issue 1-1: Workplan proposals**

Moderator encourage companies to provide view on the key milestones, e.g., LS to trigger discussion in other WG, initial CR, final CR, work split.

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| --- | --- |
| **Company** | **Comments** |
| Ericsson | For the workplan in R4-2014224, it was not completely clear to us what is envisaged by “Initial/further discussion on the mechanisms of activation/deactivation of MG following a DCI or timer based BWP switch”. Firstly the mechanisms of timer and DCI based BWP switch and the BWP configurations themselves are already set in stone and what we understand of this WI objective is associating those already defined to a certain preconfigured MG pattern (or no MG). The actual signaling to preconfigure different MG pattern for different BWP configuration is RAN2 business, and our understanding is just that the corresponding preconfigured MG pattern becomes active when the timer or DCI based switch is then done. So it is not very clear to us what RAN4 would actually need to do on this (we don’t have special requirements if RRC in release 15 reconfigures the MG patten, even though that could happen). We are fine to to discuss whatever is needed though, it is just that we do not see very much.In general we did not observe a very big difference between workplans. Apple workplan lists out objectives from the WID explicitly whereas Mediatek workplan just talks about “each objective” but the content in terms of what the work would involve in each meeting seems nearly the same. |
| Apple | In 14224 we intend to provide high level work plan for core part according to the approved objectives. Since this is RAN4 led work item, we expect RAN4 can lead the overall design for all the objectives and define corresponding RRM requirements. Usually more issues are to be identified during the work item phase. Actual work plan may need to be adjusted from time to time. At this stage we think high level work plan is acceptable. We are fine with moderator’s work plan. |
| Intel | The recommended WF is fine for us. For the work plan itself, the technical items which shall be discussed in each meeting can be in the generic way as we did in WID .  |
| CATT | We think the two options have no big difference except that the option 1 listed more details in each objective. We are fine with the recommended WF.  |
| OPPO | OK with either one. And the recommended WF is fine to us that the WP can be further updated accordingly.. |
| NEC | Ok with both the work plans as there is no major difference. |
| MTK | Thank you for the comments.From our understanding, the detail technical items don’t need to capture in the work plan. We can further discuss the detail in next meeting.  |
| Nokia | For the work plan in R4-2014628, the detail level for the core part is not sufficient, thus we propose to re-use the performance part. For the work plan in R4-2014224, it can be used as baseline for the core part. Further comments: - The discussion on scenarios or use cases for such MG enhancements is missing, which is needed before applicability is discussed. Applicability is usually discussed at a later point in time.- It does not make sense to discuss the enhancement mechanisms and conclude RRM impact and to agree them in the same meeting as the CR. Mechanisms need to be agreed at least one meeting before the core CR is planned to be agreed.- Both 38.133 and 36.133 are affected due to DC scenarios, this could be also captured.- RAN4 has primary responsibility. Thus, in the WP, communication (liaisons) with RAN2 related to procedures and signaling should be included. |
| Huawei | The recommended WF is fine. |
| ZTE | For the work plan we don’t need to go to very detail, especially for the first meeting. The work plan can be evolved depending on progress in the meetings if necessary. |
| Qualcomm | The recommended WF is reasonable. Parts of both proposals can be combined to form a more comprehensive one. Schedule-wise we have a preference for option2. |

**Issue 1-2: Whether the WP shall cover both core and performance parts**

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| --- | --- |
| **Company** | **Comments** |
| Ericsson | Since the workplan is very high level, we think it should cover core and performance parts, although clearly we will need to cover detailed performance planning eg test case list etc once the core part is complete or nearly complete. So at the level of detail in R4-2014628 a plan for performance work is fine for now. |
| Apple | No strong view. Anyway performance plan will be discussed after core part is finalized. |
| CMCC | We share similar view with Ericsson, prefer to cover both core and performance parts. |
| Intel | Yes. The overall plan for both core and performance parts is desired.  |
| vivo | Prefer the work plan to have the performance parts. It is high level anyway and better to have it since it could be updated anyway when core part is finished.  |
| CATT | Slightly prefer option 1. The general plan of performance part can be expected now and the details can be revisited after core part is finalized.  |
| OPPO | Fine with option 1.Agree that the WP of performance part will be discussed after core part is finalized. |
| NEC | Ok with both options as performance part completion may be after 6 months of core part completion. |
| MTK |  OK. The overall plan for both core and performance parts is better. |
| Nokia | In our view the workplan should cover both parts; the core part should be more detailed, whilst the performance part can still remain at high level. |
| Huawei | It is preferred that both core and performance are included in work plan. |
| ZTE | If there is official TU budget for performance part, the performance should be included. |
| Qualcomm | WP should cover both core and performance parts. |

### CRs/TPs comments collection

*Major close-to-finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| XXX | Company A |
| Company B |
|  |
| YYY | Company A |
| Company B |
|  |

## 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**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |

### CRs/TPs

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

|  |  |
| --- | --- |
| **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”* |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |