**3GPP TSG-RAN WG4 Meeting # 112 R4-241xxxx**

**Maastricht, Netherlands, August 19 ‒ August 23, 2024**

**Agenda item:** 10.1.2

**Source:** Moderator (Apple)

**Title:** Topic summary for [112][229] RRM\_Spec\_Improvement

**Document for:** Information

# Introduction

The following agreements were made in RAN4#111

* + Issue1: [], “TBD” and “FFS” clean up
		- The case, which is not an obvious editorial revision and subject to the technical discussion, should be listed separately and excluded from this exercise.
	+ Issue2: Terminology/style inconsistency, incorrect notation/symbols/abbreviation, undefined abbreviations, redundant information/notes clean up
		- If the revision results in an update in Section 3, TS38.133, it should be indicated separately.
		- The case, which is not an obvious editorial revision and subject to the technical discussion, should be excluded from this exercise.
	+ Issue3: Empty test cases clean up
		- Empty test cases in Annex A of TS 38.133 can be made void
	+ The work split among the interested companies is indicated in the attached table. Only volunteer companies in the table are expected to bring a draft CR in RAN4#112.
		- The draft CR should be based on the latest version of Rel-18 TS38.133 after RAN#104.
		- The proposed revision should be strictly limited to the aforementioned three issues.
		- If needed, a separate discussion paper can be used to summarize the untouched cases which may be subject to further technical discussion.
* In principle it is agreed to include references or mapping tables in the core part requirements that point to the relevant test cases from Rel-19
	+ FFS on the feasibility and the detailed guideline for drafting rules in future meetings.
* The summary of other identified issues, where RAN4 has not yet decided if, when and how to address, is listed as below. Depending on the discussion in both RAN4 and RAN, these issues and the associated guideline for drafting rules, can be revisited.
	+ Hierarchy of indent
	+ Suffix alignment
	+ Unused test configurations
	+ Duplicated requirements
	+ Modal verbs
* Continue using the big CR approach in RAN4
	+ FFS on the improvement of big CR approach if needed in the future meetings.

# Companies’ contributions summary

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

## Companies’ contributions summary

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc number** |  **Title** | **Company** | **Proposals / Observations** |
| [**R4-2411474**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411474.zip) | Further details on RRM Big CR approach | China Telecom | ***Proposal 1:*** *Moderator(s) to provide the WI CR structure including the section numbers and titles at the meeting together with the CR work split, and the WI CR structure can be updated with the update of the CR planning.****Proposal 2:*** *RAN4 to discuss the following proposals on improving the big CR approach, and encourage other concrete proposals on improving the big CR quality as well as alleviating delegates’ workload.** *# 1: For individual small CR drafting, accept the changes endorsed in the previous meeting, and only mark the new changes proposed in the current meeting. This may make it easier for big CR editor to focus on and implement the new changes. And the changes endorsed across multiple meetings will all be marked in the big CRs.*
* *# 2: Use of example CR for similar changes to different sections.*
* *# 3: For each individual small CR, only cover the changes in the responsible section, and not cover the changes in sections handled by other CRs.*
* *# 4: Assign two editors for each big CR, one responsible for drafting the CR and the other one responsible for cross-checking. Note that, as usual, all the delegates following the WI are still highly encouraged to carefully review the big CR.*
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| [**R4-2411475**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411475.zip) | Views on RRM specification improvement in R19 timeframe | China Telecom | ***Observation 1:*** *In the last meeting, RAN4 has reached good progress on the RRM specification improvements to be implemented for the up to Rel-18 legacy features.****Proposal 1:*** *RAN4 to further discuss the potential RRM specification improvements for Rel-19 new features, which can be implemented in the CRs for one, multiple or all Rel-19 WIs.****Observation 2:*** *The use of indentation may bring confusion or reduce the readability in some cases.****Proposal 2:*** *No-use of indentation and instead using pseudo-code for the CRs of at least one Rel-19 WI.****Observation 3:*** *Suffix misalignment does not cause any confusion as long as the sub-clause title is clear.****Proposal 3:*** *RAN4 to discuss the need of aligning the suffix for R19 new features.****Proposal 4:*** *For R19 new features, align the drafting rule at least for different requirements under the same WI:** *For core requirement, align the rule of adding similar requirements, e.g., add new sub-clause or update the existing sub-clause.*
* *For performance requirement, e.g., use differential approach (baseline + delta) or specify separate test configurations for different test cases.*
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| [**R4-2411689**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411689.zip) | Discussion on specification quality improvement for TS38.133 | LG Electronics Inc. | * ***Proposal***: RAN4 to make a principle how to be addressed for Rel-19 for following issues instead of Rel-18 specification quality improvement.
	+ Hierarchy of indent
	+ Suffix alignment
	+ Unused test configurations
	+ Duplicated requirements
	+ Modal verbs
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| [**R4-2411785**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411785.zip) | On improvements of Rel-19 RRM specifications | Qualcomm Technologies Ireland | **Proposal 1:** RAN4 to develop guidelines for drafting requirements with complex logic, including adopting a pseudo-code approach (e.g. similar to the way RAN2 procedures are specified).**Observation 1:** The hierarchy of indent could be indicated by the same approach as in TS 38.321, i.e., 1>, 2>, 3>, etc. for the indent level. **Observation 2:** Significant improvement of the readability in TS 38.133 can be achieved by applying proper indentation and reorganizing of the text without the need to rewrite it. **Observation 3:** Further optimization beyond proper indentation and text reorganization is possible.**Proposal 2:** RAN4 should select a few example sections of TS 38.133 and try to improve readability by proper indentation and restructuring of the existing text.**Proposal 3:** RAN4 should develop guidelines how parameters are defined in TS 38.133. |
| [**R4-2411969**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411969.zip) | Specification improvements in R19 timeframe | Nokia | 1. During the Rel-19 specification clean up, parameters and formulas that are included in the specification as figures should be modified into text format or formulas.

Hierarchy of indent:1. RAN4 should correct indentation errors, which are present many places in the current specification, at least in some of the sections.
2. RAN4 should start using similar numbering approach as in RAN2 when defining Rel-19 requirements, where possible.

Duplicated requirements:1. RAN4 to remove duplicated requirements and move and capture those in one existing section. This section can then be referred to from where those requirements are currently (initially) defined.
2. Any additional feature specific requirements or difference to the baseline requirements can be kept/addressed in the current sections.
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| [**R4-2411970**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411970.zip) | Specification improvements on CR handling | Nokia | 1. Utilizing a running CR process can in general help RAN4 specification quality by allowing draft CRs to be available earlier and allowing all companies more time to review the changes.

Utilizing a running CR process can help RAN4 improve the quality of new requirements developed in a WI by allowing companies to review the needed requirements and spot any missing ones as early as possible.1. RAN4 to trial the running CR process in some selected Rel-19 work items.
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| [**R4-2412673**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412673.zip) | On other issues for RRM specification quality improvement | Huawei, HiSilicon | Proposal 1: RAN4 to further discuss> Whether a reference from core/perf requirements to test cases is needed> Whether today’s mapping approach is still needed with possible improvement, or new approach is needed> If new mapping approach is needed, whether the new mapping is captured as part of the requirements, or maintained in a separate clause (e.g. Annex), or even separately from the spec.Proposal 2: RAN4 to discuss suffix alignment across the spec.> If heading of some clauses are changed, the existing references in the spec needs to be investigated• Proposal 3: RAN4 to discuss improving use of hierarchy of indent in RRM spec> Hierarchy of indent is supposed to be used to describe split cases and sub-cases of a requirement> Hierarchy of indent is supposed to be used to describe parameters of requirements> Setup drafting rule for formats and bullet marks for different indentation levelsExample: First level indentationo Second level indentation- Third level indentation• Proposal 4: RAN4 to discuss elimination of duplicated requirements case-by-case> Companies can bring in proposals in contribution driven manner> The changes need to be reviewed carefully to avoid any technical change |
| [**R4-2412674**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412674.zip) | On CR handling for RRM specification quality improvement | Huawei, HiSilicon | Sufficient preparation before drafting> Rapporteur or Moderator can prepare a table for mapping the requirements of a WI to the specific clauses in the spec,e.g. as part of CR work split.> Rapporteur or Moderator can appoint REFERENCE draftCRs, e.g. for similar requirements or test cases.• Sufficient drafting and review time> Earlier start on CR discussion rather than the last 2 meetings, e.g. the preparation work in the above bullet is expectedto be done before the second last meeting, leaving the last 2 meetings for drafting and reviewing |
| [**R4-2413394**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413394.zip) | On RRM specification quality improvement – general aspects | Ericsson | * ***Proposal 1 (Mapping purpose)****: It is clarified that the mapping is for information purpose only and presents the information from the test cases description in a more compact and structured way.*
* ***Proposal 2 (Mapping)****: Given the informative purpose of the mapping and its potential length, including such mapping in a new Annex D (informative) of TS 38.133 may be preferred.*
* ***Proposal 3 (Mapping format)****: The mapping can be in a table format and contain, e.g., <requirement clause ID><test case clause IDs> columns. If needed, the column <test case clause IDs> can be further broken into sub-columns, e.g., for SA, EN-DC, and NE-DC.*
* ***Proposal 4 (Mapping contents)****: The mapping can be focus on core requirements and corresponding test cases, but potentially may also be extended to performance requirements and corresponding test cases.*
* ***Proposal 5 (Mapping maintenance)****: Upon each test case introduction, the mapping can be updated with the corresponding reference.*
* ***Proposal 6 (RAN5 LS)****: Inform RAN5 by sending an LS to RAN5 listing the relevant RAN4 CRs agreed during this RAN4 framework on RRM specification quality improvement.*
* ***Proposal 7 (modal verbs)****: RAN4 to review the use of modal verbs in normative text in requirements and make corrections as needed.*
* ***Proposal 8 (undefined abbreviations)****: RAN4 to review the used but undefined abbreviations and update clause 3.3 of TS 38.133 upon the need, e.g., for the following cases:*
	+ *“PRB” or “RB”: both are used, choose one of them? None of them is in Abbreviation of TS 38.133,*
	+ *“BW”: used, but not in the Abbreviation section in TS 383.133,*
	+ *“TRS”: is used but not defined in Abbreviations section in TS 38.133.*
* ***Proposal 9 (general big or non-editorial changes)****: Any medium- or large-scale changes, including restructuring, to the existing NR requirements shall be avoided.*
* ***Proposal 10 (general big or non-editorial changes)****: Any non-editorial changes to the existing NR requirements shall be avoided, unless really necessary for completeness of the specification or requested by RAN5, e.g., test cases clean up.*
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| [**R4-2413395**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413395.zip) | On RRM specification quality improvement – CR handling | Ericsson | * ***Proposal 1****: A big maintenance CR running over the first quarter after closing the core WI.*
* ***Proposal 2****: Allocate separate AI/TU for discussing and finalizing the feature CRs after the technical discussions are over.*
	+ *Depending on the feature and the amount of specification impact, the time allocation can vary and can be up to the entire meeting week in the worst case.*
* ***Proposal 3****: WI Rapporteurs present a CR implementation plan (e.g., similar to the workplan, but focused on CR handling for the WI), discuss, and get it approved. This applies also when there is no work split.*
* ***Proposal 4****: For situations where similar text needs to be repeated across multiple sections (or specifications), the general text could firstly be agreed as a reference and then used across different sections/CRs/specifications to improve consistency.*
* ***Proposal 5****: Creating a checkbox list of key specification editing aspects to remember and check while preparing CRs and/or extend the Forword section of the specification to ensure consistent usage of frequently used terms, notation, abbreviation, CA configuration vocabulary, etc.*
* ***Proposal 6****: Creating a 3GPP repository of figure templates, editable diagrams, and formulae. The link with templates could be included in the checkbox list described in Proposal 5.*
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# Topic #1: Identified Issues in RAN4#111

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

* references or mapping tables in the core part requirements that point to the relevant test cases from Rel-19
	+ Huawei: If new mapping approach is needed, whether the new mapping is captured as part of the requirements, or maintained in a separate clause (e.g. Annex), or even separately from the spec.
	+ Ericsson:
		- It is clarified (in the specification) that the mapping is for information purpose only and presents the information from the test cases description in a more compact and structured way.
		- Given the informative purpose of the mapping and its potential length, including such mapping in a new Annex D (informative) of TS 38.133 may be preferred.
		- *The mapping can be in a table format and contain, e.g., <requirement clause ID><test case clause IDs> columns. If needed, the column <test case clause IDs> can be further broken into sub-columns, e.g., for SA, EN-DC, and NE-DC.*
		- *The mapping can focus on core requirements and corresponding test cases, but potentially may also be extended to performance requirements and corresponding test cases.*
		- *Upon each test case introduction, the mapping can be updated with the corresponding reference*
* Hierarchy of indent
	+ China Telecom: No-use of indentation and instead using pseudo-code for the CRs of at least one Rel-19 WI. The use of indentation may bring confusion or reduce the readability in some cases
	+ Qualcomm: RAN4 should select a few example sections of TS 38.133 and try to improve readability by proper indentation and restructuring of the existing text.
	+ Nokia: RAN4 should correct indentation errors, which are present many places in the current specification, at least in some of the sections. RAN4 should start using similar numbering approach as in RAN2 when defining Rel-19 requirements, where possible.
	+ Huawei: Hierarchy of indent is supposed to be used to describe split cases and sub-cases of a requirement. Hierarchy of indent is supposed to be used to describe parameters of requirements. Setup drafting rule for formats and bullet marks for different indentation levels
	+ LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change
* Suffix alignment
	+ China Telecom: Suffix misalignment does not cause any confusion as long as the sub-clause title is clear. RAN4 to discuss the need of aligning the suffix for R19 new features.
	+ Huawei: If heading of some clauses are changed, the existing references in the spec needs to be investigated
	+ LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change
* Unused test configurations
	+ LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change
* Undefined abbreviations
	+ Ericsson: RAN4 to review the used but undefined abbreviations and update clause 3.3 of TS 38.133 upon the need, e.g., for the following cases:
		- “PRB” or “RB”: both are used, choose one of them? None of them is in Abbreviation of TS 38.133,
		- “BW”: used, but not in the Abbreviation section in TS 383.133,
		- “TRS”: is used but not defined in Abbreviations section in TS 38.133.
* Duplicated requirements
	+ China Telecom
		- For core requirement, align the rule of adding similar requirements, e.g., add new sub-clause or update the existing sub-clause.
		- For performance requirement, e.g., use differential approach (baseline + delta) or specify separate test configurations for different test cases.
	+ Nokia: RAN4 to remove duplicated requirements and move and capture those in one existing section. This section can then be referred to from where those requirements are currently (initially) defined. Any additional feature specific requirements or difference to the baseline requirements can be kept/addressed in the current sections.
	+ Huawei: The changes need to be reviewed carefully to avoid any technical change
	+ Ericsson:
		- For situations where similar text needs to be repeated across multiple sections (or specifications), the general text could firstly be agreed as a reference and then used across different sections/CRs/specifications to improve consistency.
		- Any medium- or large-scale changes, including restructuring, to the existing NR requirements shall be avoided.
		- Any non-editorial changes to the existing NR requirements shall be avoided, unless really necessary for completeness of the specification or requested by RAN5, e.g., test cases clean up.
	+ LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change
* Modal verbs
	+ RAN4 to review the use of modal verbs in normative text in requirements and make corrections as needed (Ericsson)
	+ LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change

# Topic #2: On CR

*Moderator: since we have agreed in RAN#111 to continue big CR approach, the proposals beyond this approach will be deprioritized*

* Rapporteur or Moderator can prepare a table for mapping the requirements of a WI to the specific clauses in the spec (Huawei)
* Assign multiple editors for cross-check (China Telecom)
* WI Rapporteurs present a CR implementation plan (e.g., similar to the workplan, but focused on CR handling for the WI), discuss, and get it approved. (Ericsson)
* Reference draftCR (China Telecom, Huawei)
* Early start on CR discussion (e.g. >2 meeting cycles) (Huawei)
* A big maintenance CR running over the first quarter after closing the core WI. Allocate separate AI/TU(Ericsson)

# Topic #3: New Proposals

*Moderator: to maintain the efficiency and reasonable workload, the proposals beyond the list of identified issues can be discussed after the idenfied issue is resolved. Exceptional case can be considered based on the consensus.*

* Nokia: During the Rel-19 specification clean up, parameters and formulas that are included in the specification as figures should be modified into text format or formulas.
* Qualcomm: RAN4 to develop guidelines for drafting requirements with complex logic, including adopting a pseudo-code approach (e.g. similar to the way RAN2 procedures are specified). RAN4 should develop guidelines how parameters are defined in TS 38.133.
* Ericsson: Creating a checkbox list of key specification editing aspects to remember and check while preparing CRs and/or extend the Forword section of the specification to ensure consistent usage of frequently used terms, notation, abbreviation, CA configuration vocabulary, etc.
* Ericsson: Creating a 3GPP repository of figure templates, editable diagrams, and formulae. The link with templates could be included in the checkbox list described in Proposal 5.
* Ericsson: Inform RAN5 by sending an LS to RAN5 listing the relevant RAN4 CRs agreed during this RAN4 framework on RRM specification quality improvement.