**3GPP TSG-RAN WG4 Meeting # 98-bis-e R4-2105812**

**Electronic Meeting, 12th – 20th April, 2021**

**Agenda item:** 5.6.1, 5.6.2.2.1, 5.6.2.2.3, 5.6.2.2.6

**Source:** Moderator (ZTE Corporation)

**Title:** Email discussion summary for [98-bis-e][210] NR\_RRM\_Enh\_2

**Document for:** Information

# Introduction

TDocs submitted to the following agenda items will be treated:

- 5.6.1 RRM core requirements maintenance (38.133)

- 5.6.2.2.1 SRS carrier switching requirements

- 5.6.2.2.3 CGI reading requirements with autonomous gap

- 5.6.2.2.6 Mandatory MG patterns

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

* 1st round: Companies provide comments on draft CRs and discuss open issues
* 2nd round: Finalize on the open issues. Check if revised draft CRs can be endorsed.

# Topic #1: Core Maintenance

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2104481 | ZTE Corporation | **Proposal 1: Clarify that the interruption requirements for SRS carrier based switching only apply for same frequency ranges but not across different frequency ranges.**  **Proposal 2: The clarification shall also be added to R17 spec through a Cat A CR.** |
| R4-2106611 | vivo, Qualcomm, Huawei, HiSilicon, MediaTek Inc., Apple, Nokia | Draft CR to 38.133 correction on SRS carrier based switchig core requirements  Summary of change:   * Removed requirements for NR SRS carrier based switching between FR1 and FR2 |
| R4-2106612 | Vivo | *Observation 1: SRS carrier switching between FR1 and FR2 was never discussed in RF session.*  ***Proposal 1: Remove interruption requirements for SRS carrier switching between FR1 and FR2.***  ***Proposal 2: No new UE capability is needed, at least in R16, to indicate the UE is capable of SRS carrier switching between FR1 and FR2.***  ***Proposal 3: LS to RAN2 to clarify that UE capability*** *SRS-SwitchingTimeNR* ***is to indicate interruption time during RF retuing for SRS carrier switching between a carrier on one band and another (PUSCH-less) carrier on the other band in the same frequency range to transmit SRS.*** |
| R4-2106930 | Huawei, HiSilicon | Correction on SRS carrier switching  Summary of change:   1. ENDC, revised the condition to “the SRS switching is not colliding with any SSB/CSI-RS based measurements in SCG”; 2. In SA, adding the condtion “the SRS switching is not colliding with any SSB/CSI-RS based measurements”; 3. In NEDC, adding the condtion “the SRS switching is not colliding with any SSB/CSI-RS based measurements in MCG”; 4. In NRDC, adding the condtion “the SRS switching is not colliding with any SSB/CSI-RS based measurements”; |

## 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 Remove core requirements on SRS carrier switching between FRs

*Sub-topic description:*

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

**Issue 1-1: Whether to remove interruption requirements for SRS carrier switching between FR1 and FR2**

* Proposals
  + Option 1: Remove interruption requirements for SRS carrier switching between FR1 and FR2 (ZTE, vivo, Qualcomm, Huawei, HiSilicon, MediaTek Inc., Apple, Nokia)
    - Option 1a: The clarification shall also be added to R17 spec through a Cat A CR. (ZTE)
* Recommended WF
  + Can we go with Option 1 / Option 1a?

**Issue 1-2: New UE capability**

* Proposals
  + Option 1: No new UE capability is needed, at least in R16, to indicate the UE is capable of SRS carrier switching between FR1 and FR2. (vivo)
* Recommended WF
  + Can we go with Option 1?

**Issue 1-3: Send LS to RAN2 on UE capability SRS-SwitchingTimeNR**

* Proposals
  + Option 1: LS to RAN2 to clarify that UE capability SRS-SwitchingTimeNR is to indicate interruption time during RF retuing for SRS carrier switching between a carrier on one band and another (PUSCH-less) carrier on the other band in the same frequency range to transmit SRS. (vivo)
* Recommended WF
  + Can we go with Option 1?

## Companies views’ collection for 1st round

### Open issues

*One of the two formats, i.e. either example 1 or 2 can be used by moderators.*

**Example 1**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Issue 1-1:  Issue 1-2:  Issue 1-3: |
| ZTE | Issue 1-1: Support Option 1 and 1a.  Issue 1-2: Support Option 1. No new UE capability is needed as no UE currently supports this. |
| Huawei | Issue 1-1: Support option 1.  Issue 1-2: Support option 1. |
| Nokia | Issue 1-1: Fine with the recommended WF.  Issue 1-2: We understood such capability is needed only if some UE is capable of SRS carrier switching between FR1 and FR2. If this is not the case, probably no need to introduce new capability for now.  Issue 1-3: We don’t see it necessary to send LS to RAN2 or change the existing capability. Currently the problem arises because of no support from UE vendors. We can remove the corresponding requirements in RAN4, but nothing is wrong in the existing UE capability srs-switchingTimeNR. |
| QC | Issue 1-1: Support option 1/1a.  Issue 1-2: Support option 1.  Issue 1-3: Support option 1. |
| Apple | Issue 1-1: Support option 1.  Issue 1-2: Support option 1. |
| MediaTek | Issue 1-1: Support option 1.  Issue 1-2: Support option 1. |
| Ericsson | Issue 1-1: We are fine with Option 1.  Issue 1-2: Option 1.  Issue 1-3: We do not think it is necessary to send LS to RAN2. The existing capability as such is not causing problems. |
| OPPO | Issue 1-1: Support option 1.  Issue 1-2: Support option 1. |
| vivo | Issue 1-1: Support Option 1.  Issue 1-2: Support Option 1.  Issue 1-3: We see the benefit to clarify UE capability by sending LS to RAN2 so that in Rel-16 there are consistent UE capability and corresponding requirements. Meanwhile the more important part is removing unrealistic requirements. If agreements can be made for Issue 1-1 and Issue 1-2, it is fine for us not to send LS. |
| Intel | Issue 1-1: Option 1. DraftCR is endorsed. And cat A CR needs to be submitted in May together with formal CR.  Issue 1-2: Option 1.  Issue 1-3: we are OK to send the LS. |

### CRs/TPs comments collection

*For close-to-finalize Wis and maintenance work, comments collections can be arranged for TPs and CRs. For ongoing Wis, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2106611 | Ericsson: OK |
| Company B |
|  |
| R4-2106930 | Nokia: Is the addition to the CR the same as the condition in following bullet? It seems current conditions for applicability is sufficient. Hence, we do not see a need for this CR.  - for UE, which does not support simultaneous reception and transmission for inter-band TDD CA specified in TS 38.331 [2], and is compliant to the requirements for inter-band CA with uplink in one NR band and without simultaneous Rx/Tx specified in TS 38.101 [5], the SRS transmission are not simultaneously scheduled with DL SSB/CSI-RS for L3 or L1 measurements transmission on other carriers. |
| QC: We believe this CR is needed. The description in the CR is better aligned to the agreed WF and making EN-DC and other sections consistent. The quoted text in Nokia’s comment has additional conditions and leave the coverage of the statement different than the agreement of prioritizing measurement over SRS carrier switching. |
| Ericsson: we have some concern for the NR-DC case. The coordination between MN and SN is most likely not tight enough to guarantee that there is no SRS switching in MCG that impacts measurements in SCG, and vice versa. |

## 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.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Issue 1-1** | *Tentative agreements:* Remove interruption requirements for SRS carrier switching between FR1 and FR2.  *Recommendations for 2nd round:* No need to discuss. |
| **Issue 1-2** | *Tentative agreements:* No new UE capability is needed, at least in R16, to indicate the UE is capable of SRS carrier switching between FR1 and FR2.  *Recommendations for 2nd round:* No need to discuss. |
| **Issue 1-3** | *Tentative agreements:* No need to send LS to RAN2 since agreements are made for Issue 1-1 and 1-2 within RAN4.  *Recommendations for 2nd round:* No need to discuss. |

### CRs/TPs

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

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2106611 | *endorsed* |
| R4-2106930 | *revised* |

## Discussion on 2nd round (if applicable)

No open issues left, companies please discuss revised CRs using separate email threads directly.

# Topic #2: SRS carrier switching requirements (Perf)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **[R4-2104899](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104899.zip)** | Qualcomm, Inc. | 38.133 CR on SRS test cases  Summary of change:  Update the SRS carrier switching test cases |
| **[R4-2106613](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106613.zip)** | vivo | Draft CR to 38.133 correction on SRS carrier based switching test cases  Summary of change:   * Changed SRS transimission from periodic to aperiodic * Corrected SRS configurations * Added missing test parameters |

## Open issues summary

Companies are encouraged to provide feedback directly for the two draft CRs.

## Companies views’ collection for 1st round

### 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** |
| **[R4-2104899](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104899.zip)** | QC: this CR can be merged to 6613. |
| Ericsson: CR is OK. |
|  |
| **[R4-2106613](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106613.zip)** | Anritsu: Could you clarify the reason to change SRS transmission from periodic to aperiodic? If we see removed Table A.4.5.2.8.1-4 or associated reference table A.3.24-1, it seems resource type is defined as periodic. Anyway we would like to suggest merging contents with R4-2104899. |
| QC: Based on our understanding, the SRS transmission is aperiodic, triggered by TE. |
| vivo: Thanks Qualcomm and Anritsu for the suggestion. 4899 will be merged into revision of 6613.  To Anritsu: In the test aperiodic SRS transmission should be triggered as the interruption requirements are specified based on single SRS transmission. The SRS resources are periodic so that UE could find a suitable resource for the single SRS transmission after SRS carrier switching is triggered.  Furthermore, according to clause 6.2.1.3 in TS 38.214, aperiodic SRS transmission is triggered in DCI format 2-3 for SRS carrier switching. |

## Summary for 1st round

### CRs/TPs

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

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| **[R4-2104899](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104899.zip)** | *merged* |
| **[R4-2106613](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106613.zip)** | *revised* |

## Discussion on 2nd round (if applicable)

No open issues left, companies please discuss revised CRs using separate email threads directly.

# Topic #3: CGI reading requirements with autonomous gap (Perf)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **[R4-2104568](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104568.zip)** | MediaTek inc. | DraftCR on SA CGI identification of E-UTRA neighbor cell Test Case  Summary of change:  In R4-2017363 it is agreed to add 30ms LTE power up time for CGI reading delay of LTE target cell. Include the 30ms LTE power up time in this reporting delay. |
| **[R4-2104900](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104900.zip)** | Qualcomm, Inc. | CR: CGI reading TCs  Summary of change:  Update the CGI reading test cases |

## Open issues summary

Companies are encouraged to provide feedback directly for the two draft CRs.

## Companies views’ collection for 1st round

### 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** |
| **[R4-2104568](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104568.zip)** | Huawei: OK with the change, but some other test requirements need to be updated also, e.g. the highlighted ones:  The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.  …   * The UE shall be scheduled continuously throughout the test, and from the start of T3 until 170 ms at least the following number of ACK/NACK shall be detected as being transmitted by the UE.Config 1, 2, 4, 5: 80 ACK/NACK * Config 3, 6: 160 ACK/NACK   The rate of correct events observed during repeated tests shall be at least 90%.  NOTE: The overall ACK/NACK number is caused by two parts. Firstly, at least 60/120 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Clause 9.4.7.1. Secondly, given that continuous DL data allocation, additional 20/40 ACK/NACK shall be sent from the start of T3 until 170 ms excludes 150 ms for identifying the cell global identifier of cell 2. |
| Nokia: fine with the change. R4-2104900 also includes the change. It will be better to merge together. |
| QC: Can merge to R4-2104900 |
| MediaTek: We are fine to merge our modification in QC’s CR R4-2104900 and we would like to be a co-source company in that CR if you do not mind. |
| Ericsson: CR is OK. |
| **[R4-2104900](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104900.zip)** | Huawei:  Change #1 is fine.  Change #2 is overlapping with 4568, and we prefer to define the interruption requirements in number of ACK/NACKs, as this is how core requirements are defined in 8.2.2.2.15.  Change #3 is fine, except that the clause number referred for interruption requirement should be 8.2.2.2.14. |
| Nokia: OK |
| QC: We agree with Huawei’s comment on change 2 and will revise accordingly. |
| Ericsson: CR is OK (goes for the by QC proposed revision as well) |

## Summary for 1st round

### CRs/TPs

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

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| **[R4-2104568](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104568.zip)** | *merged* |
| **[R4-2104900](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104900.zip)** | *revised* |

## Discussion on 2nd round (if applicable)

No open issues left, companies please discuss revised CRs using separate email threads directly.

# Topic #4: Mandatory MG patterns (Perf)

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| **[R4-2104480](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104480.zip)** | ZTE Corporation | **Proposal 1: R15 test cases on mandatory gap patterns shall be inherited completely to R16 specifications, and R16 UEs shall pass all test cases.** |
| **[R4-2104862](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104862.zip)** | Apple | **Observation 1:** besides newly introduced tests configured with #2, #3 and #17, there are still quite a lot of existing test cases configured with “legacy” MG patterns.  **Observation 2:** if the UE can successfully pass the new test case configured new mandatory gap pattern, it can also survive the corresponding test case with “legacy” MG pattern.  **Proposal 1: For the scenario which is without SSB time index detection and when DRX is not used, the Rel-15 MG related test cases can be skipped if UE passes the Rel-16 new introduced MG related test cases for the same scenario. For other scenarios, no Rel-15 test cases can be skipped.** |
| **[R4-2104863](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104863.zip)** | Apple | CR for test applicability for mandatory gap patterns  Summary of change: Introduce tepplicabilityity for test cases with different MG pattern to allow UE to skip some existing test cases if it can pass the new test cases. |
| **[R4-2104947](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104947.zip)** | CMCC | ***Proposal 1: from our point of view, we prefer option 2, but we are also fine with option 1 to move forward.*** |
| **[R4-2106886](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106886.zip)** | Ericsson | **Observation 1 :** The newly defined test cases for mandatory measurement gap take approximately 10 minutes each for FR1 and FR2 which is an extremely small part of the total UE RRM certification testing time  **Observation 2 :** It is not desirable to eliminate test coverage based on assumptions and pre-conceptions about likely failure modes in a very complicated implementation and system such as NR  **Observation 3 :** Test case lists are developed and maintained by many bodies and organisations within the industry who do not expect that test coverage will be removed in a future release  **Observation 4 :** The business incentive to develop and certify test implementation is less if they are only used for testing a single release of UE  **Proposal 1 : A release 16 UE is expected to pass tests with release 15 MG patterns, and additionally the tests defined in [1] and [2] for release 16 mandatory gap patterns. This corresponds to Option 2 in the WF.** |
| **[R4-2106931](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106931.zip)** | Huawei, HiSilicon | **Proposal: Introduce the limited number of test cases for R16 mandotory MG and no R15 test cases are skipped:**  **- SA: inter frequency measurement without SSB index detection and with no DRX (FR1 and FR2)**  **- ENDC: inter frequency measurement without SSB index detection and with no DRX (FR1 and FR2)**  **Where**   * + - **#3 for per-UE gap capable UE in FR1**     - **#2 for per-FR gap capable UE in FR1**     - **#17 in FR2** |

## 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 4-1 Allowing UEs to skip R15 TCs?

*Sub-topic description:*

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

**Issue 4-1: Whether to allow R16 UEs to skip some of R15 TCs**

* Proposals
  + Option 1: No (ZTE, CMCC, Ericsson, Huawei)
  + Option 2: Partly. For the scenario which is without SSB time index detection and when DRX is not used, the Rel-15 MG related test cases can be skipped if UE passes the Rel-16 new introduced MG related test cases for the same scenario. For other scenarios, no Rel-15 test cases can be skipped. (Apple, CMCC)
* Recommended WF
  + Discussion is needed

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Issue 4-1: |
| ZTE | Issue 4-1: Support Option 1. We do not see clear logic why R15 TCs shall be skipped since this is not the common practice. To safeguard the UE performance and then the overall network performance, we don’t think skipping TCs is a good idea. |
| Huawei | Issue 4-1: Support option1.  We understand the motivation of option 2 is to reduce test number, however this may have potential risk if some fundamental R15 test cases are untested. The event triggered reporting test without SSB time index and without DRX is one critical test to be verified. In R15, pattern #0 for per UE gap capable UE or pattern#4 for per FR gap capable UE is configured. As we know the MGL length of pattern #0 and pattern#2 is different. If only pattern#2 is verified by R16 UE, the performance of MG pattern #0 is not verified for the same scenario. |
| Nokia | Issue 4-1: Support Option 1. We have same view as expressed earlier that there seems not to be any reasoning why Rel-15 test cases could be skipped because new test cases for a new mandatory feature is introduced in Rel-16. |
| QC | Issue 4-1: Support option 2  We address the concern from the proponents of option 1 in the following:  #1 Testing time difference is not large  Despite the fact that the individual tests are not long, option 2 can saves a lot of testing time, considering that multiple entities (UE vendor internal, OEM etc) are doing multiple rounds of the RRM tests.  **#**2 Test coverage  From measurement gap perspective, the test coverage is still complete with the proposed applicability rule. We use the example given in the contribution to explain. The issue “UE could easily have a bug in the implementation of measurement starting or ending time which only became apparent when the effective gap length was not a multiple of 5ms” is easily caught by any test using gap pattern 0 and MGL 6ms in R15, as R4-2104862 pointed out, there are still plenty of them after the applicability rule is agreed.  #3 R15 test maintenance  Option 2 isn’t to remove the test, this is just an applicability rule to skip the old release tests for new release UEs. The tests are still there for R15 UEs. Skipping SC tests are a more general approach which has significant impact. However, the proposed applicability rule is specifically targeting mandatory gap pattern, and for any applicability rule based on similar test configuration argument should be treated case by case. Agreeing this applicability rule doesn’t mean the “similar test configuration” argument to introduce applicability rule can immediately apply to other test cases except mandatory gap pattern tests discussed in R16.  #4 Business incentives to implement test  The R15 tests, as Ericsson argued in R4-2106686, are developed and currently maintained by many bodies already. We are not introducing applicability rule to new tests that are still required different entities to develop it. The applicability rule applies to existing tests, therefore, business incentive of developing tests is not a concern here. |
| Apple | Issue 4-1: Support option 2  @ZTE: we have clarified the logic and elaborated the feasibility many times in recent RAN4 meeting. In short, besides newly introduced tests configured with #2, #3 and #17, there are still quite a lot of existing test cases configured with “legacy” MG patterns. Test coverage of legacy pattern can still be guaranteed in option 2. Besides, if the UE can successfully pass the new test case configured new mandatory gap pattern, it can also survive the corresponding test case with “legacy” MG pattern.In fact we had quite a lot of similar example in test history in 3GPP. If UE can survive a more demanding test then UE can skip the corresponding less demanding test. For instance, when 3CC CA was introduced, UE needs to pass all the 3CC CA tests if supported. Later when 4CC CA was introduced, people defined test applicability to allow UE to skip 3CC CA tests and only focus on 4CC CA tests.  @Huawei, we disagree with the statement “As we know the MGL length of pattern #0 and pattern#2 is different. If only pattern#2 is verified by R16 UE, the performance of MG pattern #0 is not verified for the same scenario.” First of all, pattern#2 is with 3ms MGL while pattern#0 is with 6ms MGL. They have the same MGRP. From UE implementation point of view how can the UE which can meet measurement requirement with 3ms MGL not capable of meeting the same measurement requirement with 6ms MGL, considering other test parameters are the same. Secondly, as mentioned in our contribution, there are still quite a lot of existing tests configured with pattern#0, and we only propose to let UE skip one of them.  @Nokia, similar response as that to ZTE. |
| MTK | Issue 4-1: Support option 2  If UE can pass the test of shorter MGL, then UE can definitely survive in the scenario of longer MGL. We do not see any strong argument to support the necessity of option 1. |
| Ericsson | Option 1.  It is not part of the objectives in the WID to reduce the Rel-15 test case coverage or to identify which of the Rel-15 test cases would be candidates for skipping.  We note that since RAN4#98e there has been one plenary meeting where proponents could have updated the WID, but have chosen not to do so. We therefore suggest that RAN4 stops this discussion now as it is outside the scope of the WID.  As pointed out previous meeting there is a risk for already deployed networks if we get UEs in the field that have a reduced Rel-15 test coverage. The proper way to manage the test scope is in our view to be careful when incrementally adding test cases for new functionality in later releases. It is not a good practice to start removing bricks from the foundation once the house has been built. |
| OPPO | Support option 2. We also agree that UE can skip the corresponding less demanding test if UE can survive a more demanding test. Option 2 can save testing time without losing test coverage. |

### CRs/TPs comments collection

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

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| **[R4-2104863](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104863.zip)** | Huawei: depending on the conclusion of issue 4-1 |
| 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.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Issue 4-1** | *Candidate options:*   * + Option 1: No (ZTE, CMCC, Ericsson, Huawei, Nokia)   + Option 2: Partly. For the scenario which is without SSB time index detection and when DRX is not used, the Rel-15 MG related test cases can be skipped if UE passes the Rel-16 new introduced MG related test cases for the same scenario. For other scenarios, no Rel-15 test cases can be skipped. (Apple, CMCC, Qualcomm, MediaTek, OPPO)   *Recommendations for 2nd round: Continue the discussion.* |

### CRs/TPs

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

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| **[R4-2104863](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104863.zip)** | *revised* |

## Discussion on 2nd round (if applicable)

### Sub-topic 4-1 Allowing UEs to skip R15 TCs?

**Issue 4-1: Whether to allow R16 UEs to skip some of R15 TCs**

* Proposals
  + Option 1: No (ZTE, CMCC, Ericsson, Huawei, Nokia)
  + Option 2: Partly. For the scenario which is without SSB time index detection and when DRX is not used, the Rel-15 MG related test cases can be skipped if UE passes the Rel-16 new introduced MG related test cases for the same scenario. For other scenarios, no Rel-15 test cases can be skipped. (Apple, CMCC, Qualcomm, MediaTek, OPPO)
* Recommended WF
  + The moderator suggests companies to reach consensus on whether this is within or out of scope of the WI and then discuss the technical contents.

## Companies views’ collection for 2nd round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | Issue 4-1: Before going into the technical details, our opinion is that the discussion is currently out of scope of the WI. Thus, we think that at least we shouldn’t discuss it here under this WI. |
| Apple | Issue 4-1: we don’t think option 2 is out of the scope. The scope of this WI includes performance requirements for newly defined core requirement. Option 2 is not to remove any existing test cases, but introduce new test applicability. In our understanding, new test applicability definitely falls into the scope of performance requirements. |
| Ericsson | Issue 4-1: In our view, removing the need by Rel-16 UEs to pass the full current suite of Rel-15 mandatory gaps test cases is outside the scope of the WID. We have strong technical concern which we believe is valid (see first round comments). We note that other network vendors also have concern. We therefore think that if RAN4 is to take the unconventional step of removing mandatory test cases from one release to another, it shall at least be captured in the concerned WID before doing so.  @Apple: Regarding your comment “Option 2 is not to remove any existing test cases, but introduce new test applicability.” This is just semantics – the effect you want to achieve is to allow UE to skip certain test cases that are mandatory in an earlier release.  [Apple] we have quite a lot of examples in history that UE is allowed to skip some mandatory test case in earlier release if it can survive the more demanding tests introduced in the later release. Thus this is not a compelling argument. |
| QC | @Ericsson: We’ve tried to address your technical concern one by one in the previous comment, but haven’t seen further discussion in your comment. We want to re-iterate that there are a lot of applicability rules, e.g. demod 2Rx and 4Rx test applicability rule, which allows UE to skip mandatory 2Rx tests when 4Rx tests are passed. These rules are introduced without a WID specifically referring to it. Therefore, we agree with Apple that this is still within scope, and we would like to know your feedback toward our comment addressing your technical concerns. |
| Nokia | Issue 4-1: To address Apple and QC comments: we recognize the concern related to testing time and effort for the UE. However, our concern is that if a UE supporting the new mandatory GPs enters a cell which only support legacy mandatory GPs, the UE has not been tested against the used GPs.  [Apple] as mentioned in our contribution, there are still quite many other test cases configured with legacy mandatory GPs  And from network point of view it would be the same as the test cases has been removed.  Under discussion is addition of 3 new test cases due to having agreed new mandatory GPs from Rel-16. 2 test cases have been introduced with the aim at testing UE performance when configured with GP#2 and GP#3. Hence, when UE is applying MGL of 3ms. Testing UE performance when using MGL=3ms is not included in any of the existing test cases. Therefore. it is well justified to have these test cases. Not testing 6ms MGL because 3ms MGL is tested leaves the 6ms MGL un-tested which seems unjustified accounting that many existing deployments use 6ms MGL. It has been argued that if the UE can fulfil the requirements using a 6ms MGL it can also fulfil the requirements when using a 3ms MGL. We do not see a one-to-one mapping here as when a 6ms MGL is configured the UE may have to measure more SSBs within the gap than if MGL of 3ms is configured. Another new test case has been agreed for testing GP#17. Also, here the difference is the MGL compared to existing tests.  [Apple] we don’t understand why “when a 6ms MGL is configured the UE may have to measure more SSBs within the gap than if MGL of 3ms is configured”. Only 1 SSB is configured for both legacy test and new test. |
| Apple | Response added inline above. Overall, we can have millions of different combinations of L1, L2 and L3 parameters configured in practice. But we don’t define test cases for all the possible configurations. It is reasonable to have limited tests as long as the test coverage can be deemed as fulfilled if UE can survive more demanding tests, and that is what people have actually done in RAN4. |

# Recommendations for Tdocs

## 1st round

**New tdocs**

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

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-2106611 | Draft CR to 38.133 correction on SRS carrier based switching core requirements | vivo, Qualcomm, Huawei, HiSilicon, MediaTek Inc., Apple, Nokia | *endorsed* |  |
| R4-2106930 | Correction on SRS carrier switching | Huawei, HiSilicon | *revised* |  |
| **[R4-2104899](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104899.zip)** | CR: SRS carrier switching TCs | Qualcomm, Inc. | *merged* |  |
| **[R4-2106613](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106613.zip)** | Draft CR to 38.133 correction on SRS carrier based switching test cases | vivo | *revised* |  |
| **[R4-2104568](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104568.zip)** | DraftCR on SA CGI identification of E-UTRA neighbor cell Test Case | MediaTek inc. | *merged* |  |
| **[R4-2104900](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104900.zip)** | CR: CGI reading TCs | Qualcomm, Inc. | *revised* |  |
| **[R4-2104863](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104863.zip)** | CR for test applicability for mandatory gap patterns | Apple | revised |  |

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** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-2105762 | Correction on SRS carrier switching | Huawei, HiSilicon | *Endorsed* |  |
| **R4-2105763** | Draft CR to 38.133 correction on SRS carrier based switching test cases | vivo | *Endorsed* |  |
| R4-2105764 | CR: CGI reading TCs | Qualcomm, Inc. | *Endorsed* |  |
| R4-2105765 | CR for test applicability for mandatory gap patterns | Apple |  | *Not available after the deadline. Actually, the related open issue is quite controversial and there is little hope to converge during this meeting. So, the original CR can be postponed.* |
| R4-2105761 | WF on R16 RRM enhancement part 2 – SRS Carrier switching, CGI reading, Mandatory MG patterns | ZTE Corporation | Approved |  |

Notes:

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   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents