3GPP TSG-RAN WG4 Meeting #112 R4-2411799

Maastricht, Netherlands, 19th – 23rd August, 2024

**Agenda item:** 5.14.3

**Source:** Moderator (Apple)

**Title:** Topic summary for [112][204] NR\_RRM\_enh3

**Document for:** Information

# Introduction

This topic summary includes RRM core requirements maintenance (5.14.1) and RRM performance requirements maintenance (5.14.2).

*List of candidate target of discussions for this topic.*

* Mainly discuss on
  + Issue 1-1-1, 1-1-4, 1-1-5, 1-2-1, 1-2-3, 2-1, 2-2, 1-1-2, 1-1-3.

**Note:**

FG31-1: Enhanced L3 measurement reporting for unknown SCell activation if the valid L3 measurement results are available

FG31-2: Beam sweeping factor reduction for FR2 unknown SCell activation

FG31-3: Shorter measurement interval for unknown SCell activation

# Topic #1: Core part maintenance (5.14.1)

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2411442](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411442.zip) | Apple | Proposal 1: RAN4 to discuss if measurement period shall be considered as a condition to differentiate the requirements for FR1 SCell activation enhancement with L3 report.  Proposal 2: Like the legacy FR1 known SCell activation, SCell activation delay requirement with L3 report shall be differentiated according to measurement period below or above 2400ms, and decide if AGC refinement or T/F tracking is needed. |
| [R4-2411479](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411479.zip) | OPPO | Proposal 1：For RACH based PSCell activation, it is not necessary to improve the delay requirements for RACH-based PSCell activation. Keep the same Tsearch for all cases, including that UE is configured with bfd-and-RLM with value true and without detecting RLF or BFD. |
| [R4-2411560](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411560.zip) | Nokia, Nokia Shanghai Bell | Proposal 1: For multiple SCell activation on the same FR1 band, the applicability condition “all to-be-activated SCells are unknown” shall be changed to “at least one to-be-activated SCell is unknown”.  Proposal 2: RAN4 to discuss if to consider the case where not all the unknown to-be-activated SCells are reported in the L3 reporting and cell detection is still needed on some of the unknown SCells on the same FR1 band.  Proposal 3: If the case in P2 is agreed to be discussed, N1 needs to be counted for the cell detection on the unknown SCells which were not reported and non-contiguous to any of the reported unknown SCells. Otherwise, it shall be clarified in applicability conditions that all the unknown SCells requiring cell detection are reported in L3 reporting.  Proposal 4: The measurement period can be considered as one side condition in determining the SCell activation delay with L3 reporting.  Proposal 5: The SCell activation delay with L3 reporting shall be extended only if the measurement period is larger than 2400ms and the AGC refinement is performed after L3 reporting. |
| [R4-2411561](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411561.zip) | Nokia, Nokia Shanghai Bell | CR based on 1560 |
| [R4-2411964](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411964.zip) | Nokia | Tsearch for RACH-based PSCell activation:   1. In general, a UE which has not detected neither BFD nor RLF on the deactivated PSCell while deactivated, need no additional search time at PSCell activation (Tsearch = 0ms). 2. A UE which has detected either BFD or RLF on the deactivated PSCell is allowed search time at PSCell activation.   Tsearch in RACH-based PSCell activation delay:   1. For RACH based PSCell activation for unknown PSCell, RAN4 to agree on conditions for reduced Tsearch at PSCell activation, when the UE is configured with bfd-and-RLM. 2. Tsearch for PSCell activation of an unknown PSCell, can be reduced from 24\*Trs or 3\*Trs, is when no RLM has occurred. 3. For RACH based PSCell activation, if the FR1 or FR2 PSCell is known, Tsearch = 0 ms. If the PSCell is an unknown FR1 or FR2 PSCell configured with bfd-and-RLM with value true, provided no RLM has occurred, if Es/Iot ≥ -2 dB then for FR2 Tsearch = [12]\* Trs ms and Tsearch = [1]\* Trs ms for FR1. Otherwise, if the FR2 PSCell is unknown and Es/Iot ≥ -2 dB, then Tsearch = 24\* Trs ms, and if the target cell is an unknown FR1 PSCell and Es/Iot ≥ -2 dB, then Tsearch =3\* Trs ms.   PSCell activation delay and PSCell DRX:   1. UE shall start monitoring PDCCH on the activated PSCell immediately after the SCG activation delay. 2. Send LS to RAN2 clarifying PDCCH monitoring assumption with RAN2. |
| [R4-2411965](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411965.zip) | Nokia | CR based on 1964 |
| [R4-2412123](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412123.zip) | China Telecom | Proposal 1: It may not be needed to differentiate the requirements for FR1 SCell activation enhancement with L3 report according to measurement period. |
| [R4-2412196](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412196.zip) | Huawei, HiSilicon | Proposal 1: For FR2 target SCell, the requirements can be updated as follows:  For FR2 target SCell, Tactivation\_time\_multiple\_scells is equal to Tactivation\_time which is the SCell activation delay in millisecond as specified in Clause 8.3.17 except the definition of Tuncertainty\_MAC and Tuncertainty\_RRC are replaced with:  - Tuncertainty\_MAC is the time period between reception of the last activation command for PDCCH TCI, PDSCH TCI (when applicable), relative to  - First valid L3-RSRP reporting of a to-be-activated SCell within the same band for unknown case, when UE reports valid L3-RSRP.  - Tuncertainty\_RRC is the time period between reception of the RRC configuration message for TCI of periodic CSI-RS for CQI reporting (when applicable) relative to  - First valid L3-RSRP reporting of a to-be-activated SCell within the same band for unknown case, when UE reports valid L3-RSRP.  Proposal 2: For FR1 target SCell, the requirements can be updated as follows:  For FR1 target SCell, Tactivation\_time\_multiple\_scells is:  - 3ms + max (4ms + [TL3 report]+ Tuncertainty\_SP + 3ms+ THARQ, max(TFirstSSB\_MAX\_multiple\_scells + TSMTC\_MAX\_multiple\_scells, 4ms + [TL3 report]+ Tuncertainty\_MAC + 3ms + THARQ) + TFineTiming + 2ms ), if the semi-persistent CSI-RS is used for CSI reporting  - 3ms + max (4ms + [TL3 report]+ Tuncertainty\_RRC + TRRC\_delay, max(TFirstSSB\_MAX\_multiple\_scells + TSMTC\_MAX\_multiple\_scells, 4ms + [TL3 report]+ Tuncertainty\_MAC + THARQ) + TFineTiming + 2ms), if the periodic CSI-RS is used for CSI reporting  if on the same band UE also has at least one parallel to-be-activated SCell which is FR1 unknown SCell without valid L3-RSRP report after SCell activation. TFirstSSB\_MAX\_multiple\_scells, TSMTC\_MAX\_multiple\_scells is defined in 8.3.7; if on the same band, UE does not have any parallel to-be-activated SCell which is FR1 unknown SCell without valid L3-RSRP report after SCell activation, requirements in 8.3.17 apply. |
| [R4-2412197](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412197.zip) | Huawei, HiSilicon | CR based on 2196 |
| [R4-2412516](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412516.zip) | vivo | CR based on 2599 |
| [R4-2412599](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412599.zip) | vivo | Proposal 1: RAN4 also consider applying enhancements of L3 reporting during SCell activation in FR1 to the case when only one SSB is transmitted in *ssb-PositionInBurst*.  Proposal 2: RAN4 further extend the requirement applicability of 8.3.17 and 8.3.18 to the scenarios in FR1 where only one SSB is considered. If only one SSB is considered, Tuncertainty\_MAC, Tuncertainty\_SP, Tuncertainty\_RRC and TRRC\_delay are counted as zero, and the 3ms MACE CE decoding delay for TCI state activation is removed, i.e. the overall delay Tactivation\_time is 7ms + TL3,report+ THARQ + TFineTiming + 2ms.  Proposal 3: For R18 unknown SCell activation delay reduction with L3 MR reporting, Tuncertainty\_MAC is zero if UE receives PDSCH carrying MAC CE based TCI activation command before L3 MR is sent in PUSCH.  Proposal 4: For R18 unknown SCell activation delay reduction with L3 MR reporting, Tuncertainty\_RRC is zero if UE receives PDSCH carrying RRC configuration message for TCI of periodic CSI-RS for CQI reporting before L3 MR is sent in PUSCH.  Proposal 5: For R18 unknown SCell activation delay reduction with L3 MR reporting, Tuncertainty\_SP is zero if UE receives PDSCH carrying MAC CE based activation command for semi-persistent CSI-RS resource set for CQI reporting before L3 MR is sent in PUSCH.  Proposal 6: For activation of SCG, RAN4 to send LS to RAN2 clarifying the UE behavior on PDCCH monitoring   * Option 1: UE starts to monitor PDCCH with/without DRX applying once upper layers indicate that SCG is activated * Option 2: UE won’t monitor PDCCH during SCG activation procedure and starts to monitor PDCCH with/without DRX applying after SCG activation delay (i.e., Tactivation\_time specified in TS38.133) |
| [R4-2413002](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413002.zip) | Ericsson | Proposal 1: Do not consider additional AGC sample for the measurement period more than 2400ms for L3 measurement based SCell activation.  Proposal 2: No need to apply L3 based SCell activation when the single SSB is present. |
| [R4-2413072](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413072.zip) | ZTE Corporation, Sanechips | Proposal 1: For multi-SCell activation, classify the unknown to-be-activated SCell(s) without L3 reporting into two types:   * Type 1: The unknown to-be-activated SCell(s) without L3 reporting and not contiguous to any active serving cell or any known SCell in FR1; or the unknown to-be-activated SCell(s) without L3 reporting and not in the same band with any active serving cell or any known SCell in FR2. * Type 2: The unknown to-be-activated SCell(s) without L3 reporting who does not meet Type 1.   For Type 1, apply legacy single or multiple unknown SCell activation procedure to them, depend on the number of such cell.  For Type 2, they are not the target audience for R18 L3 reporting based requirements, keep legacy strategy for them.  Proposal 2: For the L3 reporting based requirements, whether to ignore the AGC refinement, which can be determined by the measurement period. That is:   * If the measurement period > 2400, both AGC refining plus T/F tracking are necessary; * Otherwise, only T/F tracking is needed.   Proposal 3: The L3 reporting based requirements can also be applied to the cases in FR1: 1) Only one SSB is transmitted in ssb-PositionInBurst; 2) The TCI state indication at the same time with unknown SCell activation command. |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Before f2f meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1 SCell activation enhancement

|  |
| --- |
| Agreement in last RAN4 meeting:  **Applicability of multiple SCell activation with L3 reporting on FR1 and FR2 band**   * + For FR1, L3 reporting based multiple SCell activation requirements are applicable to unknown target SCell activation when there is no contiguous active serving cell or there is no contiguous known SCell(s) to the unknown to-be-activated SCell on the FR1 band.     - This condition will be added section 8.3.18.   + For FR2, L3 reporting based multiple SCell activation requirements are applicable to unknown target SCell activation when there is no active serving cell or there is no known SCell(s) on the same band.     - This condition will be added section 8.3.18. |

**Issue 1-1-1: Requirement for the case when NOT all the unknown to-be-activated SCells have L3 report on FR1 band (some have L3 report but others not)**

* Option 1 (Nokia):
  + For multiple SCell activation on the same FR1 band, the applicability condition “all to-be-activated SCells are unknown” shall be changed to “at least one to-be-activated SCell is unknown”.
  + RAN4 to discuss if to consider the case where not all the unknown to-be-activated SCells are reported in the L3 reporting and cell detection is still needed on some of the unknown SCells on the same FR1 band.
  + If the case above is agreed to be discussed, N1 needs to be counted for the cell detection on the unknown SCells which were not reported and non-contiguous to any of the reported unknown SCells. Otherwise, it shall be clarified in applicability conditions that all the unknown SCells requiring cell detection are reported in L3 reporting.
* Option 2 (Huawei):
  + For FR1 target SCell, the requirements can be updated as follows:
    - For FR1 target SCell, Tactivation\_time\_multiple\_scells is:
      * 3ms + max (4ms + [TL3 report]+ Tuncertainty\_SP + 3ms+ THARQ, max(TFirstSSB\_MAX\_multiple\_scells + TSMTC\_MAX\_multiple\_scells, 4ms + [TL3 report]+ Tuncertainty\_MAC + 3ms + THARQ) + TFineTiming + 2ms ), if the semi-persistent CSI-RS is used for CSI reporting
      * 3ms + max (4ms + [TL3 report]+ Tuncertainty\_RRC + TRRC\_delay, max(TFirstSSB\_MAX\_multiple\_scells + TSMTC\_MAX\_multiple\_scells, 4ms + [TL3 report]+ Tuncertainty\_MAC + THARQ) + TFineTiming + 2ms), if the periodic CSI-RS is used for CSI reporting
    - if on the same band UE also has at least one parallel to-be-activated SCell which is FR1 unknown SCell without valid L3-RSRP report after SCell activation. TFirstSSB\_MAX\_multiple\_scells, TSMTC\_MAX\_multiple\_scells is defined in 8.3.7; if on the same band, UE does not have any parallel to-be-activated SCell which is FR1 unknown SCell without valid L3-RSRP report after SCell activation, requirements in 8.3.17 apply.
* Option 3 (ZTE):
  + For multi-SCell activation, classify the unknown to-be-activated SCell(s) without L3 reporting into two types:
    - Type 1: The unknown to-be-activated SCell(s) without L3 reporting and not contiguous to any active serving cell or any known SCell in FR1; or the unknown to-be-activated SCell(s) without L3 reporting and not in the same band with any active serving cell or any known SCell in FR2.
    - Type 2: The unknown to-be-activated SCell(s) without L3 reporting who does not meet Type 1.
  + For Type 1, apply legacy single or multiple unknown SCell activation procedure to them, depend on the number of such cell.
  + For Type 2, they are not the target audience for R18 L3 reporting based requirements, keep legacy strategy for them.
* Recommended WF:
  + Moderator: firstly to discuss the question in option 1 and option 3: whether or not to consider the case where not all the unknown to-be-activated SCells are reported in the L3 reporting and cell detection is still needed on some of the unknown SCells on the same FR1 band?
  + If logic in option 3 can be used, than can discuss the details in option 2.

**Issue 1-1-2: Multiple SCell activation requirement with L3 reporting for FR2 case based on applicability agreed in last meeting.**

* Proposal 1 (Huawei):
  + For FR2 target SCell, the requirements can be updated as follows:
    - For FR2 target SCell, Tactivation\_time\_multiple\_scells is equal to Tactivation\_time which is the SCell activation delay in millisecond as specified in Clause 8.3.17 except the definition of Tuncertainty\_MAC and Tuncertainty\_RRC are replaced with:
      * Tuncertainty\_MAC is the time period between reception of the last activation command for PDCCH TCI, PDSCH TCI (when applicable), relative to
        + First valid L3-RSRP reporting of a to-be-activated SCell within the same band for unknown case, when UE reports valid L3-RSRP.
      * Tuncertainty\_RRC is the time period between reception of the RRC configuration message for TCI of periodic CSI-RS for CQI reporting (when applicable) relative to
        + First valid L3-RSRP reporting of a to-be-activated SCell within the same band for unknown case, when UE reports valid L3-RSRP.
* Recommended WF:
  + Can be discussed in CR?

**Issue 1-1-3: Uncertainty part for SCell activation requirement with L3 reporting**

* Option 1 (vivo):
  + For R18 unknown SCell activation delay reduction with L3 MR reporting, Tuncertainty\_MAC is zero if UE receives PDSCH carrying MAC CE based TCI activation command before L3 MR is sent in PUSCH.
  + For R18 unknown SCell activation delay reduction with L3 MR reporting, Tuncertainty\_RRC is zero if UE receives PDSCH carrying RRC configuration message for TCI of periodic CSI-RS for CQI reporting before L3 MR is sent in PUSCH.
  + For R18 unknown SCell activation delay reduction with L3 MR reporting, Tuncertainty\_SP is zero if UE receives PDSCH carrying MAC CE based activation command for semi-persistent CSI-RS resource set for CQI reporting before L3 MR is sent in PUSCH.
* Recommended WF:
  + Can be discussed in CR?

**Issue 1-1-4: FR1 SCell activation enhancement with one SSB transmitted in ssb-PositionInBurst.**

* Option 1(vivo):
  + RAN4 also consider applying enhancements of L3 reporting during SCell activation in FR1 to the case when only one SSB is transmitted in *ssb-PositionInBurst*.
  + RAN4 further extend the requirement applicability of 8.3.17 and 8.3.18 to the scenarios in FR1 where only one SSB is considered. If only one SSB is considered, Tuncertainty\_MAC, Tuncertainty\_SP, Tuncertainty\_RRC and TRRC\_delay are counted as zero, and the 3ms MAC CE decoding delay for TCI state activation is removed, i.e. the overall delay Tactivation\_time is 7ms + TL3,report+ THARQ + TFineTiming + 2ms.
* Option 2(Ericsson):
  + No need to apply L3 based SCell activation when the single SSB is present.
* Option 3(ZTE):
  + The L3 reporting based requirements can also be applied to the cases in FR1: 1) Only one SSB is transmitted in ssb-PositionInBurst; 2) The TCI state indication at the same time with unknown SCell activation command.
* Recommended WF
  + TBA

**Issue 1-1-5: FR1 SCell activation enhancement considering the measurement period**

* Option 1(Apple, Nokia, ZTE):
  + Like the legacy FR1 known SCell activation, SCell activation delay requirement with L3 report shall be differentiated according to measurement period below or above 2400ms, and decide if AGC refinement or T/F tracking is needed.
    - The SCell activation delay with L3 reporting shall be extended only if the measurement period is larger than 2400ms and the AGC refinement is performed after L3 reporting. (Nokia, ZTE)
* Option 2(CTC, Ericsson):
  + It may not be needed to differentiate the requirements for FR1 SCell activation enhancement with L3 report according to measurement period. Do not consider additional AGC sample for the measurement period more than 2400ms for L3 measurement based SCell activation.
* Recommended WF
  + TBA

**The CR submitted in this meeting:**

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| --- | --- | --- | --- | --- |
| **CR tdoc** | **Company** | **Main revision** | **Status** | **Moderator suggestions** |
| [R4-2411561](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411561.zip) | Nokia, Nokia Shanghai Bell | CR on section 8.3.18 | To be revised | Recommend companies to coordinate the CR splitting, and have one company CR cover one section. |
| [R4-2412197](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412197.zip) | Huawei, HiSilicon | CR on section 8.3.18 | To be revised |
| [R4-2412516](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412516.zip) | vivo | CR on 8.3.17, 8.3.18. | To be revised |

### Sub-topic 1-2 FR1+FR1 NR-DC

**Issue 1-2-1: whether to enhance Tsearch for RACH based PSCell activation**

* Option 1 (OPPO):
  + For RACH based PSCell activation, it is not necessary to improve the delay requirements for RACH-based PSCell activation. Keep the same Tsearch for all cases, including that UE is configured with bfd-and-RLM with value true and without detecting RLF or BFD.
* Option 2 (Nokia):
  + In general, a UE which has not detected neither BFD nor RLF on the deactivated PSCell while deactivated, need no additional search time at PSCell activation (Tsearch = 0ms).
  + A UE which has detected either BFD or RLF on the deactivated PSCell is allowed search time at PSCell activation.
* Recommended WF:
  + TBA

**Issue 1-2-2: Tsearch delay design for RACH-based PSCell activation delay**

* Option 1 (Nokia):
  + For RACH based PSCell activation for unknown PSCell, RAN4 to agree on conditions for reduced Tsearch at PSCell activation, when the UE is configured with bfd-and-RLM.
  + Tsearch for PSCell activation of an unknown PSCell, can be reduced from 24\*Trs or 3\*Trs, is when no RLM has occurred.
  + For RACH based PSCell activation, if the FR1 or FR2 PSCell is known, Tsearch = 0 ms. If the PSCell is an unknown FR1 or FR2 PSCell configured with bfd-and-RLM with value true, provided no RLM has occurred, if Es/Iot ≥ -2 dB then for FR2 Tsearch = [12]\* Trs ms and Tsearch = [1]\* Trs ms for FR1. Otherwise, if the FR2 PSCell is unknown and Es/Iot ≥ -2 dB, then Tsearch = 24\* Trs ms, and if the target cell is an unknown FR1 PSCell and Es/Iot ≥ -2 dB, then Tsearch =3\* Trs ms.
* Recommended WF:
  + This issue 1-2-2 can be discussed after issue 1-2-1 is concluded

**Issue 1-2-3: DRX application and PDCCH monitoring of PSCell immediately after SCG activation**

* Option 1 (Nokia):
  + UE shall start monitoring PDCCH on the activated PSCell immediately after the SCG activation delay. It means “The UE shall apply no DRX immediately after Tactivation\_time.” (excerpt from [R4-2411964](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411964.zip))
* Option 2 (vivo):
  + UE starts to monitor PDCCH with/without DRX applying once upper layers indicate that SCG is activated
* Option 3 (vivo):
  + UE won’t monitor PDCCH during SCG activation procedure and starts to monitor PDCCH with/without DRX applying after SCG activation delay (i.e., Tactivation\_time specified in TS38.133)
* Proposal (Nokia, vivo): For activation of SCG, RAN4 to send LS to RAN2 clarifying the UE behavior on PDCCH monitoring
* Recommended WF:
  + Discuss the options as well as the proposal.

**The CR submitted in this meeting:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CR tdoc** | **Company** | **Main revision** | **Status** | **Moderator suggestions** |
| [R4-2411965](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411965.zip) | Nokia, Nokia Shanghai Bell | CR on section 8.17.2 | To be revised |  |

# Topic #2: RRM performance requirements maintenance (5.14.2)

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2411562**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411562.zip) | Nokia, Nokia Shanghai Bell | Proposal 1: To specify the test cases for TC#1 in the other agreed CA/EN-DC modes:  (1) FR1 PCell+FR2 target SCell and  (2) FR2 PCell+FR2 inter-band target SCell. |
| [**R4-2411563**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411563.zip) | Nokia, Nokia Shanghai Bell | CR based on 1562, CR on FR2 unknown SCell activation with FG31-1 in FR1+FR2 and FR2+FR2 scenarios |
| [**R4-2412198**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412198.zip) | Huawei, HiSilicon | Section A.5.5.3.14 and A.5.5.3.15, CR on TC maintenance for R18 eFeRRM SCell activation |
| [**R4-2412285**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412285.zip) | Ericsson | Draft CR to TS 38.133 on RRM SCG activation deactivation test case for FR1-FR1 inter-band NR-DC with target Pscell in FR1 |
| [**R4-2413003**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413003.zip) | Ericsson | Proposal 1: RAN4 to include SR transmission in the test case for L3 report based fast SCell activation test case. |
| [**R4-2413004**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413004.zip) | Ericsson | Withdrawn? (status in the tdoc list is withdrawn) |
| [**R4-2413435**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413435.zip) | Ericsson | CR based on 3003 |

*The moderator can suggest a limited number of papers which could be presented.*

## Open issues summary

*Before f2f meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions..*

In last RAN4#110 meeting the TC work split (R4-2403466) is agreed as following:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Feature | Index | Test case | CA/DC mode | Other configurations | Test applicability | Volunteer Company to lead CR |
| FG31-1:  L3 report based enhancement | 1 | FR2 unknown SCell activation with L3 report | 1. FR1 PCell+FR2 target SCell 2. FR2 PCell+FR2 inter-band target SCell 3. LTE PCell + FR1 PSCell + FR2 target SCell |  | Define test applicability and UE is required to perform one test for each FR.  UE only needs to pass test in one CA/DC mode. | QC |
| 2 | FR2 PUCCH SCell activation delay with L3 report |  | Huawei |
| 5 | FR1 unknown SCell activation with L3 report | 1. FR1 PCell+FR1 inter-band target SCell 2. LTE PCell + FR1 PSCell + FR1 inter-band target SCell |  | Define test applicability and UE is required to perform one test for each FR.  UE only needs to pass test in one CA/DC mode. | vivo |
| 7 | Multiple SCell activation delay with FR1 unknown SCell with L3 report |  | ZTE |
| FG31-2:  Beam sweeping factors reduction | 9 | FR2 unknown SCell activation with FG31-2 and FG31-3 | 1. FR1 PCell+FR2 target SCell 2. FR2 PCell+FR2 inter-band target SCell 3. LTE PCell + FR1 PSCell + FR2 target SCell | DRX.8: DRX cycle = 320 ms and TAT = Infinity | Verify UE supporting FG 31-2 and/or FG 31-3 for FR2, depending the capabilities supported by the UE.  FFS:UE only needs to pass test in one CA/DC mode. | Nokia |
| FG31-3:  (1)Use SSB periodicity instead of SMTC periodicity”  (2)“Performing L1-RSRP measurement in non-DRX mode even DRX is configured” | 17 | FR1 unknown SCell activation with FG31-3 | 1. FR1 PCell+FR1 inter-band target SCell 2. LTE PCell + FR1 PSCell + FR1 inter-band target SCell | DRX.8: DRX cycle = 320 ms and TAT = Infinity | Verify UE supporting FG 31-3 for FR1.  UE only needs to pass test in one CA/DC mode. | MTK |

**Issue 2-1: missing TCs for FG31-1**

* Option 1 (Nokia):
  + To specify the test cases for TC#1 in the other agreed CA/EN-DC modes:
    - (1) FR1 PCell+FR2 target SCell and
    - (2) FR2 PCell+FR2 inter-band target SCell..
* Recommended WF
  + Option 1 is agreeable?

**Issue 2-2: SR transmission in the FG31-1 test case for L3 report**

* Proposal 1 (Ericsson):
  + RAN4 to include SR transmission in the test case for L3 report based fast SCell activation test case.
* Recommended WF
  + TBA

**The CR submitted in this meeting:**

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| --- | --- | --- | --- | --- |
| **CR tdoc** | **Company** | **Main revision** | **Status** | **Moderator suggestions** |
| [**R4-2411563**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411563.zip) | Nokia, Nokia Shanghai Bell | CR based on 1562, CR on FR2 unknown SCell activation with FG31-1 in FR1+FR2 and FR2+FR2 scenarios | To be revised |  |
| [**R4-2412198**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412198.zip) | Huawei, HiSilicon | Section A.5.5.3.14 and A.5.5.3.15, CR on TC maintenance for R18 eFeRRM SCell activation | To be revised |  |
| [**R4-2412285**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412285.zip) | Ericsson | Draft CR to TS 38.133 on RRM SCG activation deactivation test case for FR1-FR1 inter-band NR-DC with target Pscell in FR1 | To be revised |  |
| [**R4-2413004**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413004.zip) | Ericsson | Withdrawn? (status in the tdoc list is withdrawn) | To be revised | Please check the status of this CR |
| [**R4-2413435**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413435.zip) | Ericsson | CR based on 3003 | To be revised | This CR is based on the big CR with revision mode in last meeting. It may need to be revised based on latest spec. |