**3GPP TSG-RAN WG4 Meeting # 104-bis-e** [**R4-2217141**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_104bis-e/InboxR4-2217141.zip)

**Electronic Meeting, 10– 19 October 2022**

**Agenda item:** 4.6.6

**Source:** Moderator (vivo)

**Title:** Email discussion summary for [104-bis-e][208] NR\_redcap\_RRM\_2

**Document for:** Information

# Introduction

This email discussion is for R17 NR RedCap WI and the scope covers the following agenda items:

* AI 4.6.3.2 Extended DRX enhancements
* AI 4.6.3.3 RRM measurement relaxations
* AI 4.6.3.4 Others (include [R4-2216457](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216457.zip))

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

Contact information

|  |  |  |
| --- | --- | --- |
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Note:

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

# Topic #1: Extended DRX enhancements

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2216295](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216295.zip) | Huawei, HiSilicon | Proposal 1: Proposal 1: When UE transitions from measurements within PTW and to measurements outside PTW or vice versa during one measurement period, the UE measurement requirements apply based on the longer measurement requirements before or after the transition. |
| [R4-2216296](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216296.zip) | Huawei, HiSilicon | CR |
| [R4-2216454](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216454.zip) | Ericsson | CR |

## Open issues summary

### Sub-topic 1-1 Maintenance on eDRX requirements for Redcap

**Issue 1-1-1: Issue when UE transitions from measurements within PTW and to measurements outside PTW or vice versa during one measurement period**

* Proposals
  + Option 1: When UE transitions from measurements within PTW and to measurements outside PTW or vice versa during one measurement period, the UE measurement requirements apply based on the longer measurement requirements before or after the transition. (Huawei)
* Recommended WF
  + TBA

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| **Company** | **Comments** |
| Huawei | Support option 1.  We would like to explain a bit more on option 1 including identified new issue and the possible solution.  In RRC active mode, UE performs measurements both within PTW and outside PTW when idle\_eDRX is configured. However as per RAN2 definition, the T length within PTW and outside PTW will be different. Then there would be some issues to determine Nserv \_RedCap,when UE transmits from within PTW to outside PTW or vise versa during one measurement period:  Table 5.1B.2.2-1: Nserv\_RedCapfor inactive Redcap UE configured with eDRX\_IDLE cycle, (Frequency range FR1)   |  |  |  |  | | --- | --- | --- | --- | | eDRX\_IDLE cycle length [s] | DRX or eDRX INACTIVE cycle length[s] | T [s] | Nserv \_RedCap [number of T ] | | 2.56 ≤eDRX\_IDLE cycle length ≤10485.76 | 0.32 ≤DRX\_Inactive cycle length ≤2.56; or  2.56 ≤eDRX\_Inactive cycle length ≤10.24 if inactive eDRX is configured | 0.32 | 4\*M1 | | 0.64 | 4\*M1 | | 1.28 | 2 | | 2.56 | 2 | | 5.12 | 2 | | 10.24 | 2 | | Note1: T is dertermined according to clause 7.1 in [1].  Note2: M1=2 if SMTC periodicity (TSMTC) > 20 ms and DRX cycle ≤ 0.64 second. | | | |   One example is given:  If T within PTW is 0.64s, Nserv \_RedCap is defined as 4\* M1, if T outside PTW is 2.56, Nserv \_RedCap is defined as 2. When UE transmits from within PTW and to outside PTW **during one measurement period**, T is changed and the evaluation number Nserv \_RedCap is changed accordingly. The example is presented in below Figure, where M1 is assumed as 1. In this scenario shall UE use 4\* M1 paging cycles (where Twithin PTW=0.64s) or use 2 paging cycles (where Toutside PTW=2.56s)?    Therefore, the identified issue is that **both the number of paging cycles and paging cycle length (i.e., T) would be changed from within PTW to outside PTW (and vice versa) during one measurement period** eDRX\_IDLE is configured for inactive RedCap UE. To address the above identified issues, it is proposed to make the below clarification:  When UE transitions from measurements within PTW and to measurements outside PTW or vice versa during one measurement period, the UE measurement requirements apply based on the longer measurement requirements before or after the transition. |
| Nokia | We support option 1. One clarification is proposed: “…the UE measurement requirements apply based on the longer measurement **period** requirements before or after the transition.” |
| Apple | Fine with option 1 and agree that the newly identified issue is valid. |
| vivo | OK with option 1 |
| Xiaomi | OK with option 1 |
| Ericsson | OK with option 1 |
| OPPO | OK with option 1 |
| MediaTek | This is already captured in the specs as: ‘For any requirement in this section, when the UE transitions between any two states when being configured with eDRX\_IDLE, being configured with eDRX\_IDLE cycle, changing eDRX\_IDLE cycle length, or changing PTW configuration, the UE shall meet the transition requirement, which is the less stringent requirement of the two requirements corresponding to the first state and the second state, during the transition time interval which is the time corresponding to the transition requirement. After the transition time interval, the UE shall meet the requirement corresponding to the second state.’. |

## Companies views’ collection for 1st round

### Open issues

### 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.*

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| **CR/TP number** | **Comments collection** |
| [R4-2216296](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216296.zip) | Huawei: To better understand the CR, we would like to interpret it a bit.  Besides the clarification in option 1 in issue 1-1-1, this CR also covers another change:  The existing M1 for inactive mode is specified as:  “The UE shall measure the SS-RSRP and SS-RSRQ level of the serving cell and evaluate the cell selection criterion S defined in TS 38.304 [1] for the serving cell at least once every M1\*N1 DRX cycle; where:  - M1=2 if SMTC periodicity (TSMTC) > 20 ms and DRX cycle ≤ 0.64 second,  - otherwise M1=1.”  As the logic of serving cell evaluation measurement is based on T (paging occation), it is straight forward to replace DRX with T for M1. |
| Nokia: same comment as for option 1. We propose to modify “... and evaluate the cell selection criterion S defined in TS 38.304 [1] for the serving cell at least once every **Nserv\_RedCap\*T as specified in Table 5.1B.2.2-1or and Table 5.1B.2.2-2**”. The enumeration below first paragraph is not needed as it just repeats NOTE1 and NOTE2 for FR1. |
| Apple: technically agree with the CR. Some comments on the CR text, now in Inactive requirement, two separated table are used for FR1 and FR2, and FR1 table has M1 but no N1 while FR2 has N1 but no M1, and therefore accordingly, we think it’s better to differentiate FR1 and FR2 in the following text,  When UE is configured with eDRX\_IDLE, the UE shall measure the SS-RSRP and SS-RSRQ level of the serving cell and evaluate the cell selection criterion S defined in TS 38.304 [1] for the serving cell at least once every M1\* T for FR1 and N1\*T for FR2; where:  - T is dertermined according to clause 7.1 in [1],  - M1=2 if SMTC periodicity (TSMTC) > 20 ms and T ≤ 0.64 second, otherwise M1=1.  Or alternatively:  When UE is configured with eDRX\_IDLE, the UE shall measure the SS-RSRP and SS-RSRQ level of the serving cell and evaluate the cell selection criterion S defined in TS 38.304 [1] for the serving cell at least once every M1\*N1 T; where:  - T is dertermined according to clause 7.1 in [1],  - N1=1 for FR1, and M1=1 for FR2  - M1=2 if SMTC periodicity (TSMTC) > 20 ms and T ≤ 0.64 second in FR1, otherwise M1=1. |
| [R4-2216454](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216454.zip) | Nokia: The CR is agreeable. |
| vivo: ok with this CR |
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## 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** | **Issue 1-1-1: Issue when UE transitions from measurements within PTW and to measurements outside PTW or vice versa during one measurement period**   * Proposals   + Option 1: When UE transitions from measurements within PTW and to measurements outside PTW or vice versa during one measurement period, the UE measurement requirements apply based on the longer measurement requirements before or after the transition. (Huawei Nokia Apple vivo xiaomi Ericsson oppo)   + Option 2: Not necessary to have option 1 (MTK)   *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round: continue 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.*

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| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| [R4-2216296](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216296.zip) | *to be revised* |
| [R4-2216454](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216454.zip) | *agreeable* |

## Discussion on 2nd round (if applicable)

**Issue 1-1-1: Issue when UE transitions from measurements within PTW and to measurements outside PTW or vice versa during one measurement period**

* Proposals
  + Option 1: When UE transitions from measurements within PTW and to measurements outside PTW or vice versa during one measurement period, the UE measurement requirements apply based on the longer measurement requirements before or after the transition. (Huawei Nokia Apple vivo xiaomi Ericsson oppo)
  + Option 2: Not necessary to have option 1 (MTK)

*Tentative agreements:*

*Candidate options:*

*Recommendations for 2nd round: continue discussion*

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| **Company** | **Comments** |
| Huawei | Support option 1.  Thanks for the comments pointing out the existing requirements during 1st round discussion. However we think the existing requirements don’t cover the case in this issue. In this case, both eDRX\_IDLE/eDRX\_Inactive cycle length and PTW configuration are not changed. The change is T which may be different within PTW and outside PTW as per RAN2 agreement (where PTW configuration is unchanged). |
| Apple | Fine with option 1. |
| vivo | OK with option 1 |
| Ericsson | Fine with option 1. |
| MediaTek | Thanks HW for the clarifications. We support option 1. |
| Nokia | Fine with option 1. |
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# Topic #2: RRM measurement relaxations

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2215963](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2215963.zip) | vivo | **Proposal 1: For the issue 2-1-3, option 3 can be considered and the wording of option 3 could be updated.** |
| [R4-2216219](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216219.zip) | Nokia, Nokia Shanghai Bell | 1. RAN4 to proceed along option 1 for Issue 2-1-3, i.e. UE shall not relax measurements on any of the neighbour cells in case UE has failed to meet the S criterion. 2. RRM relaxation of neighbour cell measurements is allowed for SDT at inactive state and depends on whether configured relaxation criteria are met, e.g. whether single stationary criterion is met, single low mobility criterion is met, or stationary not-at-cell-edge criteria are met. |
| [R4-2216297](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216297.zip) | Huawei, HiSilicon | CR |
| [R4-2216763](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216763.zip) | Ericsson | Observation 1 Whether UE can apply relaxed measurement when failing to meet the S-criterion was overlooked in Rel-16 RRM relaxation WI.  Observation 2 Rel-17 RedCap UE is allowed to not measure on any of the neighbour cells for 4 hours compared to the longest relaxation period of 1 hour for Rel-16 NR UE.   1. If the UE is configured with and has fulfilled multiple relaxation criteria that allows the UE to not measure for 4 hours and if UE has failed to meet the S-criterion, then the UE shall not relax measurements on any of the neighbour cells. |
| [R4-2216883](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216883.zip) | Nokia, Nokia Shanghai Bell | CR |

## Open issues summary

### Sub-topic 2-1 Remaining issues on RRM measurment relaxation for Redcap

**Issue 2-1-1: Clarification on RRM relaxation applying conditions**

* Proposals
  + Option 1: For the issue 2-1-3 in [R4-2215162], option 3 can be considered and the wording of option 3 could be updated. (vivo)
    - Note: option 3 is “If the UE is configured with and has fulfilled the stationary and not-at-cell-edge criteria in sections 4.2B.2.10.3 and 4.2B.2.11.3 and if UE has failed to meet the S-criterion, then the UE shall not relax measurements on any of the neighbour cells”.
  + Option 2: RAN4 to proceed along option 1 for Issue 2-1-3, i.e. UE shall not relax measurements on any of the neighbour cells in case UE has failed to meet the S criterion. (Nokia)
  + Option 3: If the UE is configured with and has fulfilled multiple relaxation criteria that allows the UE to not measure for 4 hours and if UE has failed to meet the S-criterion, then the UE shall not relax measurements on any of the neighbour cells. (Ericsson)
* Recommended WF
  + This topic has been discussed for a few meetings and any compromise is encouraged. Proponent could check whether option 1 and option 3 are identical.

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| **Company** | **Comments** |
| Nokia | We support option 2 related to failed S criterion, the event which indicates the need for cell reselection and hence to identify potential reselection candidates as fast as possible. In our view this should be valid independent if single relaxation criterion or multiple relaxation criteria are fulfilled. |
| Apple | We are fine with option 1 and 3.  As commented to R4-2216764 in thread #207, it’s not realistic to us that serving cell S criteria is not met but the relaxation criteria of not-at-cell-edge is still met. SSearchThresholdP and SSearchThresholdQ is cell specific configuration controlled by network, we just don’t understand what’s the motivation to configure a low threshold of “SSearchThresholdP and SSearchThresholdQ” (lower than S criteria) but specify in RAN4 spec to not allow UE doing the relaxation. However, if both stationary criteria and not-cell-edge criteria are configured, it’s possible that UE doesn’t meet S criteria and non-at-cell-edge but UE meets stationary criteria, and this case to us is a possible configuration and for this case we agree to not relax measurement. |
| CMCC | Option 3 |
| vivo | Ok with either option 1 and 3 |
| Xiaomi | Fine with option 1 and option 3. |
| Ericsson | We understand the motivation behind option 2 which was also our original proposal. However, to make progress, we are fine compromise to any of the option 1 and 3. |
| OPPO | Option 1 is fine. |
| MediaTek | Regarding option 3: If the UE has satisfied not at cell edge criterion but not criterion S then the NW may need to adapt the threshold to make them aligned. |

**Issue 2-1-2: RRM measurement relaxation for SDT at inactive state**

* Proposals
  + Option 1: RRM relaxation of neighbour cell measurements is allowed for SDT at inactive state and depends on whether configured relaxation criteria are met, e.g. whether single stationary criterion is met, single low mobility criterion is met, or stationary not-at-cell-edge criteria are met. (Nokia)
* Recommended WF

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| **Company** | **Comments** |
| Huawei | Option1 is not very clear to us. We think SDT TA validation requirements have no relation with measurement relaxation criteria. |
| Nokia | We support option 1. In our view, this issue should be addressed as applicability of RRM measurement relaxation for neighbour cells during SDT in inactive state is currently not mentioned in 38.133. Such clarification we see needed.  To Huawei: It is not related to SDT TA validation requirements. We propose to add this clarification in a separate section, see CR in R4-2216883. |
| Apple | Don’t understand the necessity of option 1. We already has Inactive relaxation requirement, and we think it can also applied for RedCap UEs which are configured with CG-SDT. Similarly, we don’t have any SDT clarification/condition in other RedCap requirement sections. |
| vivo | Same understanding the RRM relaxation at inactive state applies when SDT is configured. |
| Intel | We also understand that RRM relaxation for neighbor cell measurement in RRC Inactive is applied for RedCap UEs and it is already captured in 5.1B.2.9, 5.1B.2.10 and 5.1B.2.11 by referring the requirements in RRC Idle (4.2B.2.9, 4.2B.2.10 and 4.2B.2.11). We think it is sufficient since these sections describe RedCap UE behavior in RRC Inactive. No need to rephrase them again. |
| MediaTek | leave it to UE implementation. UE can decide whether to do relaxed meaurement or not. This is because SDT transmission is also important |
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## Companies views’ collection for 1st round

### Open issues

### 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.*

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| **CR/TP number** | **Comments collection** |
| R4-2216297 | Nokia: Generally, the CR is OK. Some scenarios require rewording though, as the referred fulfilled relaxation criteria are left unclear “and has also fulfilled both criteria” (change 2, change 6) and “criteria” at the end of the insertion should be put in singular (change 4, change 5). |
| Apple: fine with the CR. |
| Vivo: fine with the CR |
| R4-2216883 | Apple: up to issue 2-1-2 |
| Ericsson: It depends on outcome of issue 2-1-2. We don’t see the need for the second change. |
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## 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** | **Issue 2-1-1: Clarification on RRM relaxation applying conditions**   * Proposals   + Option 1: For the issue 2-1-3 in [R4-2215162], option 3 can be considered and the wording of option 3 could be updated. (vivo Apple xiaomi Ericsson oppo)     - Note: option 3 is “If the UE is configured with and has fulfilled the stationary and not-at-cell-edge criteria in sections 4.2B.2.10.3 and 4.2B.2.11.3 and if UE has failed to meet the S-criterion, then the UE shall not relax measurements on any of the neighbour cells”.   + Option 2: RAN4 to proceed along option 1 for Issue 2-1-3, i.e. UE shall not relax measurements on any of the neighbour cells in case UE has failed to meet the S criterion. (Nokia)   + Option 3: If the UE is configured with and has fulfilled multiple relaxation criteria that allows the UE to not measure for 4 hours and if UE has failed to meet the S-criterion, then the UE shall not relax measurements on any of the neighbour cells. (Ericsson Apple CMCC vivo xiaomi Ericsson)   + Option 4: For option 3, if the UE has satisfied not at cell edge criterion but not criterion S then the NW may need to adapt the threshold to make them aligned (MTK)   *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:*  *Could company check whether can compromise to option 1 (or option 3 as backup)?*  **Issue 2-1-2: RRM measurement relaxation for SDT at inactive state**   * Proposals   + Option 1: RRM relaxation of neighbour cell measurements is allowed for SDT at inactive state and depends on whether configured relaxation criteria are met, e.g. whether single stationary criterion is met, single low mobility criterion is met, or stationary not-at-cell-edge criteria are met. (Nokia)   + Option 2: option 1 is not necessary (Apple vivo Intel)   + Option 3: Up to UE implementation (MTK)   *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round: suggest if there is no consensus at 2nd round the issue is closed without any agreement.* |

### CRs/TPs

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

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| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2216297 | *“to be revised”* |
| R4-2216883 | *postpone* |

## Discussion on 2nd round (if applicable)

**Issue 2-1-1: Clarification on RRM relaxation applying conditions**

* Proposals
  + Option 1: For the issue 2-1-3 in [R4-2215162], option 3 can be considered and the wording of option 3 could be updated. (vivo Apple xiaomi Ericsson oppo)
    - Note: option 3 is “If the UE is configured with and has fulfilled the stationary and not-at-cell-edge criteria in sections 4.2B.2.10.3 and 4.2B.2.11.3 and if UE has failed to meet the S-criterion, then the UE shall not relax measurements on any of the neighbour cells”.
  + Option 2: RAN4 to proceed along option 1 for Issue 2-1-3, i.e. UE shall not relax measurements on any of the neighbour cells in case UE has failed to meet the S criterion. (Nokia)
  + Option 3: If the UE is configured with and has fulfilled multiple relaxation criteria that allows the UE to not measure for 4 hours and if UE has failed to meet the S-criterion, then the UE shall not relax measurements on any of the neighbour cells. (Ericsson Apple CMCC vivo xiaomi Ericsson)
  + Option 4: For option 3, if the UE has satisfied not at cell edge criterion but not criterion S then the NW may need to adapt the threshold to make them aligned (MTK)

*Tentative agreements:*

*Candidate options:*

*Recommendations for 2nd round:*

*Could company check whether can compromise to option 1 (or option 3 as backup)?*

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| **Company** | **Comments** |
| Apple | Fine with option 1 and 3. |
| vivo | Ok with option 1 or 3. |
| Ericsson | We support option 3 because it covers all cases where the UE is allowed to not measure for 4 hours. But we can also accept option 1. |
| MediaTek | It is still not clear to us why the UE can satisfies multiple relaxation criteria but not meeting the S Criterion? We believe this issue can be solved by the NW. Further clarification is needed. |
| Nokia | We support option 2, but we can compromise to option 3. |
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**Issue 2-1-2: RRM measurement relaxation for SDT at inactive state**

* Proposals
  + Option 1: RRM relaxation of neighbour cell measurements is allowed for SDT at inactive state and depends on whether configured relaxation criteria are met, e.g. whether single stationary criterion is met, single low mobility criterion is met, or stationary not-at-cell-edge criteria are met. (Nokia)
  + Option 2: option 1 is not necessary (Apple vivo Intel)
  + Option 3: Up to UE implementation (MTK)

*Tentative agreements:*

*Candidate options:*

*Recommendations for 2nd round: suggest if there is no consensus at 2nd round the issue could be closed without any agreement.*

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| **Company** | **Comments** |
| Apple | Support option 2. |
| vivo | Ok with option 2 |
| MediaTek | Support options 2 and 3. |
| Nokia | We support option 1. |
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# Topic #3: Others

## Companies’ contributions summary

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| T-doc number | Company | Proposals / Observations |
| [R4-2215470](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2215470.zip) | Xiaomi | **Proposal 1: RAN4 to consider sharing mechanism to define the measurement requirement when the NCD-SSB offset configured with 5ms.** |
| [R4-2215598](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2215598.zip) | Apple | CR |
| [R4-2216220](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216220.zip) | Nokia, Nokia Shanghai Bell | 1. MG configuration with appropriate combination of gap offset and MGTA, selected by network, can resolve the depicted issue to preclude UE having to drop MG assisted CD-SSB inter-frequency measurements. 2. RAN4 to consider the scenario NCD-SSB time offset = 5ms and CD-SSB in a different BWP to NCD-SSB with MG for CD-SSB being applied. 3. RAN4 to not further treat the scenario with NCD-SSB offset = 5ms, as there is no specification impact. Network can select appropriate MG configuration based on gap offset and MGTA to preclude UE having to drop MG assisted CD-SSB inter-frequency measurements. |
| R4-2216457 | Ericsson | ***Proposal 1: In RedCap, RAN4 to define UE behaviour when the MG and the SMTC meets the proximity condition with the time distance = 4ms.***  ***Proposal 2: When the SMTC for intra-frequency layer is fully-partially overlapping with the MG due to NCD-SSB offset, UE is required to perform intra-frequency measurement and drop the configured MG.*** |

## Open issues summary

### Sub-topic 3-1 On offset to transmit CD-SSB and NCD-SSB at different times

**Issue 3-1-1: Issue when NCD-SSB time offset = 5ms**

* Proposals
  + Option 1: RAN4 to consider sharing mechanism to define the measurement requirement when the NCD-SSB offset configured with 5ms. (xiaomi)
  + Option 2: RAN4 to consider the scenario NCD-SSB time offset = 5ms and CD-SSB in a different BWP to NCD-SSB with MG for CD-SSB being applied. RAN4 to not further treat the scenario with NCD-SSB offset = 5ms, as there is no specification impact. Network can select appropriate MG configuration based on gap offset and MGTA to preclude UE having to drop MG assisted CD-SSB inter-frequency measurements. (Nokia)
  + Option 3: In RedCap, RAN4 to define UE behaviour when the MG and the SMTC meets the proximity condition with the time distance = 4ms; When the SMTC for intra-frequency layer is fully-partially overlapping with the MG due to NCD-SSB offset, UE is required to perform intra-frequency measurement and drop the configured MG. (Ericsson)
* Recommended WF

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| --- | --- |
| **Company** | **Comments** |
| Huawei | Network can control the gap configuration, NCD-SSB/CD-SSB periodicity and offset between NCD and CD-SSB. The fully-partial overlapping case pointed in option 3 can be avoided, e.g., network configures 20ms offset. Therefore we think there is no specification impact. |
| Nokia | Option 2. In our view, this issue can be resolved with proper network configuration. Regarding option 3, we do not think that the proximity condition is valid here, as it is applied between two measurement gaps, whilst here one measurement (CD-SSB) is done gap-assisted, while the other (NCD-SSB) is done w/o gap. |
| Apple | Same view as Huawei, we think this issue can be addressed by network configuration. |
| CMCC | Same view as other companies. Do not further discuss the issue that can be easily addressed by network proper configuration. |
| vivo | Similar view, up to NW configuration to solve this issue |
| Xiaomi | If RAN4 to consider the NCD-SSB=5ms case, we think the sharing rule between measurement with gap and measurement withourt gap could be consdiered, instead of totally dropped one measurement.  But we are fine to left it to NW configuration. |
| Ericsson | From our understanding, NCD-SSB offset =5ms is a valid configuration.  We agree with other companies’ view such as change the offset to other values, however, our intention is to clarify UE’s behaviour when NW configures NCD-SSB=5ms.  Whether apply the proximity is another issue which is still discussing in NTN session. We suggest companies to wait the conclusion in NTN and further check whether it is needed here. |
| OPPO | Support to leave it to network configuration. No need to specify any proximity condition. |

## Companies views’ collection for 1st round

### Open issues

### 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 |
| R4-2215598 | Nokia: The CR is agreeable. The cover sheet should use the term “system information update” or “SI update” rather than “system update”. |
| Company B |
|  |
|  | 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.*

|  |  |
| --- | --- |
|  | Status summary |
| Sub-topic#1 | **Issue 3-1-1: Issue when NCD-SSB time offset = 5ms**   * Proposals   + Option 1: RAN4 to consider sharing mechanism to define the measurement requirement when the NCD-SSB offset configured with 5ms. (xiaomi)   + Option 2: RAN4 to consider the scenario NCD-SSB time offset = 5ms and CD-SSB in a different BWP to NCD-SSB with MG for CD-SSB being applied. RAN4 to not further treat the scenario with NCD-SSB offset = 5ms, as there is no specification impact. Network can select appropriate MG configuration based on gap offset and MGTA to preclude UE having to drop MG assisted CD-SSB inter-frequency measurements. (Nokia)   + Option 3: In RedCap, RAN4 to define UE behaviour when the MG and the SMTC meets the proximity condition with the time distance = 4ms; When the SMTC for intra-frequency layer is fully-partially overlapping with the MG due to NCD-SSB offset, UE is required to perform intra-frequency measurement and drop the configured MG. (Ericsson)   + Option 4: Not necessary to consider this scenario (Huawei Apple Xiaomi oppo)   *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd 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 |
| R4-2215598 | *“to be revised”* |

## Discussion on 2nd round (if applicable)

**Issue 3-1-1: Issue when NCD-SSB time offset = 5ms**

* Proposals
  + Option 1: RAN4 to consider sharing mechanism to define the measurement requirement when the NCD-SSB offset configured with 5ms. (xiaomi)
  + Option 2: RAN4 to consider the scenario NCD-SSB time offset = 5ms and CD-SSB in a different BWP to NCD-SSB with MG for CD-SSB being applied. RAN4 to not further treat the scenario with NCD-SSB offset = 5ms, as there is no specification impact. Network can select appropriate MG configuration based on gap offset and MGTA to preclude UE having to drop MG assisted CD-SSB inter-frequency measurements. (Nokia)
  + Option 3: In RedCap, RAN4 to define UE behaviour when the MG and the SMTC meets the proximity condition with the time distance = 4ms; When the SMTC for intra-frequency layer is fully-partially overlapping with the MG due to NCD-SSB offset, UE is required to perform intra-frequency measurement and drop the configured MG. (Ericsson)
  + Option 4: Not necessary to consider this scenario (Huawei Apple Xiaomi oppo)

*Tentative agreements:*

*Candidate options:*

*Recommendations for 2nd round:*

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Option 4.  We understand that the intention of option 3 is to clarify UE’s behavior when NCD-SSB is 5ms and Gap is configured. However Network can control the gap configuration, NCD-SSB/CD-SSB periodicity and offset between NCD and CD-SSB. The fully-partial overlapping case can be avoided, e.g., network configures 20ms offset. The configuration is up to network.  We think option2 has the similar view as option 4. |
| Apple | Support option 4, same comment as in 1st round. |
| vivo | Support option 4. |
| Ericsson | Option 3.  NCD-SSB offset = 5ms is allowed in NW’s configuration.  We noticed that a new general proximity between SMTC and MG was introduced in NTN. That means the proximity is always met regardless of the SMTC duration, MGRP or MGL.  To Huawei,  Do you mean NCD-SSB offset =5ms should be precluded in NW’s configuration? |
| Nokia | We support options 2 and 4. |
|  |  |
|  |  |

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
|  | WF on eDRX and RRM measurement relaxations requirements for Redcap UE | vivo |  |
|  |  |  |  |
|  |  |  |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation** | **Comments** |
| [R4-2216295](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216295.zip) |  | Discussion on Extended DRX enhancements for inactive RedCap UE | Huawei, HiSilicon | Noted |  |
| [R4-2216296](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216296.zip) |  | Clarification on measurement for inactive mode RedCap UE | Huawei, HiSilicon | revised |  |
| [R4-2216454](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216454.zip) |  | CR on RedCap eDRX | Ericsson | Agreeable |  |
| [R4-2215963](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2215963.zip) |  | on remaining issues on RRM relaxation for Redcap | vivo | Noted |  |
| [R4-2216219](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216219.zip) |  | Discussion on RRM relaxations | Nokia, Nokia Shanghai Bell | Noted |  |
| [R4-2216297](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216297.zip) |  | Correction on relaxed measurement for RedCap | Huawei, HiSilicon | Revised |  |
| [R4-2216763](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216763.zip) |  | Discussions on RRM measurement relaxations | Ericsson | Noted |  |
| [R4-2216883](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216883.zip) |  | CR 38.133: RRM relaxations in case of failed S-criterion and SDT for RedCap | Nokia, Nokia Shanghai Bell | postpone |  |
| [R4-2215470](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2215470.zip) |  | Discussion on NCD-SSB time offset impact for RedCap UE | Xiaomi | Noted |  |
| [R4-2215598](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2215598.zip) |  | CR on scheduling restrictions for L3 measurements in FR1 for RedCap | Apple | revised |  |
| [R4-2216220](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104bis-e/Docs/R4-2216220.zip) |  | Discussion on impact from NCD-SSB time offset | Nokia, Nokia Shanghai Bell | Noted |  |
| R4-2216457 |  | Discussions on RedCap measurement requirements | Ericsson | Noted |  |

Notes:

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

## 2nd round

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation** | **Comments** |
| [R4-2217232](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_104bis-e/InboxR4-2217232.zip) |  | WF on eDRX and RRM measurement relaxations requirements for Redcap UE | vivo | Agreeable |  |
|  |  |  |  |  |  |
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Notes:

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