**3GPP TSG-RAN2 Meeting #118-eR2-2206712**

**Electronic, 9th – 20th May, 2022**

**Source: Email discussion Rapporteur (Huawei, HiSilicon)**

**Title: Summary for [Post118-e][502] UP open issues and CR to 38.321 (Huawei)**

**Agenda item:** **6.6.2**

**Document for:** **Discussion and Decision**

# General

This document contains the list of comments made during the review of the MAC CR for SDT

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### Comments

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| Companies | Brief description of the issue | Suggested resolution/company comments | Proposed way forward by rapporteur |
| LG01 | 5.2  3> when the Contention Resolution is considered successful for Random Access procedure when the CG-SDT procedure is ongoing:  Double “when” is misleading | Change the second “when” to “while”.  3> when the Contention Resolution is considered successful for Random Access procedure while the CG-SDT procedure is ongoing: | [Rapp] Corrected |
| LG02 | 5.2  1> when instruction from the upper layer has been received for indicating the expiry of the *cg-SDT-TimeAlignmentTimer*:  The text is not aligned with RRC text.  instruct the MAC entity to stop the *cg-SDT-TimeAlignmentTimer*, if it is running; | Align the text between RRC and MAC. Either using “expiring” or “stopping”.  If we choose to keep the RRC text, the MAC spec should keep the original text, i.e. “stopping”. | [Rapp] previous change reverted |
| LG03 | 5.8.2  1> if, after initial transmission for CG-SDT with CCCH message has been performed according to clause 5.4.1, PDCCH addressed to the MAC entity's C-RNTI has not been received, and the SSB corresponding to the configured UL grant has the same SSB index as the SSB selected for initial transmission for CG-SDT with CCCH message (i.e., retransmission of initial transmission of CG-SDT);  3> if this is the initial transmission of CG-SDT with CCCH message after the CG-SDT procedure is initiated as in clause 5.27: (i.e., SSB selection for initial transmission for CG-SDT)  3> else if PDCCH addressed to C-RNTI has been received after the initial transmission of CG-SDT with CCCH message: (i.e., SSB for subsequent new transmission for CG-SDT)  Three highlighted texts are not aligned. | Remove “SSB selection for” from the second text and remove “SSB for” from the third text. | [Rapp] Corrected |
| LG04 | 5.27.2  The MAC entity shall:  1> store the RSRP of the downlink pathloss reference derived based on the *measObject* configured for the Serving Cell as in TS 38.331 [5].  It is not clear when the MAC entity stores the RSRP. | Add the timing when the MAC entity stores the RSRP.  The MAC entity shall, upon reception of configuration for CG-SDT:  1> store the RSRP of the downlink pathloss reference derived based on the *measObject* configured for the Serving Cell as specified in TS 38.331 [5]. | [Rapp] Added |
| Samsung001 | 5.27.1 General 2> if CG-SDT is configured on the selected UL carrier, and TA of the configured grant Type 1 resource is valid according to clause 5.27.2; and  2> if, for at least one RB configured for SDT having data available for transmission, *configuredGrantType1Allowed* is configured with value *true* for the corresponding logical channel(s); and  2> if at least one SSB configured for CG-SDT with SS-RSRP above *cg-SDT-RSRP-ThresholdSSB* is available:  3> indicate to the upper layers that the conditions for initiating SDT procedure are fulfilled;  3> perform CG-SDT procedure on the selected UL carrier according to clause 5.8.2.  We do not agree with this change. In our understanding, the intention of the agreement was to use LCH restriction (i.e. configuredGrantType1Allowed or allowedCG-List) for CG-SDT during the LCP procedure. It was not intended for CG-SDT vs RA-SDT selection. | Remove the change  Lenovo: We agree with Samsung  ZTE: We also agree with this comment. Also, the initial sentence about configuredGrantType1Allowed should be updated (please see Z003 below).  Nokia: We do not agree with this comment. It seems logical to take the restriction into account while selecting between CG-SDT and RA-SDT as if the *configuredGrantType1Allowed* is not true for any LCH having data available to transmit, then it makes no sense to select CG-SDT.  LG: We share the view from Nokia. Even if there is SDT data for an RB configured for SDT, if the RB is not mapped to CG, the UE shall not select the CG-SDT procedure. | [Rapp] Removed. |
| Lenovo001 | As already discussed by email last week, we think that the following RAN2#118e agreement would require some clarifications/changes in TS38.321.  UE doesn’t need to update Bj once being released to RRC\_INACTIVE.  FFS whether a change is needed for SDT and Lenovo can give a TP.    According to the current specifications, UE needs to update Bj also while being in RRC\_INACTIVE and during a SDT procedure. There is a requirement that UE needs to have a up to date value for Bj when LCP is performed. Just to mention, that we actually don’t think that the interpretation/implementation option mentioned by NEC – “T” should be considered as zero at the time of the first update of Bj, e.g. first LCP procedure after initializing Bj to zero – was the intended behaviour at the time when LCP procedure was specified for NR Rel-15. In particular given that the exact moment when UE updates Bj is up to UE implementation (UE doesn’t need to be update Bj at the time when performing LCP) as specified in TS38.321, this would lead to different implementations having a different *Bj* value at the time when a grant is processed by LCP. This seems to be also the understanding of other companies (e.g. R2-2203391, R2-2203186) when the issue was discussed for the SCG activation and deactivation feature.  Even though we don’t consider the issue as critical, we think that RAN2 should be at least clear on what the intended UE behaviour is for SDT. Taking the agreement reached during RAN2#118e it seems that UE also doesn’t need to update Bj during a SDT procedure, e.g. for subsequent SDT initial transmissions.  As commented already by email, we think that a NOTE would be the simplest to clarify the intended UE behaviour, but we don’t have a strong opinion. | [NEC] We wonder if the RAN2 agreement “UE doesn’t need to update Bj once being released to RRC\_INACTIVE.”implies that Bj is not updated (i.e. not increase or decrease, and remains zero) during SDT for SDT-RBs? If so, can the existing LCP procedure work for the transmission of data from SDT-RBs? Our assumption is during SDT, Bj should be able to be updated at least for SDT-RBs as the legacy way.  [Lenovo] This is exactly the point I was trying to make. The current agreement is not really clear and also would require changes in the spec. Our understanding though was that intention behind the agreement was, that UE doesn’t need to account for the time between being released to RRC\_INACTIVE and initiation of a SDT procedure for the update of Bj, i.e. Bj is zero at the start of the SDT procedure.  [Xiaomi] It seems that companies have different interpretations on this agreement. I thought this agreement means that the UE resets MAC at the reception of the RRCRelease, and no special handling for Bj is needed at the reception of RRCRelease message. However regarding Bj updating during the SDT procedure, there is no specification change needed, and the UE keeps the legacy Bj updating procedure. Maybe this can be discussed further if company views are not aligned.  [NEC] It seems companies’ view are aligned that Bj should be able to be updated for SDT-RBs during SDT. | [Rapp]  On the part mentioned about the agreement in this meeting, we don’t think this is the exact intention behind the agreement. The agreement is just to say that the UE should not update Bj after transiting to the RRC\_INACTIVE but before SDT procedure is initiated.  Back to the spec, the NOTE already captures that when the UE updates Bj between LCP procedures is up to the UE implementation. Then why it not enough to rely on this NOTE that the UE’s implementation can take this into account?  [Lenovo] The NOTE is just saying that it’s up to UE implementation when to update Bj not whether to update. As explained before, of course the UE has the freedom when to update Bj. The point is whether UE needs to account for the time elapsed between being released to RRC\_INACTIVE and the initiation of SDT procedure when updating Bj (e.g. at the first LCP during SDT procedure), i.e. whether UE needs to measure the time elapsed between being released to RRC\_INACTIVE and initiation of SDT.  Same as for SCG activation/deactivation the point is that Bj remains zero (after being released to RRC\_INACITVE) until the initiation of SDT procedure.  There also does not seem to be difference between SDT and the other cases of first LCP procedure (e.g., first instance of LCP after the UE transits to RRC\_CONNECTED from RRC\_IDLE). Could the proponent clarify on this?  For each logical channel *j*, the MAC entity shall:  1> increment *Bj* by the product PBR × T before every instance of the LCP procedure, where T is the time elapsed since *Bj* was last incremented;  1> if the value of *Bj* is greater than the bucket size (i.e. PBR × BSD):  2> set *Bj* to the bucket size.  NOTE: The exact moment(s) when the UE updates *Bj* between LCP procedures is up to UE implementation, as long as *Bj* is up to date at the time when a grant is processed by LCP.  Since the proponent does not hold a strong view on this, also with doubts from the other companies, I prefer to keep the spec as it is for now. Views from the other companies are also welcomed.  [Lenovo] As mentioned several times, our point is to clarify the agreement. When we keep the spec as it is (which is certainly one option), we can’t have the agreement. It should be rather clear that the agreement is not inline with the current specified behaviour.  [LG] Our understanding of the agreement is that the Bj is reset to zero when the UE is released to RRC\_INACTIVE.  But, it is not clear whether the UE increases Bj in RRC\_INACTIVE before starting SDT procedure.  Once the SDT procedure is started, it is obvious that Bj is updated following the legacy procedure. |
| Z001 | Clause 5.1.1  1> if the Random Access procedure is not initiated for RA-SDT, as specified in clause 5.27.1:2> if the RSRP of the downlink pathloss reference is less than *rsrp-ThresholdSSB-SUL*:  3> select the SUL carrier for performing Random Access procedure;  3> set the PCMAX to PCMAX,f,c of the SUL carrier.  2> else:  3> select the NUL carrier for performing Random Access procedure;  3> set the PCMAX to PCMAX,f,c of the NUL carrier.  A similar issue was also discussed as part of the RA partitioning and there was no consensus to have this. We propose to keep as it is hence. | Undo the change | [Rapp] Revert the change |
| Z002 | 1> when instruction from the upper layer has been received for starting the *TimeAlignmentTimer*:  2> start the *TimeAlignmentTimer* associated with PTAG.  For the above, perhaps we should mention PTAG also in first sentence and may be the RRC should also be aligned with this wording | 1> when instruction from the upper layer has been received for starting the *TimeAlignmentTimer* associated with PTAG:  2> start the *TimeAlignmentTimer* associated with PTAG. | [Rapp] Corrected |
| Z003 | - *cg-SDT-RSRP-ThresholdSSB*: an RSRP threshold configured for SSB selection for CG-SDT.  - *configuredGrantType1Allowed*: indicates whether CG-SDT can be used for transmission for a certain logical channel.  **ZTE comment:**  We think the current LCP procedure is sufficient for this. Even in the case where all DRBs are configured to be not allowed for CG-SDT, then the CCCH message can still be transmitted over the CG-SDT resource if available. So, we think this is not precluded. So, this definition need not be added here. | Remove the change.  Nokia: We do not agree with this comment. It seems to make the whole *configuredGrantType1Allowed* parameter configuration useless. It is logical to take the restriction into account while selecting between CG-SDT and RA-SDT as if the *configuredGrantType1Allowed* is not true for any LCH having data available to transmit, then it makes no sense to select CG-SDT.  LG: We share the view from Nokia. Even if there is SDT data for an RB configured for SDT, if the RB is not mapped to CG, the UE shall not select the CG-SDT procedure. | [Rapp] Corrected |
| NEC01 | 5.8.2  The following agreement is not reflected:   1. When none of the SSB is above the RSRP threshold for CG-SDT SSB selection, UE triggers legacy SR/RACH when there is UL data available | 1> else if PDCCH addressed to C-RNTI after the initial transmission of the CG-SDT with CCCH message has been received:  2> if at least one RB configured for SDT having data available for transmission:  3~~2~~> initiate Random Access procedure in clause 5.1. | [Rapp] I think the intention of the agreement in this meeting is that we don’t change anything in the spec. Also, when there is no uplink data available, the SDT procedure needs to be terminated anyhow. So, there is no actual use case for this condition.  Views from other companies on this are also invited.  [NEC] If nothing is changed in the spec, then it should be Option B.2 in Q13 of the UP email discussion at meeting. However, the decision is to use Option B.1.   * **OptionB: UE trigger legacy SR/RACH,**    + **OptionB.1: UE triggers legacy SR/RACH when there is UL data available**   + **OptionB.2: MAC triggers the RACH directly in case all the UL CG-SDT grant are not available due to the lack of qualified SSB**   And it is possible that there is no uplink data available temporarily during SDT, for example the UE is still waiting for the DL data from network in response to previous UL transmission, and whether there is some further UL data may depend on the DL data received. When to terminate the SDT procedure is up to network signalling or upon T319a expiry, so we think the use case does exist. |
| X001 | 5.27.1  The first “if configured” seems redundant.  1> if the RSRP of the downlink pathloss reference is higher than *sdt-RSRP-Threshold*, if configured, or if *sdt-RSRP-Threshold* is not configured: | Remove “if configured” |  |
| X002 | 5.8.2  It seems better to have more aligned procedural text with the RACH procedure regarding the SSB selection.  2> if at least one SSB corresponding to the configured uplink grant with SS-RSRP above the *cg-SDT-RSRP-ThresholdSSB* is available:  3> if this is the initial transmission of CG-SDT with CCCH message after the CG-SDT procedure is initiated as in clause 5.27: (i.e., initial transmission for CG-SDT)  4> select an SSB from the at least one SSB(s) associated with the configured grant with SS-RSRP above *cg-SDT-RSRP-ThresholdSSB*.  3> else if PDCCH addressed to C-RNTI has been received after the initial transmission of CG-SDT with CCCH message: (i.e., subsequent new transmission for CG-SDT)  4> if SS-RSRP of the SSB selected for the previous transmission for CG-SDT is above *cg-SDT-RSRP-ThresholdSSB* and this SSB is associated with this configured grant:  5> select this SSB.  4> else:  5> select an SSB from the SSB(s) associated with the configured grant with SS-RSRP above *cg-SDT-RSRP-ThresholdSSB*. | 2> if at least one SSB corresponding to the configured uplink grant with SS-RSRP above the *cg-SDT-RSRP-ThresholdSSB* is available:  3> if this is the initial transmission of CG-SDT with CCCH message after the CG-SDT procedure is initiated as in clause 5.27: (i.e., initial transmission for CG-SDT)  4> select an SSB with SS-RSRP above *cg-SDT-RSRP-ThresholdSSB* amongst the SSB(s) associated with the configured grant.  3> else if PDCCH addressed to C-RNTI has been received after the initial transmission of CG-SDT with CCCH message: (i.e., subsequent new transmission for CG-SDT)  4> if SS-RSRP of the SSB selected for the previous transmission for CG-SDT is above *cg-SDT-RSRP-ThresholdSSB* and this SSB is associated with this configured grant:  5> select this SSB.  4> else:  5> select an SSB with SS-RSRP above *cg-SDT-RSRP-ThresholdSSB* from the SSB(s) associated with the configured grant.  [LG] Select one between “amongst” and “from”. |  |
| H001 | In 5.27.1, we have the following:  2> if at least one SSB configured for CG-SDT with SS-RSRP above *cg-SDT-RSRP-ThresholdSSB* is available:  3> indicate to the upper layers that the conditions for initiating SDT procedure are fulfilled;  3> perform CG-SDT procedure on the selected UL carrier according to clause 5.8.2.  2> else if a set of Random Access resources to indicate RA-SDT are available according to clause 5.1.1b on the selected UL carrier:  3> consider *cg-SDT-TimeAlignmentTimer* as expired and perform the corresponding actions in clause 5.2;  3> indicate to the upper layers that the conditions for initiating SDT procedure are fulfilled.  2> else:  3> indicate to the upper layers that the conditions for initiating SDT procedure are not fulfilled.  The current text refers to “availability” of RA-SDT RACH resources, but refers to section 5.1.1b which speaks of “selection” of resources, so the expected UE behaviour is unclear. | The availability of the resources just says whether there is any RACH partition with SDT available in the cell, but it does not mean the UE will select this partition (e.g. the SDT is only available to normal UEs while the UE is a Redcap UE). Therefore, the UE should actually check which resources it will select.  The following change is needed:  2> if at least one SSB configured for CG-SDT with SS-RSRP above *cg-SDT-RSRP-ThresholdSSB* is available:  3> indicate to the upper layers that the conditions for initiating SDT procedure are fulfilled;  3> perform CG-SDT procedure on the selected UL carrier according to clause 5.8.2.  2> else if a set of Random Access resources to indicate RA-SDT are ~~available~~ selected according to clause 5.1.1b on the selected UL carrier:  3> consider *cg-SDT-TimeAlignmentTimer* as expired and perform the corresponding actions in clause 5.2;  3> indicate to the upper layers that the conditions for initiating SDT procedure are fulfilled.  2> else:  3> indicate to the upper layers that the conditions for initiating SDT procedure are not fulfilled.  [LG] Agree with H001. |  |
| C001 | In 5.4.5  For Regular BSR, the MAC entity shall:  1> if the BSR is triggered for a logical channel for which *logicalChannelSR-DelayTimerApplied* with value *true* is configured by upper layers and SDT procedure is not on-going according to clause 5.27:  2> start or restart the *logicalChannelSR-DelayTimer*.   1. if BSR is triggered for a logical channel for which *logicalChannelSR-DelayTimerApplied* with value *true* is configured by upper layers and SDT procedure is on-going according to clause 5.27:   2> start or restart the *logicalChannelSR-DelayTimer* with the value set to *sdt-LogicalChannelSR-DelayTimer*.  1> else:  2> if running, stop the *logicalChannelSR-DelayTimer*.  The texts highlighted in yellow. | We think this part can be revised as:  For Regular BSR, the MAC entity shall:  1> if the BSR is triggered for a logical channel for which *logicalChannelSR-DelayTimerApplied* with value *true* is configured by upper layers and SDT procedure is not on-going according to clause 5.27:  2> start or restart the *logicalChannelSR-DelayTimer* with the value set to *logicalChannelSR-DelayTimer*.   1. if BSR is triggered for a logical channel for which *logicalChannelSR-DelayTimerApplied* with value *true* is configured by upper layers and SDT procedure is on-going according to clause 5.27:   2> start or restart the *logicalChannelSR-DelayTimer* with the value set to *sdt-LogicalChannelSR-DelayTimer*.  1> else:  2> if running, stop the *logicalChannelSR-DelayTimer*.  [LG] The *logicalChanelSR-DelayTimer* is a timer, and it is misleading to set a “timer” to “timer”.  Moreover, the MAC specification does not specify initial value, because it was discussed in the past whether the timer is counting-up or counting-down timer, and it was decided to leave it up to UE implementation. Therefore, the specification only says a timer is started from initial value, as shown in the Note 1 in 3.1.  A Timer is always started or restarted from its initial value.  Therefore, we think legacy text should be kept, and the second highlighted text should be changed:  2> start or restart the *logicalChannelSR-DelayTimer*. |  |