3GPP RAN WG2 Meeting #118-e R2-2206212

eMeeting May 9th – May 20th, 2022

Agenda Item: 6.10.2.1

Source: InterDigital

Title: [DRAFT] Report of [AT118-e][104][NTN] UP RILs and detailed issues

Document for: Discussion, Decision

# Introduction

This document is intended to address User Plane-related RILs and detailed issues remaining from Phase 1 discussion, as per the following scope:

**[AT118-e][104][NTN] UP corrections (InterDigital)**

* Updated scope:
	1. Continue the discussion on the functional aspects, based on [R2-2206194](file:///C%3A%5CData%5C3GPP%5CRAN2%5CInbox%5CR2-2206194.zip); discuss the LS to RAN1 on msg3 repetition
	2. treat UP related RILs “for discussion” (M411, M412, O358, X605, X610, X604, V307, Z550, Z351, I036, V308, O354) (also further confirm the UP related  PropAgree/PropReject RILs)
* **Updated intended outcome:**
	1. **Summary of the offline discussion on the functional aspects and LS content, with:**
		+ **List of proposals for agreement (if any)**
		+ **List of proposals that require online discussions**
		+ **List of proposals that should not be pursued (if any)**
	2. **Summary of the offline discussion on the detailed (e.g. RIL related) issues**

Please note the following deadlines:

* Deadline2 (for companies' feedback on detailed aspects): **Monday 2022-05-16 20:00 UTC**
* Deadline2 (for rapporteur's summary in R2-2206212): Monday 2022-05-16 22:00 UTC

Please also note the following chair guidance:

* Proposals marked "for agreement" in R2-2206212 not challenged until **Tuesday 2022-05-17 10:00 UTC** will be declared as agreed via email by the session chair (for the rest the discussion might continue online).

This discussion document focuses on Part 2) of the updated scope, i.e. the detailed issues.

# User Plane RILs

Several RILs have been flagged by RRC CR Rapporteur as relevant to User Plane discussion. The following section lists identified issues still open for discussion, as well as confirming RRC CR Rapporteur’s proposed resolutions are acceptable for remaining UP-related RILs.

## RILs flagged for discussion

### Need Codes: M411, M412, X605, X604

The following RILs discuss need codes for several parameters relevant to User Plane:

**[RIL]**: M411 **[Delegate]**: MediaTek (Abhishek Roy) **[WI]**: NR\_NTN\_enh-Core **[Class]**:1 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** May meeting discussion

**[Description]**: ‘Need M’s should be ‘Need R’. Otherwise, there is no way to release the configuration

**[Proposed Change]**: Change “M” to “R” for repK-r17, nrofHARQ-ProcessesExt-r17, harq-ProcID-Offset-v17, harq-ProcID-Offset2-v1700,

**[RRC CR rapp comments]**: UP discussion as Need code now is as in previous release same field. Also, RepK is not NTN parameter.

**[RIL]**: M412 **[Delegate]**: MediaTek (Abhishek Roy) **[WI]**: NR\_NTN\_enh-Core **[Class]**:1 **[Status]**: ToDo **[TDoc]**: none

**[Current status]:** May meeting discussion

**[Description]**: Need S should be Need R and the highlighted text should be removed. When the field is absent, there is no configuration (or the existing configuration is released), and the behaviour in this case will be covered in the MAC 38.321 spec. There is no need to specify behaviour when the field is absent using Need S within the RRC spec. In my understanding, Need S with special instructions should only be used when a special value should be applied if the field is absent (e.g., use a specific value, or a value from another parameter etc.)

**[Proposed Change]**: Change “S” to “R”

**[RIL]**: X605 **[Delegate]**: Xiaomi (Xiaowei) **[WI]**: NR\_NTN\_enh-Core **[Class]**:1 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** May discussion

**[Description]**: Need R is changed to Need M

**[Proposed Change]**: The need code for uplinkHARQ-Mode is Need M, which is to support delta configuration. We suggest to align UL and DL configuration, i.e. to support delta configuration for DL. Thus, we suggest to change the Need R to Need M.

**[RIL]**: X604 **[Delegate]**: Xiaomi (Xiaowei) **[WI]**: NR\_NTN\_enh-Core **[Class]**:1 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** Prop Agree

**[Description]**: The need code should be Need M instead of Need N

**[Proposed Change]**: If Need code N is used for discardTimerExt2, it will be one-shot configuration. Then it is against the intention to use SetupRelease type, which is used for supporting delta configuration using need M to explicitly release stored configuration. Thus, we suggest to change Need N to Need M.

**[Delegate comments]:** Huawei (Lili) v18: No, it should be Cond DRB2, like discardTimerExt-r16.

**Question 1) Please indicate all the below modifications you: A) support; and B) do not support. If you object to a modification, please describe why this is not acceptable.**

***repK-r17*: ‘Need M’ is changed to ‘Need R’**

***nrofHARQ-ProcessesExt-r17*: ‘Need M’ is changed to ‘Need R’**

***harq-ProcID-Offset-v17*: ‘Need M’ is changed to ‘Need R’**

***harq-ProcID-Offset2-v1700*: ‘Need M’ is changed to ‘Need R’**

***allowedHARQ-mode*: ‘Need S’ is changed to ‘Need R’**

1. ***uplinkHARQ-Mode*: ‘Need R’ is changed to ‘Need M’**

***discardTimerExt2*: ‘Need N’ is changed to ‘Need M’**

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| **Company** | **Modifications supported**  | **Modifications NOT supported**  | **Additional Comments**  |
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### ta-Report: V307, Z351

The following RILs address the location and field description of *ta-Report*:

**[RIL]**: V307 **[Delegate]**: vivo (Xiao) **[WI]**: NR\_NTN\_enh-Core **[Class]**:2 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** Prop Agree

**[Description]**: Change the location of the field ta-Report-r17 and revise the field description.

**[Proposed Change]**: The ta-Report-r17 should also be able to be configured in the dedicated signalling for the HO case as agreed before, but now this is unable to be achieved since the field is directly put in the SIB19. Also, the TA reporting during the RACH triggered by RRC resusme should also depend on this field included in SIB19, but this case is now missing in the Spec. The proposed solution is to move the ta-Report-r17 into the IE “NTN-Config”, and add the revised field description as follows: ta-Report When this field is included in SIB19, it indicates whether UE specific TA reporting is enabled during initial access, RRC connection reestablishment and RRC resume When this field is included in DowlinkConfigCommon within dedicated signalling, it indicates whether UE specific TA reporting is enabled during handover (see TS 38.321 [3], clause x.x.x)..

**[RIL]**: Z351 **[Delegate]**: ZTE (Zhihong) **[WI]**: NR\_NTN\_enh-Core **[Class]**:1 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** Prop Reject

**[Description]**: This filed is also used to indicate for TA report in resume or reestablishment/Handover cases.

**[Proposed Change]**: add ‘, RRC resume, reestablishment and handover’ after initial access. Or in another option replace ‘during initial access ’ with ‘as defined in subclause 5.4.X’ and refer to TS 38.321

**[RRC CR rapp comments]:** V307 is implemented instead

Based on current RIL status, V307 has been listed as ‘Prop Agee’. As indicated by RRC CR Rapporteur, the changes in V307 should satisfy the issues raised in Z351, so Z351 is not needed.

**Question 2) Please confirm the following:**

**Do you agree with the proposed changes in V307 (i.e. V307 confirmed as Prop Agree)?**

**Do the changes in V307 address the issue raised in Z351 (i.e. Z351 confirmed as Prop Reject)?**

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| **Company** | **Confirm V307? (Yes/No)** | **Reject Z351? (Yes/No)** | **Additional Comments**  |
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### discardTimerExt and discardTimerExt2: Z550, I036

The following RIL addresses details related to discardTimerExt2:

**[RIL]**: Z550 **[Delegate]**: ZTE (Zhihong) **[WI]**: NR\_NTN\_enh-Core **[Class]**:1 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** May meeting discussion

**[Description]**: No discardTimerExt2 is specified in 38.323, shall be discardTimer without extension mark

**[Proposed Change]**: update discardTimerExt2 to discardTimer in the filed description

**[RRC CR rapp comments]:** 38.323 needs to updated then. Otherwise there is no new value supported

As listed by RIL Z550, discardTimerExt2 is not currently specified in 38.323. Unless this is introduced, there is no new value supported, and *discardTimerExt2* to changed to *discardTimer* in the RRC filed description.

**Question 3) What is your preferred Option regarding Z550?**

**Option 1: update *discardTimerExt2* to *discardTimer* in the field description (i.e. Z550 is updated to Prop Agree).**

**Option 2: specify *discardTimerExt2* in TS 38.323 (i.e. Z550 is updated to Prop Reject)**

**Option 3: Other, please describe.**

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| **Company** | **Preferred Option?** | **Additional Comments**  |
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As well, the following RIL addresses details related to discardTimerExt:

**[RIL]**: I036 **[Delegate]**: Intel (Sudeep) **[WI]**: NR\_NTN\_enh-Core **[Class]**:1 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** Prop Agree

**[Description]**: No need for ignoring discardTimerExt as this is optional and can be released

**[Proposed Change]**: Remove the reference to discardTimerExt

This RIL is currently listed as ‘Prop Agree’. RAN2 is asked to confirm this status.

**Question 4) Do you agree to remove the reference to *discardTimerExt* (i.e. I036 is confirmed as Prop Agree)?**

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| **Company** | **Agree/Disagree** | **Additional Comments**  |
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### TimingAdvanceSR: O358

The following RIL addresses inclusion of the field and field description of *TimingAdvanceSR*, used for Timing Advance Reporting in TS 38.321:

**[RIL]**: O358 **[Delegate]**: OPPO (Haitao) **[WI]**: NR\_NTN\_enh-Core **[Class]**:2 **[Status]**: ToDo **[TDoc]**: R2-2204717

**[Current status]:** May meeting discussion

**[Description]**: The field and field description of *TimingAdvanceSR* is missing in the spec.

**[Proposed Change]**: add the corresponding field and description. We’ll have a contribution on this.

The referenced contribution proposes to include a new field *timeAdvanceSR* and associated field description in *MAC-CellGroupConfig*. This is in line with handling of *offsetThresholdTA*, the other field used to control TA reporting. R2-2205958 also proposes to introduce a new field *timingAdvanceSR* and associated field description. However, it is further proposed this new field, as well as *offsetThresholdTA* be captured in a new IE *tar-config* within *MAC-CellGroupConfig* as this is more future-proof and in-line with configuration of legacy reporting procedures such as buffer status and power headroom reporting.

Companies are encouraged to refer to both R2-2204717 and R2-2205958 for corresponding text proposals.

**Question 5) What is your preferred Option regarding O358?**

**Option 1: Introduce new field *timeAdvanceSR* in *MAC-CellGroupConfig*.**

**Option 2: Introduce a new IE *tar-Config* within *MAC-CellGroupConfig* to contain parameters used for configuration of Timing Advance Reporting (i.e. *offsetThresholdTA* and new field *timingAdvanceSR*).**

**Option 3: Other, please describe.**

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| **Company** | **Preferred Option?** | **Additional Comments**  |
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### General: X610, V308, O354

The following RIL addresses additional clarification in field description of *sr-ProhibitTimer*:

**[RIL]**: X610 **[Delegate]**: Xiaomi (Xiaowei) **[WI]**: NR\_NTN\_enh-Core **[Class]**:1 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** Prop Reject

**[Description]**: should clarify in field description that if sr-ProhibitTimerExt is configured, UE shall ignore sr-ProhibitTimer.

**[Proposed Change]**: sr-ProhibitTimerExt-r17 is introduced. We need to clarify that if sr-ProhibitTimerExt-r17 is configured, UE shall ignore sr-ProhibitTimer. We suggest to add the following text to the description field: if sr-ProhibitTimerExt-r17 is configured, UE shall ignore sr-ProhibitTimer (without suffix).

**[RRC CR rapp comments]**: sr-ProhibitTimer is optional parameter so no need to describe it should be ignored.

Current status of this RIL is ‘Prop Reject’ as *sr-ProhibitTimer* is already an optional parameter. UP is asked to confirm this status.

**Question 6) Do you agree the further clarification that if *sr-ProhibitTimerExt* is configured, UE shall ignore *sr-ProhibitTimer***. **is not needed? (i.e. X610 is confirmed as Prop Reject)?**

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| **Company** | **Agree/Disagree** | **Additional Comments**  |
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The following RIL addresses extension of *harq-ProcID-Offset-v17*:

**[RIL]**: V308 **[Delegate]**: vivo (Xiao) **[WI]**: NR\_NTN\_enh-Core **[Class]**:2 **[Status]**: ToDo **[TDoc]**: None

**[Current status]:** May meeting discussion

**[Description]**: Removal of the unexpected extension of harq-ProcID-Offset-v17

**[Proposed Change]**: The original field harq-ProcID-Offset is used specifically for the unlicensed spectrum as indicated in the field description. However, the extension of the HARQ process number is introduced for NTN only. Since it is unlikely for the NTN to be deployed in the unlicensed environment, nor is there any agreement to support such HARQ process number extension to NR-U in TN, this extension is unexpected and should be removed.

**[RRC CR rapp comments]:** need to check/discuss if this really is an issue

Based on RRC CR Rapporteur’s comments, UP is to clarify whether this is an issue, and if so, whether the proposed change is sufficient.

**Question 7a) Do you agree that the issue described in V308 is valid, and to be addressed in Rel-17 NTN?**

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| **Company** | **Agree/Disagree** | **Additional Comments**  |
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**Question 7b) If ‘Agree’ to Question 7a), do you agree that the proposed change in V308 addresses the issue? (i.e. V308 is confirmed as ‘Prop Agree’)**

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| **Company** | **Agree/Disagree** | **Additional Comments**  |
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The following RIL addresses alignment of harq-ProcessNumberSizeDCI-0-2-v1700 with RAN1 specification:

**[RIL]**: O354 **[Delegate]**: OPPO (Haitao) **[WI]**: NR\_NTN\_enh-Core **[Class]**:2 **[Status]**: ToDo **[TDoc]**: R2-2204719

**[Current status]:** May meeting discussion

**[Description]**: according to RAN1 spec, harq-ProcessNumberSizeDCI-0-2-v1700 should include 0, 1, 2, 3, 4, 5 bits

**[Proposed Change]**: change to INTEGER (0..5), We will submit a contribution on this.

The corresponding contribution proposes the respective change to *PUSCH-Config* (companies are encouraged to refer to R2-2204719). UP is asked to confirm whether this change is acceptable.

**Question 8) Do you agree to update harq-ProcessNumberSizeDCI-0-2-v1700 to INTEGER (0..5) as described in R2-2204719?**

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| **Company** | **Agree/Disagree** | **Additional Comments**  |
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## User Plane RILs: For confirmation

In addition to the RILs in Section 2.1 listed for discussion, a number of other RILs relevant to User Plane have been assigned the following status:

**Prop Agree:**

H021, V309, H022, X603, V312, S602, H033, O352, M409, O353, H034, Q303, X606, X607, V316, B008, X608, X609, V317

**Prop Reject:**

H020

RRC CR Rapporteur has requested that User Plane confirm the status of the above RILs. Please refer to documents ‘RIL List v207\_NTN\_RAN2118\_V00’ in Phase 2 folder of [Offline-101][NTN] for description/proposed change of each issue.

**Question 9) If you object to the status of one or more of the above RIL (s), please: 1) Indicate which RIL status is unacceptable; 2) Provide technical justification why the RIL status is unacceptable; and 3) Suggest an alternative acceptable solution (if available).**

**Note: If a company does not comment on a RIL status, it is assumed the status is correct/confirmed.**

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# Other detailed UP aspects: Phase 1 corrections

## Corrections to be agreed

**Correction 1**: Unclear description on Active Time triggered by SR transmission

The following clarification to 5.7 DRX procedure was discussed in Phase 1:

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| 5.7 Discontinuous Reception (DRX)…When DRX is configured, the Active Time for Serving Cells in a DRX group includes the time while:...- a Scheduling Request is sent on PUCCH and is pending (as described in clause 5.4.4 or 5.22.15). If this Serving Cell is part of a non-terrestrial network, the Active Time is started after the Scheduling Request transmission that is performed when the *SR\_COUNTER* is 0 for all the SR configurations with pending SR(s) plus the UE-gNB RTT; or |

Input to Phase 1 discussion is summarized below:

* Correction 1:
	+ CATT thinks this is unnecessary, and current text is clear
	+ Vivo (proponent) thinks this is needed, since in current spec there is no other place using “first” without specifying from which moment “first” is counted

Rapporteur understanding is that above clarification is valid. Considering this was only challenged by one company and no technical issue was brought up, it is suggested that the above text proposal be adopted.

**Correction 5:** Reconfiguration of *offsetThresholdTA* to disable TA reporting

In Phase 1 discussion, the following clarification to the third TAR triggering condition was discussed:

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| 5.4.8 Timing Advance Reporting…A Timing Advance report (TAR) may be triggered if any of the following events occur:*…*- upon configuration or reconfiguration of *offsetThresholdTA* by upper layers which is not used to disable the TA report function, if the UE has not previously reported Timing Advance value to current Serving Cell during this connection; |

Input to Phase 1 discussion is summarized below:

* Correction 5:
	+ CATT and Huawei think this is unnecessary, and current text is clear. Huawei further notes that UE reporting upon reconfiguration of *offsetThresholdTA* will not happen
	+ ZTE (proponent) thinks the correction is needed to clarify that if NW releases event triggered TA config

In comment to Question 6) in R2-2206207 Phase 2: functional aspects of [AT118-e][104], it is clarified that the intention is to clarify that in case UE is reconfigured to release the configuration UE shall not trigger TA report. Rapporteur thinks that this correction is valid and this language is already used for a similar condition in power headroom reporting. It is suggested that the above text proposal be adopted.

**Correction 7:** Alignment of MAC and RRC on use of HARQ mode

In Phase 1 a text proposal was discussed correcting several instanced where usage of “HARQ mode” in MAC spec is not consistent with other RRC fields.

Input to Phase 1 discussion is summarized below:

* Correction 7:
	+ QC notes that “if the corresponding HARQ process in this Serving Cell is configured with uplinkHARQ-Mode equal to HARQmodeA:” is unclear as uplinkHARQ-Mode is bit string.

Based on consensus support to Question 3) in R2-2206207 Phase 2: functional aspects of [AT118-e][104], it seems the challenged part of the original text proposal to 5.7 is no longer relevant. Rapporteur suggests however that the following clarifications to 5.4.3.1 and 5.7 are valid and be adopted.

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| 5.4.3.1 Logical Channel Prioritization…- *allowedHARQ-mode* which sets the allowed *uplinkHARQ-mode* for transmission.…2> *allowedHARQ-mode*, if configured, includes the *uplinkHARQ-mode* for the HARQ process associated to the UL grant. |

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| 5.7 Discontinuous Reception (DRX)…- *uplinkHARQ-Mode* (optional): the configuration to set *HARQmodeA* or *HARQmodeB* per UL HARQ process. |

**Question 10) Do you agree to adopt text proposals from Correction 1, 5, and 7 above? If ‘Disagree’ to one or more corrections, please: 1) provide technical justification why this is not acceptable; and 2) provide an alternate acceptable wording (if available).**

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## Corrections to be rejected

**Correction 2:** Clarification on TA reporting when multiple TARs are triggered and pending at once

In Phase 1 discussion, the following clarifying NOTE was provided for the case of more than one TAR MAC CE pending transmission:

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| 5.4.8 Timing Advance Reporting…NOTE: UL-SCH resources are considered available if the MAC entity has been configured with, receives, or determines an uplink grant. If the MAC entity has determined at a given point in time that UL-SCH resources are available, this need not imply that UL-SCH resources are available for use at that point in time.NOTE X: The TAR MAC CE is generated based on the latest UE-gNB RTT available. |

Input to Phase 1 discussion is summarized below:

* Correction 2:
	+ ASUSTeK notes that the TAR MAC CE should be generated based on the latest “Timing Advance value”, not UE-gNB RTT
		- Vivo (proponent) is okay with this change
	+ ZTE notes that since UE only generates the TAR when there are UL resources available, it is guaranteed UE will report the latest TA.

Rapporteur thinks that this correction (with update from ASUSTeK) is technically correct, however it seems this may be considered a corner case and not strictly necessary. It is therefore proposed that the above correction be rejected.

**Correction 4:** Inclusion of UE-gNB RTT definition in RRC specification

In Phase 1 discussion, it was proposed to include UE-gNB RTT definition in RRC specification to support HARQ RTT Timer extension in RRC:

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| 3.1 Definitions…**Uu Relay RLC channel**: An RLC channel between L2 U2N Relay UE and gNB, which is used to transport packets over Uu for L2 UE-to-Network relay**.****UE-gNB RTT:** For non-terrestrial networks, the sum of the UE's Timing Advance value (see TS 38.211 [16] clause 4.3.1) and *kmac* provided in *NTN-Config*.**UE Inactive AS Context**: UE Inactive AS Context is stored when the connection is suspended and restored when the connection is resumed. It includes information as defined in clause 5.3.8.3. |

Input to Phase 1 discussion is summarized as follows:

* Correction 4:
	+ Ericsson does not support this change and thinks there is no need to take MAC timer that is set with information available to MAC and handle it in RRC especially since UE-gNB RTT is changing all the time.

Based on consensus support to Question 3) in R2-2206207 Phase 2: functional aspects of [AT118-e][104], HARQ RTT Timer extension is fully performed in MAC, and the original text proposal no longer relevant.

**Question 11) Do you agree to reject text proposals from Correction 2 and 4 above? If ‘Disagree’ to rejecting one or more corrections, please provide technical justification why this is change is needed.**

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| **Company** | **Agree/Disagree** | **Additional Comments**  |
| ASUSTeK | Disagree for 2 | Though the UE would generate a TAR when there are UL resources available, it is still not clear which TA value is reported from the current spec text. For example, when the variation between current TA and the last reported TA achieves offsetThresholdTA, the UE is expected to report current TA to the network. However, the “current TA” when the UE has available UL resources for TAR may be different from the TA when triggering the TAR. And the “current TA” when the UE has available UL resources may not fulfill the offsetThresholdTA. It's not clear the UE reports which "current TA" (the latest TA or the TA triggering TA report) without this NOTE. Since the time duration between triggering and reporting may be long for the UE not configured to triggered SR for TAR, the ambiguity may not be a corner case. |
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# Conclusions

<To be generated pending company input>

# References

1. [R2-2204556](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2204556.zip): Corrections on the TAR triggers based on RRC procedures in NR NTN – vivo
2. [R2-2205720](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205720.zip): Discussion on user plane known issues for NR NTN – Nokia, Nokia Shanghai Bell
3. [R2-2205231](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205231.zip): The Modification of TA Reporting Triggering Condition – CATT
4. [R2-2205478](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205478.zip): Further consideration on TA report MAC CE – Huawei, HiSilicon
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