3GPP RAN WG2 Meeting #119bis-e R2-2210853

eMeeting October 10th – 19th, 2022

Agenda Item: 6.10.3

Source: InterDigital

Title: [DRAFT] Report of [AT119bis-e][111][NR NTN] UP corrections

Document for: Discussion, Decision

# Introduction

This document is intended to address general corrections and address proposals from contributions in AI 6.10.3 as per the following discussion guidelines:

**[AT119bis-e][111][NR NTN] UP corrections (InterDigital)**

* **Initial scope: Discuss UP corrections based on contributions in 6.10.3**
* **Initial intended outcome: Summary of the offline discussion with e.g.:**
  + **List of proposals for agreement (if any)**
  + **List of proposals that require online discussions**
  + **List of proposals that should not be pursued (if any)**

**Please note the following deadlines:**

* **Initial deadline (for companies' feedback): Thursday 2022-10-13 18:00 UTC**
* **Initial deadline (for rapporteur's summary in R2-2210853): Thursday 2022-10-13 22:00 UTC**

**Please also note the following chair guidance:**

Proposals marked "for agreement" in R2-2210853 not challenged until Friday 2022-10-14 10:00 UTC will be declared as agreed via email by the session chair (for the rest the discussion might continue online).

# Remaining corrections from RAN2#119e

## Cancellation of pending SR for TA report

As noted in [2], RAN2 agreed that UE can select between any available SR configuration for SR triggered by Timing Advance Report MAC CE. However, the cancellation of pending SR for TA report is not curently defined in MAC specification.

The following text proposal has been agreed in RAN2#119bis-e to be taken as baseline, with detailed wording to be fine-tuned:

**Baseline text proposal from R2-2210087**

|  |
| --- |
| The MAC entity shall for each pending SR not triggered according to the BSR procedure (clause 5.4.5) for a Serving Cell:  …   1. if this SR was triggered by consistent LBT failure recovery (see clause 5.21) of an SCell and all the triggered consistent LBT failure(s) for this SCell are cancelled; or   1> if this SR was triggered by Timing Advance report (see clause 5.4.8) and a MAC PDU is transmitted and the MAC PDU includes a Timing Advance Report MAC CE:  2> cancel the pending SR and stop the corresponding *sr-ProhibitTimer*, if running. |

The following alternative text proposals have been provided in [2-4]:

**Alternative 1:** [2][R2-2210641](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210641.zip)

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| …  1> if this SR was triggered by Timing Advance reporting (see clause 5.4.8) and all the triggered Timing Advance reports are cancelled:  2> cancel the pending SR and stop the corresponding *sr-ProhibitTimer*, if running. |

**Alternative 2:** [3][R2-2210708](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210708.zip)

|  |
| --- |
| …  1> if this SR was triggered by Timing Advance Report procedure (see clause 5.4.8) prior to the MAC PDU assembly and a MAC PDU containing the relevant Timing Advance Report MAC CE is transmitted:  2> cancel the pending SR and stop the corresponding *sr-ProhibitTimer*, if running. |

**Alternative 3:** [4][R2-2210768](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210768.zip)

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| --- |
| …  1> if the SR is triggered by Timing Advance Reporting (see clause 5.4.8) and the Timing Advance Report MAC CE that triggers the SR has already been cancelled; or  2> cancel the pending SR and stop the corresponding *sr-ProhibitTimer*, if running. |

Unless technical justification is provided demonstrating the baseline text from R2-2210087 is insufficient and/or incorrect, Rapporteur suggests the baseline text proposal be agreed and included in NTN MAC corrections CR.

**Question 1: Do you agree to the baseline text proposal for SR cancellation in** [**R2-2210087**](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210087.zip)**? If ‘Disagree’, please: 1) indicate which of the above alternatives is preferred; and 2) provide technical justification why the baseline is insufficient.**

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| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| OPPO | Agree | Firstly, the wording from R2-2210087 is aligned with the cancellation of pending SR triggered by other MAC CEs (e.g. Pre-emptive BSR MAC CE, BFR MAC CE, LBT failure MAC CE) in legacy.  Secondly, based on MAC spec, there is only one condition to cancel the triggered Timing Advance report, i.e. All triggered Timing Advance reports shall be cancelled when a MAC PDU is transmitted and this PDU includes the corresponding Timing Advance Report MAC CE, so using the text from R2-2210087 is sufficient. |
| vivo | Agree |  |
| MediaTek | Agree |  |
| Nokia | Disagree | Prefer Alt1.  We think UE should cancel the pending SR when all the triggered Timing Advance reports has been cancelled. How UE cancel the triggered Timing Advance reports are well defined in clause 5.4.8 as below. There is no need to repeat that in this section (5.4.4).  *All triggered Timing Advance reports shall be cancelled when a MAC PDU is transmitted and this PDU includes the corresponding Timing Advance Report MAC CE.*  Furthermore, Alt1 wording is aligned with the legacy case as well (e.g. *if this SR was triggered by consistent LBT failure recovery (see clause 5.21) of an SCell and all the triggered consistent LBT failure(s) for this SCell are cancelled*). |
| Ericsson | Disagree Alt 1 is preferred. | **text proposal from R2-2210087:** its easier to connect the cancelling with the triggered TA reports, than the transmission of the MAC PDU.  Alt 1 is missing a “;” before the “or” (part not shown in excerpt above).  Alt 2 do not agree with wording, at least “relevant” must be removed.  Alt 3 the wording is a bit odd |
| Xiaomi | Alt 1 is preferred |  |
| Qualcomm | Alt 1 |  |
| ASUSTeK | Agree | We are fine with baseline text proposal or alternative 1. |
| Samsung | Alt 1 |  |
| LG | Alt 1 is preferred but | We suggest to change the text in this section (5.4.4). “*All triggered Timing Advance reports shall be cancelled when a MAC PDU is transmitted and this PDU includes a Timing Advance Report MAC CE”.* This is because the mean of “the corresponding TAR MAC CE” is ambiguous.  According to the current specification, even if multiple TARs are triggered, only one TAR MAC CE is contained in a MAC PDU. Then, all triggered TARs are cancelled. Given that, it is unclear what “the corresponding” refers to.  Note that, the similar procedure is defined to cancel all triggered BSRs as follows.  “All triggered BSRs may be cancelled when the UL grant(s) can accommodate all pending data available for transmission but is not sufficient to additionally accommodate the BSR MAC CE plus its subheader. All BSRs triggered prior to MAC PDU assembly shall be cancelled when a MAC PDU is transmitted and this PDU includes **a** Long, Extended Long, Short, or Extended Short BSR MAC CE which contains buffer status up to (and including) the last event that triggered a BSR prior to the MAC PDU assembly.” |
| Apple | Alt 1 |  |
| ZTE | Alt1 | After further checking of the specs, we agree with companies’ observation and are fine with Alt1. |
| Sequans | Agree |  |
| Apple | Alt 1 |  |
| Lenovo | Alt 1 | Alt 1 is preferred. |
| Huawei, HiSilicon | Agree but | Alt 1 is also fine with us. |
| InterDigital | Alt 1 | No strong opinion, okay with majority |
| TTP | Alt 1 |  |

## Cancellation of RACH due to pending SR for TA report

[2] Further notes that the ongoing Random Access procedure due to a pending SR for Timing Advance Report MAC CE should be stopped if the MAC CE is included in a transmitted MAC PDU. This is also not currently captured in MAC specification.

The following text proposal has been agreed in RAN2#119bis-e to be taken as baseline, with detailed wording to be fine-tuned:

**Baseline text proposal from R2-2210087**

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| --- |
| …  The MAC entity may stop, if any, ongoing Random Access procedure due to a pending SR for positioning measurement gap activation/deactivation request, which has no valid PUCCH resources configured, if:  - the Positioning Measurement Gap Activation/Deactivation Request MAC CE that triggers the SR corresponding to the Random Access procedure has already been cancelled.  The MAC entity may stop, if any, ongoing Random Access procedure due to a pending SR for Timing Advance report, which has no valid PUCCH resources configured, if:  - a MAC PDU is transmitted using a UL grant other than a UL grant provided by Random Access Response or a UL grant determined as specified in clause 5.1.2a for the transmission of the MSGA payload, and this PDU includes a Timing Advance Report MAC CE. |

The following alternative text proposals have been provided in [2] and [3]:

**Alternative 1:** [2][R2-2210641](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210641.zip)

|  |
| --- |
| The MAC entity may stop, if any, ongoing Random Access procedure due to a pending SR for Timing Advance Report MAC CE, which has no valid PUCCH resources configured, if:  - a MAC PDU is transmitted using a UL grant other than a UL grant provided by Random Access Response or a UL grant determined as specified in clause 5.1.2a for the transmission of the MSGA payload, and this PDU contains a Timing Advance Report MAC CE which includes the latest available estimate of the UE’s Timing Advance value prior to the MAC PDU assembly. |

**Alternative 2:** [3][R2-2210708](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210708.zip)

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| --- |
| The MAC entity may stop, if any, ongoing Random Access procedure due to a pending SR for Timing Advance report, which has no valid PUCCH resources configured, if:  - the Timing Advance Report MAC CE that triggers the SR corresponding to the Random Access procedure has already been cancelled. |

Unless technical justification is provided demonstrating the baseline text from R2-2210087 is insufficient and/or incorrect, Rapporteur suggests the baseline text proposal be agreed and included in NTN MAC corrections CR.

**Question 2: Do you agree to the baseline text proposal for RACH cancellation in** [**R2-2210087**](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210087.zip)**? If ‘Disagree’, please: 1) indicate which of the above alternatives is preferred; and 2) provide technical justification why the baseline is insufficient.**

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| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| OPPO | Agree |  |
| vivo | Agree |  |
| MediaTek | Agree |  |
| Nokia | Agree |  |
| Ericsson | Agree | Alt 1 is unnecessarily complicated  Alt 2 is incorrect as the SR is cancelled when the RA is triggered. |
| Xiaomi | Agree |  |
| Qualcomm | Agree |  |
| ASUSTeK | Agree |  |
| Samsung | Agree |  |
| LG | Agree |  |
| Apple | Agree |  |
| ZTE | Agree | After further checking of the specs, we agree with companies’ observation and are fine with the text proposal. |
| Sequans | Agree |  |
| Apple | Agree |  |
| Lenovo | Agree |  |
| Huawei, HiSilicon | Agree, but | Suggest to add a reference at the end to make “this PDU includes a Timing Advance Report MAC CE” more clear:  The MAC entity may stop, if any, ongoing Random Access procedure due to a pending SR for positioning measurement gap activation/deactivation request, which has no valid PUCCH resources configured, if:  - the Positioning Measurement Gap Activation/Deactivation Request MAC CE that triggers the SR corresponding to the Random Access procedure has already been cancelled.  The MAC entity may stop, if any, ongoing Random Access procedure due to a pending SR for Timing Advance report, which has no valid PUCCH resources configured, if:  - a MAC PDU is transmitted using a UL grant other than a UL grant provided by Random Access Response or a UL grant determined as specified in clause 5.1.2a for the transmission of the MSGA payload, and this PDU includes a Timing Advance Report MAC CE as specified in clause 5.4.8. |
| InterDigital | Agree |  |
| TTP | Agree |  |

## Other corrections

Contributions [4-6] also provide additional corrections and text proposals. A summary of main issues and proposed resolutions is provided below, however companies are encouraged to review referenced papers for detailed discussion.

### Corrections to Random Access

As noted in [5], RAN1 has specified in TS 38.213 that UE pre-compensates the RTT between UE and the reference point for the uplink timing adjustment in NTN. Currently, the related UE behaviour on how this pre-compensation is considered during PRACH occasion selection is not captured in the latest MAC spec.

[5] notes that a clear UE behaviour to clarify such a procedure specific for NTN is preferable, thus, it is proposed to add the description in the TS 38.321 clause 5.1.2 that if Random Access Preamble is transmitted on a non-terrestrial network, the MAC entity shall take into account the UE-RP RTT when determining the next available PRACH occasion.

**Question 3a: Do you agree to specify that if Random Access Preamble is transmitted in the non-terrestrial network, the MAC entity shall take into account the RTT between UE and the reference point when determining the next available PRACH occasion?**

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| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| OPPO | Disagree | No need to capture this as UE anyway will select an available RO. |
| vivo | Agree | Proponent. Just would like to further clarify that, even if the next available PRACH occasion is too close to perform the pre-compensation, there is no room for the UE to select other PRACH occasions, as the specified UE behaviour anyway requires the UE to select the next available PRACH occasion. |
| MediaTek | Disagree |  |
| Nokia | Disagree | It is UE implementation issue to select a correct PRACH occasion. Otherwise, UE will always fail to access to NW. |
| Ericsson | Disagree | As there is already a reference to the RAN1 spec clause 8.1 where this is specified – this is NOT needed (the other exceptions listed in the RAN2 spec is because they are specified in the RAN2 spec and not in RAN1 spec). |
| Xiaomi | Disagree | Agree with Ericsson |
| Qualcomm | Disagree |  |
| ASUSTeK | Disagree |  |
| LG | Disagree | Selection of PRACH occasion is up to UE implementation. |
| Apple | Disagree |  |
| ZTE |  | Share some sympathy on the proposal, but also agree it is guaranteed by UE implementation. |
| Sequans | Disagree | Does not seem needed. |
| Apple | Disagree |  |
| Lenovo | Disagree |  |
| Huawei, HiSilicon | Disagree |  |
| InterDigital | Disagree |  |
| TTP | Disagree |  |

**Question 3b: If ‘Agree’ to Question 3a, do you agree to the text proposal from** [**R2-2209503**](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2209503.zip) **as baseline?**

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| **Company** | **Agree/Disagree** | **Additional comments** |
| vivo | Agree |  |
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### Corrections on reported value for event-triggered TA report

As noted in [6], in the previous meeting it was agreed that the TAR MAC CE shall be generated based on the latest available estimate of the UE’s Timing Advance value prior to the MAC PDU assembly. However, the time between when a TA report is triggered and the TA report is generated may be long. For the case that the TA report is triggered due to the variation between current TA and the last reported TA becoming larger than *offsetThresholdTA*, it may result in that the TA value to be reported doesn’t fulfil the condition of triggering the TA report (e.g. the current TA at time of assembly may have fallen back below the threshold).

[6] notes that in this case, it may make sense to re-evaluate the offsetThresholdTA when the TAR MAC CE is to be generated if corresponding TA report is triggered by offsetThresholdTA. If the TA value to be reported doesn’t fulfil the condition of the trigger, the TA report is cancelled.

**Question 4a: Do you agree to cancel the TA report if the variation between the latest TA value prior to the MAC PDU assembly and the last reported TA becomes lower than *offsetThresholdTA*?**

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| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Additional comments** |
| OPPO | Disagree | No need for extra condition to cancel TA report and it would only make UE implementation more complicated. |
| vivo | Disagree | It is an optimization. Referring to the mechanism of BSR triggering, upon BSR being triggered, the BSR will not be cancelled even if the UL data volume becomes zero later. Similarly, we think the optimization of TA reporting is not needed. |
| MediaTek | Disagree | Such optimizations are not needed as R-17 CR. |
| Nokia | Disagree | We think such optimization is not needed. The similar issue may happen for other MAC CE (e.g., PHR). UE can still report TAR in this case for specification/procedure simplicity. |
| Ericsson | Disagree | This is an optimization, no need to decrease the frequency of TA reports (I guess this will only happen close to the minimum TA anyway). |
| Xiaomi | Disagree |  |
| Qualcomm | Disagree |  |
| ASUSTeK | Comment | If majority companies prefer not to cancel the TA report for the scenario, the Tdoc also provides another alternative to clarify behavior as below:   |  | | --- | | 5.4.8 Timing Advance Reporting  […]  A MAC PDU shall contain at most one Timing Advance Report MAC CE, even when multiple events have triggered a Timing Advance report. The Timing Advance Report MAC CE shall be generated based on the latest available estimate of the UE’s Timing Advance value prior to the MAC PDU assembly, even when the latest available estimate of the UE’s Timing Advance value prior to the MAC PDU assembly doesn’t fulfill the condition of triggering the Timing Advance report. | |
| Samsung | Disagree | Seems this is a rare case, no need to over optimize |
| LG | Disagree |  |
| Apple | Disagree |  |
| ZTE | Disagree | More like optimization |
| Sequans | Disagree |  |
| Apple | Disagree |  |
| Lenovo | Disagree |  |
| Huawei, HiSilicon | Disagree |  |
| InterDigital | Disagree |  |
| TTP | Disagree |  |

**Question 4b: If ‘Agree’ to Question 4a, do you agree to the text proposal from** [**R2-2209849**](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2209849.zip) **as baseline?**

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| **Company** | **Agree/Disagree** | **Additional comments** |
| ASUSTeK | Comment | The Tdoc provides two TPs corresponding to agree and disagree for Q4a. |
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### Editorial corrections

Several editorial corrections have additionally been captured in [4]. Companies are encouraged to review the draft CR provided within the Offline discussion folder and provide comments (if any) within that document.

If a company does not question an editorial correction, it is assumed agreeable.

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| **Company** | **Section number** | **Additional comments** |
| Ericsson | 6.1.3.57  6.1.3.56 | 57: We are fine to change to “indicates”, but for the Diff Koffset is defined in ms, not slots, see RAN1 agreement from RAN1#107e:  **Agreement**  The value range of the differential UE specific K\_offset provided in MAC CE is 0 – 63 ms.  Therefore, we propose to write  “- Differential Koffset: This field indicates the differential Koffset in ~~the~~ number of ~~slots~~ subframes (see clause 4.2 in TS 38.213 [6]). The length of the field is 6 bits.”  56: Also TA is defined in subframes, see RAN1#107e:  **Agreement**  15 kHz is used as the reference subcarrier spacing value for the unit of TA reported in FR1.  **Agreement**  The reported TA is the least integer number of slots greater than or equal to the corresponding TA value.  Therefore we propose to modify to:  “- Timing Advance: In FR1, the Timing Advance field indicates the least integer number of ~~slots~~ subframes greater than or equal to the Timing Advance value (see TS 38.211 [8], clause 4.3.1). The length of the field is 14 bits.” |
| Samsung |  | Agree with Ericsson’s comment |
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# Summary

<To be generated based on company input>

# Conclusions

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# References

1. [R2-2210087](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210087.zip) – Correction to TA report triggered SR and DRX – OPPO
2. [R2-2210641](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210641.zip) – Correction on SR cancellation and Random Access procedure stop for NTN – Nokia, Nokia Shanghai Bell
3. [R2-2210708](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210708.zip) – Correction on SR triggered by TAR – ZTE Corporation, Sanechips
4. [R2-2210768](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210768.zip) – Corrections to TS 38.321 for Rel-17 NR NTN – Samsung Research America
5. [R2-2209503](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2209503.zip) – On corrections on random access procedure in NR NTN – vivo
6. [R2-2209849](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Docs/R2-2209849.zip) – Discussion on reported value for event-triggered TA report – ASUSTek