3GPP TSG-RAN WG2 Meeting #127bis R2-240xxxx

Hefei, China, 14th – 29th October, 2024

**Agenda item: 8.25.1**

**Source: Samsung**

**Title: Report of [AT127bis][013][ATG] CRs (Samsung)**

**WID/SID: NR\_ATG-Core**

**Document for: Discussion and Decision**

# Introduction

This is the report for the following offline:

* [AT127bis][013][ATG] CRs (Samsung)

Intended outcome: Review CRs and identify agreable changes and if any should be merged

Deadline: 10-17-24

# Background

This issue was originally raised in RAN2#126, and then further discussed in RAN2#127.

For RAN2#127bis there are the following contributions:

***ATG***

*R2-2408388 On ATG timing advance reporting procedure Ericsson discussion Rel-18 NR\_ATG-Core*

*R2-2408444 Clarification of offsetThresholdTA-r18 for NR ATG Huawei, HiSilicon, CMCC, CATT, Nokia, Nokia Shanghai Bell CR Rel-18 38.331 18.3.0 4882 1 F NR\_ATG-Core R2-2406604*

*R2-2408807 Clarification on Timing Advance Report MAC CE for ATG Samsung, Qualcomm, Huawei, HiSilicon, CMCC, CATT CR Rel-18 38.321 18.3.0 1954 - F NR\_ATG-Core*

*R2-2408808 Correction on SCS applied for ATG offsetThreshold Samsung CR Rel-18 38.331 18.3.0 5032 - F NR\_ATG-Core*

*R2-2409069 Clarification on the unit of offsetThresholdTA-r18 for ATG ZTE Corporation CR Rel-18 38.331 18.3.0 5074 - F NR\_ATG-Core*

*R2-2409070 Clarification on Timing Advance filed in the Timing Advance Report MAC CE Z TE Corporation CR Rel-18 38.321 18.3.0 1961 - F NR\_ATG-Core*

The contributions address two issues:

* **The SCS used for the offsetThreshold in order to trigger TAR MAC CE.** There are three different corrections suggested:
  + The SCS of the offset threshold is clarified to be based on the SCS of the active BWP of when the configuration of TAR-Config is applied/configured/received. This means that the offset threshold does not change when the SCS of the BWP changes
  + The SCS of the offset threshold is clarified to be based on the SCS of the initial BWP. This means that the offset threshold does not change when the SCS of the BWP changes.
  + The SCS of the offset threshold is clarified to be based on the active BWP. This means that the offset threshold may change.
* **The SCS used to report the timing advance field in the TAR MAC CE.** 
  + The proposal is to clarify that the SCS of the Timing Advance field is clarified to be the active BWP

# Discussions

## Offset threshold

The discussion rapporteur that there is a majority for using the SCS of the active BWP when TAR-Config is applied:

***R2-2408444 Clarification of offsetThresholdTA-r18 for NR ATG Huawei, HiSilicon, CMCC, CATT, Nokia, Nokia Shanghai Bell CR Rel-18 38.331 18.3.0 4882 1 F NR\_ATG-Core R2-2406604***

***R2-2408388 On ATG timing advance reporting procedure Ericsson discussion Rel-18 NR\_ATG-Core***

*Proposal 2 SCS of offsetThresholdTA is assumed to be based on the SCS of the active BWP when the UE is configured with Timing Advance reporting.*

Therefore the initial suggestion from the discussion rapporteur is to agree R2-2408444.

**Tentative proposal 1: Agree offset in offsetThreshold-r18 is based on active BWP where the TAR-Config is applied.**

Comments on tentative proposal or the CR in R2-2408444:

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| **Company** | **Support (Yes/No/See comment)** | **Comment (potential clarifications etc... )** |
| Huawei | Yes, with comment | We are generally fine with the new proposed option 1 as suggested by the offline rapporteur below with one change – keeping the original wording: (…)when *TAR-Config* is applied. |
| Huawei v06 |  | Additionally, we think the UE assumption as captured currently is too restrictive, it should only be for TAR-Config and BWP switching, therefore we propose to revise the wording as follows:  Value of *offsetThresholdTA-r18* does not change with BWP switching and the UE assumes the BWP-switching does not occur when TAR-Config is applied. |
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**F2F/offline discussion:**

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Potential clarification on when the network is expected to configure this? For instance in stable conditions?

ZTE: Huawei solution is confusing due to the wording. ZTE think that reconfiguring is not a problem, i.e it can be based on active BWP and can change with SCS changing.

HW: Changed to be “applied” to solve the issue of handovers. Threshold should not change with BWP switching.

ZTE: Wording is confusing. Keeping threshold unchanged can be achieved by basing it on initail BWP.

QC: Only way to achieve no changing of the absolute threshold is to base it on the initial BWP. No tight coordination between CU and DU. Issue if we go with HWs proposal. We need a change, current procedure is not clear. If we are going to change, we should go for the cleanest solution – initial BWP.

CATT: First step: Agree that unit of the value does not change with BWP switching within the same cell. Second step: In case of handover it can change. We support active BWP as MAC should be based on active BWP.

QC: For active BWP, CU-DU would need to make sure that there is tight coordination.

HW: Tar config would not be sent very often. Configuration sent in stable conditions. Our understanding is that the original intention of the feature to rely on active BWP. It is also future-proof.

QC: RRC does not necessarily know when the “conditions are stable”. Clarification: CU-DU has tight coordination – this has to be specified somehow.

LG: How does the network configure finer granularity – this is our concern. QC: If we want finer granulirty we can go with 30 kHz BWP.

HW: We think that initial BWP is NBC. We believe that active BWP is just a clarification. QC: We are also in favour of non-NBC, but this would be up to interpretation due to original wording.

QC: Limit to not do reconfiguration. Low layer (DU) decides when BWP is switched, and is decoupled from CU. For active BWP we would need to clarify that there is coordination between CU and DU. For handover case with field description: how network handles handover needs to be clarified.

ZTE: We prefer clean and more simple solution.

**Rapporteur observation:**

*Companies agree threshold should not change with BWP switching.*

Two different options:

* Option 1: Based on SCS of active BWP when the “configuration” is applied/received. With clarification that network ensures that the BWP-switching does not happen during configuration/reconfiguration. With the following field description.
  + Option 1a: Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. ~~For ATG, n~~Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols based on the SCS of the active BWP of the SpCell when *TAR-Config* is configured. Value of *offsetThresholdTA-r18* does not change with BWP switching and the UE assumes the BWP switching does not occur during configuration/reconfiguration. During handover, *offsetThresholdTA-r18* is based on SCS of the BWP indicated by *firstActiveDownlinkBWP-Id*.
  + Option 1b: Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. ~~For ATG, n~~Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols based on the SCS of the active BWP of the SpCell when *TAR-Config* is applied. Value of *offsetThresholdTA-r18* does not change with BWP switching and the UE assumes the BWP switching does not occur when *TAR-Config* is applied. During handover, *offsetThresholdTA-r18* is based on SCS of the BWP indicated by *firstActiveDownlinkBWP-Id*.
* Option 2: Based on SCS of initial BWP, with the following clarification in the field description:
  + Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. ~~For ATG, n~~Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols using the SCS of the initial BWP of the SpCell.

If any companies want to give comments on other CRs (not required).

*R2-2408808 Correction on SCS applied for ATG offsetThreshold Samsung CR Rel-18 38.331 18.3.0 5032 - F NR\_ATG-Core*

Comments on the CR in R2-2408808 (not required):

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| **Company** | **Support (Yes/No/See comment)** | **Comment** |
| Qualcomm | See comments | Current text:   * For ATG, network only configures offsetThresholdTA-r18, which is in unit of symbols   Current text is not clear, as we all know.  This means the unit of symbols could be associated with (1) active BWP or (2) initial BWP. Whichever option we go, we cannot argue one has no compatibility issue and other has compatibility issue.  Either way there is possibility of misunderstanding in behaviour change.  One change (active BWP solution) still has some room for issue while other does not. So we prefer to choose the cleaner solution, i.e., number of symbols based on SCS of initial BWP as in this CR. |
| Rapporteur | See comments | Can add clarification that it is the initial BWP of the SpCell or PCell. |
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*R2-2409069 Clarification on the unit of offsetThresholdTA-r18 for ATG ZTE Corporation CR Rel-18 38.331 18.3.0 5074 - F NR\_ATG-Core*

Comments on the CR in R2-2409069 (not required):

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| **Company** | **Support (Yes/No/See comment)** | **Comment** |
| Qualcomm | See comment | This text needs to be formulated carefully to avoid any potential issue. This is early Rel-18 and better to clarify for once and all. We should not be coming back bring issues on this in future.  Following is suggestion for this option:  OffsetThresholdTA  Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols based on the SCS of the active BWP of the PSCell when *TAR-Config* is configured. Value of *offsetThresholdTA-r18* does not change with BWP switching and the UE assumes the BWP-switching does not occur during configuration/reconfiguration. During handover, *offsetThresholdTA-r18* is based on SCS of the BWP indicated by *firstActiveDownlinkBWP-Id*. |
| Ericsson | See comment | As pointed out to offline to QC, the current field description is not clear on that that the r18 field is only for ATG. This comment is to emphasize that the the suggested change above “Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols…” is important. |
| Rapporteur | Comment to QCs TP | Currently the options states “active BWP of the PSCell”. PSCell is Primary SCG Cell. We think it should either say PCell or SpCell. If we are confident that DC is not supported and will never be supported, then it should be PCell, else it should be SpCell. |
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## Timing advance field in MAC CE

For the issue Timing Advance field in TAR MAC CE, a majority are for clarifying that the Timing Advance field in TAR MAC CE is based on the active BWP:

*R2-2408807 Clarification on Timing Advance Report MAC CE for ATG Samsung, Qualcomm, Huawei, HiSilicon, CMCC, CATT CR Rel-18 38.321 18.3.0 1954 - F NR\_ATG-Core*

Therefore the initial suggestion from rapporteur is to agree R2-2408807

**Tentative proposal 2: Agree clarification on Timing Advance field of TAR MAC CE is based on SCS of Active BWP.**

Comments on the CR in R2-2408807:

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| **Company** | **Support (Yes/No/See comment)** | **Comment (potential clarifications etc... )** |
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**F2F/offline discussion:**

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Rapporteur observation:

No issues with MAC CE CR.

# Conclusion

In this discussion, we have the following outcomes:

**Two different options:**

* **Option 1: Based on SCS of active BWP when the “configuration” is applied/received. With clarification that network ensures that the BWP-switching does not happen during configuration/reconfiguration. With the following field description(difference highlighted):** 
  + **Option 1a: Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. ~~For ATG, n~~Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols based on the SCS of the active BWP of the SpCell when *TAR-Config* is configured. Value of *offsetThresholdTA-r18* does not change with BWP switching and the UE assumes the BWP switching does not occur during configuration/reconfiguration. During handover, *offsetThresholdTA-r18* is based on SCS of the BWP indicated by *firstActiveDownlinkBWP-Id*.**
  + **Option 1b: Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. ~~For ATG, n~~Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols based on the SCS of the active BWP of the SpCell when *TAR-Config* is applied. Value of *offsetThresholdTA-r18* does not change with BWP switching and the UE assumes the BWP switching does not occur when *TAR-Config* is applied. During handover, *offsetThresholdTA-r18* is based on SCS of the BWP indicated by *firstActiveDownlinkBWP-Id*.**
* **Option 2: Based on SCS of initial BWP, with the following clarification in the field description:**
  + **Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. ~~For ATG, n~~Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols using the SCS of the initial BWP of the SpCell.**

**Proposal 2: For MAC CE clarification, agree R2-2408807.**

# Text proposals

## Option 1a

------------------------ 38.331 V18.3.0 ------------------------

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| *TAR-Config* field descriptions |
| ***offsetThresholdTA***  Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols based on the SCS of the active BWP of the SpCell when *TAR-Config* is applied. Value of the *offsetThresholdTA-r18* does not change with BWP switching and the UE assumes the BWP-switching does not occur during configuration/reconfiguration. During handover, *offsetThresholdTA-r18* is based on SCS of the BWP indicated by *firstActiveDownlinkBWP-Id*. |
| ***timingAdvanceSR***  Used to configure whether a Timing Advance report may trigger a Scheduling Request as specified in TS 38.321 [3]. |

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## Option 1b

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| *TAR-Config* field descriptions |
| ***offsetThresholdTA***  Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols based on the SCS of the active BWP of the SpCell when *TAR-Config* is applied. Value of *offsetThresholdTA-r18* does not change with BWP switching and the UE assumes the BWP-switching does not occur when *TAR-Config* is applied. |
| ***timingAdvanceSR***  Used to configure whether a Timing Advance report may trigger a Scheduling Request as specified in TS 38.321 [3]. |

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## Option 2

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| *TAR-Config* field descriptions |
| ***offsetThresholdTA***  Offset for TA reporting as specified in TS 38.321 [3]. Network only configures this parameter for MCG. Network only configures offsetThresholdTA-r18 for ATG, which is in unit of symbols using the SCS of the initial BWP of the SpCell. |
| ***timingAdvanceSR***  Used to configure whether a Timing Advance report may trigger a Scheduling Request as specified in TS 38.321 [3]. |

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