**3GPP TSG RAN WG2 Meeting #131bis R2-250xxxx**

Prague, Czech, Oct 13th – 17th, 2025

Agenda Item: 8.20.1

Source: CATT

Title: Report of [Post131][225][NR\_Others] On Rx BSF optimization (CATT)

Document for: Discussion and Decision

# Introduction

* [Post131][225][NR\_Others] On Rx BSF optimization (CATT)

Intended outcome: Discussion summary on the UAI issue, and endorse the CR for TS38.331

Deadline: Long

Rapporteur will provide RRC CR for RAN2#131bis based on the outcome of this post email discussion.

Companies providing input to this email discussion are requested to leave contact information below.

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| --- | --- | --- |
| **Company** | **Name** | **Email Address** |
| vivo | Dongdong Wei | weidongdong@vivo.com |
| Huawei, HiSilicon | Lili Zheng | zhenglili4@huawei.com |
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# Discussion

In RAN4 LS [1], the updated RAN4 agreements on Rx BSF are provided as below. And RAN2 work is to introduce a new UAI indicating UE preference to quit FBS. Regarding the UAI details, some issues have been listed and companies are invited to provide views.

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| 1. Overall Description:  RAN4 would like to update RAN2 on the Rx BSF optimization for NR RRM Phase 5. RAN4 had discussion on the Rx BSF optimization and the following agreements have been made for quitting condition of FBS:   |  | | --- | | RAN4#115 Agreement:  For the quitting condition of FBS:   * Introduce a new UAI indicating “overheating” issue:   + RAN4 will not discuss the UE behaviour after reporting UAI * Introduce a timer-based solution:   + UE is allowed to fall back to normal measurement when it has performed fast measurement for at least T1 from the time point when UE enters the FBS mode after meeting the FBS entry condition     - Further discuss the candidate numbers for T1. |   RAN4 further discussed the UAI and updated the agreement as follows:   * Introduce a new UAI indicating UE preference to quit FBS:   + RAN4 will not discuss the UE behaviour after reporting UAI   For the value of T1, RAN4 agreed to define a fixed a value of 90 seconds in RAN4 spec, which has no RAN2 impact in RAN4 understanding.   |  | | --- | | RAN4#116 Agreement:  A fixed value of 90 seconds. |   2. Actions:  **To RAN WG2 group:**  **ACTION:**  **RAN4 kindly requests RAN2 to take the above agreements into consideration for future work and define the new UAI in RAN2 specification.** |

***UAI Content***

The UAI is used to indicate UE preference to quit FBS, then whether the following UAI content is agreeable:

quitFBS-PreferenceFR2-r19 ENUMERATED {true} OPTIONAL

##### Q1. Do you agree the new UAI only indicates UE preference to quit FBS?

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| --- | --- | --- |
| **Company** | **Yes/No** | **Comment** |
| vivo | Yes | Follow RAN4 agreements. |
| Huawei, HiSilicon | See comments | We prefer to include two values for this UAI, i.e., UE can report it wants to quit BSF or it wants to stay in BSF.  UE cannot fall back to normal measurement during T1 and T1 is set to a quite long value (90s) by RAN4, we think it is possible that the UE preference could change during this 90s.  Also, in the R18 multi-Rx, we allow UE to report either “preference on operating in multi-Rx” or “preference on not operating in multi-Rx”. |
| OPPO | Yes | Follow R4 agreement  For the intention of Huawei, it can be also achieved by a single value, i.e., initially UE report this ‘quit-FBS’ value using UAI, then if UE is OK to stay at FBS, another UAI can be reported with the value absent.  But we are also fine not to consider this quit-FBS/stay-at-FBS change case at all. |
| CATT | Yes |  |
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##### Summary

***Prohibit timer***

Prohibit timer can prevent UE from frequently reporting UAI information. For example, T346m has been introduced for multi-Rx preference reporting. And the configuration of timer length is as below, i.e., timer length in seconds.

MultiRx-PreferenceReportingConfigFR2-r18 ::= SEQUENCE {

multiRx-PreferenceReportingConfigFR2ProhibitTimer-r18 ENUMERATED {

s0, s0dot5, s1, s2, s3, s4, s5, s6, s7,

s8, s9, s10, s20, s30, spare2, spare1}

}

|  |
| --- |
| ***multiRx-PreferenceReportingConfigFR2ProhibitTimer***  Prohibit timer for multi-Rx operation preference reporting for FR2. Value in seconds. Value *s0* means prohibit timer is set to 0 seconds, value *s0dot5* means prohibit timer is set to 0.5 seconds, value *s1* means prohibit timer is set to 1 second and so on. |

Considering RAN4 has agreed that:

*UE is allowed to fall back to normal measurement when it has performed fast measurement for 90s from the time point when UE enters the FBS mode after meeting the FBS entry condition.*

it seems unnecessary to introduce a prohibit timer for this new UAI, as the time duration of FBS operation is only 90s, and after receiving this quitting-preference UAI during this 90s period, network can lower down the activation threshold so that UE can quit FBS operation.

##### Q2. Do you agree NOT to introduce a prohibit timer for this new UAI?

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| **Company** | **Yes/No** | **Comment** |
| vivo | Yes | No need to introduce a duplicated timer in RAN2. |
| Huawei, HiSilicon | No | Even if the UE reports the UAI during T1 (90s), the UE cannot exit BSF before T1 expires, and it is up to NW implementation to de-configure BSF configuration. It is likely that the UE could trigger another report during this 90s, and a prohibit timer would be useful to prevent frequent reporting. |
| CATT | Yes |  |
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##### Summary

***UAI configuration***

**Q3. If the answer to Q2 is Yes, whether the following configuration to enable the new UAI is agreeable:**

OtherConfig-v19xy ::= SEQUENCE {

quitFBS-PreferenceReportingConfigFR2-r19 ENUMERATED {true} OPTIONAL -- Need R

}

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| **Company** | **Yes/No** | **Comment** |
| vivo | Yes |  |
| Huawei, HiSilicon |  | If a prohibit timer is introduced, SetupRelease structure is better. |
| CATT | Yes |  |
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***UAI procedure***

**Q4. If the answers to the questions above are all Yes, whether the following UAI related procedural text in RRC is agreeable:**

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| --- |
| 5.7.4.2 Initiation  <Unnecessary part omitted>  1> if configured to provide its preference for quitting FBS operation:  2> if the UE has a preference on quitting FBS operation for FR2:  3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to provide the UE preference for quitting FBS operation for FR2.  5.7.4.3 Actions related to transmission of *UEAssistanceInformation* message  <Unnecessary part omitted>  1> if transmission of the *UEAssistanceInformation* message is initiated to provide preference on quitting FBS operation for FR2 according to 5.7.4.2:  2> set *quitFBS-PreferenceFR2* to *true*: |

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| **Company** | **Yes/No** | **Comment** |
| vivo | Yes | Besides these modifications, we prefer also adding this purpose (i.e. preference on quitting FBS operation) into section 5.7.4.1, e.g.  - configured grant assistance information for NR sidelink positioning, or  - its preference on quitting FBS operation for FR2. |
| Huawei，HiSilicon | Yes | To be consistent:  1> if configured to provide its preference for quitting FBS operation for FR2:  2> if the UE has a preference on quitting FBS operation for FR2:  Besides, the UE behaviour of releasing this configuration should also be captured (e.g. during re-establishment, during resume). |
| CATT | Yes |  |
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##### Summary:

***Any other issues on the new UAI***

##### Q5. For any other issues companies think RAN2 needs to discuss about this new UAI, please add them in the following table.

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| **Company** | **Comment** |
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##### Summary

***RRC CR***

##### Q6. Regarding the following RRC CR, companies are invited to leave further comments in the following table.

[R2-2505205](file:///C:\Users\panidx\OneDrive%20-%20InterDigital%20Communications,%20Inc\Documents\3GPP%20RAN\TSGR2_131\Docs\R2-2505205.zip) Introduction of Rx BSF optimization for NR RRM Ph5 CATT, Ericsson, Apple, ZTE Corporation draftCR Rel-19 38.331 18.6.0 B NR\_RRM\_Ph5-Core

|  |  |
| --- | --- |
| **Company** | **Comment** |
| Huawei, HiSilicon | There is no need to have a separate clause for criterion for L3 fast beam sweeping operation, it can be added in the field description of the new IE, the feature is mainly described in RAN4 spec anyway.  [Rapp]: from rapporteur perspective, we don’t have a strong view.  In RAN4 running CR, only the following description has been added:  L3 fast Rx beam sweeping operation is activated for intra-frequency measurements and inter-frequency measurements with measurement gap provided that  -     UE is configured with triggering conditions indicated by *fbs-ThresholdP-r19* and/or *fbs-ThresholdQ-r19*, and the configured triggering conditions are satisfied.  -     The time since L3 fast Rx beam sweeping operation is activated is not larger than 90 s.  And the detail of the triggering condition is not specified in RAN4 spec. Since in RAN4 LS, RAN4 would like RAN2 to specify this triggering condition, it should be clearly specified in RAN2 spec.  In current RAN2 running CR, we introduced two thresholds for triggering condition. If only one threshold is configured, it’s sufficient to use field description to explain the triggering condition. But when two thresholds are configured, it’s not very clear to us how to capture the exact wording to explain this case in each field description. Maybe Huawei can provide a TP for further discussion, and we could add a proposal for online discussion to resolve this issue. Thank you.  [HW2] I think your TP in R2-2505205 can be taken as a baseline, and the related field description can be added under “fbs-Config-r19” instead of under individual thresholds, e.g.  ***fbs-Config***  Indicates the configuration for fast beam sweeping operation for L3 measurements ~~as specified in clause 5.5.X~~. If the measured PCell RSRP is below *fbs-ThresholdP* if configured and the measured PCell RSRQ is below *fbs-ThresholdQ* if configured, multi-Rx based L3 measurement shall be activated if supported by the UE.  ***fbs-ThresholdP***  RSRP threshold ~~Parameter "FBS-ThresholdP" in clause 5.5.x, which is used~~ to evaluate the criterion to activate fast beam sweeping operation for L3 measurements as specified in TS 38.133 [14].  ***fbs- ThresholdQ***  RSRQ threshold ~~Parameter "FBS-ThresholdQ" in clause 5.5.x, which is used~~ to evaluate the criterion to activate fast beam sweeping operation for L3 measurements as specified in TS 38.133 [14]. |
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##### Summary

# Conclusion

# References

[1] R4-2512333, LS on Rx BSF optimization for NR RRM Phase 5