**3GPP TSG-RAN WG2 #121bis-e *R2-230xxxx***

**E-meeting, April 2023**

Agenda Item: 6.10.1

Source: OPPO

Title: [Draft] [AT121bis-e][503][V2X/SL] Default CBR configuration (OPPO)

Document for: Discussion, Decision

# Introduction

This document is a report on the following email discussion:

* [AT121bis-e][503][V2X/SL] Default CBR configuration (OPPO)

**Scope:** Discuss corrections for (taking the conclusion for Case-3 into account, discuss the need of R17 CR, and no need to cover case-4)

1) default CBR, including 2841, 2617, 2795, 3908, 3214, 3215, 2619, 2647

Merge corrections that can be agreed in principle.

**Intended outcome:**

1. discussion summary in R2-2304227
2. if needed, 38.321 CR in R2-2304228 for R16 and R2-2304229 for R17
3. if needed, 38.331 CR in R2-2304230 for R16 and R2-2304231 for R17

**Deadline:** Comeback at 4/25 CB session

# Contact Information

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
| OPPO | Bingxue Leng | lengbingxue@oppo.com |
| Xiaomi | Li Zhao | zhaoli6@xiaomi.com |
| Nokia | Jakob Buthler | Jakob.buthler@nokia.com |
| vivo | Jing Liang | [liangjing@vivo.com](mailto:liangjing@vivo.com) |
| Lenovo | Joachim Löhr | [jlohr@lenovo.com](mailto:jlohr@lenovo.com) |
| LG | Giwon Park | [Giwon.park@lge.com](mailto:Giwon.park@lge.com) |
| NEC | Boyuan Zhang | zhang\_boyuan@nec.cn |
| Apple | Zhibin Wu | [Zhibin\_wu@apple.com](mailto:Zhibin_wu@apple.com) |
| Intel | Ansab Ali | ansab.ali@intel.com |
| CATT | Jie Shi | shijie@catt.cn |
| ZTE | Weiqiang Du | [du.weiqiang2@zte.com.cn](mailto:du.weiqiang2@zte.com.cn) |
| Samsung | Hyunjeong Kang | hyunjeong.kang@samsung.com |
| Qualcomm | Qing Li | [qinli@qti.qualcomm.com](mailto:qinli@qti.qualcomm.com) |

# Discussion

During 119bis, RAN2 discussed the use of default CBR in the following cases, besides case 3, all the other cases are confirmed.

[Proposal 18] Changes related to default CBR parameters are postponed to next meeting. (6/10)

[Session chair]: Check companies’ understanding (assuming R17 default CBR is configured)

- Case 1: partial sensing, R17 normal pool, R17 default CBR – partial

- Case 2a: random selection, R17 normal pool, R17 default CBR – random

- Case 2b: random selection, R16/17 exceptional pool, R16 default CBR

- Case 3: full sensing, R16/17 normal pool, R16 default CBR or invalid case?

=>Case 1, 2a, 2b are confirmed. Case 3 will be revisited next meeting.

During 120, RAN2 has further discussed whether the use of R16 default CBR in the normal pool is a valid case and a LS was sent to RAN1 due to no consensus in RAN2. And RAN1 has replied the LS in last meeting as follows:

|  |
| --- |
| RAN1 thanks RAN2 for the further question on default CBR configuration LS referenced above. Please find below RAN1’s reply to the question.  *RAN1 reply to Q1:*  ***From RAN1 perspective, whether case 3 is valid or not is the same in Rel-16 as in Rel-17, and therefore RAN1 recommends to RAN2 that the usage of default CBR configuration for full sensing case in R17 is unchanged compared to R16.*** |

And during online session, the following 2 cases are further discussed in RAN2

Case-3: usage of R16 default CBR for full sensing in normal pool

Case-4: usage of R16 default CBR for partial sensing and random selection in normal pool when R17 default CBR is not configured

And the following conclusion has been made

Agreement:

RAN2 confirm the validity of Case-3 (usage of R16 default CBR for full sensing in normal pool). But no spec change for R16 at least.

Thus, by following the guidance from online conclusion, the following questions are to check companies view on the whether/how of the spec change for each confirmed case (i.e., Case 1/2a/2b/3) for R17.

## Case-1

**Question 1-1: What is your view on the spec impact of Case 1 (usage of R17 *sl-DefaultCBR-PartialSensing* for partial sensing in R17 normal pool)?**

|  |  |  |
| --- | --- | --- |
| Company | Whether MAC spec impact is needed | Comments |
| OPPO | Yes | There is no RRC change proposed in this meeting. |
| Xiaomi | MAC | We think change on MAC specification is enough. The definition of sl-DefaultCBR-PartialSensing is already clear in the RRC |
| Nokia | OK with spec impact |  |
| vivo | Yes |  |
| Lenovo | Yes |  |
| LG | Yes |  |
| NEC | Yes |  |
| Apple | Yes |  |
| Intel | Yes |  |
| CATT | Yes |  |
| ZTE | Yes |  |
| Samsung | Yes | MAC spec change is enough. |
| Qualcomm | Yes | MAC spec only |

The following changes to MAC spec have been proposed in R2-2302619/R2-2303215/R2-2302647, for Case-1

**R2-2302619**

|  |
| --- |
| 3> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-PartialSensing* configured by RRC if partial sensing is selected and CBR measurement results are not available in case the *sl-TxPoolExceptional* is not used; |

**R2-2303215**

|  |
| --- |
| 3> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-PartialSensing* configured by RRC if partial sensing is selected and CBR measurement results are not available; |

**R2-2302647**

|  |
| --- |
| 3> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-PartialSensing* configured by RRC if partial sensing is selected and the number of SL RSSI measurement slots over CBR measurement window is below *sl-MinNumRssiMeasurementSlots* in case the *sl-TxPoolExceptional* is not used; |

If the answer in Question 1-1 to MAC spec impact is Yes, the following question is to check companies’ view on the detailed wording of MAC change

**Question 1-2: If the answer to Q1-1 is Yes, what is your view on the shape of MAC change for Case 1 (usage of R17 *sl-DefaultCBR-PartialSensing* for partial sensing in R17 normal pool)?**

**Option-1: As proposed in R2-2302619;**

**Option-2: As proposed in R2-2303215;**

**Option-3: As proposed in R2-2302647;**

**Option-4: Others;**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comments |
| OPPO | Option-3 | “CBR result not available” for partial sensing case is not very accurate, the wording in Option-3 more aligns with RRC spec. |
| Xiaomi | Option 1 or 2 | Proponent of option 2. We don’t think we need to duplicate the RRC wording in the MAC. Option 3 seems too much. Also we don’t think exceptional pool can be configured with partial sensing, so it seems not necessary to further limit “in case the *sl-TxPoolExceptional* is not used”. But we are OK if companies want to make it clear enough to align with the agreement. So we can accept option 1. |
| Nokia | Option 2 | Brief and to the point |
| vivo | Option-1 | Simple. Option seems over specified. And it is also more comprehensive to cover the exceptional pool case. |
| Lenovo | Option 1 or Option 2 |  |
| LG | Option 1 or 2 |  |
| NEC | Option 1/2 |  |
| Apple | Option 2 | We do not think exceptional pool needs to be specifically mentioned in MAC spec for partial sensing case. |
| Intel | Option 1 or 2 |  |
| CATT | Option 1 | Option 1 is aligned to the agreement and make the case more clear, i.e., sl-DefaultCBR-PartialSensing is used for partial sensing and the normal pool. |
| ZTE | Option 1 or 2 |  |
| Samsung | Option 2 | Same view as Apple |
| Qualcomm | Option 2 |  |

## Case-2

**Question 2a-1: What is your view on the spec impact of Case 2a (usage of R17 *sl-DefaultCBR-RandomSelection* for random selection in R17 normal pool)?**

|  |  |  |
| --- | --- | --- |
| Company | Whether MAC spec impact is needed | Comments |
| OPPO | Yes | There is no RRC change proposed in this meeting. |
| Xiaomi | MAC | Same comment as Q1-1. |
| Nokia | Yes |  |
| vivo | Yes |  |
| Lenovo | Yes |  |
| LG | Yes |  |
| NEC | Yes |  |
| Apple | Yes |  |
| Intel | Yes |  |
| CATT | Yes |  |
| ZTE | Yes |  |
| Samsung | Yes | MAC spec change is enough. |
| Qualcomm | Yes | MAC only |

The following changes to MAC spec have been proposed in R2-2302619/R2-2303215/R2-2302647, for Case-2a

**R2-2302619/R2-2302647**

|  |
| --- |
| 3> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-RandomSelection* configured by RRC if random selection is selected and CBR measurement results are not available in case the *sl-TxPoolExceptional* is not used; |

**R2-2303215**

|  |
| --- |
| 3> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-RandomSelection* configured by RRC if random selection is selected and CBR measurement results are not available; |

If the answer in Question 2a-1 to MAC spec impact is Yes, the following question is to check companies’ view on the detailed wording of MAC change

**Question 2a-2: If the answer to Q2a-1 is Yes, what is your view on the shape of MAC change for Case 2a (usage of R17 *sl-DefaultCBR-*** ***RandomSelection* for random selection in R17 normal pool)?**

**Option-1: As proposed in R2-2302619/R2-2302647;**

**Option-2: As proposed in R2-2303215;**

**Option-3: Others;**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comments |
| OPPO | Option-1 |  |
| Xiaomi | Option 1 or 2 | Same comment as Q1-2. |
| Nokia | Option 2 |  |
| vivo | Option 1 | Better to mention it is for the case when exceptional pool is not used. |
| Lenovo | Option 1 or Option 2 |  |
| LG | Option 1 or Option 2 |  |
| NEC | Option 1/2 |  |
| Apple | Option 1 |  |
| Intel | Option 1 or 2 |  |
| CATT | Option 1 |  |
| ZTE | Option 1 or 2 |  |
| Samsung | Option 2 | But no strong view between the two options. |
| Qualcomm | Option 2 | Consistent text for both partial and random selection. |

**Question 2b-1: What is your view on the spec impact of Case 2b (usage of R16 *sl-DefaultTxConfigIndex* for random selection in R16 exceptional pool)?**

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Whether RRC spec impact is needed | Whether MAC spec impact is needed | Comments |
| OPPO | No | Yes |  |
| Xiaomi | No | See comments | We think whether we can agree with the change for case 2b depends on the answer of Q3-1/3-2. If we don’t want to change the spec for case 3, then we cannot limit the usage of default CBR value to exceptional pool. |
| Nokia | No | No strong view | Slight bias towards yes |
| vivo | No | Yes |  |
| Lenovo | No | Yes |  |
| LG | No | Yes |  |
| NEC | No | Yes |  |
| Apple | NO | No | There is no difference between R16 exceptional pool and R17 exceptional pool.. R17UE can use R16 sl-DefaultTxConfigIndex as same as R16 UE as long as g *sl-DefaultCBR-RandomSelection* is not configured. |
| Intel | No | Yes |  |
| CATT | No | Yes |  |
| ZTE | No | No | Share same view with Apple. |
| Samsung | No | No | We think that this case 2b is already covered with existing specification text. |
| Qualcomm | No | No |  |

The following change to MAC spec has been proposed in R2-2302619/R2-2303215/R2-2302647, for Case-2b

**R2-2302619/R2-2302647/ R2-2303215**

|  |
| --- |
| 3> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if CBR measurement results are not available in case the *sl-TxPoolExceptional* is used; |

If the answer in Question 2b-1 to MAC spec impact is Yes, the following question is to check companies’ view on the detailed wording of MAC change

**Question 2b-2: if the answer to Q2b-1 is Yes for MAC spec, what is your view on the shape of MAC spec change for Case 2b (usage of R16 *sl-defaultTxConfigIndex* for random selection in R16 exceptional pool)?**

**Option-1: As proposed in R2-2302619/R2-2302647/R2-2303215;**

**Option-2: Others;**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comments |
| OPPO | Option-1 |  |
| Xiaomi | See comment above | Depends on how we handle case 3. |
| Nokia | Option 1\* | \*Only if we agree on any spec change |
| vivo | Option 1 |  |
| Lenovo | Option 1 |  |
| LG | Option 1 |  |
| NEC | Option 1 |  |
| Intel | Option 1 |  |
| CATT | Option 1 |  |

The following change to RRC spec has been proposed in R2-2302617 for Case-2b

|  |
| --- |
| ***sl-DefaultTxConfigIndex***  Indicates the PSSCH transmission parameters to be used by the UEs which do not have available CBR measurement results, by means of an index to the corresponding entry in *sl-Tx-ConfigIndexList*. Value 0 indicates the first entry in *sl-Tx-ConfigIndexList*. The field is ignored if the UE has available CBR measurement results. This field is applied if CBR measurement results are not available when the *sl-TxPoolExceptional* is used. |

If the answer in Question 2b-1 to RRC spec impact is Yes, the following question is to check companies’ view on the detailed wording of RRC change

**Question 2b-3: if the answer to Q2b-1 is Yes for RRC spec, what is your view on the shape of RRC spec change for Case 2b (usage of R16 *sl-defaultTxConfigIndex* for random selection in R16 exceptional pool)?**

**Option-1: As proposed in R2-2302617;**

**Option-2: Others;**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comments |
|  |  |  |
|  |  |  |

## Case-3

**Question 3-1: What is your view on the spec impact of Case 3 (usage of R16 *sl-DefaultTxConfigIndex* for full sensing in R16 normal pool), limited to R17?**

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Whether RRC spec impact is needed, limited to R17 | Whether MAC spec impact is needed, limited to R17 | Comments |
| OPPO | No | No | Since R1 LS suggest not to change the spec for this case, so it should be aligned between R16 and R17 spec for this case.  ***Therefore RAN1 recommends to RAN2 that the usage of default CBR configuration for full sensing case in R17 is unchanged compared to R16.***  Otherwise, if R2 goes to spec change, we would suggest to notify R1 on the R2 conclusion. |
| Xiaomi | No | See comments | We think if Q2b-2 adopt the following change, then we need to have corresponding change for case 3, otherwise, the default R16 CBR value is only applicable for exceptional case but actually we already agreed case 3 is valid, i.e., in R17 normal pool if sensing result is not available, R16 default CBR value should be applied.    Maybe as a compromise and to respect the guideline from RAN1. We don’t change the usage of the R16 default CBR value at all, i.e., neither case 2b nor case 3 is reflected in the specification. We only have changes on the case 1 and case 2a for R17 normal pool. |
| Nokia | No | No |  |
| vivo | No | No | As the validity is not confirmed by RAN1, we would better not to change the spec. |
| Lenovo | No | No |  |
| LG | No | No |  |
| NEC | No | No |  |
| Apple | No | No | Case 3 is valid but the behaviour is same for R16 and R17 UEs |
| Intel | No | No | Share view with OPPO |
| CATT | Yes | Yes | We hope to make it clear in R17 and this is aligned to the agreement. |
| ZTE | No | No |  |
| Samsung | No | No | We understood that the operation of R16 is applied to R17. We think that the spec change is not needed for the case 3. |
| Qualcomm | No | No | Based on RAN1’s reply, if no change to Rel 16 then no change to Rel 17. |

The following change to MAC spec has been proposed in R2-2302619/R2-2303215, for Case-3

**R2-2302619**

|  |
| --- |
| 3> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if full sensing is selected and CBR measurement results are not available when the *sl-TxPoolExceptional* is not used; |

**R2-2303215**

|  |
| --- |
| 3> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-defaultTxConfigIndex* configured by RRC if full sensing is selected and CBR measurement results are not available; |

If the answer in Question 3-1 to MAC spec impact is Yes, the following question is to check companies’ view on the detailed wording of MAC change

**Question 3-2: If the answer to Q3-1 is yes for MAC spec, what is your view on the shape of R17 MAC spec change for Case 3 (usage of R16 *sl-DefaultTxConfigIndex* for full sensing in R16 normal pool)?**

**Option-1: As proposed in R2-2302619**

**Option-2: As proposed in R2-2303215;**

**Option-3: Others;**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comments |
| Xiaomi | Option 1 or 2 | If Q2b-2 adopt the change, then we need corresponding change for case 3 as well. And in this case we have the same comments as Q1-2. We don’t think exceptional pool can be configured with full sensing, so it seems not necessary to further limit “in case the *sl-TxPoolExceptional* is not used”. But we are OK if companies want to make it clear enough to align with the agreement. So we can accept option 1. |
| Nokia | See comments | If action is agreed, then 3215 |
| CATT | Option 1 | We hope to make it clear in the description and aligned to the agreement. |

The following change to RRC spec have been proposed in R2-2302617/R2-2303908 for Case-3

**R2-2302617**

|  |
| --- |
| ***sl-DefaultTxConfigIndex***  Indicates the PSSCH transmission parameters to be used by the UEs which do not have available CBR measurement results, by means of an index to the corresponding entry in *sl-Tx-ConfigIndexList*. Value 0 indicates the first entry in *sl-Tx-ConfigIndexList*. The field is ignored if the UE has available CBR measurement results. This field is applied if CBR measurement results are not available when the *sl-TxPoolExceptional* is not used and full sensing is selected. |

**R2-2303908**

|  |
| --- |
| ***sl-DefaultTxConfigIndex***  Indicates the PSSCH transmission parameters to be used by the UEs which do not have available CBR measurement results, by means of an index to the corresponding entry in *sl-Tx-ConfigIndexList*. Value 0 indicates the first entry in *sl-Tx-ConfigIndexList*. The field is ignored if the UE has available CBR measurement results. For indicating default CBR value, the field is used for following cases:  1. when full sensing is used, |

If the answer in Question 3-1 to RRC spec impact is Yes, the following question is to check companies’ view on the detailed wording of RRC change

**Question 3-3: If the answer to Q3-1 is yes to RRC spec, what is your view on the shape of R17 RRC spec change for Case 3 (usage of R16 *sl-DefaultTxConfigIndex* for full sensing in R16 normal pool)?**

**Option-1: As proposed in R2-2302617;**

**Option-2: As proposed in R2-2303908;**

**Option-3: Others;**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comments |
| CATT | Option 1 | Proponent. See our comment above. |
|  |  |  |

# Conclusion

We have the following proposals:

[Proposal 1 xxx.](#_Toc39666495)

# Reference

1. R2-2302410 Reply LS to RAN2 on default CBR configuration (R1-2302174; contact: OPPO) RAN1 LS in Rel-17 NR\_SL\_enh-Core To:RAN2
2. R2-2302841 Discussion on RAN1 LS R1-2302174 Ericsson discussion Rel-17 NR\_SL\_enh-Core
3. R2-2302617 Miscellaneous RRC corrections for the usage of default CBR configuration CATT CR Rel-17 38.331 17.4.0 3955 - F NR\_SL\_enh-Core
4. R2-2302795 On default CBR configuration Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core
5. R2-2303908 Correction on default CBR configuration ZTE Corporation, Sanechips CR Rel-17 38.331 17.4.0 4033 - F NR\_SL\_enh-Core
6. R2-2303214 Discussion on the usage of default CBR values for NR sidelink Xiaomi discussion
7. R2-2303215 Correction on the usage of default CBR values for NR sidelink Xiaomi CR Rel-17 38.321 17.4.0 1587 - F NR\_SL\_enh-Core
8. R2-2302619 Correction on case for default CBR configuration CATT CR Rel-17 38.321 17.4.0 1575 - F NR\_SL\_enh-Core
9. R2-2302647 Discussion on default CBR OPPO discussion Rel-17 NR\_SL\_enh-Core