**3GPP TSG RAN WG1 Meeting #110 R1-220xxxx**

**Toulouse, France, August 22 – 26, 2022**

**Agenda Item: 8.11**

**Source: Moderator (Huawei)**

**Title: Moderator summary for reply LS to R1-2205727**

**Document for: Discussion and decision**

# Introduction

A RAN2 LS was sent to RAN1 in R1-2205727, where the following questions was asked:

* On IUC Scheme 1:

**Q1:** For the parameter *sl-TriggerConditionRequest* which is used to determine how to trigger IUC explicit request, does UE-B “has data to be transmitted to UE-A” mean UE-B is to piggyback the IUC Request with SL data transmission?

**Q2:** For the parameter *sl-Condition1-A-2* which is used to disable the usage of condition 1-A-2 in IUC Scheme 1, how will UE-A evaluate the condition “when it is intended receiver of UE-B” and how to capture this in 3GPP language?

* On default CBR configuration:

**Q3**: Is there still a need for the R17 default CBR parameters considering the existing R16 default CBR parameter?

**Q4**: If yes to Q3, how to differentiate the usage of the R16 / R17 default CBR parameters?

RAN1 was requested to provide feedback on the above questions.

# Discussion

## Background and Moderator’s view

Below are summary of contributions and Moderator’s view:

* **On Q1:** 
  + **Summary of contributions**
    - Do not piggyback: Huawei, QC, LG, ZTE, OPPO, CATT, vivo
    - Piggyback: Xiaomi, Samsung, Apple
    - Not in all cases: Ericsson (sometimes, it can and sometimes it cannot, e.g. when SL data has the same source/destination ID pair as the IUC request, they can be transmitted together)
  + **Moderator’s view**
    - Some companies raised a valid point that the resource set provided by UE-A based on the IUC request will be used to determine UE-B’s transmission resources to transmit the data. Thus, UE-B is not supposed to piggyback the data triggering IUC request with the IUC request.
* **On Q2:** 
  + **Summary of contributions**
    - No need to further capture such condition in RAN2, this has already specified in section 8.1.4A TS 38.214.
      * CATT, Xiaomi, ZTE,
    - No need to further capture such condition in RAN2, this has already specified in TS 38.321.
      * Huawei, OPPO
    - This can be restricted to an established unicast link with specific source-destination ID pair, given that the preferred resource set can be transmitted from UE-A to UE-B in a unicast manner only
      * LG, QC, CATT, Ericsson
    - How to capture in spec language RRC/MAC spec is up to RAN2
      * LG, vivo
    - Automatically assumed so if not set to “disable”: Apple
  + **Moderator’s view**
    - Some companies (e.g., OPPO, Huawei) raised a valid point that UE-A is always the intended receiver of UE-B as per TS 38.321 (see cyan part below) and no specification change is required.

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| *(below is from TS 38.321)*  3> if configured by RRC, *sl-InterUE-CoordinationScheme1* enabling reception of preferred resource set and non-preferred resource set and when the UE does not have own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE:  4> randomly select the time and frequency resources for one transmission opportunity from the resources belonging to the received preferred resource set for a MAC PDU to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL CSI reporting.  3> if configured by RRC, *sl-InterUE-CoordinationScheme1* enabling reception of preferred resource set and non-preferred resource set and when the UE has own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE:  4> randomly select the time and frequency resources for one transmission opportunity within the intersection of the received preferred resource set and the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] for a MAC PDU to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL CSI reporting; |

* **On Q3/Q4:** 
  + **Summary of contributions**
    - These two new R17 default CBR parameters are needed
      * Positive: Huawei, QC, Ericsson
      * Negative: ZTE, CATT, xiaomi, vivo, Samsung, OPPO (update field description to include R17 two cases),
      * Up to RAN2: LG (but need update of field description to reflect partial sensing and random resource selection), Apple
  + **Moderator’s view**
    - Some companies point out the new Rel-17 parameters as provided in RAN1’s RRC list are introduced for new resource allocation schemes, i.e. partial sensing and random resource selection, which is different from the situation of Rel-16 full sensing.
    - Some companies who are negative on introducing these new R17 parameters also point out R16 parameter’s filed description needs to be updated to reflect the usage of these new R17 parameters.
    - To simplify the situation, Moderate suggests to specify these two Rel-17 parameters since they are already provided in RAN1’s RRC list, and clarify the usage of them to RAN2.

Based on above, the following draft RAN1’s reply to each questions are provided. Please provide your comments if any.

## 1st round discussions

### Q1

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| **Q1:** For the parameter *sl-TriggerConditionRequest* which is used to determine how to trigger IUC explicit request, does UE-B “has data to be transmitted to UE-A” mean UE-B is to piggyback the IUC Request with SL data transmission? |

RAN1’s reply: No. The resource set provided by UE-A based on the IUC request will be used to determine UE-B’s transmission resources to transmit the data. Thus, UE-B is not supposed to piggyback the data triggering IUC request with the IUC request.

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| Company | Agree? | Comment |
| Huawei, HiSilicon | ok |  |
| DCM | Accept | Although our preference is to piggyback always in order to avoid a lot of request TXs, we can be flexible in consideration of the current stage and majority view. |
| Ericsson | See comment | As commented in our contribution, there are some cases where the IUC request can be multiplexed with other data as indicated in the agreement below. In order to provide a full answer to RAN2 we should also include that case.  **Agreement**   * For inter-UE coordination information transmission in Scheme 1,   + Inter-UE coordination information can be multiplexed with other data only if the source/destination ID pair is the same     - Retransmission of the TB carrying inter-UE coordination information is supported * For explicit request transmission in Scheme 1,   + Explicit request can be multiplexed with other data only if the source/destination ID pair is the same     - Retransmission of the TB carrying request is supported   Therefore, we propose to include this text into the answer:  “If the IUC request and the data have the same source/destination ID pair, the IUC request and the data can be multiplexed.” |
| Intel | Ok |  |
| Spreadtrum | OK |  |
| Qualcomm | Comment | We agree with the general direction but share Ericsson’s view that there are cases when the request could be multiplexed with other data.  No. The resource set provided by UE-A based on the IUC request will be used to determine UE-B’s transmission resources to transmit the data. Thus, UE-B is not supposed to piggyback the data triggering IUC request with the IUC request. However, the UE can multiplex the IUC request with other data. |
| ZTE, Sanechips | Comment | Similar view with Ericsson on the precondition for multiplexing, i.e. the destination/source ID pair shall be identical. However, the multiplexing may not necessarily take place given IUC request itself can still be transmitted. |
| CATT, GOHIGH | Yes | We are also fine with Ericsson and QC’s clarification. |
| Nokia, NSB | Comment | Same view as Ericsson and QC |
| Samsung | No | In our understanding, the agreement below (marked in yellow) means that UE-B is to piggyback the IUC Request with SL data transmission. No piggyback was not agreed. Please correct me if there is some misunderstanding…  Agreement  For inter-UE coordination triggered by UE-B’s explicit request in Scheme 1,   * A resource pool level (pre-)configuration can enable one of the following alternatives:   + Alt 1: it is up to UE-B’s implementation whether or not to trigger the request generation   + Alt 2: the request generation can be triggered only when UE-B has data to be transmitted to UE-A   Note: Rel-16 procedure of UL/SL prioritization, LTE SL/NR SL prioritization, and congestion control is applied to the transmission of the request transmission. |
| NEC | Comment | We share Ericsson's view. |
| vivo | OK | Although we agree with Ericsson’s view, we think this is well known to RAN2 as the multiplexing is done in MAC layer. Thus additional clarification may not be needed. |
| OPPO | OK | Fine with the reply above, also fine with the addition from Qualcomm. |
| Apple | No | In RAN1’s discussions (R1-2200749), three alternatives were mentioned as follows:   |  | | --- | | FL’s observation:  Clear majority is not observed, and the situation is not so much different compared to the last meeting. FL suggests to provide two alternatives to finalize it.  Q3-9: Which alternative do you agree among following proposals?  Alt 1:   * For inter-UE coordination triggered by UE-B’s explicit request in Scheme 1,   + it is up to UE-A’s implementation whether or not to trigger the request generation   + Note: Rel-16 procedure of UL/SL prioritization, LTE SL/NR SL prioritization, and congestion control is applied to the transmission of the request transmission.   Alt2:   * For inter-UE coordination triggered by UE-B’s explicit request in Scheme 1,   + the request generation can be triggered if the following is met. For other cases, it is up to UE implementation whether or not to trigger the request generation.     - Priority value of UE-B’s transmission is smaller than a (pre)configured threshold   + Note: Rel-16 procedure of UL/SL prioritization, LTE SL/NR SL prioritization, and congestion control is applied to the transmission of the request transmission.   Alt3:   * For inter-UE coordination triggered by UE-B’s explicit request in Scheme 1,   + the request generation can be triggered if the following is met. For other cases, it is up to UE implementation whether or not to trigger the request generation.     - UE-B has data that is transmitted together with the request to UE-A   + Note: Rel-16 procedure of UL/SL prioritization, LTE SL/NR SL prioritization, and congestion control is applied to the transmission of the request transmission. |   In our understanding, RAN1 agreement is derived from alternative 3 in the above intermediate proposal. It is clear that this alternative refers that UE-B’s data is transmitted together with the IUC request. Hence, we think the answer to RAN2’s first question is yes. |

### Q2

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| **Q2:** For the parameter *sl-Condition1-A-2* which is used to disable the usage of condition 1-A-2 in IUC Scheme 1, how will UE-A evaluate the condition “when it is intended receiver of UE-B” and how to capture this in 3GPP language? |

RAN1’s reply: UE-A is always the intended receiver of UE-B as per TS 38.321 and no specification change is required.

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| Company | Agree? | Comment |
| Huawei, HiSilicon | ok |  |
| DCM | OK |  |
| Ericsson |  | Not sure we are answering RAN2’s question. In our view, we should indicate how the receiver UE knows that it is the intended receiver. |
| Intel | Comment | We think we should respond that this should be based on a established unicast link. |
| Spreadtrum | OK |  |
| Qualcomm |  | We share Intel’s view that UE-B will use an established unicast link to match the source of the IUC as a destination for a data transmission. |
| ZTE,Sanechips | OK |  |
| CATT, GOHIGH | OK |  |
| Nokia, NSB | OK |  |
| Samsung | O.K |  |
| NEC |  | Agree with Ericsson. RAN2 of course acknowledges what's captured in 321. |
| vivo | No | “A resource set is received” does not necessarily mean it is the intended receiver – the destination ID should be checked.  Given that this is the RAN2 spec, how to change the spec should be up to RAN2. |
| OPPO | Comment | Based on TS 38.321, preferred resource set is only used for the transmission to the UE-A providing the set, therefore we agree that UE-A is always the intended receiver of UE-B.  But we do not think no specification change is required, as “when it is intended receiver of UE-B” is captured in 38.331 now, which RAN2 thinks is not 3GPP language, in our view this sentence can be simply removed. |
| Apple | Comment | We are fine with the first half of the proposal “UE-A is always the intended receiver of UE-B as per TS 38.321”, and do not agree with the second half of the proposal “no specification change is required.”  The assumption that UE-A is intended receiver of UE-B is hard to justify. For instance, in request-triggered IUC scenario, UE-B does not indicate whether or not its sidelink transmission is towards UE-A. In condition-triggered IUC scenario, UE-A also does not know whether UE-B has sidelink transmission to UE-A.  Hence, the RRC parameter *sl-Condition1-A-2* indicates whether condition 1-A-2 is applied, where it is autonomously implied that UE-A is intended receiver of UE-B under condition 1-A-2. Hence, there is no need to further justify “UE-A is intended receiver of UE-B” in PHY specification. Hence, we propose to remove the following sentence in the PHY specification: “~~the UE is a destination UE of the TB for whose transmission the preferred resource set is being determined;”~~ |

### Q3

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| **Q3**: Is there still a need for the R17 default CBR parameters considering the existing R16 default CBR parameter? |

RAN1’s reply: Yes. The new Rel-17 parameters as provided in RAN1’s RRC list are introduced for new resource allocation schemes, i.e. partial sensing and random resource selection, which is different from the situation of Rel-16 full sensing.

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| --- | --- | --- |
| Company | Agree? | Comment |
| Huawei, HiSilicon | ok |  |
| DCM | OK |  |
| Ericsson | OK |  |
| Intel | Ok |  |
| Spreadtrum | OK |  |
| Qualcomm | OK |  |
| ZTE,Sanechips | No | Although the situation is different form R16, we think the same default parameters can be used for all of them, the necessity/benefit of using different default parameters for R17 cases is not justified. |
| CATT, GOHIGH | No | We don’t see much added value for the new introduced R17 parameters. so prefer to remove these two new R17 paramenters. |
| Nokia, NSB | OK |  |
| Samsung | Can Accept | If majority want new Rel-17 parameters, we can accept |
| NEC | ok |  |
| vivo | Comments | This issue actually was discussed during RAN1 RRC parameter discussion. The existing parameter is reused from R15 LTE, which is introduced for LTE PUE. Thus it seems no problem to reuse it in NR.  If we really would like to have the flexibility to separately configure the CBR for partial sensing and random selection, at most one new parameter is needed (e.g., for random selection), while reusing the existing one for partial sensing. |
| OPPO | OK |  |
| Apple | Comment | Our view is it is up to RAN2 to decide whether the two new RRC parameters (defaultCbrRandomSelection and defaultCbrPartialSensing) are redundant. |

### Q4

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| **Q4**: If yes to Q3, how to differentiate the usage of the R16 / R17 default CBR parameters? |

RAN1’s reply: The Rel-17 parameters *defaultCbrRandomSelection* and *defaultCbrPartialSensing* are used for UE performing partial sensing and random resource selection, respectively. The existing Rel-16 parameter is used when these two Rel-17 parameters do not apply.

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| --- | --- | --- |
| Company | Agree? | Comment |
| Huawei, HiSilicon | ok |  |
| DCM | OK |  |
| Ericsson | OK |  |
| Intel | OK |  |
| Spreadtrum | OK |  |
| Qualcomm | OK |  |
| Nokia, NSB | OK |  |
| Samsung | OK |  |
| NEC | ok |  |
| vivo | No | See our reply to Q3. |
| OPPO | OK |  |

## 2nd round discussions

**Proposal: endorse the following reply to the questions in RAN2’s LS in R1-2205727.**

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| **Q1:** For the parameter *sl-TriggerConditionRequest* which is used to determine how to trigger IUC explicit request, does UE-B “has data to be transmitted to UE-A” mean UE-B is to piggyback the IUC Request with SL data transmission? |

RAN1’s reply: No. The resource set provided by UE-A based on the IUC request will be used to determine UE-B’s transmission resources to transmit the data. Thus, UE-B is not supposed to piggyback the data triggering IUC request with the IUC request. However, the UE can multiplex the IUC request with other data if and only if the source/destination ID pair is the same as per RAN1’s agreement below.

Agreement

* For inter-UE coordination information transmission in Scheme 1,
  + Inter-UE coordination information can be multiplexed with other data only if the source/destination ID pair is the same
    - Retransmission of the TB carrying inter-UE coordination information is supported
* For explicit request transmission in Scheme 1,
  + Explicit request can be multiplexed with other data only if the source/destination ID pair is the same
    - Retransmission of the TB carrying request is supported

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| **Q2:** For the parameter *sl-Condition1-A-2* which is used to disable the usage of condition 1-A-2 in IUC Scheme 1, how will UE-A evaluate the condition “when it is intended receiver of UE-B” and how to capture this in 3GPP language? |

RAN1’s reply: This condition is always satisfied, i.e., UE-A is always the intended receiver of UE-B as per TS 38.321 ~~and no specification change is required~~.

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| **Q3**: Is there still a need for the R17 default CBR parameters considering the existing R16 default CBR parameter? |

RAN1’s reply: Yes. The new Rel-17 parameters as provided in RAN1’s RRC list are introduced for new resource allocation schemes, i.e. partial sensing and random resource selection, which is different from the situation of Rel-16 full sensing.

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| **Q4**: If yes to Q3, how to differentiate the usage of the R16 / R17 default CBR parameters? |

RAN1’s reply: The Rel-17 parameters *defaultCbrRandomSelection* and *defaultCbrPartialSensing* are used for UE performing partial sensing and random resource selection, respectively. The existing Rel-16 parameter is used when these two Rel-17 parameters do not apply.

# Conclusion

TBD

# Reference

**Rel-17 sidelink**

[R1-2205727](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205727.zip) LS on RRC parameters for IUC Scheme 1 and default CBR configuration RAN2, Huawei

**Relevant company tdocs:**

[R1-2205845](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2205845.zip) Discussion on LS on RRC parameters for IUC Scheme 1 and default CBR configuration LG Electronics

[R1-2206091](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206091.zip) About LS on RRC parameters for IUC Scheme 1 and default CBR configuration ZTE, Sanechips

[R1-2206277](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206277.zip) Discussion on the LS on RRC parameters for IUC Scheme 1 and default CBR configuration OPPO

[R1-2206278](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206278.zip) Draft reply LS on RRC parameters for IUC Scheme 1 and default CBR configuration OPPO

[R1-2206342](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206342.zip) Draft Reply LS on RRC parameters for IUC Scheme 1 and default CBR configuration CATT, GOHIGH

[R1-2206609](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206609.zip) [Draft]Reply LS on RRC parameters for IUC Scheme 1 and default CBR configuration Xiaomi

[R1-2206707](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206707.zip) Draft reply LS on RRC parameters for IUC Scheme 1 and default CBR configuration vivo

[R1-2206775](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2206775.zip) Draft Reply LS on RRC parameters for IUC Scheme 1 and default CBR configuration Samsung

[R1-2207166](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207166.zip) Reply to RAN2 LS on RRC parameters for IUC Scheme 1 and default CBR configuration Qualcomm Incorporated

[R1-2207302](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207302.zip) Discussion on RAN2 LS on RRC Parameters for IUC Scheme 1 and Default CBR Configuration Apple

[R1-2207303](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207303.zip) Draft Reply LS to RAN2 on RRC Parameters for IUC Scheme 1 and Default CBR Configuration Apple

[R1-2207516](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207516.zip) Discussion on LS on RRC parameters for IUC Scheme 1 and default CBR configuration Huawei, HiSilicon

[R1-2207561](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207561.zip) [Draft] Reply LS on RRC parameters for IUC Scheme 1 and default CBR configuration Ericsson

[R1-2207562](file:///C:\Users\younsun\Documents\3GPP%20documents\RAN1%20tdocs\TSGR1_110\Docs\R1-2207562.zip) Discussion on LS on RRC parameters for IUC scheme 1 and default CBR configuration Ericsson