3GPP TSG RAN WG1 #101 R1-200xxxx

e-Meeting, May 25th – June 5th, 2020

**Agenda item: 7.1**

**Source: Moderator (Nokia)**

**Title: [101-e-NR-7.1CRs-11] Correction to TBS determination when 3824<Ninfo<3825**

**Document for: Discussion and Decision**

# 1 Introduction

This document facilitates the discussion on TBS determination when the unquantized calculation of Ninfo is larger than 3824 and smaller than 3825.

# 2 Summary of the possible solutions

NEC proposes to acknowledge that the specification has been interpreted in two ways, and the solution is to avoid the ambiguity by making the the unquantized *N*info to falling between 3824 and 3825 as unsupported [1].

Nokia and Nokia Shanghai Bell propose to clarify that the *N*info an unquantized variable [2].

Ericsson proposes to clarify that the *N*info is rounded down to the nearest integer, and further suggests that whichever clarification is adopted for Rel-16, this is allowed for Rel-15 based implementations as well [3].

The three proposals quite well cover the possible options for RAN1 to choose from.

# 3 Collection of company views

**Q1:** Company views on how to resolve the issue in Rel-16 specifications

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| --- | --- | --- | --- |
| **Proposal****Company** | **1) 3824 < *N*info < 3825 is not supported in Rel-16 [1]** | **2) Clarify *N*info is unquantized** | **3) Clarify *N*info is rounded down to the nearest integer** |
| Nokia | Not preferred. 3GPP essentially acknowledged that in Rel-15 the gNB does not know which way the UE is implemented, but it is not as drastic and saying this is an invalid Ninfo value and cannot be used. | Preferred solution as this was the original RAN1 intention. | If for some reason 3GPP cannot agree to clarify the spec so that it reads what it was intended to read, then we would rather accept this solution than none at all. |
| Ericsson | In our understanding it would be an overkill approach to put this restriction in the specs and therefore we don’t support this proposal. | Using “unquantized/non-integer” value for Ninfo is the original intention in Rel-15 from channel coding group, though technically applying “floor” or “unquantized” Ninfo works equally well. However very large amount of Rel-15 UEs released in the market are implemented with the “floor” solution. Our concern is the end users out there in the field may not able/willing to update to this solution.  | By brief investigation there’s much more “floor” Rel-15 UEs being released into the field, applying “floor” in Rel-16 would benefit those majority Rel-15 UEs. We prefer this solution and hope companies can understand our intension and also support this solution. |
| QC |  | We do not prefer this solution. But we can accept it as a solution for this issue in Rel-16, if it is the majority view in RAN1.  | We prefer this solution.  |
| MediaTek |  | We support this solution because it is the original RAN1 intention. In addition, the equation in spec clearly states that the value is not quantized (NO “floor” there).  | We cannot accept this solution.  |
| Huawei |  | With the understanding that there are already a large number of Rel-15 UEs implemented following solution 3, solution 2 is not preferred.  | We prefer this solution.  |
| ZTE | If there is no consensus to adopt Solution 2, i.e. unquantized Ninfo in Rel-16, we are okay to explicitly clarify in 38.214 that it is invalid if Ninfo is greater than 3824 and smaller than 3825.  | Solution 2 is clearly the original intention. And Ninfo is a floating point number as there is no additional quantization operation applied to the formula “ Ninfo=NRE\*Qm\*R\*v ” in TS 38.214. So if we decide to resolve this issue in Rel-16, Solution 2 is our first priority. | We cannot accept this solution. |
| CATT |  | Although solution 2 is the original intention, given that there are a large number of Rel-15 UEs implemented following solution 3, solution 2 is not preferred. | We prefer this solution. |
| Spreadtrum |  | It is the original intention, we can go with it, too. | It is our first preference. |
| NEC | We propose this option for the case no consensus could be made. We are also fine to fix *N*info either option 2) or 3). | Specification can be read with *N*info replaced with in the following equations and texts. Therefore, this option would be preferable among option 2) and 3). | If RAN1 goes for this option, we are OK with this option. |

**Q2:** Company views on making the resolution to Q1 early implementable (if applicable). i.e. if proposal 2) or 3) is agreed for Rel-16 specifications, the CR cover page states that “This CR may be implemented by earlier release UEs/gNBs”, as in the draft CR [2], and to facilitate proposal #3 of [3]?

|  |  |
| --- | --- |
| **Company** | **View** |
| Nokia | Support making a statement on early implementability in the CR cover page. |
| Ericsson | Support making the “earlier release” statement in the CR cover page. |
| QC | First of all, we don’t see much benefit to add such a sentence of “early implementable” in general, as base station anyway needs to deal with the ambiguity among Rel-15 UEs which are already deployed in the field.  More importantly, the answer to Q2 depends on what solution RAN1 adopt for Q1. If the solution is “Clarify Ninfo is unquantized”, then we disagree with adding “This CR may be implemented by earlier release UEs/gNBs” in CR cover page. If the solution is “Clarify Ninfo is rounded down to the nearest integer”, then we are OK to add that sentence in CR cover page. |
| MediaTek | We share the similar view as QC, the answer depends on which solution is adopted in Q1. If Solution 3 is adopted in Q1, then we cannot agree to add the magic sentence in CR cover page. |
| Huawei | Given that there are already different UE implementations for Rel-15, the magic sentence is not strictly needed but we are fine if Solution 3 is adopted. |
| ZTE | As there are different implementations in Rel-15, the sentence is not needed for the CR cover page. |
| CATT | Given that there are different implementations in Rel-15, the statement on early implementability in the CR cover page is not needed. |
| Spreadtrum | Agree with many companies‘ comments, it is not needed. |
| NEC | Given either implementation would be possible in Rel-15, magic sentence would not be needed. |

# References

1. [R1-2003923](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_101-e/Docs/R1-2003923.zip), On ambiguous TBS due to ambiguity of Ninfo, NEC
2. [R1-2004636](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_101-e/Docs/R1-2004636.zip), Draft 38.214 CR Correction to TBS determination when 3824<Ninfo<3825 (Rel-15 origin), Nokia, Nokia Shanghai Bell
3. [R1-2004642](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_101-e/Docs/R1-2004642.zip), Remaining issue for Rel-16 maintenance, Ericsson

# Annex – Proposals of the submitted Tdocs

**R1-2003923, On ambiguous TBS due to ambiguity of Ninfo, NEC**

Any TBS resulting from floating point value more than 3824 and less than 3825 are not supported in this version of the specification.

**R1-2004636, Draft 38.214 CR Correction to TBS determination when 3824<Ninfo<3825 (Rel-15 origin), Nokia, Nokia Shanghai Bell**

2) Unquantized intermediate variable (*Ninfo*) is obtained by .

**R1-2004642, Remaining issue for Rel-16 maintenance, Ericsson**

1. Selecting either “floor” or “float” can work for TBS size determination.
2. RAN1 make decision and select one of the alternatives.
3. There are probably more “floor” UEs than the “float” UEs in the market.
4. Based on the observation, we have the following text proposal.

---------------------------- Start of proposed TP for 38.214 --------------------------------------------

--- Paraphrased by the discussion moderator as the original TP was somehow corrupt ---

2) Intermediate number of information bits (*Ninfo*) is obtained by

If 

Use step 3 as the next step of the TBS determination

else

Use step 4 as the next step of the TBS determination

end if

3) When , TBS is determined as follows

---------------------------- End of proposed TP for 38.214 --------------------------------------------

Once the decision is made in RAN1 for Rel-16, it can be applied for Rel-15 implementation.

1. The Rel-16 decision on N\_info equation between 3824 and 3825 can be applied for Rel-15.