**[]3GPP TSG-RAN WG4 Meeting #** **100-e R4-2115349**

**Electronic Meeting, Aug. 16-27, 2021**

**Title: [DRAFT]** LS on criteria for RLM/BFD relaxation

**Response to:**

**Release:** Rel-17

**Work Item:** NR\_UE\_pow\_sav\_enh-Core

**Source:** RAN WG4

**To:** RAN WG2

**Cc:** RAN WG1

**Contact Person:**

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**Attachments:**

**1. Overall Description:**

In RAN4 #98e-bis, RAN4 #99e and RAN4 #100e meeting, RAN4 has discussed RLM/BFD relaxation for power saving enhancements.

Conclusions on feasible scenarios have been draw as follows.

* *RAN4 concluded the feasible scenario and will define the RLM/BFD requirements for R17 UE measurements relaxation for RLM and/or BFD in work phase for the following cases (in RAN4 #98e-bis)*
* *Case 1: SSB based RLM/BFD measurement relaxation in FR1*
* *Case 2: CSI-RS based RLM/BFD measurement relaxation in FR1*
* *Case 3: CSI-RS based RLM/BFD measurement relaxation in FR2*
* *Case 4: SSB based RLM/BFD measurement relaxation in FR2*
* *Relaxed BFD/RLM requirements shall be supported for all deployment scenarios supported by current specification which includes: NR SA, EN-DC, NE-DC, NR intra-band CA, NR inter-band CA and NR-DC. (in RAN4 #99e)*

For the relaxation criteria, RAN4 have also achieved agreements as follows.

* *Network to enable and disable this feature. (in RAN4 #98e)*
* *Whether relaxed RLM/BFD requirements can be applied depends on both the serving cell quality and UE mobility state. (in RAN4 #98e-bis)*
* *If the UE fulfills any of serving cell quality exit condition or low mobility exit condition, or DRX cycle length is NOT allowed for relaxation, UE will exit relaxation mode. (in RAN4 #99e)*
  + *FFS: details of low mobility exit condition*
  + *FFS: the observation period for the exiting criteria*
* *When neither serving cell quality criteria nor low mobility criteria is configured, the existing RLM/BFD requirements shall apply. (in RAN4 #100e, to be updated based 2nd round discussion)*
* *Note: It can be revisited if* 
  + *dedicated or broadcast signalling to indicate the UE when it is allowed to relax the RLM/BFD measurements is agreed, or*
  + *good serving cell criteria is agreed to be predefined.*
* *FFS: Whether low mobility criteria are necessary to be configured*

For the low mobility criterion, RAN4 have achieved agreements so far as follows

* *Low mobility criteria (in RAN4 #100e)*
  + *Reuse Rel-16 low mobility criterion based on L3 RSRP measurement variation.*
    - *FFS the RSs for L3 RSRP measurement*

For the cell quality criterion, RAN4 have achieved agreements so far as follows

* *Good serving cell quality criteria of RLM/BFD relaxation is defined as the radio link quality is better than a threshold. The radio link quality in good serving cell quality criteria for R17 RLM/BFD relaxation is based on SINR. (in RAN4 #98e-bis)*
* *UE reuse the SINR for RLM/BFD evaluation when determine whether the serving cell quality criteria is fulfilled or not (in RAN4 #99e)*
* *Reuse the legacy definition of the SINR for radio link quality evaluation of RLM/BFD. (in RAN4 #100e, to be updated based 2nd round discussion)*
  + *FFS: whether the thresholds are pre-defined or configured*

According to the WID RP-193239, RAN2 work will be triggered by RAN4 LS.

* 1. Study the feasibility and performance impact of relaxing UE measurements for RLM and/or BFD, particularly for low mobility UE with short DRX periodicity/cycle, and specify, if agreed, relaxation in the corresponding requirements [RAN4]
* NOTE: Supplementary RAN2 work, if needed, can be triggered by RAN4 LS

RAN4 respectfully ask RAN2 take above conclusions into considerations and start work in RAN2. RAN2 may work on at least following aspects:

* Specify the relaxation criteria and corresponding signalling.

If there is further RAN4 conclusions that need RAN2 work in the future meetings, it will be informed to RAN2.

**2. To RAN WG2 group.**

**ACTION:** RAN4 respectfully asks RAN2 to take RAN4 conclusions in consideration and start RAN2 work on this topic.

**3. Date of Next TSG-RAN WG4 Meetings:**

TSG-RAN4 Meeting #101e 1 - 12, Nov, 2021 Online

TSG-RAN4 Meeting #101e-bis TBD Online