**3GPP TSG-RAN WG4 Meeting #102-e *R4-2205332***

**Online, Feb 21 – Mar 3, 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **DraftCR** | **rev** | **1** | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | DraftCR on SSB based relaxed RLM requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_UE\_pow\_sav\_enh-Core | | | | |  | ***Date:*** | | | 2022-02-28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases:* *Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In R17, RAN4 agreed to define SSB based relaxed radio link monitoring requirements, and a draft CR [R4-2202643] was endorsed in RAN4#101bis-e meeting. However, the values of K1 and K2 are still TBD. | | | | | | | | |
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| ***Summary of change:*** | | Based on the version in [R4-2202643], SSB based relaxed radio link monitoring requirements has been further updated.   * To update the value of K1. * To update the value of K2. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The SSB based relaxed radio link monitoring requirements are not completed in R17.  . | | | | | | | | |
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| ***Clauses affected:*** | | 8.1.2.x | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS38.533 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<Start of change 1>

8.1.2.x Minimum requirement for relaxed RLM

This clause contains minumun requirements for relaxed radio link monitoring based on SSB.

UE shall be able to evaluate whether the downlink radio link quality on the configured RLM-RS resource estimated over the last TEvaluate\_out\_SSB\_Relax [ms] period becomes worse than the threshold Qout\_SSB within TEvaluate\_out\_SSB\_Relax [ms] evaluation period.

TEvaluate\_out\_SSB\_Relax is defined in Table 8.1.2.x-1 for FR1.

TEvaluate\_out\_SSB\_Relax is defined in Table 8.1.2.x-2 for FR2 with scaling factor N=8.

The value of P is defined in clause 8.1.2.2.

Longer evaluation period would be expected if the combination of RLM-RS resource, SMTC occasion and measurement gap configurations does not meet previous conditions.

For either an FR1 or FR2 serving cell, longer evaluation period would be expected during the period Tidentify\_CGI when the UE is requested to decode an NR CGI.

For either an FR1 or FR2 serving cell, longer evaluation period would be expected during the period Tidentify\_CGI,E-UTRAN when the UE is requested to decode an LTE CGI.

**Table 8.1.2.x-1: Evaluation period TEvaluate\_out\_SSB\_Relax for FR1**

|  |  |
| --- | --- |
| **Configuration** | **TEvaluate\_out\_SSB\_Relax (ms)** |
| Max(TDRX,TSSB) ≤80ms | Max(200 × K3, Ceil(15 × K1 × P) ×Max(TDRX,TSSB)) |
| 80ms < Max(TDRX,TSSB) ≤160ms | Ceil(15 × P) × Max(TDRX,TSSB) |
| NOTE 1: TSSB is the periodicity of the SSB configured for RLM. TDRX is the DRX cycle length and no longer than 80ms.  NOTE 2: K1 is the relaxation factor. K1 = 4 for Max(TDRX,TSSB) ≤ 40ms and K1 = 2 for 40ms<Max(TDRX,TSSB) ≤80ms.  NOTE3: K3 is the relaxation factor for the lower bound. K3 = K1, if 1 < K1 ≤ 2; K3 = 1 otherwise. | |

**Table 8.1.2.x-2: Evaluation period TEvaluate\_out\_SSB\_Relax for FR2**

|  |  |
| --- | --- |
| **Configuration** | **TEvaluate\_out\_SSB\_Relax (ms)** |
| Max(TDRX,TSSB) ≤80ms | Max(200 × K4, Ceil(15 × K2 × P × N) × Max(TDRX,TSSB)) |
| 80ms < Max(TDRX,TSSB) ≤160ms | Ceil(15 × P × N) × Max(TDRX,TSSB) |
| NOTE 1: TSSB is the periodicity of the SSB configured for RLM. TDRX is the DRX cycle length and no longer than 80ms.  NOTE 2: K2 is the relaxation factor. K2 = 2.  NOTE3: K4 is the relaxation factor for the lower bound. K4 = K2, if 1 < K2 ≤ 2; K4 = 1 otherwise. | |

<End of change 1>