**3GPP TSG- RAN WG4 Meeting #102-e *R4-2206915***

**Electronic Meeting, February 21 – March 3, 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** |  | **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:***  | Draft CR for TS 38.133 Minimum requirement for SSB based BFD for UE configured with relaxed measurement criterion |
|  |  |
| ***Source to WG:*** | CMCC |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_UE\_pow\_sav\_enh |  | ***Date:*** | 2022-02-13 |
|  |  |  |  |  |
| ***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 canbe 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)* |
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| ***Reason for change:*** | The relaxed RLM/BFD requirements is introduced in new subsections within the existing RLM/BFD sections TS 38.133 |
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| ***Summary of change:*** | Added the mimimum requirement structure for the NR Rel-17 SSB based relaxed BFD requirements. |
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| ***Consequences if not approved:*** | The WI will be incomplete.  |
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| ***Clauses affected:*** | 8.5.2.X(new) |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ... |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Revision of R4-2204533 |

<< Start of Changes >>

##### 8.5.2.X Minimum requirement for SSB based relaxed beam failure detection

This clause contains minimum requirements for SSB based relaxed beam failure detection.

UE shall be able to evaluate whether the downlink radio link quality on the configured SSB resource in set  estimated over the last TEvaluate\_BFD\_SSB\_Relax ms period becomes worse than the threshold Qout\_LR\_SSB within TEvaluate\_BFD\_SSB\_Relax ms period.

The value of TEvaluate\_BFD\_SSB\_Relax is defined in Table 8.5.2.X-1 for FR1.

The value of TEvaluate\_BFD\_SSB\_Relax is defined in Table 8.5.2.X-2 for FR2 with scaling factor N=8

The value of P is defined in clause 8.5.2.2.

Longer evaluation period would be expected if the combination of BFD-RS resource, SMTC occasion and measurement gap configurations does not meet pervious 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 BFD evaluation period would be expected during the period Tidentify\_CGI,E-UTRAN when the UE is requested to decode an LTE CGI.

**Table 8.5.2.X-1: Evaluation period** **TEvaluate\_BFD\_SSB\_Relax for FR1**

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| --- | --- |
| **Configuration** | **TEvaluate\_BFD\_SSB\_Relax (ms)**  |
| Max(TDRX, TSSB) ≤ 80 ms | Max(50 × K3, Ceil(7.5 × K1 × P) × Max(TDRX,TSSB)) |
| 80ms＜Max(TDRX, TSSB) ≤ 160 ms | Max(50, Ceil(7.5 × P) × Max(TDRX,TSSB)) |
| Note 1: TSSB is the periodicity of SSB in the set . TDRX is the DRX cycle length and no longer than 80ms.Note 2: K1 is the relaxation factor. K1 = 2 for 40ms＜Max(TDRX, TSSB) ≤ 80 ms, K1 = 4 for Max(TDRX, TSSB) ≤ 40 msNote 3: K3 is the relaxation factor for the lower bound. K3 = K1, if 1 < K1 ≤ 2; K3 = 1 otherwise. |

**Table 8.5.2.X-2: Evaluation period TEvaluate\_BFD\_SSB\_Relax for FR2**

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| --- | --- |
| **Configuration** | **TEvaluate\_BFD\_SSB\_Relax (ms)**  |
| Mas(TDRX, TSSB) ≤ 80 ms | Max(50 × K4, Ceil(7.5 × K2 × P × N) × Max(TDRX,TSSB)) |
|  |  |
| 80ms＜Max(TDRX, TSSB) ≤ 160 ms | Max(50, Ceil(7.5 × P× N) × Max(TDRX,TSSB)) |
| Note 1: TSSB is the periodicity of SSB in the set . TDRX is the DRX cycle length and no longer than 80ms.Note 2: K2 is the relaxation factor. K2 = 2.Note 3: K4 is the relaxation factor for the lower bound. K4 = K2, if 1 < K2 ≤ 2; K4 = 1 otherwise. |

<< End of Changes >>