**3GPP TSG-SA5 Meeting #140-e *S5-216362rev1***

**e-meeting, 15 - 24 November 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.552** | **CR** | **0340** | **rev** | **-** | **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 |  | Radio Access Network | **x** | Core Network | **X** |

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| ***Title:*** | Add PM on Handover failures per beam related to MRO for intra-system mobility | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eSON\_5G | | | | |  | ***Date:*** | | | 2021-11-05 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
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| ***Reason for change:*** | | Add new PM to support analytics related to intra-system mobility. | | | | | | | | |
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| ***Summary of change:*** | | Introduce new PM related to handover failure per beam. | | | | | | | | |
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| ***Consequences if not approved:*** | | Use case for beam handover mobility cannot be supported. | | | | | | | | |
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| ***Clauses affected:*** | | 5.1.1.25, A.66 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 28.541 CR 0635,  TS 28.313 CR 0044 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **1st Modified Section** |

##### 5.1.1.25.X Handover failures per beam-cell pair related to MRO for intra-system mobility

a) This measurement provides the number of handover failure events per beam-cell pair (source beam, i.e., the last beam before failure, and target cell) related to MRO detected during the intra-system mobility within 5GS. The measurement includes separate counters for various handover failure types, classified as "Intra-system too early handover per beam”, "Intra-system too late handover per beam " and "Intra-system handover to wrong cell per beam ". The handovers considered are inter-cell handovers.

b) CC.

c) The measurements of too early handovers per beam, too late handovers per beam and handover to wrong cell per beam events are obtained respectively by accumulating the number of failure events detected by gNB during the intra-system mobility within 5GS.

d) Each measurement is an integer value.

e) HO.IntraSys.bTooEarly  
HO.IntraSys.bTooLate  
HO.IntraSys.bToWrongCell

f) Beam

g) Valid for packet switched traffic.

h) 5GS.

i) One usage of this measurement is to support MRO (see TS 28.313 [30]).

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| **2nd Modified Section** |

A.66 Monitoring of MRO performance

5G NR cells may experience issues, such as too early or too late handover, handover to wrong cell, ping-pong handover, that not only impact user experience, but also waste network resources, if handover parameters are not set properly. MRO is intended to automatically detect the handover issues, and determine actions to configure the handover parameters in cells in order to improve the handover performance.

It is also important to have information about the used beams in the source in order to optimize the handover performance taking beam IDs into account.

The MRO related measurements are used to support the mobility robustness optimization SON function.

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| **End of Modified Sections** |