**3GPP TSG-SA5 Meeting #145-e *S5-225339rev1***

e-meeting, 15 – 24 August 2022

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **28.552** | **CR** | **0379** | **rev** | **1** | **Current version:** | **17.7.0** |  |
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| *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:*** | Rel-18 CR 28.552 Add beam specific inter-system handover counters related to MRO | | | | | | | | | |
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| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | PM\_KPI\_5G\_Ph3 | | | | |  | ***Date:*** | | | 2022-08-05 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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 PMs to support analytics per beam-cell-pair related to inter-system mobility. | | | | | | | | |
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| ***Summary of change:*** | | Introduce new PMs related to handover failure per beam-cell-pair related to MRO for inter-system mobility. | | | | | | | | |
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| ***Consequences if not approved:*** | | Use case for beam handover inter-system mobility cannot be supported. | | | | | | | | |
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| ***Clauses affected:*** | | 5.1.1.25.x, 5.1.1.25.y, 5.1.1.25.z | | | | | | | | |
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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 ... | | |
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| ***Other comments:*** | | This CR is related to the draftCR S5-224166 approved at SA5#144e. The differences are   1. corrections of clause 5.1.1.25.1, 5.1.1.25.2, 5.1.1.25.3, 5.1.1.25.4 are shifted to a separate CR because these errors should be already corrected in Rel-16 (see CR S5-225325 (Rel-16) and S5-225326 (Rel-16)) 2. in clause 5.1.1.25.y "failure events" is replaced by "inter-system unnecessary handover reports" because unnecessary handovers are no failures (see also correction in Rel-16 CR S5-225325) and 3. in clauses 5.1.1.25.x and 5.1.1.25.y "NCI" is corrected to "ECGI" because the adjacent cells in the considered cases of inter-system mobility are LTE cells. | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

***First changes***

##### 5.1.1.25.5 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 for the beam per adjacent cell, too late handovers for the beam per adjacent cell and handover to wrong cell for the beam per adjacent cell events are obtained respectively by accumulating the number of failure events detected by gNB during the intra-system mobility within 5GS, where adjacent cells are identified by their NR Cell Identity (NCI).

d) Each measurement is an integer value.

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

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]).

##### 5.1.1.25.x Handover failures per beam-cell pair related to MRO for inter-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 inter-system mobility from 5GS to EPS. The measurement counter is classified as handover failure type "Inter-system too late handover".

b) CC.

c) The measurements of too late handovers for the beam per adjacent cell events are obtained respectively by accumulating the number of failure events detected by gNB during the inter-system mobility from 5GS to EPS, where adjacent cells are identified by their E-UTRAN Cell Global Identifier (ECGI).

d) Each measurement is an integer value.

e) HO.InterSys.bTooLate.ECGI

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]).

##### 5.1.1.25.y Unnecessary handovers per beam-cell pair for inter-system mobility

a) This measurement provides the number of unnecessary handover events per beam-cell pair (source beam, i.e., the last beam before handover, and target cell) detected during the inter-system mobility from 5GS to EPS. An example of unnecessary handover occurred when a UE handed over from NG-RAN to other system (e.g. UTRAN) even though quality of the NG-RAN coverage was sufficient.

b) CC.

c) The measurement of unnecessary handovers for the beam per adjacent cell is obtained by accumulating the number of inter-system unnecessary handover reports detected by gNB during the inter-system mobility from 5GS to EPS, where adjacent cells are identified by their E-UTRAN Cell Global Identifier (ECGI).

d) Each measurement is an integer value.

e) HO.InterSys.bUnnecessary.ECGI

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]).

##### 5.1.1.25.z Handover ping-pong per beam-cell pair for inter-system mobility

a) This measurement provides the number of handover ping-pong events per beam-cell pair (source beam, i.e., the last beam before failure, and target cell) detected during the inter-system mobility from 5GS to EPS. An example of handover ping-pong occurred when a UE is handed over from a cell in a source system (e.g. NG-RAN) to a cell in a target system different from the source system (e.g. E-UTRAN), then within a predefined limited time the UE is handed over back to a cell in the source system, while the coverage of the source system was sufficient for the service used by the UE.

b) CC.

c) The measurement of handover ping-pong events for the beam per adjacent cell is obtained by accumulating the number of failure events detected by gNB during the inter-system mobility from 5GS to EPS, where adjacent cells are identified by their NR Cell Identity (NCI).

d) Each measurement is an integer value.

e) HO.InterSys.bPingPong.NCI

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]).

***End of changes***