**3GPP TSG-SA5 Meeting #131e *S5-203086***

**e-meeting 25th May-3rd June 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | 28.552 | **CR** | 0234 | **rev** | 1 | **Current version:** | 16.5.0 |  |
|  | | | | | | | | |
| *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 |  |

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| ***Title:*** | Add UE power headroom measurement | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE, China Mobile | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_SLICE\_ePA | | | | |  | ***Date:*** | | | 2020/5/13 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | UE power headroom measurement is important for analyzing UE power distribution, to learn whether the uplink signal strength can be increased or not. So it is very useful to do trouble shooting of coverage hole and coverage balance for uplink. | | | | | | | | |
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| ***Summary of change:*** | | Add power headroom distribution measurement. | | | | | | | | |
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| ***Consequences if not approved:*** | | The power headroom measurement is missing. | | | | | | | | |
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| ***Clauses affected:*** | | 5.1.1.X(new), 5.1.1.X.1(new), A.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:*** | |  | | | | | | | | |

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| **1st modified section** |

#### 5.1.1.X PHR Measurement

5.1.1.x.1 Type 1 power headroom distribution

a) This measurement provides a bin distribution (histogram) of Type 1 power headroom (See in TS 38.321 [32]) measurements.

b) CC.

c) This measurement is obtained by incrementing the appropriate measurement bin using Type1 power headroom value when GNB received Type1 power headroom contained in Single Entry PHR MAC CE or Multiple Entry PHR MAC CE (See in TS 38.321 [32]) for period headroom report from UE.

d) A set of integer.

e) L1M.PHR1.BinX

where X represents the range of PHR value (-32 ...+38 dB) (See in TS 38.133 [32])

NOTE: Number of bins and the range for each bin is left to implementation.

f) NRCELLDU

g) Valid for packet switched traffic

h) 5GS

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| **Next modified section** |

# A.x Use case of UE power headroom

UE power headroom measurement is important for analyzing UE power distribution, to learn whether the uplink signal strength can be increased or not. So it is very useful to do trouble shooting of coverage hole and coverage balance for uplink. It is also used to evaluate the power control performance and increase UE power headroom as possible with QoS is guaranteed for the purpose of energy saving. These questions are determined by the ratio of the number of larger or less than threshold to the total number of it and the threshold is configurable.

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| **End of modifications** |