**3GPP TSG-SA5 Meeting #129e *S5-201337rev3***

**e-meeting, 24 February – 4 March 2020**

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| *CR-Form-v11.4* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | 0199 | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 use case and definitions of TA measurements | | | | | | | | | |
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| ***Source to WG:*** | ZTE, China Mobile | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_SLICE\_ePA | | | | |  | Date: | | | 2019/2/20 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | The TA measurement can be used to calculate distance distribution between UE and serving gNodeB. It is useful to analyze -UE distribution in geographic area and to do trouble shooting of extending coverage and overage blind spot.  The relation between the preamble and SSB beam refers to the parameter ssb-perRACH-OccasionAndCB-PreamblesPerSSB defined in TS38.331 clause 6.3.2. | | | | | | | | |
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| ***Summary of change:*** | | The TA related measurement and use case are added. | | | | | | | | |
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| ***Consequences if not approved:*** | | The efficient approach for trouble shooting of extending coverage and coverage blind spot cannot be supported. | | | | | | | | |
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| ***Clauses affected:*** | | 2, 3.2, 3.4, 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:*** | |  | | | | | | | | |

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| **1st modified section** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 32.401: "Telecommunication management; Performance Management (PM); Concept and requirements".

[3] 3GPP TS 32.404: "Performance Management (PM); Performance measurements - Definitions and template".

[4] 3GPP TS 23.501: "System Architecture for the 5G System".

[5] IETF RFC 5136: "Defining Network Capacity".

[6] 3GPP TS 38.473: "NG-RAN; F1 Application Protocol (F1AP)".

[7] 3GPP TS 23.502: "Procedures for the 5G System".

[8] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[9] 3GPP TS 32.425: "Performance Management (PM); Performance measurements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN)".

[10] 3GPP TS 32.451: "Key Performance Indicators (KPI) for Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Requirements".

[11] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[12] Void.

[13] 3GPP TS 38.423: "NG-RAN; Xn Application Protocol (XnAP)".[14] 3GPP TS 29.502: "5G System; Session Management Services; Stage 3".

[15] Void.

[16] 3GPP TS 29.244: "Technical Specification Group Core Network and Terminals; Interface between the Control Plane and the User Plane Nodes; Stage 3".

[17] ETSI GS NFV-IFA027 v2.4.1: "Network Functions Virtualisation (NFV); Management and Orchestration; Performance Measurements Specification".

[18] Void.

[19] 3GPP TS 38.214: "NR; Physical layer procedures for data".

[20] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".

[21] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[22] 3GPP TS 29.413: "Application of the NG Application Protocol (NGAP) to non-3GPP access".

[23] 3GPP TS 29.122: "Technical Specification Group Core Network and Terminals; T8 reference point for Northbound APIs".

[24] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[25] ETSI ES 202 336-12 V1.2.1: "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (power, cooling and building environment systems used in telecommunication networks); Part 12: ICT equipment power, energy and environmental parameters monitoring information model".

[26] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[27] 3GPP TS 29.274: "Evolved General Packet Radio Service (GPRS); Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".

[28] 3GPP TS 29.510: "5G System; Network function repository services; Stage 3".

[x] 3GPP TS 38.211: "NR; Physical channels and modulation".

[y] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification"

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| **Next modified section** |

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

PI Performance Indicator.

TA Timing Advance.

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| **Next modified section** |

## 3.4 Measurement family

The measurement names defined in the present document are all beginning with a prefix containing the measurement family name. This family name identifies all measurements which relate to a given functionality and it may be used for measurement administration.

The list of families currently used in the present document is as follows:

- DRB (measurements related to Data Radio Bearer)

- RRC (measurements related to Radio Resource Control)

- UECNTX (measurements related to UE Context)

- RRU (measurements related to Radio Resource Utilization)

- RM (measurements related to Registration Management)

- SM (measurements related to Session Management)

- GTP (measurements related to GTP Management)

- IP (measurements related to IP Management)

- PA (measurements related to Policy Association)

- L1M (measurements related to Layer 1 Measurement)

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| **Next modified section** |

#### 5.1.1.X TA related measurements

##### 5.1.1.X.1 TA distribution per SSB Beam at Random Access Phase per SSB

a) This measurement provides a bin distribution (histogram) of the TA per SSB beam measurements derived from preamble which related with the SSB index (see TS 38.331 [y]) in the measured NR cell (see TS 38.211 [x]) at contention based Random Access Phase.

b) CC.

c) This measurement is obtained by incrementing the appropriate measurement bin using the TA derived from preamble at contention based Random Access Phase. Unit is ,  and  (see TS 38.211 [x]).

d) A set of integer.

e) L1M.RA.BinX

Where X represents the range of measured quantity TA value in Ts.

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

f) Beam

g) Valid for packet switched traffic

h) 5GS

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| **Next modified section** |

# A.x Use case of TA related measurements

TA measurement can be used to calculate distance distribution between UE and serving gNodeB. It is useful to analyze UE distribution in geographic area and to do trouble shooting of extending coverage and coverage blind spot. The probability of extending coverage and blind spot can be analyzed by the ratio of the number of TA. Threshold is configurable according to the cases to be analyzed. The cases include dense urban area macro cell, suburban area macro cell and rural area cell. So it is necessary to define the TA related measurements.

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| **End of modifications** |