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| **3GPP TSG-RAN WG2 Meeting#117eR2-22xxxxx**  **Electronic Meeting, Feb 21st - March 3rd , 2022 Revision of R2-2203366**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | *CR-Form-v12.1* | | | | | | | | | | **CHANGE REQUEST** | | | | | | | | | |  | | | | | | | | | |  | **38.305** | **CR** | **0082** | **rev** | **2** | **Current version:** | **16.7.0** |  | |  | | | | | | | | | | *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:*** | Addition of Timing Advance measurement reporting in NR E-CID [NRTADV] | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson, NTT Docomo, Polaris Wireless, Verizon, China Telecom, FirstNet, Deutsche Telekom, Intel Corporation, CATT, Nokia, Nokia Shanghai Bell, Huawei | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2022-02-14 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | RAN1 has discussed in TEI17 NR Positioning support for TA measurement. To enable timing advance (TA) PRACH based solution for NR UL E-CID, the following agreement was made by RAN1.   |  | | --- | | TEI proposal #5  Define a new timing advance measurement for NR as below   * + Timing advance (TADV) is defined as the time difference TADV = TgNB-RX –TgNB-TX, where     - TgNB-RX is the Transmission and Reception Point (TRP) [18] received timing of uplink subframe #*i* containing PRACH transmitted from UE, defined by the first detected path in time     - TgNB-TX is the TRP transmit timing of downlink subframe #*j* that is closest in time to the subframe #*i* received from the UE     - The detected PRACH is used to determine the start of one subframe containing that PRACH   Send an LS to RAN2 and RAN3 with the agreement to add TADV reporting for NR UL E-CID so that their corresponding specification changes can be updated. LS is endorsed in **R1-2110601**. | | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Addition of 'NR Timing Advance' | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Timing Advance measurement functionality will be missing. Incomplete specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.9.1, 8.9.2.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.455 CR 0042 | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS 38.300 CR 0407 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS 38.215 CR 0038  TS 38.473 CR 0817 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**START OF CHANGES**

## 8.9 NR Enhanced cell ID positioning methods

### 8.9.1 General

NR Enhanced Cell ID (NR E-CID) positioning refers to techniques which use UE and/or NR radio resource related measurements to improve the UE location estimate. In the case of uplink NR E-CID inter-RAT E-UTRA measurements reported by UE may also be used.

NOTE 1: For NR E-CID positioning methods the UE reports only the measurements that it has available rather than being required to take additional measurement actions. Therefore, the measurement gap request procedure described in clause 7.4.1.1 is not applicable for NR E-CID positioning methods.

NR E-CID measurements may include:

UE measurements (TS 38.215 [37]):

- SS Reference signal received power (SS-RSRP);

- SS Reference Signal Received Quality (SS-RSRQ);

- CSI Reference signal received power (CSI-RSRP);

- CSI Reference Signal Received Quality (CSI-RSRQ).

The UE measurements above may be aggregated at cell level or measured per SSB or CSI-RS resource.

NR E-CID UE measurements for other RAT may include:

- E-UTRA Reference signal received power (RSRP);

- E-UTRA Reference Signal Received Quality (RSRQ);

NOTE 2: The above E-UTRA measurements by UE are only used for Uplink NR E-CID positioning.

gNB measurements (TS 38.215 [37]):

- UL Angle of Arrival (azimuth and elevation);

- Timing advance (TADV).

Various techniques exist to use these measurements to estimate the location of the UE. The specific techniques are beyond the scope of this specification.

**NEXT CHANGE**

#### 8.9.2.3 Information that may be transferred from the gNB to LMF

The information that may be transferred from gNB to the LMF is listed in table 8.9.2.3-1.

Table 8.9.2.3-1: Information that may be transferred from gNB to the LMF

|  |
| --- |
| Information |
| UL Angle of Arrival (azimuth and elevation) |
| Cell Portion ID |
| NR Measurement Results List: |
| - SS Reference signal received power (SS-RSRP) |
| - SS Reference Signal Received Quality (SS-RSRQ) |
| - CSI Reference signal received power (CSI-RSRP) |
| - CSI Reference Signal Received Quality (CSI-RSRQ) |
| - NR Cell Global Identifier /Physical Cell ID |
| - Timing Advance (TADV) |
| E-UTRA Measurement Results List: |
| - E-UTRA Physical Cell ID |
| - E-UTRA Reference Signal Received Power (RSRP) |
| - E-UTRA Reference Signal Received Quality (RSRQ) |

Both cell-level and beam-level measurements for SS-RSRP, SS-RSRQ, CSI-RSRP and CSI-RSRQ are supported.

**END OF CHANGES**