**3GPP TSG-RAN WG2 Meeting #114-e *R2-2106580***

**Electronic, 19th – 27th May, 2021**

Agenda Item: 5.5

Source: Huawei, HiSilicon

Title: [AT114-e][611][POS] Agenda Item 5.5 on NR Rel-15 positioning (Huawei)

**Document for: Discussion and Agreement**

# Introduction

This document is to handle the following email discussion:

* [AT114-e][611][POS] Agenda item 5.5 on NR Rel-15 positioning (Huawei)

Scope: Discuss and conclude on the CRs in R2-2105052/R2-2105053.

Intended outcome: Agreed CRs, report in R2-2106580

Deadline: Tuesday 2021-05-25 1000 UTC

In this discussion, we will discuss the following CRs:

|  |  |  |
| --- | --- | --- |
| [R2-2105052](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202105%20-%20RAN2_114-e,%20Online\Extracts\R2-2105052%20Correction%20to%20E-CID-R15.doc) | Correction to E-CID-R15 | Huawei, HiSilicon |
| [R2-2105053](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202105%20-%20RAN2_114-e,%20Online\Extracts\R2-2105053%20Correction%20to%20E-CID-R16.doc) | Correction to E-CID-R16 | Huawei, HiSilicon |

* 1. Contact Information

|  |  |  |
| --- | --- | --- |
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# Discussion

Background of the discussion

During RAN2#113-e, the following dicsussion document and CR have been provided:

[R2-2101815](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101815%20Clarification%20on%20E-CID%20and%20NR%20E-CID.docx) Clarification on E-CID and NR E-CID Huawei, HiSilicon discussion Rel-15 NR\_newRAT-Core

[R2-2101816](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101816%20Correction%20to%20E-CID-R15.doc) Correction to E-CID-R15 Huawei, HiSilicon CR Rel-15 38.305 15.7.0 0063 - F NR\_newRAT-Core

[R2-2101817](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101817%20Correction%20to%20E-CID-R16.doc) Correction to E-CID-R16 Huawei, HiSilicon CR Rel-16 38.305 16.3.0 0064 - A NR\_newRAT-Core

Then, based on the discussion online, the following LS has been sent to RAN3 with the content of confirming with RAN3 the supported measurement by ng-eNB

[R2-2102104](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102104%20LS%20on%20E-CID%20LTE%20measurements.docx) (Draft LS from [611]) Huawei, HiSilicon LS out Rel-16 NR\_pos-Core To:RAN3

* Approved as R2-2102128

|  |
| --- |
| During RAN2#113-e, RAN2 discussed the support for gNB reporting E-UTRA measurements for UL E-CID positioning in Rel-15. RAN2 kindly requests RAN3 to confirm whether gNB can report E-UTRA measurement to the LMF for UL E-CID positioning in Rel-15. |

Discussion on the CR

During RAN2#114, the following two CRs have been provided, with generally the same content as the CR submitted to RAN2#113e

[R2-2105052](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202105%20-%20RAN2_114-e,%20Online\Extracts\R2-2105052%20Correction%20to%20E-CID-R15.doc) Correction to E-CID-R15 Huawei, HiSilicon CR Rel-15 38.305 15.8.0 0063 1 F NR\_newRAT-Core R2-2101816

[R2-2105053](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202105%20-%20RAN2_114-e,%20Online\Extracts\R2-2105053%20Correction%20to%20E-CID-R16.doc) Correction to E-CID-R16 Huawei, HiSilicon CR Rel-16 38.305 16.4.0 0064 1 F NR\_pos-Core R2-2101817

Since the discussion in RAN3 is still on-going people from different companies can consult with RAN3 colleagues to align with the current status of the discussion in RAN3.

### R15 CR

The following change has been made in R2-2105052:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ==================================FIRST CHANGE================================== 4.3.4 Enhanced Cell ID methods In the Cell ID (CID) positioning method, the position of an UE is estimated with the knowledge of its serving ng-eNB, gNB and cell. The information about the serving ng-eNB, gNB and cell may be obtained by paging, registration, or other methods.  Enhanced Cell ID (E‑CID) positioning refers to techniques which use additional UE measurements and/or NG-RAN radio resource and other measurements to improve the UE location estimate.  In this version of the specification, E-CID is supported for E-UTRA only. However, depending on the serving NG-RAN node e.g. ng-eNB, uplink E-CID may be supported based on GERAN, UTRA or WLAN signals.  Although E-CID positioning may utilise some of the same measurements as the measurement control system in the RRC protocol, the UE generally is not expected to make additional measurements for the sole purpose of positioning; i.e., the positioning procedures do not supply a measurement configuration or measurement control message, and the UE reports the measurements that it has available rather than being required to take additional measurement actions.  In cases with a requirement for close time coupling between UE and ng-eNB measurements (e.g., TADV type 1 and UE E-UTRA Rx-Tx time difference), the ng-eNB configures the appropriate RRC measurements and is responsible for maintaining the required coupling between the measurements.  The operation of the Enhanced Cell ID method is described in clause 8.3.  ================================SECOND CHANGE================================== 8.3.2.3 Information that may be transferred from the gNB to LMF The information that may be signalled from gNB to the LMF is listed in table 8.3.2.3-1.  Table 8.3.2.3-1: Information that may be transferred from gNB to the LMF   |  |  | | --- | --- | | Information | | | NR Measurement Results List: | | |  | - Cell Global Identifier /Physical Cell ID | |  | - Cell Portion ID |   ==================================END OF CHANGES=============================== |

**Q2: Do companies think the above changes in R2-2105052 are necessary?**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Qualcomm | Yes | They align Stage 2 with Stage 3 specification.  Note: RAN2 will most likely not receive the RAN3 reply LS at this meeting. However, there seems basic agreement on the LS response text in RAN3:  “RAN3 confirms that the gNB cannot report E-UTRA measurements to the LMF for UL E-CID positioning in Rel-15. “ |
| Intel | No | We already sent LS R2-2102128 to RAN3. We should wait for them. |
| Nokia | Yes | Nokia also has contributions (R3-211603, R3-211604, R3-211605) submitted to RAN3 which aligns with the above quoted RAN3 agreement. |
| ZTE | No | We prefer to wait for RAN3 reply. |
| Huawei, HiSIlicon (proponenet) | Yes |  |
| Xiaomi |  | We prefer to make final decision after receiving the reply LS from RAN3. |
| Samsung | No | We prefer to wait for RAN3 reply to the LS. |
| CATT | Yes | We have confirmed with our RAN3 colleage, the conclusion in RAN3 is that “the gNB cannot report E-UTRA measurements to the LMF for UL E-CID positioning in Rel-15.” |
| Apple | Yes | Agree with Qualcomm to align this. |

### R16 CR

The following change has been made in R2-2105053:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ==================================FIRST CHANGE================================== 4.3.4 Enhanced Cell ID methods In the Cell ID (CID) positioning method, the position of an UE is estimated with the knowledge of its serving ng-eNB, gNB and cell. The information about the serving ng-eNB, gNB and cell may be obtained by paging, registration, or other methods.  Enhanced Cell ID (E‑CID) based on LTE signals positioning refers to techniques which use additional UE measurements and/or NG-RAN radio resource and other measurements to improve the UE location estimate. In the case of a serving ng-eNB, uplink E-CID may be supported based on NR, GERAN, UTRA or WLAN signals.  Although E-CID based on LTE signals positioning may utilise some of the same measurements as the measurement control system in the RRC protocol, the UE generally is not expected to make additional measurements for the sole purpose of positioning; i.e., the positioning procedures do not supply a measurement configuration or measurement control message, and the UE reports the measurements that it has available rather than being required to take additional measurement actions.  In cases with a requirement for close time coupling between UE and ng-eNB measurements (e.g., TADV type 1 and UE E-UTRA Rx-Tx time difference), the ng-eNB configures the appropriate RRC measurements and is responsible for maintaining the required coupling between the measurements.  The operation of the Enhanced Cell ID based on LTE signals method is described in clause 8.3.  ==================================SECOND CHANGE================================= 8.3.2.3 Information that may be transferred from the gNB to LMF The information that may be signalled from gNB to the LMF is listed in table 8.3.2.3-1.  Table 8.3.2.3-1: Information that may be transferred from gNB to the LMF   |  |  | | --- | --- | | Information | | | NR Measurement Results List: | | |  | - Cell Global Identifier /Physical Cell ID | |  | - Cell Portion ID |   ==================================END OF CHANGES================================= |

**Q2: Do companies think the above changes in R2-2105053 are necessary?**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Ericsson | No | In Rel-16, gNB should support providing EUTRAN measurement results.  in R15, we had only GERAN and/or UTRAN measurements which could be reported as other RAT different from the serving RAT |
| Qualcomm | Yes | This is the Rel-16 "shadow" CR, which is needed if the Rel-15 version is agreed.  Note, in Stage 2 we have LTE E-CID (section 8.3) and NR E-CID (section 8.9). E-UTRAN measurement results are part of NR E-CID in Rel-16 Stage 2. |
| Intel | No | We already sent LS R2-2102128 to RAN3. We should wait for them. |
| Nokia | Yes | Note that this CR is about LTE E-CID and for the case when the UE is served by a gNB i.e. serving RAT is NR. There was an ambiguity in 38.455 about whether the *E-CID Measurement Result* IE can be used to report measured results for E-UTRA. However, the intention is that this IE can only include measured results for the serving RAT, which means a gNB cannot use the IE to report E-UTRA measurements. We have CRs in RAN3 (R3-211604, R3-211605) to address the ambiguity in 38.455. |
| ZTE | No | We prefer to wait for RAN3 reply. |
| Huawei, HiSIlicon (proponenet) | Yes |  |
| Xiaomi |  | We prefer to make final decision after receiving the reply LS from RAN3. |
| Samsung | No | We prefer to wait for RAN3 reply to the LS. |
| CATT | No | In Rel-15 LTE E-CID, it is specified “In this version of the specification, E-CID is supported for E-UTRA only.” in TS38.305.  However in Rel-16 LTE E-CID, we didn’t specify if gNB supports LTE E-CID or not.  Companies shall discuss if gNB is supposed to support LTE E-CID first, then we can make the modification accordingly. We recommend gNB to support LTE E-CID. |
| Apple | Yes | serving RAT (gNB) does not need to report measured results for E-UTRA for the positioning purpose. |

# Conclusion

**TBD**

# 4 References