3GPP TSG-RAN WG2 Meeting #115 Electronic R2-210xxxx

Online, Aug 16th – Aug 27th, 2021

**Agenda item: 6.1.4.1.1**

**Source: Apple Inc**

**Title: Draft-Summary of [AT115-e][023][NR16] Connection Control I (Apple)**

**Document for: Discussion and Decision**

# 1 Introduction

This document is a report on the following email discussion:

* [AT115-e][023][NR16] Connection Control I (Apple)

 Scope: Determine agreeable parts and agree CRs, Treat R2-2106955, R2-2107599, R2-2108638, R2-2108473, R2-2107401, R2-2106916, R2-2108106, R2-2107588, R2-2108440, R2-2108441, R2-2107571

      Intended outcome: Report, Agreed CRs.

      Deadline: Schedule 1

The deadline Schedule 1 for this email discussion is copied from Chair notes:

* A first round with Deadline for comments Thursday Aug 19 1200 UTC to settle scope what is agreeable etc
* A Final round with Final deadline Thursday Aug 26 1200 UTC. to settle details / agree CRs etc. Additional check points etc if needed are defined by the Rapporteur.
* In case some parts of an email discussion need more time, doesn’t converge, need on-line treatment etc Rapporteur please contact chair.

This document summarizes the following contributions from Agenda Item 6.1.4.1.1 Connection control:

**DC location reporting**

[R2-2106955](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2106955.zip) Reply LS DC location reporting for intra-band UL CA (R4-2107903; contact: Huawei) RAN4 LS in Rel-16 NR\_RF\_FR1-Core To:RAN2

[R2-2107599](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2107599.zip) Correction to uplink Tx DC location reporting for UL CA 2PA case Apple CR Rel-16 38.331 16.5.0 2733 - F NR\_RF\_FR1-Core

[R2-2108638](file:///C%3A%5CUsers%5Cnaveenpalle%5Cspec%5CRAN2-115e%5CDocs%5CR2-2108638.doc) UE reporting of Tx DC location info for the second PA Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2789 - F NR\_RF\_FR1-Core

**eMIMO**

[R2-2108473](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108473.zip) Correction on RepetitionSchemeConfig for eMIMO Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2777 - F NR\_eMIMO-Core

[R2-2107401](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2107401.zip) Correction on TCI configuration for DCI format 1\_2 vivo CR Rel-16 38.331 16.5.0 2723 - F NR\_eMIMO-Core

**NR-U**

[R2-2106916](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2106916.zip) Reply LS on random value generation for RMTC-SubframeOffset (R1-2106264; contact: Apple) RAN1 LS in Rel-16 NR\_unlic-Core, TEI16 To:RAN2

[R2-2108106](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108106.zip) Clarification on RMTC subframe offset Ericsson CR Rel-16 38.331 16.5.0 2753 - F NR\_unlic-Core

[R2-2107588](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2107588.zip) RSSI/CO reporting in MCG/SCGfailureinformation Apple CR Rel-16 38.331 16.5.0 2732 - F NR\_unlic-Core

**DCCA**

[R2-2108440](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108440.zip) Corrections on RRC reconfiguration for fast MCG link recovery Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2776 - F LTE\_NR\_DC\_CA\_enh-Core

[R2-2108441](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2108441.zip) Corrections on RRC reconfiguration for fast MCG link recovery Huawei, HiSilicon CR Rel-16 36.331 16.5.0 4715 - F LTE\_NR\_DC\_CA\_enh-Core

*Moved from 6.1.4.2*

**RRC Processing time**

[R2-2107571](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2108_R2_115-e/Docs/R2-2107571.zip) RRC Processing Delay for SCell Modification Apple discussion Rel-16 NR\_newRAT-Core

*Postponed last meeting*

# 2 Contact Points

Respondents to the email discussion are kindly asked to fill in the following table.

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
| Apple(rapporteur) | Naveen Palle | naveen.palle@apple.com |
| Huawei, HiSilicon | Yang Zhao | zhaoyang@huawei.com |
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| Nokia | Amaanat Ali | amaanat.ali@nokia.com |
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| vivo | Chenli | Chenli5g@vivo.com |
| Ericsson | Zhenhua Zou | zhenhua.zou@ericsson.com |

# 3 Discussion

## 3.1 DC Location reporting

This topic is from the following contributions[2][3] based on the RAN4 LS[1].

[1] R2-2106955 Reply LS DC location reporting for intra-band UL CA (R4-2107903; contact: Huawei) RAN4 LS in Rel-16 NR\_RF\_FR1-Core To:RAN2

[2] R2-2107599 Correction to uplink Tx DC location reporting for UL CA 2PA case Apple CR Rel-16 38.331 16.5.0 2733 - F NR\_RF\_FR1-Core

[3] R2-2108638 UE reporting of Tx DC location info for the second PA Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2789 - F NR\_RF\_FR1-Core

Companies are requested to provide their views on the two CRs

**Question 1: Do companies agree with R2-2107599?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | Yes with the intention | We think the change is basically proposing the same thing as the CR provided by the LS contact, and thus we prefer to go with the version of LS contact. |
| MediaTek | Yes with the intention |  |
| Nokia | No | We don’t think the CR is adding any additional value. The field is optional so it can be absent anyway. |
| ZTE | Yes with the intention |  |
| CATT | Yes with the intention |  |
| Samsung | Yes |  |
| vivo | Yes with the intention |  |
| Ericsson | No | We wonder if this could be better categorized as UE capability clarification, since RAN4 indicates that there is no such use case. This is different from that the UE could have a second uplink Tx DC but 3GPP decides not to report to the network, which might be the implication of this RRC signalling restriction.  |

**Question 2: Do companies agree with R2-2108638?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | Yes | Proponent.  |
| MediaTek | Yes |  |
| Nokia | No | **“RAN4 confirms the use case of UE reporting Tx DC location info for the second PA (when the UE supports dual PA) when the SCell is deactivated, is not needed”**RAN4 said it’s not needed even as a use case, not that it has to be absent. So the scenario and its signalling is not required to be even supported. |
| ZTE | See comment | Regarding the comment from Nokia, we understand the newly added sentence has not impact to network, as it only specify in which scenario *secondPA-TxDirectCurrent* may not be reported. So as long as all UEs implement according to the LS, it seems sufficient.However, we are also fine if majority want to capture it in spec.  |
| CATT | Yes |  |
| Samsung | Yes |  |
| vivo | Yes with the intention |  |
| Ericsson | No | Simlar to the comment by Nokia. We wonder if this could be better categorized as UE capability clarification, since RAN4 indicates that there is no such use case. This is different from that the UE could have a second uplink Tx DC but 3GPP decides not to report to the network, which might be the implication of this RRC signalling restriction. |

**Question 3: Any comments/suggestions/preferences between the CRs, assuming they are agreeable?**

|  |  |
| --- | --- |
| Company | Comments |
| Huawei, HiSilicon | We think the change is quite straight forward and per the chair guidance of LS contact as usual, we prefer to go with the version in 8638. |
| MediaTek | We understand the intention of both CR R2-2107599 and R2-2108638 are the same. We slightly prefer the wording in R2-2108638. |
| Nokia | We do not really see any need for the CRs. Please see Q1 and Q2 answers from us. |
| ZTE | We slightly prefer the wording in R2-2108638. |
| Samsung | We slightly prefer the wording in R2-2108638. |
| vivo | We prefer the wording in R2-2108638.  |
| Apple | If majority prefer R2-2108638, we suggest to add the editorial correction to this CR. |

## 3.2 eMIMO

This topic is from the following two contributions[4][5].

[4]R2-2108473 Correction on RepetitionSchemeConfig for eMIMO Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2777 - F NR\_eMIMO-Core

[5] R2-2107401 Correction on TCI configuration for DCI format 1\_2 vivo CR Rel-16 38.331 16.5.0 2723 - F NR\_eMIMO-Core

Based on the LS from RAN1 R2-2004251, the CR from [4] proposes the below changes:

1) The UE shall release fdm-TDM-r16 when slotBased-16 is set to setup.

2) The network does not use the value "release" of fdm-TDM-r16 or slotBased-16

**Question 4: Do companies agree with R2-2108473?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | Yes | Proponent |
| MediaTek | Yes |  |
| Nokia | Yes | We think this is the easiest way to handle this, otherwise we would have to dummify the fields and that would not be a good idea as it would be NBC for the functionality. |
| ZTE | Yes | We think this is an effective way for implementing. |
| CATT | Yes |  |
| Samsung | Yes |  |
| vivo | Yes | This is the best way we could go.  |
| Apple | Yes |  |
| Ericsson | yes | Consequence if CR is not agreed would be that nw need to send two messages to switch RepetitionSchemeConfig. |

The CR from [5] proposes to update the field description of IE tci-PresentDCI-1-2 to capture the case that the UE is not configured with *enableDefaultBeamForCCS*

**Question 5: Do companies agree with R2-2107401?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | Yes |  |
| MediaTek | Yes |  |
| Nokia | Intent:Yes, CR text: Changes needed | This is not so clear: The RAN1 specification text is (spaced for better readability):When * the UE is configured with CORESET associated with a search space set for cross-carrier scheduling AND
* the UE is not configured with *enableDefaultBeamForCCS*,

the UE expects * *tci-PresentInDCI* is set as 'enabled'

OR * *tci-PresentDCI-1-2* is configured for the CORESET,

Note that "OR", which means that network sets either the legacy *tci-PresentInDCI* OR the *tci-PresentInDCI-1-2* field, but is not required to set both (which the CR would now require). DCI 1-2 is not mandatory to configure, and can have separate cross-carrier scheduling configuration. Hence, the text needs to at least be contingent to the 1) use of DCI format 1-2 and 2) presence of *carrierIndicatorSizeDCI-1-2-r16*. carrierIndicatorSize-r16 SEQUENCE { carrierIndicatorSizeDCI-1-2-r16 INTEGER (0..3),[vivo] We agree that network sets either the *tci-PresentInDCI* OR the *tci-PresentInDCI-1-2* field. Actually, the current CR doesn’t require “both”. If network configures DCI format 1-1, then, the corresponding decription in IE ***tci-PresentInDCI*** will be applied; while if network configures DCI format 1-2, then, the corresponding description in IE ***tci-PresentDCI-1-2*** will be applied.We are fine to add more clarification like:In case of cross carrier scheduling, the network configures this field for the *ControlResourceSet* used for cross carrier scheduling for DCI format 1-2 in the scheduling cell if *enableDefaultBeamForCCS* is not configured (see TS 38.214 [19], clause 5.1.5) |
| ZTE | Intent Yes | Agree with NOKIA’s analysis. The CR itself shall be improved to align with the RAN1 spec. |
| CATT | Yes |  |
| QCOM |  | already clear from RAN1 spec[vivo] if companies think this is clear in RAN1 spec, and no need to capture it in RAN2. Then, we need a CR to remove the similar description for IE ***tci-PresentInDCI*, “**In case of cross carrier scheduling, the network sets this field to enabled for the *ControlResourceSet* used for cross carrier scheduling in the scheduling cell if *enableDefaultBeamForCCS* is not configured (see TS 38.214 [19], clause 5.1.5).**”**We are fine with either approach, which should be consistency.  |
| Samsung | Yes |  |
| vivo | Yes | Proponent.  |
| Apple | Yes when Nokia’s comments are covered. |  |
| Ericsson |  | Not sure if strickly needed |

## 3.3 NR-U

This topic is from the following contributions [7][8] where [7] is based on the LS[6]

[6] R2-2106916 Reply LS on random value generation for RMTC-SubframeOffset (R1-2106264; contact: Apple) RAN1 LS in Rel-16 NR\_unlic-Core, TEI16 To:RAN2

[7] R2-2108106 Clarification on RMTC subframe offset Ericsson CR Rel-16 38.331 16.5.0 2753 - F NR\_unlic-Core

[8] R2-2107588 RSSI/CO reporting in MCG/SCGfailureinformation Apple CR Rel-16 38.331 16.5.0 2732 - F NR\_unlic-Core

The CR from [7] proposes to clarify that the generation method for the random offset value is up to UE’s implementation when *RMTC-SubframeOffset* is not configured.

**Question 6: Do companies agree with R2-2108106?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | Maybe no | We prefer not to have this addition, which doesn’t really bring further clarification or guideline on UE behaviour (as the addition suggests many options for UE to renew the offset random number). UE implementations can do whatever it thinks as suitable already, with or without the change.  |
| MediaTek | Yes (No strong view) | It seems fine to capture RAN1 conclusion |
| Nokia | No | Agree with Huawei |
| ZTE | No | Agree with HuaWei |
| Samsung | No | RAN1 replied that the random number generation is upto UE implementation. We think no further clarification is needed. |
| vivo | No | Agree with Huawei |
| Apple | No strong view, can go with majority. |  |
| Ericsson (proponent) | Yes | Clearer to capture the RAN1 agreement.  |

The CR from [8] to add the measurement results for RSSI/CO on unlicensed NR frequencies into MeasResult2NR which is carried in MCGFailureInformation and SCGFailureInformation.

**Question 7: Do companies agree with R2-2107588?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | No | We prefer not to make such optimization at this stage. Essentially RSSI/CO measurements are not accurate by themselves, from interference management perspective, as the measured RSSI includes the contribution from the intended transmitter. |
| MediaTek | No | We prefer to consider this kind of optimization in later releases (e.g. Rel-17). It doesn’t look like a bug that need to be fixed in Rel-16. |
| Nokia | No | This is not correction but possible optimization (if even that).  |
| ZTE | No |  |
| Samsung | No | We don’t want to allow the optimization at this stage. |
| vivo | No | We see potential benefits of introducing such measurements, however this is NOT a correction but rather an introduction of a new feature, which, might be discussed in R17 MDT/SON WI at a later stage. Therefore we do not agree the CR (at least for now). |
| Apple (proponent) | Yes | RSSI/CO measurement result was considered useful for HO determination during NR-U discussion. We think this was omitted when MCG/SCGFailureInformation was introduced. Therefore we don’t consider it as an optimization. But rather a missed aspect of this feature. |
| Ericsson | No | Not needed. |

## 3.4 DCCA

This topic is from the following contributions [9][10]

[9] R2-2108440 Corrections on RRC reconfiguration for fast MCG link recovery Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2776 - F LTE\_NR\_DC\_CA\_enh-Core

[10] R2-2108441 Corrections on RRC reconfiguration for fast MCG link recovery Huawei, HiSilicon CR Rel-16 36.331 16.5.0 4715 - F LTE\_NR\_DC\_CA\_enh-Core

The CR from [9] and [10] propose that the *DLInformationTransferMRDC* can include RRC reconfiguration message including *reconfigurationWithSync* or *mobilityControlInfo.*

**Question 8: Do companies agree with the NR RRC CR in R2-2108440?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | Yes | Proponent |
| MediaTek | Yes |  |
| Nokia | Yes |  |
| ZTE | Yes |  |
| CATT | Yes |  |
| Samsung | Yes |  |
| vivo | Yes |  |
| Apple | Yes |  |
| Ericsson | No | It is true that only reconfiguration with sync/mobilityControlInfo can bring the UE out of MCG failure, but this is for the network to ensure and we have so far not specified the network response. Regarding the reference to 36.331 section 5.3.5.3, it is commonly used in 38.331 for all cases of RRCConnectionReconfiguration (with or without MCI), so there should not be any unclarity there. In some places the notation 5.3.5./5.3.5.4 is used and we could change the reference accordingly, but that is an editorial change for rapporteur CR. |

**Question 9: Do companies agree with the LTE RRC CR in R2-2108441?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | Yes | Proponent |
| MediaTek | See comment | Fix the typo “heeendover” in below wording. Other change is fine.“This field is mandatory present for heeeandover within E-UTRA when the *fullConfig* is included; otherwise it is optionally present, Need OP.” |
| Nokia | Yes |  |
| ZTE | Yes |  |
| CATT | Yes |  |
| Samsung | Yes |  |
| vivo | Yes |  |
| Apple | Yes with the typo corrected. |  |
| Ericsson | No | For same reasons as for the corresponding 38.331 CR in R2-2108440 we see no need for this CR. We have not specified the network response to MCGFailureInformation and it is network responsibility that the response does not cause the deadlock situation they mention. That is just poor network implementation. We see no need to make this limitation, which could cause issues if DLInformationTransferMRDC is later extended to other use cases. |

## 3.5 SCell RRC Processing Delay

This topic is from the following contribution

[11]R2-2107571 RRC Processing Delay for SCell Modification Apple discussion Rel-16 NR\_newRAT-Core

This topic was discussed in earlier RAN2 meeting and concensus was not reached. [11] provides observations on the absence of NBC issue and the difference in LTE and NR in SCell modification handling. Based on these the following proposals are made:

**Proposal 1: Extend the RRC processing delay for SCell modification from 10ms to 16ms.**

**Proposal 2: Agree the R16 RRC CR in Annex part.**

**Question 10: Do companies agree with extending the RRC processing delay for SCell modification from 10ms to 16ms as per proposal 1? Pls provide comments as well.**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | No | We are fine with the current 10ms processing time, and prefer not to extend it. As discussed in RAN2 #113bis and 104 meetings, there is potential inter-operablility issue due to different understanding from NW side and UE side on the time point UE be ready for UL grant after a RRC reconfiguration message. Even though the change is now proposed for Rel-16, the inter-operability issue between Rel-15 gNB and Rel-16 UE might be still there. Besides, it seems no real issues caused by the 10ms processing delay were confirmed from the previous RAN2 discussions. It would be safer not to change spec. |
| MediaTek | No strong view |  |
| Nokia | No | Fully agree with Huawei. Nokia and Ericsson already had a contribution in the previous meetings with our view and we think this should not be pursued further. This would not be backward-compatible as networks would expect UE to do this in 10ms, but some UEs would require 16ms. |
| ZTE | No | Same view as Huawei and Nokia. |
| QCOM | No strong view | We need to be a little bit positive when addressing this CR.-Firstly the CR is not an NBC? Network can still tansmit UL grants for an extra couple of ms and even if it didn’t, UE can still sends SR to obtain UL grant, so it’s an not NBC and UE can still get around it. -Secondly, if UE can’t make it in 10 ms, I am not sure how blocking this CR will rectify the issue. We’re not discussing a design issue, rather a performance issue, and we need to be considered to others.  |
| Samsung | No | We do not want to change this if there are real problem in the field. |
| vivo | No | Agree with Huawei and Nokia. |
| Ericsson | No | This has been discussed over and over and maybe we should stop doing this ☺Our understanding is that:* As in LTE, the processing delay requirement for the SCell modification is considered as the same of a simple RRCReconfiguration message (i.e., 10ms).
* RAN4 does not define any specific UE requirement for the SCell modification procedure.
* The RRC segmentation was introduced in Rel-16 to address the case (among the others) of a large RRC reconfiguration message.
* Changing the RRC processing delay for the SCell modification from 10ms to 16ms only in Rel-16 it will result in different implementations and this is not desirable.

For all these reasons, we prefer to have any change in the current specification. |

**Question 11: Do companies agree with the text proposal in the Annex part of [11]? Pls provide comments if needed.**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| Huawei, HiSilicon | No | Same comment to Q10. |
| Nokia | No | Same comment to Q10. |
|  |  |  |
|  |  |  |
|  |  |  |

# 4 Conclusion

TBD.

# 5 References

[1] R2-2106955 Reply LS DC location reporting for intra-band UL CA (R4-2107903; contact: Huawei) RAN4 LS in Rel-16 NR\_RF\_FR1-Core To:RAN2

[2] R2-2107599 Correction to uplink Tx DC location reporting for UL CA 2PA case Apple CR Rel-16 38.331 16.5.0 2733 - F NR\_RF\_FR1-Core

[3] R2-2108638 UE reporting of Tx DC location info for the second PA Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2789 - F NR\_RF\_FR1-Core

[4]R2-2108473 Correction on RepetitionSchemeConfig for eMIMO Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2777 - F NR\_eMIMO-Core

[5] R2-2107401 Correction on TCI configuration for DCI format 1\_2 vivo CR Rel-16 38.331 16.5.0 2723 - F NR\_eMIMO-Core

[6] R2-2106916 Reply LS on random value generation for RMTC-SubframeOffset (R1-2106264; contact: Apple) RAN1 LS in Rel-16 NR\_unlic-Core, TEI16 To:RAN2

[7] R2-2108106 Clarification on RMTC subframe offset Ericsson CR Rel-16 38.331 16.5.0 2753 - F NR\_unlic-Core

[8] R2-2107588 RSSI/CO reporting in MCG/SCGfailureinformation Apple CR Rel-16 38.331 16.5.0 2732 - F NR\_unlic-Core

[9] R2-2108440 Corrections on RRC reconfiguration for fast MCG link recovery Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2776 - F LTE\_NR\_DC\_CA\_enh-Core

[10] R2-2108441 Corrections on RRC reconfiguration for fast MCG link recovery Huawei, HiSilicon CR Rel-16 36.331 16.5.0 4715 - F LTE\_NR\_DC\_CA\_enh-Core

[11]R2-2107571 RRC Processing Delay for SCell Modification Apple discussion Rel-16 NR\_newRAT-Core