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

Online, Aug 16th – Aug 27th, 2021

**Agenda item: 5.4.1.1**

**Source: vivo**

**Title: Summary of [AT115-e][013][NR15] Connection Control II (vivo)**

**Document for: Discussion and Decision**

# 1 Introduction

This document is a report on the following email discussion:

* [AT115-e][013][NR15] Connection Control II (vivo)

 Scope: Determine agreeable parts in a first phase, for agreeable parts agree on CRs. Treat R[2-2107375](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107375.zip), R[2-2107376](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107376.zip), R2-2108811, R2-2108812, R[2-2108185](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108185.zip), R2-2108186, R[2-2107836](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107836.zip), R2-2107837, R2-2107570,

 Intended outcome: Report, agreed CRs if applicable

 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 5.4.1.1 Connection control:

[1] R2-2107375 38331 Clarifications on full configuration-R15 OPPO CR Rel-15 38.331 15.14.0 2719 - F NR\_newRAT-Core

[2] R[2-2107376](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107376.zip) 38331 Clarifications on full configuration-R16 OPPO CR Rel-16 38.331 16.5.0 2720 - A NR\_newRAT-Core

[3] R2-2108811 Correction on reconfigurationWithSync Huawei, HiSilicon CR Rel-15 38.331 15.14.0 2798 - F NR\_newRAT-Core

[4] R2-2108812 Correction on reconfigurationWithSync Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2799 - A NR\_newRAT-Core

[5] R[2-2108185](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108185.zip) Clarification on NR SCG reconfiguration with sync in LTE Ericsson CR Rel-15 36.331 15.14.0 4707 - F NR\_newRAT-Core

[6] R[2-2108186](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108186.zip) Clarification on NR SCG reconfiguration with sync in LTE Ericsson CR Rel-16 36.331 16.5.0 4708 - A NR\_newRAT-Core

[7] R[2-2107836](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107836.zip) Correction on the Need for SCG Reconfiguration with Sync in (NG)EN-DC vivo CR Rel-15 36.331 15.14.0 4698 - F NR\_newRAT-Core

[8] R[2-2107837](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107837.zip) Correction on the Need for SCG Reconfiguration with Sync in (NG)EN-DC vivo CR Rel-16 36.331 16.5.0 4699 - A NR\_newRAT-Core

[9] R[2-2107570](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107570.zip) Clarification on LTE HO without SCG Configuration Change Apple discussion Rel-16 NR\_newRAT-Core

# 2 Contact Points

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

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
| vivo(rapporteur) | Annie Zhong | tingting.zhong@vivo.com |
| Qualcomm | Mouaffac Ambriss | mambriss@qti.qualcomm.com |
| Nokia |  | amaanat.ali@nokia.com |
| MediaTEk | Felix Tsai | Chun-fan.tsai@mediatek.com |
| Ericsson | Antonino Orsino | antonino.orsino@ericsson.com |
| OPPO | Jiangsheng Fan | fanjiangsheng@oppo.com |
| Intel | Sudeep K Palat | sudeep.k.palat@intel.com |
| ZTE | Huang He | Huang.he4@zte.com.cn |
| NEC | Hisashi Futaki | hisashi.futaki[at] nec.com |
| Apple | Yuqin Chen | yuqin\_chen@apple.com |
| CATT | Jing Liang | liangjing@catt.cn |
| Samsung | Sangbum Kim | Sb07.kim@samsung.com |
|  Fujitsu | Takako Sanda | Sanda.takako@fujitsu.com |
|  Docomo | Masato Taniguchi | masato.taniguchi.mf@nttdocomo.com |
| Sequans | Olivier Marco | omarco at sequans.com |
| Lenovo | Lianhai | Wulh5@lenovo.com |

# 3 Discussion

## 3.1 Phase 1-Full configuration

This topic is from the following two contributions.

[1] R[2-2107375](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107375.zip) 38331 Clarifications on full configuration-R15 OPPO CR Rel-15 38.331 15.14.0 2719 - F NR\_newRAT-Core

[2] R2-2107376 38331 Clarifications on full configuration-R16 OPPO CR Rel-16 38.331 16.5.0 2720 - A NR\_newRAT-Core

Two contributions above mention that,

* According to section 5.3.5.11 in TS38.331, when full configuration is received, UE shall release the DRBs associated to each PDU session that is a part of current configuration. The PDU session is released if the same PDU session is not added by drb-ToAddModList.
* In RRC resume procedrue, the full configuration indication can be included in RRCResume message while drb-ToAddModList is optional present. Therefore, if there is no drb-ToAddModList included in RRCResume, all DRBs will be released but SRB2 is present, which is not supported.
* drb-ToAddModList is modified to be mandatory present when the fullConfig is included in the RRCResume.

**Question 1: Do companies think the issue mentioned by two contributions above should be addressed?**

|  |  |  |
| --- | --- | --- |
| Company | Yes or No | Comments |
| QCOM | Yes |  |
| MediaTek | Maybe | It is also our understanding that DRBToAddMod should be present in case of *RRCResume* with full configuration. We have no strong view whether this clarification is needed or not. We assume that this is already current network behavior. Anyway, fine to clarify this. |
| Nokia | No | We think the NOTE 3 in section 5.3.5.11 is sufficiently clear and says specifically "the DRB re-setup" Looks like the CR tries to cover a bad network implementation but this should be already clear enough? |
| Ericsson | No | Our understanding is that there is no issue with the current specification and the problem that is tackled by this CR is due to a bad network implementation. However, we usually don’t accommodate bad network implementation and we don’t see the point to have this change now. |
| OPPO | Yes | We agree that this case can be avoided by smart network implemention, but we think it is beneficial to make a clarification on this issue so that an unsupported case can be precluded from specification perspective. |
| Intel | Yes | While it should be reasonably clear to an implementation that DRBs should be setup after a full configuration, since the other cases are included, it is better to also include this one to avoid misunderstanding. |
| Huawei, HiSilicon | Acceptable to us |  |
| ZTE | Maybe | We agree the intention, but we have no strong view since it is some kind of bad NW implementation and there is no issue in current NW. |
| NEC | Yes |  |
| Apple | Yes | We are fine to clarify in the spec. |
| CATT | Yes |  |
| Samsung | Yes | Upon resume, SRB2 only may exist without DRB according to the current specification. However this situation is not supported |
| Fujitsu | No strong view | We tend to agree Nokia and Ericsson but this is not strong view. |
| Docomo | Yes | Agree with OPPO |
| LG | Yes  | We think it is fine to clarify the network behaviour drb-ToAddModList, i.e., the field should be present in case of fullConfig within RRCResume.  |
| Sequans | Yes  | Looks good to align with other cases |
| vivo | Yes | Agree with Intel. |
| Lenovo | Yes | Good to clarify in the specification |

**Summary:**

**Whether DRB-ToAddModList should be present in the case of RRCResume with full configuration**

Yes: All companies

* They think DRB-ToAddModList should be present in the case of RRCResume with full configuration.

**Whether the CRs are needed**

Yes: 13 companies(QCOM, OPPO, Intel, Huawei, NEC, Apple, CATT, Samsung, Docomo, LG, Sequans, vivo, Lenovo)

* Intel, vivo: think since the other cases are included, it is better to also include this one to avoid misunderstanding.
* OPPO, Docomo: think it is beneficial to make a clarification on this issue so that an unsupported case can be precluded from specification perspective.

No: 2 companies(Nokia, Ericsson)

* Ericsson: think it can be achieved by smart network implementation (i.e., bad network implementation configuring RRCResume with full configuration and without DRB-ToAddModList does not exist)
* Nokia: think NOTE 3 in section 5.3.5.11 is sufficiently clear and says specifically "the DRB re-setup" Looks like the CR tries to cover a bad network implementation

No strong view: 3 companies(MediaTek, ZTE, Fujitsu)

* They think it is some kind of bad NW implementation and there is no issue in the current NW. they have no strong view whether this clarification is needed or not.

Based on the summary, all companies think DRB-ToAddModList should be present in the case of RRCResume with full configuration. Besides, the majority of companies think CRs R2-2107375/R2-2107376 are needed, so the rapporteur would like to propose the following proposal,

**Proposal 1:** **DRB-ToAddModList should be present in the case of RRCResume with full configuration and CRs R2-2107375/R2-2107376 are needed.**

**Question 2: If the answer to Question 1 is Yes, do companies agree with spec changes([1], [2])?**

|  |  |  |
| --- | --- | --- |
| Company | Agree or not? | Comments |
| QCOM | Yes |  |
| MediaTek | Maybe | See comments in Q1. |
| Nokia | No | See comments in Q1. |
| Ericsson | No | See comments in Q1. |
| OPPO | Yes |  |
| Intel | Yes |  |
| Huawei, HiSilicon | Yes |  |
| ZTE | Yes |  |
| NEC | Yes |  |
| Apple | Yes |  |
| CATT | Yes |  |
| Samsung | Yes |  |
| Docomo | Yes |  |
| LG | Yes |  |
| Sequans | Yes |  |
| vivo | Yes |  |
| Lenovo | Yes |  |

**Summary:**

**Whether the spec changes are OK if the CRs are needed**

Yes: 14 companies(QCOM, OPPO, Intel, Huawei, ZTE, NEC, Apple, CATT, Samsung, Docomo, LG, Sequans, vivo, Lenovo)

No: 2 companies (Nokia, Ericsson)

* Their answers are related to Question 1, i.e., they think the CRs aren’t needed.

No strong view: 1 company (MediaTek)

* MediaTek’s answer is related to Question 1, i.e., MediaTek has no strong view whether CRs are needed.

Although the majority of companies agree with the changes in CRs R2-2107375/R2-2107376, the rapporteur thinks we can continue to check the details of CRs(e.g., the coversheet) in the second phase to make them better.

**Proposal 2: Continue to discuss the details of CRs R2-2107375/R2-2107376 in the second phase.**

## 3.2 Phase 1-Reconfiguration With Sync

In RAN2#114e meeting, R2-2105090[10] proposed that according to the LTE RRC spec[11] description below, in EN-DC handover, NW is mandatory to provide the reconfigurationWithSync in SCG configuration regardless of whether SCG configuration is changed or not.

|  |
| --- |
| 5.3.1.3 Connected mode mobility……Before sending the handover message to the UE, the source eNB prepares one or more target cells. The source eNB selects the target PCell. The source eNB may also provide the target eNB with a list of best cells on each frequency for which measurement information is available, in order of decreasing RSRP. The source eNB may also include available measurement information for the cells provided in the list. The target eNB decides which Scells are configured for use after handover, which may include cells other than the ones indicated by the source eNB. If an SCG is configured, handover involves either SCG release or either SCG change (in case of DC) or an NR SCG reconfiguration with sync and key change (in case of EN-DC and NGEN-DC). In case the UE was configured with (EN-) DC or NGEN-DC, the target eNB indicates in the handover message whether the UE shall release the entire (NR) SCG configuration. Upon connection re-establishment, the UE releases the entire SCG configuration except for the DRB configuration, while E-UTRAN in the first reconfiguration message following the re-establishment either releases the DRB(s) or reconfigures the DRB(s) to MCG DRB(s).…… |

However, in the 114e-AT005 email discussion[12], many companies thought that from TS 38.331[13] it is already clear when the reconfiguration with sync should be signalled in the secondary cell group as the specification below. Besides, they thought the reason why there is some misalignment between the LTE and NR specification perhaps is that the conditions in the NR spec were updated after the LTE specification text was written.

|  |  |
| --- | --- |
| **Conditional Presence** | **Explanation** |
| *ReconfWithSync* | The field is mandatory present in the *RRCReconfiguration* message:- in each configured *CellGroupConfig* for which the SpCell changes,- in the *masterCellGroup* at change of AS security key derived from KgNB,- in the *secondaryCellGroup* at:- PSCell addition,- SCG resume with NR-DC or (NG)EN-DC,- update of required SI for PSCell,- change of AS security key derived from S-KgNB while the UE is configured with at least one radio bearer with *keyToUse* set to *secondary* and that is not released by this *RRCReconfiguration* message,Otherwise, it is optionally present, need M. The field is absent in the *masterCellGroup* in *RRCResume* and *RRCSetup* messages and is absent in the *masterCellGroup* in *RRCReconfiguration* messages if source configuration is not released during DAPS handover. |

NOTE: In case of change of AS security key derived from S-KgNB/S-KeNB, if *reconfigurationWithSync* is not included in the *masterCellGroup*, the network releases all existing MCG RLC bearers associated with a radio bearer with *keyToUse* set to *secondary*. In case of change of AS security key derived from KgNB/KeNB, if *reconfigurationWithSync* is not included in the *secondaryCellGroup*, the network releases all existing SCG RLC bearers associated with a radio bearer with *keyToUse* set to *primary*.

The final agreement for this topic was “Postpone discussion on whether the reconfigurationWithSync in SCG configuration is mandatory for the LTE handover with NR PSCell in EN-DC” in RAN2#114e meeting[14]. Therefore, there are several contributions related to this issue in RAN2#115e meeting as follows.

[3] R2-2108811 Correction on reconfigurationWithSync Huawei, HiSilicon CR Rel-15 38.331 15.14.0 2798 - F NR\_newRAT-Core

[4] R2-2108812 Correction on reconfigurationWithSync Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2799 - A NR\_newRAT-Core

[5] R2-2108185 Clarification on NR SCG reconfiguration with sync in LTE Ericsson CR Rel-15 36.331 15.14.0 4707 - F NR\_newRAT-Core

[6] R[2-2108186](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108186.zip) Clarification on NR SCG reconfiguration with sync in LTE Ericsson CR Rel-16 36.331 16.5.0 4708 - A NR\_newRAT-Core

[7] R2-2107836 Correction on the Need for SCG Reconfiguration with Sync in (NG)EN-DC vivo CR Rel-15 36.331 15.14.0 4698 - F NR\_newRAT-Core

[8] R[2-2107837](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107837.zip) Correction on the Need for SCG Reconfiguration with Sync in (NG)EN-DC vivo CR Rel-16 36.331 16.5.0 4699 - A NR\_newRAT-Core

[9] R[2-2107570](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107570.zip) Clarification on LTE HO without SCG Configuration Change Apple discussion Rel-16 NR\_newRAT-Core

Referring to contributions above, there are two different options proposed by companies’ contributions for this topic :

* Option A: NR SCG reconfigurationWithSync configuration is mandatory present for (NG)EN-DC handover, and NR spec is updated;
* Option B: NR SCG reconfigurationWithSync configuration isn’t mandatory present for (NG)EN-DC handover, and LTE spec is updated.

**Question 3: Which option do companies prefer?**

|  |  |  |
| --- | --- | --- |
| Company | Preferred option | Comments |
| QCOM | Please check notes | Options statements and CRs are not fully aligned, so to avoid confusion, we will explicitly mention the preferred option:**-Change the NR spec to mandate the Reconfig with Sync upon MCG HO.** |
| MediaTek | Option A | Slightly prefer option A to avoid any potential IOT issue |
| Nokia | Option A | Firstly companies need to all agree that for every case of LTE HO (intra eNB or inter eNB) the LTE security keys are updated and hence NR SCG is forced to undergo reconfiguration with sync. If this is not the common understanding we are already in trouble with IODT.It would be good to confirm the above before discussing any CRs (we don’t think the CRs today are aligned with this understanding) |
| Ericsson | See comments | The current conditional presence of *ReconfWithSync* in the NR specification, that was changed in after the LTE specification, allows the network to not provide the reconfiguration with sync when all SCG radio bearer are MN terminated bearers.We agree that the LTE mandate that reconfiguration with sync is always used in case of LTE HO, but we think that the IODT problem (may) is already there.According to this, we want to encourage everybody to check they implementation so that we can come up with a solution that (hopefully) will make everybody happy.Along these line, maybe we can move this to a post email discussion? |
| OPPO | Option A | But we’re also fine to have the common understanding that ‘every case of LTE HO (intra eNB or inter eNB), the LTE security keys are updated’ as mentioned by Nokia. |
| Intel | Option A | LTE specification was done before the NR was updated. NR is technically not incorrect as reconfig with sync is not essential. Then, it comes to what implementations support today. Since majority prefer option A, and it is the safer option, we prefer option A for Rel-15.  |
| Huawei, HiSilicon | Option A | proponent |
| ZTE | Option A | Although option B is feasible as well, considering the option B has not been well tested by UE, option A seems a safer way to go. |
| NEC | Option A | we prefer A, as this is simpler. Also, we do not see critical issue with this direction. |
| Apple | Option A | Prefer Option A to avoid IOT issue.  |
| CATT | Option A | Option A seems simpler. |
| Samsung | Option A |  |
| Fujitsu | Option A | Option A is simpler |
| Docomo | Option A |  |
| LG | Option A | We prefer option A because it allows unified behaviours for call cases including the case that all bearers are MN-terminated. This would be good to avoid potential IODT issues.  |
| Sequans | Option A |  |
| vivo | See comments | The current NR spec was updated in RAN2#110e meeting by two CRs(“Correction on the need for reconfiguration with sync in (NG)EN-DC, NR-DC and NE-DC”, R2-2005233 and R2-2005234). So it means NR spec also covers the case of SCG reconfiguration with sync in (NG)EN-DC. However, if the IOT issues indeed exist, we agree with Option A, otherwise, we prefer Option B. |
| Lenovo | Option A |  |

**Summary:**

**Option A**

16 companies: QCOM, MediaTek, Nokia, OPPO, Intel, Huawei, ZTE, NEC, Apple, CATT, Samsung, Fujitsu, Docomo, LG, Sequans, Lenovo

* MediaTek, Nokia, OPPO, Intel, ZTE, Apple, LG: think Option A is safer and can avoid any potential IOT issue.Nokia and OPPO also think for every case of LTE HO (intra eNB or inter eNB), LTE security keys are updated, which forces NR SCG to undergo reconfiguration with sync**.**
* NEC, CATT, Fujitsu: think Option A is simpler.

**Option B**

0 company

**Others**

2 companies: Ericsson, vivo

* Ericsson, vivo: think the current conditional presence of ReconfWithSync in NR allows the network to not provide the reconfiguration with sync when all SCG radio bearers are MN terminated bearers.
* Ericsson: think the LTE mandate that reconfiguration with sync is always used in case of LTE HO.
* Ericsson: propose that everybody check their implementation(whether the IOT issue exists) so that we can come up with a solution that will make everybody happy. Besides, a post email is needed for this target.
* vivo: if the IOT issues indeed exist, vivo agree with Option A, otherwise, vivo prefer Option B.

Considering that the majority of companies prefer Option A and Chair has suggested that “Everyone, Please, don’t object or ask for further delays, unless it is reasonable. For mature or simple topics we need to progress by making decisions.” in the On-line Efficiency email. So the rapporteur would like to propose the following proposal,

**Proposal 3:** **NR SCG reconfigurationWithSync configuration is mandatory present for (NG)EN-DC handover, and the NR spec is updated.**

**Question 4: If the answer to Question 3 is Option A, do companies have any comments on spec changes([3], [4], [9]\_Option 1)?**

|  |  |  |
| --- | --- | --- |
| Company | Agree or not? | Comments |
| QCOM | Please check notes | We support HW CR (R[2-2108811](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108811.zip) & R2-2108812) … worth to mention that the spec number of these CRs is not 36.331, rather 38.331.  |
| MediaTek |  | HW CR (R[2-2108811](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108811.zip) & R[2-2108812](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108812.zip)) looks okay to us. The coversheet should be revised as mentioned by QC. |
| Nokia |  | First we would like common understanding to be confirmed |
| Ericsson |  | Check implementations first and then decide with direction to go. |
| OPPO |  | HW CR(R[2-2108811](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108811.zip) & R2-2108812) can be a way forward if we have the above common understanding. |
| Huawei, HiSilicon |  | Proponent of R[2-2108811](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108811.zip) /R2-2108812 |
| ZTE |  | CR from HW seems fine for us. |
| NEC | See comment | prefer to go with Option 1 of [9]. Can discuss a wording, e.g. whther “LTE HO” or “EUTRA HO”?For [3][4], they are confuing, because the changes look like to support Option B, i.e. it can be understood that only when the S-KgNB has been used and is to be updated, the reconfigurationWithSync is configured. The cover page and actual changes would not be so aligned with some interpretation of the new text.  |
| Apple |  | Our understanding is the condition should be “S-KgNB is changed due to LTE HO”. Huawei CR may miss the case where SCG is configured but without SN terminated DRB/SRB3. For example, if there are only MN terminated bearers, “change of AS security key derived from S-KgNB” would not happen.Thus, we prefer using a clearer text like “LTE HO with EN-DC”. |
| CATT |  | We support HW CR[3][4] |
| Samsung |  | The contents from HW CRs seems correct, but target TS should be 38.331 not 36.331 |
| Fujitsu |  | We support HW’s CR with cover sheet change (36.331 -> 38.331) |
| Docomo |  | Agree with NEC |
| LG |  | HW CRs would be baseline.  |
| vivo |  | If IOT issues indeed exist, we support HW CR. |
| Lenovo |  | Prefer CR from HW. |

**Summary:**

**Which CRs are selected if NR spec is agreed to be updated+suggestions for the specific wording of selected CRs**

[3], [4]: 11 companies(QCOM, MediaTek, OPPO, Huawei, ZTE, CATT, Samsung, Fujitsu, LG, vivo,Lenovo)

* QCOM, MediaTek, Samsung, Fujitsu: The target TS in the coversheets of CRs [3]/[4] should be revised to 38.331.

[9]\_Option 1: 3 companies(NEC, Apple, Docomo)

* NEC, Apple, Docomo: support [9]\_Option 1. Because they think HW CR is wrong(i.e., if there are no SN-terminated DRB/SRB3, “change of AS security key derived from S-KgNB” would not happen)
* NEC: propose a suggestion for [9]\_Option 1, i.e., confirm the wording for handover(e.g., whther “LTE HO” or “EUTRA HO”)

Others: 2 companies(Nokia, Ericsson)

* Ericsson’s answer is related to Question 3, i.e., Ericsson doesn't support either option temporarily. Ericsson think we should check implementations first and then decide with direction to go.
* Nokia’s answer is related to Question 3, Nokia want to first confirm the common understanding proposed in Question 3 because Nokia doesn’t think the CRs today are aligned with this understanding.

Considering that the majority of companies prefer [3]/[4], so rapporteur think we can continue to discuss the details of [3]/[4] in phase 2 to make them better (besides the suggestion already proposed by QCOM, MediaTek, Samsung, Fujitsu).

Regarding the question proposed by NEC and Apple, the rapporteur thinks there is no relationship between “if there are no SN-terminated DRB/SRB3” and “change of AS security key derived from S-KgNB”. Because the latter is only due to the updated Master KgNB/KeNB. Besides, “change of AS security key derived from S-KgNB” and “there is at least one radio bearer with keyToUse set to secondary” are already simultaneously used in TS38.331 as follows,

-Change of AS security key derived from S-KgNB while the UE is configured with at least one radio bearer with keyToUse set to secondary and that is not released by this RRCReconfiguration message.

Hence, based on the summary, the rapporteur proposes the following proposal,

**Proposal 4: Continue to discuss the details of CRs R2-2108811/R2-2108812 in the second phase (besides the proposed suggestion in the first phase).**

**Question 5: If the answer to Question 3 is Option B, do companies have any comments on spec changes([5], [6],[7], [8], [9]\_Option 2)?**

|  |  |  |
| --- | --- | --- |
| Company | Agree or not? | Comments |
| QCOM | Please check notes | We support HW CR (R2-2108811 & R[2-2108812](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108812.zip)) … worth to mention that the spec number of these CRs is not 36.331, rather 38.331.  |
| Nokia |  | First we would like common understanding to be confirmed |
| Ericsson | Yes but | We are open to go for a solution that is compatible with current implementations. |
| ZTE |  | If there is no IOT issue for option B, which need to be confirmed by UE vendor, then we are also fine with option B. |
| vivo |  | If the IOT issue doesn’t exist, we support [7] and [8], because[7] and [8] include all sections needed to be updated. |
|  |  |  |

**Summary:**

Considering we have proposed to adopt Option A, so the spec changes in Option B will not be discussed. No proposal is proposed here.

Further, in the 114e-AT005 email discussion, some companies thought that if reconfigurationWithSync is not included, then SCG MAC/RLC will not reset. In this case, to avoid UE to deliver the old data (with old key) to CN, one possible way is to configure new LCHs associated with the bearers, and discard the data received from old LCH. RLC bearers can be released and added. In rapporteur’s view, according to the quoted TS38.331 spec above“In case of change of AS security key derived from KgNB/KeNB, if reconfigurationWithSync is not included in the secondaryCellGroup, the network releases all existing SCG RLC bearers associated with a radio bearer with keyToUse set to primary.” ,the current TS38.331 has already solved this issue. As for whether the new RLC bearers are added by network, it is network’s behavior and the better way is up to network’s implementation.

**Question 6: If the answer to Question 3 is Option B, do companies agree that it is up to network’s implementation to avoid UE to deliver the old data (with old key) to CN if NR SCG reconfigurationWithSync is not included?**

|  |  |  |
| --- | --- | --- |
| Company | Agree or not? | Comments |
| Nokia | Agree | The LTE HO already forces a key change so this should be business as usual? |
| Intel | Agree | It can be done by RLC bearer release and add can be used if option B is to be considered. |
| ZTE | Agree |  |
| NEC | Agree | if Option A, it is network responsibility to ensure reconfigurationWithSync for SCG. No need to capture error case handling from UE point of view. |
| vivo | Agree |  |
|  |  |  |

**Summary:**

**For Option B**

Intel, ZTE, vivo: they agree that if Option B is considered, it can be up to network’s implementation(e.g., it can be done by RLC bearer release and add)

**For Option A**

Nokia, NEC: they think if Option A is considered, the network will ensure reconfigurationWithSync for SCG. So the issue mentioned by Question 6 does not exist.

Considering that we have proposed to adopt Option A, the issue mentioned by Question 6 does not exist. So there is no need to discuss Question 6 anymore. No proposal is proposed here.

## 3.3 Phase-2 Full configuration

In Phase 1 discussion, all companies agreed that DRB-ToAddModList should be present in the case of RRCResume with full configuration. So the next step is how to achieve this consistent proposal, and there are two solutions proposed as follows,

* Solution 1: Explicitly specify it in the RRC spec(i.e., CRs R2-2107375/R2-2107376 are needed).
* Solution 2: Capture a RAN2 understanding in the chairman’s note(i.e., CRs R2-2107375/R2-2107376 aren’t needed)

**Question 7: Which solution do companies prefer?**

|  |  |  |
| --- | --- | --- |
| Company | Preferred option | Comments |
| Ericsson | Solution 2 | The point is rather if we want to specify the network behavior for something that is obvious.As comment during the offline discussion we are not against on the principle pointed out by the CR but we think that is not a good practice to restrict the network behavior to avoid bad network implementation. If we go down this road we will see a huge number of CRs in the coming meetings to correct or clarify this or that corner case.Considering that Rel-15 is out there for quite some time now and no IODT issue has been observed in the field, our compromise is to capture a RAN2 understanding in the chairman’s note. We should not open the door to this kind of obvious clarifications at this later stage of Rel-15. |
| Sequans | Solution 1 | It is not clear to us why we don't align with other cases, introduced initially by R2-1810854 if we are not mistaken. |
| Nokia | Solution 2 | With at least 3 CRs in this meeting a bad precedent is being setup for future meetings where in spite of no proven IODT issue nor evidence of faulty/incorrect UE behavior CRs are being pushed quoting “good advice” to network implementations. Definitely those issues seem relevant but none of those warrant corrections in Rel-15 specifications inspite of a team of companies supporting such corrections. Ericsson rightly says that Rel-15 implementations are out there in the field for quite a long time and we need to really have a very high standard for what is termed as an “essential” correction.In Nokia’s view, a possible compromise is to acknowledge such issues by clarifying the right network behavior in the Chairman’s notes allowing any “faulty” network implementations out there to align. |

# 4 Conclusion

Based on the summary and discussion above, we have the following proposals,

**Phase 1:**

**Proposal 1:** **DRB-ToAddModList should be present in the case of RRCResume with full configuration and CRs R2-2107375/R2-2107376 are needed.**

**Proposal 2: Continue to discuss the details of CRs R2-2107375/R2-2107376 in the second phase.**

**Proposal 3:** **NR SCG reconfigurationWithSync configuration is mandatory present for (NG)EN-DC handover, and the NR spec is updated.**

**Proposal 4: Continue to discuss the details of CRs R2-2108811/R2-2108812 in the second phase (besides the proposed suggestion in the first phase).**

**Phase 2:**

# 5 Reference

[1] R2-2107375 38331 Clarifications on full configuration-R15 OPPO CR Rel-15 38.331 15.14.0 2719 - F NR\_newRAT-Core

[2] R[2-2107376](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107376.zip) 38331 Clarifications on full configuration-R16 OPPO CR Rel-16 38.331 16.5.0 2720 - A NR\_newRAT-Core

[3] R2-2108811 Correction on reconfigurationWithSync Huawei, HiSilicon CR Rel-15 38.331 15.14.0 2798 - F NR\_newRAT-Core

[4] R2-2108812 Correction on reconfigurationWithSync Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2799 - A NR\_newRAT-Core

[5] R[2-2108185](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108185.zip) Clarification on NR SCG reconfiguration with sync in LTE Ericsson CR Rel-15 36.331 15.14.0 4707 - F NR\_newRAT-Core

[6] R[2-2108186](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2108186.zip) Clarification on NR SCG reconfiguration with sync in LTE Ericsson CR Rel-16 36.331 16.5.0 4708 - A NR\_newRAT-Core

[7] R[2-2107836](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107836.zip) Correction on the Need for SCG Reconfiguration with Sync in (NG)EN-DC vivo CR Rel-15 36.331 15.14.0 4698 - F NR\_newRAT-Core

[8] R[2-2107837](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107837.zip) Correction on the Need for SCG Reconfiguration with Sync in (NG)EN-DC vivo CR Rel-16 36.331 16.5.0 4699 - A NR\_newRAT-Core

[9] R[2-2107570](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2021%5CRAN2%20115_e%5CR2-2107570.zip) Clarification on LTE HO without SCG Configuration Change Apple discussion Rel-16 NR\_newRAT-Core

[10] R2-2105090, Clarification on NR HO without SCG Configuration Change Apple.

[11] TS36.331-g50, " Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification ".

[12] R2-2106755, Summary of [AT113-e][005][NR15] Connection Control II (Apple).

[13] TS38.331-g50, " Radio Resource Control (RRC) protocol specification ".

[14] R2-2106901, RAN2#114-e Meeting Report.