3GPP TSG-RAN WG2 #113bis-e R2-21xxxxx

Electronic, 12th – 20th Apr, 2021

Agenda Item: 5.4.1

Source: Huawei, HiSilicon

Title: [AT113bis-e][006][NR15] Connection Control II (Huawei)

Document for: Discussion, Decision

# 1 Introduction

This document is to kick off the following email discussion:

* [AT113bis-e][006][NR15] Connection Control II (Huawei)

 Scope: Treat R2-2103535, R2-2103536, R2-2104254, R2-2104255, R2-2102715, R2-2103659, R2-2103660, R2-2104267, R2-2104268, R2-2103752, R2-2103753, R2-2103754, R2-2103860, R2-2103861

 Phase 1, determine agreeable parts, Phase 2, for agreeable parts Work on CRs.

 Intended outcome: Report and Agreed-in-principle CRs.

 Deadline: Schedule A

The plan for Schedule A is below:

A first round with **Deadline for comments Wednesday April 14 1000 UTC** to settle scope what is agreeable etc (phase 1)

A pre-final round with **Deadline for any functional and/or scope comments Monday April 19 1800 UTC.** At this point all non-agreeable parts shall be removed/excluded. (phase 2)

A final round (last 24h) for checking and smaller simplification / removal comments only including agreeable parts, with Deadline **EOM** (at this point all outcome documents need to be available in inbox with tdoc numbers).

Additional check-points etc if needed are defined by the Rapporteur. Offline discussion rapporteur must notify chairman / session chair if on-line comeback discussion is needed, if discussion doesn’t converge etc.

# Contact Information

|  |  |
| --- | --- |
| Company | Email |
| Huawei, HiSilicon | caozhenzhen@huawei.com |
| Samsung | sy0123.jung@samsung.com |
| Apple | zhibin\_wu@apple.com |
|  |  |
|  |  |
|  |  |
|  |  |

# Discussion

Companies are requested to add their comments on each of the CRs of this email discussion in the questionnaires below.

## L2 Parameters

[R2-2103535](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103535.zip) Correction on contention resolution timer (R15) Huawei, HiSilicon CR Rel-15 38.331 15.13.0 2512 - F NR\_newRAT-Core

[R2-2103536](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103536.zip) Correction on contention resolution timer (R16) Huawei, HiSilicon CR Rel-16 38.331 16.4.1 2513 - A NR\_newRAT-Core

The reason for changes is:

|  |
| --- |
| For ra-ContentionResolutionTimer, in MAC spec, it says the timer is SpCell only. However, the configuration of such timer is mandatory in RACH-ConfigCommon IE, no matter the IE is for an UL BWP on SpCell or other cells. We need to fix the inconsistence between MAC and RRC specs. |

**Q1: Do you agree with the problem identified and the changes in R2-2103535,** **R2-2103536?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| Nokia | Not essential correction | According to MAC, the value from Scell is anyway not used so we don’t see a need to make a correction. |
| Huawei,HiSilicon | Yes | Proponent of the CR |
| Samsung | No | Same view with Nokia i.e. how to use ra-ContentionResolutionTimer is clearly specified in MAC specification so nothing seems broken. In addition, the network may configure the same value on it on SpCell and SCell.  |
| Apple | Yes | We are fine to clarify this aspect in the field description. |
|  |  |  |
|  |  |  |

## Timer

[R2-2104254](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2104254.zip) Correction on T325 Google Inc. CR Rel-15 38.331 15.13.0 2563 - F NR\_newRAT-Core

[R2-2104255](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2104255.zip) Correction on T325 Google Inc. CR Rel-16 38.331 16.4.1 2564 - F NR\_newRAT-Core

The reason for changes is:

|  |
| --- |
| After successful completion of the mobility from NR, the UE stops all timers. This means the timer T325 is stopped. According to current standard, a UE stops deprioritisation of all frequencies or NR signalled by RRCRelease only due to T325 expiry. Since the T325 is stopped and will not expire, the UE will always keep the deprioritisationReq it received from the network. |

**Q2: Do you agree with the problem identified and the changes in R2-2104254,** **R2-2104255?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| Nokia | Yes, but | Is this the only timer that needs such handling? There seems to be a need to do something but then the interoperability statement seems incorrect as it says about network implementation and that doesn’t seem right to us. |
| Huawei, HiSilicon | Yes, agree with the issue, but  | Maybe the intention should be that the UE should stop deprioritizing NR frequencies when T325 is stopped. |
| Samsung | No | Nothing is broken i.e. deprioritization will be ONLY applied while T325 is running. Also, it has been from LTE so we can live w/o this change.  |
| Apple | Yes with comments | Agree with the intention. But the exact change can be further discussed  |
|  |  |  |
|  |  |  |

## RRC Resume (initialization upon reception of RAN paging and T380 Expiry)

[R2-2102715](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2102715.zip) Corrections to initiation upon reception of RAN paging and T380 Expiry Samsung Electronics Co., Ltd CR Rel-15 38.331 15.13.0 2476 - F NR\_newRAT-Core

The reason for changes is:

|  |
| --- |
| Scenario:1. UE is in RRC Connected. UE receives RRCRelease with suspend config
	* UE enters RRC\_INACTIVE
	* Reset MAC
	* Re-establish RLC entities of SRB1
	* Suspend all SRBs and DRB(s) except SRB 0
	* Indicate PDCP suspend to lower layer for all DRBs
2. RRC initiate resumption of RRC Connection in RRC\_INACTIVE and
	* Apply the default SRB1 config
	* Apply the default MAC cell group config
	* Apply the CCCH config
	* Re-establish PDCP entity for SRB1
	* Resume SRB1
	* Generate RRCResumeRequest/RRCResumeRequest1 and submit it to lower layers for transmission
3. While the resumption is ongoing, T380 expires/RAN paging is received.
4. RRC initiates resumption of RRC Connection again according to section 5.3.13.8/5.3.2.3 respectively and
	* Apply the default SRB1 config
	* Apply the default MAC cell group config
	* Apply the CCCH config
	* Re-establish PDCP entity for SRB1
	* Resume SRB1
	* Generate RRCResumeRequest/RRCResumeRequest1 and submit it to lower layers for transmission

In the above scenario, upon initiation of second connection resumption, following steps are missing in current specification.* + MAC reset
	+ Release RLC entity for SRB 0 (inorder to remove old CCCH message from RLC buffer).

In the absence of these steps, even though RRC has initiated connection resume again the the transmission of RRC resume from first initiation of connection resume continues in lower layers (RLC/MAC), leading to unpredictable behaviour. * gNB may discard both the messages leading to failure of connection resume.
* gNB may respond to the first one while the UE is expecting response as per the latest connection resume request. Upon receving second resume request while expecting resume complete, gNB may discard the second resume request and terminate the resume procedure.
 |

**Q3: Do you agree with the problem identified and the changes in R2-2102715?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| Nokia | No | Question for clarification: If resumption is ongoing and periodic RAN update expires why would UE start another resumption procedure. Wouldn't it be better just continue with existing one? |
| Huawei, HiSilicon | No | Agree with Nokia. Secondly, we don’t see a real problem if the UE really selects to launch the second resume procedure, and the network should be able to handle this. |
| Samsung (Proponent) | Yes  | In response to Nokia's comment, according to current specification, RRC initiates resumption of RRC connection again according to section 5.3.13.8/5.3.2.3. We are fine to clarify that UE does not initiate second RRC connection resume if RRC connection resumption is already ongoing i.e. Note. However, if UE is allowed to initiate second resume connection, operation as specified by the proposed changes in the CR should be performed.  |
| Apple | No | Agree with Nokia. UE does not need to initiated the 2nd resumption procedure. |
|  |  |  |
|  |  |  |

## RRC Resume (Resume of measurements)

[R2-2103659](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103659.zip) Resume of measurements during the RRC resume procedure Ericsson CR Rel-15 38.331 15.13.0 2524 - F NR\_newRAT-Core

[R2-2103660](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103660.zip) Resume of measurements during the RRC resume procedure Ericsson CR Rel-16 38.331 16.4.1 2525 - A NR\_newRAT-Core

The reason for changes is:

|  |
| --- |
| According to section 5.3.13.4, when a UE resumes from the RRC\_INACTIVE state, it should resume the measurements, if these have been suspended. 1> if the *RRCResume* message includes the *measConfig*:2> perform the measurement configuration procedure as specified in 5.5.2;1> resume measurements if suspended;However, when the UE is released with the RRC release procedure, it is not mentioned anywhere that the measurements are suspended.Further, another issue is that when the UE is released, it should store in the UE Inactive AS Context all the RRC configuration (including the measConfig). However, this is not clear from the procedural text as it says that the UE stores “all other parameters configured”. It is not clear if “parameters” refer also to the measurement configuration.3> store in the UE Inactive AS Context the current KgNB and KRRCint keys, the ROHC state, the stored QoS flow to DRB mapping rules, the C-RNTI used in the source PCell, the *cellIdentity* and the physical cell identity of the source PCell, and all other parameters configured except for the ones within *ReconfigurationWithSync* and *servingCellConfigCommonSIB*; |

**Q4: Do you agree with the problem identified and the changes in R2-2103659,** **R2-2103660?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| Nokia | No, but | This will not work with IDLE mode measurements which start when UE receives the RRCRelease. So if we go this way, the Rel-16 CR has to make clear \*which\* measurements are suspended. Maybe "measurements configured for RRC\_CONNECTED"? Is that the intention of the proposal? |
| Huawei, HiSilicon | No | First, it is already clear in other places that the UE will not perform measurement and reporting. Secondly, we are not sure this is the only case, for example, L1 measurement and CSI reporting have not been explicitly suspended, but it is obvious the UE will not do L1 measurement and reporting in RRC\_INACTIVE.  |
| Samsung | No | Nothing is broken and it's merely nice to clarify. If agreed, it should be merged into Rap CR. |
| Apple | No | This is not essential change. I think the current text is clear that the measurement config is part of Inacitve context. |
|  |  |  |
|  |  |  |

## Abortion of RRC connection est

[R2-2104267](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2104267.zip) Clarification on the abortion of RRC connection establishment Huawei, HiSilicon CR Rel-15 38.331 15.13.0 2566 - F NR\_newRAT-Core

[R2-2104268](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2104268.zip) Clarification on the abortion of RRC connection establishment Huawei, HiSilicon CR Rel-16 38.331 16.4.1 2567 - A NR\_newRAT-Core

The reason for changes is:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| In Section 7 of TS 38.331, the T319 timer description captures the following:

|  |  |  |  |
| --- | --- | --- | --- |
| T319 | Upon transmission of *RRCResumeRequest* or *RRCResumeRequest1.* | Upon reception of *RRCResume,* *RRCSetup, RRCRelease, RRCRelease* with *suspendConfig* or *RRCReject* message, cell re-selection and upon abortion of connection establishment by upper layers. | Perform the actions as specified in 5.3.13.5. |

At the same time, in the procedural text, the abortion of the connection establishment covers only T300 and speaks nothing about T319:

|  |
| --- |
| 5.3.3.8            Abortion of RRC connection establishmentIf upper layers abort the RRC connection establishment procedure, due to a NAS procedure being aborted as specified in TS 24.501 [23], while the UE has not yet entered RRC\_CONNECTED, the UE shall:1> stop timer T300, if running;1> reset MAC, release the MAC configuration and re-establish RLC for all RBs that are established; |

Since section 7 in only an informative annex while the UE behaviour would rather follow the procedural text in the normative part of the specifications, a correctly implemented UE would actually not stop T319 upon abortion of connection establishment by upper layers, which is against the intended UE behaviour.  |

 |

**Q5: Do you agree with the problem identified and the changes in R2-2104267,** **R2-2104268?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| Nokia | Yes | This could be aligned |
| Huawei, HiSilicon | Yes | Proponent of the CR |
| Samsung | No | Our understanding is that the description of T319 timer in the table seems wrong so it can be just deleted from there.  |
| Apple | Yes |  |
|  |  |  |
|  |  |  |

## SCell Index

[R2-2103752](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103752.zip) Clarification on SCellIndex and ServCellIndex NTT DOCOMO, INC. discussion Rel-15

[R2-2103753](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103753.zip) Clarification on SCellIndex and ServCellIndex NTT DOCOMO, INC. CR Rel-15 38.331 15.13.0 2526 - F NR\_newRAT-Core

[R2-2103754](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103754.zip) Clarification on SCellIndex and ServCellIndex NTT DOCOMO, INC. CR Rel-16 38.331 16.4.1 2527 - A NR\_newRAT-Core

There are two issues explained in R2-2103752, and several proposals are provided.

Rapporteur would like to first ask companies to provide their views on the following two proposals.

**Proposal2: RAN2 to confirm if the assignment of servCellIndex for PSCell can be duplicated with SCellIndex for SCell.**

**Proposal3: RAN2 to confirm if the duplicate use of servCellIndex happens, it is unclear for UE on which cell (i.e. PSCell or SCell) to multiplex the UCI based on current spec.**

**Q6a: What is your understanding on the above two proposals and questions?**

|  |  |
| --- | --- |
| Company | Comments |
| Nokia | We agree that there is a problem but maybe this is just an editorial issue.We understand that network can deal with this apparent “inconsistency” by ensuring that it does not mix the PSCell index space with the Scell index space (e.g. always allocate 1 to PSCell, use Scell space from 2 onwards). Then there is no problem.Can companies confirm that then this is purely an editorial issue? |
| Huawei, HiSilicon | Our understanding is that servCellIndex and SCellIndex are both the serving cell index, and they should not be duplicated for a UE.In MAC spec, only servCellIndex is used for all serving cells. |
| Samsung | Agree with P1. But for the change on P4, we think there is no value to specify the clear NW behavior in the specification.  |
| Apple | For P2, we think these two should not be duplicated and the constraint in NW assignment of this index range needs to be clarified in RRC spec. |
|  |  |
|  |  |

Companies are requested to provide feedbacks on the following two proposals.

**Proposal1: Correct the SCellIndex description as following:**

**The IE *SCellIndex* concerns a short identity, used to identify an SCell. The value range is shared across the Cell Groups.**

**Proposal4: Add clarification in the ServCellIndex description as following:**

**The IE *ServCellIndex* concerns a short identity, used to identify a serving cell (i.e. the PCell, the PSCell or an SCell). Value 0 applies for the PCell, while the *SCellIndex* that has previously been assigned applies for SCells. For *ServCellIndex* of PSCell, the value shall be assigned other than *SCellIndex* used for SCells within SCG.**

**Q6b: Do you agree with Proposal 1 and Proposal 4 above?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| Nokia | - | See answer to Q6a, yes if only change is purely editorial |
| Huawei, HiSilicon | Partially | The first change should be fine (more like editorial).For the second change, we think the serving cell ID should be unique for all serving cells configured to a UE, i.e. across cell groups. |
| Samsung | Partly | We are fine with P1 but we do not see any value on P4.  |
| Apple | Yes with comments | We are fine with P1. We also support some clarification for PSCell index in ServCellIndex. But not sure the text in P4 is the best solution.  |
|  |  |  |
|  |  |  |

## Processing delay

[R2-2103860](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103860.zip) Clarification on the RRC Processing Delay Apple draftCR Rel-15 38.331 15.13.0 F NR\_newRAT-Core, TEI15

[R2-2103861](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113bis-e%5CDocs%5CR2-2103861.zip) Clarification on the RRC Processing Delay Apple draftCR Rel-16 38.331 16.4.1 A NR\_newRAT-Core, TEI16

The reason for changes is:

|  |
| --- |
| Currently, RRC reconfiguration delay for SCell modification case is 10ms, but in all other CA/DC cases (i.e. SCell addition/release, SCG addition/modification/release), the delay is 16ms. SCell modification could result in large RRCReconfiguration air-message size (e.g. due to major change in CSI configuration by the network in multiple SCells) considering the large number of SCells that the UE could support. Such large air-message require high processing in RRC and accordingly longer execution time (e.g. longer time for ASN.1 decoding). In addition, since SCG modification also include the SCell modification, for the SCell modification case, the processing delay should be also 16ms. |

**Q7: Do you agree with the problem identified and the changes in R2-2103860,** **R2-2103861?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| Nokia | No, change is NBC + RAN4 checking is required | * + The proposal is NBC and will require checking with RAN4
	+ Is the change coming from a real field issue that the UE cannot meet the performance? If not, we are not ready to accept to change anything.
 |
| Huawei, HiSilicon | No | Agree with Nokia. |
| Samsung | Yes | It seems omitted by accident and we are fine with the change.  |
| Apple | Yes |  Proponent of the CR |
|  |  |  |
|  |  |  |

# Conclusion

TBD

# References

[1]