3GPP TSG-RAN WG2 Meeting #115 Electronic R2-21xxxxx

Electronic, 16 – 27 August 2021

Agenda Item: 5.4.1.3

Source: Huawei, HiSilicon

Title: [AT115-e][014][NR15] CP Other (Huawei)

Document for: Discussion, Decision

# 1 Introduction

This document is to kick off the following email discussion:

**[AT115-e][014][NR15] CP Other (Huawei)**

 Scope: Determine agreeable parts in a first phase, for agreeable parts agree on CRs. Treat R[2-2108290](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%5CR2-2108290.zip), R2-2108644, R2-2108645, R2-2107022, R2-2108646, R[2-2108647](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%5CR2-2108647.zip), R2-2107377, R[2-2107378](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%5CR2-2107378.zip), R[2-2107573](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%5CR2-2107573.zip), R[2-2108571](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%5CR2-2108571.zip)

 Intended outcome: Report, agreed CRs if applicable

 Deadline: Schedule 1

The guidance for deadline is below:

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.

# Contact Information

|  |  |
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# Discussion

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

## Rapporteur CR

R[2-2108290](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%5CR2-2108290.zip) Miscellaneous non-controversial corrections Set XI Ericsson CR Rel-15 38.331 15.14.0 2762 - F NR\_newRAT-Core

The changes are:

|  |
| --- |
| Miscellaneous non-controversial errors are corrrected.1. “TBD” in Guidelines section

Deleted “TBDs” for examples in the Guidelines section (Annex A) that have never been introduced.Corrected also some other typos. |

**Q1: Do you agree with the changes in R2-2108290?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| MediaTek |  | The first change (remove comma) on smtc field seems not necessary (Note that this part is different from R16). “The SSB periodicity/offset/duration configuration of target cell for NR PSCell change, NR PCell change and (for NR-DC) NR PSCell addition.”Others look ok. |
| Nokia |  | Yes looks okay |
| ZTE | Yes | It seems no harm to remove the comma.  |
| Ericsson | Yes(Propoent) |  |
| Huawei, HiSilicon | Yes |  |
| Samsung | Yes | Rel-16 CR (R[2-2108291](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%5CR2-2108291.zip)) has more minor corrections than Rel-15 CR but we think Rel-16 CR category should be A instead of F based on the MCC guideline i.e. If there are more substantial changes in the later release CR, we should normally split the CRs to Cat A + Cat F parts so this is clear. But in this case the changes are anyway mostly editorial so we think it’s fine to just use Cat A for all of them. |
| Lenovo | Yes but | The following issue can be fixed as well:In 6.4: current description of maxBarringInfoSet is not correct, it should say "Maximum number of access control parameter sets“. Is also a R16 issue.maxAccessCat-1 INTEGER ::= 63 -- Maximum number of Access Categories minus 1maxBarringInfoSet INTEGER ::= 8 -- Maximum number of Access Categories |
| vivo | Yes | The first change to remove the comma seems unnecessary but ok to follow the majority.Other changes to remove TBDs are ok. |
| OPPO |  | No strong view |
| Apple | Yes |  |
| CATT | Yes |  |
| QCOM | Yes | Spec version seems wrong in the CR.  |
| NEC | Yes | fine to correct them |
| Intel | Yes |  |

## SearchSpaceSIB1

R[2-2108644](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%5CR2-2108644.zip) Clarification of search space configuration for SIB1 Huawei, HiSilicon CR Rel-15 38.331 15.14.0 2790 - F NR\_newRAT-Core

Moved from 5.4.1.1

R2-2108645 Clarification of search space configuration for SIB1 Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2791 - A NR\_newRAT-Core

Moved from 5.4.1.1

R[2-2107022](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%5CR2-2107022.zip) Discussion on RMSI and OSI reception based on non-zero search space OPPO discussion Rel-15 NR\_newRAT-Core

The discussion was also discussed in RAN2#114 in R[2-2107022](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%5CR2-2107022.zip), and no conclusion was made.

According to the proposals in R[2-2108644](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%5CR2-2108644.zip)/R[2-2108645](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%5CR2-2108645.zip) and R2-2107022, there are basically the following options:

**Option 1**: if searchSpaceSIB1 is set to non-zero in dedicated BWPs, the UE monitors all PDCCH occasions as configured in searchSpaceSIB1, i.e. using TCI states like for other dedicated search spaces.

**Option 2**: clarify that the searchSpaceSIB1 can only be set to zero for both initial DL BWP and dedicated BWPs if configured.

**Option 3**: define the mapping between SIB1 PDCCH occasions and SSBs like for OSI if searchSpaceSIB1 is set to non-zero.

**Q2: Which option(s) above do you prefer, or you have other preference (please indicate that in the comment column)?**

|  |  |  |
| --- | --- | --- |
| Company | Preference | Comments |
| MediaTek | See comment | We feel like this is more RAN1 issue and should check with RAN1 first. Our preference is option 1 at this moment. We are however not sure any SPEC change is needed. Note that in TS 38.213 Section 10, it says that RMSI SS (=Type0-PDCCH CSS) can be provided by *searchSpaceSIB1* in *PDCCH-ConfigCommon*. And it further specifies how to monitor PDCCH candidates if the *searchSpaceID* is zero or non-zero. Therefore, we think that probably there is no issue at all. Anyway, we would suggest at least ask RAN1 before concluding in RAN2. |
| Nokia | See comment | First of all just to confirm, using non-zero SS ID for SIB1 (search space), would mean that we are looking at non-cell defining SSB (i.e. there is no Type0-PDCCH SS or CORESET#0 config in MIB). i.e. there would not be any IDLE UEs for this SSB.So, the scenario applies only for CONNECTED mode UEs right?We would prefer checking this with RAN1 as well as we are not really sure anything is really broken at this point of time.On the R2-2108644/R[2-2108645](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%5CR2-2108645.zip), its an NBC change and we already agreed not to have mapping rules for this case. Hence, NW has to set SIB1 SS to zero always. |
| ZTE | See comment | First, we share the same view as Nokia, this kind of configuration only happens to connected UE when dedicated BWP does not cover CD-SSB. Based on the RAN1 LS(R2-1813287/R1-1809810) we pointed out last meeting:***Answer:*** *No, a UE does not necessarily need to monitor an SS/PBCH block associated to the additional CORESET/search space to be able to receive SI broadcast. The UE can be configured with TCI states for the additional CORESET/search space to enable SI broadcast reception.*In this case, UE follows TCI state for SIB1 reception, and network will configure SIB1 CORESET/search space associated with CSI-RS, and configures QCL relationship between CSI-RS and SSB. If anything needs to be clarified, we also think it can be clarified in RAN1 first.  |
| Ericsson | See comment | This issue was already discussed in the last meeting and it looked like we are discussing an issue that, in reality, is not there.For this reason, we basically agree with the comment from MediaTek, even if we are not sure whether an LS to RAN1 is needed.Maybe interested company can bring this directly to RAN1? |
| Huawei, HiSilicon | Option 1 | We agree with some others above. This is indeed about the case where the dedicated BWP is not overlapped with the CORESET#0 and SSB of the cell, so the network cannot provide SS#0 for SIB1 reception. The RAN1 LS (R2-1813287/R1-1809810) mentioned by ZTE is an evidence that option 1 was actually the agreed option. |
| Samsung | - | PDCCH monitoring for SIB1 is defined in RAN1 spec. No change is needed in RRC. If any change is needed in RAN1 spec (if not clear), it should be discussed in RAN1. |
| vivo | Contribution driven in RAN1 | Our understanding of the UE behavior is option1, while no need to clarify it in the spec.Further, it is a RAN1 issue and could be contribution-driven in RAN1. No need to LS from RAN2 to RAN1. |
| OPPO | See comment  | In last RAN2 meeting, some companies propose to use the RRC configured TCI state for RMSI reception. However, there is any wording to say it in the spec, it is just companies’ understanding.Even if it is true that RRC configured TCI state is used for RMSI reception when non-zero search space is configured for RMSI. We wonder how about OSI reception in this case? It is clear that the OSI reception is based on beam sweeping in the spec and no wording to say RRC configured TCI state based OSI reception is not allowed in the spec. If so, there are 2 solution for OSI reception for RRC\_CONNECTED UE if non-zero search space is configured for OSI.**Solution 1**: use active TCI state of PDCCH to send DCI scrambled with SI-RNTI for OSI. Then use TCI state of PDSCH to receive PDSCH of OSI.**Solution 2**: send OSI based on beam sweeping according to TS38.331 section 5.2.2.3.2.However, it is not clear for the UE which solution the network use? Whether there is a case that the UE consider a good beam for OSI is not the one the network use if network use solution 1 and UE use solution 2? If so, the UE will fail to receive OSI.**RAN2 should consider RMSI, OSI and paging reception together when RAN2 determine something.** |
| Apple | See comment | From our understanding, the UE behavior for zero search space and non-zero search space is clear to companies. In details, for zero search space for SIB1/OSI/Paging, UE follows TS38.213 Section 13 for PDCCH monitoring. While for non zero search space for SIB1/OSI/Paging, according to TS38.213 Section 10, “the UE determines monitoring occasions for PDCCH candidates of the Type0/0A/2-PDCCH CSS set based on the search space set associated with the value of searchSpaceID”. That is to say, UE follows the normal TCI state used in connected state.Then regarding the text in TS38.331 on searchSpaceOtherSystemInformation, RAN2 decided on the principle for paging first in RAN2 #102 meeting and then for OSI in RAN2 #103 meeting that “for non-default association, Kth PDCCH monitoring occasion in the SI-Window corresponds to Kth transmitted SSB”. But there is no consensus that this method is also applicable to SIB1 in non-default association case. If companies feel needed, we suggest to have a discussion in RAN1 first.Anyway, our interpretation is the two aspects are not contradictive to each other. The PDCCH occasion to monitor for connected UE is based on TCI state referring to a CSI RS, which could be QCLed with an SSB index. Regarding the contributions R2-2108644 and R2-2108645, we feel it’s not necessary to have this text. Strictly speaking, it is not 100% percent correct since UE could skip some PDCCH monitoring in some cases like overbooking. |
| CATT |  | RAN1 spec specified the mapping between RMSI PDCCH monitoring occasions and SSBs when searchSpaceSIB1 is set to zero, and we are not sure if RAN1 has the responsibility to consider the mapping for non-zero searchSpaceSIB1. Anyway we can ask RAN1 for some help, and identify whether some rules should be complied. |
| QCOM |  | We should check with RAN1 … in addition we are not really sure anything is really broken at this point of time. |
| NEC | See comment | generally we assume this should be clarified in RAN1. Also, we tend to agree with Nokia and ZTE that this, if happen, would be in Connected state only and the network will handle e.g. as ZTE explained. |
| Intel | Option 2 (possibly option 3 for Rel-17) | We agree with Oppo’s observation that the mapping between RMSI PDCCH monitoring occasions and SSBs when searchSpaceSIB1 is set to non-zero.Considering backward compatibility issue, we prefer option 2. But we can consider option 3 for Rel-17.  |

## inter-RAT measurement report triggering

R[2-2108646](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%5CR2-2108646.zip) Correction on inter-RAT measurement report triggering Huawei, HiSilicon CR Rel-15 38.331 15.14.0 2792 - F NR\_newRAT-Core

R2-2108647 Correction on inter-RAT measurement report triggering Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2793 - A NR\_newRAT-Core

The reason for changes is:

|  |  |
| --- | --- |
| According to 5.5.4.1, TS 38.331, for inter-RAT E-UTRA measurement:* if the measurement is related to event B1/B2, the UE considers serving cell(s) on the associated MO as neighbour cell(s);
* else, i.e. if the measurement is the periodical report type, the UE considers neighbouring cell(s) on the associated MO which is not in the black cell list as applicable cell(s).

|  |
| --- |
| 5.5.4 Measurement report triggering5.5.4.1 GeneralIf AS security has been activated successfully, the UE shall:1> for each *measId* included in the *measIdList* within *VarMeasConfig*:2> if the corresponding *reportConfig* includes a *reportType* set to *eventTriggered* or *periodical*:……3> else if the corresponding *measObject* concerns E-UTRA:4> if *eventB1* or *eventB2* is configured in the corresponding *reportConfig*:5> consider a serving cell, if any, on the associated E-UTRA frequency as neighbour cell;4> else:5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModListEUTRAN* defined within the *VarMeasConfig* for this *measId*; |

 Based on the above procedure, there is no description on how to determine applicable neighbouring cell(s) for the B1/B2 measurement, but in fact, the action in the “else” branch is also applicable to the B1/B2 measurement rather than only for the periodical type.Therefore, the above procedure should be modified to include the procedure of determining applicable neighbouring cell(s) for B1/B2 measurement.  |

**Q3: Do you agree with the problem identified and the changes in R**[**2-2108646**](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%5CR2-2108646.zip)**/R**[**2-2108647**](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%5CR2-2108647.zip)**?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| MediaTek | Yes | Maybe this could be included in Rapporteur’s CR |
| Nokia | Yes | Agree with MediaTek |
| ZTE | Yes | Agree with MediaTek. |
| Ericsson  | Yes | Agree with MediaTek. |
| Huawei, HiSilicon | Yes | Proponent |
| Samsung | Yes | This change seems correct. The ‘else’ should be removed because the neighboring cells detected on that frequency have to be considered even with eventB1 or eventB2 reporting.Cf. Note TS36.331 has same description with the change. See the captured below:1. 5.5.4 Measurement report triggering
2. 5.5.4.1 General

*(skipped)*4> else:5> if the *eventB1* or *eventB2* is configured in the corresponding *reportConfig*:6> consider a serving cell, if any, on the associated NR frequency as neighbouring cell;5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*; |
| vivo | Yes | The “else” branch is also applicable to the B1/B2 measurement  |
| OPPO | Yes | Agree with MediaTek |
| Apple | Yes | Agree with MediaTek. |
| CATT | Yes | Agree with MediaTek. |
| QCOM | Comments | 1-existing spec is clear already and not sure if this change is needed2-the current proposed change seems more confusing. As a suggestion if there is a need to have it clearer:4> else, consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModListEUTRAN* defined within the *VarMeasConfig* for this *measId*; |
| NEC | Yes | Agree with MediaTek  |
| Intel | Yes | We prefer not to include this in rapporteur CR but to keep it as a separate CR – this is changing the behaviour, even if it is an obvious behaviour and should be covered properly in the cover page. If it is in the rapporteur CR, this change should clearly identified in the cover page.  |

## MeasObjectEUTRA

R[2-2107377](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%5CR2-2107377.zip) 38331 Corrections on MeasObjectEUTRA-R15 OPPO CR Rel-15 38.331 15.14.0 2721 - F LTE\_NR\_DC\_CA\_enh-Core

Moved from 5.4.1.1

R2-2107378 38331Corrections on MeasObjectEUTRA-R16 OPPO CR Rel-16 38.331 16.5.0 2722 - A NR\_newRAT-Core

Moved from 5.4.1.1

The reason for changes is:

|  |
| --- |
| ccording to introduction of inter-RAT measurement in section 5.1.1, both ‘whitelisted’ cells and ‘blacklisted’ cells can be configured. While in *MeasObjectEUTRA* IE, there is no corresponding fields to configure the while list of cells. The introduction and the configuration are misaliged in current R15 RRC specification. |

**Q4: Do you agree with the problem identified and the changes in R**[**2-2107377**](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%5CR2-2107377.zip)**/R**[**2-2107378**](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%5CR2-2107378.zip)**?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| MediaTek | Yes | Maybe this could be included in Rapporteur’s CR |
| Nokia | Yes | Agree with MediaTek |
| ZTE | Yes | Agree with MediaTek |
| Ericsson | No | We this this is not a real issue as the whitelisted cell should be the one in the highlighed fields:MeasObjectEUTRA::= SEQUENCE { carrierFreq ARFCN-ValueEUTRA, allowedMeasBandwidth EUTRA-AllowedMeasBandwidth, cellsToRemoveListEUTRAN EUTRA-CellIndexList OPTIONAL, -- Need N cellsToAddModListEUTRAN SEQUENCE (SIZE (1..maxCellMeasEUTRA)) OF EUTRA-Cell OPTIONAL, -- Need N blackCellsToRemoveListEUTRAN EUTRA-CellIndexList OPTIONAL, -- Need N blackCellsToAddModListEUTRAN SEQUENCE (SIZE (1..maxCellMeasEUTRA)) OF EUTRA-BlackCell OPTIONAL, -- Need N eutra-PresenceAntennaPort1 EUTRA-PresenceAntennaPort1, eutra-Q-OffsetRange EUTRA-Q-OffsetRange OPTIONAL, -- Need R widebandRSRQ-Meas BOOLEAN, ...}However, if companies are eager to have this change, it can be merged in the Rapporteur’s CR. |
| Huawei, HiSilicon |  | Proponent needs to reply to Ericsson’s comment above. On the other hand, “a list of cell specific offsets” should not be removed.  |
| Samsung | Partially agreed | It is fine to remove the introduction of whitelisted cells for inter-RAT measurement, because there is no whitelist in RRC spec.But, a list of cell specific offsets should be kept. |
| Lenovo | Partly | We have the same understanding as Samsung. The removal of “a list of cell specific offsets” is not correct as cellIndividualOffset can be configured per LTE cell.The changes to “whitelisted cells” can be merged into the rapporteur CRs. |
| vivo | partly | The intention of the CR is to clarify the difference between the intra-RAT and inter-RAT. For intra-RAT, both cellsToAddModList and whiteCellsToAddModList are configured, while the whiteCellsToAddModList is not included in the configuration of inter-RAT.Therefore, the list of 'whitelisted' cells can be removed.Meanwhile, “a list of cell specific offsets” should be revised to “a cell specific offset” instead of being removed, as only one offset “EUTRA-Q-OffsetRange” is included for intra-RATmeasurement. |
| OPPO | Yes |  |
| Apple | Yes | Agree with MediaTek |
| CATT | Partly | “a list of cell specific offsets” should be kept since it is related with the field of cellsToAddModListEUTRAN. |
| QCOM | Yes |  |
| NEC | Yes | Agree to include in Rapp CR. |
| Intel | Partly | Agree with others about cell specific offsets. |

## L3 filtering configuration

R[2-2107573](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%5CR2-2107573.zip) Clarification on L3 filtering configuration (filterCoefficient) Apple discussion Rel-16 NR\_newRAT-Core

Moved from 6.1.4.1.2

It has following observations:

**Observation 1: The L1 measurement period which is the reference to the assumed sample rate for filterCoefficient configuration could be dynamically changed via L1/L2 mechanism.**

**Observation 2: L3 filtering configuration/implementation based on dynamic change of the L1 assumed sample rate is against the RRC functionality concept and increases the UE and NW complexity.**

**Q5a: Do you agree with the problem identified in R2-2107573?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| MediaTek | Yes | It seems better to fix the assumption of sampling rate. |
| Nokia | No | The parameters are per FR so the current text is correct in our view.[Apple feedback] We propose the parameter is a fix value per FR, but referring to the current RAN4 spec doesnot achieve this purpose. |
| ZTE | See comments, more clarification is needed. | We are actually unclear how this “assumption” works. The current spec has following two notes:NOTE 2: The filtering is performed in the same domain as used for evaluation of reporting criteria or for measurement reporting, i.e., logarithmic filtering for logarithmic measurements.NOTE 3: The filter input rate is implementation dependent, to fulfil the performance requirements set in TS 38.133 [14]. For further details about the physical layer measurements, see TS 38.133 [14].In our understanding, UE follows the minimum measurement period defined in TS 38.133, and performs L3 filtering when each result is delivered from UE’s L1 to L3 (see Note3). UE can perform more frequent L1 sample, but the L1 sample rate is up to UE implementation.So for the “assumption” value, we are unclear whether the UE’s measurement behaviour will change when the “assumption” is updated to fixed value. Maybe more clarification is needed. [Apple feedback] According to the spec logic, the L3 filter is designed as follows:1. For configuration, L3 filtering configuration is based on the assumed sample rate which is aligned with UE and NW.
2. For the adaptation to UE specific L1 sample rate, UE adapts its Layer 3 filter implementation and scales the filter coefficient based on the UE’s actual L1 input rate.

And here the problem is in the configuration part.  |
| Apple | Yes | The sample rate assumption should be fix, and it can be fix per FR. But it’s not true if you look at the referred RAN4 spec. According to the referred L1 measurement period defined in section 9.2.5.2 of TS38.133 spec, the assumed sample rate “X” is not a fix value, but depends on many factors as follows:1. K\_p, SMTC and CSSF\_intra, and CSSF\_intra (Carrier-specific scaling factor) depends on inside or outside gap criteria (defined in section 9.1.5 of TS38.133 spec);
2. PCell, PSCell and SCell, and SCell activated/deactivated state.

Since the factors (CSSF\_intra, SCell state) can be dynamically changed due to L1 BWP switching or L2 SCell activation, the referred value will be changed dynamically.  |
| Ericsson | Yes |  |
| Huawei, HiSilicon | No | We assume that the network should be able to configure a proper k value, which does not necessarily change dynamically according to the X. |
| Samsung | No | From our understanding, UE applies the “intra-freq minimum requirement time interval” as a sample rate X ms, and it is already provided per FR with formulas in TS 38.133 (in Tables). If the clarification is needed, only need to do is restricting dynamic change of the sample rate “X” for the L3 filtering configuration by implementation. |
| vivo | No | No explicit mapping relation between the filterCoefficient K and the sample rate X. Therefore, configuration of k is up to implementation of gNB. |
| OPPO | No | We don’t think L1 measurement period is updated that dynamically. For inside gap/outside gap, measurement is done already differently |
| CATT | Yes | To fix the sample rate assumption we think some change or clarification is necessary. |
| NEC | Yes but | why not discussing this in RAN4 first?  |
| Intel | Yes | We understand the point. However, NR and LTE are different in defining measurement period e.g. SSB periodicity is configurable and different timer period per FR1/FR2. It might be sensible to consult with RAN4 how to define a reasonable value/approach to synchronize between gNB and UE in applying filter coefficient |

The following proposals are provided in R2-2107573:

**Proposal 1: Confirm that UE and NW have the same assumption of the sample rate for the filterCoefficient K configuration.**

**Proposal 2: The dynamic change of the assumed sample rate “X” for the L3 filtering configuration and implementation is not supported.**

**Proposal 3: Specify that the assumed sample rate “X” for the filterCoefficient configuration as the fix value, i.e., 200ms for FR1, and 400ms for FR2.**

**Proposal 4: Agree the CR to capture the text proposal in section 2.3.**

**Q5b: Do you agree with the proposals in R2-2107573?**

|  |  |  |
| --- | --- | --- |
| Company | Agree?(Yes or No) | Comments |
| MediaTek | No strong view | The direction suggested by Apple is in general fine for us. We however don’t think this is an essential issue as it may only cause some performance lost if we don’t fix it. |
| ZTE |  | See our question to Q5a.  |
| Apple | Agree |  |
| Ericsson | See comments (need RAN4 confirmation) | What is proposed in the CR seems to be correct under the current context but it is not future proof (e.g., redcap). It is better to phrase the changes in a different way. Of course any change should be confirmed with RAN4. * adapt the filter such that the time characteristics of the filter are preserved at different input rates, observing that the *filterCoefficient k* assumes a sample rate equal to X ms; The value of X is equivalent to one smallest possible intra-frequency L1 measurement period as defined in TS 38.133 [14] assuming non-DRX operation, and depends on frequency range.

We can as well send an LS without mentioning any proposed changes from RAN2 and ask RAN4 for a wording suggestion |
| Samsung | No | We don’t think spec change is needed. |
| vivo | No | The fix value of X may introduce misalignment between L1 and L3 measurements.  |
| OPPO | No | RAN2 should confirm with RAN4 before having a solution. |
| CATT | Yes | The change seems simple and clear. |
| NEC |  | same comment as to Q5a. Why not discussed in RAN4 first? |
| Intel |  | As commented in Q5a, we need to consult with RAN4.  |

## Overheating assistance

R[2-2108571](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%5CR2-2108571.zip) Clarification for overheating assistance information reporting Huawei, HiSilicon discussion Rel-15 NR\_newRAT-Core

For the first issue, it is proposed to discuss the following two alternative understandings:

**Proposal 1: If the UE sent the first overheating assistance information with preference on reduced parameter A and the NW already reduced the configuration for parameter A, UE sends the second overheating assistance information without including the preference on reduced parameter A, RAN2 to clarify how to understand UE’s preference:**

**Alt 1) UE does not have any preference on reducing configuration for parameter A and prefers to restore the configuration for parameter A**

**Alt 2) the previous preference on reduced parameter A is unchanged and UE prefers to maintain the configuration for parameter A**

**(The parameter A can be the number of maximum sCC, the number of maximum aggregated bandwidth, the number of maximum MIMO layers).**

NOTE: there is a mistake in the discussion part before Proposal 1 (i.e. Alt.1 is actually Alt.2), but anyway please just use Alt.1 and Alt.2 in Proposal 1.

**Q6a: For the first issue, which alternative above is your understanding, or you have other understanding (please indicate in the comment column)?**

|  |  |  |
| --- | --- | --- |
| Company | Alternative | Comments |
| MediaTek | Alt 2 | Based on current SPEC, it seems that each parameter (although within the same IE) is set independently. So, Alt 2 looks more reasonable to us. We assume network will remember last UAI setting until receiving “no overheating ind” (i.e. no fields are included in IE *OverheatingAssistance*). |
| Nokia | Alt2 (in our understanding network does not need to remember previous indications…) | If the UE has sent overheating indicator, it is up to NW to rescue the UE. It doesn’t make sense to go back to the previous configuration that caused the overheating. If the NW has no smart mechanism to treat it, it will probably result in trial-error approach. Up to NW implementation how smart it is, but we see no need for specification clarification on this. |
| ZTE | See comments | We share the same view as Nokia, that network does not need to remember previous configuration or previous UAI.So when UE sends second UAI (with fields), it implies UE has preference to reduce other configurations. And the UE is satisfied with current configuration for parameter A. It is up to network whether to configure parameter A to a more aggressive value or not. But the UAI message itself does not represent that UE wants to change back to previous configuration of parameter A.So for the scenario mentioned in P1, our interpretation is the modification of Alt 1):**Alt 1) UE does not have any preference on reducing current configuration for parameter A ~~and prefers to restore the configuration for parameter A~~** |
| Ericsson | Alt 1) with modification | Alt1) with modification “UE does not have any preference on reducing configuration for parameter A ~~and prefers to restore the configuration for parameter A~~”. We cannot really infer whether the UE prefers the configuration to be restored or not, absence of a preference field can only indicate the UE has no preference, whether to restore the previous configuration or not would be up to the network. We think this is actually already clear from the current procedures – note that once the UE is including the overheating parameters, the procedures do not prevent the UE from including any preference i.e. there is no delta in the procedures for what the UE sends within the overheating report. |
| Samsung | Alt 1 | Unlike power saving, the IE OverheatingAssistance has no feature IEs, e.g. maxBW-Preference-r16.Thus, if UE reports no reduced parameter, it should mean ‘no preference’.E.g. we can see it in the current description:***reducedBW-FR1***Indicates the UE's preference on reduced configuration corresponding to the maximum aggregated bandwidth across all downlink carrier(s) and across all uplink carrier(s) of FR1, to address overheating or power saving. This field is allowed to be reported only when UE is configured with serving cell(s) operating on FR1. The aggregated bandwidth across all downlink carrier(s) of FR1 is the sum of bandwidth of active downlink BWP(s) across all activated downlink carrier(s) of FR1. The aggregated bandwidth across all uplink carrier(s) of FR1 is the sum of bandwidth of active uplink BWP(s) across all activated uplink carrier(s) of FR1. If the field is absent from the *MaxBW-Preference* IE or the *OverheatingAssistance* IE, it is interpreted as the UE having no preference on the maximum aggregated bandwidth of FR1. |
| vivo | Alt 1 with modification | **Alt 1) UE does not have any preference on reducing configuration for parameter A ~~and prefers to restore the configuration for parameter A~~**When the parameter is absent, UE has no preference and it’s up to network to maintain the configuration or reconfigure a new one. |
| OPPO | Alt 1 with modification | Alt1) with modification “UE does not have any preference on reducing configuration for parameter A ~~and prefers to restore the configuration for parameter A~~”. |
| Apple | Alt 2 | If UE does not report a further reduced value (UAI#2 in the example) for a parameter that it has requested to be reduced in a previous UAI and the NW has agreed to the same and reconfigured the UE accordingly, it means UE is fine with current active configuration on this parameter and UE can independently request for another parameter reduction. This implies, UE is not requesting the NW to change the previously modified configuration (UAI#1 in the example). This also allows both the UE and NW to work based on the current active configuration and not having to remember/track all the previously requested UAI values, making the implementation more simple and reasonable. |
| CATT | Alt 2 | The NW does not have to remember the previous handling requested by the UE. |
| NEC | Alt.1 with modification | tend to agree with Nokia and ZTE that the network does not need to remember previous information received before reducing some configurations as per the UE request. Alt.1 with modification as proposed by ZTE or Ericsson (prefer ZTE one) should be the way to go. |
| Intel | See comments (Alt 1 with comments) | The agreements from R2-109bis are as follows:1 Delta signalling applies at a ‘feature’ level, where the ‘features’ for power saving are: drx-Preference, maxBW-Preference, maxCC-Preference, maxMIMO-LayerPreference, minSchedulingOffsetPreference and releasePreference. No further grouping is considered.2 When reporting a ‘feature’, the all parameters that the UE has a preference for are included. Parameters that are not included are interpreted as the UE having no preference for those parameters.3 An empty ‘feature’ IE can be signalled to indicate that the UE has no preference for all parameters in the ‘feature’ (i.e. similar to overheating)As per bullet 2, above, within the overheating, all of the valid ones have to be included. If not included, UE has no preference. The alternatives as stated are a bit confusing. So we have not indicated a preference on them itself.  |

For the second issue, it is proposed to discuss the following

**Proposal 2: RAN2 to clarify how to understand the “reduced configuration” for overheating:**

**Alt 1) the reduced value can range up to the active configuration before UE indicates overheating assistance information**

**Alt 2) the reduced value can** **only range up to the current active configuration**

**Q6b: For the second issue, which alternative above is your understanding, or you have other understanding (please indicate in the comment column)?**

|  |  |  |
| --- | --- | --- |
| Company | Alternative | Comments |
| MediaTek | Alt 1 or up to UE capability | We see no limitation in current SPEC and think that UE can report any (MIMO) configurations which are under UE capability. It can give UE more flexibility. It seems no problem to report preference that is under current configuration (which means that no network action is really needed).  |
| Nokia | Network is not required to have any memory of past events so it would only look at the currently active configuration… | See answer to Q6a |
| ZTE | Alt 2) | See our answer to Q6a, we understand UE does not need to differentiate the configuration before or after UAI. UE only need to determine whether it has preference to the current configuration. So when UE sends UAI, the reduced value should be range up to current active configuration (i.e. Alt2 )  |
| Ericsson | If really needed, Alt 2) | In principle, for overheating the UE would not be bounded to any particular value since this was not previously discussed in this context. Hence, adding any different behavior than that may be non-backwards compatible. Within that said, if companies are willing to change this, we should follow the same approach as for power saving i.e. Alt 2), we do not need to repeat the discussion from power saving. |
| Huawei, HiSilicon | Alt 1 or up to UE capability | In our understanding, the active configuration before UE indicates overheating assistance information is the configuration based on UE capability. Agree with MTK that it gives UE more flexibility, especially if Alt 2) is preferred for Q6a, otherwise the UE cannot restore the configuration for one specific parameter (i.e. sCC, aggregated bandwidth, MIMO layers). Besides, we agree that we should not restrict the NW implementation, then the Alt 1 can indicate the clear preference from UE for the configuration to the NW. |
| Samsung | Alt 1 | Atl1 seems reasonable, rather than Alt 2. |
| vivo | Alt 1 | For instance, the capability of UE about MIMO is 8 and the current activate configuration already reduced to 2 due to the UE previous request. When the overheating status relieve a little and the UE would like to switch to one relaxed configuration (e.g. 4), the alt2 may cannot work, i.e., the UE need to be reconfigured to 8 before it request for reducedMIMO-Layer to 4. However, the reconfiguration is controlled by the network. |
| OPPO | Alt 1 or up to UE capability | Alt 1 can give UE and network more flexibility. |
| Apple | Alt 2 | Though ideally from a UE perspective we would like to have the flexibility to request for a parameter upgrade (from a lower configuration to a higher configuration upto to the current UE capability), for the case of overheating we find that it might be counter productive to switch to the higher configuration until the overheating condition is mitigated and UE indicates it is no longer overheated. In this context, looks like Alt 2 is simpler for both UE and NW. And since in power saving we already had the same discussion, we could follow the same approach here, to ensure uniform UAI handling for both overheating and power save.    |
| CATT | Alt 2 | Agree with ZTE that UE does not need to differentiate the configuration before or after UAI. The reduced value can only range up to the current active configuration. |
| QCOM | Check Notes  | Before asking this question, it would be good to know the expected network behavior for each case:1. UE sends value within the range of the current active configuration 🡪 should be no issue at the network
2. UE sends value larger than the range of the current active configuration (but less than what was advertised in the capability message)
	1. Would network honor it? e.g. increased the number of CC

Would network ignore it? as it’s not considered as valid value to reduce the configuration |
| NEC | Alt 2 |  |
| Intel | Alt 1 |  |

# Conclusion

TBD

# References

[1]