**3GPP T****SG-RAN WG2 Meeting #118-electronic R2-220xxxx**

**Online, May 9th - May 20th, 2022**

**Agenda item: 5.1.4.1**

**Source: vivo**

**Title: Report of [AT118-e][019][NR1516] CP Miscellanous**

**Document for: Discussion and Decision**

# 1 Introduction

This contribution is aimed at reporting the discussion and results of the following offline discussion:

* [AT118-e][019][NR1516] CP Miscellanous (vivo)

Scope: Treat R2-2204902, R2-2205428, R2-2205429, R2-2204845, R2-2204846, R2-2205827, R2-2204728, R2-2204729, R2-2204845, R2-2204846, R2-2205827, R2-2204728, R2-2204729, R2-2205503, R2-2205504, R2-2205298, R2-2205299, R2-2205300

Ph1 Determine agreeable parts, Ph2 for agreeable parts agree CRs (offline agreement, CB online only if necessary).

Intended outcome: Report, Agreed CRs

Deadline: Schedule 1

The discussion scope is to gather companies’ views on the contributions [1]-[13]. Companies are invited to provide their views by May 12th (Thursday), 2022, 12:00 UTC for phase-1 discussion.

# 2 Participants

To facilitate this offline discussion amongst the delegates, would you please fill in your name and the email address in the table below.

|  |  |
| --- | --- |
| Delegate name | E-mail address |
| Yitao Mo (Stephen) | yitao.mo@vivo.com |
| Nokia | amaanat.ali@nokia.com |
| Docomo | masato.taniguchi.mf@nttdocomo.com |
| Sangbum Kim | sb07.kim@samsung.com |
| Mouaffac Ambriss (Qualcomm Inc) | [mambriss@qti.qualcomm.com](mailto:mambriss@qti.qualcomm.com) |
| Apple | rrossbach@apple.com |
| Lili Zheng (Huawei, HiSilicon) | zhenglili4@huawei.com |
| Fei Dong (ZTE) | Dong.fei@zte.com.cn |
| Antonino Orsino (Ericsson) | antonino.orsino@ericsson.com |
| Haitao Li | lihaitao@oppo.com |
| Haocheng Wang | wanghaocheng@catt.cn |
| LiuJing (ZTE) | liu.jing30@zte.com.cn |
| Sudeep Palat | Sudeep Palat |
| Hisashi Futaki (NEC) | hisashi.futaki @ nec.com |
| Olivier Marco (Sequans) | omarco@sequans.com |
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# 3 Phase-1 Discussion

## 3.1 Clarification for Inter-MN HO without SN change

In the previous RAN2 meeting, the need for Stage 3 CR regarding inter-MN handover without SN change was discussed but postponed without consensus. The corresponding agreement is given as follows,

|  |
| --- |
| **RAN2#117 meeting agreements**  R2-2202807 Clarification on inter-MN handover without SN change NEC CR Rel-15 38.331 15.16.0 2907 - F NR\_newRAT-Core  R2-2202808 Clarification on inter-MN handover without SN change NEC CR Rel-16 38.331 16.7.0 2908 - A NR\_newRAT-Core   * [029] Both Postponed |

To completely solve this issue which has been discussed for almost one year, the following proposal is given in the contribution [1],

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| --- |
| **Proposal 1: RAN2 to agree to capture the following in a Chairman notes.**   * RAN2 confirms that according to the current RRC spec, both fields *sourceConfigSCG* and *scg-RB-Config* in *CG-ConfigInfo* can be sent in the following cases:   + SN change procedure   + Inter-MN HO with SN change   + Inter-MN HO without SN change (Case 0)   + Inter-MN HO without SN node change (Case 2) |

**Q1: Do companies agree with Proposal 1?**

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| --- | --- | --- |
| **Company** | **Yes/No/Comments** | **Detailed comments** |
| Nokia | Yes | We are fine to capture the scenarios listed in P1 for chair notes |
| vivo | Yes | It makes everything clear. |
| Docomo | Comments | The “content” of the proposal looks correct according to the past discussion, but we still have a concern on the current Stage 3 text, which is not aligned with the proposal and very misleading.  ***sourceConfigSCG***  Includes all of the current SCG configurations used by the target SN to build delta configuration to be sent to UE, e.g. during SN change. The field contains the *RRCReconfiguration* message, i.e. including *secondaryCellGroup* and *measConfig*. The field is signalled upon change of SN, unless MN uses full configuration option. Otherwise, the field is absent.  **Could companies accept removing the following part from the description?**  *The field is signalled upon change of SN, unless MN uses full configuration option. Otherwise, the field is absent.*  With that we can get rid of the misleading part, and the readers (espetially, dev/test people without the context of our long winding discussions) will be able to understand the intention in favor of previously agreed Stage 2 text. |
| Samsung | Yes |  |
| Huawei, HiSilicon | Yes |  |
| Ericsson | Yes | We think that the current stage2 and stage3 specifications do not forbid any of those cases highlighted in P1 and thus we are wondering if this clarification is really needed. However, since this does not involve any actual change in current specifications we are fine to have this only in chair notes. |
| OPPO | Yes |  |
| CATT | No strong view |  |
| Apple | Yes | We think it is ok to capture the understanding in P1 in the chair notes. |
| ZTE | Yes |  |
| Intel | Yes | We are also open to the proposal from DoCoMo. But will require a separate CR. |
| NEC | Yes (proponent) | This is useful for our implementation. Also, it is good to complete the long discussion with explicit conclusion.  Regarding the point from DOCOMO, we feel that it would be a bit difficult to re-discuss the text and converge quickly.. |
|  |  |  |

**Summary:**

12 companies have provided input on this Q1. 10/12 companies agree to capture the implementation cases of inter-MN HO without SN change in the Chairman Notes. Meanwhile, 1 company has no strong view on this while another 1 company would like to make further clarification/correction in the RRC sepc. Based on the companies’ positions, the rapporteur proposes,

**Proposal 1: RAN2 confirms that both fields *sourceConfigSCG* and *scg-RB-Config* in *CG-ConfigInfo* can be sent in the following cases: (capture this in Chairman Notes, no spec change is required)**

* + **SN change procedure**
  + **Inter-MN HO with SN change**
  + **Inter-MN HO without SN change (Case 0)**
  + **Inter-MN HO without SN node change (Case 2)**

## 3.2 Correction on *p-maxNR-FR1* in NR-DC

The current RRC spec specifies that the filed *p-maxNR-FR1* is used in (NG)EN-DC and NE-DC. As a result, the power sharing framework for FR1-FR1 NR-DC might not work properly as this field cannot be used to indicate the maximum total transmit power of NR SCG. Thus, the CRs R2-2205428/5429 [2][3] propose that *p-maxNR-FR1* shall be also applied to NR-DC, i.e., not only limited to (NG)EN-DC and NE-DC. The corresponding correction is quoted as follows,

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| --- |
| ***p-maxNR-FR1***  For (NG)EN-DC and NE-DC, the field indicates the maximum total transmit power to be used by the UE in the NR cell group across all serving cells in frequency range 1 (FR1) (see TS 38.104 [12]). For NR-DC, it indicates the the maximum total transmit power to be used by the UE in the NR cell group across all serving cells in frequency range 1 (FR1) (see TS 38.104 [12]) the UE can use in NR SCG. |

**Q2: Do companies agree with the intention of CR?**

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| --- | --- | --- |
| **Company** | **Yes/No/Comments** | **Detailed comments** |
| Nokia | Neutral | Proposed change is correct but we are not sure there is any misunderstanding as there is the p-maxUE-FR1 for full FR1 across all cell groups. So not sure why there should be particularly misunderstanding with this one. |
| vivo | No strong view | In our understanding, for NR-DC case, the field *p-maxNR-FR1-MCG-r16* is used to indicate the maximum total transmit power that can be used in MCG. Consequently, the field *p-maxNR-FR1* is only for SCG. It is quite straightforward.  Anyway, no strong view on this clarification. |
| Docomo | Yes | Support. The intention is correct, and literally read, the description looks like it is a total transmit power across “all serving cells”. |
| Samsung | Yes |  |
| Apple | No strong view | It’s already specified, but if companies want clarification, we are ok. |
| Huawei, HiSilicon | Yes |  |
| Ericsson | Yes | We tend to agree with Nokia that the usage of the field should be clear from the existing text, and from the fact that there is p-maxNR-FR1-MCG for the MCG power. But since NR-DC usage was not mentioned before, we may as well clarify the text at the same time. |
| OPPO | Yes |  |
| CATT | Yes, proponent | In our view this CR is needed as it is RAN2’s previous common understanding that the field applies for NR-DC, but in the current specification, it says “The field is used in (NG)EN-DC and NE-DC”, which is not correct.    As a background, the spec is like that because the NR-DC case was mistakenly ruled out when we tried to add NE-DC case back in 2020 (see old CR in R2-2002154 for more details ).    Without this CR, it is unclear how power coordination works for FR1 NR DC case. |
| ZTE | Yes |  |
| Intel | Yes | This makes the NR DC case clear – the original text didn’t cover this. |
| NEC | No strong view | We have similar view as Ericsson. |
| Sequans | Yes |  |
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**Summary:**

13 companies have provided input on this Q2. 9/13 agree with the correction while the others hold a neutral view. So the rapporteur proposes,

**Proposal 2: R2-2205428 and R2-2205429 are agreed.**

## 3.3 Correction on *rrc-ConfiguredUplinkGrant*

In the CRs R2-2204845/4846/5827 [4]-[6], it is pointed out that the field description parts for both *precodingAndNumberOfLayers* and *pathlossReferenceIndex* are missing within the field *rrc-ConfiguredUplinkGrant*. So the CRs propose to add the following,

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| --- |
| ***pathlossReferenceIndex***  Indicates the reference signal used as PUSCH pathloss reference (see TS 38.213 [13], clause 7.1.1). |
| ***precodingAndNumberOfLayers***  Indicates the precoding and number of layers (see TS 38.212 [17], clause 7.3.1.1.2). |

**Q3: Do companies agree with the intention of CR?**

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| --- | --- | --- |
| **Company** | **Yes/No/Comments** | **Detailed comments** |
| Nokia | Yes | Propose to merge this to rapporteur CR |
| vivo | Yes (Proponent) | For Rel-15 and Rel-16 specs, we are fine to merge this to rapporteur CR.  For Rel-17 spec, we can merge this to the SDT RRC CR as additional SDT-specific field description is needed for those fields. |
| Docomo | Yes |  |
| Samsung | Yes |  |
| Qualcomm Inc | No strong views | Can be merged with rapporteur CR.  as a suggestion to reword the description for pathlossReferenceIndex, e.g., "indicates the reference signal index used as PUSCH pathloss reference" |
| Apple | Yes | Agree to these CRs with the addition under b) for R17.   1. pathlossReferenceIndex: A field description is also missing in the Rel-17 version and this is covered in R2-2205827. 2. precodingAndNumberOfLayers: Currently the Rel-17 description of this field (in the current h00 version of the RRC spec) references TS 38.213 not TS 38.212. This should be harmonized across releases so that different versions of the RRC spec do not refer different RAN1 specs. In fact the reference to 38.213 seems to be wrong, it should be TS 38.212 [17], clause 7.3.1.1.2. |
| ZTE | No strong views | Can be merged in rapporteur CR.  Qualcomm’s suggestion is fine to us. |
| Ericsson | Comment | Not really needed, but we are fine to add if majority thinks so.  In that case, it shall be merged to the rapporteur CR.  About R2-2204845:  The field description for pathlossReferenceIndex shall be as in the existing field *sri-PUSCH-PathlossReferenceRS-Id*, as it is used for the same purpose:  ***sri-PUSCH-PathlossReferenceRS-Id***  The ID of PUSCH-PathlossReferenceRS as configured in the pathlossReferenceRSToAddModList in PUSCH-PowerControl.  About 4846:  Same comment as for 4845.  This is a mirror CR, thus coverpage shall say Cat A.  About 5827:  Same comment as for 4845.  When pathlossReferenceIndex is added, also pathlossReferenceIndex2 needs to be added.  This is not a mirror CR, thus coverpage shall say Cat F. |
| OPPO | Yes |  |
| CATT | No strong view | Anyway it is seems not essential, can be merged to rapporteur CR. |
| Huawei, HiSilicon | Basically Agree | The wording needs to be improved. For precodingAndNumberOfLayers, a reference to TS 38.214 subclause 6.1.2.3 should be also added in addition to TS 38.212. |
| Intel | No strong view | We don’t need to have field description for all fields. Though the reference to the sections in 321 is useful. |
| NEC | Yes | We are fine with the proposed way forward from vivo. |
| Sequans | Yes |  |
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**Summary:**

14 companies have provided input on this Q3. The majority (9/14) agrees with the intention of the CR (also merged with RRC rapporteur CR). Meanwhile 3 companies also propose some wording suggestions. Thus, the rapporteur proposes,

**Proposal 3: vivo updates R2-2204845, R2-2204846, and R2-2205827 based on the comments from other companies.**

## 3.4 Correction on T345 for UAI overheating

In the CRs R2-2204728/4729 [7][8], it is mentioned that the stop conditions for T345 specified in the table in section 7.1.1 are not aligned with the procedure text that is specified in section 5.3.7. To this end, it is proposed that the stop conditions for T345 specified in the table in section 7.1.1 shall be revised from “Upon releasing *overheatingAssistance* during the connection re-establishment procedure” to “Upon releasing *overheatingAssistanceConfig* during the connection re-establishment procedure”. More specifically,

| Timer | Start | Stop | At expiry |
| --- | --- | --- | --- |
| T345 | Upon transmitting *UEAssistanceInformation* message with *overheatingAssistance* | Upon releasing *overheatingAssistanceConfig* during the connection re-establishment procedure, upon initiating the connection resumption procedure, and upon receiving *overheatingAssistanceConfig* set to *release.* | No action. |

**Q4: Do companies agree with the intention of CR?**

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| --- | --- | --- |
| **Company** | **Yes/No/Comments** | **Detailed comments** |
| Nokia | Yes | Yes, minor but in fact brings clarity. Can be also captured in the rapporteur CR, as reflects the intended behaviour |
| vivo | Yes |  |
| Docomo | Yes |  |
| Samsung | Yes with comments | Section 7.1.1 is just informative, so it would be good to be merged into Rap CR. |
| Qualcomm Inc | Yes |  |
| Apple | Yes |  |
| Ericsson | Yes, but | As indicated by Nokia it should be in the rapporteur CR, since this is just a clarification on an informative table. |
| OPPO | Yes | Proponent |
| CATT | Yes |  |
| Huawei, HiSilicon | Yes | The changes are editorial. Agree with other companies to merge them to the rapporteur CR. |
| Intel | Yes with comments | We also think this can go into a rapporteur CR. |
| NEC | Yes | This can be merged with Rapporteur CR |
| Sequans | Yes |  |
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**Summary:**

All 13 companies agree with the intention of the CR (also merged with RRC rapporteur CR).

**Proposal 4: R2-2204728 and R2-2204729 are endorsed (for merge into the RRC rapporteur CR).**

## 3.5 Need code correction for *ReferenceTimeInfo*

In NR, upon receiving reference time information in DL information transfer or SIB9, the UE action is to deliver the time to the upper layer, i.e., one shot. However, the need code of *referenceTimeInfo-r1*6 is currently set to Need R, which requires the UE to unnecessarily store the reference time which will be useless after delivering to the upper layer. Thus, the CRs R2-2205503/5504 suggest changing the need code from Need R to Need N in *DLInformationTransfer* and *SIB9*, as follows,

referenceTimeInfo-r16 ReferenceTimeInfo-r16 OPTIONAL, -- Need N

**Q5: Do companies agree with the intention of CR?**

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| --- | --- | --- |
| **Company** | **Yes/No/Comments** | **Detailed comments** |
| Nokia | Neutral | Not sure what is the additional implication to UE to discard v/s store. If it is just a variable storage then maybe change is not so critical. Is there a functionality impact that requires this as some sort of essential correction? If not, then we don’t think any reason to change. |
| vivo | No strong view for *DLInformationTransfer*  No for *SIB9* | In our understanding, either implementation leads to Rome. The differences are in storage overhead (e.g. whether the UE needs to store the ASN.1 configuration in the local UE configuration) and storage flush (e.g. the UE needs to flush the local UE configuration when this field is not configured in the next reconfiguration). Anyway, the differences have no impact on functionality, inter-operability, and performance. So, we don’t have a strong view.  However, for *SIB9*, we think the correction is not needed as any field with Need M or Need N in system information shall be interpreted as Need R, according to the current RRC spec. |
| Docomo | No strong view | The second comment from vivo makes sense – would this impact 6.1.2? |
| Samsung | Yes | The alignment of Rel-17 ASN.1. seems correct, but not so essential |
| Apple | No strong view | At least for *DLInformationTransfer* it would make sense to have a similar behavior between R16 and R17 as was also was discussed in the ASN.1 ad-hoc in the context of I005. So strictly speaking the answer should be Yes for *DLInformationTransfer* and No for SIB9. But it does not make sense to have different treatment of this parameter depending on whether it was received dedicated signalling or SIB. |
| Ericsson | Yes (proponent) | ASN.1 ad-hoc meeting agrees that UDLE actions upon receiving these fields related with reference time delivery are one-shot, i.e., upon receiving the information, they are transferred to upper layers. The UE does not store the values. All later introduced fields in Rel-17 have need N. One can check details in R2-2204303.  From network vendor point of view, there is no impact on functionality. From UE point of view, from the procedure text, it seems that the UE, by implementation, can also discard the value even if the need code is Need R without any impact. Thus, the correction is not essential, but good to align with the Rel-17 specs. With that being said, as proponent, we are fine to follow the majority views. |
| OPPO | No | Isn’t need R more correct as UE does not need to store? |
| CATT | No strong view | We don’t see the critical impact, so no strong view for this. |
| ZTE | Yes, but | The intention is correct, but there is no need to update SIB9, same comment as Vivo. |
| Huawei, HiSilicon | No | Agree with Vivo and Apple that at least the change for SIB9 is not needed.  For *DLInformationTransfer* we think Need R also works. |
| Intel | Yes | We should align with Rel-17, where this was discussed (and re-discussed). As discussed for Rel-17, if we use Need R, network will be required to provide it during NAS transfer. Further, the inconsistency can lead to wrong interpretation that Rel-16 and 17 behaviour is different.  The change for SIB9 is less clear. The network will always include it if needed irrespective of UE storing or not. Need N is not normally used in SIB (if at all). |
| NEC | No strong view |  |
| Sequans | Yes | Not essential but we agree with the intention. |
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**Summary:**

13 companies have provided input on this issue. Amongst the companies’ comments,

* For SIB9, 6/12 companies think this correction is not needed. 3 companies indicates Yes and 4 companies have no strong view.
* For *DLInformationTransfer*, 6 companies have no strong view. 5 companies indicates Yes and 2 company think this correction is not needed.

Based on the companies’ positions, the rapporteur think this correction can be agreed for the field *referenceTimeInfo-r16*  within *DLInformationTransfer*.

**Proposal 5: Ericsson updates R2-2205503 and R2-2205504 (i.e. only change the need code from Need R to Need N for *referenceTimeInfo* in *DLInformationTransfer*).**

## 3.6 Correction on NR serving frequency results reporting

According to the sub-clause 5.5.5.1 in TS 36.331, for the event A3/A4/A5/B1-NR/B2-NR measurement, if the *purpose* field is not configured or set to *reportLocation*, the UE will not include NR serving frequency results. However, for the case that the *purpose* field is not configured (i.e. general measurements other than sidelink or sensing measurements), the NR serving cell results are also expected to be reported. Thus, to realize the NR serving cell results reporting when the *purpose* field is not configured, the CRs R2-2205298/5299/5300 suggest the following changes,

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| 1> if the *triggerType* is set to *event*; and if the corresponding measObject concerns NR; and if *eventId* is set to *eventB1-NR* or *eventB2-NR*; or  1> if the *triggerType* is set to *event*; and if *eventId* is set to *eventA3* or *eventA4* or *eventA5*:  2> if *purpose* for the *reportConfig* or *reportConfigInterRAT* associated with the *measId* that triggered the measurement reporting is set to a value other than *reportLocation* or *purpose* is not configured:  3> set the *measResultServFreqListNR* to include for each NR serving frequency that the UE is configured to measure according to TS 38.331 [82], if any, the following:  4> set *measResultSCell* to include the available results of the NR serving cell, as specified in 5.5.5.2;  4> if the *reportConfig* associated with the *measId* that triggered the measurement reporting includes *reportAddNeighMeas* and if *eventId* is set to *eventA3* or *eventA4* or *eventA5*:  5> set *measResultBestNeighCell* to include the available results, as specified in 5.5.5.2, of the non-serving cell with the highest sorting quantity determined as specified in 5.5.5.3;  3> for each (serving or neighbouring) cell for which the UE reports results according to the previous, additionally include available beam results according to the following:  4> if maxReportRS*-Index* is configured, set *measResultRS-IndexList* to include available results, as specified in 5.5.5.2, of up to *maxReportRS-Index* beams, ordered based on the quantity determined as specified in 5.5.5.3; |

**Q6: Do companies agree with the intention of CR?**

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| --- | --- | --- |
| **Company** | **Yes/No/Comments** | **Detailed comments** |
| Nokia | Rel-15, **NO** unless there is an IODT issue which is there to clarify | We are a bit careful not to update Rel-15 Is this a real issue now coming from IODT? As it needs to be considered this is for Rel-15 apparently (old release) and in our understanding the change is not so fundamental that it would require to now put at risk existing Rel-15 implementations. If 'purpose not configured' is listed explicitly, is it changing something, from the procedural perspective? We think the reporting would happen also today, as 'no purpose' matches the case 'if report purpose is other than reportLocation' so maybe no issue to fix, in fact?  We would like to first have common understanding of what the problem really is… |
| vivo | Comments | Similar view with Nokia. We are wondering whether the mentioned case really exists. |
| Docomo | Comments | We agree with the intention that *measResultServFreqListNR* should be included in “no purpose” case, and “purpose is set to … other that reportLocation” looks a bit tricky.  Having said that we can follow the majority considering the timing. |
| Samsung | Yes |  |
| Apple | Comments | We agree with the intention, but not sure whether it will have IODT issue. |
| Huawei, HiSilicon | Yes | From the comments of above companies, it seems everyone agree with the intention that “no purpose configured” case is missing in the current text.  Then we don’t understand why RAN2 does not make it clear in the spec.  As far as we know, RAN5 also considers this piece of text ambiguous when designing test cases. The corresponding RAN5 papers are in (R5-220106, R5-220107), during offline discussion in RAN5, the following question was raised:  for the event-triggered reporting we have following purpose options: reportLocation, sidelink, spare2, spare1 and sensing Using reportLocation is prohibited, setting sidelink/sensing may cause additional complications. Do we have to configure spare then if we want the condition 2 to be satisfied?  So form our perspective, RAN2 can refine our spec to spare RAN5 the pain. |
| Ericsson | Comments | The intention of the change is technically correct. Whether there is any IODT issue should be confirmed by chipset vendors. If all the implementations are already considering the case of “purpose” not configured then we may not need to address this change. |
| OPPO | Comments | We agree with the intention, but not sure whether it will have IODT issue. |
| CATT | Comments | Same doubt as Nokia that whether the problem is really exist? |
| Intel | May be | Agree with the intention. But risk of interoperability issue seems small. |
| NEC | Comments | Firstly we agree wth the intention and the change.  As Nokia commented, it may be good to clarify if there is the prolem in the field, as this is for Rel-15. |
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**Summary:**

11 companies have provided input on this Q6. 2/11 companies agree with this correction, 6/11 companies agree with the intention of this correction (with 4/11 companies raising the concerns that adopting this correction in Rel-15 spec might lead to IODT issue), and the other 3/11 companies are wondering whether the mentioned question does exist.

From the rapporteur point of view, as the majority (8/11) thinks the CR intention is technically correct and there might be IODT issue (for Rel-15 spec) if the CR is agreed, it seems the safest way is to firstly check the existing UE implementation and further figure out whether there is any IODT issue will be incurred if we need this correction. This can be done during Phase-2 discussion. Thus, the following proposal is made,

**Proposal 6: In Phase 2, further check the UE implementation on the NR serving frequency results reporting when *purpose* is not configured, and whether the CRs are needed.**

# 4 Conclusion

This discussion report is summarized with final proposals as follows,

# 5 Reference

1. R2-2204902, Confirmation for inter-MN HO without SN change, NEC.
2. R2-2205428, Correction on FR1-FR1power control parameters of NR-DC, CATT.
3. R2-2205429, Correction on FR1-FR1power control parameters of NR-DC, CATT.
4. R2-2204845, Correction on rrc-ConfiguredUplinkGrant in Rel-15, vivo.
5. R2-2204846, Correction on rrc-ConfiguredUplinkGrant in Rel-16, vivo.
6. R2-2205827, Correction on rrc-ConfiguredUplinkGrant in Rel-17, vivo.
7. R2-2204728, Correction on T345 for UAI overheating, OPPO.
8. R2-2204729, Correction on T345 for UAI overheating, OPPO.
9. R2-2205503, Need code correction for ReferenceTimeInfo, Ericsson.
10. R2-2205504, Need code correction for ReferenceTimeInfo, Ericsson.
11. R2-2205298, Correction on NR serving frequency results reporting for event-triggered measurement (R15), Huawei, HiSilicon.
12. R2-2205299, Correction on NR serving frequency results reporting for event-triggered measurement (R16), Huawei, HiSilicon.
13. R2-2205300, Correction on NR serving frequency results reporting for event-triggered measurement (R17), Huawei, HiSilicon.