3GPP TSG-RAN WG2 #109bis-e R2-20xxxxx

Electronic Meeting, April 20th – 30th 2020

Agenda Item: 5.4.3

Source: OPPO

Title: [AT109bis-e][016][NR15] UE Cap Miscellaneous III (Oppo, ZTE, Nokia, Huawei)

Document for: Discussion, Decision

# 1 Introduction

This document is to kick off the following email discussion:

* [AT109bis-e][016][NR15] UE Cap Miscellaneous III (Oppo, ZTE, Nokia, Huawei)

Scope: Treat R2-2002694, R2-2002695, R2-2002637, R2-2002636, R2-2002989, R2-2002678, R2-2003541, R2-2003542

Part 1: Determine which issues that need resolution, find agreeable proposals. Deadline: April 23 0700 UTC

Part 2: For the parts that are agreeable, discussion will continue to agree on CRs.

# 2 Discussion

Companies are requested to add their comments for each of the treated CRs of this email discussion in the boxes below (one for each CR to be treated).

### 2.1 Clarification on *BandParameters* (*R2-2002694, R2-2002695, R2-2002637, R2-2002636*)

In the related contributions, the proposal is to add a field description in Rel-15 to clarify the relationship between the original *bandList* and *bandList*-v1540, and further extend it to *bandList*-v16xy.

Although two options are provided in R2-2002694,

* CRs are prepared based on option-1 (proposed as baseline in 2694), i.e., the UE shall include the same number of entries, and listed in the same order in different versions of *bandList*.
* In option-2, the CR only mandates the same order but not the same number of entries.

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| Company | Agree/Disagree | Comments |
| OPPO | Agree | Apparently there would be problem for network to understand the band association if there is no alignment between band lists. |

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| Nokia | Not yet… | * For R2-2002694, R2-2002695 have we misunderstood something? In our understanding, the SRS params are not needed to be filled in for all the band combinations so the presence will take care.
* For R2-2002637, R2-2002636 this should be common sense based on how the lists are formatted and there should be no misunderstanding?
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| NTT DOCOMO | CR is not necessary | Option 1 is our understanding given the structure that frequency band information is included only in the original field ,i.e. BandParameters (w/o suffix). Nevertheless, it is obvious from the signaling structure. Moreover, it is the same as in LTE. For LTE, such a clarification was not needed. We haven’t heard any IOT problems since LTE CA is deployed in the network. We’re not sure if it is motivated by the real IOT problem. |
| CATT | No need | Implementation exists today and we do not see a risk without these changes. And if we do this, it seems many other IEs under the band parameter will also need to be clarified? |
| Huawei | Open | We agree the intention that BandParameters (w/o suffix) should be listed in the same order with the same number of entries, as we describe for BandCombinationList (without suffix). If this issue needs to be corrected, we think it would be good to check all the fields with the similar issue. |
| Intel | Open |  |
| Qualcomm Incorporated | Disagree | The change does not seem very essential. It should be sufficiently clear from the signaling structure how the UE should populate the parallel list.We need clarification text in exceptional cases where it is NOT in the same number of entries, or NOT in the same order as in the original bandList. |
| Lenovo | No need | Our understanding is that Option 1 is implied by current signaling structure. |
| Ericsson | Agree (option 1) | We think it would worth clarifying, it should be noted that also for BandCombinationList level we added some clarification on this:

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| *BandCombination*field descriptions |
| ***BandCombinationList-v1540, BandCombinationList-v1550, BandCombinationList-v1560, BandCombinationList-v1570, BandCombinationList-v1580, BandCombinationList-v1590***The UE shall include the same number of entries, and listed in the same order, as in *BandCombinationList* (without suffix). |

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| MediaTek | See comments | We are fine with the intention and the CR proposed in [R2-2002695](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2004_R2_109bis-e/Docs/R2-2002695.zip). But we are very confused that R2-2002636 seems the same as [R2-2002695](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2004_R2_109bis-e/Docs/R2-2002695.zip). And R2-2002637, it is the R16 CR? It should be category A and contains the same change as R15 CR. |
| ZTE | Agree  | We do meet some problems on this issue as below, in some UE’s capability, there is only one element in bandList-v1540 BandCombination ::= SEQUENCE {bandList SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParameters,...} UE report 2 bands in the band combination BandCombination-v1540::= SEQUENCE { bandList-v1540 SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParameters-v1540,} UE report only 1 bandParameters-v1540From the network side, we can’t distinguish which band the reported bandParameters-v1540 is related to. Thus we hope to add a clarification.  |
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11 companies replied to this question, where 6 companies agree / are open to this (OPPO, Huawei, Intel, Ericsson, ZTE, MediaTek), 5 companies disagree on this (Nokia, DOCOMO, CATT, Qualcomm, Lenovo), by arguing this is too obvious to be clarified.

Considering there is clear majority on the intention but no clear majority on supporting the CR

**Rapporteur’s suggestion:**

**RAN2 confirm option-1 in R2-2002694 (i.e., The UE shall include the same number of entries, and listed in the same order, as in *bandList* (without suffix)) as the correct understanding.**

**The CR is not pursued in this meeting. The proponent can continue discussion with interested companies.**

### 2.2 Removing bandwidth class F ([*R2-2002989*](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002682))

RAN4 dummy bandwidth class F so that the CR is to remove that by clarification in 38.306.

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| Company | Agree/Disagree | Comments |
| NTT DOCOMO | Agree |  |
| Huawei | Open | We agree the intention. However, as it has been captured in RAN4 spec, we are not sure if the correction is really needed. |
| OPPO | Agree |  |
| Intel | Open | Same view as Huawei.  |
| Qualcomm Incorporated | Agree |  |
| Lenovo | Disagree | After checking TS 38.101-1 the UE will know which BW class values are applicable in FR1. Furthermore, in FR1 the values {m, n, o, p, q} do not apply either. Moreover, in FR1 and FR2 a BW class value “n” is not specified. Therefore, we wonder why we should specify something for value “F”. |
| Ericsson | Open | If it is not used then even if the UE ends up setting this bandwidth class for FR1, such band combination would basically have no use. But we are fine if most of companies see a need to clarify it. |
| MediaTek | Open | Same view as Huawei and Intel. |
| ZTE | Agree |  |
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8 of 9 companies who joined the discussion support this proposal, yet 3 companies (Huawei, Intel, MediaTek) questioned on the need of CR considering the RAN4 spec may be sufficient enough.

Considering there is clear majority on supporting the CR

**Rapporteur’s suggestion:**

**Agree on this CR R2-2002989.**

### 2.3 Clarify the *bwp-WithoutRestriction* ([*R2-2002678*](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002682))

In the description for IE of *bwp-WithoutRestriction* , the sentence of “The Bandwidth restriction in terms of DL BWP for PCell and PSCell means that the bandwidth of a UE-specific RRC configured DL BWP may not include the bandwidth of CORESET #0 (if configured) and SSB.” Is misleading, since it should be for “BWP operation without bandwidth restriction”.

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| Company | Agree/Disagree | Comments |
| Nokia | Disagree | Is there really any way to misinterpret this? If this is really an issue we can agree to fix that as part of rapporteur CR. |
| NTT DOCOMO | Disagree | Not essential. It is less likely to misinterpret as such. |
| CATT |  | This seems editorial. Not sure if this is needed in this stage. Or maybe as Nokia said it can be handled in rapporteur CR. |
| Huawei |  | Agree with CATT that it seems editorial. We are ok if it can be handled in rapporteur CR. |
| OPPO | Agree | This field description would cause misunderstanding on the *bwp-WithoutRestriction*.It is fine to handle it in the rapporteur CR. |
| Intel | If RAN2 wants, rapporteur can take it. |  |
| Qualcomm Incorporated | Agree | The current text is certainly incorrect.But the text can be modified to indicate what the UE supports if this capability is indicated, instead of trying to define what the “lack of restriction” means. |
| Lenovo | Agree | However, it’s editorial and can be handled in a rapporteur CR. In this context the following correction can be made as well (add “a UE-specific RRC configured”):“For SCell(s), it means that the bandwidth of a UE-specific RRC configured DL BWP may not include SSB.” |
| Ericsson |  | Even though the change seems correct, it seems not essential. But we are also fine to correct this in the rapporteur CR. |
| MediaTek |  | We also understand this is editorial and prefer to have class D CR if majority prefer to clarify. |
| ZTE | Agree |  |
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11 companies joined the discussion, 10 companies (Nokia, CATT, Huawei, OPPO, Intel, Qualcomm, Lenovo, Ericsson, MediaTek, ZTE) agree to capture this, and 7 of the 10 companies tend to leave that to rapporteur CR.

Some detailed issues are raised like

* QC: the text can be modified to indicate what the UE supports if this capability is indicated
* Lenovo: addition of UE-specific RRC configured
* MediaTek: Cat-D

Considering there is clear majority on handling this in rapporteur-CR

**Rapporteur’s suggestion:**

**Handle the CR in rapporteur-CR.**

### 2.4 Clarify the *bwp-SwitchingDelay* ([*R2-2003541,*](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002682) *R2-2003542*)

In the description of the field *bwp-SwitchingDelay*, it says “Defines whether the UE supports DCI and timer-based active BWP switching delay type1 or type2 specified in clause 8.6.2 of TS 38.133 [5]. It is mandatory to report type 1 or type 2”. It mandates a UE to report the support of type1 or type2 for BWP switching delay. The proposal is to add “if the UE reports bwp-DiffNumerology, bwp-SameNumerology or bwp-WithoutRestriction.” to avoid the case of basic BWP operation.

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| Company | Agree/Disagree | Comments |
| Nokia | Strictly disagree | Agreeing to this change will make a mandatory Rel-15 feature optional. The BWP DCI switching was supposed to be mandatory with capability, but now the proposal is to make it mandatory if UE supports the 6-3/6-4/6-1a, which was never the intent of this capability. |
| NTT DOCOMO | Agree | According to TR 38.822 (RAN1 UE feature list), DCI based switching is a component of bwp-SameNumerology and bwp-DiffNumerology, which are optional. In other words, it could be understood as conditional mandatory if UE supports bwp-SameNumerology or bwp-DiffNumerology. |
| CATT | Agree | We understand the signaling the same way as the two document and we tend to think the proposed changes make things more clear.  |
| OPPO | Agree | We tend to agree with the intention, yet for the added condition “if the UE reports bwp-DiffNumerology, bwp-SameNumerology or bwp-WithoutRestriction.”, considering 6-2/3/4 (bwp-SameNumerology bwp-DiffNumerology) are Prerequisite for 6-1a (bwp-WithoutRestriction), there seems no need to indicate 6-1a explicitly. |
| Intel | Open | Even the 6-1 UEs are required to “decode” the DCI, but the switching is not mandatory. Agree with OPPO reasoning.  |
| Qualcomm Incorporated | Disagree | The intention of the CR is correct. But the current text already mentions "DCI and timer based active BWP switching". It is sufficiently clear that the support for DCI and timer based BWP switching is prerequisite. |
| Lenovo | Open |  |
| Ericsson | Agree | We think the intention is correct and would be good to clarify in this case. |
| MediaTek | Disagree | Same view as QC, the intention is correct and there is no case network would use “DCI and timer based BWP switching” without UE indicating corresponding capability. |
| ZTE | Disagree | The observation is correct, but we think there is no inter-operability issue. Even if the CR is not agreed, the network won’t fail when network does not receive this capability in case the UE only supports basic BWP operation, because network does not do capability verification.  |

10 companies joined the discussion, 6 companies agree / are open to this proposal. 4 companies disagree, where Qualcomm/MediaTek/ZTE share the intention, but believe the current text is already sufficient, while Nokia believe the even intention is not correct.

Considering there is clear majority on the intention, but no clear majority on supporting the CR

**Rapporteur’s suggestion:**

**RAN2 confirm the intention of R2-2003541 (i.e., the UE is only mandated to report *bwp-SwitchingDelay***

 **if the UE supports DCI and timer-based active BWP switch) as the correct understanding.**

**The CR is not pursued in this meeting. The proponent can continue discussion with interested companies.**

# Conclusion

In the previous sections we made the following observations:

Based on the discussion in the previous sections we propose the following:

# References

[1]