**3GPP TSG-RAN WG2 Meeting #113bis electronic R2-210xxxx**

**Online, April 12th –20th, 2021**

Agenda Item: 6.1.4.1.1

Source: Fujitsu

Title: Report of [Offline-019][NR16] Connection Control

Document for: Discussion, Agreement

# 1 Introduction

This contribution is related to the following email discussion.

* [AT113bis-e][019][NR16] Connection Control (Fujitsu)

 Scope: Treat R2-2103209, R2-2103210, R2-2104247, R2-2104240, R2-2103280, R2-2103449, R2-2102854, R2-2104167, R2-2103937

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

 Intended outcome: Report and Agreed-in-principle CRs

 Deadline: Schedule A

# 2 Contact Information

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| Company | Contact: Name (E-mail) |
| Ericsson | Section 3.1: Zhenhua Zou, zhenhua.zou@ericsson.com |
| OPPO | Section 3.1/3.2: Zhe Fu, fuzhe@OPPO.com |
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# 3 Discussion

## 3.1 Restriction on DCI format 0\_2/1\_2 for unlicensed band

[R2-2103209](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_113bis-e/Docs/R2-2103209.zip) CR on the configuration restriction on DCI format 0\_2/1\_2 for unlicensed band (Option 1) OPPO, Samsung, Xiaomi, ZTE, Apple, Intel CR Rel-16 38.331 16.4.1 2502 - F NR\_IIOT-Core, NR\_unlic-Core

[R2-2103210](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_113bis-e/Docs/R2-2103210.zip) CR on the UE capability restriction on DCI format 0\_2/1\_2 for unlicensed band (Option 2) OPPO, Samsung, Xiaomi CR Rel-16 38.306 16.4.0 0548 - F NR\_IIOT-Core, NR\_unlic-Core

Summary of Changes from the CRs:

* Option 1: In Section 6.3.2 of TS38.331, clarify DCI format 1\_2/0\_2 is not allowed for unlicensed band.
* Option 2: In Section 4.2.7.10 of TS38.306, clarify dci-Format1-2And0-2-r16 is not applied for unlicensed band.

Rapporteur opinion: The change is needed. Option 1 is slightly preferred.

**Do you agree with the intention of these CRs? If yes, which option do you prefer?**

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| **Company** | **Response** | **Comments** |
| Ericsson | No | Even though the CAPC field is not in the DCI format x\_2 in the Rel-16, it does not mean that the DCI format x\_2 cannot be used in the unlicensed band. 1. Not every UL transmission requires an LBT indication. Actually the UE needs to know the LBT category for an UL burst, so there can be cases where the UL is indicated with DCI x\_1. For later contiguous transmissions within the same burst, the UE is actually not performing any LBT so those in principle can be scheduled with a different DCI that does not indicate LBT.  See below PHY layer spec texts for more info,

If a UL grant scheduling a PUSCH transmission indicates Type 1 channel access procedures, the UE shall use Type 1 channel access procedures for transmitting transmissions including the PUSCH transmission unless stated otherwise in this clause. [….]If a UE is scheduled to transmit a set of  consecutive UL transmissions without gaps including PUSCH  using one or more UL grant(s), PUCCH using one or more DL grant(s), or SRS with one or more DL grant(s) or UL grant(s) and the UE transmits one of the scheduled UL transmissions in the set after accessing the channel according to one of Type 1, Type 2, Type 2A, Type 2B or Type 2C UL channel access procedures, the UE may continue transmission of the remaining UL transmissions in the set, if any. 1. The UE is scheduled using the DCI x\_2, and also received DCI 2\_0 that indicates COT sharing. With this combination, the LBT indication is according to the DCI 2\_0, regardless if the LBT is indicated by the scheduling grant or not.

Of course, the usage might be limited, e.g., if the UE is scheduled using DCI x\_2, and the LBT indication is not indicated by any other means, then the UE behavior may not be defined. The common understanding is that UE can do whatever it wants, and if it is a trouble for the network, then the network would not schedule in such a way. To summarize, there is no need to add this restrictions in the spec and it is up-to network implementation to ensure that the LBT indication (if needed) is conveyed to the UE by other means. |
| OPPO | Option 1 or 2 | As mentioned in the CRs, the feature of Rel-16 IIoT is designed only for licensed band, the design of DCI format 0\_2 and DCI format 1\_2 does not include channel access related field, e.g. ChannelAccess-CPext, which is necessary and thus the key field for DG for unlicensed band. Without this field, the UE is not sure how to access the channel on unlicensed band. One may argue that the UE can use the default CAPC field value defined in TS 38.300 to access the channel, even if CAPC is not indicated in the DCI. For the configured UL resource, we tend to agree the UE can do so, since Type 1 channel access is specified as the default channel access type for CG in TS 37.213. However, for DG, it is not unclear which channel access type is the default one, thus the UE does not know how to access the channel.Based on the above, if the UE receives DG with DCI format x\_2 for unlicensed band, the UE does not know how to access, e.g. whether to choose Type 1 channel access or Type 2 channel access, which introduces the unexpected/erroneous UE behavior.Actually, the issue on the support of DCI format x\_2 for unlicensed band in Rel-16 is already discussed in RAN1#104e meeting. Many companies in RAN1 agreed in Rel-17 to discuss the support of DCI format x\_2 for unlicensed band. In our understanding, it means the common understanding in RAN1 is no support of DCI format x\_2 for unlicensed band in Rel-16. Thus, what RAN2 needs to do is to capture this restriction. For convenience, I would like to list RAN1 progress on this issue for reference:- In RAN1#99, RAN1 has agreed not to leave DCI format x\_2 aside from shared spectrum channel access, i.e. DCI format should be enhanced to include e.g. channelaccess-CPext field. But, the related enhancement is unfortunately missing. - In RAN1#104e, it is proposed in P2 of R1-2100147 to modify TS 38.212 to align RAN1 spec and RAN1 agreement, but most companies tend to resolve the issue (i.e. to resolve the missing part mentioned above) in Rel-17. The related RAN1 discussion is in section 2.7 in the summary of [104-e-NR-NRU-02] Channel Access and with the link here<https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_104-e/Inbox/drafts/7.2.2/%5B104-e-NR-NRU-02%5D%20Channel%20Acces>Regarding the case mentioned by Ericsson, sometimes the UE can know how to access the channel, e.g. when DCI format x\_2 and format 2\_0 are jointly indicated to the UE. But, as Ericsson also indicated, the usage is very limited. In our understanding, it is not suitable for normal cases which are the ones we need to consider more. In my humble opinions, assuming the network allows the UE does whatever it wants when the UE is scheduled using DCI x\_2, I am not quite sure whether nothing is really broken. If that was the case, RAN1 will simply indicate DCI format x\_2 for unlicensed band is already supported in Rel-16, and there should be some place to say it depends on UE implementation other than not mention anything. On the other hand, the issue is clear and the change is essential, we do not think it is a good way to rely on gNB implementation to avoid such scheduling issue.In summary, this restriction should be captured in Rel-16 spec to avoid the related issues. Either Option 1 or Option 2 is fine to us.  |

**Summary: To be added later**

## 3.2 Correction on releasing referenceTimePreferenceReporting and sl-AssistanceConfigNR

[R2-2104247](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_113bis-e/Docs/R2-2104247.zip) Correction on releasing referenceTimePreferenceReporting and sl-AssistanceConfigNR     Google Inc.  CR  Rel-16 38.331   16.4.1    2562      -      F     5G\_V2X\_NRSL-Core, NR\_IIOT-Core

Summary of Changes from the CR:

If the selected cell is not a CHO candicated cell, the UE releases *referenceTimePreferenceReporting* and *sl-AssistanceConfigNR*.

Rapporteur opinion: The change seems acceptable.

**Do you agree with the changes proposed in this CR?**

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| **Company** | **Response** | **Comments** |
| Ericsson (Tony) | Yes | Changes looks ok, even if not super essential. |
| OPPO | No strong view | Change seems correct, but may not be very essential. |

**Summary: To be added later**

## 3.3 Correction on description of subCarrierSpacing in BWP

[R2-2104240](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_113bis-e%5C%5CDocs%5C%5CR2-2104240.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_ranWG2TSGR2_113bis-eDocsR2-2104240.zip) Correction on description of subCarrierSpacing in BWP Fujitsu, Samsung CR Rel-16 38.331 16.4.1 2561 - F NR\_unlic-Core

Summary of Changes from the CR:

The description of *subCarrierSpacing* in *BWP* is changed into: Subcarrier spacing to be used in this BWP for all channels and reference signals unless explicitly configured elsewhere. Corresponds to subcarrier spacing according to TS 38.211 [16], table 4.2-1. The value *kHz15* corresponds to µ=0, value *kHz30* corresponds to µ=1, and so on. Only the values 15 kHz, 30 kHz, or 60 kHz (FR1), and 60 kHz or 120 kHz (FR2) are applicable. For the initial DL BWP this field has the same value as the field *subCarrierSpacingCommon* in *MIB* of the same serving cell for operation in licensed spectrum, and has the value corresponding to the subcarrier spacing of the SSB associated to the initial DL BWP for operation with shared spectrum channel access.

Rapporteur opinion: The change is essential and needed.

**Do you agree with the changes proposed in this CR?**

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| **Company** | **Response** | **Comments** |
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**Summary: To be added later**

## 3.4 Correction on description of ssb-PositionsInBurst in ServingCellConfigCommonSIB

[R2-2103280](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_113bis-e%5C%5CDocs%5C%5CR2-2103280.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_ranWG2TSGR2_113bis-eDocsR2-2103280.zip) Correction on description of ssb-PositionsInBurst in ServingCellConfigCommonSIB Fujitsu CR Rel-16 38.331 16.4.1 2505 - F NR\_unlic-Core

Summary of Changes from the CR:

Remove ‘only *mediumBitmap* is used’ in description of *ssb-PositionsInBurst* in *ServingCellConfigCommonSIB*

Rapporteur opinion: The change is editorial and acceptable. Additionally, for easy reading, maybe the description could be re-constructed as follows:

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| ***ssb-PositionsInBurst***Time domain positions of the transmitted SS-blocks in an SS-burst as defined in TS 38.213 [13], clause 4.1. For operation with shared spectrum channel access, only *inOneGroup* is used and the UE interprets this field same as *mediumBitmap* in *ServingCellConfigCommon*. The UE assumes that a bit at position k > $N\_{SSB}^{QCL}$ is 0, where $N\_{SSB}^{QCL}$ is obtained from MIB as specified in TS 38.213 [13], clause 4.1. |

**Do you agree with the intention of this CR? If yes, do you agree with the above changes suggested by the Rapporteur?**

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| **Company** | **Response** | **Comments** |
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**Summary: To be added later**

## 3.5 Correction on freqMonitorLocations

[R2-2103449](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_113bis-e/Docs/R2-2103449.zip) Correction on freqMonitorLocations ASUSTeK CR Rel-16 38.331 16.4.1 2508 - F NR\_unlic-Core

Summary of Changes from the CR:

Change least significant bit in field description of *freqMonitorLocations* to most significant bit.

Rapporteur opinion: The change is for alignment with TS 38.213. It is acceptable.

**Do you agree with the changes proposed in this CR?**

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| **Company** | **Response** | **Comments** |
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**Summary: To be added later**

## 3.6 Correction on repetition for L1-SINR

[R2-2102854](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_113bis-e/Docs/R2-2102854.zip) Correction on repetition for L1-SINR vivo draftCR Rel-16 38.331 16.4.1 F NR\_eMIMO-Core

Summary of Changes from the CR:

In the field description of *repetition* in *NZP-CSI-RS-ResourceSet*, update the field description that the repetition could be also configured for CSI-RS resource sets with report of L1 SINR.

Rapporteur opinion: The change seems acceptable.

**Do you agree with the changes proposed in this CR?**

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| **Company** | **Response** | **Comments** |
| **Ericsson** | **yes** |  |
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**Summary: To be added later**

## 3.7 Miscellaenous corrections on BH RLC channel management for IAB-MT

[R2-2104167](file:///D%3A/Documents/3GPP/tsg_ran/WG2/TSGR2_113bis-e/Docs/R2-2104167.zip) Miscellaenous corrections on BH RLC channel management for IAB-MT Huawei, HiSilicon CR Rel-16 38.331 16.4.1 2557 - F NR\_IAB-Core

Summary of Changes from the CR:

1. Based on the received *CellGroupConfig* IE which contains the *spCellConfig* with *reconfigurationWithSync*, IAB-MT will resume BH RLC channels, if suspended.
2. Upon the initiation of the RRC re-establishment, suspend BH RLC channels and BAP entity at IAB-MT.
3. Editorial changes for *IABOtherInformation-IEs* field descriptions. For *iab-IPv4-AddressReport*: This field is used to report the IPv4 address per specific usage assigned by OAM for IAB-DU; for *iab-IPv6-AddressReport*: This field is used to report the IPv6 address per specific usage assigned by OAM for IAB-DU.
4. Editorial change for *all-Traffic-IAB-IP-Address* in *IAB-IP-AddressAndTraffic-IEs field descriptions:* This field is used to report to IAB-donor-CU the IP address(es) or IPv6 address prefix for all traffic.
5. Extend the *LogicalChaneelIdentity* IE description for BH RLC channel: The IE *LogicalChannelIdentity* is used to identify one logical channel (*LogicalChannelConfig*) and the corresponding RLC bearer (*RLC-BearerConfig*) or BH RLC channel (*BH-RLC-ChannelConfig*).

Rapporteur opinion: The changes all look acceptable.

**Do you agree with the changes proposed in this CR?**

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| **Company** | **Response** | **Comments** |
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**Summary: To be added later**

## 3.8 Clarification to BAP address field description in the BAP-RoutingID IE

[R2-2103937](file:///D%3A%5C%5CDocuments%5C%5C3GPP%5C%5Ctsg_ran%5C%5CWG2%5C%5CTSGR2_113bis-e%5C%5CDocs%5C%5CR2-2103937.zip%22%20%5Co%20%22D%3ADocuments3GPPtsg_ranWG2TSGR2_113bis-eDocsR2-2103937.zip) Clarification to BAP address field description in the BAP-RoutingID IE Ericsson CR Rel-16 38.331 16.4.1 2542 - F NR\_IAB-Core

Summary of Changes from the CR:

1. In the field description of the *BAP-Address* IE included in the *UL BAP-RoutingID* IE, remove “destination IAB-node” from “The ID of a destination IAB-node or IAB-donor-DU used in the BAP header”.

Rapporteur opinion: The change is unnecessary. Current text is a generic description of how BAP routing ID is defined.

**Do you agree with the changes proposed in this CR?**

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| **Company** | **Response** | **Comments** |
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**Summary: To be added later**

# 4 Conclusion

**To be added later**