3GPP TSG-RAN WG3 Meeting #114bis-e R3-221101

Online, 17 – 26 January 2022

**Agenda item: 9.3.5.1**

**Source: Huawei (moderator)**

**Title: Summary of offline: frequency information for DL only or UL only cell**

**Document for: Discussion and Decision**

# 1 Introduction

This paper summarizes the following email discussion:

**CB: # 91\_DLUPOnlyCell**

**- Start with R16**

**- Check the necessity of this correction, F1 and Xn?**

(HW - moderator)

Summary of offline disc [R3-221101](https://ericsson-my.sharepoint.com/personal/angelo_centonza_ericsson_com/Documents/Local%20Documents/3GPP_ETSI/RAN3/RAN3-114bis/EmailDiscussions/CB%20%23%2091_DLUPOnlyCell/Inbox/R3-221101.zip)

# 2 For the Chair’s Notes

TBD

# 3 Discussion (Phase 1)

Based on the online discussion, the CR(s) can be started from Rel-16.

## 3.1 Xn CR on Served Cell Information NR and Neighbour Information NR

As indicated in R3-220685, for the LTE UL EARFCN in the Served Cell Information E-UTRA, it is already clearly indicated that the UL EARFCN could be ignored, when the NUL is not defined. Then for NR, the similar semantic descriptions can be included for NR UL frequency info as well, for the SDL cell.

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| --- | --- | --- | --- | --- | --- | --- |
| <excerpt from 9.2.2.12 Served Cell Information E-UTRA > | M |  | 9.2.2.4 |  | – |  |
| CHOICE *E-UTRA-Mode-Info* | M |  |  |  | – |  |
| *>FDD* |  |  |  |  | – |  |
| **>>FDD Info** |  | *1* |  |  | – |  |
| >>>UL EARFCN | M |  | E-UTRA ARFCN  9.2.2.21 | Corresponds to NUL in TS 36.104 [25] for E-UTRA operating bands for which it is defined; ignored for E-UTRA operating bands for which NUL is not defined | – |  |
| >>>DL EARFCN | M |  | E-UTRA ARFCN  9.2.2.21 | Corresponds to NDL in TS 36.104 [25] | – |  |
| >>>UL E-UTRA Transmission Bandwidth | M |  | E-UTRA Transmission Bandwidth  9.2.2.22 | Same as DL Transmission Bandwidth in this release; ignored in case UL EARFCN value is ignored | – |  |

Also there are some comments online:

* The addition of semantic descriptions for the optional IE “UL Carrier List” is not needed. The moderator removes this change (see the update below).
* The “shall” should not be used in the semantic descriptions. Though there are some examples already using the “shall” in the semantic descriptions, the moderator remove the “shall” accordingly (see the update below).

Then the updated semantic descriptions are given as follows.

#### 9.2.2.11 Served Cell Information NR

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| --- | --- | --- | --- | --- | --- | --- |
| >*FDD* |  |  |  |  |  |  |
| >>**FDD Info** |  | *1* |  |  | – |  |
| >>>UL NR Frequency Info | M |  | NR Frequency Info  9.2.2.19 | This IE is ignored for NR operating bands for which uplink range of NREF is not defined in TS 38.104 [24], section 5.4.2.3. | – |  |
| >>>DL NR Frequency Info | M |  | NR Frequency Info  9.2.2.19 |  | – |  |
| >>>UL Transmission Bandwidth | M |  | NR Transmission Bandwidth  9.2.2.20 | This IE is ignored in case the *UL NR Frequency Info* IE is ignored. | – |  |
| >>>DL Transmission Bandwidth | M |  | NR Transmission Bandwidth  9.2.2.20 |  | – |  |
| >>>UL Carrier List | O |  | NR Carrier List  9.2.2.63 | If included, the *UL Transmission Bandwidth* IE shall be ignored. | YES | ignore |

#### 9.2.2.13 Neighbour Information NR

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| --- | --- | --- | --- | --- |
| *>>FDD* |  |  |  |  |
| **>>>FDD Info** |  | *1* |  |  |
| >>>>UL NR FreqInfo | M |  | NR Frequency Info  9.2.2.19 | This IE is ignored for NR operating bands for which uplink range of NREF is not defined in TS 38.104 [24], section 5.4.2.3. |
| >>>>DL NR FreqInfo | M |  | NR Frequency Info  9.2.2.19 |  |

**Question 1: Do you agree the change above? Or further comments, e.g. if any further update is needed:**

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| --- | --- |
| **Company** | **Comments** |
| HW | Yes. |
| Ericsson | These changes are not needed. Honestly, if there was a problem with these missed semantics, the problem would have been solved by now so we do not see these changes as essential.  Also, we should not repeat errors from LTE. It is clear that stating that an IE is ignore if another IE is ignored creates a strange condition that surely cannot be tested. We therefore would not reuse that semantics formulation from LTE. |
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| Moderator Summary:   * TBD | |

## 3.2 F1AP CR on the Served Cell Information

There are some online comments whether the F1AP CR is critical, and what errors may happen etc. As the proponent, we see at least the following benefit:

* If we have the F1AP CR, then the DU can freely generate the mandatory frequency information for UL only or DL only cell (SDL or SUL), since it clearly knows that the CU will ignore this frequency information.

Another point is that the *Cell Direction* IE is an optional IE indicating UL only, DL only. On the other hand, the Frequency band information can also indicate the SUL, or SDL. Hence there are two possible ways to clarify the mandatory frequency information in the served cell information.

* **Option 1: not associated with the Cell Direction IE**

#### 9.3.1.10 Served Cell Information

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| *>FDD* |  |  |  |  | - |  |
| **>>FDD Info** |  | *1* |  |  | - |  |
| >>>UL FreqInfo | M |  | NR Frequency Info  9.3.1.17 | This IE is ignored for NR operating bands for which uplink range of NREF is not defined in TS 38.104 [17], section 5.4.2.3. | - |  |
| >>>DL FreqInfo | M |  | NR Frequency Info  9.3.1.17 | This IE is ignored for NR operating bands for which downlink range of NREF is not defined in TS 38.104 [17], section 5.4.2.3. | - |  |
| >>>UL Transmission Bandwidth | M |  | Transmission Bandwidth  9.3.1.15 | This IE is ignored if the *UL FreqInfo* IE is ignored. | - |  |
| >>>DL Transmission Bandwidth | M |  | Transmission Bandwidth  9.3.1.15 | This IE is ignored if the *DL FreqInfo* IE is ignored. | - |  |
| >>>UL Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the UL Transmission Bandwidth IE shall be ignored. | YES | ignore |
| >>>DL Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the *DL Transmission Bandwidth* IE shall be ignored. | YES | ignore |

* **Option 2: as proposed in** [**R3-220687**](file:///D:\My_work\TSGR1-108-eMeeting-20220110\RAN3-114bis\Docs\R3-220687.zip)**.**

#### 9.3.1.10 Served Cell Information

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| --- | --- | --- | --- | --- | --- | --- |
| *>FDD* |  |  |  |  | - |  |
| **>>FDD Info** |  | *1* |  |  | - |  |
| >>>UL FreqInfo | M |  | NR Frequency Info  9.3.1.17 | This IE shall be ignored if the *Cell Direction* IE set to “dl-only” is included. | - |  |
| >>>DL FreqInfo | M |  | NR Frequency Info  9.3.1.17 | This IE shall be ignored if the *Cell Direction* IE set to “ul-only” is included. | - |  |
| >>>UL Transmission Bandwidth | M |  | Transmission Bandwidth  9.3.1.15 | This IE shall be ignored if the *UL FreqInfo* IE is ignored. | - |  |
| >>>DL Transmission Bandwidth | M |  | Transmission Bandwidth  9.3.1.15 | This IE shall be ignored if the *DL FreqInfo* IE is ignored. | - |  |
| >>>UL Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the UL Transmission Bandwidth IE shall be ignored. | YES | ignore |
| >>>DL Carrier List | O |  | NR Carrier List  9.3.1.137 | If included, the *DL Transmission Bandwidth* IE shall be ignored. | YES | ignore |

**Question 2: is the F1AP CR (for R16) agreeable, or which option is preferred?**

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| **Company** | **Comments** |
| Huawei | Both options are acceptable, Option 1 is slightly preferred. |
| Ericsson | Again, we do not see these corrections as essential because whatever problem might have occurred due to this missing text, it has been resolved by now. We would at best accept something in line with Option 2, with the following amendments:   * Remove shall statement from the semantics * Do not use the formulation “This IE shall be ignored if the *UL FreqInfo* IE is ignored.”, instead use only one formulation, i.e. something like “This IE is ignored if the Cell Direction IE set to “dl-only” is included.” |
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| Moderator Summary:   * TBD | |

# 4 Discussion (Phase 2), if needed

TBD

# 5 Conclusions, Recommendations

TBD

# References

1. R3-220227, Remaining issues on Time Synchronization enhancements (ZTE)
2. R3-220228, (TP for Introduction of Enhanced IIoT support over F1) Time Synchronization enhancements (ZTE)
3. R3-220337, Discussion on Further enhanced NR-IIoT: Enhancements for support of time synchronization (Ericsson)
4. R3-220338, Enhancements for support of time synchronization (Ericsson)
5. R3-220367, (TP for NR\_IIOT\_URLLC\_enh BL CR for TS 38.473) Time synchronization open issues (Nokia, Nokia Shanghai Bell)
6. R3-220368, (TP for NR\_IIOT\_URLLC\_enh BL CR for TS 38.423) Time synchronization and handover (Nokia, Nokia Shanghai Bell)
7. R3-220616, Discussion on PDC TA based and E-CID measurement (Ericsson)
8. R3-220646, (TP for NR\_IIOT\_URLLC\_enh BL CR for TS 38.473) Discussion on supporting the network pre-compensated PDC (Samsung)
9. R3-220647, (TP for NR\_IIOT\_URLLC\_enh BL CR for TS 38.470) Supporting the network pre-compensated PDC (Samsung)
10. R3-220648, (TP for NR\_IIOT\_URLLC\_enh BL CR for TS 38.473) Discussion on the time synchronization error budget over F1AP (Samsung)
11. R3-220652, (TP for eIIOT BLCR for TS 38.473) Supporting propagation delay compensation enhancements (Huawei)
12. R3-220653, (TP for eIIOT BLCR for TS 38.423) Supporting propagation delay compensation enhancements (Huawei)
13. R3-220940, Discussion on Propagation Delay Compensation Enhancements (CATT)
14. R3-220941, TP for BLCR for 38.473 on Propagation Delay Compensation Enhancements (CATT)R3-220094, LS on updated Rel-17 LTE and NR higher-layers parameter list (RAN1)