3GPP TSG-RAN WG2 Meeting #121bis-e R2-230xxxx

Elbonia, 17 – 26 April 2023

**Agenda item: 6.2.1**

**Source: Nokia (Rapporteur)**

**Title: [AT121bis-e][007][NR17] RRC UpTo71GHz Corrections (Nokia)**

**WID/SID: NR\_ext\_to\_71GHz-Core - Release 17**

**Document for: Discussion and Decision**

# 1 Introduction

This document is the report of the following email discussion:

* [AT121bis-e][007][NR17] RRC UpTo71GHz Corrections (Nokia)

Scope: Treat R2-2302405, R2-2302408, R2-2302691, R2-2302773, R2-2302842, R2-2303057, R2-2303125, R2-2303472, R2-2303557, R2-2303917, R2-2303918, R2-2303942, R2-2304125.  
Ph1: Determine agreeable parts, identify online CB points. Ph2: For agreeable parts, if any, reflect these in agreeable CRs.

Intended outcome: Report, If applicable: In-Principle-Agreed CRs

Deadline: Schedule 1

Discussions with Deadline **Schedule 1**:

A **first round** with **Deadline W1 Thursday April 21th 1200 UTC** to settle scope what is agreeable etc

A Final round with **Final deadline W2 Wednesday April 26th 1000 UTC (EOM)** to settle details / agree CRs etc.

[R2-2302405](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302405.zip) LS to RAN2 on reference subcarrier spacing for FR2-2 (R1- 2302185; contact: Nokia)  RAN1  LS in    Rel-17   NR\_ext\_to\_71GHz-Core         To:RAN2

[R2-2302408](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302408.zip) LS to RAN2 on K2 indication for multi-PUSCH scheduling (R1-2302144; contact: LGE)           RAN1  LS in Rel-17 NR\_ext\_to\_71GHz-Core         To:RAN2

[R2-2302691](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302691.zip) Miscellaneous corrections for Ext71GHz          Huawei, HiSilicon CR       Rel-17 38.331 17.4.0  3961    -           F   NR\_ext\_to\_71GHz-Core

[R2-2302773](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302773.zip) Clarification for configured grant periodicity      Nokia, Nokia Shanghai Bell      CR       Rel-17 38.331 17.4.0   3964    -           F          NR\_ext\_to\_71GHz-Core   Revised

[R2-2302842](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302842.zip) Correction to RRC for 71 GHz on channel occupancy duration  Ericsson          CR       Rel-17 38.331 17.4.0   3968    -           F          NR\_ext\_to\_71GHz-Core

[R2-2303057](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303057.zip) The restriction addition for SCS in CO-DurationPerCell   NEC Corporation        CR       Rel-17 38.331 17.4.0   3982    -           F          NR\_ext\_to\_71GHz-Core

[R2-2303125](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303125.zip) CO-Durations Reference subcarrier spacing for FR2-2   Nokia, Nokia Shanghai Bell    CR       Rel-17 38.331   17.4.0  3986    -           F          NR\_ext\_to\_71GHz-Core

[R2-2303472](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303472.zip) Discussion on RAN1 LS R1-2302144   Ericsson   discussion       Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2303557](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303557.zip) Correction to RRC for 71 GHz on multi-PUSCH   Ericsson          CR       Rel-17 38.331 17.4.0  4016    -   F          NR\_ext\_to\_71GHz-Core

[R2-2303917](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303917.zip) Correction K2 on multi-PUSCH scheduling      ASUSTeK   CR       Rel-17 38.331 17.4.0  4035    -           F   NR\_ext\_to\_71GHz-Core

[R2-2303918](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303918.zip) Correction on condition for extendedK2            ASUSTeK   CR       Rel-17 38.331 17.4.0  4036    -           F   NR\_ext\_to\_71GHz-Core

[R2-2303942](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303942.zip) Clarification on K2 indication for multi-PUSCH scheduling          LG Electronics Inc.     CR       Rel-17   38.331 17.4.0  4043    -           F   NR\_ext\_to\_71GHz-Core

[R2-2304125](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304125.zip) Clarification for configured grant periodicity      Nokia, Nokia Shanghai Bell      CR       Rel-17 38.331 17.4.0   3964    1          F          NR\_ext\_to\_71GHz-Core   [R2-2302773](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302773.zip)

# 2 Contact Points

Respondents to the email discussion are kindly asked to fill in the following table.

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
| Nokia (Rapporteur) | Jarkko Koskela | jarkko.t.koskela@nokia.com |
| ASUSTeK | Xinra Kung | Xinra\_Kung@asus.com |
| Ericsson | Min Wang | Min.w.wang@ericsson.com |
| Apple | Naveen Palle | naveen.palle@apple.com |
| vivo | Yitao Mo (Stephen) | yitao.mo@vivo.com |
| OPPO | ShiCong | shicong@oppo.com |
| Xiaomi | Li Zhao | zhaoli6@xiaomi.com |
| Samsung | Taeseop Lee | taeseop.lee@samsung.com |
| LGE | Gyeong-Cheol LEE | gyeongcheol.lee@lge.com |
| Intel Corporation | Seau Sian Lim | seau.s.lim@intel.com |
| Huawei, HiSilicon | Tao Cai | tao.cai@huawei.com |
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# Discussion

## LS on reference subcarrier spacing

RAN2 is receiving LS:

[R2-2302405](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302405.zip) LS to RAN2 on reference subcarrier spacing for FR2-2 (R1- 2302185; contact: Nokia)  RAN1  LS in    Rel-17   NR\_ext\_to\_71GHz-Core         To:RAN2

LS states:

RAN WG1 made the following agreement related to applicable reference subcarrier spacings:

|  |
| --- |
| Agreement  The values 120/480/960 kHz can be configured as reference subcarrier spacing in CO-DurationsPerCell-r17, and the values 15/30/60 kHz cannot be configured as reference subcarrier spacing in CO-DurationsPerCell-r17.   * + Send an LS to RAN2 informative of the clarification |

**2. Actions:** RAN1 kindly requests RAN2 implement the restrictions on the applicable reference subcarrier spacings in *CO-DurationsPerCell-r17*.

For the the LS there are some CRs provided:

[R2-2303125](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303125.zip) CO-Durations Reference subcarrier spacing for FR2-2   Nokia, Nokia Shanghai Bell    CR       Rel-17 38.331   17.4.0  3986    -           F          NR\_ext\_to\_71GHz-Core

|  |
| --- |
| ***subcarrierSpacing***  Reference subcarrier spacing for the list of Channel Occupancy durations (see TS 38.213 [13], clause 11.1.1). Network configures *subcarrierSpacing-r16* with one of following values: 15, 30 or 60 kHz. Network configures *subcarrierSpacing-r17* with one of following values: 120, 480 or 960 kHz. |

[R2-2302842](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302842.zip) Correction to RRC for 71 GHz on channel occupancy duration  Ericsson          CR       Rel-17 38.331 17.4.0   3968    -           F          NR\_ext\_to\_71GHz-Core

|  |
| --- |
| ***subcarrierSpacing***  Reference subcarrier spacing for the list of Channel Occupancy durations (see TS 38.213 [13], clause 11.1.1).  Only the following values are applicable depending on the used frequency:  FR1: 15, 30, or 60 kHz  FR2-2: 120, 480, or 960 kHz |

[R2-2303057](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303057.zip) The restriction addition for SCS in CO-DurationPerCell   NEC Corporation        CR       Rel-17 38.331 17.4.0   3982    -           F          NR\_ext\_to\_71GHz-Core

|  |
| --- |
| ***subcarrierSpacing***  Reference subcarrier spacing for the list of Channel Occupancy durations (see TS 38.213 [13], clause 11.1.1). The network does not configure 15kHz, 30kHz and 60kHz SCS for *subcarrierSpacing-r17* in *CO-DurationsPerCell-r17*. |

and Change 1 from:

[R2-2302691](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302691.zip) Miscellaneous corrections for Ext71GHz          Huawei, HiSilicon CR       Rel-17 38.331 17.4.0  3961    -           F   NR\_ext\_to\_71GHz-Core

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| --- |
| ***subcarrierSpacing***  Reference subcarrier spacing for the list of Channel Occupancy durations (see TS 38.213 [13], clause 11.1.1). The values 120/480/960 kHz can be configured as reference subcarrier spacing in CO-DurationsPerCell-r17, and the values 15/30/60 kHz cannot be configured as reference subcarrier spacing in CO-DurationsPerCell-r17. |

All the CRs impact same *CO-DurationsPerCell IE* field description for *subCarrierSpacing.* NEC CR differs a bit as it does not limit r16 field applicable values. Ericsson CR explicitly talks about used frequency range instead of version of the field used in the configuration. Otherwise CRs are very similar.

**Rapporteur** : It seems better to also capture r16 field applicable values to avoid ambiquity. Regarding the way to capture – both Ericsson and Nokia/Huawei/NEC style seem to be both working.

**Question 1**: Can we note the LS and capture limitations of applicable values for both r16 and r17 versions of *subcarrierSpacing* in the *CO-DurationsPerCell* IE? If yes, then do you haveany preference whether to capture in with Ericsson style or Nokia/Huawei/NEC style?

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| --- | --- | --- |
| Answers to Question 1 | | |
| Company | Yes/No | Technical Arguments |
| Ericsson | Yes | The changes in our CR are better, so that we can use the same format to capture the allowable SCSs as the existing fields of subscarrierSpacing in other places in the spec.  In addition, we normally only specify the allowed values instead specifying not allowed values in the RRC. |
| vivo | Yes with comments | The RAN1 LS just requires RAN2 to make some clarification for the R17 case, rather than the R16 case (i.e. the R16 NRU WI is intended for unlicensed access to FR1. It is quite clear). We also think it is sufficient to clarify the R17 case (i.e. Network only configures *subcarrierSpacing-r17* with 120, 480, or 960 kHz.)  But we can follow the majority view if we make it for both R16 and R17. And we prefer Ericsson’s TP.  Ericsson-> the RAN1 LS has just listed RAN1 agreements for the issues, how to implement it is up to RAN2. RAN2 needs to take the responsibility to implement the RAN1 agreements in a proper fashion. Since the existing fields (i.e., subcarrierspacing in other 25 places in the RRC spec) have listed allowed values for both R16 and R17 fields (depending on frequency bands), It would be very much beneficial for RAN2 to adopt an unified wording. |
| OPPO | Yes | We prefer Ericsson TP |
| Xiaomi | Yes | Fine with Ericsson solution. |
| Samsung | Yes | Support the correction from Ericsson. |
| Nokia | Yes | Ericsson way is OK – but when we refer to FR1/2/2-2 we should talk about frequency range but otherwise good to us |
| LGE | Yes | For TP, either way is fine, so we can follow majority view. |
| Intel | Yes | We have a slight preference is to go with the Ericsson’s approach. |
| Huawei, HiSilicon | Yes | The wording "only" in Ericsson TP is preferred, other parts can be further checked according to above comments. Anyway we can follow majority view. |
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**Summary 1**: Everyone OK to Note the LS.

**Proposal 1**: Note the LS [R2-2302405](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302405.zip). Agree to progress CR with taking R2-2302842 as baseline i.e. following updates:

Only the following values are applicable depending on the used frequency range:

FR1: 15, 30, or 60 kHz

FR2-2: 120, 480, or 960 kHz

## K2 indication for multi-PUSCH scheduling including extendedK2 and k2-r16 handling

RAN2 is receiving LS:

[R2-2302408](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302408.zip) LS to RAN2 on K2 indication for multi-PUSCH scheduling (R1-2302144; contact: LGE)           RAN1  LS in Rel-17 NR\_ext\_to\_71GHz-Core         To:RAN2

LS states:

RAN1 observed the inconsistency between 38.214 and 38.331 specifications. The following two types of multi-PUSCH scheduling are supported:

* Type 1: Rel-16 multi-PUSCH scheduling, where a row of the TDRA table can indicate 2 to 8 contiguous PUSCHs
* Type 2: Rel-17 multi-PUSCH scheduling, where a row of the TDRA table can indicate 2 to 8 non-contiguous PUSCHs

According to 38.214 specification, UE determines K2 from *k2-r16* (rather than *extendedK2-r17*) for Type 1 while UE determines K2 from *extendedK2-r17* for Type 2. However, according to 38.331 specification, if the size of *puschAllocationList* is higher than 1, the field *extendedK2(n)* corresponding to k2 of the n-th PUSCH, n>1, is **mandatory present**, which implies UE shall determine K2 from *extendedK2-r17* regardless of Type 1 or Type 2.

To resolve this inconsistency issue, the following TP for 38.331 specification is provided as RAN1’s recommendation.

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| --- | --- |
| **Conditional Presence** | **Explanation** |
| *MultiPUSCH* | In case size of *puschAllocationList* is higher than 1, the field *extendedK2(n)* corresponding to k2 of the n-th PUSCH, n>1, is mandatory present for all n if any two PUSCHs are non-contiguous. Otherwise, it is optionally present, Need S. |

For which following CRs/proposals/discussions were provided:

[R2-2303918](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303918.zip) Correction on condition for extendedK2            ASUSTeK   CR       Rel-17 38.331 17.4.0  4036    -           F   NR\_ext\_to\_71GHz-Core

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| --- | --- |
| *MultiPUSCH* | In case size of *puschAllocationList* is higher than 1, the field *extendedK2(n)* corresponding to k2 of the n-th PUSCH, n>1, is mandatory present for all n if any n-th PUSCH and (n-1)-th PUSCH are non-contiguous. Otherwise, it is optionally present, Need S. |

[R2-2303942](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303942.zip" \o "C:Usersmtk65284Documents3GPPtsg_ranWG2_RL2TSGR2_121bis-eDocsR2-2303942.zip) Clarification on K2 indication for multi-PUSCH scheduling          LG Electronics Inc.     CR       Rel-17   38.331 17.4.0  4043    -           F   NR\_ext\_to\_71GHz-Core

|  |  |
| --- | --- |
| *MultiPUSCH* | In case size of *puschAllocationList* is higher than 1, the field *extendedK2(n)* corresponding to k2 of the n-th PUSCH, n>1, is mandatory present for all n if any two PUSCHs are non-contiguous. Otherwise, it is optionally present, Need S. |

and change 2 from:

[R2-2302691](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302691.zip) Miscellaneous corrections for Ext71GHz          Huawei, HiSilicon CR       Rel-17 38.331 17.4.0  3961    -           F   NR\_ext\_to\_71GHz-Core

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| *MultiPUSCH* | In case size of *puschAllocationList* is higher than 1, the field *extendedK2(n)* corresponding to k2 of the n-th PUSCH, n>1, is mandatory present for all n if any two PUSCHs are non-contiguous. Otherwise, it is optionally present, Need S. |

And then more extensive discussion on the issue in :

[R2-2303472](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303472.zip) Discussion on RAN1 LS R1-2302144   Ericsson   discussion       Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2303557](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303557.zip" \o "C:Usersmtk65284Documents3GPPtsg_ranWG2_RL2TSGR2_121bis-eDocsR2-2303557.zip) Correction to RRC for 71 GHz on multi-PUSCH   Ericsson          CR       Rel-17 38.331 17.4.0  4016    -   F          NR\_ext\_to\_71GHz-Core

In the CR it is proposed to also capture RAN1 suggested change:

**Rapporteur:** All the papers propose to add the change as proposed by RAN1. That seems agreeable. In addition Ericsson proposes more extensive changes but that is discussed in next question

**Question 2** Do you agree to do the changes as proposed by RAN1 on conditional presence MultiPUSCH? NOTE: additional changes proposed by Ericsson are covered in next question.

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| --- | --- | --- |
| Answers to Question 2 | | |
| Company | Yes/No | Technical Arguments |
| ASUSTeK | Yes with comment | We slightly prefer to use the modified text proposed in our contribution. With the text proposed by RAN1, there is a concern that “any two PUSCHs” could mean any combination among all PUSCHs (e.g. 1st PUSCH and 3rd PUSCH), while the intention should only be checking whether consecutive 2 PUSCHs are non-contiguous or not. |
| Ericsson | Yes | In addition to our proposed extensive changes, RAN1 recommended text is fine. |
| vivo | Yes | We are fine with RAN1’s wording. It is quite clear we are handling the case where 2 consecutive PUSCHs in order sequence with a gap. |
| OPPO | yes |  |
| Xiaomi | Yes | We see the concern from ASUSTeK, maybe we can have some update on RAN1’s wording, i.e., for all n if any two consecutive PUSCHs are non-contiguous |
| Samsung | Yes | We understand the concern from ASUSTeck and support the correction proposed by Xiaomi above. |
| Nokia | Yes | Likely we need some additional things compared to RAN1 proposal. Xiaomi proposal looks fine (i.e. Asustek with update) |
| LGE | Yes with comment | We are fine with Xiaomi’s updated wording.  On top of RAN1 request, we think the following error should be also fixed.  The *pusch-AllocationList-r17* is mentioned in the field description of *puschAllocationList*, but this does not exist in RRC specification. We think this should be removed and the related description needs to be updated like below.  ***puschAllocationList***  The field *puschAllocationList-r16* indicates one or multiple PUSCH continuous in time domain which share a common k2 (see TS 38.214 [19], clause 6.1.2.1). In this release, this field configures one or multiple PUSCH that may be in consecutive or non-consecutive slots (see TS 38.214 [19], clause 6.1.2.1). The *puschAllocationList-r16* only has one element in *pusch-TimeDomainAllocationListDCI-0-1-r16* and in *pusch-TimeDomainAllocationListDCI-0-2-r16*. |
| Intel | Yes | Xiaomi’s suggestion looks good to us. |
| Huawei, HiSilicon | Yes | We don't think ASUSTek's concern is critical, though can follow majority view on whether Xiaomi's revision is needed. |
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**Summary 2**: It seems pretty common understanding to agree with wording from RAN1 but with small update. Wording (From Xiaomi): “for all n if any two consecutive PUSCHs are non-contiguous” seems to be agreeable. Also it seems nobody has a problem with proposal from LG (missing in the question) regarding *pusch-AllocationList* field description

**Proposal 2**: Note the LS [R2-2302408](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302408.zip). Progress with modified RAN1 wording “for all n if any two consecutive PUSCHs are non-contiguous” and include in the CR also correction from LG (R2-2303942) regarding field description of *pusch-AllocationList*

The Ericsson CR/Discussion document says that with the RAN1 suggested changes, the “otherwise” condition would be different compared to the original texts.

In the original texts, the “otherwise” condition means that the first PUSCH, i.e., n==1, in that case the field is optionally present. The field description of *extendedK2* has specified UE actions in case the field is absent.

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| *PUSCH-TimeDomainResourceAllocationList* field descriptions |
| ***extendedK2***  Corresponds to L1 parameter 'K2' (see TS 38.214 [19], clause 6.1.2.1) configurable per PUSCH allocation. Only values {0..32} are applicable for PUSCH SCS of 120 kHz.  When the field is absent for the first PUSCH if multiple PUSCH are configured per PDCCH, or when the field is absent and only one PUSCH is configured per PDCCH, the UE applies the value 1 when PUSCH SCS is 15/30 kHz; the value 2 when PUSCH SCS is 60 kHz, the value 3 when PUSCH SCS is 120 kHz, the value 11 when PUSCH SCS is 480 kHz, and the value 21 when PUSCH SCS is 960 kHz. |

In the updated texts, the “otherwise” condition would be extended to also cover the case where all PUSCHs are contiguous.

Due to extension of the “otherwise” condition, further changes would be necessary. Based on this observation, we think the changes indicated in the RAN1 LS are incomplete.

The UE actions are missing when all PUSCHs are contiguous, the field *extendedK2* is absent and n>1. In this case, further changes to the field description of *extendedK2* would be required to specify the missing UE actions.

In addition to changes indicated in the RAN1 LS R1-2302144, include the below texts in the field description of *extendedK2*

*If multiple contiguous PUSCH are configured per PDCCH, when the field extendedK2(n) corresponding to k2 of the n-th PUSCH, n>1 is absent, the UE applies k2 of the first PUSCH plus n-1.*

**Question 2.2** Do you agree to do the changes as proposed by RAN1 on conditional presence MultiPUSCH are not complete? If yes, do you agree with Ericsson proposed change (and provide alternative TP is you see necessary)?

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| --- | --- | --- |
| Answers to Question 2.2 | | |
| Company | Yes/No | Technical Arguments |
| Ericsson | Yes | As we described in our paper, the otherwise condition has been extended to also cover the case where all PUSCHs are contiguous. In this case, we need to specify the UE actions when the field is absent. |
| vivo | Comments | We are first wondering whether NW implementation can avoid the case mentioned by Ericsson.  Ericsson-> As we described in our paper, the “otherwise” condition would be extended with the RAN1 suggested texts, to also cover the case where **all PUSCHs are contiguous**. Since the ASN.1 need code is “NEED S”, which means that the spec needs to specify the UE actions if the field is absent otherwise, **the RRC spec has a flaw**, isn’t so? We can not rely on NW implementation to address **a RRC flaw**. |
| OPPO | No strong veiw |  |
| Xiaomi | Yes |  |
| Samsung | Yes |  |
| Nokia | Yes | /// proposal is good to us |
| LGE | Yes |  |
| Intel | Yes |  |
| Huawei, HiSilicon | Yes with comments | On Ericsson's wording for the other case, we think further checking is needed, maybe RAN1 is more suitable to do the checking.  According to our RAN1 colleagues, the proposed field description of extendedK2 should be checked (might not be correct) as that, the multiple PUSCHs can be shorter than a slot. The start point of subsequent PUSCHs schedule by the same DCI depends on the K2-r16 for the first PUSCH and SLIVs for proceeding PUSCHs. As the SLIV can be shorter than a slot, plus n-1 slots for the nth PUSCH would be not correct. The detail description can be referred to 38.214 section 6.1.3, as follows:  cid:image001.png@01D96E2E.837145D0  That is, we are fine to specify the "Need S" behaviour when optionally present, however the actual added wording shall be checked. |
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**Summary 2.2**: Basically all the companies seem to be fine with the issue raised by Ericsson and following main principle of Ericsson proposal. Huawei raised concern about need to check details with RAN1 colleagues.

**Proposal 2.2**: Progress the CR taking R2-2303557 as baseline and including Proposal 2 (and proposal 2.3) in the CR.

Additionally there is paper on extendeK2 handling in case k2-r16 is absent:

[R2-2303917](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303917.zip) Correction K2 on multi-PUSCH scheduling      ASUSTeK   CR       Rel-17 38.331 17.4.0  4035    -           F   NR\_ext\_to\_71GHz-Core

Reason for change:

According to text from TS 38.214, when *extendedK2* is not configured, *K2* is given by *k2-r16*. However, according to TS 38.331, when *extendedK2* is absent, the UE applies default value according to PUSCH SCS which makes inconsistence between TS 38.331 and TS 38.214.

For *pusch-TimeDomainAllocationListForMultiPUSCH* in *pusch-Config*, if a row indicates resource allocation for two to eight contiguous PUSCHs and *extendedK2* is not configured, *K2* given by *k2-r16* indicates the slot where UE shall transmit the first PUSCH of the multiple PUSCHs.

For *pusch-TimeDomainAllocationListForMultiPUSCH* in *pusch-Config,* if a row indicates resource allocation of more than one PUSCH and *extendedK2* is configured, each PUSCH has a separate SLIV, mapping type and *K2* given by *extendedK2*. If a row indicates resource allocation of a single PUSCH, the PUSCH has a single SLIV, mapping type, and *K2*, where *K2* is given by *extendedK2*, if configured, otherwise *K2* is given by *k2-r16*.

According to previous RAN1 agreement, motivation of applying default value for K2 is when RRC parameter is absent. In this sense, default value should be corrected to be applied when both extendedK2 and k2-r16 are not configured

Agreement: (RAN1 106b-e)

* For NR operation with 480 kHz and/or 960 kHz SCS, *j* = 11 for 480 kHz and *j* = 21 for 960 kHz for determination of the default PUSCH time domain resource allocation (in 38.214 Section 6.1.2.1.1).
* When the field k2 is absent in RRC, the UE applies the value 11 when PUSCH SCS is 480 kHz; and the value 21 when PUSCH SCS is 960 kHz for k2.

and the change:

Specify the UE applies the default value for K2 when both extendedK2 and k2-r16 are not configured.

|  |
| --- |
| ***extendedK2***  Corresponds to L1 parameter 'K2' (see TS 38.214 [19], clause 6.1.2.1) configurable per PUSCH allocation. Only values {0..32} are applicable for PUSCH SCS of 120 kHz.  When the field is absent for the first PUSCH if multiple PUSCH are configured per PDCCH and *k2-r16* is absent, or when the field is absent and only one PUSCH is configured per PDCCH and *k2-r16* is absent, the UE applies the value 1 when PUSCH SCS is 15/30 kHz; the value 2 when PUSCH SCS is 60 kHz, the value 3 when PUSCH SCS is 120 kHz, the value 11 when PUSCH SCS is 480 kHz, and the value 21 when PUSCH SCS is 960 kHz. |

**Rapporteur:** This looks to be valid change based on RAN1 agreements and 38.214 specification..

**Question 2.3**: Do you agree with the need to clarify behaviour when k2-r16 is absent UE only then applies default values? If yes, are you fine with the change as proposed?

|  |  |  |
| --- | --- | --- |
| Answers to Question 2 | | |
| Company | Yes/No | Technical Arguments |
| ASUSTeK | Yes | Proponent. |
| Ericsson | No strong view |  |
| Apple | Looks ok |  |
| vivo | Yes | The correction is aligned with the RAN1 spec. |
| OPPO | No strong veiw |  |
| Xiaomi | Yes |  |
| Samsung | Yes |  |
| Nokia | Yes |  |
| LGE | Yes |  |
| Intel | Yes |  |
| Huawei, HiSilicon | No strong view |  |
|  |  |  |
|  |  |  |

**Summary 2.3**: Everyone seems to be fine with the proposal. .

**Proposal 2.3**: Agree the change. Rapporteur considers it might be better to incorporate changes to CR from proposal 2.2. (but please include company and reason for change from R2-2303917)

## pdcch-BlindDetection4

[R2-2302691](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302691.zip) Miscellaneous corrections for Ext71GHz          Huawei, HiSilicon CR       Rel-17 38.331 17.4.0  3961    -           F   NR\_ext\_to\_71GHz-Core

Reason for Change 3 in the above CR :

1. Field *pdcch-BlindDetection4* is used in TS 38.213, while it is not introduced in TS 38.331 yet.

and the change:

1. Add field *pdcch-BlindDetection4* in the *PhysicalCellGroupConfig* IE.

The corresponding CR change .

1. [[
2. intraBandNC-PRACH-simulTx-r17 ENUMERATED {enabled} OPTIONAL -- Need R
3. ]],
4. [[
5. pdcch-BlindDetection4-r17 SetupRelease { PDCCH-BlindDetection4-r17 } OPTIONAL -- Need M
6. ]]
7. }
8. ----------------OMITTED UNCHANGEC PARTS---------------------
9. PDCCH-BlindDetection3-r16 ::= INTEGER (1..15)
10. PDCCH-BlindDetection4-r17 ::= INTEGER (1..15)

**Question 3**: Do you agree to introduce new parameter *pdcch-BlindDetection4-r17*? If yes, are you fine with the change as proposed? And if not, how do we resolve difference between 38.21 and 38.331?

|  |  |  |
| --- | --- | --- |
| Answers to Question 3 | | |
| Company | Yes/No | Technical Arguments |
| Ericsson | Seems ok |  |
| vivo | Yes | And we can confirm this (i.e. adding the new parameter) with RAN1. |
| OPPO | Yes | We are ok to capture this to align with RAN1 spec |
| Xiaomi | Yes |  |
| Samsung | Yes |  |
| Nokia | Yes |  |
| LGE | Yes |  |
| Intel | Yes |  |
| Huawei, HiSilicon | Yes (proponent) |  |
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**Summary 3**: Everyone is OK with the CR intention.

**Proposal 3**: Agree the intention of CR R2-2302691 (can still check until deadline 2 for comments for coversheet etc..).

## 3.5 Configured grant periodicity

[R2-2302773](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302773.zip) Clarification for configured grant periodicity      Nokia, Nokia Shanghai Bell      CR       Rel-17 38.331 17.4.0   3964    -           F          NR\_ext\_to\_71GHz-Core   Revised

updated to:

[R2-2304125](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304125.zip) Clarification for configured grant periodicity      Nokia, Nokia Shanghai Bell      CR       Rel-17 38.331 17.4.0   3964    1          F          NR\_ext\_to\_71GHz-Core   [R2-2302773](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302773.zip)

Reason for change:

Two parameters are defined so that when signalled they take precedence over *periodicity* – those are *periodicityExt-r16* and *periodicityExt-r17*. The precedence level between those however is not clear and there is no explicit prohibition of signalling both, leading to ambiguity if both are signalled. Either the extended version is never signalled if the previous version is, or the previous version is ignored by the UE if the later version is signalled. Both options are valid but having network limitation seems less likely to impact any UE implementations

and the change:

1. Add limitation that network only configures either ***periodicityExt-r17*** or ***periodicityExt-r16***, but not both*.*

|  |
| --- |
| ***periodicityExt***  This field is used to calculate the periodicity for UL transmission without UL grant for type 1 and type 2 (see TS 38.321 [3], clause 5.8.2). If this field is present, the UE shall ignore field *periodicity* (without suffix) . Network does not configure *periodicityExt-r17* together with *periodicityExt-r16*.  The following periodicites are supported depending on the configured subcarrier spacing [symbols]:  15 kHz: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 640.  30 kHz: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 1280.  60 kHz with normal CP: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 2560.  60 kHz with ECP: *periodicityExt*\*12, where *periodicityExt* has a value between 1 and 2560.  120 kHz: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 5120.  480 kHz: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 20480.  960 kHz: *periodicityExt*\*14, where *periodicityExt* has a value between 1 and 40960.  In case of SDT, the network does not configure periodicity values less than 5ms. |

**Rapporeteur:** There is some ambiquity regarding configuring two *periodicityExt* fields from r16 and r17. It seems valid issue that could cause some misunderstanding between UE and NW.

**Question 4**: Do you agree to the intent of the CR? and if yes, are you OK with the proposed change?.

|  |  |  |
| --- | --- | --- |
| Answers to Question 4 | | |
| Company | Yes/No | Technical Arguments |
| Ericsson | No strong view | We follow the majority view. |
| Apple | No strong view as well. |  |
| vivo | Yes |  |
| OPPO | Yes |  |
| Xiaomi | Yes |  |
| Samsung | Yes |  |
| Nokia | Yes |  |
| LGE | Yes |  |
| Intel | Yes |  |
| Huawei, HiSilicon | Yes with comments | Fine to add such limitation on NT configuration. The actual intention should be that periodicityExt-r17 is only applicable for SCS 480, 960 and periodicityExt-r16 is applicable for other SCS, can prefer more explicit limitation. |
|  |  |  |
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**Summary 4**: Everyone seems to agree with the intention of CR

**Proposal 4**: Agree the intention of R2-2304125 (can still check until deadline 2 for comments for coversheet etc..). Consider updating with more explicit limitation as indicated by Huawei

# Conclusion

**Reference carrier spacing:**

**Proposal 1**: Note the LS [R2-2302405](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302405.zip). Agree to progress CR with taking R2-2302842 as baseline:

**K2 indication**

**Proposal 2**: Note the LS [R2-2302408](file:///C:/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302408.zip). Progress with modified RAN1 wording “for all n if any two consecutive PUSCHs are non-contiguous” and include in the CR also correction from LG (R2-2303942) regarding field description of *pusch-AllocationList*

**Proposal 2.2**: Progress the CR taking R2-2303557 as baseline and including Proposal 2 (and proposal 2.3) in the CR.

**Proposal 2.3**: Agree the change. Rapporteur considers it might be better to incorporate changes to CR from proposal 2.2. (but please include company and reason for change from R2-2303917 if we agree to do so)

**pdcch-BlindDetection4**

**Proposal 3**: Agree the intention of CR R2-2302691 (can still check until deadline 2 for comments for coversheet etc..).

**Configured grant periodicity**

**Proposal 4**: Agree the intention of R2-2304125 (can still check until deadline 2 for comments for coversheet etc..). Consider updating with more explicit limitation as indicated by Huawei.