**3GPP TSG-****RAN WG2 Meeting #118-e R2-220xxxx**

**Online, 09 - 20 May 2022**

**Agenda Item:** 6.0.1

**Source:** Huawei, HiSilicon

**Title:** Summary of offline discussion: [AT118-e][025][NR17] RRC issues (Huawei)

**Document for:** Discussion and decision

# Introduction

This document aims at gathering companies’ views for the following offline discussion:

* [AT118-e][025][NR17] RRC issues (Huawei)

 Scope: Treat [R2-2205397](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205397.zip), [R2-2205196](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205196.zip), [R2-2205684](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205684.zip), [R2-2206131](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2206131.zip), [R2-2205015](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205015.zip). Determine agreeable parts, for agreeable parts make agreeable TPs for merge with Rapporteur CR. If modifications from [R2-2205015](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205015.zip) are needed also for Rel-16, this need to be a separate CR.

 Intended outcome: Report, agreeable TPs for merge with rapporteur CR, agreeable CR(s) if applicable.

 Deadline: Schedule 1

## Company contact details

|  |  |  |
| --- | --- | --- |
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# Discussion

## R2-2205397 Discussion on PDCCH adaptation IEs (ePowSav)

The document in [1] is related to RILs N128/Z054/Z055 and discusses a signalling of SearchSpaceSwitchTimer and PDCCH-SkippingDuration, which is currently captured as follows:

SearchSpaceSwitchTimer-r17 ::= INTEGER (1..6400)

PDCCH-SkippingDuration-r17 ::= INTEGER (1..6400)

|  |
| --- |
| ***searchSpaceSwitchTimer***Timer (in unit of slots) to control the UE behavior to switch from search space group X back to search space group 0, as specified in clause 10 of TS 38.213. A UE does not expect to be configured with Rel-16 SSSG switching parameters and Rel-17 SSSG switching parameters per cell simultaneously. For 15 kHz SCS, {1,2,3,…,20,30, 40, 50, 60, 80, 100} are valid. For 30 kHz SCS, {1,2,3,…,40, 60, 80, 100, 120,160,200} are valid. For 60kHz SCS, {1,2,3,…,80, 120, 160, 200, 240, 320,400} are valid. For 120kHz SCS, {1,2,3,…,160, 240, 320,400, 480, 640,800} are valid. For 480kHz SCS, {4,8,12,…,640, 960, 1280,1600, 1920, 2560,3200} are valid. For 960kHz SCS, {8,16,24,…,1280, 1920, 2560,3200, 3840, 5120,6400} are valid. |
| ***pdcch-SkippingDurationList***The UE can be configured to be indicated a value of X (i.e., skipping duration), in units of slots, among at most 3 RRC configured values, by scheduling DCIs indicating that PDCCH schedules data. For each skipping duration (i.e. the value range of IE *PDCCH-SkippingDuration-r17*), {1,2,3,…,20,30, 40, 50, 60, 80, 100} are valid for the 15 kHz SCS, {1,2,3,…,40, 60, 80, 100, 120,160,200} are valid for 30 kHz SCS, {1,2,3,…,80, 120, 160, 200, 240, 320,400} are valid for 60kHz SCS, and {1,2,3,…,160, 240, 320,400, 480, 640,800} are valid for 120kHz SCS , {4,8,12,…,640, 960, 1280,1600, 1920, 2560,3200} are valid for 480kHz SCS, and {8,16,24,…,1280, 1920, 2560,3200, 3840, 5120,6400} are valid for 960kHz SCS. |

In [1] it is observed that the way the signalling is done at the moment for these fields leads to a large unnecessary overhead as most of the available codepoints cannot be used in the field configuration. Based on this observation the following options are proposed:

|  |  |  |
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| **Option 1**: Most straightforward signalling would be to have CHOICE depending on small values or large values. For small values CHOICE for different SCC with different maximum values and for large value common codepoint with scaling fact as how RAN1 have chosen those values (note that the comments in the ASN.1 below illustrate the bit costs of each field):    searchSpaceSwitchTimer-r17          CHOICE { --1 bit      smallValues       CHOICE {                 --2 bits          scs15              INTEGER (1..20),    -- 5 bits          scs30              INTEGER (1..40),    -- 6 bits          scs60              INTEGER (1..80),    -- 7 bits          scs120or480or960   INTEGER (1..160),   -- 8 bits      },      largeValues       ENUMERATED { n30, n40, n50, n60 ,n80, n100 } -- 3 bits    }

|  |
| --- |
| ***searchSpaceSwitchTimer***Timer (in unit of slots) to control the UE behavior to switch from search space group 1 or 2 back to search space group 0, as specified in clause 10 of TS 38.213. Network does not configure both Rel-16 SSSG switching parameters and Rel-17 SSSG switching parameters per cell simultaneously. For smallValues, the values in slot are multiplied by 4 for 480kHz SCS and multiplied by 8 for 960kHz SCS. For largeValues, Actual value = field value \* used SCS / 15 kHz, i.e. n30 corresponds to 30 slots for 15kHz SCS, 2\*30 slots for 30kHz SCS, 4\*30 slots for 60kHz SCS, 8\*30 slots for 120kHz SCS, 32\*30 slots for 480kHz SCS and 64\*30 slots for 960kHz SCS, and so on. |

**Option 2:** It would also be possible to have 166 codepoints without distinguishing the SCS and describe in the field description how they are mapped to different values for different SCS:searchSpaceSwitchTimer-r17 INTEGER (1..166)- For the first 160 values in 1..160 range, the value applied by UE is CEIL (signalled value \* SCS/120) which results into 20/40/80/160/3200/6400 as maximum values for 15kHz/30kHz/60kHz/120khz/480kHz/960kHz SCS. Note that the CEIL is needed to ensure integer values, and has already been defined in RRC specifications earlier.- For the last 6 values in 161..166 range, the value applied by UE is SCS/15 \* (30, 40, 50, 60, 80, 100). Note that in this case, since all SCS are multiples of 15 kHz, there are no fractional values possible in this calculation.

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| ***searchSpaceSwitchTimer***Timer (in unit of slots) to control the UE behavior to switch from search space group 1 or 2 back to search space group 0, as specified in clause 10 of TS 38.213. Network does not configure both Rel-16 SSSG switching parameters and Rel-17 SSSG switching parameters per cell simultaneously. For the first 160 values in 1..160 range, the actual value = CEIL(field value \* SCS/120 kHz). For the last 6 values in 161..166 range, the field values correspond to (30, 40, 50, 60, 80, 100) slots and the actual value = SCS/15 \* (30, 40, 50, 60, 80, 100), i.e. 161 corresponds to 30 slots for 15kHz SCS, 2\*30 slots for 30kHz SCS, 4\*30 slots for 60kHz SCS, 8\*30 slots for 120kHz SCS, 32\*30 slots for 480kHz SCS and 64\*30 slots for 960kHz SCS, and so on.. |

 |

**Question 1: Do companies agree to redefine signalling design for searchSpaceSwitchTimer and PDCCH-SkippingDuration** **by** **introducing new IE used by both fields as proposed in Option 1 or Option 2?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No, preferred option** | **Justification** |
| Qualcomm Incorporated | Option 2 | Reduce overhead and yet is still simple |
| Nokia, Nokia Shanghai Bell | Yes, Option 1 (slight preference) but option 2 is also fine | Our main interest is in keeping overhead down and both solutions improve that. Just to note that our proposal is meant for both the *pdcch-SkippingDuration* and *searchSpaceSwitchTimer*. |
| OPPO | Option 1 | From signalling overhead perspective, both Option 1 and Option 2 are acceptable. We slightly prefer option1 as it’s easy for understand from the ASN.1 code point of view. |
| Apple | Option 2 | Option 2 is better compared to option 1 in terms of the number of bits needed to signal this. |
| MediaTek | Option 1 | Both options are okay. Option 1 give slightly more readability. |
| ZTE | Option 2 | Both options are okay. Option 2 can obtain more beneficial on bit consumption. |
| Huawei, HiSilicon | Option 2 | We have a slight preference for Option 2 as it more efficient from signaling perspective compared to Option 1 |
| Ericsson | No strong view, option 1 if any | We do not see a strong need to optimize.  |
| Samsung | Not essential | The current overhead is 13 bits. With the proposal overhead will be 8 to 11 bits.  |
| vivo | Slightly Option 2 | Both option1 and option2 could work and we can accept both. But considering option 2 reduces more signalling overhead, we slightly prefer option 2.  |

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| **Summary of Q1:**Almost all companies are in favour of the proposed signalling redefinition, even though a couple of companies indicate the gains are not substantial. The support for the particular options:Option 1 – 4 companiesOption 2 – 5 companiesConsidering that both options seem acceptable and are technically correct, it is proposed to simply follow the majority view.**Proposal 1: Redefine signalling design for searchSpaceSwitchTimer and PDCCH-SkippingDuration (in PDCCH-Config)** **by** **introducing a new IE used by both fields as proposed in Option 2 from R2-2205397. The proponent is requested to provide a TP/draft CR.** |

[1] provides also a second proposal relating to *searchSpaceSwitchDelay* field:

|  |
| --- |
| **Proposal 2**: introduce new Rel-17 field for *searchSpaceSwitchDelay* with either extending the values or scaling the current values based on SCS e.g. multiplied by 4 and 8 for 480kHz and 960kHz SCS based on RAN1 outcome. |

Since the change will have to take place anyway during this meeting, companies are invited to present their tentative views, under the assumption that the final decision will have to be made based on the RAN1 conclusion.

**Question 2: Do companies agree to introduce new Rel-17 field for searchSpaceSwitchDelay with either extending the values or scaling the current values based on SCS e.g. multiplied by 4 and 8 for 480kHz and 960kHz SCS based on RAN1 outcome?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No, preferred option** | **Justification** |
| Qualcomm Incorporated | Yes, scaling | Simpler to apply scaling multipliers for the new SCSes |
| Nokia, Nokia Shanghai Bell | Yes, scaling | Possible values under discussion in RAN1, scaling seems to be enough:**Table 10.4-1: Minimum value of** 𝑷𝒔𝒘𝒊𝒕𝒄𝒉 **[symbols]**

|  |  |  |
| --- | --- | --- |
| 𝝁 | **Minimum** 𝐏𝐬𝐰𝐢𝐭𝐜𝐡 **value forUE processing capability 1 [symbols]** | **Minimum** 𝐏𝐬𝐰𝐢𝐭𝐜𝐡 **value forUE processing capability 2 [symbols]** |
| 0  | 25  | 10 |
| 1  | 25  | 12 |
| 2  | 25  | 22 |
| 3  | 40  | 36 |
| 5  | 160  | 144 |
| 6  | 320  | 288 |

 |
| OPPO |  | Leave it to RAN1 |
| Apple | See comment | We can scale it based on SCS (but this is to be decided by RAN1) |
| MediaTek | See comment | We assume scaling is fine but of course wait for final RAN1 conclusion. |
| ZTE | Seem Comments | Scaling is fine, and as nokia pointed out, we need wait for RAN1’s conclusion. |
| Huawei, HiSilicon | Yes, scaling  | We are fine to apply scaling multipliers for the new SCSes  |
| Ericsson | Yes | In our understanding the Rel-16 (up to SCS 60) maximum value of 52 should be multiplied with 8 (for SCS 480) and 16 (for SCS 960), i.e. up to 832, see [R2-2205192](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2//TSGR2_118-e/Docs/R2-2205192.zip). |
| Samsung | See comment | scaling is fine. Ok to wait for final RAN1 conclusion |
| vivo | Yes, scaling | Scaling is easier if it could satisfy the value of 480kHz and 960kHz SCS.Besides, we think it might be better to confirm with RAN1, for any other intention.  |

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| **Summary of Q2:**All companies agree with the proposal and all companies seem to favour the solution using scaling of the existing values. **Proposal 2: Pending RAN1 confirmation: Introduce a new Rel-17 field for searchSpaceSwitchDelay with scaling of the current values based on SCS e.g. multiplied by 4 and 8 for 480kHz and 960kHz SCS. The proponent is requested to provide a TP/draft CR (can wait for RAN1 conclusion).** |

## R2-2205196 Discussion on RIL issue E133 (ePowSav, 71 GHz)

The following RIL has been submitted:

 OPTIONAL, -- Need M

 searchSpaceSwitchTimer-r17 INTEGER (1..800) OPTIONAL, -- Need R

 pdcch-SkippingDurationList-r17 SEQUENCE(SIZE (1..3)) OF PDCCH-SkippingDuration-r17 OPTIONAL -- Need R

 ]]

In [2], this topic is further discussed. The original intention of the RIL was to analyse whether the *searchSpaceSwitchTimer* parameter can be reused for both ePowSav and 71 GHz, but it seems that in [2] the submitting company concluded that it would be hard to reuse the same type for both parameters due to, e.g. different value ranges. Hence, it is only proposed to extend the value range of *searchSpaceSwitchTimer-r16* from *PDCCH-ServingCellConfig* in the following way (as in the RRC rapporteur CR for 71 GHz [3]):

*PDCCH-ServingCellConfig* information element

-- ASN1START

-- TAG-PDCCH-SERVINGCELLCONFIG-START

PDCCH-ServingCellConfig ::= SEQUENCE {

 slotFormatIndicator SetupRelease { SlotFormatIndicator } OPTIONAL, -- Need M

 ...,

 [[

 availabilityIndicator-r16 SetupRelease {AvailabilityIndicator-r16} OPTIONAL, -- Need M

 searchSpaceSwitchTimer-r16 INTEGER (1..80) OPTIONAL -- Need R

 ]],

 [[

 searchSpaceSwitchTimer-v17xy INTEGER (81..1280) OPTIONAL -- Need R

 ]]

}

-- TAG-PDCCH-SERVINGCELLCONFIG-STOP

-- ASN1STOP

|  |
| --- |
| *PDCCH-ServingCellConfig* field descriptions |
| ***availabilityIndicator***Use to configure monitoring a PDCCH for Availability Indicators (AI). |
| ***searchSpaceSwitchTimer***The value of the timer in slots for monitoring PDCCH in the active DL BWP of the serving cell before moving to the default search space group (see TS 38.213 [13], clause 10.4). For 15 kHz SCS, {1..20} are valid. For 30 kHz SCS, {1..40} are valid. For 60 kHz SCS, {1..80} are valid. For 120 kHz SCS, {1..160} are valid.For 480 kHz SCS, {1..640} are valid.For 960 kHz SCS, {1..1280} are valid.The network configures the same value for all serving cells in the same *CellGroupForSwitch*. |
| ***slotFormatIndicator***Configuration of Slot-Format-Indicators to be monitored in the correspondingly configured PDCCHs of this serving cell. |

Based on this, the following question is asked:

**Question 3: Do companies agree to extend the value range of searchSpaceSwitchTimer-r16 from PDCCH-ServingCellConfig, as proposed in** **R2-2205188?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No, preferred option** | **Justification** |
| Qualcomm Incorporated | Yes | Similar extensions have been made to other IEs whose values depend on SCS. This IE was forgotten by mistake. |
| Nokia, Nokia Shanghai Bell | No (see Q1/2) | We should use the same IE definition as for Q1/2 since there are some restrictions to the values. |
| OPPO | Yes |  |
| Apple | Yes | We think the case where the UE is configured with B52 and also the network intends the UE to do powersave would anyway use the SCS from 120,480,960, so this is a good approach. |
| MediaTek | Yes |  |
| ZTE | Yes |  |
| Huawei, HiSilicon | Yes | Agree to expand the parameter value for 71GHz separately. We would not like to try to make joint changes with ePowSav, as there are different restrictions from two WIs. |
| Ericsson | Yes | It is best to use seperate RRC parameter for 71 GHz, due to below reasonsHH1) timers have different value ranges for 71GHz and ePowersaving, reuse the same IE may require additional RAN1 and RAN2 work to settle/extend value range, at least RAN1 needs to be informed by LS, however, this is the last meeting of R17 WI, we can choose easiest approach to close the issue.2) for 71GHz, the timer value is common in all cells in the same configured cell group, while different values can be set for different cells for ePowersaving.3) it is beneficial for future extension if there is a need to optimize features to apply both features at the same time for a UE if it is feasible.The extended value range is aligned with RAN1 agreements indicated in RAN1 LS R1-2202759. |
| Samsung | Yes |  |
| vivo | Yes  | The searchSpaceSwitchTimer in Q1 is applied for Rel-17 ePowSav, while this searchSpaceSwithTimer is applied for 71 GHz. |

|  |
| --- |
| **Summary of Q3:**All but 1 company agree that companies agree to extend the value range of searchSpaceSwitchTimer-r16 from PDCCH-ServingCellConfig, as proposed in R2-2205188.**Proposal 3: Extend the value range of searchSpaceSwitchTimer-r16 from PDCCH-ServingCellConfig, as proposed in R2-2205188 (already captured in the RRC correction CR for 71 GHz, no further action needed).** |

## R2-2205684 Discussion on ul-AccessConfigListDCI (RIL A402, A405) (IIOT, 71 GHz)

In [4] it is indicated that after introduction of the Rel-17 versions of ul-AccessConfigListDCI-1-2, ul-AccessConfigListDCI-1-1 as well as ul-AccessConfigListDCI-0-1, ul-AccessConfigListDCI-0-2 fields, the interpretation of the field description became cumbersome. Furthermore, it is unclear in which frequency ranges the fields can be applied. The following clarifications are then proposed:

## Text Proposal 1

START OF CHANGES

### 6.3.2 Radio resource control information elements

< Unchanged parts omitted >

***PUCCH-Config* field descriptions**

|  |
| --- |
| **ul-AccessConfigListDCI-1-1, ul-AccessConfigListDCI-1-2**List of the combinations of cyclic prefix extension and UL channel access type (see TS 38.212 [17], clause 7.3.1) applicable, respectively, to DCI format 1\_1 and DCI format 1\_2. The fields ul-AccessConfigListDCI-1-1-r16 and ul-AccessConfigListDCI-1-2-r17 are only applicable for FR1 (see TS 38.212 [17], Table 7.3.1.2.2-6). The field ul-AccessConfigListDCI-1-1-r17 indicates a list which only contains UL channel access types and is only applicable for FR2-2 (see TS 38.212 [17], Table 7.3.1.2.2-6A).  |

< Unchanged parts omitted >

END OF CHANGES

## Text Proposal 2

START OF CHANGES

### 6.3.2 Radio resource control information elements

< Unchanged parts omitted >

***PUSCH-Config* field descriptions**

|  |
| --- |
| ***ul-AccessConfigListDCI-0-1, ul-AccessConfigListDCI-0-2***List of the combinations of cyclic prefix extension, channel access priority class (CAPC), and UL channel access type (see TS 38.212 [17], clause 7.3.1) applicable for DCI format 0\_1 and DCI format 0\_2, respectively. The fields ul-AccessConfigListDCI-0-1-r16 and ul-AccessConfigListDCI-0-2-r17 are only applicable for FR1 (see TS 38.212 [17], Table 7.3.1.1.2-35). The field *ul-AccessConfigListDCI-0-1-r17* only contains a list of UL channel access types and is only applicable for FR2-2 (see TS 38.212 [17], Table 7.3.1.1.2-35A). |

**Question 4: Do companies agree with the changes proposed in Text Proposal 1 above?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes |  |
| Nokia, Nokia Shanghai Bell | Yes |  |
| OPPO | Yes |  |
| Apple | Yes |  |
| MediaTek | Yes |  |
| ZTE | Yes |  |
| Huawei, HiSilicon | Yes |  |
| Ericsson | Yes | The changes are fine in order to distinguish from FR2-2. |
| Samsung | Yes |  |
| vivo | Yes |  |

**Question 5: Do companies agree with the changes proposed in Text Proposal 2 above?**

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| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes |  |
| Nokia, Nokia Shanghai Bell | Yes |  |
| OPPO | Yes |  |
| Apple | Yes |  |
| MediaTek | Yes |  |
| ZTE | Yes |  |
| Huawei, HiSilicon | Yes |  |
| Ericsson | Yes | The changes are fine in order to distinguish from FR2-2. |
| Samsung | Yes |  |
| vivo | Yes |  |

|  |
| --- |
| **Summary of Q4 and Q5:**All companies agree with both TP1 and TP2 from R2-2205684.**Proposal 4: Text Proposal 1 and Text Proposal 2 from R2-2205684 are agreed.** |

## R2-2206131 Discussion on ul-AccessConfigListDCI PDSCH and PUSCH TDRA configuration (RIL: Q300, E057) (CovEnh, 71 GHz)

The document in [5] is related to the following RIL issues:

|  |
| --- |
| **[RIL]**: Q300 **[Delegate]**: Qualcomm (Umesh) **[WI]**: 71GHz **[Class]**: 2 **[Status]**: ToDo **[TDoc]**: None **[Proposed Conclusion]**: **[Description]**: Extended k0 in PDSCH-TimeDomainResourceAllocation**[Proposed Change]**: The only difference between r16 and r17 seems to be the range of k0. Then it is unclear why -r17 needs to be introduced instead of simply adding NCE for k0-v1700 for the extended range.Easier to simply add k0-v1700 field in -r16 IE, unless a clear need for new IE is seen. This also has impact on merging with MBS.Related to Q301 and Q302**[Comments]**:**[RIL]**: E057 **[Delegate]**: Ericsson (Jonas) **[WI]**: MULTI **[Class]**: 2 **[Status]**: ToDo **[TDoc]**: R2-22xxxx **[Proposed Conclusion]**: **[Description]**: The current way CE parameters have been implemented are not very clean and can be done in a better way.**[Proposed Change]**: Add CE parameters numberOfRepetition and numberOfSlots-TBoMS under PUSCH-Allocation-r17 and make PUSCH-Allocation-r16 optional. Then we need to consider k2-r17 whether the condition should remain.**[Comments]**:  |

The tentative conclusions from the ASN.1 review ad-hoc meeting are as follows:

|  |
| --- |
| PUSCH-TimeDomainResourceAllocationList merging issue[R2-2204346](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118/Docs/R2-2204346.zip) [E057] Coverage enhancement TDRA table Ericsson discussion NR\_cov\_enh* Noted

DISCUSSION* MTK are ok with proposal but would like to avoid reuse of IE with same ranges, i.e. can have CE field but should not duplicate the sub-fields, can refer to IE’s instead.

[R2-2204341](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118/Docs/R2-2204341.zip) PDSCH-TimeDomainResourceAllocationList and PUSCH-TimeDomainResourceAllocationList merging issue (RIL: Q300, E057) Huawei, HiSilicon discussion Rel-17 NR\_ext\_to\_71GHz-Core, NR\_cov\_enh-Core* Noted

DISCUSSION* Ericsson think that k2-r17 is not only for multiPUSCH.
* Intel think that k2 is anyway different, should add a qualifier somehow,
* Nokia would like to think a bit more
* QC agrees with the proposal to add Multi- to the lists.
* Rename k2-r17 to something else to differentiate it from k2-r16.

*Chair: There is clear interest for further clarifications on TDRA IEs and structure, but companies seems not ready for agreement. Consider for R2 118-e* PDSCH-TimeDomainResourceAllocationList merging issue[R2-2204301](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118/Docs/R2-2204301.zip) PDSCH-TimeDomainResourceAllocationList merging issue [Q300] [Q301] [Q302] Qualcomm Incorporated discussion Rel-17 NR\_ext\_to\_71GHz-Core, NR\_MBS-Core* Noted

P1* Ericsson prefer to keep the current design.
* Huawei think we attempt to do non-critical extension. Nokia agrees. Intel MTK agrees.
* [Q300] Extend k0-r16 instead of introducing PDSCH-TimeDomainResourceAllocation-r17 Adopt changes shown in section 3.2.
* [Q302] Remove last sentence in *repetitionNumber* field description and update the conditional presence table, as shown in section 3.1.
* P2 no change needed (r16 version intended).
 |

In [5], further modifications of TDRA configurations are proposed for both PDSCH and PUSCH and the TPs can be found in [5].

The proposed changes for PDSCH TDRA are summarized as follows:

**Proposal 1.1: In PDSCH-TimeDomainResourceAllocationList IE:**

* 1. **To avoid confusion with Rel-16 fields/types, PDSCH-TimeDomainResourceAllocationList-r17 is renamed as MultiPDSCH-TimeDomainResourceAllocationList-r17 and pdsch-AllocationList-r17 is renamed as pdsch-TimeDomainResourceAllocationList-r17.**

**Proposal 1.2 In PDSCH-Config IE:**

1. **Replace PDSCH-TimeDomainResourceAllocationList-r17 with MultiPDSCH-TimeDomainResourceAllocationList-r17**

**Question 6: Do companies agree with the proposals above for PDSCH TDRA signalling changes?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes | Adding “Multi” as shown above makes it clearer.No strong view on renaming of pdsch-AllocationList-r17 to pdsch-TimeDomainResourceAllocationList-r17 |
| Nokia, Nokia Shanghai Bell | Yes but | If we change the name, it's no longer critical extension so the name could be shorted to e.g. MultiPDSCH-TDRA-List-r17 - that's more concise. |
| Apple | Yes |  |
| MediaTek | Yes | Nokia’s suggested shorter name is a bit more convenient. |
| Huawei, HiSilicon | Yes (proponent) | OK with the suggestion from Nokia. |
| Ericsson | Yes | We are OK with this.  |
| Samsung | Yes |  |
| vivo | Yes |  |

The proposed changes for PUSCH TDRA are summarized as follows:

**Proposal 2.1 In PUSCH-TimeDomainResourceAllocation IE:**

1. **Rename k2-r17 to something different than k2-Ext-r17 to better differentiate it from k2-r16 (e.g. k2PerPUSCH-Allocation-r17).**
2. **Add k2PerPUSCH-Allocation-r17 to PUSCH-Allocation-r16.**
3. **Add a separate field description for k2PerPUSCH-Allocation-r17.**
4. **Clarify that k2 is not present/ignored in case k2PerPUSCH-Allocation-r17 is configured.**
5. **Remove PUSCH-TimeDomainResourceAllocationList-r17, PUSCH-TimeDomainResourceAllocation-r17 and PUSCH-Allocation-r17.**

**Proposal 2.2: In PUSCH-Config IE:**

1. **Remove pusch-TimeDomainAllocationListForMultiPUSCH-r17, pusch-TimeDomainAllocationListDCI-0-2-r17, pusch-TimeDomainAllocationListDCI-0-1-r17.**

**Question 7: Do companies agree with the proposals above for PUSCH TDRA signalling changes?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes | Minor: extra comma at the end of field k2PerPUSCH-Allocation-r17 should be removed.k2PerPUSCH-Allocation-r17 INTEGER (0..128) OPTIONAL, -- Cond MultiPUSCH |
| Nokia, Nokia Shanghai Bell | Yes but | Minor comments:- dash is needed between "k2" and "per"-It could be sufficient to use "*k2-PerPUSCH-r17*" (i.e. without the word "Allocation" - we should avoid overly long names in RRC) |
| Apple | Yes | We have noted that the text proposal in R2-2206131 does not include the field description of **k2PerPUSCH-Allocation-r17**, which should be added. |
| MediaTek | Yes | Agree with the preceding comments as well. |
| Huawei, HiSilicon | Yes (proponent) | Agree with the suggestion from Nokia. On the field description, we have only discussed this from signalling clarity point of view and we were hoping the proper field description can be handled by the 71 GHz WI RRC CR rapporteur when implementing the changes (but agree this is needed). |
| Ericsson | Yes | On a) please note that this is not only to enable per PUSCH-allocation, but also to extend the value range for higher SCS. Given this, consider whether it is really needed to give it the name k2-PerPUSCH-Allocation. Alternatively keep the name k2-ext but describe in the field name of k2-ext something on the lines of “*Corresponds to L1 parameter 'K2' (see TS 38.214 [19], clause 6.1.2.1) configurable per PUSCH allocation.*”.  |
| vivo | Yes | Also agree the suggestion from Qualcomm and Nokia. |

|  |
| --- |
| **Summary of Q6 and Q7:**All companies are supportive of the proposed changes for PUSCH and PDSCH TDRA. There were some comments raised on the naming of the parameters. Based on this the following is proposed.**Proposal 5: Agree to the following changes:****1.1: In PDSCH-TimeDomainResourceAllocationList IE:*** 1. **To avoid confusion with Rel-16 fields/types, PDSCH-TimeDomainResourceAllocationList-r17 is renamed as MultiPDSCH-TDRA-List-r17 and pdsch-AllocationList-r17 is renamed as pdsch-TDRA-List-r17.**

**1.2 In PDSCH-Config IE:**1. **Replace PDSCH-TimeDomainResourceAllocationList-r17 with MultiPDSCH-TDRA-r17**

**2.1: In PUSCH-TimeDomainResourceAllocation IE:**1. **Rename k2-r17 to something different than k2-Ext-r17 to better differentiate it from k2-r16 (e.g. k2-PerPUSCH-r17) (can be further checked during Phase 2 whether k2-Ext-r17 can be kept).**
2. **Add k2-PerPUSCH-r17 to PUSCH-Allocation-r16.**
3. **Add a separate field description for k2-PerPUSCH-r17.**
4. **Clarify that k2 is not present/ignored in case k2-PerPUSCH-r17 is configured.**
5. **Remove PUSCH-TimeDomainResourceAllocationList-r17, PUSCH-TimeDomainResourceAllocation-r17 and PUSCH-Allocation-r17.**

**2.2: In PUSCH-Config IE:**1. **Remove pusch-TimeDomainAllocationListForMultiPUSCH-r17, pusch-TimeDomainAllocationListDCI-0-2-r17, pusch-TimeDomainAllocationListDCI-0-1-r17.**

**The proponent is requested to provide a TP/draftCR.** |

## R2-2205015 [H634] Correction for the need code and conditions for optional fields in PC5 RRC message (SL enh, SL Relay)

This topic has been discussed during the ASN.1 ad-hoc meeting with the following conclusion:

Need Codes and optional fields for PC5

[R2-2204321](file:///C%3A/Users/mtk65284/Documents/3GPP/tsg_ran/WG2_RL2/TSGR2_118/Docs/R2-2204321.zip) [H634] Correction for the need code and conditions for optional fields in PC5 RRC message Huawei, HiSilicon draftCR Rel-17 38.331 17.0.0 F NR\_SL\_relay-Core, NR\_SL\_enh-Core

* Noted

DISCUSSION

* Lenovo think indeed need codes are used, so it seems useful to have clarifications, but maybe this should be for Rel-16. OPPO agrees, think something should be introduced for Rel-16, need time to check.
* HW agree that we should correct for Rel-16.
* QC support to do this.
* MTK agree in general, but need to check.
* Intel think that we should add PC5 to title rather than remove
* SS wonder if applicable to LTE. Oppo think that LTE only have sbcch. Apple: No impact on LTE
* Ericsson would like to consider a new section for PC5
* Will update general text for need code and conditions for optional fields for PC5, likely from R16, treat further at next meeting (not urgent, can even treat in Q3)

The feedback towards the proposed changes was favourable, so it is proposed to discuss further details, i.e. whether the TP in [6] is OK and whether the changes should be applied from Rel-16 or from Rel-17.

**Question 8: Please provide comments towards the CR in R2-2205015, if any.**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm Incorporated | We support the CR. |
| Nokia | We agree with the intention of the CR |
| OPPO | OK |
| Apple | We agree with the CR. |
| MediaTek | The intention of the CR is OK. We have a couple of concerns about the error handling, but they require some discussion and can be addressed in future meetings. |
| Huawei, HiSilicon | No comments (proponent) |
| Ericsson | We are generally fine with the changes but since this does not impact any functionality of the system (is more to align current description for RRC) we prefer to have this in the Rapporteur’s CR |
| Samsung | We agree with the intention of the CR. |
| vivo | OK |

**Question 9: Do you think the changes should be applied from Rel-16 or only from Rel-17?**

|  |  |  |
| --- | --- | --- |
| **Company** | **R16 / R17** | **Comments** |
| Qualcomm Incorporated | R16 |  |
| Nokia | Rel-16 |  |
| OPPO | OK |  |
| Apple | R16 |  |
| MediaTek | Rel-16 |  |
| Huawei, HiSilicon | R16 |  |
| Ericsson | No strong view | We are open to have this from R16 but prefer to have this in Rapporteur CR. |
| Samsung | Rel-16 |  |
| vivo | R16 |  |

|  |
| --- |
| **Summary of Q8 and Q9:**The companies are supportive of the modifications proposed in R2-2205015 and all companies agree to have the changes applied to Rel-16 as well.**Proposal 6: The changes in R2-2205015 are agreed and should be applied from Rel-16.**  |

# Conclusion

Based on the discussion in section 2, the following is proposed:

**Proposal 1: Redefine signalling design for searchSpaceSwitchTimer and PDCCH-SkippingDuration (in PDCCH-Config)** **by** **introducing a new IE used by both fields as proposed in Option 2 from R2-2205397. The proponent is requested to provide a TP/draft CR.**

**Proposal 2: Pending RAN1 confirmation: Introduce a new Rel-17 field for searchSpaceSwitchDelay with scaling of the current values based on SCS e.g. multiplied by 4 and 8 for 480kHz and 960kHz SCS. The proponent is requested to provide a TP/draft CR (can wait for RAN1 conclusion).**

**Proposal 3: Extend the value range of searchSpaceSwitchTimer-r16 from PDCCH-ServingCellConfig, as proposed in R2-2205188 (already captured in the RRC correction CR for 71 GHz, no further action needed).**

**Proposal 4: Text Proposal 1 and Text Proposal 2 from R2-2205684 are agreed.**

**Proposal 5: Agree to the following changes:**

**1.1: In PDSCH-TimeDomainResourceAllocationList IE:**

* 1. **To avoid confusion with Rel-16 fields/types, PDSCH-TimeDomainResourceAllocationList-r17 is renamed as MultiPDSCH-TDRA-List-r17 and pdsch-AllocationList-r17 is renamed as pdsch-TDRA-List-r17.**

**1.2 In PDSCH-Config IE:**

1. **Replace PDSCH-TimeDomainResourceAllocationList-r17 with MultiPDSCH-TDRA-r17**

**2.1: In PUSCH-TimeDomainResourceAllocation IE:**

1. **Rename k2-r17 to something different than k2-Ext-r17 to better differentiate it from k2-r16 (e.g. k2-PerPUSCH-r17) (can be further checked during Phase 2 whether k2-Ext-r17 can be kept).**
2. **Add k2-PerPUSCH-r17 to PUSCH-Allocation-r16.**
3. **Add a separate field description for k2-PerPUSCH-r17.**
4. **Clarify that k2 is not present/ignored in case k2-PerPUSCH-r17 is configured.**
5. **Remove PUSCH-TimeDomainResourceAllocationList-r17, PUSCH-TimeDomainResourceAllocation-r17 and PUSCH-Allocation-r17.**

**2.2: In PUSCH-Config IE:**

1. **Remove pusch-TimeDomainAllocationListForMultiPUSCH-r17, pusch-TimeDomainAllocationListDCI-0-2-r17, pusch-TimeDomainAllocationListDCI-0-1-r17.**

**The proponent is requested to provide a TP/draftCR.**

**Proposal 6: The changes in R2-2205015 are agreed and should be applied from Rel-16.**

# References

1. R2-2205397 Discussion on PDCCH adaptation IEs (related to N128/Z054/Z055) Nokia, Nokia Shanghai Bell
2. R2-2205196 Discussion on RIL issue E133 Ericsson
3. R2-2205188 RRC correction CR for 71 GHz Ericsson
4. R2-2205684 Discussion on ul-AccessConfigListDCI (RIL A402, A405) Apple
5. R2-2206131 PDSCH and PUSCH TDRA configuration (RIL: Q300, E057) Huawei, HiSilicon
6. R2-2205015 [H634] Correction for the need code and conditions for optional fields in PC5 RRC message, Huawei, HiSilicon