**3GPP TSG- #****R1-23xxxxx**

**Athens, Greece, February 27th – March 3rd, 2023**

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| *CR-Form-v12.1* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **-** | **rev** |  | **Current version:** |  |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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| ***Title:*** | Corrections on impact of HD-FDD operation for RedCap UE | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Moderator (Ericsson), [CATT], NTT DOCOMO, … | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_redcap-Core | | | | |  | ***Date:*** | | | 2023-03-02 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In TS 38.213 for RACH procedure, several clauses such as clauses 7.5, 8.1, and 11.1 are referred, to reflect the impact of PRACH cancellation due to UE behaviours defined in the respective clauses.  In TS 38.213 for UCI transmission, several clauses such as clauses 11.1, 11.1.1 and 11.2A are referred as the the limitations for UE transmissions, to reflect the impact of PUCCH/PUSCH cancellation due to UE behaviours defined in the respective clauses.  In TS 38.213 for PDCCH reception with two candidates, several clauses such as clauses 10, 11.1 and 11.1.1 are referred, to reflect the impact of PDCCH cancellation due to behaviour defined in the respective clauses.  HD-FDD operation defined in Clause 17.2 can also lead to channel cancellation and would have impact on RACH procedure, UCI transmission and PDCCH reception as well.  Note that clause 17.2 is already referred in some part of clause 9 for UCI multiplexing with same priority index in a PUCCH or a PUSCH. The same impact of HD-FDD operation should be introduced for RACH procedure, UCI transmission and PDCCH reception as well.   |  | | --- | | In the remaining of this clause, a UE multiplexes UCIs with same priority index in a PUCCH or a PUSCH before considering limitations for UE transmission as described in clauses 11.1, 11.1.1, 11.2A, and 17.2. A PUCCH or a PUSCH is assumed to have a same priority index as a priority index of UCIs a UE multiplexes in the PUCCH or the PUSCH. |   RAN1#112 discussed this topic and the discussion is captured as Issue #2 in feature lead summary in [R1-2301883](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_112/Docs/R1-2301883.zip). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the missing clause 17.2 as a reference clause for the corresponding descriptions. Furthermore, a general statement “Procedures for a HD-UE are same as described for a UE in all other clauses of this document unless stated otherwise” is inserted in the beginning of clause 17.2. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | UE behaviour for RACH procedure, UCI transmission and PDCCH reception is not clear. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6, 7, 7.4, 8.1, 8.1A, 9, 9.2.3, 9.2.4, 10, 11, 17.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

# 6 Link recovery procedures

**<Unchanged parts are omitted>**

For the remaining of this clause, if a PDCCH reception includes two PDCCH candidates from two linked search space sets based on *searchSpaceLinkingId*, as described in clause 10.1, the last symbol of the PDCCH reception is the last symbol of the PDCCH candidate that ends later. The PDCCH reception includes the two PDCCH candidates also when the UE is not required to monitor one of the two PDCCH candidates as described in clauses 10 (except clause 10.4), 11.1, 11.1.1 and 17.2.

**<Unchanged parts are omitted>**

# 7 Uplink Power control

**<Unchanged parts are omitted>**

The PDCCH reception includes the two PDCCH candidates also when the UE is not required to monitor one of the two PDCCH candidates as described in clauses 10 (except clause 10.4), 11.1, 11.1.1 and 17.2.

## 7.4 Physical random access channel

**<Unchanged parts are omitted>**

If due to power allocation to PUSCH/PUCCH/PRACH/SRS transmissions as described in clause 7.5, or due to power allocation in EN-DC or NE-DC or NR-DC operation, or due to slot format determination as described in clause 11.1, or due to the PUSCH/PUCCH/PRACH/SRS transmission occasions are in the same slot or the gap between a PRACH transmission and PUSCH/PUCCH/SRS transmission is small as described in clause 8.1, or due to HD-UE operation in paired spectrum as described in clause 17.2, the UE does not transmit a PRACH in a transmission occasion, Layer 1 notifies higher layers to suspend the corresponding power ramping counter. If due to power allocation to PUSCH/PUCCH/PRACH/SRS transmissions as described in clause 7.5, or due to power allocation in EN-DC or NE-DC or NR-DC operation, the UE transmits a PRACH with reduced power in a transmission occasion, Layer 1 may notify higher layers to suspend the corresponding power ramping counter.

## 8.1 Random access preamble

**<Unchanged parts are omitted>**

For a PRACH transmission by a UE triggered by a PDCCH order, the PRACH mask index field [5, TS 38.212], if the value of the random access preamble index field is not zero, indicates the PRACH occasion for the PRACH transmission where the PRACH occasions are associated with the SS/PBCH block index indicated by the SS/PBCH block index field of the PDCCH order. If the UE is provided by *cellSpecificKoffset*, the PRACH occasion is after slot where is the slot of the UL BWP for the PRACH transmission that overlaps with the end of the PDCCH order reception assuming , and is the SCS configuration for the PRACH transmission. If the PDCCH reception for the PDCCH order includes two PDCCH candidates from two linked search space sets based on *searchSpaceLinkingId*, as described in clause 10.1, the last symbol of the PDCCH reception is the last symbol of the PDCCH candidate that ends later. The PDCCH reception includes the two PDCCH candidates also when the UE is not required to monitor one of the two PDCCH candidates as described in clauses 10 (except clause 10.4), 11.1, 11.1.1 and 17.2.

**<Unchanged parts are omitted>**

## 8.1A PUSCH for Type-2 random access procedure

**<Unchanged parts are omitted>**

A UE does not transmit a PUSCH in a PUSCH occasion if the PUSCH occasion associated with a DMRS resource is not mapped to a preamble of valid PRACH occasions or if the associated PRACH preamble is not transmitted as described in clause 7.5 or clause 11.1 or clause 17.2. A UE can transmit a PRACH preamble in a valid PRACH occasion if the PRACH preamble is not mapped to a valid PUSCH occasion.

**<Unchanged parts are omitted>**

# 9 UE procedure for reporting control information

**<Unchanged parts are omitted>**

In the remaining of this clause, when a PDCCH reception by a UE includes two PDCCH candidates from corresponding search space sets, as described in clause 10.1

- a PDCCH monitoring occasion is the union of the PDCCH monitoring occasions for the two PDCCH candidates

- the start of the PDCCH reception is the start of the earlier PDCCH candidate

- the end of the PDCCH reception is the end of the PDCCH candidate that ends later

The PDCCH reception includes the two PDCCH candidates also when the UE is not required to monitor one of the two PDCCH candidates as described in clauses 10 (except clause 10.4), 11.1, 11.1.1 and 17.2.

**<Unchanged parts are omitted>**

When a UE determines overlapping for PUCCH and/or PUSCH transmissions of the same priority index other than PUCCH transmissions with SL HARQ-ACK reports before considering limitations for UE transmission as described in clauses 11.1, 11.1.1, 11.2A and 17.2 including repetitions if any,

- first, the UE resolves the overlapping for PUCCHs with repetitions as described in clause 9.2.6, if any

- second, the UE resolves the overlapping for PUCCHs without repetitions as described in clauses 9.2.5

- third, the UE resolves the overlapping for PUSCHs and PUCCHs with repetitions as described in clause 9.2.6

- fourth, the UE resolves the overlapping for PUSCHs and PUCCHs without repetitions as is subsequently described in this clause.

If a UE

- is provided *simultaneousPUCCH-PUSCH* and would transmit a PUCCH with a first priority index and PUSCHs with a second priority index that is different than the first priority index, where the PUCCH and the PUSCHs overlap in time

- can simultaneously transmit the PUCCH and the PUSCHs [18, TS 38.306],

the UE excludes the PUSCHs for resolving the time overlapping between the PUCCH and PUSCHs, where the timeline conditions are not required for the excluded PUSCHs.

When a UE determines overlapping for PUCCH and/or PUSCH transmissions of different priority indexes, other than PUCCH transmissions with SL HARQ-ACK reports, before considering limitations for transmission as described in clauses 11.1, 11.1.1, 11.2A and 17.2 including repetitions if any, if the UE is provided *uci-MuxWithDiffPrio* and the timeline conditions in clause 9.2.5 for multiplexing UCI in a PUCCH or a PUSCH are satisfied

- first, the UE resolves overlapping for PUCCH and/or PUSCH transmissions of a same priority index as described in clauses 9.2.5 and 9.2.6

- second, the UE resolves the overlapping for PUCCH transmissions of different priority indexes, and

- if the UE is provided *subslotLengthForPUCCH* in the second *PUCCH-Config*, a PUCCH transmission of smaller priority index is associated with the first overlapping slot with *subslotLengthForPUCCH* symbols of larger priority index; otherwise, the PUCCH transmission of smaller priority index is associated with the overlapping slot with symbols [4, TS 38.211] of larger priority index.

- the UE first resolves the overlapping for PUCCH transmissions, where at least one of the PUCCH transmissions is with repetitions, within a slot of larger priority index as is subsequently described in this clause, if any, and then the UE resolves the overlapping for PUCCH transmissions without repetitions within the slot using the pseudo-code in clause 9.2.5

- if the UE determines that a first PUCCH transmission of the smaller priority index is not dropped and the UCI of the first PUCCH transmission is not multiplexed in a second PUCCH transmission of larger priority index in an overlapping slot with *subslotLengthForPUCCH* symbols, the first PUCCH transmission is associated with the next overlapping slot with *subslotLengthForPUCCH* symbols for PUCCH transmissions with the larger priority index

- the UE does not expect a PUCCH transmission that includes UCI of different priority indexes to overlap with a PUCCH transmission with repetitions after resolving the overlapping for PUCCH transmissions without repetitions within a slot

- the UE does not expect a PUCCH transmission with UCI of first and second priority indexes to overlap with a PUCCH transmission with HARQ-ACK information of the first priority index, or with a PUCCH transmission or with a PUSCH transmission of the second priority index when the second priority index is larger than the first priority index

- the UE does not expect a PUCCH transmission with HARQ-ACK information of larger priority index to overlap with more than one PUCCH transmissions with HARQ-ACK information of smaller priority index

- third, the UE resolves the overlapping for PUCCH and PUSCH transmissions of different priority indexes

- the UE drops PUSCH transmissions of smaller priority index that overlap with a PUCCH transmission with positive SR of larger priority index prior to multiplexing UCI in a PUSCH transmission of smaller priority index, if any

- the UE drops PUSCH transmissions of smaller priority index that overlap with a PUCCH transmission with repetitions of larger priority index prior to multiplexing UCI in a PUSCH transmission of smaller priority index, if any

- the UE multiplexes HARQ-ACK information in a PUSCH transmission, as is subsequently described in this clause for multiplexing HARQ-ACK information from a PUCCH transmission in a PUSCH transmission of a same priority index, if a PUCCH transmission with HARQ-ACK information of a first priority index overlaps with one or more PUSCH transmissions of a second priority index that is different than the first priority index

- if // this is for cases the UE supports multiplexing information of different priorities in a PUCCH/PUSCH transmission

- a PUCCH transmission with HARQ-ACK information, without repetitions, with smaller priority index overlaps with a PUCCH transmission only with HARQ-ACK information, without repetitions, with larger priority index, or

- a PUCCH transmission without repetitions that includes HARQ-ACK information of smaller priority index overlaps with a PUCCH transmission without repetitions using a PUCCH resource with PUCCH format 2/3/4 with HARQ-ACK information and SR of larger priority index, or

- a PUCCH transmission with HARQ-ACK information, without repetitions, with smaller or larger priority index overlaps, respectively, with a PUSCH transmission with larger or smaller priority index

the UE

- multiplexes HARQ-ACK information of different priority indexes and SR information of larger priority index, if any, in a same PUCCH transmission of larger priority index, or multiplexes HARQ-ACK information the UE would provide in a PUCCH transmission of smaller or larger priority index in a PUSCH transmission of larger or smaller priority index, respectively, and applies the procedures in clause 9.2.5.3 or 9.3, respectively, and

- drops CSI and/or SR carried in the PUCCH transmission of smaller priority index, if any

- drops negative SR carried in the PUCCH transmission of larger priority index, if any, if the UE would multiplex the HARQ-ACK information of larger priority index in a PUSCH transmission of smaller priority index

- drops HARQ-ACK information of smaller priority index if the UE would multiplex the HARQ-ACK information of smaller priority index in a PUSCH transmission where the UE multiplexes Part 1 CSI reports and Part 2 CSI reports of larger priority index

- drops Part 2 CSI reports of smaller priority index if the UE would multiplex the HARQ-ACK information of smaller and larger priority indexes in a PUSCH transmission where the UE multiplexes Part 1 CSI reports and Part 2 CSI reports of smaller priority index

- drops HARQ-ACK information of smaller priority index if the UE would multiplex the HARQ-ACK information of smaller priority index in a PUCCH transmission of larger priority index using a PUCCH resource provided by *n1PUCCH-AN*

- drops Part 2 CSI reports of smaller priority index if the UE would multiplex the HARQ-ACK information of larger priority index in a PUSCH transmission where the UE multiplexes CG-UCI, Part 1 CSI reports and Part 2 CSI reports of smaller priority index

- else

- if the UE would transmit the following channels that would overlap in time where, if a channel transmission is with repetitions, the following are applicable per repetition

- a first PUCCH transmission of larger priority index and a second PUCCH transmission of smaller priority index

- a first PUCCH transmission of larger priority index and a second PUSCH transmission of smaller priority index when the UE cannot simultaneously transmit the first PUCCH and second PUSCH

- a first PUCCH transmission of smaller priority index and a second PUSCH transmission of larger priority index when the UE cannot simultaneously transmit the first PUCCH and second PUSCH

the UE

- transmits the PUCCH or the PUSCH of the larger priority index, and

- does not transmit a PUCCH or a PUSCH of smaller priority index

When a UE determines overlapping for PUCCH and/or PUSCH transmissions of different priority indexes, other than PUCCH transmissions with SL HARQ-ACK reports, before considering limitations for transmissions including with repetitions, if any, as described in clauses 11.1, 11.1.1, 11.2A and 17.2, if the UE is not provided *uci-MuxWithDiffPrio*, the UE first resolves overlapping for PUCCH and/or PUSCH transmissions of smaller priority index as described in clauses 9.2.5 and 9.2.6. Then,

- if a transmission of a first PUCCH of larger priority index scheduled by a DCI format in a PDCCH reception would overlap in time with a repetition of a transmission of a second PUSCH or a second PUCCH of smaller priority index, the UE cancels the repetition of a transmission of the second PUSCH or the second PUCCH before the first symbol that would overlap with the first PUCCH transmission

- if a transmission of a first PUSCH of larger priority index scheduled by a DCI format in a PDCCH reception would overlap in time with a repetition of the transmission of a second PUCCH of smaller priority index, the UE cancels the repetition of the transmission of the second PUCCH before the first symbol that would overlap with the first PUSCH transmission

where

- the overlapping is applicable before or after resolving overlapping among channels of larger priority index, if any, as described in clauses 9.2.5 and 9.2.6

- any remaining PUCCH and/or PUSCH transmission after overlapping resolution is subjected to the limitations for UE transmission as described in clauses 11.1, 11.1.1, 11.2A and 17.2

- the UE expects that the transmission of the first PUCCH or the first PUSCH, respectively, would not start before after a last symbol of the corresponding PDCCH reception

- is the PUSCH preparation time for a corresponding UE processing capability assuming [6, TS 38.214], based on and as subsequently defined in this clause, and is determined by a reported UE capability

If a UE is scheduled by a DCI format in a first PDCCH reception to transmit a first PUCCH or a first PUSCH of larger priority index that overlaps with a second PUCCH or a second PUSCH transmission of smaller priority index that, if any, is scheduled by a DCI format in a second PDCCH

- is based on a value of corresponding to the smallest SCS configuration of the first PDCCH, the second PDCCHs, the first PUCCH or the first PUSCH, and the second PUCCHs or the second PUSCHs

- if the overlapping group includes the first PUCCH

- if *processingType2Enabled* of *PDSCH-ServingCellConfig* is set to *enable* for the serving cell where the UE receives the first PDCCH and for all serving cells where the UE receives the PDSCHs corresponding to the second PUCCHs, and if *processingType2Enabled* of *PUSCH-ServingCellConfig* is set to *enable* for the serving cells with the second PUSCHs, is 5 for , 5.5 for  and 11 for

- else, is 10 for *,* 12 for , 23 for , 36 for , 144 for , and 288 for ;

- if the overlapping group includes the first PUSCH

- if *processingType2Enabled* of *PUSCH-ServingCellConfig* is set to *enable* for the serving cells with the first PUSCH and the second PUSCHs and if *processingType2Enabled* of *PDSCH-ServingCellConfig* is set to *enable* for all serving cells where the UE receives the PDSCHs corresponding to the second PUCCHs, is 5 for , 5.5 for  and 11 for

- else, is 10 for *,* 12 for , 23 for , 36 for , 144 for , and 288 for ;

If a PUSCH of larger priority index scheduled by a DCI format overlaps in time with a PUSCH of smaller priority index with SP-CSI report(s) without a corresponding PDCCH in one or more symbols on the same carrier, and if the earliest symbol of these PUSCH channels starts no earlier than N2+d2,1 symbols after the last symbol of the DCI scheduling the PUSCH of larger priority index where d2,1 is the maximum of the d2,1 associated with PUSCH of larger priority index scheduled by a DCI format and the PUSCH of smaller priority index with SP-CSI report(s) without a corresponding PDCCH, the PUSCH of smaller priority index with SP-CSI report(s) shall not be transmitted by the UE. Otherwise, if the timeline requirement is not satisfied this is an error case.

If a UE would transmit the following channels, including repetitions if any, that would overlap in time

- a first PUCCH of larger priority index with SR and a second PUCCH or PUSCH of smaller priority index, or

- a configured grant PUSCH of larger priority index and a PUCCH of smaller priority index, or

- a first PUCCH of larger priority index with HARQ-ACK information only in response to PDSCH(s) reception without corresponding PDCCH(s) and a second PUCCH of smaller priority index with HARQ-ACK information only in response to PDSCH(s) reception without corresponding PDCCH(s), or a second PUCCH of smaller priority index with SR and/or CSI, or a configured grant PUSCH with smaller priority index, or a PUSCH of smaller priority index with SP-CSI report(s) without a corresponding PDCCH, or

- a PUSCH of larger priority index with SP-CSI report(s) without a corresponding PDCCH and a PUCCH of smaller priority index with SR, or CSI, or HARQ-ACK information only in response to PDSCH(s) reception without corresponding PDCCH(s), or

- a configured grant PUSCH of larger priority index and a configured grant PUSCH of smaller priority index or a PUSCH of smaller priority index with SP-CSI report(s) without a corresponding PDCCH on a same serving cell

- a PUSCH of larger priority index with SP-CSI report(s) without a corresponding PDCCH and a configured grant PUSCH of smaller priority index or a PUSCH of smaller priority index with SP-CSI report(s) without a corresponding PDCCH on a same serving cell

- a PUSCH of smaller priority index scheduled by a DCI format and a configured grant PUSCH of larger priority index on a same serving cell if the UE is provided *prioLowDG-HighCG*

- a PUSCH of larger priority index scheduled by a DCI format and a configured grant PUSCH of smaller priority index on a same serving cell if the UE is provided *prioHighDG-LowCG*

the UE is expected to cancel a repetition of the PUCCH/PUSCH transmissions of smaller priority index before the first symbol overlapping with the PUCCH/PUSCH transmission of larger priority index if the repetition of the PUCCH/PUSCH transmissions of smaller priority index overlaps in time with the PUCCH/PUSCH transmissions of larger priority index. In case of a PUSCH of larger priority index scheduled by a DCI format in a PDCCH reception and a configured grant PUSCH of smaller priority index on a same serving cell and the UE is provided *prioHighDG-LowCG*

- the UE expects that the transmission of the PUSCH of larger priority index would not start before after a last symbol of the corresponding PDCCH reception

- is the PUSCH preparation time for a corresponding UE processing capability assuming [6, TS 38.214], based on and as subsequently defined in this clause, and and are determined by a reported UE capability

When a UE determines overlapping for PUCCH transmissions with SL HARQ-ACK reports and PUSCH of smaller priority index, including repetitions if any, after resolving the overlapping PUCCH other than PUCCH transmissions with SL HARQ-ACK reports and/or PUSCH transmissions, if the PUSCH includes no UCI, the UE resolves the overlapping for PUCCH transmissions with SL HARQ-ACK reports and PUSCH of smaller priority index as described in clauses 9.2.5 and 9.2.6.

When a UE determines overlapping for PUCCH transmissions with SL HARQ-ACK reports and PUSCH of larger priority index only, including repetitions if any, after resolving the overlapping PUCCH other than PUCCH transmissions with SL HARQ-ACK reports and/or PUSCH transmissions, the UE does not transmit the PUCCH with SL HARQ-ACK reports

where

- the UE expects that the transmission of the PUSCH would not start before after a last symbol of the corresponding PDCCH reception;

- is the PUSCH preparation time for a corresponding UE processing capability assuming [6, TS 38.214], based on and as subsequently defined in this clause, and is determined by a reported UE capability.

The UE expects the PUCCH and PUSCH transmissions to fulfill the conditions in clause 9 and clause 9.2.5 for UCI multiplexing replacing the reference time of "end of PDSCH" with "end of the last symbol of a last PSFCH reception occasion" as described in 16.5 and *Tproc,*1 with *Tprep*.

A UE does not expect that a PUCCH carrying SL HARQ-ACK reports overlaps with PUSCH with aperiodic or semi-persistent CSI reports.

A UE does not expect to be scheduled to transmit a PUCCH or a PUSCH with smaller priority index that would overlap in time with a PUCCH of larger priority index with HARQ-ACK information only in response to a PDSCH reception without a corresponding PDCCH unless the UE is provided *uci-MuxWithDiffPrio*. A UE does not expect to be scheduled to transmit a PUCCH of smaller priority index that would overlap in time with a PUSCH of larger priority index with SP-CSI report(s) without a corresponding PDCCH unless the UE is provided *uci-MuxWithDiffPrio*.

In the remaining of this clause, a UE multiplexes UCIs with same priority index in a PUCCH or a PUSCH before considering limitations for UE transmission as described in clauses 11.1, 11.1.1, 11.2A, and 17.2. A PUCCH or a PUSCH is assumed to have a same priority index as a priority index of UCIs a UE multiplexes in the PUCCH or the PUSCH.

**<Unchanged parts are omitted>**

9.2.3 UE procedure for reporting HARQ-ACK

**<Unchanged parts are omitted>**

A PUCCH transmission with HARQ-ACK information is subject to the limitations for UE transmissions described in clause 11.1, clause 11.1.1 and clause 17.2.

**<Unchanged parts are omitted>**

### 9.2.4 UE procedure for reporting SR

**<Unchanged parts are omitted>**

SR transmission occasions in a PUCCH are subject to the limitations for UE transmissions described in clause 11.1, clause 11.1.1 and clause 17.2.

**<Unchanged parts are omitted>**

# 10 UE procedure for receiving control information

**<Unchanged parts are omitted>**

The PDCCH reception includes the two PDCCH candidates also when the UE is not required to monitor one of the two PDCCH candidates as described in clauses 10 (except clause 10.4), 11.1, 11.1.1 and 17.2.

**<Unchanged parts are omitted>**

# 11 UE-group common signalling

**<Unchanged parts are omitted>**

In the remaining of this clause, unless stated otherwise, when a PDCCH reception by a UE includes two PDCCH candidates from corresponding search space sets, as described in clause 10.1

- a PDCCH monitoring occasion is the union of the PDCCH monitoring occasions for the two PDCCH candidates

- the start of the PDCCH reception is the start of the earlier PDCCH candidate

- the end of the PDCCH reception in the end of the PDCCH candidate that ends later

The PDCCH reception includes the two PDCCH candidates also when the UE is not required to monitor one of the two PDCCH candidates as described in clauses 10 (except clause 10.4), 11.1, 11.1.1 and 17.2.

**<Unchanged parts are omitted>**

17 UE with reduced capabilities

**<Unchanged parts are omitted>**

17.2 Half-Duplex UE in paired spectrum

A half-duplex UE (HD-UE) in paired spectrum is not capable of simultaneous transmissions and receptions on a serving cell with paired spectrum. This clause is applicable for communication of a HD-UE on a serving cell with paired spectrum. Procedures for a HD-UE are same as described for a UE in all other clauses of this document unless stated otherwise.

**<Unchanged parts are omitted>**