**3GPP TSG-RAN WG1 Meeting #107-e *R1-211xxxx***

**e-Meeting, November 11th – 19th, 2021**

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| *CR-Form-v12.0* |
| **DRAFT CHANGE REQUEST** |
|  |
|  | **38.213** | **CR** | **xxxx** | **rev** | **-** | **Current version:** | **16.7.0** |  |
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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>*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | Editorial corrections for TS 38.213 |
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| ***Source to WG:*** | Samsung |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | 5G\_V2X\_NRSL-Core, NR\_eMIMO-Core, NR\_L1enh\_URLLC-Core, NR\_2step\_RACH-Core, NR\_unlic-Core  |  | ***Date:*** | 2021-11-19 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-16 |
|  | *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 canbe 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | 1. Correct an ‘are’ to ‘is’ in a sentence in clause 6.
2. Parameter name *dl-DataToUL-ACK-ForDCIFormat1\_2* in clause 9.1.2.1 is incorrect (should be *dl-DataToUL-ACK-DCI-1-2*).
3. For NR-DC and Rel-16 PDCCH monitoring, ‘*pdcch-BlindDetection’* should be ‘*pdcch-BlindDetection2’* in clause 10.
4. For operation in shared spectrum, the bit for *subCarrierSpacingCommon* in MIB indicates N\_SSB^QCL in clause 4.1 but a corresponding change is not captured in clause 10.1.
5. Misaligned parameter name in 38.213 (*availableRB-SetsToRelease*) and 38.331 (*availableRB-SetsToReleaseList*) in clauses 11.1 and 11.1.1.
6. Misplaced word ‘grant’ in a sentence in clause 11.1.1.
7. Parameter name ‘*sl-filterCoefficient*’ in clause 16.2.1 is incorrect (should be ‘*sl-FilterCoefficient*’).
8. Clarify that the priority value of SL reception is used when comparing the priority of SL reception to *sl-PriorityThreshold-UL-URLLC* in clause 16.2.4.3.1.
9. Parameter names ‘*startSLsymbols*’ and‘*lengthSLsymbols*’ in clause 16.3 are incorrect (should be ‘*sl-StartSymbol*’ and ‘*sl-LengthSymbols’*).
10. Incorrect reference to TS38.133 in clause 16.3.1 (should be TS 38.101-4).
11. Parameter name ‘*sl-PSFCH-ToPUCCH*’ in clause 16.5.1 is incorrect (should be ‘*sl-PSFCH-ToPUCCH-CG-Type1*’).
12. As Type1 SL HARQ-ACK codebook with HARQ-ACK bits corresponding to PSSCH transmission occasions in more than one resource pool configured with PSFCH is not supported, the of occasions contain PSSCH candidate occasions in a same resource pool. However, in clause 16.5.1.1, the of occasions are derived based on a set of pool bitmaps.
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| ***Summary of change:*** | 1. Change an ‘are’ to ‘is’ in a sentence in clause 6.
2. Change *dl-DataToUL-ACK-ForDCIFormat1\_2* to *dl-DataToUL-ACK-DCI-1-2*) in clause 9.1.2.1.
3. Change ‘*pdcch-BlindDetection’* to ‘*pdcch-BlindDetection2’* in clause 10.
4. Clarify the use of *subCarrierSpacingCommon* in *MIB* for shared/non-shared spectrum operation in clause 10.1
5. Change ‘*availableRB-SetsToRelease*’ to ‘*availableRB-SetsToReleaseList*’ in clauses 11.1 and 11.1.1.
6. Rearrange location of ‘grant’ in the applicable sentence in clause 11.1.1.
7. Change ‘*sl-filterCoefficient*’ to ‘*sl-FilterCoefficient*’ in 16.2.1.
8. Add ‘or reception’ to clarify that priority value of SL reception is used when comparing the priority of SL reception to *sl-PriorityThreshold-UL-URLLC* in clause 16.2.4.3.1.
9. Change ‘*startSLsymbols*’ and‘*lengthSLsymbols*’ to‘*sl-StartSymbol*’ and ‘*sl-LengthSymbols*’ in clause 16.3.
10. Change reference in clause 16.3.1 from TS 38.133 to TS 38.101-4.
11. Change ‘*sl-PSFCH-ToPUCCH* to ‘*sl-PSFCH-ToPUCCH-CG-Type1*’ in clause 16.5.1.
12. Clarify that the of occasions of a Type1 HARQ-ACK codebook for sidelink are determined based on a single pool bitmap.
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| ***Consequences if not approved:*** | Inconsistent specifications |
|  |  |
| ***Clauses affected:*** | 2, 6, 9.1.2,1, 10, 10.1, 11.1, 11.1.1, 16.2.1, 16.2.4.3.1, 16.3, 16.3.1, 16.5.1, 16.5.1.1 |
|  |  |
|  | **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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications"

[2] 3GPP TS 38.201: "NR; Physical Layer – General Description"

[3] 3GPP TS 38.202: "NR; Services provided by the physical layer"

[4] 3GPP TS 38.211: "NR; Physical channels and modulation"

[5] 3GPP TS 38.212: "NR; Multiplexing and channel coding"

[6] 3GPP TS 38.214: "NR; Physical layer procedures for data"

[7] 3GPP TS 38.215: "NR; Physical layer measurements"

[8-1] 3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone"

[8-2] 3GPP TS 38.101-2: "NR; User Equipment (UE) radio transmission and reception; Part 2: Range 2 Standalone"

[8-3] 3GPP TS 38.101-3: "NR; User Equipment (UE) radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios"

[8-4] 3GPP TS 38.101-4: "NR; User Equipment (UE) radio transmission and reception; Part 4: Performance requirements"

[9] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception"

[10] 3GPP TS 38.133: "NR; Requirements for support of radio resource management"

[11] 3GPP TS 38.321: "NR; Medium Access Control (MAC) protocol specification"

[12] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification"

[13] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures"

[14] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification"

[15] 3GPP TS 37.213: "Physical layer procedures for shared spectrum channel access"

[16] 3GPP TS 38.473: "F1 application protocol (F1AP)"

\*\*\* Unchanged text is omitted \*\*\*

# 6 Link recovery procedures

\*\*\* Unchanged text is omitted \*\*\*

For the PCell or the PSCell, upon request from higher layers, the UE provides to higher layers the periodic CSI-RS configuration indexes and/or SS/PBCH block indexes from the set  and the corresponding L1-RSRP measurements that are larger than or equal to the Qin,LR threshold.

For the SCell, upon request from higher layers, the UE indicates to higher layers whether there is at least one periodic CSI-RS configuration index or SS/PBCH block index from the set  with corresponding L1-RSRP measurements that is larger than or equal to the Qin,LR threshold, and provides the periodic CSI-RS configuration indexes and/or SS/PBCH block indexes from the set  and the corresponding L1-RSRP measurements that are larger than or equal to the Qin,LR threshold, if any.

For the PCell or the PSCell, a UE can be provided a CORESET through a link to a search space set provided by *recoverySearchSpaceId,* as described in clause 10.1, for monitoring PDCCH in the CORESET. If the UE is provided *recoverySearchSpaceId*, the UE does not expect to be provided another search space set for monitoring PDCCH in the CORESET associated with the search space set provided by *recoverySearchSpaceId*.

\*\*\* Unchanged text is omitted \*\*\*

#### 9.1.2.1 Type-1 HARQ-ACK codebook in physical uplink control channel

For a serving cell , an active DL BWP, and an active UL BWP, as described in clause 12, the UE determines a set of occasions for candidate PDSCH receptions for which the UE can transmit corresponding HARQ-ACK information in a PUCCH in slot . If serving cell is deactivated, the UE uses as the active DL BWP for determining the set of occasions for candidate PDSCH receptions a DL BWP provided by *firstActiveDownlinkBWP-Id*. The determination is based:

a) on a set of slot timing values associated with the active UL BWP

a) If the UE is configured to monitor PDCCH for DCI format 1\_0 and is not configured to monitor PDCCH for either DCI format 1\_1 or DCI format 1\_2 on serving cell , is provided by the slot timing values {1, 2, 3, 4, 5, 6, 7, 8}

b) If the UE is configured to monitor PDCCH for DCI format 1\_1 and is not configured to monitor PDCCH for DCI format 1\_2 for serving cell , is provided by *dl-DataToUL-ACK*

c) If the UE is configured to monitor PDCCH for DCI format 1\_2 and is not configured to monitor PDCCH for DCI format 1\_1 for serving cell ,  is provided by *dl-DataToUL-ACK-DCI-1-2*

d) If the UE is configured to monitor PDCCH for DCI format 1\_1 and DCI format 1\_2 for serving cell ,  is provided by the union of *dl-DataToUL-ACK* and *dl-DataToUL-ACK-DCI-1-2*

\*\*\* Unchanged text is omitted \*\*\*

If a UE is provided *dl-DataToUL-ACK* or *dl-DataToUL-ACK-DCI-1-2*, the UE does not expect to be indicated by DCI format 1\_0 a slot timing value for transmission of HARQ-ACK information that does not belong to the intersection of the set of slot timing values {1, 2, 3, 4, 5, 6, 7, 8} and the set of slot timing values provided by for the active DL BWP of a corresponding serving cell.

\*\*\* Unchanged text is omitted \*\*\*

## 10 UE procedure for receiving control information

\*\*\* Unchanged text is omitted \*\*\*

When the UE is configured for carrier aggregation operation over more than 2 cells, or for a cell group when the UE is configured for NR-DC operation, the UE does not expect to monitor per span a number of PDCCH candidates or a number of non-overlapped CCEs that is larger than the maximum number as derived from the corresponding value of .

When a UE is configured for NR-DC operation with a total of downlink cells on both the MCG and the SCG and the UE is provided *monitoringCapabilityConfig* = *r16monitoringcapability* for all downlink cells where the UE monitors PDCCH, the UE expects to be provided *pdcch-BlindDetection2* for the MCG and *pdcch-BlindDetection2* for the SCG with values that satisfy

- *pdcch-BlindDetection2* for the MCG + *pdcch-BlindDetection2* for the SCG <= *pdcch-MonitoringCA*, if the UE reports *pdcch-MonitoringCA*, or

- *pdcch-BlindDetection2* for the MCG + *pdcch-BlindDetection2* for the SCG <= , if the UE does not report *pdcch-MonitoringCA*

When a UE is configured for NR-DC operation and the UE is provided *monitoringCapabilityConfig* = *r16monitoringcapability* for all downlink cells where the UE monitors PDCCH, the UE may indicate, through *pdcch-BlindDetectionMCG-UE-r16* and *pdcch-BlindDetectionSCG-UE-r16*, respective maximum values for *pdcch-BlindDetection* for the MCG and *pdcch-BlindDetection* for the SCG.

\*\*\* Unchanged text is omitted \*\*\*

## 10.1 UE procedure for determining physical downlink control channel assignment

\*\*\* Unchanged text is omitted \*\*\*

If a UE monitors PDCCH candidates for DCI formats with CRC scrambled by a C-RNTI and the UE is provided a non-zero value for *searchSpaceID* in *PDCCH-ConfigCommon* for a Type0/0A/2-PDCCH CSS set, the UE determines monitoring occasions for PDCCH candidates of the Type0/0A/2-PDCCH CSS set based on the search space set associated with the value of *searchSpaceID*.

The UE may assume that the DM-RS antenna port associated with PDCCH receptions in the CORESET configured by *pdcch-ConfigSIB1* in *MIB*, the DM-RS antenna port associated with corresponding PDSCH receptions, and the corresponding SS/PBCH block are quasi co-located with respect to average gain, quasi co-location 'typeA' and 'typeD' properties, when applicable [6, TS 38.214], if the UE is not provided a TCI state indicating quasi co-location information of the DM-RS antenna port for PDCCH reception in the CORESET. The value for the DM-RS scrambling sequence initialization is the cell ID. A SCS is provided by *subCarrierSpacingCommon* in *MIB* for operation without shared spectrum channel access, and same as the corresponding SS/PBCH block for operation with shared spectrum channel access.

For single cell operation or for operation with carrier aggregation in a same frequency band, a UE does not expect to monitor a PDCCH in a Type0/0A/2/3-PDCCH CSS set or in a USS set if a DM-RS for monitoring a PDCCH in a Type1-PDCCH CSS set is not configured with same *qcl-Type* set to 'typeD' properties [6, TS 38.214] with a DM-RS for monitoring the PDCCH in the Type0/0A/2/3-PDCCH CSS set or in the USS set, and if the PDCCH or an associated PDSCH overlaps in at least one symbol with a PDCCH the UE monitors in a Type1-PDCCH CSS set or with an associated PDSCH.

\*\*\* Unchanged text is omitted \*\*\*

## 11.1 Slot configuration

\*\*\* Unchanged text is omitted \*\*\*

If a UE is provided *channelAccessMode ='dynamic'* and is provided *availableRB-SetsToAddModList* and *availableRB-SetsToReleaseList*, the UE expects to be provided *co-DurationsPerCellToAddModList* and *co-DurationsPerCellToReleaseList* and/or *slotFormatCombToAddModList* and *slotFormatCombToReleaseList*.

 \*\*\* Unchanged text is omitted \*\*\*

### 11.1.1 UE procedure for determining slot format

This clause applies for a serving cell that is included in a set of serving cells configured to a UE by *slotFormatCombToAddModList* and *slotFormatCombToReleaseList*, *availableRB-SetsToAddModList* and *availableRB-SetsToReleaseList*, *switchTriggerToAddModList* and *switchTriggerToReleaseList*, or *co-DurationsPerCellToAddModList* and *co-DurationsPerCellToReleaseList*.

\*\*\* Unchanged text is omitted \*\*\*

For a set of symbols of a slot indicated to a UE as flexible by *tdd-UL-DL-ConfigurationCommon* and *tdd-UL-DL-ConfigurationDedicated* if provided, or when *tdd-UL-DL-ConfigurationCommon* and *tdd-UL-DL-ConfigurationDedicated* are not provided to the UE, and if the UE detects a DCI format 2\_0 providing a format for the slot using a slot format value other than 255

- if one or more symbols from the set of symbols are symbols in a CORESET configured to the UE for PDCCH monitoring, the UE receives PDCCH in the CORESET only if an SFI-index field value in DCI format 2\_0 indicates that the one or more symbols are downlink symbols

- if an SFI-index field value in DCI format 2\_0 indicates the set of symbols of the slot as flexible and the UE detects a DCI format indicating to the UE to receive PDSCH or CSI-RS in the set of symbols of the slot, the UE receives PDSCH or CSI-RS in the set of symbols of the slot

- if an SFI-index field value in DCI format 2\_0 indicates the set of symbols of the slot as flexible and the UE detects a DCI format, a RAR UL grant, fallbackRAR UL grant, or successRAR indicating to the UE to transmit PUSCH, PUCCH, PRACH, or SRS in the set of symbols of the slot the UE transmits the PUSCH, PUCCH, PRACH, or SRS in the set of symbols of the slot

- if an SFI-index field value in DCI format 2\_0 indicates the set of symbols of the slot as flexible, and the UE does not detect a DCI format indicating to the UE to receive PDSCH or CSI-RS, or the UE does not detect a DCI format, a RAR UL grant, fallbackRAR UL grant, or successRAR indicating to the UE to transmit PUSCH, PUCCH, PRACH, or SRS in the set of symbols of the slot, the UE does not transmit or receive in the set of symbols of the slot

- if the UE is configured by higher layers to receive PDSCH or CSI-RS in the set of symbols of the slot, the UE receives the PDSCH or the CSI-RS in the set of symbols of the slot only if an SFI-index field value in DCI format 2\_0 indicates the set of symbols of the slot as downlink and, if applicable, the set of symbols is within remaining channel occupancy duration

\*\*\* Unchanged text is omitted \*\*\*

16.2.1 PSSCH

A UE determines a power for a PSSCH transmission on a resource pool in symbols where a corresponding PSCCH is not transmitted in PSCCH-PSSCH transmission occasion on active SL BWP of carrier as:

 [dBm]

where

\*\*\* Unchanged text is omitted \*\*\*

where

- is a value of *sl-P0-PSSCH-PSCCH*, if provided

- is a value of *sl-Alpha-PSSCH-PSCCH*, if provided; else,

- , where

- is obtained from a PSSCH transmit power per RE summed over the antenna ports of the UE, higher layer filtered across PSSCH transmission occasions using a filter configuration provided by *sl-FilterCoefficient*, and

- is a RSRP, as defined in [7, TS 38.215], that is reported to the UE from a UE receiving the PSCCH-PSSCH transmission and is obtained from a PSSCH DM-RS using a filter configuration provided by *sl-FilterCoefficient*

\*\*\* Unchanged text is omitted \*\*\*

16.2.4.3.1 Prioritizations for sidelink and uplink transmissions/receptions

\*\*\* Unchanged text is omitted \*\*\*

For prioritization between SL transmission or PSFCH/S-SS/PSBCH block reception and UL transmission other than a PRACH, or a PUSCH scheduled by an UL grant in a RAR and its retransmission, or a PUSCH corresponding to Type-2 random access procedure and its retransmission, or a PUCCH with sidelink HARQ-ACK information report

- if the UL transmission is for a PUSCH or for a PUCCH with priority index 1,

- if *sl-PriorityThreshold-UL-URLLC* is provided

- the SL transmission or reception has higher priority than the UL transmission if the priority value of the SL transmission or reception is smaller than *sl-PriorityThreshold-UL-URLLC*;otherwise, the UL transmission has higher priority than the SL transmission or reception

- else

- the UL transmission has higher priority than the SL transmission or reception

- else

- the SL transmission or reception has higher priority than the UL transmission if the priority value of the SL transmission(s) or reception is smaller than *sl-PriorityThreshold*;otherwise, the UL transmission has higher priority than the SL transmission or reception

\*\*\* Unchanged text is omitted \*\*\*

16.3 UE procedure for reporting HARQ-ACK on sidelink

\*\*\* Unchanged text is omitted \*\*\*

A UE is provided by *sl-PSFCH-RB-Set* a set of PRBs in a resource pool for PSFCH transmission in a PRB of the resource pool. For a number of sub-channels for the resource pool, provided by *sl-NumSubchannel*, and a number of PSSCH slots associated with a PSFCH slot that is less than or equal to , the UE allocates the PRBs from the PRBs to slot among the PSSCH slots associated with the PSFCH slot and sub-channel , where , , , and the allocation starts in an ascending order of and continues in an ascending order of . The UE expects that isa multiple of *.*

The second OFDM symbol of PSFCH transmission in a slot is defined as .

\*\*\* Unchanged text is omitted \*\*\*

### 16.3.1 UE procedure for receiving HARQ-ACK on sidelink

A UE that transmitted a PSSCH scheduled by a SCI format 2-A or a SCI format 2-B that indicates HARQ feedback enabled, attempts to receive associated PSFCHs according to PSFCH resources determined as described in clause 16.3. The UE determines an ACK or a NACK value for HARQ-ACK information provided in each PSFCH resource as described in [8-4, TS 38.101-4]. The UE does not determine both an ACK value and a NACK value at a same time for a PSFCH resource.

\*\*\* Unchanged text is omitted \*\*\*

### 16.5.1 Type-1 HARQ-ACK codebook determination

This clause applies if the UE is configured with *pdsch-HARQ-ACK-Codebook = semi-static*.

If a UE is configured a SL configured grant Type 1, and the UE is configured a SL configured grant Type 2 or to monitor PDCCH for detection of DCI format 3\_0 with CRC scrambled by SL-RNTI or SL-CS-RNTI, and the UE is provided a set of slot timing values associated with a SL BWP by *sl-PSFCH-ToPUCCH* and *sl-PSFCH-ToPUCCH-CG-Type1*, the *sl-PSFCH-ToPUCCH-CG-Type1* is one of *sl-PSFCH-ToPUCCH*.

A UE reports HARQ-ACK information for PSSCH transmissions with corresponding PSFCH reception occasions in slot only in a HARQ-ACK codebook that the UE includes in a PUCCH or PUSCH transmission in slot , where is a number of slots indicated by the PSFCH-to-HARQ\_feedback timing indicator field in a DCI format 3\_0 scheduling the PSSCH transmissions, or by a value of PSFCH-to-HARQ feedback timing indicator field in a DCI format 3\_0 activating a SL configured grant Type-2 transmission or by a value of *sl-PSFCH-ToPUCCH-CG-Type1* for a SL configured grant Type-1. If the UE reports HARQ-ACK information for the PSSCH transmissions with corresponding PSFCH reception occasions in a slot other than slot , the UE sets a value for each corresponding HARQ-ACK information bit to NACK.

\*\*\* Unchanged text is omitted \*\*\*

16.5.1.1 Type-1 HARQ-ACK codebook in physical uplink control channel

For a SL BWP on a carrier, and an active UL BWP on the primary cell, as described in clause 12, a UE determines a set of occasions for candidate PSSCH transmissions with corresponding PSFCH reception occasions for which the UE can multiplex corresponding HARQ-ACK information in a PUCCH transmission in slot . The determination is based on:

a) a set of slot timing values associated with the SL BWP where is provided by *sl-PSFCH-ToPUCCH* for DCI format 3\_0 or by *sl-PSFCH-ToPUCCH-CG-Type1*

b) the ratio between the sidelink SCS configuration and the uplink SCS configuration provided by *subcarrierSpacing* in *BWP-Sidelink* and *BWP-Uplink* for the SL BWP and the active UL BWP, respectively

c) a configured sidelink resource pool bitmap

d) a value of a period of PSFCH transmission occasion resources for a sidelink resource pool provided by a respective *sl-PSFCH-Period*

\*\*\* Unchanged text is omitted \*\*\*