CSI-RS resources counting capability (TEI identifier: TBD)

Proponent: Tim (MediaTek) tim.frost@mediatek.com

Agreement

* For simultaneous CSI-RS reception in UE features 2-33, 2-36, 2-40, 2-41, 2-43, 16-3a and 16-3b, define 1 new UE capability:
  + UE capability 1: To allow the UE to indicate that CSI-RS ports within one periodic/semi-persistent CSI-RS resource, as well as the periodic/semi-persistent CSI-RS resource, are counted as one resource, even if the periodic/semi-persistent CSI-RS resource is referred by N Report Settings.

Muting of always-on signals in 5G broadcast (TEI identifier: TBD)

Proponent: Assunta (EBU) [assunta.devita@rai.it](mailto:assunta.devita@rai.it)

Agreement

* The non-MBSFN subframes containing the cell acquisition signals (PSS/SSS/PBCH/SIB1) in an MBMS-dedicated cell shall only be transmitted within the first (k×40) ms out of every (n×160) ms.
  + Introduce a new parameter n, to be configured for support MBMS, from the set {2,4,8,16}.
  + Introduce a new parameter k, to be configured for support MBMS, from the set {4,5,6,7,…,63}
  + In the absence of the above parameters {n,k}, all non-MBSFN subframes containing cell acquisition signals in an MBMS-dedicated cell shall be transmitted

NOTE: For a MBMS-dedicated cell, there is no RAN4 impact from the above TEI proposal.

32 HARQ process numbers (TEI identifier: [TN32HARQ]) [TN32HARQ])

Proponent: Xianghui (ZTE) han.xianghui@zte.com.cn

Agreement

* Support a maximum of 32 HARQ process numbers for TN in FR1 and FR2-1 in Rel-19.
  + Introduce new UE capabilities, by duplicating the Rel-17 UE FGs 24-8/24-9 defined for FR2-2 to FR1 and FR2-1.
    - The reporting granularity of the UE capabilities is changed to ‘per FSPC’.
  + Introduce new RRC parameters, harq-ProcessNumberSizeDCI-0-1-Ext-r19, harq-ProcessNumberSizeDCI-1-1-Ext-r19, harq-ProcessNumberSizeDCI-0-2-Ext-r19, harq-ProcessNumberSizeDCI-1-2-Ext-r19, harq-ProcessNumberSizeDCI-0-3-Ext-r19, harq-ProcessNumberSizeDCI-1-3-Ext-r19.
  + For FR1, the above downlink related parameters can only be configured when the maximum number of layers configured for PDSCH is up to 4.
  + For FR1, the above uplink related parameters can only be configured when the maximum number of layers configured for PUSCH is up to 4.

Agreement

* For up to 32 HARQ process numbers for TN in FR1 and FR2-1,
  + The value ranges of the new RRC parameters are defined as follows
    - harq-ProcessNumberSizeDCI-0-1-Ext-r19 with value range of ‘INTEGER (5)’,
    - harq-ProcessNumberSizeDCI-1-1-Ext-r19 with value range of ‘INTEGER (5)’,
    - harq-ProcessNumberSizeDCI-0-2-Ext-r19 with value range of ‘INTEGER (0..5)’,
    - harq-ProcessNumberSizeDCI-1-2-Ext-r19 with value range of ‘INTEGER (0..5)’,
    - harq-ProcessNumberSizeDCI-0-3-Ext-r19 with value range of ‘INTEGER (0..5)’,
    - harq-ProcessNumberSizeDCI-1-3-Ext-r19 with value range of ‘INTEGER (0..5)’.

Agreement

Adopt the following TPs to TS 38.212.

|  |
| --- |
| 7.3.1.1.2 Format 0\_1  <Unchanged parts are omitted>  - HARQ process number - 5 bits if higher layer parameter *harq-ProcessNumberSizeDCI-0-1* or *harq-ProcessNumberSizeDCI-0-1-Ext-r19* is configured; otherwise 4 bits  <Unchanged parts are omitted>  7.3.1.1.3 Format 0\_2  <Unchanged parts are omitted>  - HARQ process number - number of bits determined by the following:  - 5 bits determined by higher layer parameter *harq-ProcessNumberSizeDCI-0-2-v1700* if configured;  - 0, 1, 2, 3, 4 or 5 bits determined by higher layer parameter *harq-ProcessNumberSizeDCI-0-2-Ext-r19* if configured;  - otherwise 0, 1, 2, 3 or 4 bits determined by higher layer parameter *harq-ProcessNumberSizeDCI-0-2*  <Unchanged parts are omitted>  7.3.1.1.4 Format 0\_3  <Unchanged parts are omitted>  - HARQ process number - number of bits determined by the following:  - block number 1, block number 2,…, block number  Each block corresponds to the HARQ process number for a cell, and the blocks are placed according to an ascending order of a serving cell index, with block number 1 corresponding to the HARQ process number for the cell with the smallest serving cell index. Each block is 0, 1, 2, 3, 4 or 5 bits determined by higher layer parameter *harq-ProcessNumberSizeDCI-0-3* or *harq-ProcessNumberSizeDCI-0-3-Ext-r19* configured for the cell corresponding to the block.  <Unchanged parts are omitted>  7.3.1.2.2 Format 1\_1  <Unchanged parts are omitted>  - HARQ process number - 5 bits if higher layer parameter *harq-ProcessNumberSizeDCI-1-1* or *harq-ProcessNumberSizeDCI-1-1-Ext-r19* is configured; otherwise 4 bits  <Unchanged parts are omitted>  7.3.1.2.3 Format 1\_2  <Unchanged parts are omitted>  - HARQ process number - number of bits determined by the following:  - 0, 1, 2, 3, 4 or 5 bits determined by higher layer parameter *harq-ProcessNumberSizeDCI-1-2-v1700* or *harq-ProcessNumberSizeDCI-1-2-Ext-r19* if configured;  - otherwise 0, 1, 2, 3 or 4 bits determined by higher layer parameter *harq-ProcessNumberSizeDCI-1-2*  <Unchanged parts are omitted>  7.3.1.2.4 Format 1\_3  <Unchanged parts are omitted>  - HARQ process number - number of bits determined by the following:  - block number 1, block number 2,…, block number  Each block corresponds to the HARQ process number for a cell, and the blocks are placed according to an ascending order of a serving cell index, with block number 1 corresponding to the HARQ process number for the cell with the smallest serving cell index. Each block is 0, 1, 2, 3, 4 or 5 bits determined by higher layer parameter *harq-ProcessNumberSizeDCI-1-3* or *harq-ProcessNumberSizeDCI-1-3-Ext-r19* configured for the cell corresponding to the block.  <Unchanged parts are omitted> |

Two simultaneous SRS carrier switch (TEI identifier: [Simul\_SRSCS])

Proponent: Alberto (Qualcomm) [albertor@qti.qualcomm.com](mailto:albertor@qti.qualcomm.com)

Agreement

For the indication of whether a UE can simultaneously perform SRS carrier switches

* *srs-SwitchingAffectedBandsListNR-r17* is the baseline for indication.
  + *Details about UE capability will be discussed in UE feature session.*
  + *The structure of UE capability signalling is reused*
* Two SRS carrier switches are considered to be simultaneous if the SRS transmission (including RF retuning time) in both CCs overlap in time.
* A UE that indicates it is not capable of simultaneous SRS carrier switching among a set of switching pairs is not expected to be configured / scheduled with simultaneous SRS carrier switching in the set of switching pairs.
* Note: except for UE capability, the spec impact is only 38.214

UE frequency hopping enhancement for positioning (TEI identifier: [Pos\_SRSHop])

Proponent: Mengzhen (ZTE) li.mengzhen@zte.com.cn

Agreement

* Extend Rel-18’s UL frequency hopping UL SRS for positioning transmission to non-RedCap UEs in a single carrier
* UE capability for non-RedCap UEs for UL SRS frequency hopping for positioning transmission

Send LS to RAN2 to inform this agreement, whether new parameter is needed is up to RAN2 discussion.

Agreement

Send LS R1-2501573 to RAN2 with following information:

In RAN1#120 meeting TEI agenda, RAN1 has made the following agreement for enabling non-RedCap UE performing UL SRS frequency hopping for positioning:

|  |
| --- |
| Agreement   * Extend Rel-18’s UL frequency hopping UL SRS for positioning transmission to non-RedCap UEs in a single carrier * UE capability for non-RedCap UEs for UL SRS frequency hopping for positioning transmission   Send LS to RAN2 to inform this agreement, whether new parameter is needed is up to RAN2 discussion. |

As this agreement may relate to RAN2 specification, this liaison informs RAN2 about this agreement and whether new parameter for non-RedCap UE UL frequency hopping is needed is up to RAN2 discussion.

**To RAN2**

**ACTION:** RAN1 respectfully asks RAN2 to take the agreement into account in their Rel-19 specification, and feedback if there is any spec impact.

Agreement

* Adopt the following TP to Section 6.2.1.4.1, TS 38.214.

|  |
| --- |
| 6.2.1.4.1 SRS frequency hopping for positioning <Unchanged parts are omitted>  For operation in the same carrier, the reduced capability UE is not expected to be activated or triggered to transmit SRS on overlapping symbols with a SRS resource of the transmit frequency hopping configured by the higher layer parameter *SRS-PosTx-Hopping* including the switching time to or from the active bandwidth part and a SRS resource with *resourceType* of both SRS resources as 'semi-persistent' or 'aperiodic'.  A UE shall perform SRS frequency hopping for positioning according to clause 6.2.1.4.1, subject to UE capability, with the following modifications:   * “reduced capability UE” is replaced by “UE” * The reduced capability UE transmit frequency hopping is configured within one SRS resource for positioning in higher layer parameter *srs-PosConfig*, that may be configured with a bandwidth larger than the maximum bandwidth of the reduced capability UE” is replaced by “The UE transmit frequency hopping is configured within one SRS resource for positioning in higher layer parameter *srs-PosConfig*”. |

SR triggered SSSG switching (TEI identifier: [SRTrig\_SSSGSwitch])

Proponent: Wooseok (Qualcomm) wnam@qti.qualcomm.com

Agreement

* If a UE is instructed to monitor PDCCH according to search space sets with a group index other than adesignated index, the UE stops PDCCH monitoring according to search space sets with the group index and start PDCCH monitoring according to search space sets with the designated group index from the first slot that is at least P\_switch symbols after the last symbol of a PUCCH carrying an SR.
* Introduce corresponding UE capability and RRC parameters to enable/disable the above feature and indicate the designated SSSG index.
* Send LS to RAN2 to inform above agreement and ask for the support of the UE capability and the corresponding RRC parameters.

SRS-CS and UL TX switching (TEI identifier: [SRSCS\_ULTxSwitch])

Proponent: Ali (Apple) sfakoorian@apple.com

Agreement

* To resolve ambiguities with concurrent configuration of SRS-CS and ulTxswitch in a case where a UE configured with SRS CS on target CC and its “switch-from” CC on CC2 and configured with UL Tx switching operation for UL CC2 and at least one UL CC1
  + Confirm that the prioritization rules in 38.214 Sec. 6.2.1.3 are applied between target and CC1, regardless of SRS-AS antenna port configuration on target CC, if UE indicates based on srs-SwitchingAffectedBandsListNR-r17 that SRS-CS on target impacts CC1, where CC1 is one of the CC(s) which may share Tx chains with source CC. No spec change is needed.
    - Note: if UE does not indicate srs-SwitchingAffectedBandsListNR-r17, UE can only perform simultaneous transmission when the total number of involved Tx chains for simultaneous transmission on all the bands/carriers is not greater than number of Tx chains supported by the UE for simultaneous UL transmission. No spec change is needed.
  + If the UE is under the operation state in which all Tx chains are available at the source CC, the required switching time before the beginning of SRS-CS transmission on target CC is SRS-SwitchingTimeNR. Otherwise, the required switching time before the beginning of SRS-CS transmission on target CC is indicated by a UE capability. Details about UE capability will be discussed in UE feature session.
  + The existing scheduling restriction of maximum one switching per reference slot for UL Tx switching is also taking into account the triggered SRS CS
  + After SRS transmissions within an SRS resource set is done, if UE is indicated to transmit on CC1, the required switching time between the end of SRS-CS transmission on target CC and start of UL transmission on CC1 is indicated by the UE capability defined above. Otherwise, it is assumed for the determination of any future switching time that all Tx chains are returned to the source CC, and the RF tuning time to switch from target to source will be SRS-SwitchingTimeN