**3GPP TSG RAN WG1#102-e R1-200xxxx**

**e-Meeting, August 17th – 28th, 2020**

**Agenda Item: 7.2.2.1.2**

**Source: Moderator (Lenovo)**

**Title: Email discussion [102-e-NR-unlic-NRU-DL\_Signals\_and\_Channels-03] to capture earlier agreements and align specifications**

**Document for: Discussion, Decision**

# Scope and issues based on company submissions

According to the guidance by RAN1 (vice-)chairman, this email discussion to approve TPs is to be finalised by **20 August**.

# Summary of Discussion and Suggestions

TBD…

# Prior Agreements and Discussion

## IE Names in DCI 2\_0

ZTE includes the following proposal and TP in R1-2005598:

**Proposal 5: The child IEs (availableRB-SetPerCell-r16, CO-DurationPerCell-r16 and searchSpaceSwitchTrigger-r16) quoted in the definition of DCI format 2\_0 in TS 38.212 should be replaced by the parent IEs (*xxxToAddModList-r16*). The TP#3 can be adopted.**

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| ----------------------------- < Start of TP#3 for Clause 7.3.1.3.1of 38.212 [4]> -------------------------------7.3.1.3.1 Format 2\_0DCI format 2\_0 is used for notifying the slot format, COT duration, available RB set, and search space set group switching. The following information is transmitted by means of the DCI format 2\_0 with CRC scrambled by SFI-RNTI:- If the higher layer parameter *slotFormatCombToAddModList* is configured, - Slot format indicator 1, Slot format indicator 2, …, Slot format indicator *N*, - If the higher layer parameter *~~availableRB-SetPerCell-r16~~availableRB-SetsToAddModList-r16* is configured, - Available RB set Indicator 1, Available RB set Indicator 2, …, Available RB set Indicator *N1*, - If the higher layer parameter *~~CO-DurationPerCell-r16~~co-DurationsPerCellToAddModList-r16* is configured- COT duration indicator 1, COT duration indicator 2, …, COT duration indicator *N2.*- If the higher layer parameter *~~searchSpaceSwitchTrigger-r16~~**searchSpaceSwitchTriggerToAddModList-r16* is configured- Search space set group switching flag 1, Search space set group switching flag 2, …, Search space set group switching flag *M.*The size of DCI format 2\_0 is configurable by higher layers up to 128 bits, according to Clause 11.1.1 of [5, TS 38.213].-------------------------------------------- < End of text proposal> ------------------------------------------------ |

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| **Q1: Do you agree with the proposal/TP by ZTE?** |
| **Company** | **Comment** |
| Qualcomm | Agree |
| LG Electronics | Agree |
| Huawei, HiSilicon | Agree |
| Samsung | Agree |
| Sharp | Agree |

## Capturing RRC parameter *subcarrierSpacing-r16*

Sharp includes the following in R1-2006553:

**Proposal 3:**

* **TS38.213 to implement subcarrierSpacing configuration for CO duration indication.**
	+ **Adopt the following Text proposal #3.**

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| **Text proposal #3**--------- beginning of text proposal for TS 38.213 11.1.1 UE procedure for determining slot format**<omitted>**For each serving cell in the set of serving cells, the UE can be provided: - an identity of the serving cell by *servingCellId*- a location of a SFI-index field in DCI format 2\_0 by *positionInDCI*- a set of slot format combinations by *slotFormatCombinations*, where each slot format combination in the set of slot format combinations includes - one or more slot formats indicated by a respective *slotFormats* for the slot format combination, and - a mapping for the slot format combination provided by *slotFormats* to a corresponding SFI-index field value in DCI format 2\_0 provided by *slotFormatCombinationId*- for unpaired spectrum operation, a reference SCS configuration  by *subcarrierSpacing* and, when a supplementary UL carrier is configured for the serving cell, a reference SCS configuration  by *subcarrierSpacing2* for the supplementary UL carrier- for paired spectrum operation, a reference SCS configuration  for a DL BWP by *subcarrierSpacing* and a reference SCS configuration  for an UL BWP by *subcarrierSpacing2*- a location of an available RB set indicator field in DCI format 2\_0 that is - one bit, if *intraCellGuardBandDL-r16* for the serving cell indicates no intra-cell guard-bands are configured, where a value of '1' indicates that the serving cell is available for receptions, a value of '0' indicates that the serving cell is not available for receptions, by *availableRB-SetPerCell-r16*, and the serving cell remains available or unavailable for reception until the end of the indicated channel occupancy duration- a bitmap having a one-to-one mapping with the RB sets [6, TS 38.214] of the serving cell, if *intraCellGuardBandDL-r16* for the serving cell indicates intra-cell guard-bands are configured, where the bitmap includes $N\_{RB,set,DL}$ bits and $N\_{RB,set,DL}$ is the number of RB sets in the serving cell, a value of '1' indicates that an RB set is available for receptions, a value of '0' indicates that an RB set is not available for receptions, by *availableRB-SetPerCell-r16* and a RB set remains available or unavailable for receptions until the end of the indicated channel occupancy duration- a location of a channel occupancy duration field in DCI format 2\_0, by *CO-DurationPerCell-r16*, that indicates a remaining channel occupancy duration for the serving cell starting from a first symbol of a slot where the UE detects the DCI format 2\_0 by providing a value from *CO-DurationList-r16*. The channel occupancy duration field includes $max\left\{\left⌈log\_{2}\left(COdurationListSize\right)\right⌉,1\right\}$ bits, where $COdurationListSize$ is the number of values provided by *CO-DurationList-r16*. If *CO-DurationPerCell-r16* is not provided, the remaining channel occupancy duration for the serving cell is a number of slots, starting from the slot where the UE detects the DCI format 2\_0, that the SFI-index field value provides corresponding slot formats- a reference SCS configuration for the list of Channel Occupancy durations, by *subcarrierSpacing-r16*- a location of a search space set group switching flag field in DCI format 2\_0, by *SearchSpaceSwitchTrigger-r16*, that indicates a group from two groups of search space sets for PDCCH monitoring for scheduling on the serving cell as described in Clause 10.4. |

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| **Q2: Please provide your view on Sharp's proposal/TP.** |
| **Company** | **Comment** |
| Qualcomm | Agree in general, but might be better to put this as a sub-bullet of *CO-DurationPerCell-r16*. |
| LG Electronics | Agree, but as Qualcomm pointed out, instead of having separate bullet, it can be merged with the above bullet describing *CO-DurationPerCell-r16*. |
| Huawei, HiSilicon | Agree with the intention. It should be differentiated from the existing reference SCS for SFI |
| Samsung | Agree with Qualcomm |
| Sharp | This change is necessary. We are fine to move it to a sub-bullet of *CO-DurationPerCell-r16*. |

## Parameter correction for CSI-RS reception

Sharp includes the following proposal and TP in R1-2006553:

**Proposal 7:**

* ***SlotFormatCombinationsPerCell* should be referred to for determination of whether or not SFI is configured.**
	+ **Adopt the following Text proposal #7.**

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| **Text proposal #7**--------- beginning of text proposal for TS 38.213 11.1.1 UE procedure for determining slot format**<omitted>**For operation with shared spectrum channel access, if a UE is configured by higher layers to receive a CSI-RS and the UE is provided *CO-DurationPerCell-r16* and is not provided *SlotFormatCombinationsPerCell*, for a set of symbols of a slot that are indicated as downlink or flexible by *tdd-UL-DL-ConfigurationCommon* or *tdd*-*UL-DL-ConfigurationDedicated*, or when *tdd-UL-DL-ConfigurationCommon* and *tdd*-*UL-DL-ConfigurationDedicated* are not provided, the UE cancels the CSI-RS reception in the set of symbols of the slot that are not within the indicated remaining channel occupancy duration. |
| **Q3: Please provide your view on Sharp's proposal/TP.** |
| **Company** | **Comment** |
| Qualcomm | Support |
| LG Electronics | Support |
| Huawei, HiSilicon | Agree  |
| Samsung | Support |
| Sharp | This change is necessary. |

## Processing time for switching

ZTE includes the following proposal/TP in R1-2005598:

**Proposal 4: The description for UE processing time of SSS group switching in TS 38.213 should be clarified. The following TP#2 can be considered.**

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| -------------------------------- < Start of TP#2 for Clause 10.4 of 38.213 [1]> ----------------------------------10.4 Search space set group switching< Unchanged parts are omitted >A UE can be provided by *searchSpaceSwitchingDelay-r16* a number of symbols $P\_{switch}$. The UE applies the indicated $P\_{switch}$ and does not expect the indicated $P\_{switch}$ to be smaller than a minimum value of $P\_{switch}$. If the UE indicates a corresponding capability, ~~where a~~ the minimum value of $P\_{switch}$ ~~is~~ provided in Table 10.4-1 for ~~UE processing capability 1 and~~ UE processing capability 2 and SCS configuration $μ$ applies. Otherwise, a minimum value of $P\_{switch}$ provided in Table 10.4-1 for UE processing capability 1 and SCS configuration $μ$ applies ~~If the UE indicates a corresponding capability, the UE applies the~~ $P\_{switch}$ ~~value for UE processing capability 2; otherwise, the UE applies the~~ $P\_{switch}$ ~~value for UE processing capability 1 for SCS configuration~~ $μ$. Table 10.4-1: Minimum value of $P\_{switch}$ [symbols]

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| $$μ$$ | Minimum $P\_{switch}$ value for UE processing capability 1 [symbols] | Minimum $P\_{switch}$ value for UE processing capability 2 [symbols] |
| 0 | 25 | 10 |
| 1 | 25 | 12 |
| 2 | 25 | 22 |

< Unchanged parts are omitted >--------------------------------------------- < End of text proposal> ------------------------------------------------ |

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| **Q4: Please provide your view on ZTE's proposal/TP.** |
| **Company** | **Comment** |
| Qualcomm | Agree some clean up of the language is needed. We proposed the following: “A UE can be provided by *searchSpaceSwitchingDelay-r16* a number of symbols 𝑃𝑠𝑤𝑖𝑡𝑐ℎ where a minimum value of 𝑃𝑠𝑤𝑖𝑡𝑐ℎ is provided in Table 10.4-1 for UE processing capability 1 and UE processing capability 2 and SCS configuration 𝜇. UE can indicate if UE processing capability 2 is supported. If UE processing capability 2 is not supported, UE processing capability 1 is supported.” |
| LG Electronics | Support ZTE’s TP. |
| Huawei, HiSilicon | The existing TP is clear. |
| Samsung | Current specification seems clear.  |
| Sharp | Clean-up on this paragraph was made in the last meeting. Not sure if further modification is necessary, as the current description is not incorrect. |