3GPP TSG-RAN WG4 Meeting #113 R4-24xxxxx

**Orlando, FL, US, 18th – 22nd November, 2024**

**Title: LS on CSI-RS based measurements in SBFD operation**

**Response to:**

**Release: R19**

**Work Item: NR\_duplex\_evo-Core**

**Source: RAN4**

**To: RAN1**

**Cc:**

**Contact person: Waseem Ozan**

**waseem.ozan@mediatek.com**

**Send any reply LS to: 3GPP Liaisons Coordinator,** [**mailto:3GPPLiaison@etsi.org**](mailto:3GPPLiaison@etsi.org)

**Attachments:**

# 1 Overall description

Issue #1: RAN4 discussed the RRM requirements impact based on the following RAN1 agreement:

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| **RAN1#116bis agreements:**  If link direction indication is not supported nor provided for a SBFD symbol, for collision Case 2 (semi-statically configured DL reception vs. dynamically scheduled UL transmission) in the SBFD symbol for SBFD-aware UEs, reuse the existing collision handling principles in NR for operation on flexible symbols on a single carrier in unpaired spectrum, i.e. UE does not receive DL channel/signal.   * The above does not imply link direction indication is supported * FFS on dynamically scheduled UL transmission with repetition |

RAN4 would like to understand from RAN1 perspective whether the collision scenario of configured DL reception and dynamic UL transmission includes CSI-RS resources for L1-RSRP/SINR measurement and RLM/BFD/CBD measurement. ~~L3 measurements~~? ~~If the answer is yes, it is included, then can RAN1 point out which existing collision handling principles are referred to in this agreement?~~ In other words, if above semi-statically configured CSI-RS resources are collided with dynamically scheduled UL transmission, shall UE need to prioritize dynamically scheduled UL transmission over than DL CSI-RS based RRM measurement?

Issue #2: RAN4 discussed the RRM requirements impact based on the following RAN1 agreement:

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| **Agreement (RAN1#117)**  For UL transmissions and DL receptions across SBFD symbols and non-SBFD symbols in different slots (each transmission/reception within a slot has either all SBFD or all non-SBFD symbols) for an SBFD aware UE, the SBFD-aware UE is provided with one of the configurations.  ·         Configuration 1: The transmissions/receptions are restricted to SBFD symbols only or non-SBFD symbols only  ·         Configuration 2: The transmissions/receptions can be in SBFD symbols and non-SBFD symbols  ·         FFS granularity of the configuration, e.g. per UE, per channel/signal etc.  FFS whether support of configuration 2 is subject to UE capability  **Agreement (RAN1#118bis)**  For UL transmissions and DL receptions across SBFD symbols and non-SBFD symbols in different slots (each transmission/reception within a slot has either all SBFD or all non-SBFD symbols) for an SBFD aware UE, the SBFD-aware UE is provided with Configuration 1 or Configurat 2 via RRC configuration. Select from the following options   * Option 1: SBFD-aware UE is configured with Configuration 1 or Configuration 2 on a per UE per serving cell basis * Option 2: SBFD-aware UE is configured with Configuration 1 or Configuration 2 on a per UE per BWP per channel/signal basis   + Separate configurations for configured and dynamic transmission/receptions for a given channel/signal are not precluded. * Option 3: Configuration 1 or Configuration 2 is on a per cell basis.   + No separate UE capabilities for Configuration 1 and 2.   **Agreement (RAN1#118bis)**  For a CSI report associated with periodic/semi-persistent CSI-RS, the valid symbol type for CSI derivation for periodic/semi-persistent CSI-RS resources for the CSI report is explicitly configured. Only CSI-RS transmission occasions within the valid symbol types are used for CSI derivation. |
| **~~Agreement (RAN1#117)~~**  ~~For CSI report associated with periodic/semi-persistent CSI-RS, discuss and decide whether to support the following options.~~   * ~~Option A: For separate CSI reports on SBFD and non-SBFD, one~~ *~~CSI-ReportConfig~~* ~~is associated with CSI-RS(s) restricted to SBFD symbols only and the second~~ *~~CSI-ReportConfig~~* ~~is associated with CSI-RS(s) restricted to non-SBFD symbols only.~~    + ~~gNB configuration may not ensure that the CSI-RS associated with each~~ *~~CSI-ReportConfig~~* ~~is confined to either SBFD symbols or non-SBFD symbols only.~~      - ~~For the~~ *~~CSI-ReportConfig~~* ~~associated with CSI-RS(s) restricted to SBFD symbols only, only CSI-RS transmission occasions within SBFD symbols are used for CSI derivation. For the~~*~~CSI-ReportConfig~~* ~~associated with CSI-RS(s) restricted to non-SBFD symbols only, only CSI-RS transmission occasions within non-SBFD symbols are used for CSI derivation.~~   ~~Option B: Enhance Rel-18 NES CSI reporting framework to support one~~ *~~CSI-ReportConfig~~*~~with one sub-configuration associated with SBFD symbols and the other sub-configuration associated with non-SBFD symbols~~ |

To define the appropriate requirements, RAN4 needs to understand from RAN1 perspective whether the above agreement **on resource configuration and or reporting configuration**  apply to CSI-RS based L1-RSRP/SINR measurement and RLM/BFD/CBD measurement.

# 2 Actions

**To RAN1**

**ACTION:** RAN4 respectfully asks RAN1 to provide clarification on the above two issues.

# 3 Dates of next TSG RAN WG4 meetings

RAN4#114 Feb. 17 – 21, 2024 Athens, Greece

RAN4#114bis April 07 – 11, 2024 China