**3GPP TSG RAN WG1 Meeting #100bis-e R1-200xxxx**

**e-Meeting, April 20th –30th, 2020**

**Source: Moderator (Huawei)**

**Title: Email Discussion Summary of reply LS on DCP**

**Agenda item: 5**

**Document for:** **Discussion/Decision**

# Introduction

In RAN2#109-e, an LS on DCP was sent to RAN1 [1]. In this LS, RAN2 provided views on how to capture DCP (DCI with CRC scrambled by PS-RNTI) between MAC and PHY. RAN2 also provided two options for the configuration of *ps-TransmitPeriodicCSI* and *ps-TransmitPeriodicL1-RSRP*. RAN2 asks RAN1 provide feedback on the preference of the two options for CSI reporting when DCP is introduced.

As guided by chairman, this summary is to collect companies’ views on the LS and draft the reply based on companies’ input.

[100b-e-LS-02] Email approval of the reply LS for [R1-2001507](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_100b%5CDocs%5CR1-2001507.zip) by 4/22 (Huawei, Xiaolei TIE)

# Company’s input

As described in RAN2’s LS, RAN1 agreed in RAN1#99 that periodic L1-RSRP reporting and periodic CSI can be configured to be impacted by the WUS indication carried by DCI format 2\_6.

**Agreements:**

**When drx\_OnDurationTimer does not start, RAN1 agrees the following report(s) are impacted by the WUS indication**

* **SP L1-RSRP reporting**
* **SP-CSI**
* **SRS**

**Except:**

* **by configuration, whether or not for periodic L1-RSRP reporting**
* **by configuration, whether or not for periodic CSI**
* **By default, both the above two are also impacted by the WUS indication**

**Note: for the above two bullets (under Except), no additional RAN1 impact is expected in Rel-16**

In RAN2 LS (R2-2002201), two options are provided as following to interpret the two flags to configure whether or not periodic L1-RSRP and/or periodic CSI reporting are impacted due to DCP when *drx-onDurationTimer* is not running.

**Option 1:**

ps-TransmitPeriodicCSI = TRUE: Report all types of periodic CSI, including L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)

ps-TransmitPeriodicL1-RSRP = TRUE: Only report L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)

In this option, the two flags cannot both be set to TRUE and it is not possible to control the UE only to report periodic CSI apart from L1-RSRP.

**Option 2:**

ps-TransmitPeriodicCSI = TRUE: Report all types of periodic CSI apart from L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)

ps-TransmitPeriodicL1-RSRP = TRUE: Only report L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)

In this option, the two flags are independent and it is possible to control the UE only to report periodic CSI apart from L1-RSRP.

RAN2 would like to know the preference of the two options for CSI reporting from RAN1. In RAN1#100-e, the following agreement was made based on the discussion in [100e-NR-UE\_pow\_sav-WUS-01]. Therefore, the Option2 provided in RAN2’s LS (R2-2002201) is preferred by RAN1.

Agreements:

* P-CSI and L1-RSRP reports are independently configured and to allow UE only to report periodic CSI apart from L1-RSRP.

A reply is drafted as below according to the above agreements. Companies can provide your comments in the table, if any. The draft reply could be updated later based on companies’ input.

**Draft reply V1 (April 20th)**

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| **1. Overall Description:**RAN1 would like to thank RAN2 for the LS to ask RAN1’s preference on the following Option 1 and Option 2 for the two flags on CSI/SRS reporting when DCI format 2\_6 is configured. ***Option 1:****ps-TransmitPeriodicCSI = TRUE: Report all types of periodic CSI, including L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)**ps-TransmitPeriodicL1-RSRP = TRUE: Only report L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)**In this option, the two flags cannot both be set to TRUE and it is not possible to control the UE only to report periodic CSI apart from L1-RSRP.****Option 2:****ps-TransmitPeriodicCSI = TRUE: Report all types of periodic CSI apart from L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)**ps-TransmitPeriodicL1-RSRP = TRUE: Only report L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)**In this option, the two flags are independent and it is possible to control the UE only to report periodic CSI apart from L1-RSRP.*RAN1 discussed the two options in RAN1#100-e, and achieved the agreement that Option 2 is preferred:*Agreements:** *P-CSI and L1-RSRP reports are independently configured and to allow UE only to report periodic CSI apart from L1-RSRP*.

**2. Actions:****To RAN2:****ACTION:** RAN1 kindly asks RAN2 to take the above information into account for power saving configuration signalling. |

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| Company | Comments |
| MediaTek | The reply based on previous RAN1 agreement is clear, and we are supportive of it. |
| ZTE | Option 2 was agreed by RAN1 in the last meeting. We are okay with the reply. |
| CMCC | We support the reply about Option 2. |
| Huawei, HiSilicon | We support the draft reply LS. |
| Samsung | We support the draft reply LS. |
| CATT | We support draft reply LS with text proposals in AI-7.2.7 to align RAN1/RAN2 specs |
| Vivo | We support draft reply LS. We have one minor issue for clarification. Since in the power saving agenda, L1-SINR is also discussed, we think it’s better to also include that in the LS. |
| Nokia | In our view the reply is aligned with earlier RAN1 agreement, thus we agree to it. |
| Intel | We are fine with supporting Option 2 which is in line with RAN1 agreement.  |
| Ericsson | Reply is OK as it is aligned with RAN1 agreement. |

# Conclusion

According to the comments collected from companies, it is proposed to approve the content in the draft reply LS in R1-20xxxxxx as below:

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| **1. Overall Description:**RAN1 would like to thank RAN2 for the LS to ask RAN1’s preference on the following Option 1 and Option 2 for the two flags on CSI/SRS reporting when DCI format 2\_6 is configured. ***Option 1:****ps-TransmitPeriodicCSI = TRUE: Report all types of periodic CSI, including L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)**ps-TransmitPeriodicL1-RSRP = TRUE: Only report L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)**In this option, the two flags cannot both be set to TRUE and it is not possible to control the UE only to report periodic CSI apart from L1-RSRP.****Option 2:****ps-TransmitPeriodicCSI = TRUE: Report all types of periodic CSI apart from L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)**ps-TransmitPeriodicL1-RSRP = TRUE: Only report L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)**In this option, the two flags are independent and it is possible to control the UE only to report periodic CSI apart from L1-RSRP.*RAN1 discussed the two options in RAN1#100-e, and achieved the agreement that Option 2 is preferred:*Agreements:** *P-CSI and L1-RSRP reports are independently configured and to allow UE only to report periodic CSI apart from L1-RSRP*.

**2. Actions:****To RAN2:****ACTION:** RAN1 kindly asks RAN2 to take the above information into account for power saving configuration signalling. |

# Reference

1. R2-2002201, LS on DCP, RAN2#109-e.
2. R1-2001580 Draft reply LS on DCP, ZTE.
3. R1-2001642 Discussion on MAC-PHY interactions for DCP and CSI reporting, vivo.
4. R1-2002189 TP to address RAN2 LS on DCP, NEC.
5. R1-2002663 Draft reply LS on the configuration of *ps-TransmitPeriodicCSI* and *ps-TransmitPeriodicL1-RSRP*, Huawei, HiSilicon.

# Appendix: R2-2002201

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| **1. Overall Description:**In RAN2#109-e, RAN2 discussed the MAC-PHY interactions for DCP (DCI with CRC scrambled by PS-RNTI) monitoring and the start of drx-onDurationTimer. The following understanding regarding how to capture DCP between MAC and PHY was agreed from RAN2 point of view:**MAC specification:**1. MAC specifies the start of drx-onDurationTimer and Active Time, including:
* MAC should start drx-onDurationTimer according to indication provided by PHY
* MAC should start drx-onDurationTimer in case DCP is overlapped with Active time, measurement gap and BWP switching period
* MAC should start drx-onDurationTimer in case ps-Wakeup is set to true and no DCP indication is received from PHY

**PHY specification:**1. PHY specifies DCP monitoring, including:
* When to start the monitoring (ps\_offset) and stop the monitoring (minimum gap based on UE capability)
* In case DCP is considered invalid from PHY perspective (scenarios FFS in RAN1), PHY should not monitor DCP and indicates to MAC to start the drx-onDurationTimer for the next DRX cycle
1. PHY indicates to MAC whether a received DCP indicates to start the drx-onDurationTimer for the next DRX cycle or not.
2. PHY should not specify the start of drx-onDurationTimer and Active Time.

The RAN1 LS (R1 -1913480) on CSI/SRS reporting has also been discussed in RAN2#109-e. RAN2 understands the intention to control L1-RSRP reporting separately when drx-onDurationTimer is not running due to DCP. There are two options to interpret the two flags for CSI/SRS reporting in RAN1 LS:**Option 1:**ps-TransmitPeriodicCSI = TRUE: Report all types of periodic CSI, including L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)ps-TransmitPeriodicL1-RSRP = TRUE: Only report L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)In this option, the two flags cannot both be set to TRUE and it is not possible to control the UE only to report periodic CSI apart from L1-RSRP.**Option 2:**ps-TransmitPeriodicCSI = TRUE: Report all types of periodic CSI apart from L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)ps-TransmitPeriodicL1-RSRP = TRUE: Only report L1-RSRP (i.e. cri-RSRP and ssb-Index-RSRP)In this option, the two flags are independent and it is possible to control the UE only to report periodic CSI apart from L1-RSRP.**2. Actions:****To RAN1:**RAN2 respectfully asks RAN1 to:* Take above MAC-PHY interactions for DCP into account and update 38.213 running CR accordingly.
* Provide feedback on the preference of the two options for CSI reporting.

**3. Date of Next TSG-RAN WG2 Meetings:**3GPP RAN2#109bis-e 20 - 24 Apr, 2020 Online3GPP RAN2#110 25 - 29 May, 2020 Athens, Greece |