**3GPP TSG RAN WG1 #102-e R1-2005979**

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

Source: Moderator (OPPO)

Title: Summary for [102-e-NR-7.1CRs-08] QCL assumption for paging reception

Agenda Item: 7.1

Document for: Discussion and Decision

1. Introduction

This document is a summary for email discussion “[102-e-NR-7.1CRs-08] QCL assumption for paging reception”

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| [102-e-NR-7.1CRs-08] QCL assumption for paging reception – Zhihua (OPPO)   * For Rel-16, Issue#21 in [R1-2006958](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2006958.zip) * Discussion/Agreements by 8/19, TPs by 8/24 |

The contribution R1-2006033 [1] raised the issue of QCL assumption for paging reception when paging PDCCH is monitored in CSS other than type0 CSS:

* When paging PDCCH is monitored in type0 CSS, TS 38.213 has specified the QCL assumption for paging reception.
* When paging PDCCH is monitored in CSS other than type0 CSS, TS 38.304 only defines the PDCCH monitoring occasion for paging in a PO corresponds to an SSB. However, no QCL assumption for such kind of paging reception is explicitly specified in current specifications.

1. Collection of Companies’ Views

## Q1

* Whether the following issue exists? And need to be fixed in spec?
  + - When paging PDCCH is monitored in CSS other than type0 CSS, current spec lacks specification of QCL assumption for the paging reception.

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| **Company** | **View** |
| ZTE | Yes, the issue exists.  According to the current spec, unfortunately, it seems that the QCL assumption for such kind of paging reception is based on the TCI state or QCL assumption applied to the CORESET by RRC/MAC-CE command.  We wonder whether this issue of missing QCL assumption also exists for other type CSS(s) that is not in CORESET#0. |
| Ericsson | There is no problem. As noted in R1-2006033, if the UE has not been provided any TCI states, or no TCI state has been activated, the UE assumes the PDCCH DMRS is QCL with an SSB. It may be considered somewhat unfortunate that the SSB is described in 3 ways in 38.213: “associated SSB”, “SSB identified during initial access” and “same SS/PBCH block index as the one the UE uses to obtain MIB”. But it is clear that it is an SSB the UE chooses: since the choice is up to the UE anyway (there is no NW impact), there is no need to change the specification.  We also have the following statements in 38.211:  7.4.1.1.2:  In absence of CSI-RS configuration, and unless otherwise configured, the UE may assume PDSCH DM-RS and SS/PBCH block to be quasi co-located with respect to Doppler shift, Doppler spread, average delay, delay spread, and, when applicable, spatial Rx parameters.  7.4.1.3.2  In absence of CSI-RS configuration, and unless otherwise configured, the UE may assume PDCCH DM-RS and SS/PBCH block to be quasi co-located with respect to Doppler shift, Doppler spread, average delay, delay spread, and, when applicable, spatial Rx parameters.  Also in this case, it is clear that the UE may assume that the if no configuration exists, the UE may assume a QCL relationship with an SSB. |
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## Q2

* If yes for Q1, what’s the solution?

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| **Company** | **View** |
| ZTE | To reuse the default QCL assumption for monitoring paging PDCCH in type0 CSS in TS 38.213 |
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## TPs

Potential output depends on the above discussions. Companies are encouraged to input favorite CR to facilitate the second-stage discussion.

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| **Company** | **View / Proposed CR** |
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# Conclusions

To be added

# Reference

1. R1-2006033 Discussion on the QCL assumption for paging reception OPPO
2. R1-2006034 Draft CR on the QCL assumption for paging reception OPPO

# Appendix A: Views in the preparation phase email discussion

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| **Moderator / Session Chair's initial view** | Discuss over email in RAN1#102-e  Carry over from Rel-15 maintenance. |
| **vivo** | Agree with Chairman's assessment |
| **Nokia** | Agree with the chairman, this was the conclusion in RAN1#101 |
| **CATT** | Agree to discuss in RAN1#102-e. When SearchSpaceId other than 0 is configured for pagingSearchSpace, TS 38.304 has clearly defined the PDCCH monitoring occasion for paging in a PO corresponds to an SSB. However, it seems the QCL relation between PDCCHs/PDSCHs for paging and the corresponding SSBs are not explicitly defined in current specification. |
| **Samsung** | OK to discuss over email. |
| **Huawei** | Ok to discuss. |
| **Apple** | Agree with chairman |
| **MediaTek** | OK to discuss |
| **Intel** | We support to discuss this CR. |
| **Ericsson** | OK to discuss |
| **OPPO** | Agree with Chairman |
| **ZTE** | We are okay to have further discussion on UE behavior for CORESET QCL assumption for CSS outside CORESET#0 after RACH procedure |
| **NTT DOCOMO** | OK to discuss in this meeting. |
| **QC** | OK to discuss over email in this meeting |

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