**3GPP TSG RAN WG1 #118 R1-240xxxx**

**Maastricht, NL, August 19th – 23rd, 2024**

**Source: Moderator (CATT)**

**Title:** **Summary of PUCCH cyclic shift hopping**

**Agenda Item:** **7**

**Document for:** **Decision**

# Introduction

In RAN1#118, the following draft CR in R1-2406330 is submitted on PUCCH cyclic shift hopping.

R1-2406330 Clarification on the cyclic shift hopping for PUCCH transmission CATT

This contribution collects companies’ views on the issues and proposals discussed in the above Tdoc.

# Discussion

**Reason for change**

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| In current specification, for cyclic shift hopping for PUCCH transmission, the cyclic shift varis with slot number and symbol number as defined below.  wherein the function is given by  It is observed that the parameters for the functions are not aligned.  Given that *l* is clearly defined as the OFDM symbol number in the PUCCH transmission, it is not appropriate to use in functions  and , which may lead to potential misunderstanding that index of OFDM symbol number within the PUCCH transmission instead of OFDM symbol number within a slot is used to determine the cyclic shift.  In addition, *nc* is undefined in the spec which also may cause confusion. |

**TP**

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| The function is given by    where the pseudo-random sequence  is defined by clause 5.2.1. The pseudo-random sequence generator shall be initialized with , where  is given by the higher-layer parameter *hoppingId* if configured, otherwise . |

## Q: Do you agree with the text proposals in draft CR in R1-2406330?

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| **Company** | **Agree or Not Agree** | **Comments** |
| Apple | Comments | Agree if majority thinks it is essential (in that case it should be alignment CR) |
| Nokia |  | TP is not essential; it is clear how to use the function from current specification.  It seems that *nc* is used as a dummy variable since it is undefined in spec. In our understanding the same applies to *l* of *ncs.* Therefore, it is clear when cyclic shift is calculated we have to substitute *l+l’* into *l* of *ncs* function. |
| QC | Not agree | The CR is not needed. Spec has no ambiguity. As Nokia commented, what captured in spec is a conventional way to describe function call. |