**3GPP TSG-RAN WG4 Meeting # 97e DRAFT R4-2016926**

**Electronic Meeting, 2 – 13 Nov., 2020**

**Agenda item:** 13.2.1

**Source:** Qualcomm Incorporated

**Title:** WF on Phase noise mask and PTRS

**Document for:** Approval

# Topic #2: PN Models for use in RAN4

*Discussion of which PN models are appropriate for use in RAN4. Interested delegates please comment on which of the PN models are appropriate for use in RAN4.*

## UE and BS Phase Noise Models for use in RAN4 discussion from round1

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** | **TR 38.803 ex 2 3GPP** | **Tdoc 6533 Huawei** | **Tdoc 4976 Ericsson** |
| Ericsson |  |  | Use in RAN4 |
| Apple |  |  | Use in RAN4 |
| Nokia | Use in RAN4 with scaling |  |  |
| Intel | Use in RAN4 with scaling |  |  |
| Qualcomm | Use in RAN4, with or without scaling | Do not use. Far out PN is worse than 38.803 ex2, and ex2 is achievable in commerical UE. ICI with PTRS will model worse than is achievable (for the UE). | Our findings are, for the UE, 5 dB is not sufficent margin for a commercial UE. |
| Huawei |  | Use in RAN4 |  |

WF on UE and BS PN models for use in RAN4: Continue to discuss the PN models in the WI phase.

# Topic #2: Phase tracking reference signal information in LSout

*Company views on what PTRS content should be in a potential LSout to RAN1.*

## PTRS content

|  |  |
| --- | --- |
| Company | PTRS content for potential LSout |
| Qualcomm | As PTRS enhancement for assisting ICI compensation, increasing the frequency domain PTRS density for small RB allocation can be considered. New PTRS patterns other than the Rel-15 design, such as the block PTRS pattern is not necessary. Further it is up to RAN1 and not RAN4 to decide on the PTRS design. |
| Nokia | **Inform RAN1 on usefulness of ICI compensation for NR beyond 52.6GHz, and recommend to study and compare different ICI compensation schemes with respect to performance as well as implementation complexity. LS proposed.**  **Aligned with agreed WF R4-2011839, include in reply LS to RAN1 that RAN4 sees enhancements to PT-RS may be useful for >52.6 GHz frequencies and respectfully asks RAN1 to take this into account in their work.** |
| Ericsson | Retain the same Rel-15 distributed PT-RS structure for OFDM for NR operation in 52.6 to 71 GHz. |
| Huawei | **Include in reply LS to RAN1 that RAN4 sees enhancements to PT-RS may be useful for >52.6 GHz frequencies and respectfully asks RAN1 to take this into account in their work.** |
| Intel | Minimal statement on PTRS as the scope and evaluation of RAN4 study are limited |
| Guidance in GTW meeting 11/6 | In the LS including PN models to RAN1, RAN4 can share the study on PTRS, but make it clear that it is up to RAN1 to decide the design. |

WF on PTRS: Proponents contribute to the LS out being drafted