3GPP TSG-RAN WG2 Meeting #109-e R2-20xxxxx

Electronic Meeting, 24 Feb. – 6 Mar., 2020

**Agenda item: 6.19**

**Source: CMCC (rapporteur)**

**Title:** **Report of [AT109e][050][R16 Other WISI] NR HST**

**Document for: Discussion and Decision**

# Introduction

This summary document is used to gather the offline comments for the following email discussion:

**By Email – Discussion**

NR HST

R2-2000040 LS on the UE capability and network assistance signalling for Rel-16 NR HST RRM (R4-1915855; contact: China Mobile) RAN4 LS in Rel-16 NR\_HST To:RAN2

R2-2001656 LS on the UE capability and network assistance signalling for Rel-16 NR HST demodulation (R4-1915916; contact: CMCC) RAN4 LS in Rel-16 NR\_HST To:RAN2

R2-2000919 Discussion on signalling for R16 NR HST CMCC discussion Rel-16

=> Revised in R2-2002084

R2-2002084 Discussion on signalling for R16 NR HST CMCC, CATT discussion Rel-16

R2-2000920 38.331 CR on introduction of RRC parameters and UE capabilities for Rel-16 NR HST CMCC, Huawei, HiSilicon CR Rel-16 38.331 15.8.0 1464 - B NR\_HST

=> Revised in R2-2002085

R2-2002085 38.331 CR on introduction of RRC parameters and UE capabilities for Rel-16 NR HST CMCC, Huawei, HiSilicon, CATT CR Rel-16 38.331 15.8.0 1464 1 B NR\_HST

R2-2000921 38.306 CR on introduction of UE capabilities for Rel-16 NR HST CMCC, Huawei, HiSilicon CR Rel-16 38.306 15.8.0 0242 - B NR\_HST

=> Revised in R2-2002086

R2-2002086 38.306 CR on introduction of UE capabilities for Rel-16 NR HST CMCC, Huawei, HiSilicon, CATT CR Rel-16 38.306 15.8.0 0242 1 B NR\_HST

* [AT109e][050][R16 Other WISI] NR HST (CMCC)

 Scope: Treat documents above

 Intended outcome: Focus first on LS and discussion doc. Achieve initial agreements, agree what we shall do. Treatment of CRs expected next meeting.

 Deadline: Mar 3 1200 CET

# Discussions

RAN4 has sent two LS to RAN2 on the capability and signalling for NR high speed train (HST) in R16. One is for the UE capability and network assistance signalling for Rel-16 NR HST RRM [1]. The other one is for the UE capability and network assistance signalling for Rel-16 NR HST demodulation [2]. In the LS RAN4 asks RAN2 to design the corresponding signalling to support the enhanced RRM requirements, enhanced demodulation requirements and UE capability for R16 NR HST. A discussion paper is provided in [3] with corresponding proposals. We respectfully ask companies to provide their comments.

**Network assistant signalling**

**Q1.** As requested by RAN4 in [1], do you agree to introduce network assistant signalling to enable the enhanced RRM requirements for Rel-16 NR HST?

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| Ericsson | Agree |  |
| Huawei | Yes |  |
| Qualcomm Incorporated | Y |  |
| CMCC | Y |  |

In Rel-14/Rel-16 LTE HST WI, the network signalling to enable the RRM enhancements to support LTE HST is cell specific configured and is included in the IE ***RadioResourceConfigCommonSIB*** and IE ***RadioResourceConfigCommon***. For NR HST, the enhanced RRM requirements are also cell specific configured and provided to UE in idle mode and connected mode.

Therefore if the answer to Q1 is yes, companies are kindly asked to provide their further comments on Q2.

**Q2.** As suggested in [3], do you agree to include the network assistant signalling to enable the enhanced RRM requirements for Rel-16 NR HST in the IE ***ServingCellConfigCommon*** and IE ***ServingCellConfigCommonSIB***?

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| Ericsson | Y |  |
| Huawei | Yes |  |
| Qualcomm Incorporated | Y |  |
| CMCC | Y |  |

**Q3.** As requested by RAN4 in [2], do you agree to introduce network assistant signalling to enable the enhanced UE demodulation requirements for Rel-16 NR HST?

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| Ericsson | Y |  |
| Huawei  | Yes |  |
| Qualcomm Incorporated | Y |  |
| CMCC | Y |  |

In Rel-14/Rel-16 LTE HST WI, the network signalling to enable the enhanced UE demodulation requirements to support LTE HST is cell specific configured and is included in the IE ***RadioResourceConfigCommonSIB*** and IE ***RadioResourceConfigCommon***. For NR HST, the enhanced UE demodulation requirements are also cell specific configured and provided to UE in idle mode and connected mode.

Therefore if the answer to Q3 is yes, companies are kindly asked to provide their further comments on Q4.

**Q4.** As suggested in [3], do you agree to include the network assistant signalling to enable the enhanced UE demodulation requirements for Rel-16 NR HST in the IE ***ServingCellConfigCommon*** and IE ***ServingCellConfigCommonSIB***?

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| Ericsson | Agree |  |
| Huawei | Yes |  |
| Qualcomm Incorporated | Y |  |
| CMCC | Y |  |

**UE capability**

**Q5.** As requested by RAN4 in [1], do you agree to introduce the UE capability for NR HST to indicate whether UE is capable of supporting the enhanced RRM requirements?

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| Ericsson | Y |  |
| Huawei | Yes |  |
| Qualcomm Incorporated | Y |  |
| CMCC | Y |  |

**Q6.** As requested by RAN4 in [2], do you agree to introduce the UE capability for NR HST to indicate whether UE is capable of the enhanced demodulation processing for HST-SFN joint transmission scheme with velocity up to 500km/h?

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| Ericsson | Y |  |
| Huawei | Yes |  |
| Qualcomm Incorporated | Y |  |
| CMCC | Y |  |

# Conclusions

4 companies participated the email discussion: Ericsson, Huawei, Qualcomm and CMCC.

**Network assistant signalling**

All the participated companies agree to introduce network assistant signalling to enable the enhanced RRM requirements and the enhanced UE demodulation requirements for Rel-16 NR HST. They also agree to include the network assistant signalling in the IE ***ServingCellConfigCommon*** and IE ***ServingCellConfigCommonSIB***, as suggested in [3].

Based on the above, we would like to propose:

**Proposal 1: Introduce network assistant signalling in the IE *ServingCellConfigCommon* and IE *ServingCellConfigCommonSIB* to enable the enhanced RRM requirements for Rel-16 NR HST.**

**Proposal 2: Introduce network assistant signalling in the IE *ServingCellConfigCommon* and IE *ServingCellConfigCommonSIB* to enable the enhanced UE demodulation requirements for HST-SFN deployment with joint transmission scheme for Rel-16 NR HST.**

**UE capability**

All the participated companies agree to introduce the UE capability for NR HST to indicate whether UE is capable of supporting the enhanced RRM requirements, and to introduce the UE capability for NR HST to indicate whether UE is capable of the enhanced demodulation processing for HST-SFN joint transmission scheme with velocity up to 500km/h.

Based on the above, we would like to propose:

**Proposal 3: Introduce new UE capability for NR HST to indicate whether UE is capable of supporting the enhanced RRM requirements.**

**Proposal 4: Introduce new UE capability for NR HST to indicate whether UE is capable of the enhanced demodulation processing for HST-SFN joint transmission scheme with velocity up to 500km/h.**

# References

[1]R2-2000040 LS on the UE capability and network assistance signalling for Rel-16 NR HST RRM

[2] R2-2001656 LS on the UE capability and network assistance signalling for Rel-16 NR HST demodulation

[3] R2-2002084 Discussion on signalling for R16 NR HST