**3GPP TSG-RAN WG2 Meeting #109bis-e R2-200xxxx**

**Electronic, 20 April – 30 April 2020**

**Agenda Item: 6.19 Other NR Rel-16 WIs/SIs**

**Source: CMCC**

**Title: Summary for views on NR HST CRs**

**Document for: Discussion and decision**

# 1 Introduction

Agreements in RAN2#109-e on RAN2 signaling design for NR HST:

Agreements [AT109e][050][R16 Other WISI]

* Introduce network assistant signalling in the IE ServingCellConfigCommon and IE ServingCellConfigCommonSIB to enable the enhanced RRM requirements for Rel-16 NR HST.
* 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
* Introduce new UE capability for NR HST to indicate whether UE is capable of supporting the enhanced RRM requirements.
* 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.

CMCC prepared the corresponding CRs [1-2] in this meeting based on above agreements. This paper is to collect companies’ views on HST CRs based on [R2-2003508](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003508.zip) and [R2-2003509](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003509.zip) [1-2].

**[AT109bis-e][047][NR16 Other] NR HST (CMCC)**

Scope: Treat papers above on NR HST. If convergence is difficult, this may be treated on-line.

Wanted Outcome: Agreed-in-principle CRs

Deadline: April 28 0700 UTC

# 2 Companies’ views on HST CRs

**Q1: Whether 38.331 CR for HST in** [**R2-2003508**](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003508.zip) **is agreeable?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| CMCC | Yes |  |
| Qualcomm Incorporated | No | A few comments.*ServingCellConfigCommon** Missing comma, before the added extension group.
* Need M looks more appropriate for the field *highSpeedConfigforNR-r16*. Otherwise the network always needs to include the field within *ServingCellConfigCommon* when the configuration needs to be maintained.

*ServingCellConfigCommonSIB** Missing comma, before the added extension group.

*HighSpeedEnhforNRParameters** Not sure about the need of extension marker there.

*UE-NR-Capability** Duplicated *UE-NR-Capability-v16xy*
 |
| OPPO | No | Agree the comments from QC as:*ServingCellConfigCommon** Missing comma, before the added extension group.

*ServingCellConfigCommonSIB** Missing comma, before the added extension group.

*UE-NR-Capability*Duplicated *UE-NR-Capability-v16xy* |
| vivo | Yes | We are OK with the CR by fixing some ASN.1 compiling issues:*ServingCellConfigCommon:** Expecting a “,” before “[[”.

*ServingCellConfigCommonSIB** Expecting a “,” before “[[”.

*HighSpeedEnhforNRParameters*The first letter for the parameter IEs shall be lowercase.  |
| CMCC\_2 |  | Thanks for comments. Please check the updated draft 38.331 CR in the inbox. All the comments from Qualcomm, OPPO and vivo are addressed by CMCC\_2. |
| Ericsson | Yes, with changes | Thanks for updating to v2, which I have reviewed. I have the following comments.Cover page:* The secretary in RAN plenary does not like mentioning the specification number in the title or titles like "CR for ...". I propose to update to something like "Introduction of signalling for high-speed train scenarios".
* Work item code should be "NR\_HST-Core" I think.
* For "other specs affected" we typically refer to CR number, not tdoc number, so it should be "TS 38.306 CR0242".

Clause 6.3.2:* I think the names of the IEs and fields can be further improved. There is no need to have "forNR", since the signalling is in the NR specification. I also think we can skip the "enh" (for enhanced).

Clause 6.3.3:* The comment on the names applies here as well.

I also took the liberty to update some styles which our secretary has remined us about, please find a version with my proposed changes in "...v2\_E" in the folder. |
| CMCC3 |  | We had a second check on whether Need M or Need R should be applied. 1. In LTE HST, the same IEs are Need R.
2. And, if we have Need M and the UE comes to a new cell where NR HST is not used, the UE would continue to use the NR HST parameters from the old cell. But since we want the UE not to use the NR HST in the new cell we must use Need R for the parameters.

Therefore, we suggest the IEs are kept as Need R, same as LTE. |

Since only 1 company prefer the IE to be Need M, rapporteur suggest we kept it same as LTE, i.e. Need R. If companies still have strong concern on it, we can re-discuss on it.

With above changes, rapporteur suggest to agree-in-principle the 38.331 CR.

**Q2: Whether 38.306 CR for HST in** [**R2-2003509**](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003509.zip) **is agreeable?**

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| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| CMCC | Yes |  |
| Qualcomm Incorporated | No | RAN4 LS was not clear about FDD-TDD differentiation. We would wait for the official RAN4 feature list.BTW, we could also not verify:* If the feature is only applicable in FR1.
* Whether the RAN4 specification references are correct.
 |
| OPPO |  | Agree with QC. We can add to TBD in FDD-TDD differentiation Column. |
| vivo |  | For this part, we also prefer to wait for formal inputs on RAN4 feature list.  |
| CMCC\_2 |  | Thanks for comments. Please check the updated draft 38.306 CR in the inbox. All the comments from Qualcomm, OPPO and vivo are addressed by CMCC\_2.* TBD is marked for FDD-TDD differentiation.
* As for Qualcomm’s comments on whether the feature only applicable in FR1, the object in HST WID (RP-191512) shows that “The carrier frequency is **up to 3.6GHz** covering both TDD and FDD”. So, yes, it only applicable for FR1.
* We though the reference to RAN4 spec is correct.
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| Ericsson | Endorse with changes | Thanks for updating to v2, which I have reviewed. I have the following comments.Cover page:* The secretary in RAN plenary does not like mentioning the specification number in the title or titles like "CR for ...". I propose to update to something like "Introduction of signalling for high-speed train scenarios".
* Work item code should be "NR\_HST-Core" I think.
* For "other specs affected" we typically refer to CR number, not tdoc number, so it should be "TS 38.331 CR1464".

Clause 4.2.15:* Updates to names reflecting proposed changes to 331 CR (see above).

Please find a version with my proposed changes in "...v2\_E" in the folder.We support keeping the TBD for FDD-TDD differentiation for now.That means we are fine to endorse the CR.  |

With above changes, Rapporteur suggest we can endorse the 38.306 CR. The TBD will be updated in next meeting, according to RAN4 progress.

The CRs are provided for Rel-16. But for operators, in order to meet the strong requirement for the HST market, it is preferable to allow UE early implementation in Rel-15.

Background: The Rel-14 LTE HST feature is early implemented from Rel-13 without RAN2 specification change [3].

**Q3: Is it acceptable for you to allow HST feature (including RRM enhancement and UE demodulation enhancement) to be early implemented by UE in Rel-15?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comments** |
| CMCC | Yes | From RAN2 point of view, HST early implementation for R15 UEs can be allowed.  |
| Qualcomm Incorporated | No | The same argument can be made to any other release-16 feature. We should avoid this as much as possible. |
| OPPO | No |  |
| vivo |  | We need further check more. I assume this email discussion only focuses on the agreeable CRs.  |
| CMCC2 |  | May I explain further, since this is really important for operator’s real deployment.* High speed train is one of the most important scenarios for NR, which can greatly improve user experience when UE is in high speed state. It will benefit both UE and network side if this feature can be implemented earlier.
* PHY specifications have already supported high speed scenario in Rel-15. Due to the timeline, RAN4 performance part and corresponding RAN2 signalling were left over to R16.
* What we propose is to capture one sentence in CR cover page “**The NR HST enhancement, including RRM enhancement and UE demodulation enhancement, can be early implemented by UE without specification impact.**” So there will be no impact on the spec.

I currently make it as FFS in the coverage page of draft CR, and will be deleted or kept according to companies’ views. |
| Ericsson |  | There is nothing in the signalling which could cause problems. It is only SIB signalling (in principle) and the UE performs measurements accordingly. Still, it is good to be careful about magic sentences, so we would appreciate the opportunity to check until next meeting. Keeping it as FFS for now is good as a reminder. |
| HW |  | It seems possible from RAN2 signalling point of view, but it is better to wait until RAN4 finishes relevant work. Generally we think early implementation can be considered especially for UEs in idle mode. |
| CATT |  | Early implementation should be possible, considering the additions are mainly system info and needed RRM requirements. Agree with Huawei comment that it is only after finalizations of requirements and testing cases, should it be feasiable for terminals to support the enhancements.  |

Summary:

4 companies are positive for early implementation.

3 companies are not likely to support.

Rapporteur suggest to keep it as FFS in the cover page, and keep an eye on RAN4 progress.

# Reference

1. [R2-2003508](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003508.zip) 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 16.0.0 1464 2 B NR\_HST R2-2002085
2. [R2-2003509](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_109bis-e%5CDocs%5CR2-2003509.zip) 38.306 CR on introduction of UE capabilities for Rel-16 NR HST CMCC, Huawei, HiSilicon, CATT CR Rel-16 38.306 16.0.0 0242 2 B NR\_HST R2-2002086

[3] R2-1705861, Reply LS on supporting Rel-14 feature of performance enhancement for high speed scenarios from Rel-13 UEs