**3GPP TSG-RAN WG4 Meeting # 102-e R4-22xxxxx**

**Electronic Meeting, February 21 – March 3, 2022**

**Agenda item: 10.8.3**

**Source:** Moderator (CMCC)

**Title:** Email discussion summary for [102-e][319] NR\_HST\_FR1\_Demod

**Document for:** Information

# Introduction

This email discussion focuses on UE demodulation for Rel-17 NR HST, including agenda 10.8.3.1 and 10.8.3.2. The agreed way forward in previous meeting is in R4-2202985.

The targets of email discussion for 1st round and 2nd round are:

* 1st round: discuss the open issues and strive to minimize the open issues
* 2nd round: according to 1st round discussion, discuss left open issues for 2nd round, and strive to minimize the open issues, and strive to approve the WF.

# Topic #1 PDSCH requirements for CA scenarios

*Agenda 10.8.3.1 and 10.8.3.2*

## Companies’ contributions summary

|  |  |  |  |
| --- | --- | --- | --- |
| **TDoc** | **Title** | **Source** | **Proposals** |
| R4-2205080 | Summary for FR1 HST demodulation results | Ericsson |  |
| [**R4-2203762**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203762.zip) | Discussion on PDSCH CA Requirements in HST | Apple | Proposal #1: Rel-17 FR1 HST PDSCH demod requirements for CA are defined as release independent from Rel-16 if RRM requirements are agreed to be release independent.  Observation #1: There was no objective to introduce HST CA requirements for additional CBW of 35, 45MHz in FDD.  Observation #2: If HST FR1 enhancements WI is aimed for early completion in March 2022, we don’t see how additional CBW can be introduced.  Proposal #2: Do not introduce FDD requirements with additional CBW for HST CA unless there is need to support these CBW in HST deployments. |
| [**R4-2203763**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203763.zip) | Draft CR on HST DPS CA requirements for 4Rx | Apple |  |
| [**R4-2204253**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2204253.zip) | Draft CR on PDSCH requirements for HST-SFN CA requirements for 4Rx | CMCC |  |
| [**R4-2204259**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2204259.zip) | Discussion on FR1 HST UE demodulation for CA scenario | CMCC | Proposal 1: for the UE capability for supporting HST-SFN CA in FR1, the granularity is per band combination.  Proposal 2: it is proposed that Rel-17 FR1 HST-SFN CA requirements are release independent from Rel-15.  Proposal 3: for FDD 15KHz SCS, specify PDSCH requirements on single carrier of BW of {35, 45} MHz for HST scenario. |
| [**R4-2204384**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2204384.zip) | Discussion on HST FR1 CA PDSCH performance requirements | Intel Corporation | Proposal #1: Apply HST-SFN CA requirements only from Rel-17.  Proposal #2: Define HST-SFN CA feature with FSPC granularity.  Proposal #3: Define HST CA requirements for 35 and 45 CBWs. |
| [**R4-2204385**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2204385.zip) | draftCR to TS 38.101-4: HST-SFN CA requirements for 2Rx | Intel Corporation |  |
| [**R4-2204430**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2204430.zip) | Discussion on PDSCH requirements for FR1 HST CA scenarios | ZTE Corporation | Proposal 1: To confirm that the UE capability granularity is per band combination.  Proposal 2: Option 2 and option 3 are preferred for release independence for FR1 HST PDSCH SFN CA demodulation requirements. |
| [**R4-2205081**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205081.zip) | PDSCH demodulation requirements for CA with HST-SFN scenario | Ericsson | Proposal 1: Rel-17 FR1 HST PDSCH SFN CA demodulation requirements are applicable from the same release as the Enhanced RRM requirements for FR1 CA in HST scenario. If the demodulation part needs to decide the applicable release, Rel-17 FR1 HST PDSCH SFN CA demodulation requirements are applicable from Rel-16. |
| [**R4-2205082**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205082.zip) | draft CR: FRC for CA PDSCH demodulation requirements for HST | Ericsson |  |
| [**R4-2205752**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205752.zip) | Discussion on PDSCH CA scenarios for NR UE HST FR1 performance requirements | Huawei,HiSilicon | Proposal 1: HST-SFN CA requirements are release independent from Rel-16.  Proposal 2: Define PDSCH requirements on single carrier of BW of {35, 45} MHz for FDD 15kHz SCS. |
| [**R4-2205753**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205753.zip) | Draft CR on HST FR1 DPS CA requirements for 2Rx (38.101-4) | Huawei,HiSilicon |  |
| [**R4-2206090**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2206090.zip) | Views on FR1 HST PDSCH CA Tests | Qualcomm Incorporated |  |
| [**R4-2206110**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2206110.zip) | Draft CR on Applicability Rules for FR1 HST CA requirements | Qualcomm Incorporated |  |

## Open issues summary

**Issue 1-1: UE capability for HST-SFN CA**

* Agreements in RAN4#101bis-e meeting:
  + Introduce a new capability for supporting HST-SFN CA in FR1
    - * The granularity: [per band combination]
* Proposals in RAN4#102 meeting:
  + Option 1 (CMCC, ZTE): Per band combination
  + Option 2 (Intel): per FSPC
* Recommended WF
  + Can we agree with per band combination?

**Issue 1-2: Release independent**

* Agreements in RAN4#101bis-e meeting:
  + HST-DPS CA requirements are release independent from Rel-15
  + For Rel-17 FR1 HST PDSCH SFN CA demodulation requirements
    - * Option 1: Applicable from Rel-17
      * Option 2: Aligned with RRM agreement
      * Option 3: Release independent from Rel-15 /16
* Proposals in RAN4#102 meeting:
  + HST-DPS CA requirements are release independent from Rel-15 (CMCC)
  + For Rel-17 FR1 HST PDSCH SFN CA demodulation requirements
    - * Option 1: Applicable from Rel-17 (~~ZTE~~, Intel)
      * Option 2: Aligned with RRM agreement (ZTE, Apple, Ericsson)
      * Option 3: Release independent from Rel-15 /16 (ZTE)
        + Option 3a: Release independent from Rel-16 (Ericsson, Huawei)
* Recommended WF
  + Can we agree the following:
  + From demodulation perspective, release independent from Rel-16.

**Issue 1-3: FDD BW**

* Agreements in RAN4#101bis-e meeting:
  + FFS: for FDD 15KHz SCS, specify PDSCH requirements on single carrier of BW of {35, 45} MHz.
* Proposals in RAN4#102-e meeting:
  + Option 1 (Apple, Qualcomm): Do not introduce FDD requirements with additional CBW for HST CA unless there is need to support these CBW in HST deployments.
  + Option 2 (CMCC, Huawei, Qualcomm, Intel): For FDD 15KHz SCS, specify PDSCH requirements on single carrier of BW of {35, 45} MHz for HST scenario.
* Recommended WF
  + More discussion is neededs

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |

### CRs/TPs comments collection

|  |  |  |  |
| --- | --- | --- | --- |
| CR Tdoc number | Title | Responsible company | Comment collection |
| [**R4-2203763**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2203763.zip) | Draft CR on HST DPS CA requirements for 4Rx | Apple |  |
| [**R4-2204253**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2204253.zip) | Draft CR on PDSCH requirements for HST-SFN CA requirements for 4Rx | CMCC |  |
| **[R4-2204385](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2204385.zip)** | draftCR to TS 38.101-4: HST-SFN CA requirements for 2Rx | Intel |  |
| [**R4-2205082**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205082.zip) | draft CR: FRC for CA PDSCH demodulation requirements for HST | Ericsson |  |
| [**R4-2205753**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2205753.zip) | Draft CR on HST FR1 DPS CA requirements for 2Rx (38.101-4) | Huawei,HiSilicon |  |
| [**R4-2206110**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_102-e/Docs/R4-2206110.zip) | Draft CR on Applicability Rules for FR1 HST CA requirements | Qualcomm Incorporated |  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

## Discussion on 2nd round (if applicable)

### Open issues summary

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |

### CRs/TPs comments collection

## Summary on 2nd round (if applicable)

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |
| --- | --- | --- |
| **Title** | **Source** | **Comments** |
|  |  |  |

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
|  |  |  |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics incl. existing and new tdocs.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. For new LS documents, please include information on To/Cc WGs in the comments column
4. Do not include hyper-links in the documents

## 2nd round

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Decision** | **Comments** |
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| **Tdoc number** | **Title** | **Source** | **Decision** | **Comments** |
|  |  |  |  |  |

Notes:

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   2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents

# Annex

Contact information

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| --- | --- | --- |
| **Company** | **Name** | **Email address** |
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Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)