**3GPP TSG-RAN WG2 Meeting # 119bis-e *R2-22xxxxx***

**Electronic, 10th – 19th October 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** | **3507** | **rev** | **r1** | **Current version:** | **17.2.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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| ***Title:***  | Clarification on the NR HST configuration |
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| ***Source to WG:*** | Apple |
| ***Source to TSG:*** | R2 |
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| ***Work item code:*** | NR\_HST\_FR1\_enh |  | ***Date:*** | 2022-09-06 |
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| ***Category:*** |  **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | According to the RAN4 HST design and the description in TS38.133 spec, the HST enhanced RRM measurement requirement is applicable on the frequency level, not restricted to a particular serving cell. The R16 HST feature is to support the single carrier case, which is not only applicable on SpCell but on the serving frequency of SpCell. The R17 HST feature is enhanced to support the inter-frequency and CA SCC (not only SCell) case. |
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| ***Summary of change:*** | Clarify that the HST measurement configuration in the following way:**highSpeedMeasFlag**> It is configured only in SpCell’s *ServingCellConfigCommon(SIB)*.> It applies to the measurements on the SpCell frequency.**highSpeedMeasCA-Scell**> It is configured only in SCell’s *ServingCellConfigCommon.*> It applies to the measurements on the SCell frequency.**highSpeedMeasInterFreq**> It is configured only in SpCell’s *ServingCellConfigCommon*.(It is already clear with the current field description that it applies to inter-frequencies.)**Impact analysis**Impacted 5G architecture options:NR SA, (NG)EN-DC, NR-DC, NE-DCImpacted functionality:NR HST enhanced RRM measurement Inter-operability:* If the network is implemented according to the CR and the UE is not, the UE may not apply the HST enhanced RRM requirements on the non-serving cell of the SpCell frequency (if highSpeedMeasFlag is configured) and on the non-serving cell of the SCell frequency (if highSpeedMeasCA-Scell is configured).
* If the UE is implemented according to the CR and the network is not, there is no inter-opreability issue.
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| ***Consequences if not approved:*** | RAN2 and RAN4 spec is not aligned, and the HST enhanced RRM measurement requirements cannot be applicable on the non-serving cells on the same frequency of SpCell and SCell. |
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| ***Clauses affected:*** | 6.3.2 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** |  |

6.3.2 Radio resource control information elements

– *HighSpeedConfig*

The IE *HighSpeedConfig* is used to configure parameters for high speed scenarios.

***HighSpeedConfig* information element**

-- ASN1START

-- TAG-HIGHSPEEDCONFIG-START

HighSpeedConfig-r16 ::= SEQUENCE {

 highSpeedMeasFlag-r16 ENUMERATED {true} OPTIONAL, -- Need R

 highSpeedDemodFlag-r16 ENUMERATED {true} OPTIONAL, -- Cond SpCellOnly

 ...

}

HighSpeedConfig-v1700 ::= SEQUENCE {

 highSpeedMeasCA-Scell-r17 ENUMERATED {true} OPTIONAL, -- Cond SCellOnly

 highSpeedMeasInterFreq-r17 ENUMERATED {true} OPTIONAL, -- Cond SpCellOnly2

 highSpeedDemodCA-Scell-r17 ENUMERATED {true} OPTIONAL, -- Need R

 ...

}

HighSpeedConfigFR2-r17 ::= SEQUENCE {

 highSpeedMeasFlagFR2-r17 ENUMERATED {set1, set2} OPTIONAL, -- Need R

 highSpeedDeploymentTypeFR2-r17 ENUMERATED {unidirectional, bidirectional} OPTIONAL, -- Need R

 highSpeedLargeOneStepUL-TimingFR2-r17 ENUMERATED {true} OPTIONAL, -- Need R

 ...

}

-- TAG-HIGHSPEEDCONFIG-STOP

-- ASN1STOP

| ***HighSpeedConfig* field descriptions** |
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| ***HighSpeedDemodCA-Scell***If the field is present and UE supports *demodulationEnhancementCA-r17*, the UE shall apply the enhanced demodulation processing for HST-SFN joint transmission scheme with velocity up to 500km/h as specified in TS 38.101-4 [59]. This parameter only applies to SCell. |
| ***highSpeedDemodFlag***If the field is present and UE supports *demodulationEnhancement-r16*, the UE shall apply the enhanced demodulation processing for HST-SFN joint transmission scheme with velocity up to 500km/h as specified in TS 38.101-4 [59]. This parameter only applies to SpCell. |
| ***highSpeedDeploymentTypeFR2***If the field is present, and field value is *unidirectional*, the UE shall assume uni-directional deployment or if field value is *birectional* the UE shall assume bidirectional deployment for FR2 up to 350km/h as specified in TS 38.133 [14]. |
| ***highSpeedLargeOneSteptUL-TimingFR2***If the field is present, large one step UE autonomous uplink transmit timing adjustment for FR2 up to 350km/h as specified in TS 38.133 [14] is enabled. |
| ***highSpeedMeasCA-Scell***If the field is present and UE supports *measurementEnhancementCA-r17*, the UE shall apply the enhanced RRM requirements to the serving frequency of SCell for carrier aggregation to support high speed up to 500 km/h as specified in TS 38.133 [14].  |
| ***highSpeedMeasFlag***If the field is present and UE supports *measurementEnhancement-r16*, the UE shall apply the enhanced intra-NR and inter-RAT EUTRAN RRM requirements to support high speed up to 500 km/h as specified in TS 38.133 [14].If the field is present and UE supports *intraNR-MeasurementEnhancement-r16*, the UE shall apply enhanced intra-NR RRM requirement to support high speed up to 500 km/h as specified in TS 38.133 [14].If the field is present and UE supports *interRAT-MeasurementEnhancement-r16*, the UE shall apply enhanced inter-RAT EUTRAN RRM requirement to support high speed up to 500 km/h as specified in TS 38.133 [14].This parameter only applies to the serving frequency of SpCell. |
| ***highSpeedMeasFlagFR2***If the field is present, the UE shall apply enhanced intra-NR RRM requirement set one to support high speed up to 350 km/h for FR2 as specified in TS 38.133 [14], if the field value is set1 or RRM requirement set two if the field value is set2. |
| ***highSpeedMeasInterFreq***If the field is present and UE supports *measurementEnhancementInterFreq-r17*, the UE shall apply the enhanced RRM requirements for inter-frequency measurement in RRC\_CONNECTED to support high speed up to 500 km/h as specified in TS 38.133 [14]. |

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| **Conditional Presence** | **Explanation** |
| *SpCellOnly* | The field is optionally present, Need R, in the *ServingCellConfigCommonSIB or in the ServingCellConfigCommon* of an Spcell. It is absent otherwise. |
| *ScellOnly* | The field is optionally present, Need R, in the *ServingCellConfigCommon* of an Scell. It is absent otherwise. |
| *SpCellOnly2* | The field is optionally present, Need R, in the *ServingCellConfigCommon* of an Spcell. It is absent otherwise. |