3GPP TSG-RAN WG2 Meeting #127 R2-24xxxx

**Maastricht, Netherlands, August 19th – 23rd, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.331** | **CR** | **4936** | **rev** | **1** | **Current version:** | **18.2.0** |  |
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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 highSpeedMeasFlagFR2 for HST FR2 RRM |
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| ***Source to WG:*** | Samsung |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_HST\_FR2\_Enh |  | ***Date:*** | 2024-08-08 |
|  |  |  |  |  |
| ***Category:*** |  **F** |  | ***Release:*** | Rel-18 |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | In RAN4 LS (R4-2410285), RAN4 informed the following agreements.* In FR2 HST, gNB should enable RRM enhancements for all serving cells in the same frequency band (i.e. intra-band CA) in consistent manner, i.e.,
	+ The presence of highSpeedMeasFlagFR2 should be the same for all serving cells in the same frequency band
		- If highSpeedMeasFlagFR2 is present, the configured parameters for FR2 HST, i.e., set 1 or set 2, should be the same for all serving cells in the same frequency band
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| ***Summary of change:*** | The following restriction is introduced for highSpeedMeasFlagFR2. If highSpeedMeasFlagFR2 is present for SpCell and SCell(s), it should be present for all serving cells in the same frequency band with the same field value.**Impact analysis**Impacted 5G architecture options:NR SA Impacted functionality: FR2 HSTInteroperability: If the NW implements this CR but not the UE, there is no interoperability issue because UE can follow NW configuration. If the UE implements this CR but not the NW, there is no interoperability issue because it is likely that the same HST configuration is applied to all serving cells in the same frequency band in typical HST deployment. |
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| ***Consequences if not approved:*** | Unnecessary configuration need to be supported in both NW and UE. |
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| ***Clauses affected:*** | 6.3.2 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

================================================== CHANGE BEGIN==============================================================

6.3.2 Radio resource control information elements

….Omitted…

#### – *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, -- Cond SpCellOnly

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

 ...

}

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]. |
| ***highSpeedLargeOneStepUL-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 and UE supports *ue-PowerClass-v1700* set to *pc6*, the UE shall apply enhanced intra-frequency RRM requirement to the serving frequency of SpCell to support high speed up to 350 km/h for FR2 as specified in TS 38.133 [14].If the field is present and the UE supports enhanced inter-frequency RRM requirements for FR2 HST in RRC\_IDLE and RRC\_INACTIVE, the UE shall apply enhanced inter-frequency RRM requirement to support high speed up to 350 km/h for FR2 as specified in TS 38.133 [14] in RRC\_IDLE and RRC\_INACTIVE.If the field is present for SpCell and the UE supports *measEnhCAInterFreqFR2-r18*, the UE shall apply enhanced inter-frequency RRM requirement to support high speed up to 350 km/h for FR2 as specified in TS 38.133 [14] in RRC\_CONNECTED.If the field is present for SCell(s) and and the UE supports *measEnhCAInterFreqFR2-r18,* the UE shall apply enhanced intra-frequency RRM requirements to the serving frequency of the corresponding SCell to support high speed up to 350 km/h for FR2 as specified in TS 38.133 [14] in RRC\_CONNECTED. If the UE is configured with intra-band CA and the field *highSpeedMeasFlagFR2* is present, the network configures the same value for all serving cells. The field value, *set1* or *set2*, is applied as specified in TS38.133 [14]. |
| ***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 |
| *SCellOnly* | The field is optionally present, Need R, in *ServingCellConfigCommon* of an SCell. It is absent otherwise. |
| *SpCellOnly* | The field is optionally present, Need R, in *ServingCellConfigCommonSIB* or in the *ServingCellConfigCommon* of an SpCell. It is absent otherwise. |
| *SpCellOnly2* | The field is optionally present, Need R, in *ServingCellConfigCommon* of an SpCell. It is absent otherwise. |