**3GPP TSG-4 Meeting #95-e**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  | | | | | | | | |
| *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 |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | Addition of Rel-16 HST FRCs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_HST-perf | | | | |  | ***Date:*** | | | 11 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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 can be 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Introduction of Rel-16 HST TDD FRC without Special slot data. Addition of HST single Tap MCS17 FRC. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | * Modification of FRC R.PDSCH.2-10.1 to R.PDSCH.2.10-2 with no PDSCH data scheduled on special slot. * Correction of TRS slot transport block size * Addition of HST single tap FRC with MCS17 * Addition of HST-SFN FRC with rank 2 MCS 13 * Addition of HST multipath TDD with rank 1 MCS 13 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | There will be no FRC defined for Rel-16 HST-single tap, HST-SFN and HST multipath test cases. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS38.521-4 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**START OF 1st CHANGE**

Table A.3.2.1.1-8: PDSCH Reference Channel for FDD HST scenario

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Value** | | | | |
| Reference channel |  | R.PDSCH.1-8.1 FDD | R.PDSCH.1-8.2 FDD | R.PDSCH.1-8.3 FDD |  |  |
| Channel bandwidth | MHz | 10 | 10 | 10 |  |  |
| Subcarrier spacing | kHz | 15 | 15 | 15 |  |  |
| Number of allocated resource blocks | PRBs | 52 | 52 | 52 |  |  |
| Number of consecutive PDSCH symbols |  | 12 | 12 | 12 |  |  |
| Allocated slots per 2 frames | Slots | 19 | 19 | 19 |  |  |
| MCS table |  | 64QAM | 64QAM | 64QAM |  |  |
| MCS index |  | 13 | 17 | 13 |  |  |
| Modulation |  | 16QAM | 64QAM | 16QAM |  |  |
| Target Coding Rate |  | 0.48 | 0.43 | 0.48 |  |  |
| Number of MIMO layers |  | 1 | 1 | 2 |  |  |
| Number of DMRS REs |  | 18 | 18 | 18 |  |  |
| Overhead for TBS determination |  | 0 | 0 | 0 |  |  |
| Information Bit Payload per Slot |  |  |  |  |  |  |
| For Slot i = 0 | Bits | N/A | N/A | N/A |  |  |
| For Slots i = 1,…, 19 | Bits | 12552 | 16896 | 25104 |  |  |
| Transport block CRC per Slot |  |  |  |  |  |  |
| For Slot i = 0 | Bits | N/A | N/A | N/A |  |  |
| For Slots i = 1,…, 19 | Bits | 24 | 24 | 24 |  |  |
| Number of Code Blocks per Slot |  |  |  |  |  |  |
| For Slot i = 0 | CBs | N/A | N/A | N/A |  |  |
| For Slots i = 1,…, 19 | CBs | 2 | 3 | 3 |  |  |
| Binary Channel Bits Per Slot |  |  |  |  |  |  |
| For Slot i = 0 | Bits | N/A | N/A | N/A |  |  |
| For Slots i = 1,2,11,12 | Bits | 24960 | 37440 | 51168 |  |  |
| For Slots i = 3,…, 10, 13, …, 19 | Bits | 26208 | 39312 | 52416 |  |  |
| Max. Throughput averaged over 2 frames | Mbps | 11.9244 | 16.0512 | 23.8488 |  |  |
| Note 1: SS/PBCH block is transmitted in slot #0 with periodicity 20 ms  Note 2: Slot i is slot index per 2 frames | | | | | | |

**END OF 1st CHANGE**

**START OF 2nd CHANGE**

Table A.3.2.2.2-10: PDSCH Reference Channel for TDD UL-DL pattern FR1.30-1 and HST scenario

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Unit** | **Value** | | | | |
| Reference channel |  | R.PDSCH.2-10.1 TDD | R.PDSCH.2-10.2 TDD | R.PDSCH.2-10.3 TDD | R.PDSCH.2-10.4 TDD |  |
| Channel bandwidth | MHz | 40 | 40 | 40 | 40 |  |
| Subcarrier spacing | kHz | 30 | 30 | 30 | 30 |  |
| Allocated resource blocks | PRBs | 106 | 106 | 106 | 106 |  |
| Number of consecutive PDSCH symbols |  |  |  |  |  |  |
| For Slot i, if mod(i, 10) = 7 for i from {0,…,39} |  | 4 | N/A | 4 | N/A |  |
| For Slot i, if mod(i, 10) = {0,1,2,3,4,5,6} for i from {1,…,39} |  | 12 | 12 | 12 | 12 |  |
| Allocated slots per 2 frames |  | 31 | 27 | 31 | 27 |  |
| MCS table |  | 64QAM | 64QAM | 64QAM | 64QAM |  |
| MCS index |  | 13 | 13 | 17 | 13 |  |
| Modulation |  | 16QAM | 16QAM | 64QAM | 16QAM |  |
| Target Coding Rate |  | 0.48 | 0.48 | 0.43 | 0.48 |  |
| Number of MIMO layers |  | 1 | 1 | 1 | 2 |  |
| Number of DMRS REs |  |  |  |  |  |  |
| For Slot i, if mod(i, 10) = 7 for i from {0,…,39} |  | 6 | N/A | 6 | N/A |  |
| For Slot i, if mod(i, 10) = {0,1,2,3,4,5,6} for i from {1,…,39} |  | 18 | 18 | 18 | 18 |  |
| Overhead for TBS determination |  | 0 | 0 | 0 | 0 |  |
| Information Bit Payload per Slot |  |  |  |  |  |  |
| For Slots 0 and Slot i, if mod(i, 10) = {8,9} for i from {0,…,39} | Bits | N/A | N/A | N/A | N/A |  |
| For Slot i, if mod(i, 10) = 7 for i from {0,…,39} | Bits | 8456 | N/A | 11528 | N/A |  |
| For Slot i, if mod(i, 10) = {0,1,2,3,4,5,6} for i from {1,…,39} | Bits | 25608 | 25608 | 33816 | 51216 |  |
| Transport block CRC per Slot |  |  |  |  |  |  |
| For Slots 0 and Slot i, if mod(i, 10) = {8,9} for i from {0,…,39} | Bits | N/A | N/A | N/A | N/A |  |
| For Slot i, if mod(i, 10) = 7 for i from {0,…,39} | Bits | 24 | N/A | 24 | N/A |  |
| For Slot i, if mod(i, 10) = {0,1,2,3,4,5,6} for i from {1,…,39} | Bits | 24 | 24 | 24 | 24 |  |
| Number of Code Blocks per Slot |  |  |  |  |  |  |
| For Slots 0 and Slot i, if mod(i, 10) = {8,9} for i from {0,…,39} | CBs | N/A | N/A | N/A | N/A |  |
| For Slot i, if mod(i, 10) = 7 for i from {0,…,39} | CBs | 2 | N/A | 2 | N/A |  |
| For Slot i, if mod(i, 10) = {0,1,2,3,4,5,6} for i from {1,…,39} | CBs | 4 | 4 | 5 | 7 |  |
| Binary Channel Bits Per Slot |  |  |  |  |  |  |
| For Slots 0 and Slot i, if mod(i, 10) = {8,9} for i from {0,…,39} | Bits | N/A | N/A | N/A | N/A |  |
| For Slots i = 1,2,21,22 | Bits | 50880 | 50880 | 76320 | 104304 |  |
| For Slot i, if mod(i, 10) = 7 for i from {0,…,39} | Bits | 17808 | N/A | 26712 | N/A |  |
| For Slot i, if mod(i, 10) = {0,1,2,3,4,5,6} for i from {3,…,20,23,…,39} | Bits | 53424 | 53424 | 80136 | 106848 |  |
| Max. Throughput averaged over 2 frames | Mbps | 36.262 | 34.5708 | 47.9572 | 69.1416 |  |
| Note 1: SS/PBCH block is transmitted in slot #0 with periodicity 20 ms  Note 2: Slot i is slot index per 2 frames | | | | | | |

**END OF 2nd CHANGE**