**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* |
| **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 |  | Radio Access Network | **x** | Core Network |  |

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|  |
| ***Title:***  |  |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *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:*** | The equations of the R\_spat correlation matrix currently in the specification are not correct. The transmit and receive correlation matrices were exchanged in the Kroenecker product. |
|  |  |
| ***Summary of change:*** | Revising the R\_spat correlation matrices in Table C.2.4.2.2-3 |
|  |  |
| ***Consequences if not approved:*** | The computation of the R\_spat correlation matrices is not correct and will lead to wrong values of R\_spat. |
|  |  |
| ***Clauses affected:*** | C.2.4.2.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **x** |  |  Test specifications | TS/TR 38.115-1, 38.115-2 |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** | This is a revision of R4-2419341 by adding the missing “Source to TSG” in the cover page |
|  |  |
| ***This CR's revision history:*** | R4-2419341 |

## C.2.4 MIMO channel correlation matrices

### C.2.4.1 General

The MIMO channel correlation matrices defined in annex C.2.4 apply for the antenna configuration using uniform linear arrays at both gNB and NCR-MT and for the antenna configuration using cross polarized antennas.

### C.2.4.2 MIMO correlation matrices using Uniform Linear Array

#### C.2.4.2.1 General

The MIMO channel correlation matrices defined in annex C.2.4.2 apply for the antenna configuration using uniform linear array (ULA) at both gNB and NCR-MT.

#### C.2.4.2.2 Definition of MIMO correlation matrices

Table C.2.4.2.2-1 defines the correlation matrix for the gNB.

Table C.2.4.2.2-1: gNB correlation matrix

|  |  |
| --- | --- |
|  | gNB correlation |
| One antenna |  |
| Two antennas |  |
| Note: The matrix applies to the gNB for NCR-MT requirements. |

Table C.2.4.2.2-2 defines the correlation matrix for the NCR-MT:

Table C.2.4.2.2-2: NCR-MT correlation matrix

|  |  |  |  |
| --- | --- | --- | --- |
|  | One antenna | Two antennas | Four antennas |
| NCR-MT correlation |  |  |  |
| Note: The correlation matrix applies to NCR-MT for NCR-MT requirements. |

Table C.2.4.2.2-3 defines the channel spatial correlation matrix. The parameters, *α* and *β* in table C.2.4.2.2-3 defines the spatial correlation between the antennas at the gNB and NCR-MT respectively.

Table C.2.4.2.2-3: correlation matrices

|  |  |
| --- | --- |
| 1x2 case |  |
| 1x4 case |  |
| 2x2 case |  |
| 2x4 case |  |
| NOTE 1: RgNB refers to the correlation matrix of gNB for NCR-MT requirements.NOTE 2: RUE refers to the correlation matrix of NCR-MT for NCR-MT requirements |

For cases with more antennas at either gNB or NCR-MT or both, the channel spatial correlation matrix can still be expressed as the Kronecker product of and according to .