**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:*** |  | | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
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| ***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 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***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 .