**3GPP TSG-RAN WG4 Meeting # 111R4-2409391**

**Fukuoka, Japan, 20 – 24 May 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.803** | **CR** | **0019** | **rev** | **1** | **Current version:** | **14.3.0** |  |
|  | | | | | | | | |
| *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:*** | (FS\_NR\_newRAT) CR to TR 38.803 on corrections of acronyms and references | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_NR\_newRAT | | | | |  | ***Date:*** | | | 2024-05-13 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-14 |
|  | *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:*** | | Errors on acronyms and references have been identified but not corrected, which have been propagated into other TRs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Correct the identified errors on acronyms and references. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Error remains and would be propagated into other new TRs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.2.3, 5.2.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of R4-2409391 to correct also the equations. | | | | | | | | |

**<Start of change>**

#### 5.2.2.3 O-to-I penetration loss

The Path loss incorporating O-to-I building penetration loss is modelled as in the following:

PL = PLb + PLtw + PLin + *N*(0, σ*P2*)

where PLb is the basic outdoor path loss given in Section 5.2.2.1. PLtw is the building penetration loss through the external wall, PLin is the inside loss dependent on the depth into the building, and σ*P* is the standard deviation for the penetration loss.

PLtw is characterized as:



 is an additional loss is added to the external wall loss to account for non-perpendicular incidence;

, is the penetration loss of material *i*, example values of which can be found in Table 5.2.2.3-1.

*pi* is proportion of *i*-th materials, where ; and

*N* is the number of materials.

Table 5.2.2.3-1: Material penetration losses

|  |  |
| --- | --- |
| Material | Penetration loss [dB] |
| Standard multi-pane glass |  |
| IRR glass |  |
| Concrete |  |
| Wood |  |
| Note: f is in GHz | |

Table 5.2.2.3-2 gives PLtw, PLin and σ*P* for two O-to-I penetration loss models. The O-to-I penetration is UT-specifically generated, and is added to the SF realization in the log domain.

Table 5.2.2.3-2 O-to-I penetration loss model

|  |  |  |  |
| --- | --- | --- | --- |
|  | Path loss through external wall: [dB] | Indoor loss: [dB] | Standard deviation: σ*P* [dB] |
| Low-loss model |  | 0.5*d*2D-in | 4.4 |
| High-loss model |  | 0.5*d*2D-in | 6.5 |

*d2D-in* is minimum of two independently generated uniformly distributed variables between 0 and 25 m for RMa, UMa and UMi-Street Canyon. *d2D-in* shall be UT-specifically generated.

Both low-loss and high-loss models are applicable to UMa and UMi-Street Canyon.

Only the low-loss model is applicable to RMa.

The composition of low and high loss is a simulation parameter that should be determined by the user of the channel models, and is dependent on the use of metal-coated glass in buildings and the deployment scenarios. Such use is expected to differ in different markets and regions of the world and also may increase over years to new regulations and energy saving initiatives. Furthermore, the use of such high-loss glass currently appears to be more predominant in commercial buildings than in residential buildings in some regions of the world.

The pathloss incorporating O-to-I car penetration loss is modelled as in the following:

PL = PLb + *N*(*μ*, σ*P2*)

where PLb is the basic outdoor path loss given in Section 5.2.2.1. *μ* = 9, and σ*P* = 5. Optionally, for metallized car windows, *μ* = 20 can be used. The O-to-I car penetration loss models are applicable for at least 0.6-60 GHz.

**<Next change>**

### 5.2.7 Link level performance for 5G NR coexistence

The throughput of a modem with link adaptation can be approximated by an attenuated and truncated form of the Shannon bound. (The Shannon bound represents the maximum theoretical throughput than can be achieved over an AWGN channel for a given SINR). The following equations approximate the throughput over a channel with a given SINR, when using link adaptation:

Where:

S(SINR) Shannon bound, S(SINR) =log2(1+SINR) bps/Hz  
α Attenuation factor, representing implementation losses  
SINRMIN Minimum SINR of the code set, dB  
SINRMAX Maximum SINR of the code set, dB

The parameters α, SINRMIN and SINRMAX can be chosen to represent different modem implementations and link conditions. The parameters (SINR in dB instead of linear scale) proposed in table 5.2.7-1 represent a baseline case, which assumes:

- 1:1 antenna configurations

- AWGN channel model

- Link Adaptation (see table 5.2.7-1 for details of the highest and lowest rate codes)

- No HARQ

Table 5.2.7-1: Parameters describing baseline Link Level performance for 5G NR

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | DL | UL | Notes |
| α, attenuation | 0.6 | 0.4 | Represents implementation losses |
| SINRMIN, dB | -10 | -10 | Based on QPSK, 1/8 rate (DL) & 1/5 rate (UL) |
| SINRMAX, dB | 30 | 22 | Based on 256QAM 0.93(DL) & 64QAM 0.93 (UL) |

Note that the parameters proposed in table 5.2.7-1 are targeted for eMBB coexistence scenario.

**<End of change>**