3GPP TSG-RAN WG4 #100-e R4-2114993

Electronic Meeting, August 16-27, 2021

**Agenda item:** 9.16.6

**Source:** Qualcomm

**Title:** WF on co-existence simulation for NR\_ext\_to\_71GHz

**Document for:** Approval

# Introduction

This document presents the WF for co-existence simulation for extend to 71 GHz WI . The below items were agreed during the meeting.

|  |  |
| --- | --- |
|  | Summary |
| Sub-topic 1-1 | **Synchronization assumption of indoor scenario:** Synchronized TDD is assumed as TR 38.803.  |
| Sub-topic 1-2 | **UE EIRP limit assumption:** Keep UE EIRP assumption in WF R4-2107915.  |
| Sub-topic 1-4 | **BS antenna model parameter:** Keep the current assumption in WF R4-2107915.  |

# Simulation assumptions

# 1.1 UMi scenarios

* **Proposals**
	+ Option 1: Cell size shrinking (i.e., ISD = 30 meters)
	+ Option 2: Consider only indoor deployments
	+ Option 3: Other ideas?
* Recommended WF:
	+ TBD

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | My understanding option 2 may mean only consider the indoor scenario. We’re ok with both option 1 and option 2, with slightly preference of option 2. We didn’t have an analysis what ISD should be appropriate. Maybe some justification can be provided for 30 meters. |

# 1.2 UE power control parameters

Moderator assumes the power control scheme in TR 38.803 will be reused, but some parameters may need to be modified.

===================

For uplink scenario, TPC model specified in Section 9.1 TR 36.942 is applied



with following parameters.

* $CL\_{x-ile}=P\_{UE, conducted}-SNR\_{target}-Noise floor$
* $Noise floor= -174 +10log\_{10}\left(CBW\right)+Noise figure$
* γ = 1

====================

* **Proposals**
	+ Option 1: UE minimum conducted power equals -20 dBm and SNR target equals 15 dB. For CLx-ile values, 69 for 100 MHz and 63 for 400 MHz are proposed.
	+ Option 2: TBD
* Recommended WF:
	+ TBD

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | For CLx-ile caculation, may be some detail is needed. From what Nokia commented in the 1st round, CLx-ile = (Pcmax-(10\*log10(CBW)-174+BS NF+UE SNR target)), Pcmax=20(max EIRP)-10\*log10(1\*2\*2\*8)-5 (dBi)=0 dBm, then for CBW=100MHz, it seems CLx-ile=66, for CBW=400MHz, CLx-ile=60. And for the UE minimum conducted power, -20 dBm, Rmin can be derived to get -20-0=-20 dB. Is my understanding correct? |

# 1.3 Coexistence simulation parameters summary

Note: The highlighted parameters will be modified according to the conclusion of 1.1 and 1.2.

Table 1: Proposed list of coexistence simulation parameters

|  |  |  |
| --- | --- | --- |
| System Parameters | Deployment | Indoor office C in TR 38.808 (optional: Indoor office A in TR 38.808)Dense urban scenario A in TR 38.808 with ISD = 30 meters |
| Carrier Frequency | 60 GHz, 70 GHz |
| Channel BW | 100Mhz and 400MHz  |
| SCS | 120KHz for 100MHz and 960KHz for 400MHz |
| Number of active UEs | 1 |
|  | Channel model | InH open office model in TR 38.901Umi model in TR 38.901 |
| LBT | No LBT considered (optional: consider LBT) |
| BS | (Mg, Ng, M, N, P)  | (1,1,4,8,2) for indoor deployment(1,1,16,16,2) for dense urban deployment |
| (dv, dh) | (0.5 λ, 0.5 λ) |
| Antenna element gain  | 5 dBi |
| Antenna element radiation pattern | Indoor: Table A.2.1-7 in TR 38.802 for ceiling mount UMi: Table 7.3-1 in TR 38.901  |
| EIRP limit  | 40 dBm for indoor deployment52.8 dBm for dense urban deployment |
| Noise Figure  | 13 dB |
| UE | (Mg, Ng, M, N, P)  | (1,2,2,8,2) |
| (dv, dh) | (0.5 λ, 0.5 λ) |
| Antenna element gain | 5 dBi |
| Antenna element radiation pattern | Indoor and UMi: Table A.2.1-8 in TR 38.802 |
|  | EIRP limit  | 20 dBm  |
|  | Noise figure | 13 dB |
|  | LoS/ NLoS | LoS probability model defined in TR 38.803 |
|  | Minimum conducted power  | -20 dBm |
|  | SNR target | 15 dB |
|  | CL-xile  | 63 for 100 MHz and 69 for 400 MHz.$ $ |

# Calibration and alignment

* + The followings are agreed for the steps of the calibration between companies:
1. Path loss
2. Coupling loss (path loss + BS antenna array gain + UE antenna array gain)
3. DL SINR at victim system
4. UL SINR at victim system

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | Thanks for Nokia’s comments. We’re ok to include the UL Tx power. |

# Work plan for future meetings

The following meeting plan is agreed for the co-existence simulation.

* RAN4#100e: Agree the simulation assumption and the calibration aspects.
* During the period between RAN4#100e and RAN4#101e: Offline calibrate between the companies.
* RAN4#101e: Calibrate and align the simulation results, try to agree preliminary ACIR.
* RAN4#101b-e: Further update simulation results if any, agree the final ACIR requirement.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | If it’s agreed, CATT can volunteer to lead the calibration. |