3GPP TSG RAN WG1 Meeting #98 R1-xxxxxxx

Prague, CZ, 26th – 30th August, 2019

**Agenda item: x.x.x.x**

**Source: Nokia, Nokia Shanghai Bell**

**Title: Parametrization of the 5 different sub-scenarios**

**Document for: Discussion and Decision**

# Introduction

A new radio propagation model for indoor industrial scenarios is being investigated as part of the Rel-16 SI to support studies on URLLC/IIOT enhancements [1]. After the RAN1#97 meeting, a new round of discussions on channel model and calibration [97-NR-10] was carried out via the 3GPP\_TSG\_RAN\_WG1 email reflector.

One of the open points for debate in such discussion is the parametrization of the 5 different sub-scenarios in terms of size, clutter height and size, density, etc. This document builds on the observations given in [2] and proposes a parametrization for the different sub-scenarios.

# Sub-scenario parametrization

*Proposal: use the parametrization given in the below table for the 5 sub-scenarios in the model.*

# Conclusion

This contribution has provided a tentative reference parametrization for the 5 different sub-scenarios being considered in the industrial channel model.

# References

1. RP-182138, “SID on Channel Modelling for Indoor Industrial Scenarios”, Ericsson, RAN#81, Gold Coast, Australia, Sep 10–13, 2018.
2. R1-1904823, “Classification of indoor industrial scenarios”, Nokia, Nokia Shanghai Bell, RAN1#96bis, Xi’an, China, Apr 8-12, 2019.

Table 7.2-4: Evaluation parameters for Indoor Industrial

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Indoor Industrial | | | | |
| Parameters | | Sub-scenario 1 | Sub-scenario 2 | Sub-scenario 3 | Sub-scenario 4 | Sub-scenario 5 |
| Layout | Room size | Rectangular: [20-160000] m2 | | | | |
| Ceiling height | [5-25] m | [5-15] m | [5-25] m | [5-15] m | [3-25] m |
|  | Clutter height | < Ceiling height, [0-10] m | | | | |
|  | External wall and ceiling type | Concrete or metal walls and ceiling with metal-coated windows | | | | |
| Clutter type | | Big machineries composed of regular metallic surfaces.  For example: several mixed production areas with open spaces and storage/commissioning areas | Small to medium metallic machinery and objects with irregular structure.  For example: assembly and production lines surrounded by mixed small-sized machineries. | Big machineries composed of regular metallic surfaces.  For example: several mixed production areas with open spaces and storage/commissioning areas | Small to medium metallic machinery and objects with irregular structure.  For example: assembly and production lines surrounded by mixed small-sized machineries. | - |
| Clutter density and distribution | | Low clutter density  (<35%) | High clutter density  (≥35%) | Low clutter density  (<35%) | High clutter density  (≥35%) | - |
| BS antenna height cid:image001.png@01D4B35D.C4D8CCE0 | | Clutter-embedded | | Above clutter | | Above clutter |
| UT location | LOS/NLOS | LOS and NLOS | | | | 100% LOS |
| Height cid:image003.png@01D4B35D.C4D8CCE0 | Clutter-embedded | | | | Above clutter |