

3GPP TSG RAN Rel-19 workshop
Taipei, June 15 - 16, 2023

RWS-230482

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Agenda Item : 5
Source : InterDigital, Inc.
Title : Views on Channel modeling for new
use cases in Rel-19
Document for : Discussion

Overview

Motivation

- Availability of valid channel models important for evaluation of new techniques
- No existing or verified channel model exists for several use cases, scenarios and frequencies relevant for 5G-advanced and 6G

FR3 frequency band

- Candidate spectrum for 6G (WRC 23)

Sensing

- Potential new use case for 6G (Joint sensing and communication)

Reflective intelligent surfaces

- Potential solution to overcome coverage problems in higher frequencies

FR3 (7-24 GHz)

Motivation

- Currently FR3 band is considered as candidate spectrum for 6G (WRC 23)
- Existing channel model may not reflect realistic channel characteristics of FR3 band

Proposed scope of R19 study

- Study antenna types/models
- Validate existing channel model for FR3 band with field measurement results

Sensing

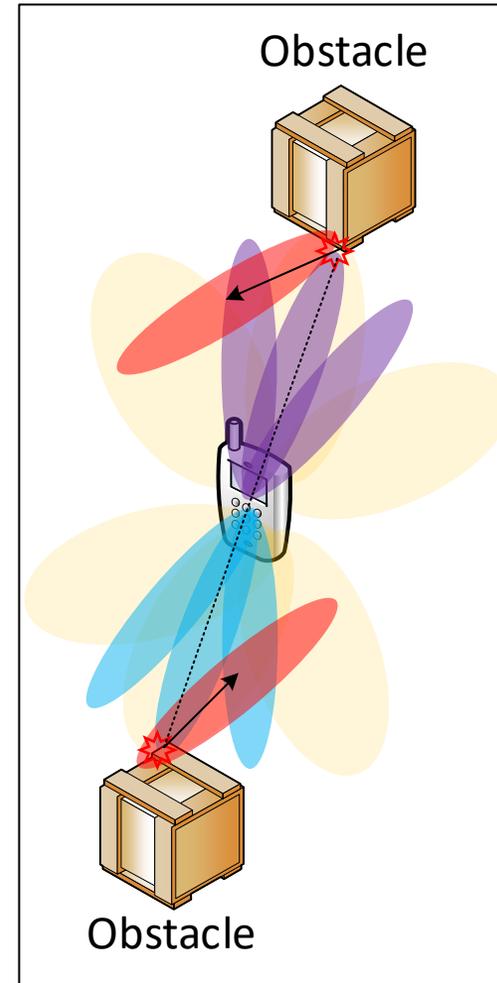
Motivation

- TR 22.837 identifies needs for sensing obstacles for improving QoS, safety and reliability for use cases such as smart transportation, railroads, factories.
- The current channel model does not address detailed properties (e.g., reflection with AoA/AoD, mobility) of the target. Channel modeling effort depend on use cases considered for joint sensing and communication.

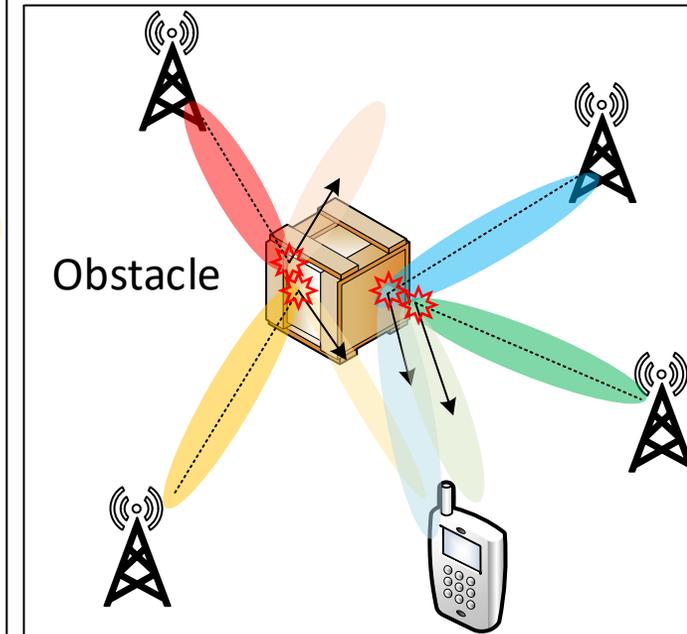
Proposed scope of R19 study

- Identify use cases for sensing environment/obstacles
 - gNB-UE bi-static sensing mode is included
- Develop channel models for the identified use cases in 3GPP frequency ranges (e.g. FR1, FR2-1, FR2-2)

UL scenario



DL scenario



Reflective Intelligent Surfaces

Motivation

- **Coverage** performance remains a key challenge for operators commercializing 5G, particularly for FR2 due to blockage and propagation losses.
- Existing solutions such as *IAB* and *NCR* may not be cost-effective/viable in certain scenarios.
- **RIS**, a planar array of N reflecting elements (unit-cells) where reflectivity of each can be adjusted, enables dynamic control of the radio environment; resulting in **better coverage** and **reliability**.

Proposed scope of R19 study

- RIS technologies, categories and types
- RIS potential use-cases and deployment scenarios
- RIS channel modelling
 - TX-RIS, RIS-RX, TX-RX, RIS-RIS links

