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RP-240311

R19 UE OTA enhancement

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Background

RAN4 Rel-19 package has been discussed in RAN#102 and summary can be found in RP-233918. In the latest guidance from RAN chair (RP-240019), OTA related topics are integrated and assigned to one WI and one SI.

OTA testing enhancement WI (**2 topics, ensuring reasonable load**) • TRP/TRS Enhancement • MIMO OTA Requirements and Test Enhancement	WI
OTA testing enhancements SI **(1 topic, ensuring reasonable load)** • FR2 OTA Testing Enhancement	SI

For the detailed contents our view are shown in the following pages.

Views on TRP TRS scope

Test method:

- **NTN OTA:** Due to lack of handheld UE supporting NTN, Rel-19 should focus on test metrics study and test method can be further considered after test metric is clear.
- **FR1 2Tx/4T OTA:**
  - 2Tx OTA are still under discussion in Rel-18 WI, it can be considered in Rel-19 if there is any leftover.
  - 4Tx is only for FWA with low priority if feasible considering the quiet zone size limitations.
- **XR OTA:** Test method/phantom can be studied, however it is premature for requirement definition
- **CA MSD OTA:** Removed/deprioritized from work load perspective.
- **Multi antenna correlation:** Clarification is needed on the specification impacts.

Performance requirement:

- Targeted TRP/TRS bands based on operators inputs but should be kept in a reasonable work load.
- 2Tx requirement shall be derived based on sufficient commercial 2Tx UEs.

Views on MIMO OTA scope

FR1 test method:

- **Dynamic channel model**
  - ✓ It might be valuable to study the dynamic channel model in MIMO OTA to mimic more realistic channel conditions.
  - ✓ Channel model validation, figure of merit, implementation and test configurations should be specified.
- **Browsing mode with hand phantom**
  - ✓ In Rel-18, the hand phantom in MIMO OTA was concluded infeasible with existing test/quiet zone.
  - ✓ In Rel-19, quiet zone extension needs to be studied to accommodate hand phantom.
- **Multi-TRP**
  - ✓ The motivation/applicable scenario for multi-TRP is unclear for FR1 MIMO OTA test scenario.

Performance requirement:

- FR1 MIMO OTA requirements based on operators' demands, e.g. n8, n77.
- FR2 MIMO OTA requirements based on operators' demands, if any.

Rel-19 OTA test enh objectives (1/2)

Objectives:

TRP/TRS enhancement

- Test method
  - ✓ Study potential test metrics to support NTN OTA
    - ◆ Test method can be further considered as 2nd priority after test metric is clear
  - ✓ Study test method and applicable phantom to support XR device OTA
  - ✓ Complete Rel-18 leftover for 2Tx test methodology
  - ✓ Testing time reduction solutions for FR1 OTA
    - ◆ FFS: if considered should be clear of how the test time can be reduced considering this has been put in the WID for two releases
  - ✓ MU assessment of test methods
- Requirements work
  - ✓ Targeted TRP/TRS bands based on operators' inputs

Rel-19 OTA test enh objectives (2/2)

Objectives:

FR1 MIMO OTA enhancement

- Study dynamic channel model based test method
  - Study and if feasible specify dynamic channel models, and related channel model validation approaches
    - FFS: what kind of dynamic channel model will be targeted in the WI
- Study hand phantom based test method
  - Study the applicable test/quiet zone size for hand phantom scenario
  - Study the test system impacts to support hand phantom based MIMO OTA tests
    - Minimum impact to existing test system should be targeted
- Study multi-TRP test scenarios for FR1 MIMMO OTA as 2nd priority
  - FFS: what kind of multi-TRP scenario is targeted needs to be clarified and should be specific and meaningful
- Performance requirements
  - FR1 MIMO OTA requirements based on operators' demands

Views on FR2 OTA Testing

Testability of STxMP for non-handheld UE

- The measurement setup is not easy for the STxMP, considering limited number of measurement probs and also placement of probs which should be carefully studied.

RC method

- RC method has the merit of low test cost, it might be a potential solution for FR2 tests
- Study is necessary to verify the harmonization between RC method and DFF/IFF method.

Testability issue of FR1+FR2 DC/CA RRM test cases

- Testability issue is already confirmed. The objective can be removed.

Rel-19 FR2 test enh SI

Objectives:

- Study RC (Reverberation Chamber) Method for FR2 OTA tests
  - ✓ Study the feasibility of RC test method for FR2 OTA tests
  - ✓ Study the FR2 requirement/test case applicability for RC test method
  - ✓ Study the feasibility of harmonization between RC method and DFF/IFF method

- Study the testability of STxMP for non-handheld UE
  - ✓ Study the measurement setup, including the number and placement of probs
  - ✓ Study the applicability for small separation of transmit beams

Thank you

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