3GPP TSG RAN meeting #101
Bangalore, India, September 11-15, 2023
Agenda Item: 8A.3

RP-232397

Views on Rel-19 RAN4 topics

China Unicom

Overview of potential Rel-19 RAN4 topics

- Topics including FR1/ FR2/ RRM/ BS RF/ Testing enhancements and basket spectrum Work Items are “traditional” RAN4 topics from Rel-15 onwards, and there are strong interests from companies to have further enhancements in many technical aspects, more detailed areas are proposed on the next slide. “New” topics (e.g. NTN, AI/ML, 3Tx enhancements, etc) are also expected to have further evolution to fulfill demands for better network performance.
- For HPUE topics, it is proposed to have continuation of existing Rel-18 WIs (FDD, CA, etc.), and to consider new scenarios including UL interband CA (PC1.5 or higher) with PC2 on FDD carrier.
- Following topics are proposed for discussion on Rel-19 RAN4 package.

Non-Spectrum

- FR1 enhancement
- FR2 enhancement
- RRM enhancement
- AI/ML for RAN4
- NTN enhancement
- BS RF evolutions
- Testing enhancement

Spectrum

- CA/DC/SUL band combinations
- High Power UEs
- New bands
- New Channel bandwidths
- UE 3Tx enhancements
- Other spectrum related enhancements

Non-spectrum RAN4 topics

- Following topics are proposed to be included in RAN4 Rel-19 Non-spectrum WI/SI. More detailed of motivations and proposals on **FR2 RRM** and **FR2 OTA Testing** are included in next slides.

FR1 enhancement

- PC1.5 for Intra-band CA
- 6Rx for smart phone
- Enable CA for 4Tx CPE

FR2 enhancement

- UE Multi-panel Transmission
- 3Tx with FR2 bands
- Others

RRM enhancement

- FR2-specific enhancement
- Others

AI/ML for RAN4

- AI testing issues
- AI-based requirements optimization
- Others

Test enhancement

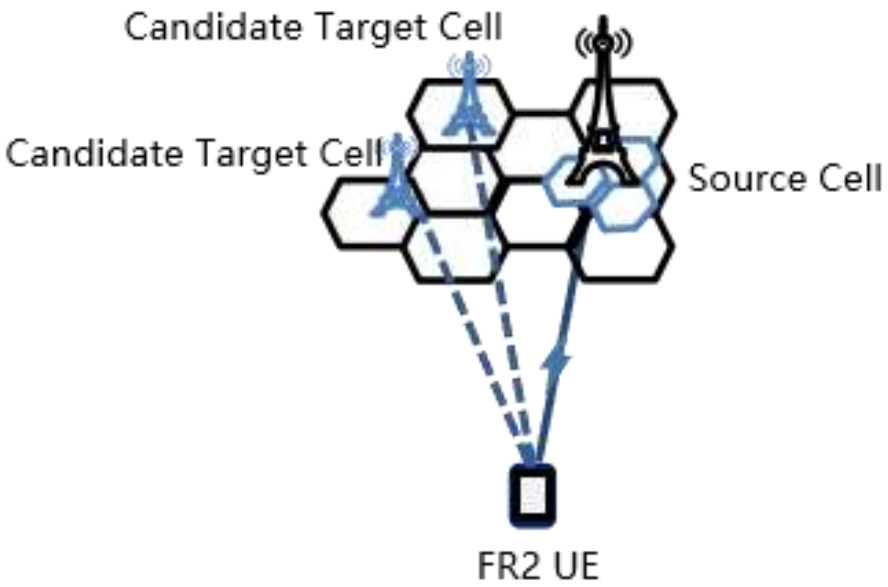
- FR2 OTA Testing
- Others

NTN enhancement

- HPUE for NTN
- Others

Non-spectrum topic: Enhanced mmW techniques in RRM

- Motivation for FR2 measurement delay reduction:
  - The **mobility performance in 5G mmWave network is degraded comparing with FR1 bands**. As the measurement delay causes longer time for FR2 UE to handover from one cell to another.
  - The main source of larger delay comparing to FR1 is the need of measuring 8 beams for FR2, with potential to be optimized for better FR2 network performance.
  - Reduced measurement delay mechanisms/requirements to be studied/specified in Rel-19

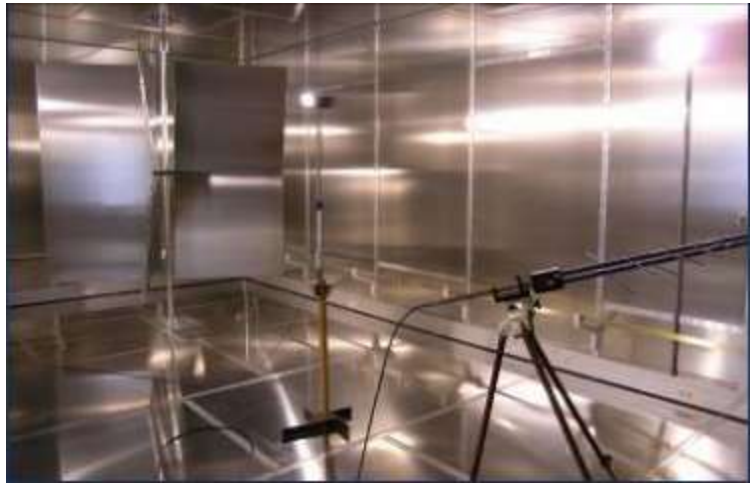


- Following are proposed for Rel-19 RRM enhancement:
  - **Study/Specify mechanism for RRM measurement of FR2 handover process, targeting at reducing the meausrement delay.**
  - **Specify reduced RRM requirements for FR2 handover process, if needed.**

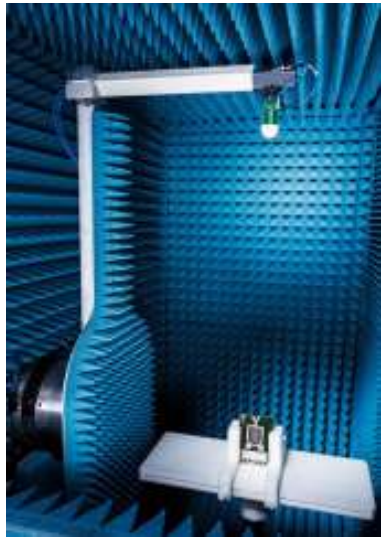
Non-spectrum topic: Reverberation Chamber (RC) Test for FR2-1

Background & Motivations

- Reverberation Chamber has the advantage of faster testing time comparing with anechoic chamber on RF parameters (e.g. TRP, etc.). RC has been widely used in LTE/NR FR1 TRP testing.
- Due to increase in the complexity of OTA testing, the industry has recognized the importance of reducing the testing time for FR2-1. RC would be a potential solution to **reduce the time needed for the performance verification process**.
- Several OTA testing related Work/Study had been carried out in previous releases based on anechoic chamber assumptions for FR2-1. And relevant work on Reverberation chamber is not studied in previous release.



Reverberation Chamber



Anechoic Chamber

Proposals

- **To consider the RC Method as a candidate alternative method for TRP and TRP-based test cases such as spurious emission for NR FR2-1 UE RF testing.**

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Thanks!