

3GPP TSG RAN 93E

September 13th-17th, 2021

RP-21nnnn

Agenda Item n.n.n

MBS Enhancement

MediaTek Inc.

Scope for NR MBS enhancement

- We acknowledge our support to the following scope for enhancement of NR Multicast and Broadcast services (identified by NWM summary in RP-211659)
 - Rel-17 left-overs
 - SFN support for MBS reception (above gNB-DU level)
 - Support of Multicast in INACTIVE state
 - Enable Higher reliability (and lower latency)
 - Improve Energy efficient operation/power saving mechanisms for MBS reception
- In addition, study Broadcast/Multicast and Unicast Superposition Transmission (BMUST)
 - Two-layer based superposition coding

SFN support for MBS reception

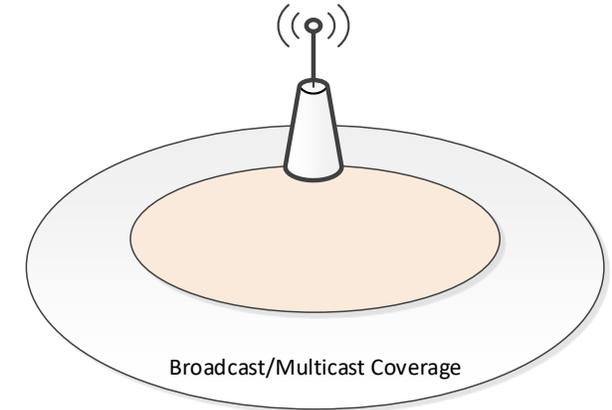
- SFN support for normal base station (HPHT based deployment is not the focus)
- Numerology consideration
 - Extended CP
 - Reuse legacy subcarrier space
- Need to support backward compatibility
- Avoid complicated synchronization protocol between network nodes

Higher reliability for NR multicast

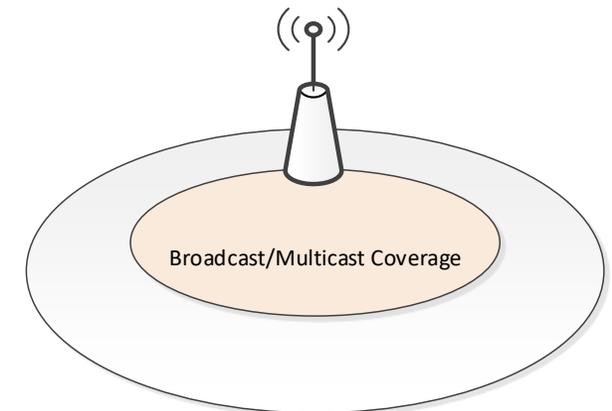
- Additional aspects on top of Rel-17 NR MBS reliability improvement mechanism
 - Support of L2-based retransmissions based on L2-feedback from the UE (e.g. PDCP layer based ARQ, or RLC layer based ARQ)
 - HARQ-ACK feedback enhancement including codebook enhancements
 - CSI feedback enhancement for multicast

Broadcast/Multicast and Unicast Superposition Transmission (BMUST)

- DL superposition coding (MUST alike) scheme between unicast and broadcast/multicast services referring to the study between two EN-TV services based MUST as studied for LTE SC-PTM
- Support two-layer based BMUST
 - Basic layer modulated by low MCS and enhanced layer modulated by high MCS
 - Two layers mapped to same OFDM symbols
 - The UE may receive both basic layer and enhanced layer
- Different options for BMUST
 - Broadcast/multicast services at basic coverage (with the need of IC cancellation at the unicast UE)
 - Broadcast/multicast services at enhanced coverage



Case 1: Broadcast/Multicast is transmitted over basic layer



Case 2: Broadcast/Multicast is transmitted over enhanced layer

Thank You!