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3GPP TSG RAN Rel-18 workshop
Electronic Meeting, June 28 - July 2, 2021

Agenda Item: 4.2

RWS-210013

Terrestrial broadcast evolution

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5G

Broadcast & Multicast

- Two main tracks: terrestrial broadcast and mixed mode
  - See background in RP-180668

Mixed mode	Terrestrial broadcast
• MNO spectrum (**IMT**) • Integration with **unicast** network • Efficient delivery of multicast/broadcast traffic (vs unicast) • Reuse of cellular infrastructure (**low power**).	• Broadcast spectrum (e.g. **UHF**) • No unicast. **Downlink-only** traffic. • Delivery of linear content (e.g. TV) • Dedicated broadcast infrastructure (can be **high power**)

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- For terrestrial broadcast, there was work in Rel-14 and 16 under the umbrella of “LTE-based 5G terrestrial broadcast”.
- As Qualcomm, we still stand by this categorization

Mixed mode aspects covered in RWS-210015

Summary of proposals

- For Rel-18, we propose to have the following enhancements for LTE-based 5G broadcast:
  - **Support of 5GC**
    - Useful to provide a standardized solution to adopt 5G Core
  - **Efficient support of NR unicast and 5G broadcast**
    - Useful optimization for smartphone support

- *Note: there is an ongoing project on adaptation to broadcast UHF band (already approved for Rel-17 and 18)*

Support of 5GC

- Currently, LTE-based 5G broadcast can only be connected to EPC.
  - During Rel-17 timeframe, there was a discussion of introducing the feature, but it was down-prioritized

- It is proposed:
  - In SA, introduce support for “terrestrial broadcast” connected to 5GC
  - In RAN, do the necessary changes to connect 5G broadcast to the 5GC.

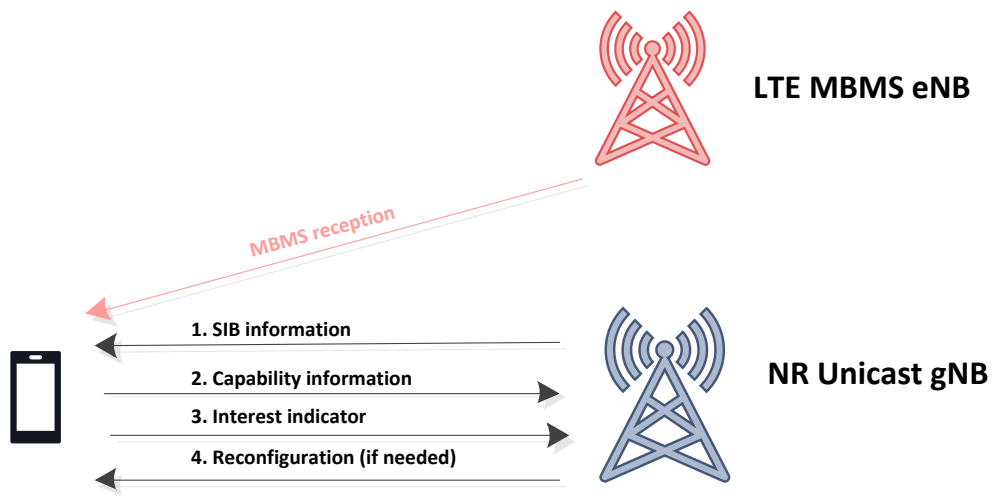
- The main RAN impact is in RAN3
  - Need to define RAN architecture to support MBSFN

- **Proposal: Introduce necessary changes to connect LTE-based 5G broadcast to 5GC**
  - This requires work in both RAN and SA.

Efficient support of unicast and broadcast

- In R2-2004535, it was proposed to introduce enhancements for simultaneous operation of NR unicast and LTE MBMS, as follows:
  - Capability signalling for baseband limitation
    - Indicate baseband limitation (amount of "baseband resources" available for MBMS reception) similar to LTE.
  - Discovery assistance: NR SIB to indicate the presence of LTE MBMS carriers.
  - MBMS Interest indication: RRC message to inform the serving gNB about the reception (or interest to receive) of LTE MBMS services.
  - Cell reselection: Prioritize frequencies depending on broadcast reception

- **Proposal**: Introduce necessary changes to enhance support of simultaneous LTE MBMS and unicast NR.



Views on "NR-based terrestrial broadcast"

- We are NOT proposing to start any work on "NR-based terrestrial broadcast"
  - In fact, we are proposing NOT to do any such work in Rel-18

- If anyway 3GPP decided to start a new project on NR-based terrestrial broadcast, what should the target be?
  - A “copy-paste” of LTE-based 5G Broadcast / EnTV features into NR would not be a good idea
    - Unclear justification / gains.

- Such project should be a long study looking at the fundamental techniques that are missing from 5G broadcast.
  - Including techniques/features supported by other broadcast standards (e.g. ATSC, DVB-T)

- **Proposal:** do **not** embark in any major redesign of terrestrial broadcast in 3GPP for Rel-18; for future releases, if desired, 3GPP could look at the fundamental techniques missing from 5G broadcast in a long study.

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