

[eMBB/non-eMBB] MBS Enhancements

eMBB consumer

MIMO

- CSI enh.
- BM: [subject to R17]
- Stationary: 8Rx, overhead redux
- UL sub-band precod.
- UL 4+ layers

DC/CA Enh.

- X-carrier HARQ: feedback & re-Tx
- Fast re-Tx split bearer
- Temporal RS PScell act
- Scalable x-carrier sch.

XR/CG Enh.

- QoS+, x-layer opt.

MBS

- SFN+
- QoS+ (Tput, reliab.)
- TV (ATSC3.0 ref)

NW Topology

Sidelink LLeMBB

- SL-U esp. <7GHz, FR2
- Low latency 1Gbps
- SL-U RedCap

Sidelink Relay

- U2U relay
- UE scheduling UE
- mPath, mHop
- Mobility (Remote, Relay)
- Network coding

Smart Repeaters

- Beamforming
- Interf. Mgmt (T/F DD)
- Integration (UE authorization)

NTN Evolution

NTN NR

- Mobility
- Regenerative arch
- HD-FDD, VoNR, MBS
- R17 leftovers

NTN IoT

- Mobility (connected)
- R17 leftovers

SID Spectr. sharing

- Study scenarios, target spectrum and regulation status

Long-term explor.

SID AI/ML integr.

- NG-RAN/AS integrat.
- DMRS ch. est., Rx noise suppress, CSI-RS overhead, CSI feedback
- (UE-based) Mobility predict., Pos. enh.
- NW functions (load balancing, radio resource planning..)

SID AI traffic

- Traffic and arch.
- Overhead optim.

SID >71GHz

- Spectrum charac.

Common tech.

[FR2] Mobility

- L1/L2 trig. CHO
- Inter-/intra-cell beam switching delay redux
- RRC DAPS HO mPanel

System Energy

- DCI-based pwr sav mTRP and mPanel
- gNB/TRP dormancy (UE -trig. / -imposed)
- Eval. Methodology (Pwr. Cons. Models)

POS (NR, SL, RedCap)

- cm-level (Tx + meas related to signal ϕ)
- SL (-based, -assisted)
- RedCap UE
- R17 leftovers

SID gNB Full Duplex

- Partitioning, scenarios, interf.

Verticals

URLLC

- DL control efficiency
- NR-U enh

RedCap

- PA-less
- (POS)
- NO LPWA

(UAV: neutral)

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- Low latency 1Gbps
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XR/CG Enh. [SA-led]

- QoS+, x-layer opt.

NTN NR

- R17 leftovers
- Mobility
- Regenerative arch
- VoNR, MBS, HD-FDD

MBS

- SFN+
- QoS+ (Tput, reliab.)
- TV (ATSC3.0 ref)

(may also be seen as non-eMBB)

Non-eMBB

URLLC

- DL control efficiency
- NR-U enh

RedCap

- PA-less
- (POS)
- NO LPWA

NTN IoT

- R17 leftovers
- Mobility (connected)

(UAV: neutral)

**X-areas
New areas**

System Energy

- DCI-based pwr sav mTRP and mPanel
- gNB/TRP dormancy (UE -trig. / -imposed)
- Eval. Methodology (Pwr. Cons. Models)

[FR2] Mobility

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SID NTN f sharing

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SID gNB Full Duplex

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SID AI/ML integr.

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SID AI traffic

- Traffic and arch.
- Overhead optim.

MBS Enhancements

RAN2-led

3GPP TUs (Total w/ 9 meetings)			
RAN1	RAN2	RAN3	RAN4
10	12	3	6

SA/CT Dependency: [TBC]

Improved MBS service quality, reliability and diversity via service continuity and wider QoS support
 Improve deployment flexibility, efficiency and coverage via wider SFN (i.e. across DUs)

Objective I: Enable SFN type operation to support multiple cell x-DU transmission [RAN2, 1, 3, 4]

- New configuration (e.g. via system information) for service continuity
- Evaluate the need for extended CP

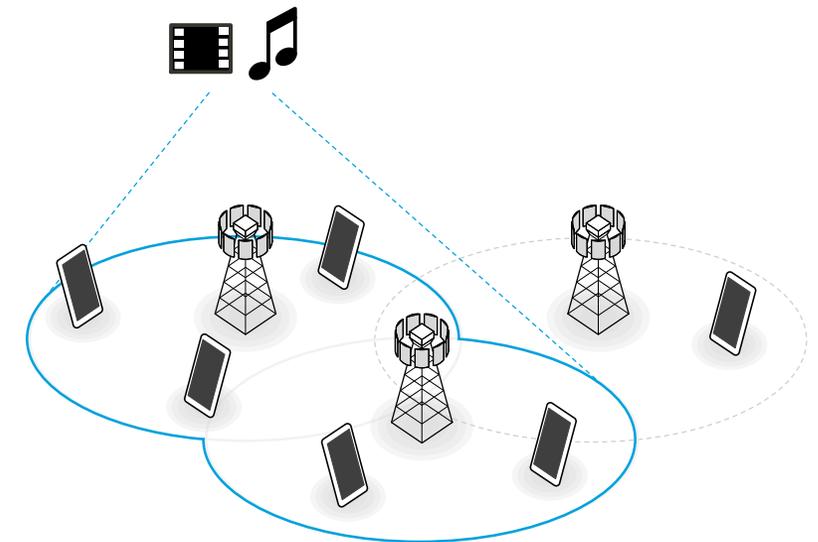
Objective II: Reliability Improvement (continuation) [RAN2, 1]

- Support MBS applications with more stringent QoS requirements e.g. public safety
- L2 feedback and retransmission at PDCP
- [L1 leftovers]

Objective III: Efficiency enhancement for broadcast [RAN1, 2, 4]

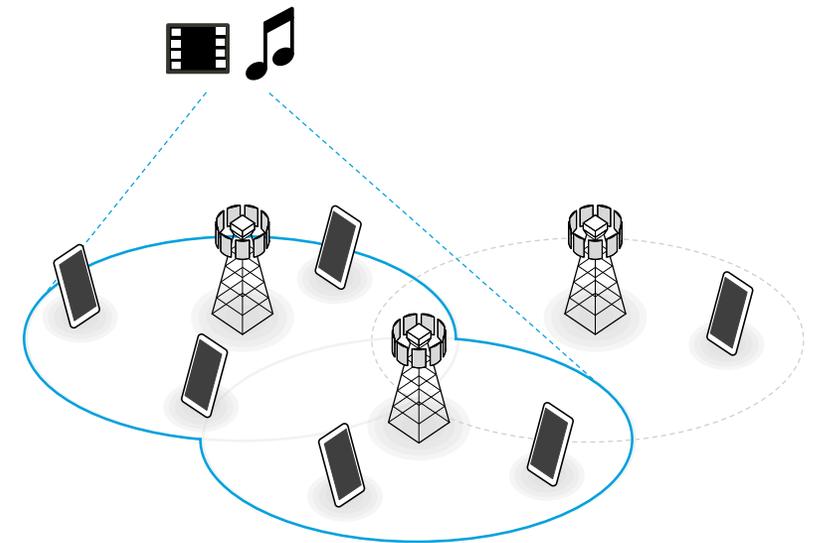
- Simultaneous transmission of ≥ 2 MBS services over the same frequency resources
- Simultaneous transmission between unicast and MBS service over the same frequency resources

NOTE: Same efficiency as for ATSC3.0



SFN based multi-cell Operation for MBS

- Rel-17 NR Multicast/Broadcast support is restricted to the network implementation based SFN operation.
 - SFN transmission to UE may be limited to only the cells hosted by a particular DU (i.e. intra-DU case).
 - The coordination among the cells within a DU for synchronized delivery of the data over the air is network implementation.
- One practical requirement from traditional broadcaster is to provide mobile services based on the conventional SFN technology (e.g. inter-DU case)
 - Network deployment based on Single Frequency Network(SFN)
 - Maximize the DL throughput for mobile users
 - Improve the spectrum utilization efficiency



Efficiency enhancement for Broadcast

- Aim for same transmission efficiency as for ATSC3.0
- Simultaneous transmission of ≥ 2 broadcast services over the same frequency resources
- Simultaneous transmission between unicast and broadcast service over the same frequency resources

Reliability Improvement (Rel-17 MBS continuation)

- Support MBS applications with more stringent QoS requirements e.g. public safety
- Further work on L2 feedback and L2 retransmission depending on Rel-17 MBS progress
- L1 leftover if any

Thank You!

MediaTek TDocs to RAN Rel-18 Workshop

RWS-210092	MediaTek Views on Rel-18 content	MediaTek Inc.
RWS-210093	[eMBB] MIMO Enhancements	MediaTek Inc.
RWS-210094	[eMBB] DC/CA Enhancements	MediaTek Inc.
RWS-210095	[eMBB] XR/CG Enhancements	MediaTek Inc.
RWS-210096	[eMBB/Other] MBS Enhancements	MediaTek Inc.
RWS-210097	[eMBB] Sidelink Enhancements - LLeMBB	MediaTek Inc.
RWS-210100	[eMBB] NTN NR Enhancements	MediaTek Inc.
RWS-210101	[non-eMBB] NTN IoT Enhancements	MediaTek Inc.
RWS-210108	[non-eMBB] URLLC Enhancements	MediaTek Inc.
RWS-210109	[non-eMBB] NR RedCap Enhancements	MediaTek Inc.
RWS-210098	[x-area] Sidelink Relay Enhancements	MediaTek Inc.
RWS-210099	[x-area] Smart Repeaters Enhancements	MediaTek Inc.
RWS-210102	[x-area] NTN/TN Spectrum Sharing	MediaTek Inc.
RWS-210103	[x-area] AI/ML Integration	MediaTek Inc.
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RWS-210105	[x-area] Mobility Enhancements	MediaTek Inc.
RWS-210106	[x-area] System Energy Enhancements	MediaTek Inc.
RWS-210107	[x-area] Positioning Enhancements	MediaTek Inc.
RWS-210197	[x-area] Sub-band Full-duplex for gNB	MediaTek Inc.
RWS-210110	Draft WID: System Energy Enhancements	MediaTek Inc.
RWS-210111	Draft WID: Mobility Enhancements	MediaTek Inc.
RWS-210112	Draft WID: DC/CA Enhancements	MediaTek Inc.
RWS-210113	Draft WID: NTN IoT Evolution	MediaTek Inc.