# Rel-17 NR IoT

3GPP TSG RAN#84
Newport Beach, CA, USA
June 3-6, 2019
A.I.8

**MediaTek Inc.**


Copyright © MediaTek Inc. All rights reserved.

# Overview Justifications

- NR provides some unique possibilities, e.g. a choice between connection by licensed or unlicensed spectrum, which can be attractive for e.g. home equipment that can thus support multiple options in one technology e.g.
  - Connect to a local gateway by Unlicensed spectrum
  - Connect to Macro network by licensed spectrum when there is no local gateway / access point.
- Most IoT cases requires good coverage
  - NR will be deployed in various spectrum, in some regions also in low spectrum that gives good coverage.
  - For operators using higher spectrum for IoT, NR may be a good choice for licensed spectrum, and coverage could be expected at least outdoors. For deep indoor possibly a complementary relaying solution is needed, but this may be needed in any case also for non-IoT use cases.
- General Conclusions
  - NR is suitable as a medium/high end IoT technology.
  - NR is suitable as a home IoT technology.
- Proposed target use case: Battery powered IoT/embedded applications that connect rarely compared to smartphones, but when connected use medium/high bitrates, e.g. on demand surveillance.
- Enhancement directions: Battery power enhancements for standby mode, Coverage Enhancements, Efficiency enhancements

Copyright © MediaTek Inc. All rights reserved.

# Coverage and deployment

- IoT communication provisioning is most often a b2b case for which coverage is very important.
  - IoT cases can benefit by methods of coverage extension that can be employed without the need for a spectrum owning operator to do hand-on work.
- Suggested objectives:
  - UE relay by NR sidelink for general coverage extension, building on V2X unicast work (see RP-191097 on NR coverage enhancement)
  - Good power efficiency for UEs using side-link relay, in particular for stand-by mode.

- Motivation: Coverage extension for IoT devices

# Idle/Inactive Mode Power consumption

- Suggested Objectives
  - NR support for eDRX for RRC_Inactive and RRC_Idle
  - NR enhanced wake-up behavior for RRC_Inactive and RRC_Idle (see RP-191096 on NR UE Power Saving Enhancements)

- Motivation: Stand-by power consumption

# Background traffic, signaling enhancements etc.

- Suggested Objective
  - Support for “Early Data Transmission” in RRC Inactive mode, with 2-step RACH and 4-step RACH, i.e. to support also transmission of Data in the RACH procedure and immediate return to or continue in RRC Inactive.

    UL Data transmission is prioritized, DL can also be considered.

    EUTRA EDT should be the baseline.

- Motivation: Efficiency – Reduce the number of transmissions required to transmit small amount of data for UEs in RRC Inactive

# UE category

- Separate UE capability for Data Rate
- Data rate 100-200 Mbps

Copyright © MediaTek Inc. All rights reserved.

# Thank You!

Copyright © MediaTek Inc. All rights reserved.