

Discussion on utilization of fragmented frequency range in 5G NR

Rakuten Mobile, Inc.

Fragmentated frequency range utilization in NR

■ Background and Motivation

- New B28 3 MHz BW allocation as LTE system is planned as depicted in RHS figure, in Japan [1]. In future, the frequency range will be defined as NR. However, as shown in the figure, there is no clear possibility to extend the band to broader bandwidth.
- Assumed use cases (as LTE, at least)
 - Providing coverage to deep indoor, rural areas, and extreme environment
 - Voice call, Data communication to limited number of users at the same time

⇒ Considering 5G-Advanced and beyond,

- 1) **How to efficiently utilize narrow bandwidth for which NR is not currently optimized in 6G area**
- 2) **Further expansion of the applicability of existing vertical use cases to the frequency range**

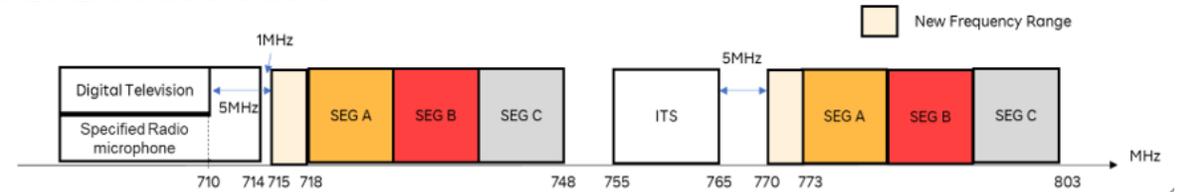


Figure 1 Discussed Frequency range in Japan [1]

Proposals for Enhancements on NR less than 5 MHz in Rel-19

- Based on Rel-18 outcome, additional features should be considered to accommodate more use cases.
- Candidate further expansion of use cases
 - **Support of Carrier Aggregation with bands of regular bandwidth, according to the market request**
 - **RedCap**
 - By utilizing specified reduced BW operation in Rel-18, necessary modification to existing (e)RedCap specification can be discussed.
 - Sensing: If low band utilization requirement becomes clear, these frequency should be considered.