A Grouping Scheme of Relay Station for IEEE 802.16j

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Purpose:
Introduce the concept of RS grouping and propose the required text revision

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RSs may be deployed close to each other so as to serve a specific area, for example:

(a) Large urban area
(b) In a tunnel
(c) In an underground
(d) Along a high way
Problem Definition

- **Frequent Handovers**
  - Frequent handovers may be happened for the MS in this case
  - For example:
    - Path a : 4 handovers
    - Path b : 3 handovers
    - Path c : 2 handovers
Problem Definition

- **More overhead by more relay regions**
  - RS transmission may be time division manner, and each relay zone may require its control signals. ex. preamble, FCH, and MAP

- More capacity consumption by more relay regions
Problem Definition

- Lower trucking efficiency if resources are pre-allocated to each relay region
  - May happen when non-transparent RS is deployed
  - The resource may not be fully utilized
Concept of RS Grouping

- **Grouped-RS**
  - A set of RSs which transmit the same preamble, FCH, MAP and data burst
  - Each group may include more than one RS

- **The neighbor RSs which are close to each other could be grouped as a grouped-RS**
  - Reduce handover frequency between RSs
  - Boost up the received signal strength

- **Advantage**
  - Lower handover frequency
  - Control overhead reduction
  - Radio resource sharing
Mobility Managements for RS Grouping

Grouped-RS

Grouped-RS1
Grouped-RS2

Intra-Group “No Handover”

Inter-Group “Handover between Grouped RS”
Summary

- Enable the **RS grouping** concept can achieve **lower handover frequency**, **lower control overhead** and **higher resource utilization efficiency**.

- A **measurement mechanism** is required to estimate **how close the relay stations are**

- This contribution has been harmonized with C802.16j-07/144r1