Decision method of relayed MS in MMR-enabled networking

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Decision method of relayed MS in MMR-enabled networking

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Current discussed RS

- There is no indication to determine relayed MS
  - Which MS communicates directly with BS or indirectly with BS via RS
Proposed scheme

- To determine relayed MS
  - All relaying transmissions are indicated by the BS
  - The conditions of determination relayed MS
    - For enhanced throughput
    - and extended cell coverage by using RS
    - When UL signal quality of the MS is changed
  - BS uses UL signal qualities of the MS
    - Directly: Between BS and MS
    - Indirectly: Between BS and MS via RS
      - RS detects UL signal quality of the MS
      - and after reports it to the BS
  - Determines whether the MS will be relayed or not
    - BS compares UL signal qualities of two paths
      - Selected value of the two path values is better than the other and a certain value
The reporting method of MS UL signal quality

- Consider backward compatibility with 802.16 TGp PMP mode
  - CQICH (Channel Quality Information Channel)
  - MAC management message
For example (1/2)

- When BS tries to connect relaying transmission
  - MS is located in BS coverage
  - MS communicates directly with the BS,
    - BS receives UL signal quality of MS, directly
    - When the MS moves in RS service region,
      - The values go from bad to worse and worse than a certain value, gradually.
    - When BS wants to change modulation to provide higher throughput to the MS,
      - BS receives UL signal quality of the MS via RS
      - RS detects UL signal quality of the MS and reports it to the BS
      - BS compares UL signal qualities of two paths
        - If indirect path UL signal quality is better than direct path UL signal quality of MS, BS tries to connect relaying transmission to the MS
  - MS communicates with BS via RS, indirectly.
For example (2/2)

- When BS tries to disconnect relaying transmission
  - MS is located out of BS coverage
  - MS communicates indirectly with BS via RS
    - BS receives UL signal quality of MS, indirectly
    - When the MS moves out RS service region,
      - The values go from bad to worse, gradually and worse than a certain value
    - When BS wants to disconnect relaying transmission to the MS
  - BS requests UL signal quality to the MS, directly
    - BS compares UL signal qualities of two paths
      - If direct path UL signal quality is better than indirect path UL signal quality of the MS and a certain value,
    - BS tries to disconnect relaying transmission to the MS
  - MS communicates with BS, directly.
Summary

- **To determine relayed MS**
  - The conditions of determination relayed MS
    - For enhanced throughput
    - and cell coverage by using RS
    - When UL signal quality of MS is changed
  - BS uses UL signal qualities of MS
    - Directly
    - Indirectly
  - BS compares UL signal quality of two paths
  - BS decides whether the MS will be relayed or not
  - The reporting method for UL signal quality of MS
    - CQICH
    - MAC management message