Support for a Simplified Uplink-Only Relaying Mode

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Reference Contribution: C802.16j-06/160

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Introduction

- 802.16j will develop relaying capability for both DL and UL in general

- In this contribution, we suggest to also support a simplified UL-only relaying mode and relay station (U-RS) within the standard

a) U-RS is disabled

b) U-RS is active
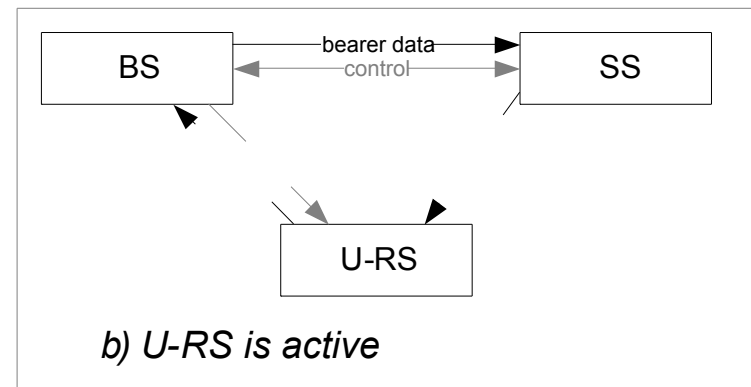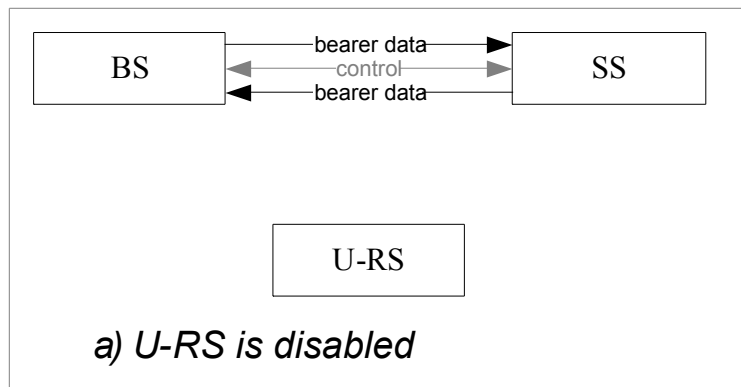
Discussion

- Why is UL-only relaying useful?
  - Large transmit power difference between BS and MS (e.g., 15-20 dB)
    - UL becomes noise-limited while DL often remains interference-limited
  - UL suffers from lower data rate than DL

- What are the other benefits/simplifications realized with UL-only relaying?
  - Reduction of signaling overhead between BS and RS
    - RS can monitor BS DL/UL MAP, hence no need for a separate BS-RS MAP
    - No overhead for transferring DL user data from BS to RS
  - Reduced RS power amplifier requirements: No RS -> MS transmissions, and RS -> BS transmissions may use high-gain directional antenna
  - No need for additional preamble reuse planning
  - No DL interference generated by RS (e.g., on preamble/MAP region)
  - No scheduler required at RS

- Signaling can also be leveraged in the case of a fully capable two-way relay
  - Can be used to help select and manage the UL portion of the route

Example SS Network Entry with U-RS