Additional Preamble Definitions for 802.16d OFDM-256

IEEE 802.16 Presentation Submission Template (Rev. 8.3)

Document Number: IEEE C802.16d-04/36

Date Submitted: 2004-03-13

Source:

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Venue:

March 14-18 Orlando, Florida, US

Purpose:

To describe the need for multiple preamble definitions for network reuse planning purposes.

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March 11, 2004

Problem Statement

- Consider a TDD network with a low reuse frequency plan:
  - Network will need to be frame synchronized to avoid undue interference problems (between uplink/downlink)
  - In downlink, SS will detect signals from multiple base stations
  - Current long preamble marking the start of the downlink frame has only a single definition
  - Interference between multiple BS transmissions of the same preamble will result in degraded frame synchronization and channel estimation by the SS
- Similar issues can occur in uplink

Suggested Remedy

- Design a set of preambles to replace each of the current preambles, that can be deployed with some reuse pattern in a low frequency reuse network
- The preambles for which to consider designing replacement sets include:
  - 4x64 frame start preamble
  - 2x128 short preamble
  - AAS network entry preamble
  - STC preamble
  - Subchannel preambles
- Support for new preambles would be mandatory for all SS

Design Issues

- How many distinct preambles in each set that replaces current preamble definitions?
  - Are distinct frame start preambles required?
  - Impact on SS performance requirements
- Low PAR required
- Good auto-correlation and cross-correlation properties required

Proposal

- Subgroup of interested 802.16 members to jointly work on preparing detailed preamble design for May interim meeting