

Frame Structure with Preamble

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Re:

IEEE 802.16m-07/047: Call for Contributions on Project 802.16m System Description Document (SDD) (2007-12-17), Multiple access and multi antenna techniques, specifically as related to frame structure.

Abstract:

Discussion on preamble design of IEEE 802.16m SDD

Purpose:

Adoption of proposed text into SDD

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Need for 16m Preamble

- Common and dedicated pilot signals are required for MU-MIMO.
 - Common pilot
 - For estimating each path gain corresponding to each transmit antenna
 - Dedicated pilot
 - For estimating beamformed channel to each user
- Legacy preamble cannot enable estimating multiple transmit-antenna channels.
- Legacy pilot tones cannot support both common and dedicated pilot signals simultaneously.

Need for 16m Preamble (Cont'd)

- For example:
 - If a frame is currently used for MU-MIMO beamforming,
 - The training (channel estimation) based on common pilot signals had to be performed prior to the current frame.
- Also, a signal for notifying the start of a 16m system is needed in the TDD system including the legacy system.
- Thus, a 16m preamble is needed.

Requirements of the 16m Preamble

- Role of Preamble
 - Synchronization, cell search, C/I estimation, channel estimation
 - Legacy preamble: 1 symbol
 - Synchronization, cell search, C/I estimation, channel estimation of 3 channels (3 sectors * 1 tx. antenna per sector)
 - 16m preamble: 1 symbol
 - Channel estimation of 6 channels (3 sectors * 2 tx. antennas per sector)
 - Notification of the start of a 16m system (TDD)
 - Synchronization, cell search, C/I estimation

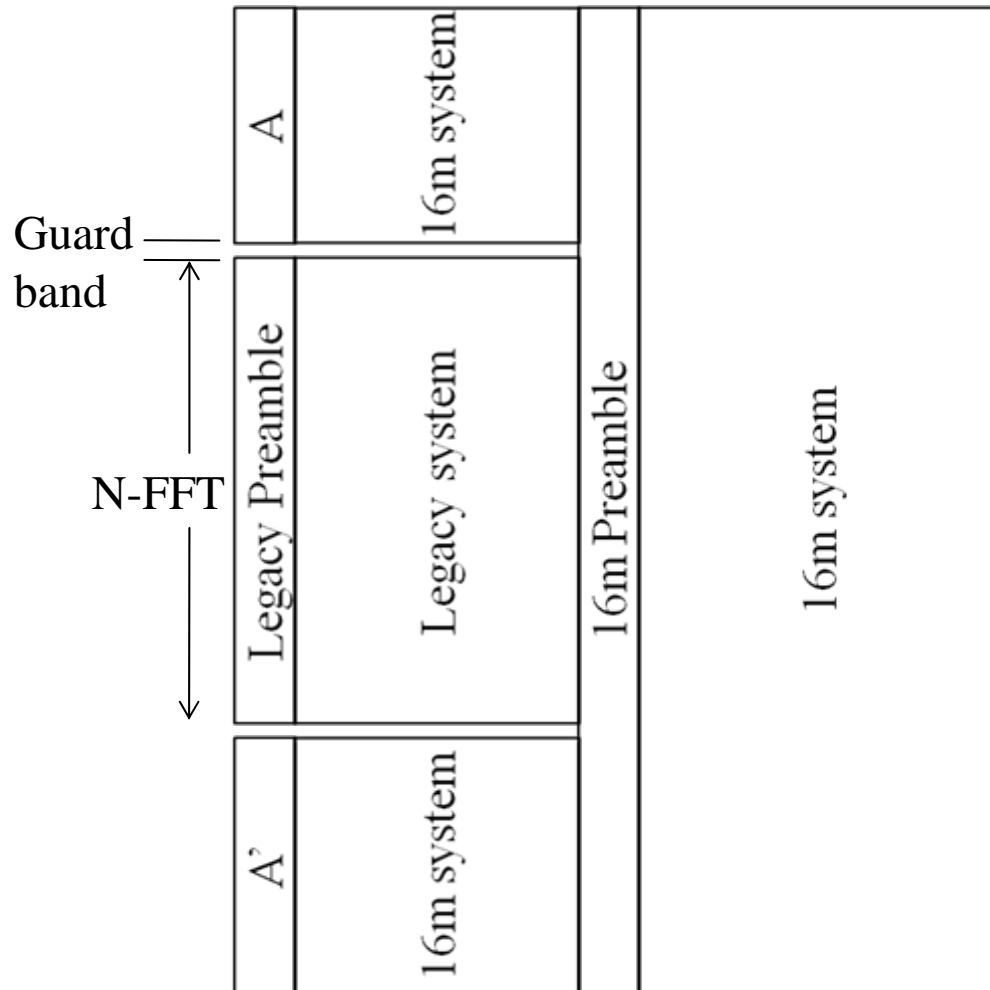
Frame Structure with Preamble

- 1 FA



Frame Structure with Preamble (Cont'd)

- More than 2 FA



- ✓ A: Legacy preamble (or) 16m Preamble
- ✓ A': Legacy preamble (or) 16m Preamble

Proposed Texts into SDD

- X.y. 16m Preamble
 - *The 16m preamble shall enable estimating 6 channels (3 sectors and 2 antennas per sector) and recognizing the start of a 16m system, as well as providing the capability of the legacy preamble.*