

IEEE 802.16m HARQ Feedback Design Details

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Venue:

SDD Session 56 Cleanup, Call for PHY Details

Base Contribution:

IEEE C802.16m-08/920

Abstract:

Proposal for 16m HARQ feedback design.

Purpose:

Adoption of proposed text/content for 802.16m System Description Document

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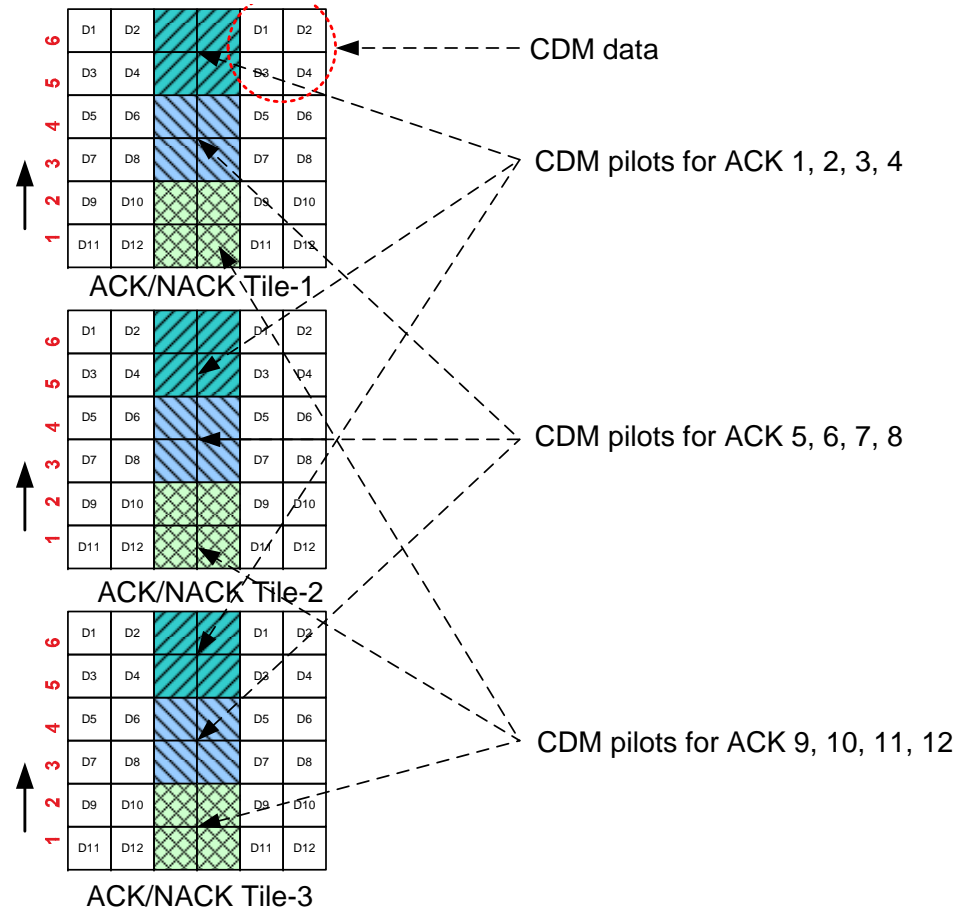
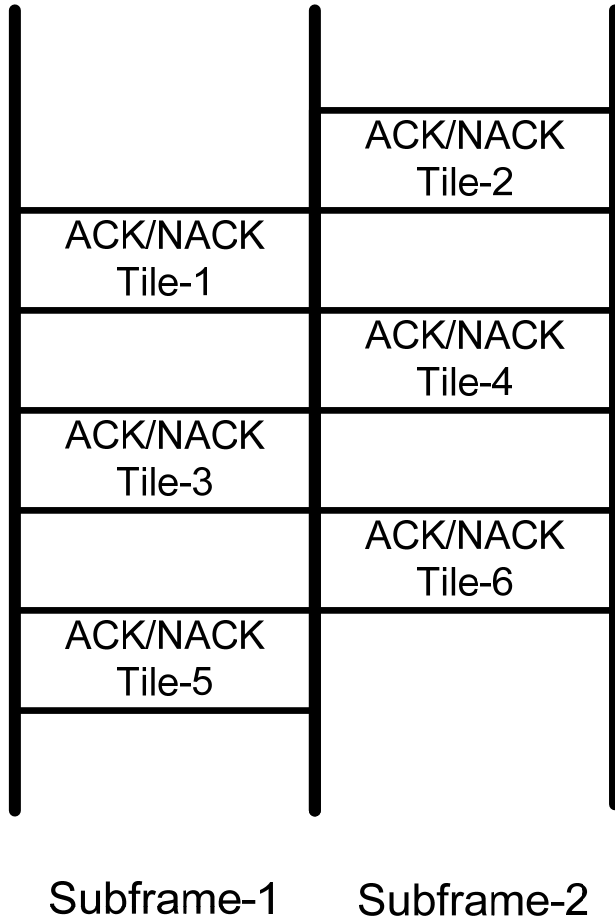
LTE ACK/NACK Review (internal)

- ❑ ACK/NACK allocation size (minimum unit)
 - 12 subcarriers by 14 symbols (1ms)
- ❑ ACK/NACK load
 - 18 ACK/NACK channels by CDM
- ❑ **ACK/NACK overhead: 9.3 tones/ACK/NACK channel**
- ❑ SCW ACK/NACK: BPSK
- ❑ MCW ACK/NACK: QPSK (2 streams per user)
- ❑ ACK/NACK can also be transmitted with data

16m ACK/NACK Design

- ❑ 1 PRU (3 distributed tiles) shared by 12 ACK/NACK
 - Pilot subcarriers are shared using CDM
 - Data subcarriers are shared using CDM
 - CDM has link budget advantage over TDM/FDM
 - **ACK/NACK overhead: 9 tones/ACK/NACK channel**
- ❑ To improve coverage, the tiles are allocated “time first”
 - Tile hopping in different subframes
 - Details in the next slides
- ❑ Support MCW ACK/NACK feedback
 - SCW: BPSK
 - MCW: QPSK
- ❑ ACK/NACK can also be transmitted with data

16m ACK/NACK PHY Design



16m ACK/NACK Detection

- ❑ ACK: packet has been received correctly
- ❑ NACK: packet has been received, but incorrectly
- ❑ DTX: DL allocation signal might be missed by MS, or MS ACK/NACK signal is missed

Support Subframe Bundling

- ❑ Multiple DL subframes can be bundled together
- ❑ One ACK/NACK is assigned for each DL allocation across the bundled subframes
 - One allocation corresponds to one DL allocation message
 - 1-bit for SCW
- ❑ Location of ACK/NACK is indicated in DL resource allocation → DL allocation index
 - ACK/NACK for persistent allocation should be allocated before regular allocations
 - DL allocation index should include number of persistent allocations