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Beamreach, ArrayComm and Intel

Venue:

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Purpose:

Discussion of new structures to consider for OFDMA AAS mode

# AAS Enhancements for OFDMA PHY

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# Motivation

- Propose changes to current AAS definition for OFDMA to enhance AAS performance:
    - Achieve link budget performance of directed scan for minimal broadcast information
    - Provide mechanisms for supporting frequency reuse of less than one
    - Enable robust and efficient paging with minimal latency

# Proposed AAS Modes

- Two modes of AAS support defined:
  - Diversity-Map Signaling
  - Direct Signaling
- AAS modes are optional

# Diversity Map Signaling

- Fixed subchannel assigned for AAS broadcast
- Carries beam-pattern diversity transmission of minimal information set (AAS_DLFP)
  - Uses most robust modulation/coding (QPSK/1-2 rate)
  - BSID, Frame Number, Preamble definition
  - Two full allocations (uplink or downlink)
- Directed transmissions will carry private MAPs for subsequent DL/UL allocations

# Diversity-Map Signaling
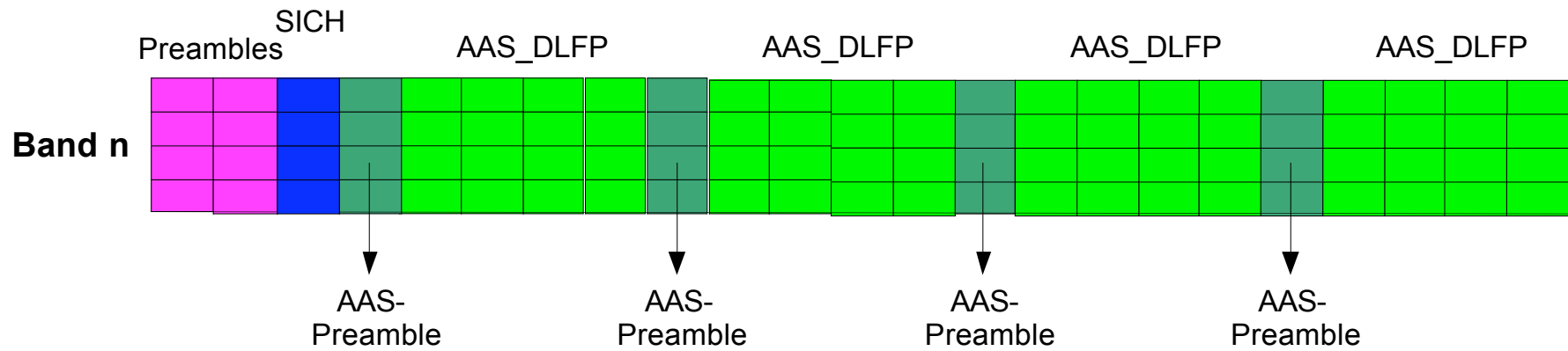
# Direct Signaling

- Fixed subchannel assigned to AAS broadcast downlink as well as an AAS access/grant region
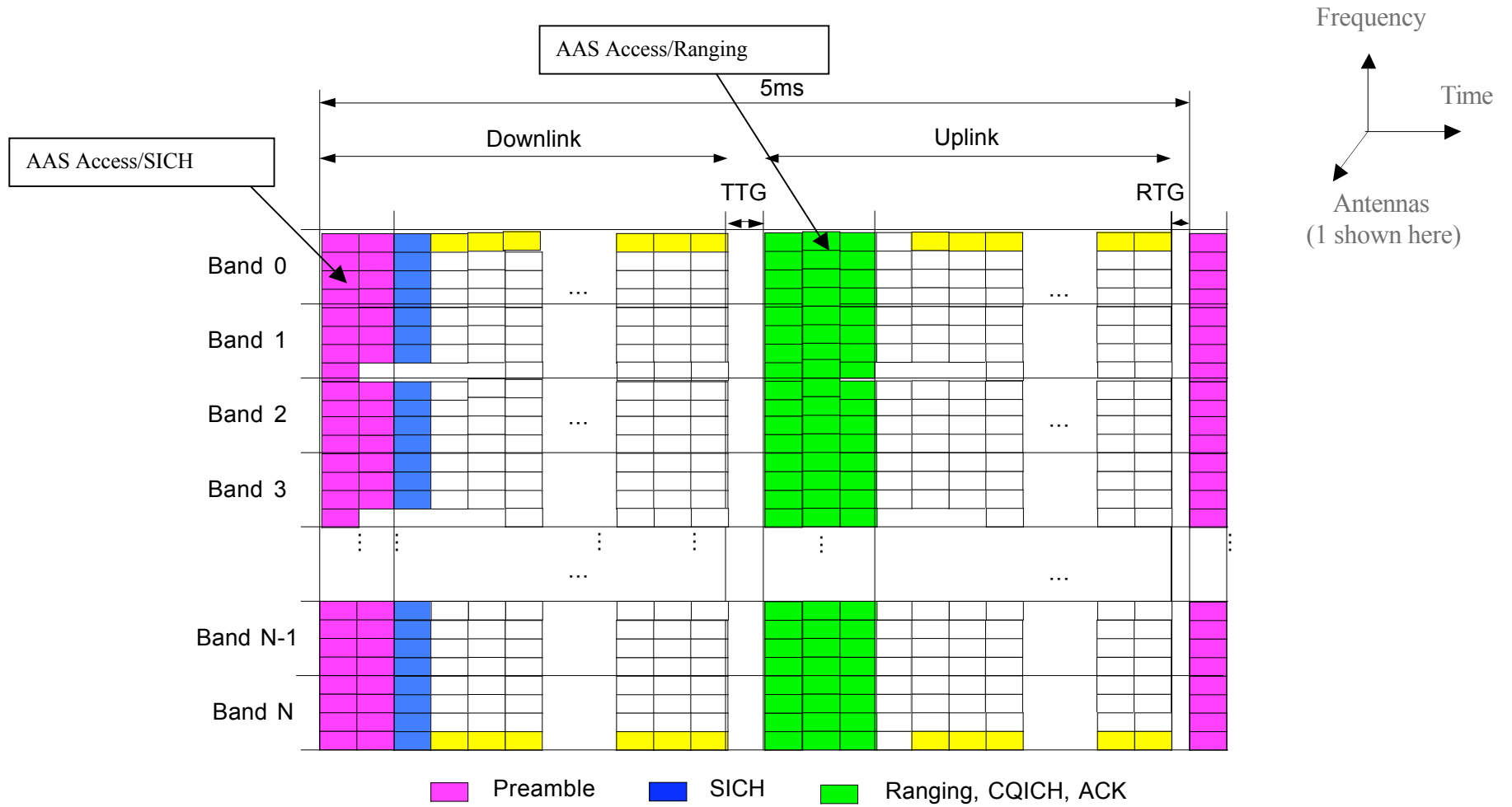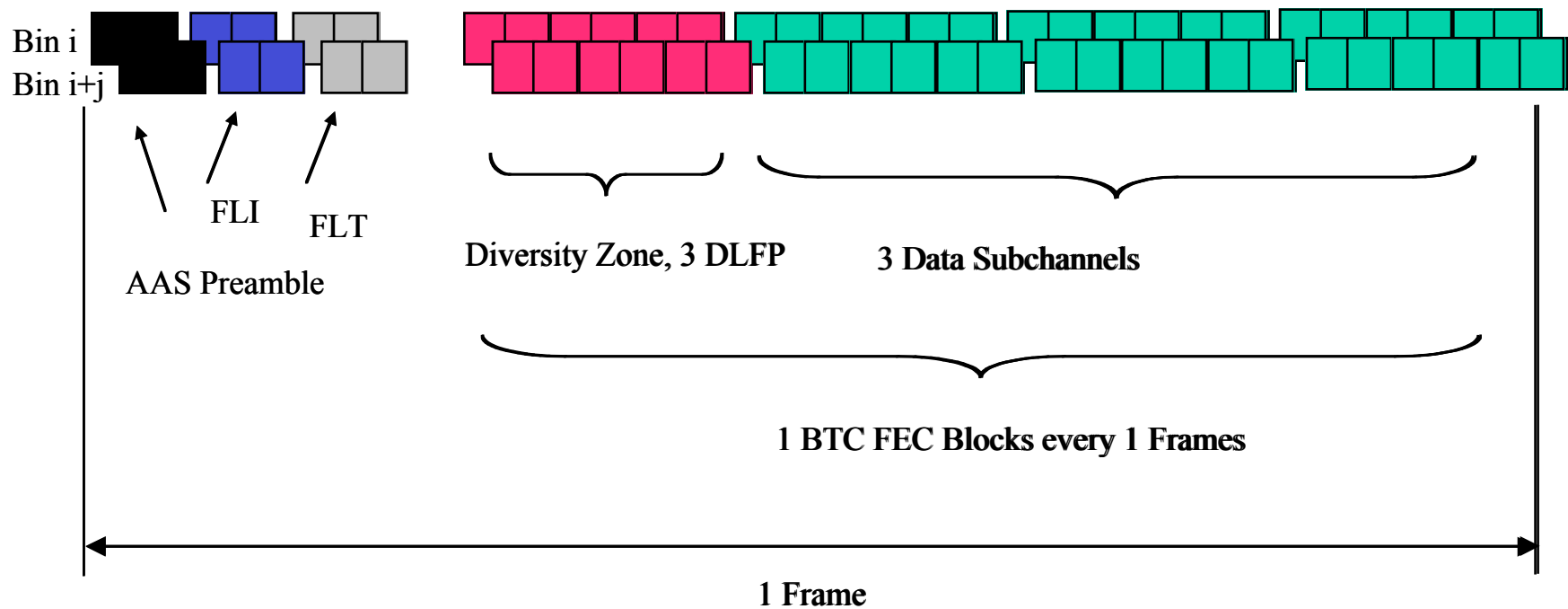- Carries beam-pattern diversity transmission of basic information set (AAS_DLFP)
- SS-based unique signaling OFDM symbols defined:
  - FLI: Forward link initiation (paging)
  - FLT: Forward link training (distinct directed training)
  - RLI/RLA: Reverse link initiation (access request/AAS training)
  - Unique signaling mechanism provide low-latency, low-overhead support for multi-user beamforming (SDMA)

# Direct-Signaling AAS Frame

# Direct-Signaling Access Mechanism



Bin i
Bin i+j

FLI
FLT

AAS Preamble

Diversity Zone, 3 DLFP

3 Data Subchannels

1 BTC FEC Blocks every 1 Frames

1 Frame

# Summary

- AAS enhancements to OFDMA PHY presented
  - Diversity-Map Signaling Mode
  - Direct-Signaling Mode
- Basic information broadcast with beam-pattern diversity
- Access grants, paging carried either by:
  - Map allocations in diversity broadcast
  - Unique signaling symbols
- Link budget deficit between directed transmissions and control signaling fully resolved