Focused Contention in 802.16-REVd

IEEE 802.16 Presentation Submission Template (Rev. 8.3)

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David Castelow
Airspan Communications Ltd
Cambridge House, Oxford Road
Uxbridge, UB8 1UN, UK

Voice: +44 1895 467281
Fax: +44 1895 467202
E-mail: dcastelow@airspan.com

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Base Document:

IEEE C802.16d-04/26r1, http://www.ieee802.org/16/tgd/contrib/C80216d-04_26r2.pdf

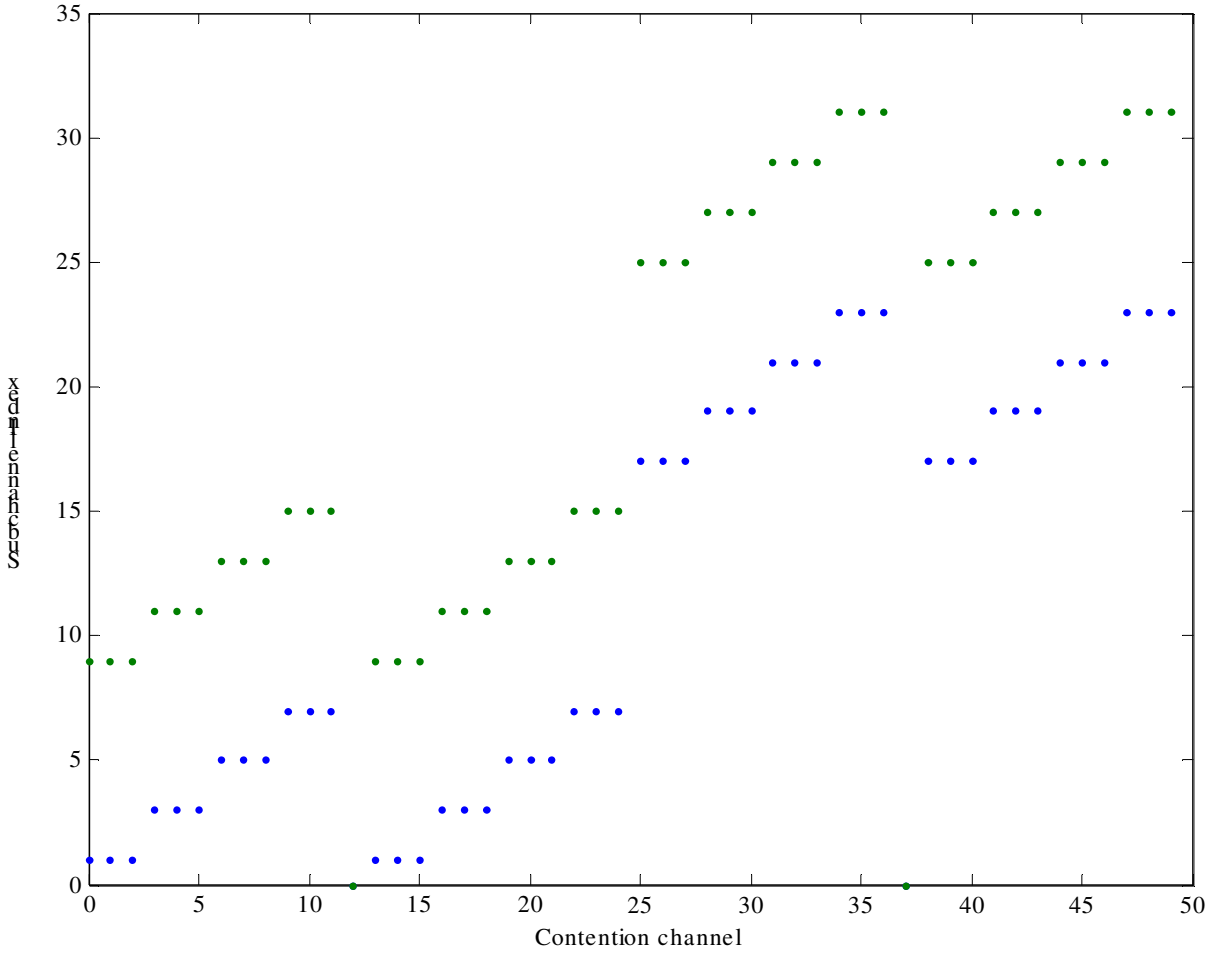
Purpose:

The document is intended for consideration within comments resolution process.

Focused Contention Changes C80216-04/26r2

- Align contention channels so they are subsets of the sub-channels.
  - For a number of reasons:
    - Simplification of both Tx and Rx:
      - All contention channels are subsets of subchannels
    - Support for Focused contention in parallel with reception of (subchannelised) data.
      - Note that this (along with the Focused Contention capability) is an option and is up to the BS: If an BS implementor does not consider this feasible, he does not need to allocate the Foc Con region and data in parallel.
    - Support for AAS: allows the BS to allocate codes (or channels) according to (part of) the BSID.

Current Mismatch between Subchannels and Contention Channels



Alternatives for AAS

- Change number of channels available for contention (based on BSID)
  - keeping 8 codes.
  - Can be achieved using UL-MAP +
  - Specification that the BS allocates region according to BSID.
- Change number of codes available for contention (based on BSID)
  - keeping number of channels at 48.
  - Needs additional messages (ULMAP or UCD)

Selected Option for AAS

- Use UL-MAP to identify allocated region for BS.
  - This is done to support AAS, where it is envisaged that each BS will use one of eight contention “slots”, tied to the lowest 3 bits of the BSID.
  - Downside is slightly higher processing requirements in SS:
    - SS must be able to select a random channel from a variable sized and “positioned” allocation.
      - Already needs some support for this in case of Cse != 0.
- Proposed mechanism provides at least 6 channels and same number of codes as presently specified.
  - Requirement to plan the use of contention intervals across basestations.

Advantages/Disadvantages

- Orthogonality between basestations using of frequency not code:
  - If using codes then timing discrepancy will lead to problems.
  - Hamming distance of codes implies no error correction.
- Downside is reduced number of channels for a single BS.

Alternatives

- Restrict Focused Contention to single code indexed by BSID.
  - Plus
    - Compatible with AAS maps.
  - Minus
    - Unknown performance limitations.
- Changes to ULMAP
  - But particularly difficult in AAS compressed UL_MAP.
- Changes to UCD to support flexible mapping of contention codes as per C80216-04/26.