

Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [Overview of a proposal for PAC operating in synchronous mode (ppt)]

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Re: [In response to call for proposals to TG8]

Abstract: [This document contains overview of a proposal for PAC operating in synchronous mode]

Purpose: [Materials for Proposal in 802.15.8 TG]

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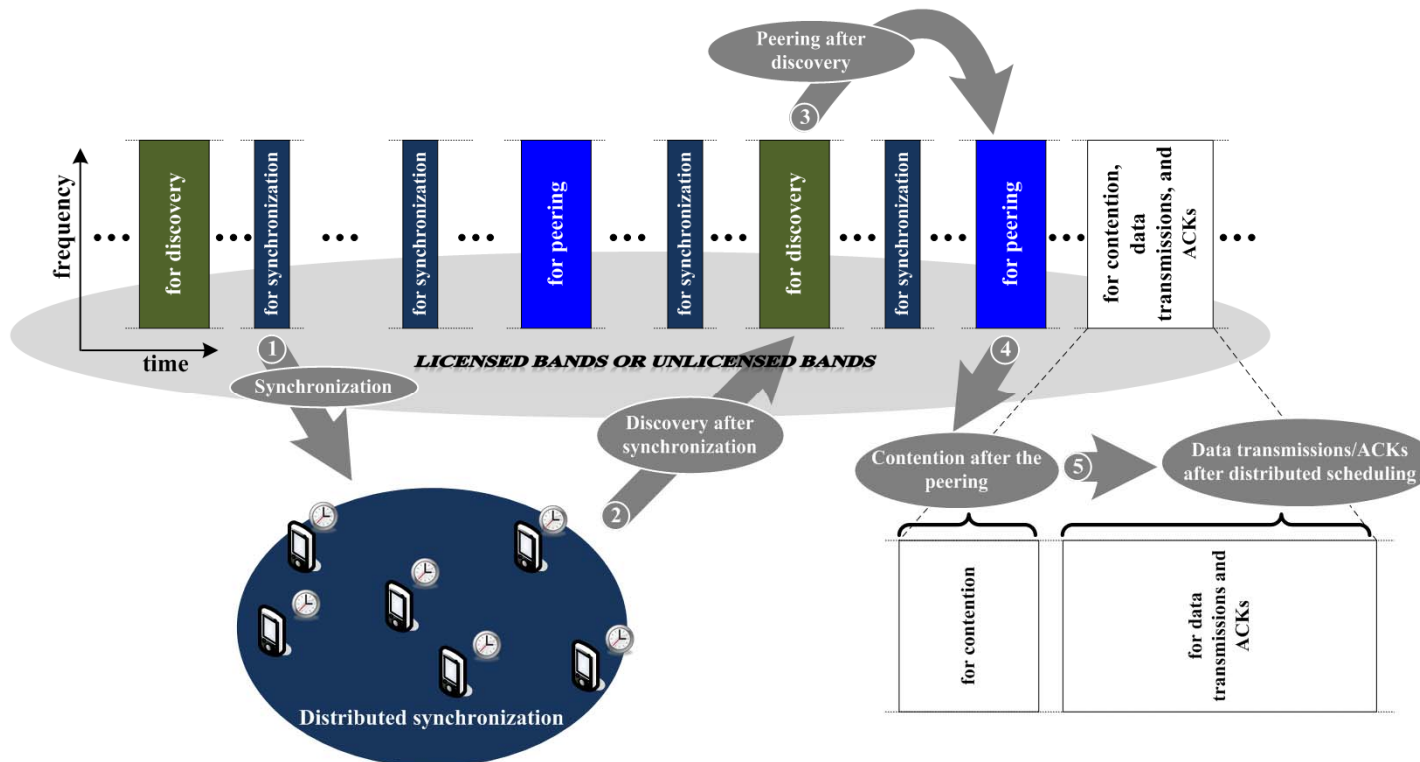
- Proposal outline
- Operation overview
- Key features of the proposal
- Conclusion

Proposal outline

- In May, we presented a preliminary example in licensed bands for PAC in synchronous mode.
 - The presentation(DCN: 15-13-0273-00-0008) covered both PHY and MAC for PAC in licensed bands operating in synchronous mode
- In July, we propose both PHY and MAC in unlicensed bands for PAC in synchronous mode.
 - DCN 15-13-0391-00-0008 or the latest version: Overview of proposal (This document)
 - DCN 15-13-0393-00-0008 or the latest version: PHY proposal (ppt)
 - DCN 15-13-0390-00-0008 or the latest version: MAC proposal (ppt)
 - DCN 15-13-0392-00-0008 or the latest version: Proposal details (doc)

Operation overview

- Synchronous mode operation for PAC in both licensed bands and unlicensed bands is proposed.
 - Radio resource is divided in time by its usage



Key features of the proposal

Operation in licensed band	Features	Operation in unlicensed band
<ul style="list-style-type: none"> ▪ Support for the large number of PDs 	The focal point of design	<ul style="list-style-type: none"> ▪ Support for the large number of PDs
<ul style="list-style-type: none"> ▪ Efficient bandwidth utilization in the licensed band 	Design considerations	<ul style="list-style-type: none"> ▪ Coexistence with heterogeneous devices
<ul style="list-style-type: none"> ▪ Sectionized and fixed frame format 	Frame structure	<ul style="list-style-type: none"> ▪ Sectionized and fixed frame format
<ul style="list-style-type: none"> ▪ Distributed synchronization 	Synchronization	<ul style="list-style-type: none"> ▪ Distributed synchronization
<ul style="list-style-type: none"> ▪ Support for both broadcast-based and request/response-based discovery 	Discovery	<ul style="list-style-type: none"> ▪ Broadcast-based discovery with support for request/response-based discovery, which is adapted to unlicensed bands ▪ Distributed allocation of discovery resource ▪ Shuffling and blocking of discovery signal for the operation in unlicensed bands
<ul style="list-style-type: none"> ▪ Sharing of an orthogonal PID(Peering ID) between peers after peering ▪ Random access for transmitting peering-request/response 	Peering	<ul style="list-style-type: none"> ▪ Sharing of an orthogonal PID(Peering ID) between peers after peering ▪ Random access for transmitting peering-request/response ▪ Shuffling and blocking of PID broadcasting signal for the operation in unlicensed bands

Key features of the proposal (cont.)

Operation in licensed band	Features	Operation in unlicensed band
▪ Frequency-domain orthogonal contention in an OFDMA manner	Contention	▪ Time-domain orthogonal contention in an OFDM manner
▪ Priority-based fully distributed scheduling	Scheduling	▪ Priority-based fully distributed scheduling
▪ OFDMA & TDMA/OFDM	Multiple access scheme for data transmission	▪ TDMA/OFDM

- Even though following features are not covered in the current proposal, it will be not long before they are included in our proposal.
 - Power saving scheme
 - Synchronous operation has a great advantage in power saving effect.
 - Multicast

Adaptation to unlicensed bands

- Much consideration is given to coexistence mechanism
 - Wireless technology designed to operate in unlicensed band shall consider coexistence mechanism.
 - PAC will create a Coexistence Assurance document as part of the WG balloting process.

- The proposal for PAC in unlicensed bands includes:
 - Heterogeneous interference sensing
 - Blocking signal
 - Low power transmission

Conclusion

- We propose a synchronous mode of PAC in both licensed bands and unlicensed bands.
- In the previous meeting, we proposed a synchronous mode of PAC in licensed bands.
- In this meeting, we propose a synchronous mode of PAC in unlicensed bands which is basically an adapted version of previous proposal.

Conclusion (cont.)

- The adaptation to unlicensed bands is featured with the coexistence mechanism with heterogeneous devices :
- It seems that PAC has much interest in unlicensed band, especially in ISM band.
- We take the coexistence with Wi-Fi stations in ISM band into our consideration.