Project	**IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>**
Title	**From session #52: assigned Action Items**
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Re:	LB 29
Abstract	
Purpose	[Description of what *specific* action is requested of the 802.16 Working Group or subgroup.]
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From session #52: assigned Action Items

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Introduction

This contribution provides text for a number of AIs

CX-Frame definition

Comment 4 Mariana the CX-Frame is not defined

Solution: Adopt David's solution: Coexistence Frame (CX-Frame): a pre-defined sequence of 802.16 DL and UL sub-frames facilitating coexistence between systems. The operational rules defined in clause 15 govern the usage of the specific sub-frames.

Secondary sync

Comment 133, P68/l37

What does "Secondary synchronization" means? What is the primary synchronization?
Provide more concise wording.

Solution: provide definitions for "primary synchronization" and "secondary synchronization".

Insert in clause 3, definitions:

3.xx Primary synchronization The source of synchronization signals transmitted within CXCC is a GPS or equivalent receiver.

3.yy Secondary synchronization The source of synchronization signals transmitted within CXCC is derived from a primary synchronization signal.

Frequency keying for OFDMA

Comments 158 p.77 l8
Needs to be defined an additional sync mode suitable for OFDMA.
Comment 215 p96, l40
It seems this clause applies only to the OFDM PHY

Discussion:

The defined OFDM sequence has the following properties:

- is different from any already defined OFDMA preambles, but can be decoded by an OFDMA receiver
- can be decoded using 64FFT
- can be decoded by using 256FFT.

If we use the OFDMA preambles on high FFT sizes, those preambles will not be decoded by OFDM or 64FFT receivers, due to the fact that use ever 3d carrier.
The solution is to keep the definition as it is.

Sub-channel 4 operation

Comment 170
It is missing the detailed description - cannot be made a reference to description.

Insert new clause title immediately after 15.3.2 (page 79, line 38)
15.3.2.1 General procedures

Insert new clause title at page 80, line 20)

15.3.2.2 Sending radio signatures in CXCC sub-channel 4

Within CXCC sub-channel 4 it is possible to evaluate the maximum interference created by those systems operating as Master during this slot.

A Base Station may use different Zones, powers and MIMO matrixes during its DL sub-frame, having the potential to create a multitude of interference patterns. In the DL sub-frame scheduled during the CXCC sub-channel 4 a Base Station is requested to use only the maximum power level, such that a receiver will receive the highest level of interference during this interval.

A special case is created in the OFDMA mode, when a Base Station may switch between the segmented of the full channel usage of the carriers. Assuming that the maximum power is used in both modes, the power density of the interference within the BS operating frequency channel or in the adjacent channel will be function of the sub-carrier usage scheme. In this case a Base Station shall transmit using the both sub-carrier allocation schemes.

In the case of sub-carrier boosting, the created interference at sub-carrier level may differ for different boosting codes. It is required to use the most frequent boosting codes in the available slots.

The UL sub-frame of CXCC indicates to an external receiver the maximum accumulated power which may act as interference to a new Base Station during this slot. An SS shall use the CXCC sub-channel 4 slot at its maximum transmission power and in the typical operating mode.

The SSs associated with an IBS shall evaluate, during CXCC sub-channel 4, the interference received from all the other BSs and report it to the IBS. The IBS may chose to evaluate the interference in other available Master sub-frames on the same or different frequency channels.

The IBS will start to be active on CXCC sub-channel 4 once has decided which is the selected frequency channel and the Master sub-frame.

Consolidation of Fig. h46

Comment 218

Fig. h46 needs consolidation relative to channel boundary (AI from 16h-07/094)

Answer: the fig. is ok, but the text can be improved to indicate the channel center.

Modify:

15.3.5.1 Signal Definition

The frequency-keyed energy pulses use for every single sub-channel the preambles defined for sub-channelization in the chapter 8.3.3.5.3. Every energy bin is mapped to a OFDM sub-channel (see Table 213-OFDM symbols parameters), as shown in the *Table h 3*.

The following figures show the desired spectral density for radio signaling. Independent of the actual channel width, the preambles are sent using the narrowest channel possible in the band. The center of the virtual narrowest channel shall coincide with the center of the used channel.

In the following example,

in which channels of 5, 10 and 20MHz may be used, the narrowest channel is 5MHz and any other system will be able to detect the preambles, ~~which~~ because they are not attenuated by any radio filter. The narrowest channel ~~will be~~is centered in the frequency domain around the actually used channel center.

Definition of Radio Signaling

Comment 226

"The radio signature will consist of a preamble and a MAC header, sent on the working channel and using the same power and sub-carrier allocation, as used in the regular data transmission mode;" The relationship between radio signature and radio signaling and how they are used are unclear.

Insert in Clause 3

Radio Signaling: The radio signaling is used in the context of this standard to transmit information between systems using either coded energy pulses or coded OFDM 256 FFT sub-carriers.

Scheduling of the Radio Signatures

Comment 234

It is stated "Base Stations using the same MAC sub-frame as the Master sub-frames shall schedule the transmission of their “radio-signatures” in such a way that they will not interfere with each other." The coordination mechanisms enabling such a non interference case seem not be described.

Replace the resolution to comment 233 as follows:

The system 2 will transmit its Base Station radio signatures ~~from time to time (every N MAC intervals)~~ at the scheduled moments of time (using CXP and CX-DL-MAP); different radio signatures will be sent for every used power/sub-channelization/OFDMA sub-channel/ spatial direction combination. ~~During these intervals the other Base Stations will schedule a Gap interval, in order to identify one~~

~~Base Station solely. Base Stations using the same MAC sub-frame as the Master sub-frames shall schedule the transmission of their "radio-signatures" in such a way that they will not interfere with each other.~~

During these intervals the other Base Stations will schedule a Gap interval, in order to avoid ~~creating~~ adding interference ~~identify one~~to the desired radio signatures. ~~Base Station solely. Base Stations using the same MAC sub-frame as the Master sub-frames shall schedule the transmission of their "radio-signatures" in such a way that they will not interfere with each other.~~

Legacy zones including preambles

Comment 251

AI Mariana: verify if there are legacy zones including preambles; Shulan raised the issue of having two preambles in a MAC frame

The answer is YES, there are legacy zones including preambles. Look at **8.4.4.6.4 AAS preambles, Table 316—AAS-DLFP structure, diversity map scan** which even allows to configure the preambles.

Text on CX_BRSTY

Comment 256

CX_BRSTY_D1, CX_BRSTY_U1, CX_BRSTY_D2, CX_BRSTY_U2 were never defined, Change the names to the currently updated names.

Modify the text at page 105, lines 20-30 as follows:

The rules for CX_BRSTY systems operating as Master are:
— The first CX_BRSTY system will use ~~the CX_BRSTY_D1, respectively CX_BRSTY_U1 of the~~ CXCC sub-channel 1 M3 DL and M3 UL (see fig. h33) to signal its occupancy of the Master 3 sub-frames.
— The second CX_BRSTY system will use ~~the CX_BRSTY_D2, respectively CX_BRSTY_U2 of the~~ CXCC sub-channel 1 M2 DL and M2 UL (see fig. h33) to signal its occupancy of the Master 2 sub-frames.
— The CX_BRSTY systems will limit their activity such that will not affect sub-frames not allocated for their operation.

MAC Message communicating the detection of 802.11 systems

Comment 275

AI Mariana: define the MAC message related to 802.11 detection

Response:
The MAC REP-RSP on page 54 already includes the report on "802.11 systems detected on the channel".

Fig. h51 correction

Comment 281

AI: Clarify in CX-DL-MAP or CX-UL_MPA message the indication for Scheduled Listen Before Talk opportunities

Modify the text relative to CX-DL-MAP (6.3.2.3.71)

Page 20, line 1

1 - ~~Radio power at the receiver for conditional transmission~~Listen before Talk in the CXCBI, conditioned by **Max Power Level**

Modify the text relative to CX-UL-MAP (6.3.2.3.72)

Page 23, line 7

1 - ~~Radio power at the receiver for conditional transmission~~Listen before Talk in the CXCBI, conditioned by **Max Power Level**

Correct the figure h55

Comment 327

AI Mariana: Correct the figure h55. Remove the "CXCPB" indication and add an indication for the contention window.

Proposed resolution:

Reject and close the comment, as having no text. Put the comment on the new Ad-Hoc for modifying the CX-Frame structure for compatibility with legacy OFDMA SS.

Add 5.9GHz to Table h45

Comment 324

AI Mariana: add 5.9GHz to Table h45

1. ***Add a row in Table h4, p.170 with the following content***

Regulatory index: 13
Frequency band: 5.85-5.925GHz

Regulatory authority: FCC, ECC?

Channel spacing: 10MHz, 20MHz

Recommendation: FFT sizes: up to 1k, Car-to-Road usage

2. ***Add the following text***

15.7.13 5.85-5.925GHz in US, Europe and Japan for Intelligent Transportation Systems

The frequency range .85-5.925GHz has been allocated for ITS applications having the scope to improve the highway traffic security.

The existing ITS standards, based on 802.11, are addressing the short range car-to-car communication. Standards for the car-to-road communication, which is higher range, are not defined yet. 802.16h may be a good candidate for this kind of applications.

Replace “will” with “shall” or “should”

Comment 327

Replace "will" along the draft (AI from 16h-07/094)

Proposed resolution:

The word “will” is extensively used in the existing 802.16 standards, so probably we can live with it.