

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	CMI sub-frame, detection of BSD, SSURF and their demodulation	
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Re:	Call for Comments and Contribution, "IEEE 802.16's License-Exempt (LE) Task Group Action item (AI-1113) was decided in July, 2006 conference (Conf number #44)	
Abstract	This document contains addition of another textual ideas on 6.3.2.3.62 (comment number 5) of previous version other ideas/comments are kept unchanged	
Purpose	To provide some contextual ideas for further exploration and understanding	
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CMI sub frame, detection of BSD, SSURF and its demodulation

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Introduction

In the July meeting one action item was decided to define the CMI sub frame and include preamble, FCH with BPSK1/2 modulation, MAP for both DL and UL based on the C80216h-06_050r0.

This contribution aims basically at addressing the method of detecting the BSD, SSURF messages in CMI method.

Insert new paragraph in 6.3.2.3.62

Once a BS station with same phy profile wants to co-exist with other BS stations in a WirelessMAN-CX system having same phy / phy profile it sends its descriptor message known as BSD.

To decode the BSD information properly foreign subscriber station should know the modulation type of BSD, and where exactly BSD exists in the CMI duration.

Following are the scenarios that can be considered in this context:

Case – 1:

CMI sub-frame has a preamble (REF1 and REF2) preceded by a CP (cyclic prefix)
CMI sub-frame has frame prefix (Frame control header- FCH) with known modulation – BSPK-1/2 with a one-symbol duration. FCH consists of Downlink frame prefix (DLFP), which in turn consists of the location and profile of the first four-downlink burst. Interfering BS sends profile information of BSD in the DLFP only.

Case – 2: ‘Interfering BS’ (sender of BSD) can send a DL-MAP in the DLFP of CMI, where the DLFP located in FCH of CMI, this DL-MAP specifies the location, duration and profile of BSD in that CMI

Case – 3:

A known modulation scheme BPSK-1/2 can be used for BSD transmission and can always start after preamble. Duration (symbol duration) of the BSD needs to be specified in a predefined place inside the message. In this case if start of the CMI frame is considered to be a predetermined one, time for parsing the BSD would be minimized.

But if BSD needs to be sent in any position of CMI, then Case –2 or, case 1 are the choices.

In all the above cases Ss that are associated to other systems should know the correct value of CP (cyclic prefix), used by the BS while sending the BSD and its CMI duration. Otherwise CP detection time needs to be

considered.

CP (cyclic prefix) could be predefined in a co-existence community for a specific PHY-profile, so that synchronization during CMI interval could be simple and less time consuming.

(Here it is assumed all systems are universally synchronized to a common timing standard such as GPS. The beginning of a CMI is known to all systems.)

Uplink MAP for sending SSURF

To send a SSURF message by a SS a UL-MAP message needs to be sent with an uplink CXZ IE (extended UIUC = 0x015) by the operating BS (OBS) (SS is registered with that BS), where the allocation start time in UL-MAP will be the start of the next CMI – uplink sub frame. These uplink grants for sending SSURF are unicast ones to SS. SS sends the SSURF by using this grant in CMI frame. A long preamble needs to be added before the SSURF message. Here the preamble preceding to the SSURF also uses a predefined CP.

Any BS (interfering BS) remaining in listen mode if detects any preamble (REF1 and REF2), by using a predefined CP (cyclic prefix) and by using a predefined modulation BPSK1/2, for a specific symbol duration (for SSURF needs to be determined) detects the SSURF.

Along with a preamble, SS can add a FCH before SSURF. Inside the FCH it could defines the profile of SSURF, so that BS in listen mode (duration of others CMI) while operating in control channel establishment decode the FCH to get the profile info of SSURF, and decode it accordingly.