Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Text for general MAC structures – sub-frames**

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Re:	IEEE 802.16h-06/015 – Working Group Review	
Abstract	Introduces the Master / Slave MAC sub-frames	
Purpose		
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Text for general MAC structures – sub-frames

Mariana Goldhamer (Alvarion)

Introduction

This contribution provides text for chapt. 15.1.4.2 in C802.16-06/048 and pictures are formatted for gray scale or black-white display.

15.1.4.2 Frame Structure for interference prevention and resolution

Replace the existing text in 15.1.4.2 with the text below:

In order to isolate the interference in the time-domain are provided repetitive MAC frame structures, which include Master and Slave sub-frames. During a Master sub-frame the data reception will not be affected by harmful interference and the data transmission will be allowed to use the maximum available powers. The activity during the Slave sub-frames is restricted, such that will not cause interference to systems using their Master sub-frame.

The assignment of different MAC sub-frames as Master/Slave sub-frames is based on the observation that in real deployment (see fig. h14) not all the data transmission connections create or are affected by interference. The overlapping radio systems create different interference zones based on the spatial distance between transmitters and receivers. As example of BS to SS interference, the radio receivers located in Zone A are affected by interference between system 1 and system 2.

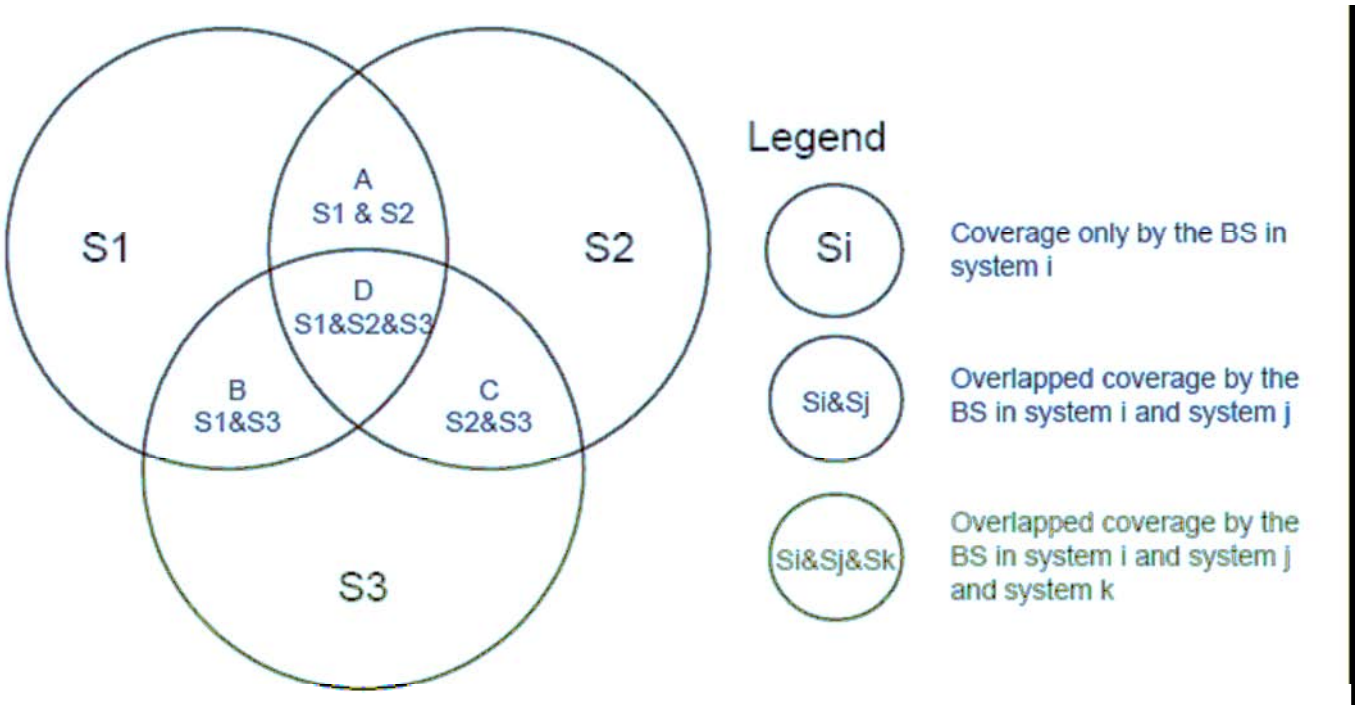

Figure h14—Interference due to overlapping networks

The operation of the three systems in Figure h 14 assume the following different situations:

- Zones in which the systems 1, 2and 3 do not interfere and the traffic can take place in parallel, using the same common sub-frame;
- Zone A: systems 1 and 2 interfere;
- Zone B: systems 1 and 3 interfere;
- Zone C: systems 3 and 2 interfere;
- Zone D: systems 1 and 2 and 3 interfere.

In order to avoid the interference, the traffic in the interfering areas A, B, C and D shall be scheduled in such a way that the interfering connections will not operate in the same time. A sub-frame called Master sub-frame is allocated to each system (see fig. h17), such that the interfering systems have Master sub-frames which do not overlap.

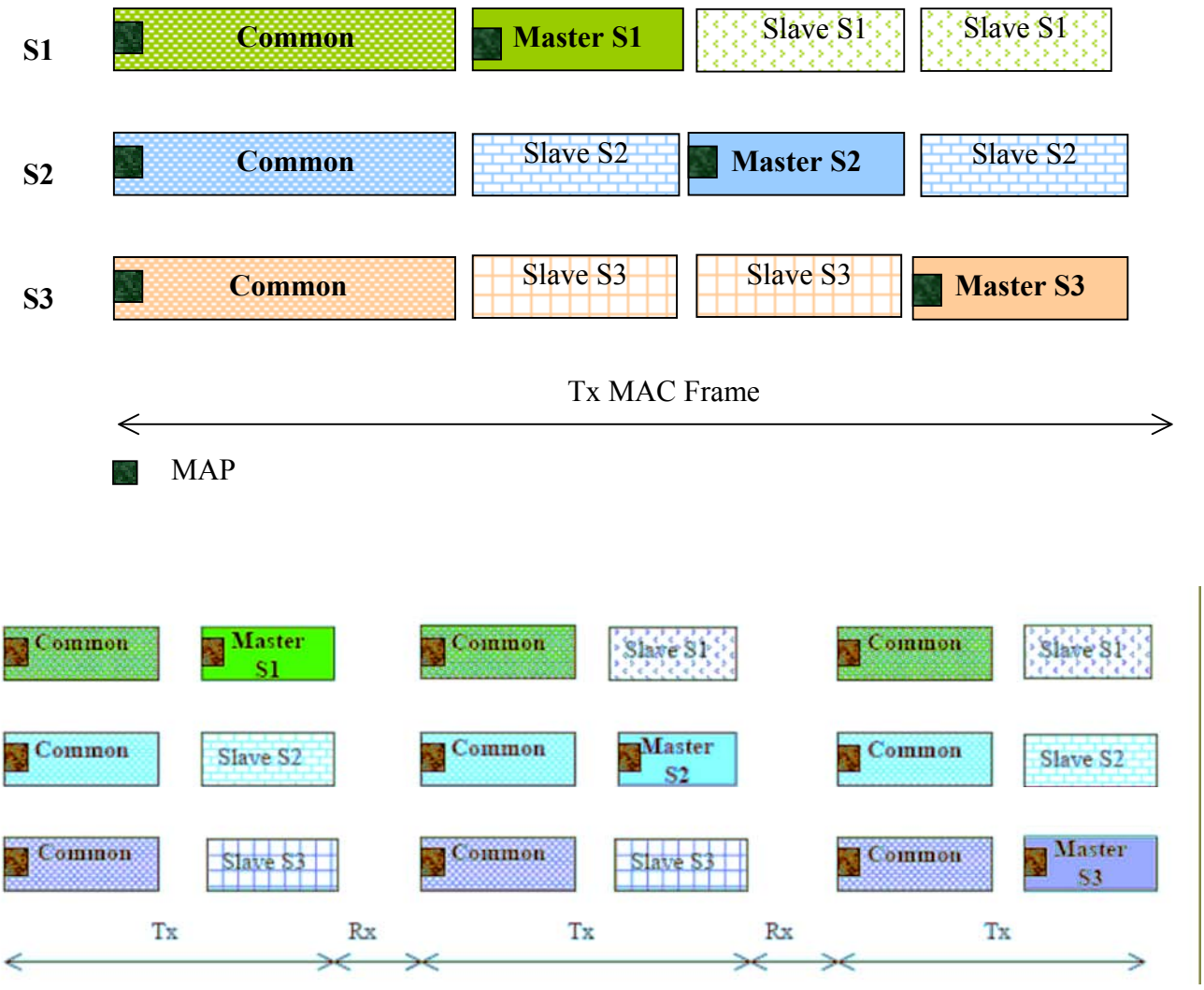

Figure h17—Examples of WirelessMAN-CX sub-frames

The system specific Master sub-frames can be scheduled during same MAC Frame (fig. h17-upper part) or in consecutives MAC Frame (fig. h17 - lower part). They should start with a private MAP, scheduling the traffic for the users that are affected by harmful interference, like those in the overlapping areas Si&Sj in fig. h14. The isolation of interference is achieved by the allocation of different transmission/reception times for the traffic in the overlapping areas, such that each system will have its own interference-free "Master" sub-frame.
The examples in fig. h17 show three systems having the Master sub-frames scheduled in one long MAC Frame or in three consecutive short MAC Frames.

The initial frame allocation is defined by a set of possible rules (see 15.4.2.1.2). The change of the rules is supported by the Coexistence Protocol(15.5) and the token protocol(15.4.2.5). See more details in 15.4.2.1.2.