Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>	
Title	**Multicarrier proposal for 16m**	
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Re:	Comments on IEEE 802.16m-08/118r1	
Abstract	A multicarrier proposal for 16m.	
Purpose	To incorporate the proposals into the 802.16m SDD.	
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Multicarrier Proposal for 16m

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Introduction

Multicarrier (MC) operation has been proposed as solution to increase the system throughput. The Rapporteur proposal C80216m_08/118r1 proposes three options for the MC with adjacent bands. However, there is no solution proposed for the case where the bands are non-adjacent, which can be also appealing for service providers that have non-contiguous bands.

This contribution is proposing to harmonize different views regarding operation with wider bandwidth, as well as providing a solution for multicarrier operation with adjacent or non-adjacent frequency bands.

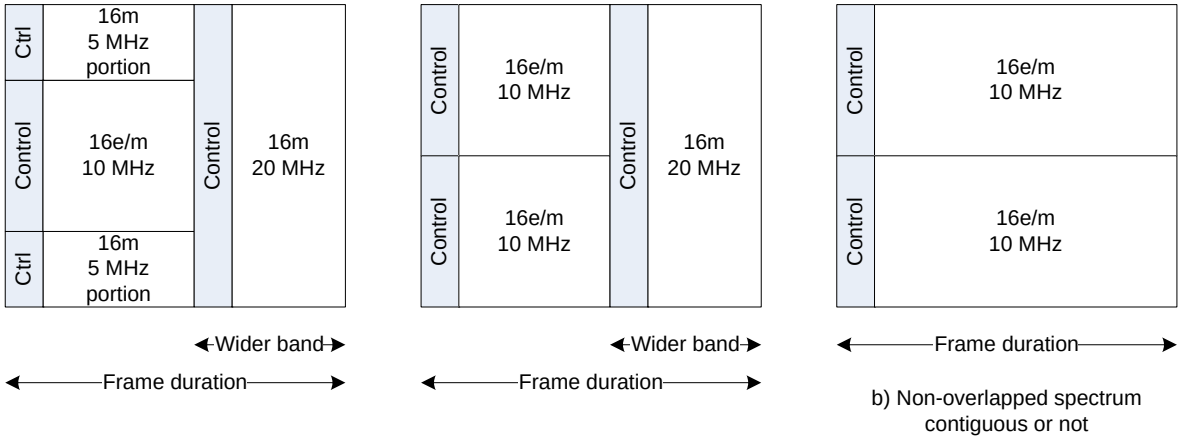

Figure 1. Different modes of utilizing the spectrum, exemplified with 5 MHz and 10 MHz narrowband, and 20 MHz wideband systems.

In the case a) a group of non-overlapped single carrier systems can allocate together a common zone that spans across the group spectrum. The advantage of this mode of operation is that can use the guard bands of the adjacent carriers for transmission to MSs that support wider bandwidths. First disadvantage is that the system is not flexible to incorporate non-contiguous bands. Second disadvantage is that the carrier frequencies for the single carrier bands have to stop in order to allow the transmission of the wider band zone with its carrier. The third disadvantage can be that some inefficiency may result with utilization of the wideband zone due to a coarse allocation of the zone.

In the case b) the spectrum is not overlapped; the two narrowband systems can be adjacent or not. This greatly simplifies the design, and it is a natural extension of the single band system. This option offers flexibility and simplicity of operation. As disadvantage we can mention that in the case of adjacent carrier operation, the guard bands are not utilized, which is wastage of resources.

Proposed Text

[Insert the following definition in section 3]

Single carrier system: A wireless system that operates in a given frequency band and has one of the nominal channel bandwidths.

[Insert the following section]

11.x Multicarrier operation support

A multicarrier system is capable of operating simultaneously on several different single carrier systems that have non-overlapped spectrum. A multicarrier capable MS may be enabled by the BS to operate in multiple adjacent or non-adjacent frequency bands. The multicarrier capabilities of an MS are provided during the network entry to the BS. The resource allocation for a carrier, which is part of a multicarrier operation, is performed within the carrier for every frame. An example of such system is presented in Figure xxx.

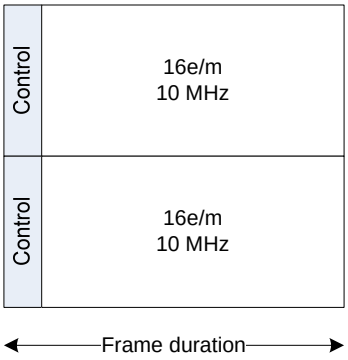

Figure xxx. Example of a multicarrier system that operates in two 10 MHZ single carrier systems.

[Insert the following section]

11.y Wider channel zone operation support

The wider channel capabilities of an MS are provided during the network entry to the BS. This mode of operation involves adjacent non-overlapped single carrier systems, which together form a wider nominal channel bandwidth. Within the frame duration, a common zone in time across all single carrier systems is allocated. This common zone is the wider channel zone that encompasses all carriers. The common zone has its own control mechanism, and this zone is flagged appropriately in each of the single carrier systems. Two examples of such configuration are provided in Figure xxy.

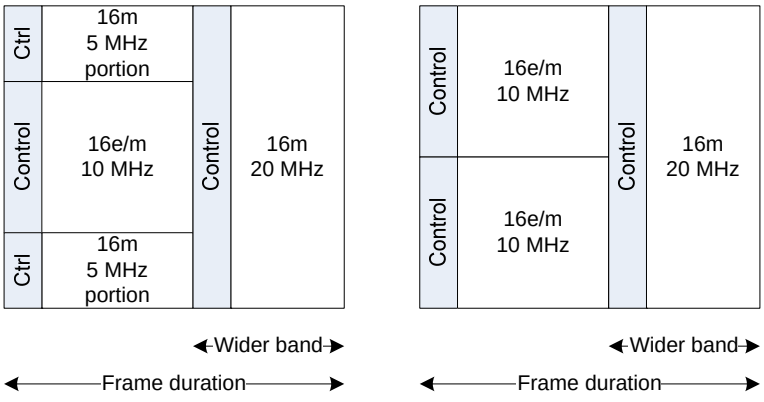

Figure xxy. Examples of operation with a zone that has wider spectrum.