

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Comments and Proposed SDD Text for Multi-Carrier Protocol	
Date Submitted	2008-05-05	
Source(s)	Mo-Han Fong, Sophie Vrzic, Robert Novak, Jun Yuan, Dongsheng Yu, Sang-Youb Kim, Kathiravetpillai Sivanesan, Anna Tee, Nortel Networks 3500 Carling Avenue Ottawa, Ontario Canada K2H 8E9	Voice: +1-613-765-8983 E-mail: mhfong@nortel.com * http://standards.ieee.org/faqs/affiliationFAQ.html >
Re:	IEEE 802.16m-08/016r1 – Call for Contributions on Project 802.16m System Description Document (SDD), on the content of IEEE 802.16m-08/003r1.	
Abstract	This contribution proposes the SDD text for multi-carrier protocol	
Purpose	To incorporate the proposed text into the Project 802.16m System Description Document	
Notice	<i>This document does not represent the agreed views of the IEEE 802.16 Working Group or any of its subgroups. It represents only the views of the participants listed in the “Source(s)” field above. It is offered as a basis for discussion. It is not binding on the contributor(s), who reserve(s) the right to add, amend or withdraw material contained herein.</i>	
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE’s name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE’s sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.	
Patent Policy	The contributor is familiar with the IEEE-SA Patent Policy and Procedures: < http://standards.ieee.org/guides/bylaws/sect6-7.html#6 > and < http://standards.ieee.org/guides/opman/sect6.html#6.3 >. Further information is located at < http://standards.ieee.org/board/pat/pat-material.html > and < http://standards.ieee.org/board/pat >.	

Comments and Proposed SDD Text for Multi-Carrier Protocol

*Mo-Han Fong, Sophie Vrzic, Robert Novak, Jun Yuan, Dongsheng Yu, Sang-Youb Kim,
Kathiravetpillai Sivanesan, Anna Tee*

Nortel Networks

1 Introduction

In IEEE 802.16m-08/003r1, Section 8.1.3 describes the basic protocol architecture for multi-carrier support. In this contribution, we propose further text for section 8.1.3 to support multi-carrier operation.

The full control information as described in 11.x.1 does not need to be sent on all carriers, as system-wide and sector-wide system information are common to all carriers. Repeating the information over multiple carriers increases the system overhead.

Two types of carriers are defined:

- **Primary carrier:** this is a carrier that carries the synchronization channel, and the full control information as described in 11.x. This type of carrier is used by MS to perform network entry/re-entry as well as for MS to obtain system parameters/configuration information. It is also used to carry traffic and the associated unicast/multicast service control information between the MS and the BS for MS that has already entered the network.
- **Secondary carrier:** this is a carrier that carries a subset of the control information, i.e, the superframe configuration control information on that carrier; as well as the unicast/multicast service control information for dynamic resource allocation of each sub-frame within the carrier. This type of carriers is used to carry traffic and the associated unicast/multicast service control information between the MS and the BS for MS that has already entered the network.

One or multiple carriers within the spectrum can be designated as primary carriers. One or multiple carriers within the spectrum can be designated as secondary carriers. An MS that has the capability to transmit/receive on only one carrier at a time is assigned to a primary carrier. An MS that has capability to transmit/receive on multiple carriers at a time, is assigned to one or multiple primary carriers. In order to enable power saving, a multi-carrier MS does not need to decode all the control information across all the carriers in the system. A multi-carrier MS monitors only the assigned primary carrier(s) for unicast/multicast service control information for new unicast/multicast traffic packet transmission/reception. The unicast/multicast service control information on the primary carrier may point to additional control information on a secondary carrier where resource for the unicast/multicast traffic burst is allocated. A multi-carrier MS may monitor the secondary carrier for unicast/multicast service control information associated with HARQ retransmission of a packet sent on that carrier. A multi-carrier MS also monitors secondary carrier(s) for superframe configuration control information in the superframe header.

2 Proposed SDD Text

8.1.3 Basic Protocol architecture for Multicarrier support

[Add the following sections and text into 802.16m-08/003r1, the end of section 8.1.3]

The full control information as described in 11.x.1 does not need to be sent on all carriers, as system-wide and sector-wide system information are common to all carriers.

Two types of carriers are defined:

- Primary carrier: this is a carrier that carries the synchronization channel, and the full control information as described in 11.x. This type of carrier is used by MS to perform network entry/re-entry as well as for MS to obtain system parameters/configuration information. It is also used to carry traffic and the associated unicast/multicast service control information between the MS and the BS for MS that has already entered the network.
- Secondary carrier: this is a carrier that carries a subset of the control information, i.e, the superframe configuration control information on that carrier; as well as the unicast/multicast service control information for dynamic resource allocation of each sub-frame within the carrier. This type of carriers is used to carry traffic and the associated unicast/multicast service control information between the MS and the BS for MS that has already entered the network.

One or multiple carriers within the spectrum can be designated as primary carriers. One or multiple carriers within the spectrum can be designated as secondary carriers. An MS that has the capability to transmit/receive on only one carrier at a time is assigned to a primary carrier. An MS that has capability to transmit/receive on multiple carriers at a time, is assigned to one or multiple primary carriers. A multi-carrier MS monitors only the assigned primary carrier(s) for unicast/multicast service control information for new unicast/multicast traffic packet transmission/reception. The unicast/multicast service control information on the primary carrier may point to additional control information on a secondary carrier where resource for the unicast/multicast traffic burst is allocated. A multi-carrier MS may monitor the secondary carrier for unicast/multicast service control information associated with HARQ retransmission of a packet sent on that carrier. A multi-carrier MS also monitors secondary carrier(s) for superframe configuration control information in the superframe header.