

Project	<b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >	
Title	<b>Proposed text for 802.16m Requirements –Section 7.0 Performance Requirements</b>	
Date Submitted	<b>2007-02-23</b>	
Source(s)	Sang Youb Kim Wen Tong Peiying Zhu Nortel Networks	Voice: +1-972-684-0667 Fax: +1-972-684-3775 <a href="mailto:sangyoub@nortel.com">sangyoub@nortel.com</a> <a href="mailto:wentong@nortel.com">wentong@nortel.com</a> <a href="mailto:pyzhu@nortel.com">pyzhu@nortel.com</a>
Re:	Call for Contributions on Requirements for P802.16m Advanced Air Interface IEEE 802.16m-07/004r1, 01/31/07	
Abstract	This document modifies Performance Requirements section in the current baseline document, 80216m-07_002.	
Purpose	For discussion and approval by TGM	
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.	
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 and Procedures	The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures < <a href="http://ieee802.org/16/ipr/patents/policy.html">http://ieee802.org/16/ipr/patents/policy.html</a> >, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair < <a href="mailto:chair@wirelessman.org">mailto:chair@wirelessman.org</a> > as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site < <a href="http://ieee802.org/16/ipr/patents/notices">http://ieee802.org/16/ipr/patents/notices</a> >.	

## Section 7.0 Performance Requirements

*Sang Youb Kim, Wen Tang, Peiyong Zhu*

*Nortel Networks*

### 7.0 Performance Requirements

Performance goals should be specified in terms of relative performance relative to that of IEEE 802.16e reference systems.

#### 7.1 User throughput

The average user-throughput in the downlink/uplink should be at least twice enhancement over IEEE 802.16e reference system.

#### 7.2 Spectrum efficiency

IEEE 802.16m shall provide enhancements to the existing standard to reduce the amount of PHY and MAC layer overhead, particularly in cases of large numbers of users with small or sporadic bandwidth demands, in order to make more efficient use of available capacity.

Spectral efficiency of 10 bits/second/Hz/cell shall be required to achieve the subscriber penetration rates and aggregate data rates needed to ensure commercial success for these networks, given the bandwidth-intensive multimedia services they must support.

IEEE802.16m shall support the enhanced MBS with spectral efficiency greater than 2bit/sec/Hz at 95% tile coverage. IEEE802.16m shall support the VoIP capacity at 200 VoIP-calls/MHz.

#### 7.3 Mobility

IEEE 802.16m shall provide seamless interworking with other radio access systems including legacy IEEE 802.16 systems. Both the inter-networking and intra-networking support for IEEE802.16m shall provide the service continuity at minimum MS speed of 120km/h. The IEEE802.16m shall enable optimize the seamless mobility management and minimize the mobility handover interruption time. The IEEE802.16m shall support the required measurement and signaling for the inter-networking handoff, scanning and network discovery.

#### 7.4 Coverage

IEEE 802.16m shall support legacy cell sizes allowing for co-location of IEEE 802.16m deployments. In addition, larger cell sizes will also be considered. 30 km cells shall be supported with limited degradation. 100 km cells should not be precluded from the standard. Support for these larger cell sizes should not compromise the performance of smaller cells.

Performance at cell edge is an important issue. IEEE 802.16m shall support enhanced cell edge performance through a combination of specified processing including MIMO, SDMA, possibly beamforming, and

superposed coding with adaptive interference cancellation. The target spectral efficiency at cell edge shall be on the order of at least in the range of 1-4 bits/sec/Hz/cell.

It is also required to support increased number of simultaneous users and enhanced user penetration rates.

IEEE802.16m should provide the enhancement of IEEE802.16j based multi-hop relay capability.

## **7.5 Enhanced Multicast-Broadcast**

System wide broadcast performance should be optimized independently of unicast service. The enhanced multi-cast and broadcast (E-MBS) support of IEEE802.16m shall provided fast signalling capability to improve the user surfing reaction time and special MAC/PHY may be optimized to minimize the MS power consumption.