

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 P802.16m Requirements Document -- Section 6</b>	
Date Submitted	<b>2007-02-25</b>	
Source(s)	Jean-Pierre Balech Alcatel-Lucent, France	<a href="mailto:jean-pierre.balech@alcatel-lucent.fr">jean-pierre.balech@alcatel-lucent.fr</a> +33 (1) 3077 4459
	Peretz Feder Alcatel-Lucent, New Jersey	<a href="mailto:pfeder@alcatel-lucent.com">pfeder@alcatel-lucent.com</a> +1 973 386 6976
	Dan Gal Alcatel-Lucent, New Jersey	<a href="mailto:dgal@alcatel-lucent.com">dgal@alcatel-lucent.com</a> +1 973 428 7734
	Hardy Halbauer Alcatel-Lucent, Germany	<a href="mailto:hardy.halbauer@alcatel-lucent.de">hardy.halbauer@alcatel-lucent.de</a> +49 (711821) 34182
	Ashok Rudrapatna Alcatel-Lucent, New Jersey	<a href="mailto:anr1@alcatel-lucent.com">anr1@alcatel-lucent.com</a> +1 973 386 7730
	Joerg Schaepperle Alcatel-Lucent, Germany	<a href="mailto:Joerg.Schaepperle@alcatel-lucent.de">Joerg.Schaepperle@alcatel-lucent.de</a> +49.711.821-32266
	Antoine Soulie Alcatel-Lucent, France	<a href="mailto:antoine.soulie@alcatel-lucent.com">antoine.soulie@alcatel-lucent.com</a> +33 (1) 40 76 1652
	Philippe Sehier Alcatel-Lucent, France	<a href="mailto:philippe.sehier@alcatel.fr">philippe.sehier@alcatel.fr</a>
	Reinaldo Valenzuela (& team) Alcatel-Lucent, New Jersey	<a href="mailto:rav@alcatel-lucent.com">rav@alcatel-lucent.com</a> +1 732 888 7031
Re:	IEEE 802.16m-07/004r1 – Call for Contributions for P802.16m Requirements	
Abstract	Proposed draft text for 802.16m Requirements Document -- Section 6	
Purpose	Incorporate into the draft-802.16m Requirements Document	
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> >.	



## Proposed Text for P802.16m Requirements Document – Section 6

*Alcatel-Lucent 16m team*

### 6.0 Functional Requirements

#### 6.1 Peak Data Rate

Peak air interface data rates shall meet or exceed the minimum rates to be defined by the ITU-R for IMT-Advanced.

*Note:* At the present, the ITU-R Recommendation M.1645 [4] §4.2.5 envisions data rates (at the Cellular Level) has high as 100 Mbit/s for high mobility and 1Gbit/s for low mobility such as nomadic/local wireless access. M.1645 also states: “These data rates are targets for research and investigation. They should not be taken as the definitive requirements for systems beyond IMT-2000”.

##### **Peak rates**

The peak rates depend, among other channel parameters, on the channel bandwidth. For 20 MHz channel, the terminal should be able to achieve a peak data rate in the range of 75 to 150 Mbit/s.. This is considered a maximum requirement in good channel conditions. For other bandwidths, the data rates shall scale accordingly. A base station sector should be able to achieve a peak aggregate data rate of up to 1 Gbit/s.

##### **Duplex mode**

Both TDD and FDD operation should be supported. In FDD operation, half-duplex terminals should also be supported.

##### **DL/UL ratio**

Symmetrical operation should be supported in addition to asymmetrical operation. To ensure maximum dynamic throughput, the UL/DL ratio should be configurable. In TDD mode, the UL/DL should be adjustable per frame. In FDD mode, the UL and DL channel bandwidths may be different and should be configurable.

##### **Maximum allowed packet reception/transmission outage time**

The outage time of user traffic packets, during handoff, shall be specified depending on the type of handoff mechanism and depending on the application type. At least two types of handoff mechanisms should be specified:

- Type-1 allows fast handoff times through usage of additional MAC and radio resources. Design target for Type-1 is 20 ms or better outage time.
- Type-2 is more efficient with respect to radio resource usage but leads to longer handoff times. Design target for Type-2 is 50 ms.

##### **Trade-off between mobility and data rate**

For mobility-performance classification purposes, the required performance values should be established for four mobility speed classes:

- 0 to 5 km/h: optimum performance.
- 5 to 60 km/h: high performance.
- 60 to 120 km/h: medium performance.
- 120 to 350 km/h: basic performance.

The acceptable performance rates for each class are **TBD**.

## 6.2 Latency

### PHY-MAC roundtrip delay

The requirement for the PHY-MAC roundtrip delay should respect the different types of services. Different values may be specified for:

- VoIP and other real-time-services
- Audio/video streaming
- Broadcast/multicast services
- HARQ.

The specific values of acceptable roundtrip delay, for each case, are **TBD**. These values may differ slightly from TDD to FDD modes.

High bandwidth real-time services and gaming applications shall be supported.

## 6.3 QoS

## 6.4 Radio Resource Management

## 6.5 Security