

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Proposed text for 802.16m Requirements – Section 6.0 Functional Requirements	
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Re:	Call for Contributions on Requirements for P802.16m Advanced Air Interface IEEE 802.16m-07/004r1, 01/31/07	
Abstract	This document modifies Functional Requirements section in the current baseline document, 80216m-07_002.	
Purpose	For discussion and approval by TGM	
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Section 6.0 Functional Requirements

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6.0 Functional Requirements

6.1 Peak Data Rate

Since new applications and new devices supporting high quality video streaming will be available for IMT-Advanced, bandwidth consumption is far more than today's consumption. Requirement of target peak data rate is

At least 200 Mbit/sec for downlink traffic and at least 100 Mbit/sec for uplink traffic for high mobility

At least 1 Gbit/sec for downlink traffic and at least 500 Mbit/sec for uplink traffic for fixed or nomadic.

State of the art modulation, coding, scheduling and multiplexing should be employed to achieve higher spectral efficiency at a reasonable complexity.

Additional transmit and receive antennas may be considered.

6.2 Latency

Latency should be further reduced as compared to the IEEE 802.16e reference system for all aspects of the system including the air link, state transition delay, access delay, and handover. IEEE 802.16m shall support less than 5 msec of latency for traffic packet and less than 100 msec of latency for signaling message.

6.3 QoS

Relative to IEEE 802.16e reference systems, IEEE 802.16m shall

have a greater ability to simultaneously support a wide range of multimedia services, provide enhanced management of different quality of service levels, and support for applications requiring IMT-Advanced system end user QoS requirements.

Supporting high priority service in wireless network is one of important issues from government /operator perspective and end-user perspective.

End-user: IEEE 802.16m shall provide high priority for emergency service calls (such as 911). Such high priority service shall be protected by proper assignment of radio resources.

Government/Operator: In emergency situations, wireless networks can experience severe congestion due to large call volumes. This causes damage to network facilities and further more prohibits emergency callings from Federal, state, and local government personnel. IEEE 802.16m shall support management of and response to emergency callings from government personnel in emergency situations.

IEEE802.16m shall ensure the QoS mechanism can provide the required data integrity, response time and throughput applicable to the MS to deliver carrier grade level service.

6.4 Radio Resource Management

6.4.1 Frequency Reuse Scheme

IEEE 802.16m shall support very flexible frequency reuse schemes with or without network wide frequency planning, such as soft frequency reuse or adaptive frequency reuse to improve cell edge performance and overall throughput.

6.4.2 Interference Management

IEEE 802.16m shall support advanced interference mitigation schemes.

6.4.3 Multi-cell Joint Resource Optimization

IEEE 802.16m shall support multi cell joint resource allocation schemes to enable load balancing and maximize network capacity.

6.4.4 B/W Scalability

IEEE 802.16m shall support enhanced B/W scalability and agility including seamless initial access and H/O.

6.4.5 Interworking Between Different Access Systems

As specified in [4], IMT-Advanced expects to support coexistence of different radio access systems connected via flexible core networks. End-user is able to be connected via a variety of different access systems to the networks. Considering the fact, it is required for IEEE 802.16m to support interworking between different access systems in terms of seamless handover not only between intra access system but also between inter access system, QoS management, and efficient load balancing. In addition, IEEE802.16m should support the inter-access-system handoff with minimum interruption time and it should also support the inter-access system measurement for efficient radio resource management.

IEEE 802.16m should aim to optimize inter-networking the IEEE802 based access system, such as IEEE802.11.

6.5 Security

Requirements for secrecy and privacy shall support more efficient, enhanced confidentiality for traffic transmission and integrity protection for control information. It is also required for support efficient, robust user/device authentication scheme, location privacy scheme, and reliable/flexible service availability protection scheme.

IEEE 802.16m shall also support inter-working security which includes delay constrained handover and roaming without changing the security level and minimum performance/capacity degradation due to the security feature provisioning and the delay due to the re-establish the security context shall not affect the real time service.