### 5.6.2 Detailed specification of the set of radio interface FDD/TDD components

#### 5.6.2.1 TDD component

The standards contained in this section are derived from the global core specifications for IMT‑2000 contained at <http://ties.itu.int/u/itu-r/ede/rsg5/IMT-2000/GCS/GCSrev10/>http://ties.itu.int/u/itu-r/ede/rsg8/wp8f/wp8f-tech/GCSrev6/5-6/.

The following notes apply to the sections below, where indicated:

1. The relevant SDOs should make their reference material available from their website.

2. This information was supplied by the recognized external organizations and relates to their own deliverables of the transposed global core specification.

The entries in the Tables in the elements of § 5.6.2.1.x.2 that contain “Y” or interoperable options (IO-BF or IO-MIMO) are part of the detailed specifications for OFDMA TDD WMAN. The “N” entries in the Tables in the elements of § 5.6.2.1.x.2 are for information only and are not included in the OFDMA TDD WMAN specification. The specifications for OFDMA TDD WMAN are provided in the elements of § 5.6.2.1.x.1 that are specifically included in the corresponding elements of § 5.6.2.1.x.2. Anything in § 5.6.2.1.x.1 that is not mentioned in § 5.6.2.1.x.2 is excluded.

##### 5.6.2.1.1 Release 1

###### 5.6.2.1.1.1 IEEE Std 802.16: Standard for local and metropolitan area networks – Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

5.6.2.1.1.1.1 IEEE Std 802.16-2004

IEEE Standard for local and metropolitan area networks – Part 16: Air interface for fixed broadband wireless access systems

This revised standard specifies the air interface, including the medium access control layer and multiple physical layer specifications, of fixed BWA systems supporting multiple services. It consolidates IEEE Std 802.16™, IEEE Std 802.16a™, and IEEE Std 802.16c™, retaining all modes and major features without adding modes. Content is added or revised to improve performance, ease deployment, or replace incorrect, ambiguous, or incomplete material, including system profiles.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16-2004 | Published; superseded byIEEE Std 802.16-2009 | 2004‑10‑01 | <http://standards.ieee.org/getieee802/802.16.html> |

5.6.2.1.1.1.2 IEEE Std 802.16e-2005 and Cor1

IEEE Standard for local and metropolitan area networks – Part 16: Air interface for fixed and mobile broadband wireless access systems – Amendment 2: Physical and medium access control layers for combined fixed and mobile operation in licensed bands

This document provides enhancements to IEEE Std 802.16-2004 to support subscriber stations moving at vehicular speeds and thereby specifies a system for combined fixed and mobile broadband wireless access. Functions to support higher layer handover between base stations or sectors are specified. Operation is limited to licensed bands suitable for mobility below 6 GHz. Fixed IEEE 802.16 subscriber capabilities are not compromised. In addition to mobility enhancements, this document contains substantive corrections to IEEE 802.16-2004 regarding fixed operation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE 802.16e‑2005 and Cor1 | Published; superseded byIEEE Std 802.16-2009 | 2006-02-28 | <http://standards.ieee.org/getieee802/802.16.html> |

5.6.2.1.1.1.3 IEEE Std 802.16f-2005

IEEE Standard for local and metropolitan area networks – Part 16: Air interface for fixed broadband wireless access systems – Amendment 1: Management information base)

This document provides enhancements to IEEE Std 802.16-2004 to define a management information base (MIB) for the MAC and PHY and associated management procedures.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16f-2005 | Published; superseded byIEEE Std 802.16-2009 | 2005-12-01 | <http://standards.ieee.org/getieee802/802.16.html> |

###### 5.6.2.1.1.2 WiMAX Forum® Mobile System Profile

The complete WiMAX Forum® Mobile System Profile, Release 1 is included in the following volume.

5.6.2.1.1.2.1 WiMAX Forum® Mobile System Profile Release 1 – IMT-2000 Edition

This provides the complete WiMAX Forum® Mobile System Profile, Release 1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF‑T23‑007‑R010v02 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-007-R010v02_MSP-IMT-2000.pdf> |
| WiMAX Forum | WMF-T23-001-R010v09 | Approved  | 2010-09-07 | <http://wimaxforum.org/imt-2000/10/WMF-T23-001-R010v09_MSP.pdf> |

##### 5.6.2.1.2 Release 1.5

###### 5.6.2.1.2.1 IEEE Std 802.16: Standard for local and metropolitan area networks – Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

5.6.2.1.2.1.1 IEEE Std 802.16-2009

Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16-2009 | Published | 2009-05-29 | <http://standards.ieee.org/getieee802/802.16.html> |

5.6.2.1.2.1.2 IEEE Std 802.16j-2009

This amendment updates and expands IEEE Std 802.16-2009, specifying physical layer and medium access control layer enhancements to IEEE Std 802.16 for licensed bands to enable the operation of relay stations. Subscriber station specifications are not changed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16j-2009 | Published | 2009-06-12 | <http://standards.ieee.org/getieee802/802.16.html> |

5.6.2.1.2.1.3 IEEE Std 802.16h-2010

**IEEE Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems – Amendment 2: Improved coexistence mechanisms for license-exempt operation**

This amendment updates and expands IEEE Std 802.16, specifying improved mechanisms, as policies and medium access control enhancements, to enable coexistence among license-exempt systems and to facilitate the coexistence of such systems with primary users.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16h-2010 | Published | 2010-07-30 | <http://standards.ieee.org/getieee802/802.16.html> |

[5.6.2.1.2.1.4 IEEE Std 802.16-2012

Title of the Standard

Synopsis of the Standard

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
|  |  |  |  |  |

]

###### 5.6.2.1.2.2 WiMAX Forum® Mobile System Profile

The complete WiMAX Forum® Mobile System Profile, Release 1.5 is included in the following volumes.

5.6.2.1.2.2.1 WiMAX Forum® Mobile System Profile Specification: Release 1.5 – Common part

This specification describes the features of the WiMAX Forum® Mobile System Profile, Release 1.5. It includes the features common to both the TDD and FDD operational modes. It has the following table of contents:

1 Scope

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

2 References

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

3 Definitions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

4 PHY profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

5 MAC profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

6 Security

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

7 Radio profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

8 Power class profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009‑08‑01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

5.6.2.1.2.2.2 WiMAX Forum® Mobile System Profile specification: Release 1.5 – TDD specific part

This specification describes the features of the WiMAX Forum® Mobile System Profile, Release 1.5. It includes the features specific to the TDD operational mode. The content refers to the physical layer.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-002-R015v05 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-002-R015v01_MSP-TDD.pdf> |

5.6.2.1.2.2.3 WiMAX Forum® Mobile Radio Specification

This specification describes the radio features of the WiMAX Forum® Mobile System Profile, Release 1.5.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-005-R015v04 | Approved | 2010-09-07 | [http://wimaxforum.org/imt-2000/10/WMF-T23-005-R015v04\_RSP.pdf](http://wimaxforum.org/imt-2000/7/MRSv031.zip) |

##### 5.6.2.1.3 Release 2

###### 5.6.2.1.3.1 IEEE Std 802.16: Standard for local and metropolitan area networks – Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

5.6.2.1.3.1.1 IEEE Std 802.16-2009

Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16-2009 | Published | 2009-05-29 | <http://standards.ieee.org/getieee802/802.16.html> |

5.6.2.1.3.1.2 IEEE Std 802.16m-2011

**Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems – Amendment 3: Advanced air interface**

This amendment specifies the WirelessMAN-Advanced air interface, an enhanced air interface designed to meet the requirements of the IMT-Advanced standardization activity conducted by the ITU-R. The amendment is based on the WirelessMAN-OFDMA specification of IEEE Std 802.16 and provides continuing support for WirelessMAN-OFDMA subscriber stations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16m-2011 | Published | 2011-05-06 | <http://standards.ieee.org/getieee802/802.16.html> |

[5.6.2.1.2.1.3 IEEE Std 802.16.1-2012

Title of the Standard

Synopsis of the Standard

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
|  |  |  |  |  |

]

#### 5.6.2.2 FDD component

The standards contained in this section are derived from the global core specifications for IMT‑2000 contained at <http://ties.itu.int/u/itu-r/ede/rsg5/IMT-2000/GCS/GCSrev10/>http://ties.itu.int/u/itu-r/ede/rsg8/wp8f/wp8f-tech/GCSrev6/5-6/.

The following notes apply to the sections below, where indicated:

1. The relevant SDOs should make their reference material available from their website.

2. This information was supplied by the recognized external organizations and relates to their own deliverables of the transposed global core specification.

The entries in the Tables in the elements of § 5.6.2.2.x.2 that contain “Y” or interoperable options (IO-BF or IO-MIMO) are part of the detailed specifications for OFDMA TDD WMAN. The “N” entries in the Tables in the elements of § 5.6.2.2.x.2 are for information only and are not included in the OFDMA TDD WMAN specification. The specifications for OFDMA TDD WMAN are provided in the elements of § 5.6.2.2.x.1 that are specifically included in the corresponding elements of § 5.6.2.2.x.2. Anything in § 5.6.2.2.x.1 that is not mentioned in § 5.6.2.2.x.2 is excluded.

##### 5.6.2.2.1 Release 1

(This section is intentionally left blank.)

##### 5.6.2.2.2 Release 1.5

###### 5.6.2.2.2.1 IEEE Std 802.16: Standard for local and metropolitan area networks – Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

5.6.2.2.2.1.1 IEEE Std 802.16-2009

Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16-2009 | Published | 2009-05-29 | <http://standards.ieee.org/getieee802/802.16.html> |

5.6.2.2.2.1.2 IEEE Std 802.16j-2009

This amendment updates and expands IEEE Std 802.16-2009, specifying physical layer and medium access control layer enhancements to IEEE Std 802.16 for licensed bands to enable the operation of relay stations. Subscriber station specifications are not changed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16j-2009 | Published | 2009-06-12 | <http://standards.ieee.org/getieee802/802.16.html> |

[5.6.2.2.2.1.3 IEEE Std 802.16-2011

Title of the Standard

Synopsis of the Standard

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
|  |  |  |  |  |

]

###### 5.6.2.2.2.2 WiMAX Forum® Mobile System Profile

The complete WiMAX Forum® Mobile System Profile, Release 1.5 is included in the following volumes.

5.6.2.2.2.2.1 WiMAX Forum® Mobile System Profile specification: Release 1.5 – Common part

This specification describes the features of the WiMAX Forum® Mobile System Profile, Release 1.5. It includes the features common to both the TDD and FDD operational modes. It has the following table of contents:

1 Scope

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

2 References

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

3 Definitions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

4 PHY profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

5 MAC profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

6 Security

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

7 Radio profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

8 Power class profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-001-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-001-R015v01_MSP-Common-Part.pdf> |

5.6.2.2.2.2.2 WiMAX Forum® Mobile System Profile specification: Release 1.5 – FDD specific part

This specification describes the features of the WiMAX Forum® Mobile System Profile, Release 1.5. It includes the features specific to the FDD operational mode. The content refers to the physical and the MAC layers.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-003-R015v01 | Approved  | 2009-08-01 | <http://wimaxforum.org/imt-2000/9/WMF-T23-003-R015v01_MSP-FDD.pdf> |

5.6.2.2.2.2.3 WiMAX Forum® Mobile Radio Specification

This specification describes the radio features of the WiMAX Forum® Mobile System Profile, Release 1.5.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| WiMAXForum | WMF-T23-005-R015v04 | Approved | 2010-09-07 | <http://wimaxforum.org/imt-2000/10/WMF-T23-005-R015v04_RSP.pdf> |

##### 5.6.2.2.3 Release 2

###### 5.6.2.2.3.1 IEEE Std 802.16: Standard for local and metropolitan area networks – Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

5.6.2.2.3.1.1 IEEE Std 802.16-2009

Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16-2009 | Published | 2009-05-29 | <http://standards.ieee.org/getieee802/802.16.html> |

5.6.2.2.3.1.2 IEEE Std 802.16m-2011

**Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems – Amendment 3: Advanced air interface**

This amendment specifies the WirelessMAN-Advanced air interface, an enhanced air interface designed to meet the requirements of the IMT-Advanced standardization activity conducted by the ITU-R. The amendment is based on the WirelessMAN-OFDMA specification of IEEE Std 802.16 and provides continuing support for WirelessMAN-OFDMA subscriber stations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
| IEEE | IEEE Std 802.16m-2011 | Published | 2011-05-06 | <http://standards.ieee.org/getieee802/802.16.html> |

[5.6.2.2.3.1.3 IEEE Std 802.16.1-2012

Title of the Standard

Synopsis of the Standard

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDO | Document No. | Status | Issued date | Location |
|  |  |  |  |  |

]