IEEE 802.16 Working Group on Broadband Wireless Access

http://WirelessMAN.org

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The IEEE 802.16 Working Group (WG) on Broadband Wireless Access* acknowledges receipt of the letter (numbered ITU-R 8A-9B/TEMP/4(Rev.1) and IEEE L802.16-03/20) of 28 November 2003, on the topic "Collaboration ITU-R / IEEE 802.16 on Broadband Wireless Access".

The IEEE 802.16 WG, during its Session #29 of 12–15 January 2004, reviewed that letter. The WG is pleased to find that ITU-R is interested in the establishment of an ITU-R Recommendation on broadband wireless access and agrees that the development of a Recommendation containing a reference to the IEEE 802.16 Wireless Metropolitan Area Network standards is appropriate at this time.

The IEEE 802.16 WG also agrees that such an ITU-R Recommendation should include the relevant ETSI HiperMAN standards and that both should be referenced in a single Recommendation.

We agree with the ITU-R view that the initial preparation should be based in an F-series (Fixed Service) Recommendation. We also agree that subsequent modifications to include mobility capabilities should be in an M-series (Mobile Service) Recommendation.

The IEEE 802.16 WG has provided draft content according to the outline provided in ITU-R's letter. This draft, in the Annex below, is meant to reflect current Metropolitan Area Network developments by both IEEE 802.16 and ETSI. We are sending a copy of this letter to ETSI for further review.

While IEEE 802.16 recognizes that ITU-R Recommendations including multiple systems relating to one particular radio application may include an evaluation of the various recommended systems, we feel that such an evaluation is not warranted in this case because the systems described in the IEEE 802.16 and ETSI HiperMAN standards are harmonized rather than competitive. If ITU-R feels that such an evaluation is useful, perhaps a separate related recommendation would be appropriate.

IEEE 802.16 looks forward to providing additional input to ITU-R groups as appropriate.

Sincerely,

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Chair, IEEE 802.16 Working Group on Broadband Wireless Access

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* The views expressed in this communication are those of the IEEE 802.16 Working Group and do not necessarily represent the views of the IEEE 802 LAN/MAN Standards Committee, the IEEE Standards Association, or the IEEE.

Annex

WORKING DOCUMENT TOWARDS A PRELIMINARY DRAFT NEW RECOMMENDATION

Detailed specifications of the radio interface for fixed broadband wireless access (BWA) systems

1 Introduction

(*TBD*)

2 Scope

This Recommendation identifies the radio interface specifications for fixed BWA systems based on the characteristics defined in IEEE Standard 802.16 ("Air Interface for Fixed Broadband Wireless Access Systems") and ETSI TS 102 177, TS 102 178, and TS 102 210.

3 Related ITU Recommendations

The existing Recommendations that are considered to be of importance in the development of this particular Recommendation are as follows:

(*TBD*)

4 Considerations

Standards for fixed BWA radio interfaces have been developed in international and regional standardization bodies with broad participation. The results of this work are significantly harmonized. Systems compliant to the specifications are expected to be available from numerous sources. The standards bodies continue to develop and enhance their specifications to support evolution toward improved capabilities in the future.

5 Recommendations

The Radiocommunication Assembly recommends that the radio interface for Fixed BWA systems be as specified below.

5.1 Radio Interface

5.1.1 Overview of the radio interface

Depending on the frequency band and implementation details, an access system built in accordance with this radio interface specification can support a wide range of applications, from commercial services to residential applications in both urban and rural areas. The specification could easily support both generic Internet-type data and real-time data, including two-way applications such as voice and videoconferencing.

The technology is known as a wireless metropolitan area network (wireless MAN). The word "metropolitan" refers not to the application but to the scale. The design is primarily oriented toward outdoor applications. The architecture is primarily point-to-multipoint, with a base station serving subscribers in a cell than can range up to tens of km. Terminals are fixed or nomadic and therefore ideal for providing access to buildings, such as businesses, homes, Internet cafes, telephone shops (telecenters), etc. When the system provides broadband access to a site, such as a building, distribution of the content throughout the site would normally be by

conventional means, such as IEEE 802.11 (wireless LAN) hot spot, IEEE 802.3 (Ethernet), T1/E1, etc., depending on the required service. Enhancement to provide direct service to mobile terminals using the wireless MAN air interface are in development.

The radio interface includes support for a variety of worldwide frequency allocations in either licensed or license-exempt bands. At higher frequencies (above 10 GHz), supported data rates range over 100 Mbit/s per 25 MHz or 28 MHz channel, with many channels available under some administrations. At the lower frequencies (below 11 GHz), data rates range up to 70 Mbit/s per 20 MHz channel.

The radio interface includes a medium-access control layer (MAC) as well as a physical layer. The MAC specifies a mechanism for controlling access to the airwaves. It is based on demand-assigned multiple access in which transmissions are scheduled according to priority and availability. This design is driven by the need to support carrier-class access to public networks, both IP and ATM, with full Quality of Service (QoS) support.

The MAC is specified in IEEE Std 802.16 and ETSI TS 102 178.

The MAC supports several physical layer specifications, depending on the frequency bands of interest and the operational requirements. In particular, the alternatives include:

a) Below 11 GHz
    a. WirelessMAN-OFDM and HiperMAN: this specification, defined in IEEE Standard 802.16 and in ETSI TS 102 177, is based on orthogonal frequency-division multiplexing (OFDM). The physical layer specifications in the IEEE and ETSI standards are nearly identical.
    b. WirelessMAN-OFDMA: this specification, defined in IEEE Standard 802.16, is based on orthogonal frequency-division multiple access (OFDMA)
    c. WirelessMAN-SCa: this specification, defined in IEEE Standard 802.16, uses single-carrier transmission

b) Above 10 GHz
    a. WirelessMAN-SC: this specification, defined in IEEE Standard 802.16, uses single-carrier transmission

5.1.2 Detailed specification of the radio interface

The specifications contained in this section are derived from the following standards for fixed BWA:

IEEE Standard 802.16	http://standards.ieee.org/getieee802/802.16.html
ETSI…	http://<TBD>