

# IEEE 802.16 Working Group on Broadband Wireless Access

<http://WirelessMAN.org>



Dr. Roger B Marks  
NIST  
325 Broadway, MC 813.00  
Boulder, CO 80303 USA  
Tel: +1 303 497 3037  
Fax: +1 303 497 7828  
<mailto:marks@nist.gov>  
6 June 2001

Dr.-Ing. Jamshid Khun-Jush, Chair, ETSI BRAN  
<mailto:Jamshid.Khun-Jush@eed.ericsson.se>

Dear Jamshid:

On behalf of IEEE 802.16, I thank you for your letter dated 5 April, delivered on 16 May, and denoted [IEEE 802.16l-01/13](#). We were very pleased to learn that your HIPERMAN group had reviewed our submission carefully and are happy to respond with more information.

In particular, we would like to answer your question: "What is the IEEE 802.16 definition of interoperability?" While the Working Group maintains no formal definition of the term, we would generally defer to *The IEEE Standard Dictionary of Electrical and Electronics Terms* (IEEE Standard 100-1996). The appropriate definition therein is this one: The capability, promoted but not guaranteed by joint conformance with a given set of standards, that enables heterogeneous equipment, generally built by various vendors, to work together in a network environment." In particular, I note that, in [IEEE 802.16l-01/09](#), we responded positively to assessment of IEEE 802.16 drafts with respect your criterion that "The standard, to be developed by ETSI Project BRAN, MUST support interoperability." In the case of IEEE 802.16, our policy is to define multiple physical layers (PHYs) operating under a unified MAC layer. These PHY options address a number of different frequencies, with the intent to support many different regulatory domains throughout the world. Each of the PHY options is intended to support an interoperable air interface. While a mixture of PHY modes might not be interoperable with each other, the choice of any single mode is intended to result in full interoperability.

I should note that we continue to consolidate our options where possible. For instance, at our Session #13 of 14-18 May, we moved to reduce the number of PHY modes in our 10-66 GHz draft from two to one. For more details on this session, please see our report <<http://ieee802.org/16/meetings/mtg13/report.html>>.

Regarding our informal discussion of adding an 802.16/HIPERACCESS clause to Annex 1 of the [Co-operation Agreement between ETSI and IEEE-SA](#), 802.16 would like to try and formalize our cooperation. I propose the clause below, with the understanding that you need to update the BRAN Terms of Reference. We believe that progress in this area will aid our cooperation, though we could go ahead with certain actions (such as IEEE copyright release for ETSI use of the 802.16 draft) beforehand.

2001-06-06

IEEE 802.16l-01/14

As usual, we welcome your members to participate in our process in any way. Please let me know if there is anything we can do to assist in this process.

Best regards,



Dr. Roger B. Marks

Chair, IEEE 802.16 Working Group on Broadband Wireless Access

cc: Jim Carlo, Chair, IEEE 802 LAN/MAN Standards Committee  
Jay Klein, IEEE 802.16 Liaison to ETSI BRAN  
Marianna Goldhammer, IEEE 802.16 Liaison to ETSI HIPERMAN

**Proposed Addition to Annex 1 of the “Co-operation Agreement between ETSI and IEEE-SA”:**

4) Metropolitan Area Networks for Fixed Broadband Wireless Access

a) ETSI - EP BRAN: Broadband Radio Access Networks (HIPERACCESS Standard Area)

Terms of Reference:

to produce specifications for high quality fixed radio access networks (HIPERACCESS) as described in the Radio Equipment and Systems (RES); Radio Local Loop (RLL) Co-ordination Group; Survey of ETSI activities and Recommendations for ETSI Work Program (TR 101 030);

to produce specifications and standards for high quality private and public access radio access networks (HIPERLAN/2) as described in Radio Equipment and Systems (RES); High Performance Radio Local Area Networks (HIPERLAN); HIPERLAN Requirements and architectures for Asynchronous Transfer Mode (ATM) (TR 101 031); to exploit the commonality between these systems to the benefit of both.

The Project shall complement other activities within ETSI such as: TM4 P-MP systems; the Cordless Terminal Mobility (CTM) project; the Corporate Networks (CN) project; and DECT, GSM, GRAN.

It should take note of standardization work in other bodies, notably the ATM Forum, the Internet Engineering Task Force (IETF), European Computer Manufacturers Association (ECMA) and DAVIC, and avoid unnecessary duplication.

b) IEEE-SA 802.16

Terms of Reference:

The mission of IEEE Working Group 802.16, a unit of the IEEE 802 LAN/MAN Standards Committee, is “to develop standards and recommended practices to support the development and deployment of fixed broadband wireless access systems.” 802.16’s air interface standards projects include the 802.16 project and its extensions through the 802.16a and 802.16b projects. The scope of 802.16 is as follows: “This standard specifies the physical layer and media access control layer of the air interface of interoperable fixed point-to-multipoint broadband wireless access systems. The specification enables transport of data, video, and voice services. It applies to systems operating in the vicinity of 30 GHz but is broadly applicable to systems operating between 10 and 66 GHz.” The scope of 802.16a is as follows: “This standard specifies the physical layer and media access control layer of the air interface of interoperable fixed point-to-

multipoint broadband wireless access systems (e.g., those supporting data rates of DS1/E1 or greater). The specification enables access to data, video, and voice services with a specified quality of service in licensed bands designated for public network access. It applies to systems operating between 2 and 11 GHz.” The scope of 802.16b is as follows: “This standard specifies the medium access control layer and physical layers of the air interface of interoperable fixed point-to-multipoint broadband wireless access systems. The specification enables transport of data, video, and voice services. Physical layers are specified for both licensed and license-exempt bands. This Amendment expands the scope of the original project by extending it to license-exempt bands (thereby defining the Wireless High-Speed Unlicensed Metropolitan Area Network [WirelessHUMAN™] Standard). It specifies the physical layer and medium access control layer of the air interface of interoperable fixed broadband wireless metropolitan area network systems, including point-to-multipoint. The standard enables access to data, video, and voice services with quality of service in unlicensed (i.e., license-exempt) bands designated for public network access. It will focus on the 5-6 GHz range and may be applied to unlicensed bands between 2 and 11 GHz. It will address strategies for coexistence with other unlicensed applications. The project will utilize or modify applicable elements from the following:

- MAC: IEEE 802.16
- PHY: IEEE 802.11a; ETSI BRAN HIPERLAN/2.

In addition to its air interface projects, IEEE 802.16 addresses coexistence through the IEEE 802.16.2 *Recommended Practice for Coexistence of Fixed Broadband Wireless Access Systems*.